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Test Id	Vers	Title	Approved	Assertion
com.eurofins_UHD-ADAPTATION-1010	1	HTML5 DASH video representation transition from UHD PQ10 (without Optional Supplemental Enhancement Information) HDR to HD PQ10 (without Optional Supplemental Enhancement Information) HDR content with same frame rate within the same adaptation set following bandwidth restriction	TRUE	When the available bandwidth is restricted, the device shall smoothly transition from a PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 5.1 3840x2160p 50fps video representation to a PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 4.1 1920x1080p 50fps video representation within the same adaptation set of the HTML5 DASH content being played back
com.eurofins_UHD-ADAPTATION-1020	1	HTML5 DASH video representation transition from HD PQ10 (without Optional Supplemental Enhancement Information) HDR to UHD PQ10 (without Optional Supplemental Enhancement Information) HDR content with same frame rate within the same adaptation set following bandwidth being unrestricted	TRUE	When the available bandwidth is unrestricted, the device shall smoothly transition from a PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 4.1 1920x1080p 50fps video representation to a PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 5.1 3840x2160p 50fps video representation within the same adaptation set of the HTML5 DASH content being played back
com.eurofins_UHD-ADAPTATION-1030	1	HTML5 DASH video representation transition from UHD PQ10 (without Optional Supplemental Enhancement Information) HDR to HD PQ10 (without Optional Supplemental Enhancement Information) HDR content with different frame rate within the same adaptation set following bandwidth restriction	TRUE	When the available bandwidth is restricted, the device shall smoothly transition from a PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 5.1 3840x2160p 50fps video representation to a PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 4.1 1920x1080p 25fps video representation within the same adaptation set of the HTML5 DASH content being played back

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Test Id	Vers	Title	Approved	Assertion
com.eurofins_UHD-ADAPTATION-1040	1	HTML5 DASH video representation transition from HD PQ10 (without Optional Supplemental Enhancement Information) HDR to UHD PQ10 (without Optional Supplemental Enhancement Information) HDR content with different frame rate within the same adaptation set following bandwidth becoming unrestricted	TRUE	When the available bandwidth becomes unrestricted, the device shall smoothly transition from a PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 4.1 1920x1080p 25fps video representation to a PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 5.1 3840x2160p 50fps video representation within the same adaptation set of the HTML5 DASH content being played back
com.eurofins_UHD-ADAPTATION-1050	1	HTML5 DASH video representation transition from UHD HLG10 HDR to HD HLG10 HDR content with same frame rate within the same adaptation set following bandwidth restriction	TRUE	When the available bandwidth is restricted, the device shall smoothly transition from a HLG10 HEVC, Main 10, Level 5.1 3840x2160p 50fps video representation to a HLG10 HEVC, Main 10, Level 4.1 1920x1080p 50fps video representation within the same adaptation set of the HTML5 DASH content being played back
com.eurofins_UHD-ADAPTATION-1060	1	HTML5 DASH video representation transition from HD HLG10 HDR to UHD HLG10 HDR content with same frame rate within the same adaptation set following bandwidth becoming unrestricted	TRUE	When the available bandwidth becomes unrestricted, the device shall smoothly transition from a HLG10 HEVC, Main 10, Level 4.1 1920x1080p 50fps video representation to a HLG10 HEVC, Main 10, Level 5.1 3840x2160p 50fps video representation within the same adaptation set of the HTML5 DASH content being played back

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Test Id	Vers	Title	Approved	Assertion
com.eurofins_UHD-ADAPTATION-1070	1	HTML5 DASH video representation transition from UHD HLG10 HDR to HD HLG10 HDR content with different frame rate within the same adaptation set following bandwidth restriction	TRUE	When the available bandwidth is restricted, the device shall smoothly transition from a HLG10 HEVC, Main 10, Level 5.1 3840x2160p 50fps video representation to a HLG10 HEVC, Main 10, Level 4.1 1920x1080p 25fps video representation within the same adaptation set of the HTML5 DASH content being played back
com.eurofins_UHD-ADAPTATION-1080	1	HTML5 DASH video representation transition from HD HLG10 HDR to UHD HLG10 HDR content with different frame rate within the same adaptation set following bandwidth becoming unrestricted	TRUE	When the available bandwidth becomes unrestricted, the device shall smoothly transition from a HLG10 HEVC, Main 10, Level 4.1 1920x1080p 25fps video representation to a HLG10 HEVC, Main 10, Level 5.1 3840x2160p 50fps video representation within the same adaptation set of the HTML5 DASH content being played back
com.eurofins_UHD-ADAPTATION-1090	1	HTML5 DASH video representation transition from PQ10 (without Optional Supplemental Enhancement Information) HDR 3840x2160 to PQ10 (without Optional Supplemental Enhancement Information) HDR 3200x1800 content with same frame rate within the same adaptation set following bandwidth restriction	TRUE	When the available bandwidth is restricted, the device shall smoothly transition from a PQ10 HDR, Main 10, Level 5.1 3840x2160p 50fps video representation to a PQ10 HDR, Main 10, Level 5.1 3200x1800p 50fps video representation within the same adaptation set of the HTML5 DASH content being played back

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Test Id	Vers	Title	Approved	Assertion
com.eurofins_UHD-ADAPTATION-1100	1	HTML5 DASH video representation transition from PQ10 (without Optional Supplemental Enhancement Information) HDR 2560x1440 to PQ10 (without Optional Supplemental Enhancement Information) HDR 3840x2160 content with same frame rate within the same adaptation set following bandwidth becoming unrestricted	TRUE	When the available bandwidth becomes unrestricted, the device shall smoothly transition from a PQ10 HDR, Main 10, Level 5.1 2560x1440p 50fps video representation to a PQ10 HDR, Main 10, Level 5.1 3840x2160p 50fps video representation within the same adaptation set of the HTML5 DASH content being played back
com.eurofins_UHD-ADAPTATION-1110	1	HTML5 DASH video representation transition from HLG10 HDR (3840x2160) to HLG10 HDR (3200x1800) content with same frame rate within the same adaptation set following bandwidth restriction	TRUE	When the available bandwidth is restricted, the device shall smoothly transition from a HLG10 HDR, Main 10, Level 5.1 3840x2160p 50fps video representation to a HLG10 HDR, Main 10, Level 5.1 3200x1800p 50fps video representation within the same adaptation set of the HTML5 DASH content being played back.
com.eurofins_UHD-ADAPTATION-1120	1	HTML5 DASH video representation transition from HLG10 HDR (2560x1440) to HLG10 HDR (3840x2160) content with same frame rate within the same adaptation set following bandwidth becoming unrestricted	TRUE	When the available bandwidth becomes unrestricted, the device shall smoothly transition from a HLG10 HDR, Main 10, Level 5.1 2560x1440p 50fps video representation to a HLG10 HDR, Main 10, Level 5.1 3840x2160p 50fps video representation within the same adaptation set of the HTML5 DASH content being played back
com.eurofins_UHD-ADINS-1010	1	HTML5 post-roll advert insertion, DASH PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 5.1 and MP4 AVC_HD_25	TRUE	Content is presented when a currently playing HTML5 media element referencing DASH with PQ10 HEVC, Main 10, Level 5.1 media is ended, and preloaded MP4 with AVC_HD_25 media is played in its entirety

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Test Id	Vers	Title	Approved	Assertion
com.eurofins_UHD-ADINS-1020	1	HTML5 pre-roll advert insertion, MP4 AVC_HD_25 and DASH PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 5.1	TRUE	Content is presented when a currently playing preloaded MP4 with AVC_HD_25 media is played in its entirety, and then an HTML5 media element referencing DASH with PQ10 HEVC, Main 10, Level 5.1 media is played
com.eurofins_UHD-ADINS-1030	1	HTML5 post-roll advert insertion, DASH HLG10 HEVC, Main 10, Level 5.1 and MP4 AVC_HD_25	TRUE	Content is presented when a currently playing HTML5 media element referencing DASH with HLG10 HEVC, Main 10, Level 5.1 media is ended, and preloaded MP4 with AVC_HD_25 media is played in its entirety
com.eurofins_UHD-ADINS-1040	1	HTML5 pre-roll advert insertion, MP4 AVC_HD_25 and DASH HLG10 HEVC, Main 10, Level 5.1	TRUE	Content is presented when a currently playing MP4 with AVC_HD_25 media is played in its entirety, and then an HTML5 media element referencing pre-buffered DASH with HLG10 HEVC, Main 10, Level 5.1 media is played.
com.eurofins_UHD-DRM-CLEARKEY-1010	1	HTML5 static video element to display DASH PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 5.1, 50 FPS EME CLEARKEY-protected content	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object which media source is initialized with a static MPD defining a stream containing AAC audio and HEVC-encoded 3840x2160p 50fps PQ10 HDR format video content, both protected with the "Clear Key" System the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.

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Test Id	Vers	Title	Approved	Assertion
com.eurofins_UHD-EAC3-1010	1	HTML5 static video element displaying DASH HLG10 HEVC, Main 10, Level 5.1, 50 FPS video and EAC3 audio content	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object which references a static MPD defining a stream containing EAC3 audio and HEVC-encoded 3840x2160p 50fps HLG10 HDR format video content with BT.2020 colour space, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
com.tivu_AITPRIORITY001	1	Priority-based AUTOSTART App-launching with and without IP connection	TRUE	An AIT containing a single AUTOSTART app is signaled on a service via both HTTP and DSM-CC, where HTTP transport is listed first. When an IP connection is available to the device, the app is launched via HTTP. When the device then changes to a different service and an IP connection is unavailable, and then the device changes back to the original service, the app is launched via DSMCC.
com.tivu_DASHDRM-HTML5-0023	1	PlayReady DRM license automatic post-acquisition	FALSE	The terminal shall be able to automatically acquire a PlayReady licence when the play() method is called and no licence is available for the content
com.tivu_DASHDRM-HTML5-0025	1	Playback errors when an invalid PlayReady licence is automatically acquired (invalid rights)	TRUE	When an invalid PlayReady licence is acquired by the media player (invalid rights), the HTMLVideoElement shall generate an 'error' event and set its 'error' property to a MediaError object with code MEDIA_ERR_DECODE

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Test Id	Vers	Title	Approved	Assertion
com.tivu_DASHDRM-HTML5-0026	1	Playback errors when no licence is available for the content and there is no way to acquire one	TRUE	When no licence is available for content, an MPEG CENC ContentProtection element is present in the MPD and no ContentProtection element is present in the MPD for PlayReady, the HTMLVideoElement shall generate an 'error' event and set its 'error' property to a MediaError object with code MEDIA_ERR_DECODE
com.tivu_DASHDRM-HTML5-0027	1	Support of live encrypted streaming with key rotation and dynamic MPD	FALSE	The PlayReady terminal shall correctly decode and display AV content from a DASH encrypted stream with multiple Periods and dynamically updated DASH MPD
com.tivu_DASHDRM-HTML5-0028	1	Error thrown when end of the Key Window is reached by a PlayReady terminal	FALSE	When a PlayReady terminal attempts to play a Period for which no key has been acquired, the HTMLVideoElement shall generate an 'error' event and set its 'error' property to a MediaError object with code MEDIA_ERR_DECODE
com.tivu_DASHDRM-HTML5-0029	1	Verify CustomData sent by PlayReady server in a license response is raised to the application	FALSE	The terminal shall raise the CustomData information to the application through onDRMMessageResult when the terminal sends a license request to the PlayReady server and a CustomData is inserted in the license response by the server
com.tivu_DASHDRM-HTML5-0031	1	Verify that the License Server URL contained in the DASH MPD can be overridden through sendDRMMessage	FALSE	The terminal shall be able to set a LA_URL that will override the LA_URL contained in the WRMHEADER of the DASH MPD
com.tivu_DASHDRM-HTML5-0032	1	Verify that license pre-acquisitions are not affected by License Server URL overriding	FALSE	License pre-acquisitions shall not be affected by License Server URL overriding
com.tivu_DASHDRM-HTML5-0033	1	Verify that an application can set a value to be used by the PlayReady Client as the CustomData for all subsequent license post acquisitions	FALSE	The terminal shall be able to set a CustomData value that will be used in all subsequent license post acquisitions requests

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Test Id	Vers	Title	Approved	Assertion
com.tivu_DASHDRM-HTML5-0035	1	PlayReady DRM license post-acquisition with Checksum	FALSE	The Terminal shall be able to automatically acquire a PlayReady license when the play method is called, no license is available for the content and a checksum is present in the DASH MPD
com.tivu_DASHDRM-HTML5-0036	3	Verify signalling of PlayReady DRM capability to HbbTV applications	TRUE	The xmlCapabilities property of the application/oipfCapabilities object shall provide a DRMSystemID of urn:dvb:casystemid:19219
com.tivu_INTERACTION001	1	When a resident application is launched it shall not kill the running HbbTV application.	TRUE	After opening the native TV menu (pressing Menu button) and navigating through it, after press exit button to close it; the running HbbTV application should not be killed.
com.tivu_INTERACTION002	1	When a resident application is launched it shall not kill the launching HbbTV application.	FALSE	After opening the native TV menu (pressing Menu button) and navigating through it, after press exit button to close it; the launching HbbTV application should not be killed.
com.tivu_LIFECYCLE001	1	When the device under test is reset to it's factory state, and then tuned to a channel with an autostart application, the autostart application is launched.	TRUE	When the device under test has been reset to its factory state and then tuned to a service with an autostart broadcast related application, the application is launched.
com.tivu_RCU001	1	Termination of non-autostart broadcast-related application using EXIT key	TRUE	Terminal shall terminate a running non-autostart broadcast-related application when the EXIT function (or equivalent) is used.
com.tivu_RCU003	1	Termination of application (broadcast-independent) using EXIT key	TRUE	The DUT shall terminate an application (broadcast independent) when the EXIT function (or equivalent key) is used.
com.tivu_STREAMEVENT001	1	Stream events using the DSMCC stream event object	TRUE	Events listened for and referenced using a DSMCC stream event object shall be registered when present.
com.tivu_STREAMEVENT002	1	Stream events using an XML file	TRUE	Events listened for and referenced using a XML file shall be registered when present.

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Test Id	Vers	Title	Approved	Assertion
com.tivu_UHD-DRM-PLAYREADY-0010	1	HTML5 static video element displaying DASH PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 5.1, 50 FPS content encrypted using PlayReady	FALSE	When the terminal loads an HbbTV Application including an HTML5 media object which references a static MPD defining a stream containing HEAAC audio and HEVC-encoded 3840x2160p 50fps PQ10 HDR format (without Optional Supplemental Enhancement Information) video content with BT.2020 colour space both encrypted using PlayReady, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
com.tivu_UHD-DRM-PLAYREADY-0020	1	HTML5 static video element displaying DASH HLG10 HEVC, Main 10, Level 5.1, 50 FPS content encrypted using PlayReady	FALSE	When the terminal loads an HbbTV Application including an HTML5 media object which references a static MPD defining a stream containing HEAAC audio and HEVC-encoded 3840x2160p 50fps HLG10 HDR format video content with BT.2020 colour space both encrypted using PlayReady, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
com.tivu_UHD-DRM-SL3000-0001	1	microsoft.playready - MSE-EME: HEVC SL3000 video SL3000, audio SL2000	TRUE	When the application uses Encrypted Media Extensions and calls the play() method of a HTML5 media object to play MSE microsoft.playready protected content containing HEVC video SL3000 and audio SL2000 with different KIDs, the terminal shall acquire a PlayReady license and the media shall be correctly presented.

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Test Id	Vers	Title	Approved	Assertion
com.tivu_UHD-DRM-SL3000-0002	1	EME DASH- microsoft.playready DRM license pre-acquisition failure (server cannot deliver a license): HEVC SL3000, audio SL2000	TRUE	When the application uses Encrypted Media Extensions and calls the play() method of a HTML5 media object to play DASH microsoft.playready protected content containing HEVC video SL3000 and audio SL2000 with different KIDs and the video KID is for a non-existent license then the video is not playing
com.tivu_UHD-DRM-SL3000-0003	1	DASH microsoft.playready - EME: HEVC SL3000 video SL3000, audio SL2000	TRUE	When the application uses EME and calls the play() method of a HTML5 media object to play DASH microsoft.playready protected content containing HEVC video SL3000 and audio SL2000 with different KIDs, the terminal shall acquire a PlayReady license and the media shall be correctly presented.
com.tivu_UHD-DRM-SL3000-0004	1	HbbTV 2.0.X - PlayReady DRM license pre-acquisition failure (server cannot deliver a license): HEVC SL3000 video SL3000, audio SL2000, different KIDs for video and audio	TRUE	When PlayReady license server cannot perform a license delivery triggered by 'sendDRMMessage', 'onDRMMessageResult' shall be called with resultCode=2
es.tdthibrida_7D7C0040	1	Broadband DVB subtitles in a TS are displayed	FALSE (Nordig)	If subtitles are enabled and a broadband delivered TS_AVC_SD_25_HEAAC stream containing DVB subtitles is being presented, those subtitles shall be displayed.
es.tdthibrida_7D7C0050	1	Broadband Teletext subtitles in a TS are displayed	FALSE (Nordig)	If subtitles are enabled and a broadband delivered TS_AVC_SD_25_HEAAC stream containing EBU Teletext subtitles is being presented, those subtitles shall be displayed.
es.tdthibrida_7D7C0060	1	Broadband Subtitles Below Application Graphics	FALSE (Nordig)	When broadband delivered subtitles are being displayed in an A/V control object, the subtitles shall be displayed behind the application graphics plane

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Test Id	Vers	Title	Approved	Assertion
es.tdthibrida_7D7C0070	1	Auto-start applications enabled by default	FALSE (Nordig)	The terminal's user interface shall have a user option that controls whether auto-start applications are launched automatically, and when in its default manufacturer state this option shall be enabled
fr.hdforum_00151000	2	Application launching with network connection available	FALSE (Nordig)	When the receiver has its default manufacturer-set configuration and the terminal is tuned to a service carrying an AIT signalling one AUTOSTART broadband application, the terminal shall start that application
fr.hdforum_00151240	1	EXIT function is provided by receiver	FALSE (Nordig)	Terminal shall provide an EXIT or TV or comparable button either on a remote control or another control interface.
fr.hdforum_00151250	1	Termination of autostart application using EXIT function	FALSE (Nordig)	Terminal shall terminate a running autostart application when the EXIT function (or equivalent) is used.
fr.hdforum_00151260	2	Termination of non-autostart broadcast-related application using EXIT function	FALSE (Nordig)	Terminal shall terminate a running non-autostart broadcast-related application when the EXIT function (or equivalent) is used.
org.hbbtv_00000020	2	Test for running PRESENT application after service selection (Service Bound)	TRUE	After service selection, with an already running service bound application, and the same application signaled as PRESENT in the AIT of the newly selected service, the terminal shall kill the currently running application.
org.hbbtv_00000030	1	Test for running AUTOSTART application after service selection (Not Service Bound)	TRUE	After service selection, with an already running not service bound application, and the same application signaled with control code AUTOSTART in the AIT of the newly selected service, the terminal shall allow the application to run uninterrupted.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000040	2	Test for running PRESENT application after service selection (Not Service Bound)	TRUE	After service selection, with an already running not service bound application, and the same application signalled with control code PRESENT in the AIT of the newly selected service, the terminal shall allow the application to run uninterrupted.
org.hbbtv_00000050	2	Test for running DISABLED application after service selection (Not Service Bound)	TRUE	After service selection, with an already running not service bound application, and the same application signalled with control code DISABLED in the AIT of the newly selected service, the terminal shall allow the application to run uninterrupted.
org.hbbtv_00000060	2	Test for KILLED application after service selection (Not Service Bound)	TRUE	After service selection, with an already running not service bound application, and the same application signaled with control code KILL in the AIT of the newly selected service, the terminal shall kill the currently running application.
org.hbbtv_00000070	2	Test for NOT SIGNALLED application after service selection (Not Service Bound)	TRUE	After service selection, with an already running not service bound application, and the same application is not signalled in the AIT of the newly selected service, the terminal shall kill the currently running application.
org.hbbtv_00000110	3	AIT changes while no broadcast related application is running, AUTOSTART application from DSMCC signalled, part 1	TRUE	While a service is selected and no application is signalled, the terminal shall detect a change in the AIT; which is updated to contain one AUTOSTART application carried on a DSMCC carousel. The terminal shall start that application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000130	2	Service selection with AUTOSTART application from broadband, part 1 (success)	TRUE	Terminal is tuned to a service with no application running. The terminal is then tuned to a service with an AIT which signals one AUTOSTART application carried via HTTP. The terminal has an operational broadband connection. The application is available from this connection. The terminal shall start the application.
org.hbbtv_00000160	2	AIT changes while no broadcast related application is running, multiple AUTOSTART applications signalled, broadband and broadcast, part 1	TRUE	While a service is selected and no application is signalled, the terminal shall detect a change in the AIT; which is updated to contain two AUTOSTART applications. App1 is carried via HTTP; App2 via DSMCC; App1 has a higher priority. The terminal has an operational broadband connection. The terminal shall start App1.
org.hbbtv_00000170	2	AIT changes while no broadcast related application is running, multiple AUTOSTART applications signalled, broadband and broadcast, part 2	TRUE	While a service is selected and no application is signalled, the terminal shall detect a change in the AIT; which is updated to contain two AUTOSTART applications. App1 is carried via HTTP; App2 via DSMCC; App1 has a higher priority. The terminal has an operational broadband conntection. App1 is temporarily unavailable. The terminal shall finally start App2.
org.hbbtv_00000190	2	AIT changes while no broadcast related application is running, multiple AUTOSTART applications signalled, broadband, part 1	TRUE	While a service is selected and no application is signalled, the terminal shall detect a change in the AIT; which is updated to contain two AUTOSTART applications carried via HTTP, App1 and App2; App1 has a higher priority. The terminal has an operational broadband connection. The terminal shall start App1.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000200	2	AIT changes while no broadcast related application is running, multiple AUTOSTART applications, broadband signalled, part 2	TRUE	While a service is selected and no application is signalled, the terminal shall detect a change in the AIT; which is updated to contain two AUTOSTART applications carried via HTTP, App1 and App2; App1 has a higher priority. The terminal has an operational broadband connection. App1 is temporarily unavailable. The terminal shall finally start App2.
org.hbbtv_00000210	3	AIT changes while no broadcast related application is running, AUTOSTART application signalled on broadband and broadcast, part 1	TRUE	While a service is selected and no application is signalled, the terminal shall detect a change in the AIT; which is updated to contain an AUTOSTART application carried on HTTP and DSMCC, with a higher priority for HTTP. The terminal has an operational broadband connection. The terminal shall finally start the application from broadband via HTTP.
org.hbbtv_00000220	3	AIT changes while no broadcast related application is running, AUTOSTART application signalled on broadband and broadcast, part 2	TRUE	While a service is selected and no application is signalled, the terminal shall detect a change in the AIT; which is updated to contain an AUTOSTART application carried on HTTP and DSMCC, with a higher priority for HTTP. The terminal has an operational broadband connection. The app is temporarily not available via the broadband connection. The terminal shall finally start the application from broadcast.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000240	3	AIT changes while no broadcast related application is running, AUTOSTART application signalled on broadcast (higher priority) and broadband, part 1	TRUE	While a service is selected and no application is signalled, the terminal shall detect a change in the AIT; which is updated to contain an AUTOSTART application carried on HTTP and DSMCC, with a higher priority for DSMCC. The terminal shall start the application from broadcast.
org.hbbtv_00000250	2	AIT changes while no broadcast related application is running, AUTOSTART application signalled on broadcast (higher prio) and broadband, part 2 (failure)	TRUE	While a service is selected and no application is signalled, the terminal shall detect a change in the AIT; which is updated to contain an AUTOSTART application carried on HTTP and DSMCC, with a higher priority for DSMCC. The DSMCC carousel is not present. The terminal shall start the application finally from broadband.
org.hbbtv_00000260	2	AIT update with no AUTOSTART applications, broadband and broadcast, part 3	TRUE	While a service is selected and no application is signalled the terminal detects an AIT which signals one application with control code PRESENT. The terminal shall not start the application.
org.hbbtv_00000270	2	AIT changes while broadcast related application is running, application still signalled	TRUE	While service selected, the terminal detects a change in the AIT, a broadcast related application is running and it is still signalled with a control other than KILL. The application SHALL continue to run.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000280	2	AIT changes while broadcast related application is running, application signaled with KILL	TRUE	While a service is selected, the terminal detects a change in the AIT, a broadcast related application is running and it is still signaled, but with the control code KILL and a new application is signaled as AUTOSTART. The running application SHALL be killed and the new application shall be started.
org.hbbtv_00000290	2	AIT changes while broadcast related application is running, application not signalled	TRUE	While a service is selected the terminal detects a change in the AIT, a broadcast related application is running and it is not signalled in the AIT anymore and a new application is signalled as AUTOSTART. The running application SHALL be killed and the new application shall be started.
org.hbbtv_00000300	2	AIT changes while no broadcast related application is running, AUTOSTART application from HTTP signalled.	TRUE	While a service is selected and a broadcast related application is not running, the terminal detects a change in the AIT with an autostart application signalled carried over HTTP. The autostart application SHALL be started.
org.hbbtv_00000310	2	Application exits	TRUE	While a service is selected and a broadcast related application is running, the application exits. The AIT signals an autostart application The terminal SHALL start the autostart application.
org.hbbtv_00000320	2	Triggering ChannelChangeSucceededEvent when transitioning from Broadcast Related to Broadcast Independent state	TRUE	When a broadcast-related application calls the setChannel() method on the video/broadcast object with a value of null for its channel argument, a ChannelChangeSucceededEvent shall be dispatched to the video/broadcast object that caused the transition with a value of null for the channel property.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000330	4	Broadcast Independent Applications created from an HTML page accessed over HTTP	TRUE	Calling Application.createApplication() with a valid HTTP URL pointing to an HTML page shall create a broadcast-independent application without an organization_id or application_id.
org.hbbtv_00000340	4	A broadcast-independent application transitioning to a broadcast-related application shall not be killed if all specified conditions are met	TRUE	A broadcast-independent application that wants to become a broadcast-related application, by successfully selecting a broadcast service, SHALL NOT be killed if all the following conditions are met: 1. The broadcast-independent application has an organization_id and application_id (whether obtained through a broadcast AIT or an XML AIT). 2. An application of the same organization_id and application_id is signalled in the broadcast channel to be selected with control code AUTOSTART or PRESENT. 3. The application signalled in the broadcast channel with the same organization_id and application_id includes a transport_protocol_descriptor with protocol_id equal to 3. 4. The URL of the entry point document of the broadcast-independent application has the same origin as at least one of the URLs signalled in the broadcast for that organization_id and application_id. 5. The URL of the page currently loaded in the broadcast-independent application is inside the application boundary of the application as defined in clause 6.3.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000350	4	A broadcast-independent application transitioning to a broadcast-related application shall be killed if the first of the specified conditions are not met	TRUE	A broadcast-independent application that wants to transition back to a broadcast-related application SHALL be killed if the following condition is not met: 1. The broadcast-independent application has an organization_id and application_id (whether obtained through a broadcast AIT or an XML AIT).
org.hbbtv_00000360	4	A broadcast-independent application transitioning to a broadcast-related application shall be killed if the second of the specified conditions are not met (app_id)	TRUE	A broadcast-independent application that wants to transition back to a broadcast-related application SHALL be killed if the following condition is not met: 2. An application of the same application_id is signalled in the broadcast channel to be selected with control code AUTOSTART or PRESENT.
org.hbbtv_00000365	1	A broadcast-independent application transitioning to a broadcast-related application shall be killed if the second of the specified conditions are not met (org_id)	TRUE	A broadcast-independent application that wants to transition back to a broadcast-related application SHALL be killed if the following condition is not met: 2. An application of the same organization_id is signalled in the broadcast channel to be selected with control code AUTOSTART or PRESENT.
org.hbbtv_00000370	5	A broadcast-independent application transitioning to a broadcast-related application shall be killed if the third of the specified conditions are not met	TRUE	A broadcast-independent application that wants to transition back to a broadcast-related application SHALL be killed if the following condition is not met: 3. The application signalled in the broadcast channel with the same organization_id and application_id includes a transport_protocol_descriptor with protocol_id equal to 3.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000380	5	A broadcast-independent application transitioning to a broadcast-related application shall be killed if the fourth of the specified conditions are not met	TRUE	A broadcast-independent application that wants to transition back to a broadcast-related application SHALL be killed if the following condition is not met: 4. The URL of the entry point document of the broadcast-independent application has the same origin as at least one of the URLs signalled in the broadcast for that organization_id and application_id.
org.hbbtv_00000400	4	Broadcast Independent Applications created from an XML AIT over HTTP and with no boundary defined	TRUE	Calling Application.createApplication() with a valid HTTP URL pointing to an XML AIT shall create a broadcast-independent application with the org_id and app_id specified in the XML AIT and an application domain that is the "fully qualified domain name" (FQDN) of the first page of the application in the absence of an application_boundary_descriptor.
org.hbbtv_00000440	4	Broadcast Independent Applications started from a Broadcast Related application	TRUE	When a broadcast-related application starts a broadcast-independent application, the application is started but the broadcast service shall cease to be selected and access to broadcast resources shall be lost
org.hbbtv_00000450	3	Transition of an Application from Broadcast Related to Broadcast Independent state using Set Channel	TRUE	When a broadcast-related application calls the setChannel(null) method on the video/broadcast object with a value of null for its channel argument it shall become a broadcast independent application. Access to broadcast resources shall be lost

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000460	4	A broadcast-independent application transitioning to a broadcast-related application shall be killed if the fifth of the specified conditions are not met	TRUE	A broadcast-independent application that wants to transition back to a broadcast-related application SHALL be killed if the following condition is not met: 5. The URL of the page currently loaded in the broadcast-independent application is inside the application boundary of the application as defined in clause 6.3.
org.hbbtv_00000570	2	User input - VK_BACK	TRUE	When user press the BACK button, there should be a key event of VK_BACK dispatched
org.hbbtv_00000580	2	User input - VK_0	TRUE	When user press the 0 button, there should be a key event of VK_0 dispatched
org.hbbtv_00000590	2	User input - VK_1	TRUE	When user press the 1 button, there should be a key event of VK_1 dispatched
org.hbbtv_00000600	2	User input - VK_2	TRUE	When user press the 2 button, there should be a key event of VK_2 dispatched
org.hbbtv_00000610	2	User input - VK_3	TRUE	When user press the 3 button, there should be a key event of VK_3 dispatched
org.hbbtv_00000620	2	User input - VK_4	TRUE	When user press the 4 button, there should be a key event of VK_4 dispatched
org.hbbtv_00000630	2	User input - VK_REWIND	TRUE	When user press the rewind button, there should be a key event of VK_REWIND dispatched
org.hbbtv_00000640	2	User input - VK_RED	TRUE	When user press the red button, there should be a key event of VK_RED dispatched
org.hbbtv_00000650	2	User input - VK_GREEN	TRUE	When user press the GREEN button, there should be a key event of VK_GREEN dispatched
org.hbbtv_00000660	2	User input - VK_YELLOW	TRUE	When user press the YELLOW button, there should be a key event of VK_YELLOW dispatched
org.hbbtv_00000670	2	User input - VK_BLUE	TRUE	When user press the BLUE button, there should be a key event of VK_BLUE dispatched
org.hbbtv_00000680	2	User input - VK_UP	TRUE	When user press the UP button, there should be a key event of VK_UP dispatched

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000690	2	User input - VK_DOWN	TRUE	When user press the DOWN button, there should be a key event of VK_DOWN dispatched
org.hbbtv_00000700	2	User input - VK_LEFT	TRUE	When user press the LEFT button, there should be a key event of VK_LEFT dispatched
org.hbbtv_00000710	2	User input - VK_RIGHT	TRUE	When user press the RIGHT button, there should be a key event of VK_RIGHT dispatched
org.hbbtv_00000720	2	User input - VK_ENTER	TRUE	When user press the ENTER or OK button, there should be a key event of VK_ENTER dispatched
org.hbbtv_00000730	2	User input - VK_5	TRUE	When user press the 5 button, there should be a key event of VK_5 dispatched
org.hbbtv_00000740	2	User input - VK_6	TRUE	When user press the 6 button, there should be a key event of VK_6 dispatched
org.hbbtv_00000750	2	User input - VK_7	TRUE	When user press the 7 button, there should be a key event of VK_7 dispatched
org.hbbtv_00000760	2	User input - VK_8	TRUE	When user press the 8 button, there should be a key event of VK_8 dispatched
org.hbbtv_00000770	2	User input - VK_9	TRUE	When user press the 9 button, there should be a key event of VK_9 dispatched
org.hbbtv_00000780	2	User input - VK_STOP	TRUE	When user press the STOP button, there should be a key event of VK_STOP dispatched
org.hbbtv_00000790	2	User input - VK_PLAY	TRUE	When user press the PLAY button, there should be a key event of VK_PLAY dispatched
org.hbbtv_00000800	2	User input - VK_PAUSE	TRUE	When user press the PAUSE button, there should be a key event of VK_PAUSE dispatched
org.hbbtv_00000810	2	User input - VK_PLAY_PAUSE	TRUE	When user press the PLAY_PAUSE button, there should be a key event of VK_PLAY_PAUSE dispatched
org.hbbtv_00000820	2	User input - VK_FAST_FWD	TRUE	When user press the FAST_FWD button, there should be a key event of VK_FAST_FWD dispatched

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000830	2	User input - CSS3 directional focus navigation - VK_UP	TRUE	On UP keydown events, the terminal shall handle CSS3 directional focus navigation when the nav-up CSS property is used by the application and UP key events are not captured by the application (no JavaScript Navigation).
org.hbbtv_00000840	2	User input - CSS3 directional focus navigation - VK_DOWN	TRUE	On DOWN keydown events, the terminal shall handle CSS3 directional focus navigation when the nav-down CSS property is used by the application and DOWN key events are not captured by the application (no JavaScript Navigation).
org.hbbtv_00000850	2	User input - CSS3 directional focus navigation - VK_LEFT	TRUE	On LEFT keydown events, the terminal shall handle CSS3 directional focus navigation when the nav-left CSS property is used by the application and LEFT key events are not captured by the application (no JavaScript Navigation).
org.hbbtv_00000860	2	User input - CSS3 directional focus navigation - VK_RIGHT	TRUE	On RIGHT keydown events, the terminal shall handle CSS3 directional focus navigation when the nav-right CSS property is used by the application and RIGHT key events are not captured by the application (no JavaScript Navigation).
org.hbbtv_00000910	2	User input - Javascript navigation - VK_UP	TRUE	On UP keydown events, terminals shall allow applications to capture the events and prevent the default action (known as "Javascript navigation").
org.hbbtv_00000920	2	User input - Javascript navigation - VK_DOWN	TRUE	On DOWN keydown events, terminals shall allow applications to capture the events and prevent the default action (known as "Javascript navigation").

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00000930	2	User input - Javascript navigation - VK_LEFT	TRUE	On LEFT keydown events, terminals shall allow applications to capture the events and prevent the default action (known as "Javascript navigation").
org.hbbtv_00000940	2	User input - Javascript navigation - VK_RIGHT	TRUE	On RIGHT keydown events, terminals shall allow applications to capture the events and prevent the default action (known as "Javascript navigation").
org.hbbtv_00000950	2	User input - Navigation priority - VK_RIGHT	TRUE	On RIGHT keydown events, the terminal shall prioritize javascript navigation over CSS3 directional focus navigation if both are used by an application.
org.hbbtv_00000960	2	User input - Navigation priority - VK_UP	TRUE	On UP keydown events, the terminal shall prioritize javascript navigation over CSS3 directional focus navigation if both are used by an application.
org.hbbtv_00000970	2	User input - Navigation priority - VK_DOWN	TRUE	On DOWN keydown events, the terminal shall prioritize javascript navigation over CSS3 directional focus navigation if both are used by an application.
org.hbbtv_00000980	2	User input - Navigation priority - VK_LEFT	TRUE	On LEFT keydown events, the terminal shall prioritize javascript navigation over CSS3 directional focus navigation if both are used by an application.
org.hbbtv_00000990	2	Access to resources inside the boundary of an application loaded from carousel	TRUE	Adding application boundaries to a "trusted" application loaded via a carousel grants elements within the extended application domain access to API functions marked with security "trusted".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001000	4	Loading a document outside the boundary of an application loaded via HTTP	TRUE	Loading a document from outside the application boundary of a "trusted" application loaded via HTTP, suspends access to API functions marked with security "trusted".
org.hbbtv_00001010	4	Loading a document from outside the application boundary including a document from within the application boundary	TRUE	When presenting a document from outside the application boundary of a trusted application loaded via HTTP, loading a document from within the application boundary of the trusted application restores access to API functions marked with security "trusted".
org.hbbtv_00001020	3	Access to resources within the Application domain via XMLHttpRequest	TRUE	Adding application boundaries to an application loaded via HTTP grants XMLHttpRequests within the extended application domain access to those resources.
org.hbbtv_00001030	2	Access to resources outside the application domain via XmlHttpRequest	TRUE	XMLHttpRequests to resources outside the application domain of an application loaded via HTTP is not allowed.
org.hbbtv_00001040	2	Access to "trusted" API from within an iframe loaded from inside the application domain	TRUE	Adding application boundaries to an application loaded via HTTP grants documents loaded in an <iframe> within the extended application domain access to API functions marked with security "trusted".
org.hbbtv_00001050	4	Block access to trusted API from document outside the application boundary	TRUE	Documents that are outside the application boundary of an application, where the application is loaded via HTTP and has no application boundaries set, do not have access to API functions marked with security "trusted".
org.hbbtv_00001060	2	Access to trusted APIs from a document inside the application boundary of a trusted application loaded via HTTP	TRUE	Adding application boundaries to a trusted application loaded via HTTP grants elements within the extended application domain access to API functions marked with security "trusted".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001150	4	Access to trusted API from a document outside the application boundary (app loaded via HTTP)	TRUE	Documents loaded in an <iframe> outside the application boundary of an application loaded via HTTP have no access to API functions marked with security "trusted".
org.hbbtv_00001160	4	Access to trusted API from a document outside the application boundary (app loaded via carousel)	TRUE	Loading a document from outside the application boundary of a trusted application loaded via a carousel, suspends access to API functions marked with security "trusted".
org.hbbtv_00001170	4	Access to trusted API from a document inside the application boundary (app loaded via carousel)	TRUE	When presenting a document from outside the application boundary of a trusted application loaded via a carousel, loading a document from within the application boundary of the trusted application restores access to API functions marked with security "trusted".
org.hbbtv_00001180	2	Access to carousel via XMLHttpRequest (app loaded via carousel)	TRUE	Adding application boundaries to an application loaded via a carousel grants XMLHttpRequests within the extended application domain access to those resources.
org.hbbtv_00001190	2	Access to resources outside the application domain via XMLHttpRequest	TRUE	XMLHttpRequests to resources outside the application domain of an application loaded via a carousel is not allowed.
org.hbbtv_00001200	2	Access to trusted API from a document inside the application domain (app loaded via carousel)	TRUE	Adding application boundaries to a trusted application loaded via a carousel grants documents loaded in an <iframe> within the extended application domain access to API functions marked with security "trusted".
org.hbbtv_00001210	4	Blocking access to trusted API from a document outside the application boundary (app loaded via carousel)	TRUE	Documents loaded in an <iframe> outside the application boundary of a trusted application loaded via a carousel have no access to API functions marked with security "trusted".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001220	1	Stopping applications: Application.destroyApplication	TRUE	A DVB service with an AUTOSTART Application is tuned. The AUTOSTART Application can be requested to kill itself using the Application.destroyApplication() method
org.hbbtv_00001230	2	Stopping applications: out of resources	TRUE	A DVB service with an AUTOSTART Application is tuned. The AUTOSTART Application continuously allocates resources without freeing them. Once the terminal runs out of resources, the terminal stops the Application
org.hbbtv_00001240	1	Starting broadcast related applications invisible	TRUE	The terminal starts a broadcast related application. Application.show() is not called. The Application is not visible.
org.hbbtv_00001260	1	Starting broadcast independent applications	TRUE	The terminal starts a broadcast-independent Application, by calling createApplication(). The Application is visible.
org.hbbtv_00001400	3	HTTP User Agent header grammar (1.1.1)	TRUE	The User-Agent header shall match the HbbTvUserAgent production in the following ABNF grammar that operates on ASCII characters: HbbTvUserAgent = HbbTvUserAgent_1 HbbTvUserAgent_2 HbbTvUserAgent_1 = TEXT "HbbTV/1.1.1" [LWS] "(" [HbbTvOptions] ";" [LWS] [vendorName] ";" [LWS] [modelName] ";" HbbTvUserAgent_2 = [LWS] [softwareVersion] ";" [LWS] [hardwareVersion] ";" [LWS] reserved ")" TEXT vendorName = TEXT modelName = TEXT softwareVersion = TEXT hardwareVersion = TEXT reserved = TEXT HbbTvOptions = 1*HbbTvOption HbbTvOption = DLOption | PVROption | RTSPOption DLOption = "+DL" PVROption = "+PVR" RTSPOption = "+RTSP" TEXT, LWS non-terminals are specified in RFC2616.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001400_171A	1	HTTP User Agent header grammar (1.7.1)	TRUE	The User-Agent header shall match the HbbTvUserAgent production in the following ABNF grammar that operates on ASCII characters: HbbTvUserAgent = HbbTvUserAgent_1 HbbTvUserAgent_2 HbbTvUserAgent_1 = TEXT "HbbTV/1.7.1" [LWS] "(" [HbbTvOptions] ";" [LWS] vendorName ";" [LWS] modelName ";" HbbTvUserAgent_2 = [LWS] softwareVersion ";" [LWS] [hardwareVersion] ";" [LWS] familyName ";" [LWS] reserved ")" TEXT vendorName = TEXT modelName = TEXT softwareVersion = TEXT hardwareVersion = TEXT familyName = TEXT reserved = TEXT HbbTvOptions = 1*HbbTvOption HbbTvOption = DLOption | PVROption | DRMOption | SyncOption | IPHOption | AFSOption DLOption = "+DL" PVROption = "+PVR" DRMOption = "+DRM" SyncOption = "+SYNC_SLAVE" IPHOption = "+IPH" AFSOption = "+AFS" TEXT, LWS non-terminals are specified in RFC2616, except that LWS is restricted to 1*(SP | HT)
org.hbbtv_00001400_171B	1	HTTP User Agent header grammar - vendor, model and family (1.7.1)	TRUE	The vendorName, modelName and familyName elements of the User-Agent header shall respectively reflect the consumer-facing make/brand of the terminal, the consumer-facing model name of the terminal, and the device family of terminal, either prefixed with a reverse domain name of the organisation or encoded as a version 4 UUID. (1.7.1)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001400_181A	1	HTTP User Agent header grammar (1.8.1)	FALSE	The User-Agent header shall match the HbbTvUserAgent production in the following ABNF grammar that operates on ASCII characters: HbbTvUserAgent = HbbTvUserAgent_1 HbbTvUserAgent_2 HbbTvUserAgent_1 = TEXT "HbbTV/1.8.1" [LWS] "(" [HbbTvOptions] ";" [LWS] vendorName ";" [LWS] modelName ";" HbbTvUserAgent_2 = [LWS] softwareVersion ";" [LWS] [hardwareVersion] ";" [LWS] familyName ";" [LWS] reserved ")" TEXT vendorName = TEXT modelName = TEXT softwareVersion = TEXT hardwareVersion = TEXT familyName = TEXT reserved = TEXT HbbTvOptions = 1*HbbTvOption HbbTvOption = DLOption | PVROption | DRMOption | SyncOption | IPHOption | AFSOption DLOption = "+DL" PVROption = "+PVR" DRMOption = "+DRM" SyncOption = "+SYNC_SLAVE" IPHOption = "+IPH" AFSOption = "+AFS" TEXT, LWS non-terminals are specified in RFC2616, except that LWS is restricted to 1*(SP | HT)
org.hbbtv_00001400_181B	1	HTTP User Agent header grammar - vendor, model and family (1.8.1)	FALSE	The vendorName, modelName and familyName elements of the User-Agent header shall respectively reflect the consumer-facing make/brand of the terminal, the consumer-facing model name of the terminal, and the device family of terminal, either prefixed with a reverse domain name of the organisation or encoded as a version 4 UUID. (1.8.1)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001401	1	HTTP User Agent header grammar (1.2.1)	TRUE	The User-Agent header shall match the HbbTvUserAgent production in the following ABNF grammar that operates on ASCII characters: HbbTvUserAgent = HbbTvUserAgent_1 HbbTvUserAgent_2 HbbTvUserAgent_1 = TEXT "HbbTV/1.2.1" [LWS] "(" [HbbTvOptions] ";" [LWS] [vendorName] ";" [LWS] [modelName] ";" HbbTvUserAgent_2 = [LWS] [softwareVersion] ";" [LWS] [hardwareVersion] ";" [LWS] reserved ")" TEXT vendorName = TEXT modelName = TEXT softwareVersion = TEXT hardwareVersion = TEXT reserved = TEXT HbbTvOptions = 1*HbbTvOption HbbTvOption = DLOption | PVROption | DRMOption DLOption = "+DL" PVROption = "+PVR" DRMOption = "+DRM" TEXT, LWS non-terminals are specified in RFC2616.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001403	1	HTTP User Agent header grammar (1.4.1)	TRUE	The User-Agent header shall match the HbbTvUserAgent production in the following ABNF grammar that operates on ASCII characters: HbbTvUserAgent = HbbTvUserAgent_1 HbbTvUserAgent_2 HbbTvUserAgent_1 = TEXT "HbbTV/1.4.1" [LWS] "(" [HbbTvOptions] ";" [LWS] vendorName ";" [LWS] modelName ";" HbbTvUserAgent_2 = [LWS] softwareVersion ";" [LWS] [hardwareVersion] ";" [LWS] familyName ";" [LWS] reserved ")" TEXT vendorName = TEXT modelName = TEXT softwareVersion = TEXT hardwareVersion = TEXT familyName = TEXT reserved = TEXT HbbTvOptions = 1*HbbTvOption HbbTvOption = DLOption | PVROption | DRMOption | SyncOption | IPHOption | AFSOption DLOption = "+DL" PVROption = "+PVR" DRMOption = "+DRM" SyncOption = "+SYNC_SLAVE" IPHOption = "+IPH" AFSOption = "+AFS" TEXT, LWS non-terminals are specified in RFC2616, except that LWS is restricted to 1*(SP | HT)
org.hbbtv_00001404	1	HTTP User Agent header grammar - vendor, model and family (1.4.1)	TRUE	The vendorName, modelName and familyName elements of the User-Agent header shall respectively reflect the consumer-facing make/brand of the terminal, the consumer-facing model name of the terminal, and the device family of terminal, either prefixed with a reverse domain name of the organisation or encoded as a version 4 UUID. (1.4.1)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001405	1	HTTP User Agent header grammar (1.5.1)	TRUE	The User-Agent header shall match the HbbTvUserAgent production in the following ABNF grammar that operates on ASCII characters: HbbTvUserAgent = HbbTvUserAgent_1 HbbTvUserAgent_2 HbbTvUserAgent_1 = TEXT "HbbTV/1.5.1" [LWS] "(" [HbbTvOptions] ";" [LWS] vendorName ";" [LWS] modelName ";" HbbTvUserAgent_2 = [LWS] softwareVersion ";" [LWS] [hardwareVersion] ";" [LWS] familyName ";" [LWS] reserved ")" TEXT vendorName = TEXT modelName = TEXT softwareVersion = TEXT hardwareVersion = TEXT familyName = TEXT reserved = TEXT HbbTvOptions = 1*HbbTvOption HbbTvOption = DLOption | PVROption | DRMOption | SyncOption | IPHOption | AFSOption DLOption = "+DL" PVROption = "+PVR" DRMOption = "+DRM" SyncOption = "+SYNC_SLAVE" IPHOption = "+IPH" AFSOption = "+AFS" TEXT, LWS non-terminals are specified in RFC2616, except that LWS is restricted to 1*(SP | HT)
org.hbbtv_00001406	1	HTTP User Agent header grammar - vendor, model and family (1.5.1)	TRUE	The vendorName, modelName and familyName elements of the User-Agent header shall respectively reflect the consumer-facing make/brand of the terminal, the consumer-facing model name of the terminal, and the device family of terminal, either prefixed with a reverse domain name of the organisation or encoded as a version 4 UUID. (1.5.1)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001407	1	HTTP User Agent header grammar (1.6.1)	TRUE	The User-Agent header shall match the HbbTvUserAgent production in the following ABNF grammar that operates on ASCII characters: HbbTvUserAgent = HbbTvUserAgent_1 HbbTvUserAgent_2 HbbTvUserAgent_1 = TEXT "HbbTV/1.6.1" [LWS] "(" [HbbTvOptions] ";" [LWS] vendorName ";" [LWS] modelName ";" HbbTvUserAgent_2 = [LWS] softwareVersion ";" [LWS] [hardwareVersion] ";" [LWS] familyName ";" [LWS] reserved ")" TEXT vendorName = TEXT modelName = TEXT softwareVersion = TEXT hardwareVersion = TEXT familyName = TEXT reserved = TEXT HbbTvOptions = 1*HbbTvOption HbbTvOption = DLOption | PVROption | DRMOption | SyncOption | IPHOption | AFSOption DLOption = "+DL" PVROption = "+PVR" DRMOption = "+DRM" SyncOption = "+SYNC_SLAVE" IPHOption = "+IPH" AFSOption = "+AFS" TEXT, LWS non-terminals are specified in RFC2616, except that LWS is restricted to 1*(SP | HT)
org.hbbtv_00001408	1	HTTP User Agent header grammar - vendor, model and family (1.6.1)	TRUE	The vendorName, modelName and familyName elements of the User-Agent header shall respectively reflect the consumer-facing make/brand of the terminal, the consumer-facing model name of the terminal, and the device family of terminal, either prefixed with a reverse domain name of the organisation or encoded as a version 4 UUID. (1.6.1)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001410	2	Status value is 404 when trying to access non-existing DSM-CC objects with XMLHttpRequest	TRUE	The status property will return value 404 when trying to access non-existing DSM-CC objects in a mounted carousel with XMLHttpRequest.
org.hbbtv_00001420	2	When accessing DSM-CC objects with XMLHttpRequest, statusText will return an empty string	TRUE	When accessing DSM-CC objects with XMLHttpRequest, statusText will return an empty string.
org.hbbtv_00001450	2	Calls to getAllResponseHeaders() return an empty string when accessing DSM-CC objects with XMLHttpRequest	TRUE	Calls to getAllResponseHeaders() return an empty string when accessing DSM-CC objects with XMLHttpRequest.
org.hbbtv_00001460	2	When accessing a DSM-CC File object with XMLHttpRequest, responseText returns the content of the requested file	TRUE	When accessing a DSM-CC File object with XMLHttpRequest, responseText returns the content of the requested file.
org.hbbtv_00001470	2	When accessing a DSM-CC Directory object with XMLHttpRequest, responseText returns a comma-separated list of objects in the directory	TRUE	When accessing a DSM-CC Directory object with XMLHttpRequest, responseText returns a comma-separated list of objects in the directory.
org.hbbtv_00001480	2	When accessing a DSM-CC File object with ".xml" extension with XMLHttpRequest, responseXML returns an XML document object	TRUE	When accessing a DSM-CC File object with ".xml" extension with XMLHttpRequest, responseXML returns an XML document object representation of the requested XML document.
org.hbbtv_00001490	2	When accessing a DSM-CC Directory object with XMLHttpRequest, responseXML returns null	TRUE	When accessing a DSM-CC Directory object with XMLHttpRequest, responseXML returns null.
org.hbbtv_00001500	2	When accessing a DSM-CC Stream Event object with XMLHttpRequest, responseXML returns null	TRUE	When accessing a DSM-CC Stream Event object with XMLHttpRequest, responseXML returns null.
org.hbbtv_00001520	2	Test of minimum terminal capabilities. Supported proportional font	TRUE	The terminal shall support the Tiresias Screenfont (or equivalent) with Unicode character range "Basic Euro Latin Character set" as defined in Annex C of TS 102 809

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001530	2	Test of minimum terminal capabilities. Supported proportional font (default)	TRUE	When the font to use is not explicitly specified in any application, the terminal shall use the Tiresias Screenfont (or equivalent) as default font
org.hbbtv_00001540	2	Test of minimum terminal capabilities. Supported proportional font (CSS Tiresias)	TRUE	The Tiresias Screenfont font (even if it is an equivalent of "Tiresias Screenfont") shall be accessible with the following CSS rule: font-family: Tiresias;
org.hbbtv_00001550	2	Test of minimum terminal capabilities. Supported proportional font (CSS sans-serif)	TRUE	When "sans serif" generic family is used for a "font family" CSS rule (i.e. font-family: sans-serif), the terminal shall use the "Tirerias Screenfont" font (or equivalent).
org.hbbtv_00001560	2	Test of minimum terminal capabilities. Supported non-proportional font	TRUE	The terminal shall support the "Letter Gothic 12 Pitch" (or equivalent) font with the support for the Unicode character range "Basic Euro Latin Character set" as defined in Annex C of TS 102 809
org.hbbtv_00001570	2	Test of minimum terminal capabilities. Supported non-proportional font (CSS Letter Gothic)	TRUE	The Letter Gothic 12 Pitch font (even if it is an equivalent of "Letter Gothic 12 Pitch") shall be accessible with the following CSS rule: font-family: "Letter Gothic 12 Pitch";
org.hbbtv_00001580	2	Test of minimum terminal capabilities. Supported non-proportional font (CSS monospace)	TRUE	When "monospace" generic family is used for a "font family" CSS rule (i.e. font-family: monospace;), the terminal shall use the "Letter Gothic 12 Pitch" font (or equivalent).
org.hbbtv_00001590	2	Test of minimum terminal capabilities. Text entry method	TRUE	The terminal shall support either multi-tap (e.g. as defined in ES 201 130 [i. 2]) or an equivalent (e.g. software keyboard) where characters are input character by character in the text field.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001600	2	Test of minimum terminal capabilities, text entry method	TRUE	For multi-tap or other methods which use supported key events to generate characters, these intermediate key events shall not be reported to applications. Only the final result shall be reported to applications. For speech-to-text or autocomplete / predictive text in virtual keyboards, terminals are not required to generate any key events.
org.hbbtv_00001620	1	Test of minimum terminal capabilities, PVR management	TRUE	The manageRecordings attribute of the recording capability shall have the value 'samedomain'.
org.hbbtv_00001630	1	Test of minimum terminal capabilities, download management	TRUE	The manageDownload attribute of the download capability shall have the value "samedomain".
org.hbbtv_00001680	2	State of a video/broadcast object when it is instantiated	TRUE	When a video/broadcast object is instantiated, it shall be in the unrealized state.
org.hbbtv_00001690	2	Change of state of a video/broadcast object when the nextChannel() method is called while it is in the unrealized state	TRUE	When a video/broadcast object is in the unrealized state and the nextChannel() method is called, the video/broadcast object shall transition to the connecting state. A PlayStateChange DOM event shall be triggered with the state property set to 1 (connecting) and the error property set to undefined (i.e. unallocated error value).
org.hbbtv_00001710	2	Change of state of a video/broadcast object when the bindToCurrentChannel() method is called while it is in the unrealized state	TRUE	When a video/broadcast object is in the unrealized state and the bindToCurrentChannel() method is called, the video/broadcast object shall transition to the connecting state. A PlayStateChange DOM event shall be triggered with the state property set to 1 (connecting) and the error property set to undefined (i.e. unallocated error value).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001720	2	Change of state of a video/broadcast object when the release() method is called while it is in the unrealized state	TRUE	When a video/broadcast object is in the unrealized state and the release() method is called, this shall have no effect.
org.hbbtv_00001730	2	Change of state of a video/broadcast object when the stop() method is called while it is in the unrealized state	TRUE	When a video/broadcast object is in the unrealized state and the stop() method is called, this shall have no effect.
org.hbbtv_00001810	2	Change of state of a video/broadcast object when the nextChannel() method is called while it is in the presenting state	TRUE	When a video/broadcast object is in the presenting state and the nextChannel() method is called, the video/broadcast object shall transition to the connecting state. A PlayStateChange DOM event shall be triggered with the state property set to 1 (connecting) and the error property set to undefined (i.e. unallocated error value) and the target property set to the video/broadcast object.
org.hbbtv_00001820	2	Change of state of a video/broadcast object when the prevChannel() method is called while it is in the presenting state	TRUE	When a video/broadcast object is in the presenting state and the prevChannel() method is called, the video/broadcast object shall transition to the connecting state. A PlayStateChange DOM event shall be triggered with the state property set to 1 (connecting) and the error property set to undefined (i.e. unallocated error value) and the target property set to the video/broadcast object.
org.hbbtv_00001830	2	Change of state of a video/broadcast object when the bindToCurrentChannel() method is called while it is in the presenting state	TRUE	When a video/broadcast object is in the presenting state and the bindToCurrentChannel() method is called, this shall have no effect.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001840	2	Change of state of a video/broadcast object when the release() method is called while it is in the presenting state	TRUE	When a video/broadcast object is in the presenting state and the release() method is called, the video/broadcast object shall transition to the unrealized state. A PlayStateChange DOM event shall be triggered with the state property set to 0 (unrealized) and the error property set to undefined (i.e. unallocated error value) and the target property set to the video/broadcast object.
org.hbbtv_00001850	2	Change of state of a video/broadcast object when the stop() method is called while it is in the presenting state	TRUE	When a video/broadcast object is in the presenting state and the stop() method is called, the video/broadcast object shall transition to the stopped state. A PlayStateChange DOM event shall be triggered with the state property set to 3 (stopped) and the error property set to undefined (i.e. unallocated error value) and the target property set to the video/broadcast object. The playState property of the video/broadcast object shall be 3 while the state is stopped.
org.hbbtv_00001900	2	Change of state of a video/broadcast object when the bindToCurrentChannel() method is called while it is in the stopped state	TRUE	When a video/broadcast object is in the stopped state and the bindToCurrentChannel() method is called, the video/broadcast object shall transition to the connecting state. A PlayStateChange DOM event shall be triggered with the state property set to 1 (connecting) and the error property set to undefined (i.e. unallocated error value).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00001910	2	Change of state of a video/broadcast object when the release() method is called while it is in the stopped state	TRUE	When a video/broadcast object is in the stopped state and the release() method is called, the video/broadcast object shall transition to the unrealized state. A PlayStateChange DOM event shall be triggered with the state property set to 0 (unrealized) and the error property set to undefined (i.e. unallocated error value).
org.hbbtv_00001920	2	Change of state of a video/broadcast object when the stop() method is called while it is in the stopped state	TRUE	When a video/broadcast object is in the stopped state and the stop() method is called, this shall have no effect.
org.hbbtv_00001940	2	video/broadcast object presentation - presenting state	TRUE	When the video/broadcast object is in the presenting state, the video/broadcast object contains the video being presented.
org.hbbtv_00001950	2	video/broadcast object presentation - stopped state	TRUE	When the video/broadcast object is in the stopped state, the content of the video/broadcast object shall be an opaque black rectangle.
org.hbbtv_00001970	2	Change of state of a video/broadcast object when the setChannel() method is called (with a null parameter) while it is in the unrealized state	TRUE	When a video/broadcast object is in the unrealized state and the setChannel() method is called (with a null parameter), the video/broadcast object shall stay in the unrealized state.
org.hbbtv_00002000	2	Change of state of a video/broadcast object when the setChannel() method is called (with a correct parameter) while it is in the presenting state	TRUE	When a video/broadcast object is in the presenting state and the setChannel(x) method is called (where 'x' is a correct parameter for setChannel() method), the video/broadcast object shall transition to the connecting state. A PlayStateChange DOM event shall be triggered with the state property set to 1 (connecting) and the error property set to undefined (i.e. unallocated error value).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002010	2	Change of state of a video/broadcast object when the setChannel() method is called (with a null parameter) while it is in the presenting state	TRUE	When a video/broadcast object is in the presenting state and the setChannel() method is called (with a null parameter), the video/broadcast object shall transition to the unrealized state. A PlayStateChange DOM event shall be triggered with the state property set to 0 (unrealized) and the error property set to undefined (i.e. unallocated error value) and the target property set to the video/broadcast object.
org.hbbtv_00002020	2	Change of state of a video/broadcast object when the setChannel() method is called (with a correct parameter) while it is in the stopped state	TRUE	When a video/broadcast object is in the stopped state and the setChannel(x) method is called (where 'x' is a correct parameter for setChannel() method), the video/broadcast object shall transition to the connecting state. A PlayStateChange DOM event shall be triggered with the state property set to 1 (connecting) and the error property set to undefined (i.e. unallocated error value) and the target property set to the video/broadcast object.
org.hbbtv_00002030	2	Change of state of a video/broadcast object when the setChannel() method is called (with a null parameter) while it is in the stopped state	TRUE	When a video/broadcast object is in the stopped state and the setChannel() method is called (with a null parameter), the video/broadcast object shall transition to the unrealized state. A PlayStateChange DOM event shall be triggered with the state property set to 0 (unrealized) and the error property set to undefined (i.e. unallocated error value) and the target property set to the video/broadcast object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002230	2	AV Object Overlap (Partial overlap of object with a higher Z index)	TRUE	When an AV object having a higher z index as compared to the HTML Objects, the AV Object shall partially overlap HTML objects.
org.hbbtv_00002240	2	AV Object Overlap (Partial overlap of object with a lower Z index)	TRUE	When a AV object having a lower z index as compared to the HTML objects, the AV Object shall be partially overlapped by the HTML objects.
org.hbbtv_00002250	2	AV Object Overlap (Total overlap of object with a higher Z index)	TRUE	When an AV object having a higher z index as compared to the HTML Objects, the AV Object shall completely overlap HTML objects.
org.hbbtv_00002260	2	AV Object Overlap (Total overlap of object with a lower Z index)	TRUE	When an AV object having a lower z-index as compared to the HTML objects, the AV Object shall be completely overlapped by the HTML objects.
org.hbbtv_00002270	2	AV Object Scaling (1/8; Video Res 1280x720; 16:9)	TRUE	Terminals shall be able to scale video having resolution of 1280x720, at sizes down to 1/8 by 1/8 of the width and height of the logical video plane - equivalent to 160 x 90 pixels in the Hybrid Broadcast Broadband TV application graphics plane.
org.hbbtv_00002280	2	AV Object Scaling (1/8; Video Res 640x720; 16:9)	TRUE	Terminals shall be able to scale video having resolution of 640x720 at sizes down to 1/8 by 1/8 of the width and height of the logical video plane - equivalent to 160 x 90 pixels in the Hybrid Broadcast Broadband TV application graphics plane.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002290	2	AV Object Scaling (1/8; Video Res 720x576; 16:9)	TRUE	Terminals shall be able to scale video having resolution of 720x576 at sizes down to 1/8 by 1/8 of the width and height of the logical video plane for videos contained in a MP4 format - equivalent to 160 x 90 pixels in the Hybrid Broadcast Broadband TV application graphics plane.
org.hbbtv_00002300	2	AV Object Scaling (1/8; Video Res 352x288; 4:3)	TRUE	Terminals shall be able to scale video having resolution of 352x288 at sizes down to 1/8 by 1/8 of the width and height of the logical video plane for videos contained in a MP4 format - equivalent to 160 x 90 pixels in the Hybrid Broadcast Broadband TV application graphics plane.
org.hbbtv_00002310	3	AV Object Scaling (2/13; Video Res 1280x720; 16:9)	TRUE	Terminals shall be able to scale video having resolution of 1280x720, at sizes down to 2/13 of the width and height of the logical video plane for videos contained in a MP4 format - equivalent to 196 x 110 pixels in the Hybrid Broadcast Broadband TV application graphics plane.
org.hbbtv_00002320	3	AV Object Scaling (2/13; Video Res 640x720; 16:9)	TRUE	Terminals shall be able to scale video having resolution of 640x720, at sizes down to 2/13 of the width and height of the logical video plane for videos contained in a MP4 format - equivalent to 196 x 110 pixels in the Hybrid Broadcast Broadband TV application graphics plane.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002330	3	AV Object Scaling (2/13; Video Res 720x576; 16:9)	TRUE	Terminals shall be able to scale video having resolution of 720x576, at sizes down to 2/13 of the width and height of the logical video plane for videos contained in a MP4 format - equivalent to 196 x 110 pixels in the Hybrid Broadcast Broadband TV application graphics plane.
org.hbbtv_00002340	3	AV Object Scaling (2/13; Video Res 352x288; 4:3)	TRUE	Terminals shall be able to scale video having resolution of 352x288, at sizes down to 2/13 of the width and height of the logical video plane for videos contained in a MP4 format - equivalent to 196 x 110 pixels in the Hybrid Broadcast Broadband TV application graphics plane.
org.hbbtv_00002350	2	AV Object Scaling (x2; Video Res 1280x720)	TRUE	Terminals shall be able to scale video having resolution of 1280x720 up to 2 x 2 of the width and height of the logical video plane - equivalent to 2560x1440 pixels in the Hybrid Broadcast Broadband TV application graphics plane.
org.hbbtv_00002360	2	AV Object Scaling (x2; Video Res 640x720)	TRUE	Terminals shall be able to scale video having resolution of 640x720 up to 2 x 2 of the width and height of the logical video plane - equivalent to 2560x1440 pixels in the Hybrid Broadcast Broadband TV application graphics plane.
org.hbbtv_00002370	2	AV Object Scaling (x2; Video Res 720x576)	TRUE	Terminals shall be able to scale video having resolution of 720x576 up to 2 x 2 of the width and height of the logical video plane - equivalent to 2560x1440 pixels in the Hybrid Broadcast Broadband TV application graphics plane.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002380	3	AV Object Scaling (x2; Video Res 352x288)	TRUE	Terminals shall be able to scale video having resolution of 352x288 up to 2 x 2 of the width and height of the logical video plane - equivalent to 2560x1440 pixels in the Hybrid Broadcast Broadband TV application graphics plane.
org.hbbtv_00002390	2	AV Object Scaling (1/2x1/4; Video Res 1280x720)	TRUE	Terminals shall be able to scale video having resolution of 1280x720 to 1/2 x 1/4 of the width and height of the logical video plane. The aspect ratio of decoded video shall be preserved such that all of the decoded video is visible within the area of the video/broadcast or AV Control object. Finally a video having a resolution of 640x180 pixels in the Hybrid Broadcast Broadband TV application graphics plane shall be visible.
org.hbbtv_00002400	2	AV Object Scaling (1/2x1/4; Video Res 640x720)	TRUE	Terminals shall be able to scale video having resolution of 640x720 up to 1/2 x 1/4 of the width and height of the logical video plane. The aspect ratio of decoded video shall be preserved such that all of the decoded video is visible within the area of the video/broadcast or AV Control object. Finally a video having a resolution of 640x180 pixels in the Hybrid Broadcast Broadband TV application graphics plane shall be visible.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002410	2	AV Object Scaling (1/2x1/4; Video Res 720x576)	TRUE	Terminals shall be able to scale video having resolution of 720x576 up to 1/2 x 1/4 of the width and height of the logical video plane. The aspect ratio of decoded video shall be preserved such that all of the decoded video is visible within the area of the video/broadcast or AV Control object. Finally a video having a resolution of 640x180 pixels in the Hybrid Broadcast Broadband TV application graphics plane shall be visible.
org.hbbtv_00002420	2	AV Object Scaling (1/2x1/4; Video Res 352x288)	TRUE	Terminals shall be able to scale video having resolution of 352x288 up to 1/2 x 1/4 of the width and height of the logical video plane. The aspect ratio of decoded video shall be preserved such that all of the decoded video is visible within the area of the video/broadcast or AV Control object. Finally a video having a resolution of 640x180 pixels in the Hybrid Broadcast Broadband TV application graphics plane shall be visible.
org.hbbtv_00002430	2	Terminal stores cookies with an expiry date in persistent memory	TRUE	The terminal shall store cookies with expiry dates in persistent memory.
org.hbbtv_00002440	2	Cookies expire at the correct time	TRUE	Terminals shall respect the expiry date of the cookie and remove them once they expire.
org.hbbtv_00002441	1	Cookies removal: delete cookie with expire time in the past	TRUE	The HbbTV application creates a cookie with expiry date in the future. Next the application is restarted. When after launch, the application sets the cookie with the same name, domain, path, and expiry date in the past, then the cookie is evicted.
org.hbbtv_00002450	1	Terminal supports cookies of 4096 bytes	TRUE	The terminal shall support storage and retrieval of a cookie with a size of 4096 bytes

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002460	1	Terminal supports at least 100 cookies	TRUE	The terminal shall support a minimum of 100 cookies
org.hbbtv_00002470	1	Terminal supports at least 100 x 4KB cookies	TRUE	The terminal shall support a minimum of 100 cookies having a maximum individual size of 4k each.
org.hbbtv_00002480	1	Terminal supports 20 cookies per domain	TRUE	The terminal shall support storage and retrieval of 20 cookies for a single domain.
org.hbbtv_00002490	1	Memory Audio - Infinite Looping	TRUE	When an A/V Control object is initialised for memory audio, and its 'loop' PARAM element has the value 'infinite'; when the play() method is called on the A/V Control object with its 'speed' argument specified as 1, the terminal shall play the whole memory audio clip in full and shall repeat playback indefinitely
org.hbbtv_00002500	1	Memory Audio - Stopping looping playback	TRUE	When the terminal is continuously playing looping memory audio, it shall be able to stop playback when the stop() method is called on the A/V Control object
org.hbbtv_00002510	2	Test of support for MP4 File Format streamed over HTTP; 1280x720p@25, 16:9	TRUE	The terminal shall correctly decode and display AV from MP4 File Formats streamed over HTTP (1280x720p@25, 16:9).
org.hbbtv_00002520	2	Test of support for MP4 File Format streamed over HTTP; 352x288i@25, 4:3	TRUE	The terminal shall correctly decode and display AV from MP4 File Formats streamed over HTTP (352x288i@25, 4:3).
org.hbbtv_00002530	2	Test of support for MPEG-2 TS streamed over HTTP; 1280x720p@25, 16:9	TRUE	The terminal shall correctly decode and display AV from MPEG-2 TS streamed over HTTP (1280x720p@25, 16:9).
org.hbbtv_00002540	2	Test of support for MPEG-2 TS streamed over HTTP; 352x288i@25, 4:3	TRUE	The terminal shall correctly decode and display AV from MPEG-2 TS streamed over HTTP (352x288i@25, 4:3).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002590	2	Test of High Bitrate Streaming; MP4 File Format	TRUE	The terminal shall correctly decode and display AV from an MP4 streamed over HTTP at 8Mbit/s.
org.hbbtv_00002600	1	Test of High Bitrate Streaming; MPEG-2 TS	TRUE	The terminal shall correctly decode and present AV from an MPEG-2 TS streamed over HTTP at 8 Mbit/s
org.hbbtv_00002610	2	Test that terminal ignores any AIT signalling present in MPEG-2 TS streamed over HTTP	TRUE	The terminal shall ignore any AIT data present in an MPEG-2 TS streamed over HTTP.
org.hbbtv_00002630	2	Test of support for AVC_SD_25; 720x576p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 720x576p@25, 16:9.
org.hbbtv_00002640	2	Test of support for AVC_SD_25; 544x576p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 544x576p@25, 16:9.
org.hbbtv_00002650	2	Test of support for AVC_SD_25; 480x576p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 480x576p@25, 16:9.
org.hbbtv_00002660	2	Test of support for AVC_SD_25; 352x576p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 352x576p@25, 16:9.
org.hbbtv_00002670	2	Test of support for AVC_SD_25; 352x288p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 352x288p@25, 16:9.
org.hbbtv_00002680	2	Test of support for AVC_SD_25; 720x576i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 720x576i@25, 16:9.
org.hbbtv_00002690	2	Test of support for AVC_SD_25; 544x576i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 544x576i@25, 16:9.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002700	2	Test of support for AVC_SD_25; 480x576i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 480x576i@25, 16:9.
org.hbbtv_00002710	2	Test of support for AVC_SD_25; 352x576i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 352x576i@25, 16:9.
org.hbbtv_00002720	2	Test of support for AVC_SD_25; 352x288i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 352x288i@25, 16:9.
org.hbbtv_00002730	2	Test of support for AVC_SD_25; 720x576p@25, 4:3	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 720x576p@25, 4:3.
org.hbbtv_00002740	2	Test of support for AVC_SD_25; 544x576p@25, 4:3	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 544x576p@25, 4:3.
org.hbbtv_00002750	2	Test of support for AVC_SD_25; 480x576p@25, 4:3	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 480x576p@25, 4:3.
org.hbbtv_00002760	2	Test of support for AVC_SD_25; 352x576p@25, 4:3	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 352x576p@25, 4:3.
org.hbbtv_00002770	2	Test of support for AVC_SD_25; 352x288p@25, 4:3	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 352x288p@25, 4:3.
org.hbbtv_00002780	2	Test of support for AVC_SD_25; 720x576i@25, 4:3	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 720x576i@25, 4:3.
org.hbbtv_00002790	2	Test of support for AVC_SD_25; 544x576i@25, 4:3	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 544x576i@25, 4:3.
org.hbbtv_00002800	2	Test of support for AVC_SD_25; 480x576i@25, 4:3	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 480x576i@25, 4:3.
org.hbbtv_00002810	2	Test of support for AVC_SD_25; 352x576i@25, 4:3	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 352x576i@25, 4:3.
org.hbbtv_00002820	2	Test of support for AVC_SD_25; 352x288i@25, 4:3	TRUE	The terminal shall correctly decode and display AVC_SD_25 streaming video at 352x288i@25, 4:3.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002830	2	Test of support for AVC_HD_25; 1280x720p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 1280x720p@25, 16:9.
org.hbbtv_00002840	2	Test of support for AVC_HD_25; 960x720p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 960x720p@25, 16:9.
org.hbbtv_00002850	2	Test of support for AVC_HD_25; 640x720p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 640x720p@25, 16:9.
org.hbbtv_00002860	2	Test of support for AVC_HD_25; 1280x720i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 1280x720i@25, 16:9.
org.hbbtv_00002870	2	Test of support for AVC_HD_25; 960x720i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 960x720i@25, 16:9.
org.hbbtv_00002880	2	Test of support for AVC_HD_25; 640x720i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 640x720i@25, 16:9.
org.hbbtv_00002890	2	Test of support for AVC_HD_25; 1920x1080p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 1920x1080p@25, 16:9.
org.hbbtv_00002900	2	Test of support for AVC_HD_25; 1440x1080p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 1440x1080p@25, 16:9.
org.hbbtv_00002910	2	Test of support for AVC_HD_25; 1280x1080p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 1280x1080p@25, 16:9.
org.hbbtv_00002920	2	Test of support for AVC_HD_25; 960x1080p@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 960x1080p@25, 16:9.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00002930	2	Test of support for AVC_HD_25; 1920x1080i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 1920x1080i@25, 16:9.
org.hbbtv_00002940	2	Test of support for AVC_HD_25; 1440x1080i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 1440x1080i@25, 16:9.
org.hbbtv_00002950	2	Test of support for AVC_HD_25; 1280x1080i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 1280x1080i@25, 16:9.
org.hbbtv_00002960	2	Test of support for AVC_HD_25; 960x1080i@25, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 960x1080i@25, 16:9.
org.hbbtv_00002970	2	Test of support for AVC_HD_25; 1280x720p@50, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 1280x720p@50, 16:9.
org.hbbtv_00002980	2	Test of support for AVC_HD_25; 960x720p@50, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 960x720p@50, 16:9.
org.hbbtv_00002990	2	Test of support for AVC_HD_25; 640x720p@50, 16:9	TRUE	The terminal shall correctly decode and display AVC_HD_25 streaming video at 640x720p@50, 16:9.
org.hbbtv_00003000	2	Test of support for HE-AAC; Mono, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present mono HE-AAC audio as part of AV Content streamed over HTTP.
org.hbbtv_00003010	2	Test of support for HE-AAC; Stereo, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present stereo HE-AAC audio as part of AV Content streamed over HTTP.
org.hbbtv_00003020	2	Test of support for HE-AAC; Multichannel, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present multichannel HE-AAC audio as part of AV Content streamed over HTTP.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00003030	2	Test of support for AAC; Mono, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present mono AAC audio as part of AV Content streamed over HTTP.
org.hbbtv_00003040	2	Test of support for AAC; Stereo, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present stereo AAC audio as part of AV Content streamed over HTTP.
org.hbbtv_00003050	2	Test of support for AAC; Multichannel, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present multichannel AAC audio as part of AV Content streamed over HTTP.
org.hbbtv_00003060	3	Test of support for AC-3; Mono, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present mono AC-3 audio as part of AV Content streamed over HTTP.
org.hbbtv_00003070	3	Test of support for AC-3; Stereo, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present stereo AC-3 audio as part of AV Content streamed over HTTP.
org.hbbtv_00003080	3	Test of support for AC-3; Multichannel, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present multichannel AC-3 audio as part of AV Content streamed over HTTP.
org.hbbtv_00003090	1	Test of support for MP4 E-AC-3; Mono, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present mono E-AC-3 audio as part of AV Content encapsulated in an MP4 container and streamed over HTTP.
org.hbbtv_00003100	1	Test of support for MP4 E-AC-3; Stereo, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present stereo E-AC-3 audio as part of AV Content encapsulated in an MP4 container and streamed over HTTP.
org.hbbtv_00003110	1	Test of support for MP4 E-AC-3; Multichannel, AV Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present multichannel E-AC-3 audio as part of AV Content encapsulated in an MP4 container and streamed over HTTP.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00003120	2	Test of support for HE-AAC; Mono, Audio Only (Radio) Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present mono HE-AAC audio as part of Audio Only (Radio) Content streamed over HTTP.
org.hbbtv_00003130	2	Test of support for HE-AAC; Stereo, Audio Only (Radio) Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present stereo HE-AAC audio as part of Audio Only (Radio) Content streamed over HTTP.
org.hbbtv_00003140	2	Test of support for HE-AAC; Multichannel, Audio Only (Radio) Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present multichannel HE-AAC audio as part of Audio Only (Radio) Content streamed over HTTP.
org.hbbtv_00003170	1	Test of support for MP4 AAC; Multichannel, Audio Only (Radio) Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present multichannel AAC audio as part of audio only (radio) content encapsulated in an MP4 container and streamed over HTTP.
org.hbbtv_00003180	2	Test of support for MP3; Mono, Audio Only (Radio) Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present mono MP3 audio as part of Audio Only (Radio) Content streamed over HTTP.
org.hbbtv_00003190	2	Test of support for MP3; Stereo, Audio Only (Radio) Content, Streamed over HTTP	TRUE	The terminal shall correctly decode and present stereo MP3 audio as part of Audio Only (Radio) Content streamed over HTTP.
org.hbbtv_00003400	2	Test of downmixing Multichannel HE-AAC (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly downmix multichannel HE-AAC for presentation over a stereo output.
org.hbbtv_00003410	2	Test of downmixing Multichannel AAC (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly downmix multichannel AAC for presentation over a stereo output.
org.hbbtv_00003420	3	Test of downmixing Multichannel AC-3 (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly downmix multichannel AC-3 for presentation over a stereo output.
org.hbbtv_00003430	1	Test of downmixing Multichannel E-AC-3 (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly downmix multichannel E-AC-3 for presentation over a stereo output

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00003441	1	Test of interpretation of audio metadata when downmixing Multichannel HE-AAC (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly interpret downmix parameters from the audio metadata when downmixing multichannel HE-AAC for presentation over a stereo output.
org.hbbtv_00003451	1	Test of interpretation of audio metadata when downmixing Multichannel AAC (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly interpret downmix parameters from the audio metadata when downmixing multichannel AAC for presentation over a stereo output.
org.hbbtv_00003460	3	Test of interpretation of audio metadata when downmixing Multichannel AC-3 (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly interpret downmix parameters from the audio metadata when downmixing multichannel AC-3 for presentation over a stereo output.
org.hbbtv_00003471	2	Test of interpretation of audio metadata when downmixing Multichannel E-AC-3 (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly interpret downmix parameters from the audio metadata when downmixing multichannel E-AC-3 for presentation over a stereo output.
org.hbbtv_00003480	2	Test of passthrough of HE-AAC (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly passthrough an HE-AAC bitstream onto the digital audio output.
org.hbbtv_00003490	2	Test of passthrough of AAC (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly passthrough an AAC-LC bitstream onto the digital audio output.
org.hbbtv_00003500	1	Test of passthrough of AC-3 (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly passthrough an AC-3 bitstream onto the digital audio output.
org.hbbtv_00003510	2	Test of passthrough of EAC-3 (AV Content) Streamed over HTTP	TRUE	The terminal shall correctly passthrough an EAC-3 bitstream onto the digital audio output.
org.hbbtv_00003520	2	Transcoding to AC3 from HE-AAC v1	TRUE	When streaming an MP4 containing 5.1 channel, HE-AAC v1 audio and accompanying video data over HTTP; the terminal shall correctly transcode the audio to AC-3 over the S/PDIF output

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00003530	2	Transcoding to AC3 from AAC LC	TRUE	When streaming an MP4 containing 5.1 channel, AAC LC audio and accompanying video data over HTTP; the terminal shall correctly transcode the audio to AC-3 over the S/PDIF output
org.hbbtv_00003540	3	AV Object Seeking Within Buffer (MP4 Forward 5s)	TRUE	The terminal shall correctly seek to a new position inside buffer for a video contained in a MP4 format. The terminal shall seek to 5s forward within buffer.
org.hbbtv_00003560	3	AV Object Seeking Outside Buffer (MP4 Forward)	TRUE	The terminal shall correctly seek forward to a new position outside buffer for a video contained in a MP4 format.
org.hbbtv_00003580	2	AV Object Seeking Outside Buffer (MP4 Backward)	TRUE	The terminal shall correctly seek backward to an earlier position outside buffer for a video contained in a MP4 format.
org.hbbtv_00003600	3	AV Object Seeking Within Buffer (MP4 Backward 5s)	TRUE	The terminal shall correctly seek backward to an earlier position within buffer for a video contained in a MP4 format.
org.hbbtv_00003630	2	AV Streaming Tests: AV Object (Pause)	TRUE	Setting the A/V control object's play speed property to 0('paused') while streaming video over HTTP SHALL cause the video to freeze and audio to suspend
org.hbbtv_00003640	2	AV Streaming Tests: AV Object (Stop)	TRUE	Stopping playback shall cause the video plane to be made opaque black and the audio to stop.
org.hbbtv_00003650	2	Test for onPlayStateChanged event when transitioning from Play to Pause	TRUE	When the A/V Control Object successfully transitions from 'playing' state to 'paused' state, an onPlayStateChanged event with a state of 2 shall be generated.
org.hbbtv_00003660	2	Test for onPlayStateChanged event when transitioning from Play to Stop	TRUE	When the A/V Control Object successfully transitions from 'playing' state to 'stopped' state, an onPlayStateChanged event with a state of 0 shall be generated.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00003670	2	Test for onPlayStateChanged event when transitioning from Paused to Playing	TRUE	When the A/V Control Object successfully transitions from 'paused' state to 'playing' state, an onPlayStateChanged event with a state of 1 shall be generated.
org.hbbtv_00003680	2	Test for onPlayStateChanged event when transitioning from Paused to Stop	TRUE	When the A/V Control Object successfully transitions from 'paused' state to 'stopped' state, an onPlayStateChanged event with a state of 0 shall be generated.
org.hbbtv_00003690	2	Test for onPlayStateChanged event when transitioning from Stop to Play	TRUE	When the A/V Control Object successfully transitions from 'stopped' state to 'playing' state, an onPlayStateChanged event with a state of 1 shall be generated.
org.hbbtv_00003700	3	Test for onPlayStateChanged event when transitioning from Stopped to Pause	TRUE	When the A/V Control Object successfully transitions from 'stopped' state to 'paused' state, an onPlayStateChanged event with a state of 2 shall be generated.
org.hbbtv_00003710	2	the application.privateData.currentChannel after application start	TRUE	After selecting a service programmatically, the currentChannel property of the application.privateData object shall reflect new channel.
org.hbbtv_00003730	2	the application.privateData.currentChannel after channel selection by application	TRUE	After start of application, the currentChannel property of the application.privateData object shall reflect the channel the application was started from.
org.hbbtv_00003740	2	CreateApplication with parameters in URL	TRUE	When calling an application via createApplication, the parameters signalled in the AIT (?param1=value1) and the parameters of the createApplication call (?param2=value2) are combined.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00003750	2	CreateApplication with hash in URL	TRUE	When calling an application via createApplication, the parameters signalled in the AIT (?param1=value1) and the parameters of the createApplication call (#test) are combined.
org.hbbtv_00003760	2	video.currentChannel after channel selection by application	TRUE	After selecting a service programmatically, the currentChannel property on the video/broadcast shall reflect the new channel.
org.hbbtv_00003780	2	video.currentChannel after application start	TRUE	After start of application, the currentChannel property on the video/broadcast shall reflect the channel the application was started from.
org.hbbtv_00003790	2	EIT p/f	TRUE	When video/broadcast object is tuned to a channel, EIT present/following data can be retrieved using the programmes property.
org.hbbtv_00003800	2	Letter Gothic font rendering width	TRUE	Rendering width of Letter Gothic 12 Pitch font (or equivalent) should match pre-defined rendering width.
org.hbbtv_00003810	2	Line-height CSS style	TRUE	The actual line-height in font rendering should match the specified line-height CSS style, even when font-weight is bold.
org.hbbtv_00003820	2	Tiresias font rendering width	TRUE	Rendering width of Tiresias font (or equivalent) should match pre-defined rendering width.
org.hbbtv_00003830	2	OIPF capabilities: hasCapability()	TRUE	When calling the hasCapability method on the application/oipfCapabilities object for the following string arguments, a boolean value is returned: +DL, +PVR, +RTSP.
org.hbbtv_00003840	2	OIPF Capabilities: extra decodes	TRUE	The properties extraSDVideoDecodes and extraHDVideoDecodes are numeric integer values greater or equal to 0.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00003850	3	OIPF Configuration: preferredAudioLanguage (1.0)	TRUE	The configuration.preferredAudioLanguage property of the application/oipfConfiguration object contains a list of comma separated ISO 639 language codes.
org.hbbtv_00003851	1	OIPF Configuration: preferredAudioLanguage	TRUE	The configuration.preferredAudioLanguage property of the application/oipfConfiguration object contains a list of comma separated ISO 639.2 language codes.
org.hbbtv_00003860	3	OIPF Configuration: preferredSubtitleLanguage (1.0)	TRUE	The configuration.preferredSubtitleLanguage property of the application/oipfConfiguration object contains a list of comma separated ISO 639 language codes.
org.hbbtv_00003861	1	OIPF Configuration: preferredSubtitleLanguage	TRUE	The configuration.preferredSubtitleLanguage property of the application/oipfConfiguration object contains a list of comma separated ISO 639.2 language codes.
org.hbbtv_00003870	2	OIPF Configuration: countryId	TRUE	The configuration.countryId property of the application/oipfConfiguration is set to an ISO-3166 three character country code.
org.hbbtv_00003880	2	StreamEvent reference DVB URL	TRUE	After registering a StreamEvent listener via a dvb: URL referencing a carousel and stream event PID on the same service, stream events are received. After removing the listener, no more stream event is received.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00003890	2	StreamEvent reference event description file	TRUE	After registering a StreamEvent listener via a HTTP URL referencing a event description file which itself references a stream event PID on the same service (via a component tag), stream events are received. After removing the listener, no more stream event is received. The stream event name of the received event is equal to the one that was used to register the listener.
org.hbbtv_00003900	2	Browser user agent test (1.1.1)	TRUE	User-agent header of XmlHTTPRequests made by terminal contain correct user agent (1.1.1)
org.hbbtv_00003901	2	Browser user agent test (1.2.1)	TRUE	User-agent header of XmlHTTPRequests made by terminal contain correct user agent (1.2.1)
org.hbbtv_00003910	3	Video player user agent test (1.1.1)	TRUE	User-agent header of HTTP video download requests made by terminal contain correct user agent (1.1.1)
org.hbbtv_00003911	3	Video player user agent test (1.2.1)	TRUE	User-agent header of HTTP video download requests made by terminal contain correct user agent (1.2.1)
org.hbbtv_00003920	3	invalid video playback: A/V format	TRUE	When playing back a video with invalid video format, a single error event should occur, the error property should be set to 0, 2, or 4.
org.hbbtv_00003930	3	invalid video playback: cannot connect	TRUE	When playing back a video with an URL referencing a port on a server that allows no connection, a single error event should occur, the error property should be set to 1.
org.hbbtv_00003940	3	invalid video playback: video not found	TRUE	When playing back a video URL that results in a HTTP error 404 (not found), a single error event should occur, the error property should be set to 1, 2, 5 or 6.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00003950	3	Playback of video without content-range support	TRUE	Terminal should be able to play back video from servers that do not support HTTP content-range headers (e.g. when playing back live video).
org.hbbtv_00003960	3	Video playTime	TRUE	During broadband video playback, playTime returns the total duration of the video in milliseconds.
org.hbbtv_00003970	3	video queue	TRUE	During playback, queuing another video makes play the video after the first video has finished playing. Calling queue(null) will erase the queue and return true. Next video queued is actually played back.
org.hbbtv_00003980	3	seek in broadband video playback	TRUE	During playback, of a broadband served video, seek sets the current play position.
org.hbbtv_00003990	3	video/mp4 keeps aspect ratio	TRUE	video/mp4 object displays video with correct aspect ratio and letterboxing. Note: this may lead to problems, as it is quite complicated for many platforms/implementations to support transparency in the video/mp4 object. However, background color is black which should avoid problems in this case (video-broadcast test is not black).
org.hbbtv_00004000	2	video/broadcast keeps aspect ratio	TRUE	video/broadcast object displays video with correct aspect ratio and letterboxing. Note: this may lead to problems, as it is quite complicated for many platforms/implementations to support transparency in the video/broadcast object.
org.hbbtv_00005010	4	MetadataSearch - addChannelConstraint() - Channel constraint with single channel	TRUE	When passing a Channel object to addChannelConstraint() on the MetadataSearch object, the terminal shall constrain query-based searches to that channel

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00005020	4	MetadataSearch - addChannelConstraint() - Clearing channel constraints when no constraints have been set	TRUE	When passing null to addChannelConstraint() on the MetadataSearch object when no channel constraints have been set, the terminal shall continue to constrain query-based searches to all channels
org.hbbtv_00007005	1	DASH: mpd outside of application boundary.	TRUE	Loading of mpd with URL pointing outside of application boundary shall not be blocked due to "the same origin" policy.
org.hbbtv_00007009	1	DASH: playing state of A/V Control object.	TRUE	The A/V control has transitioned to playing state due to the play() method on DASH content.
org.hbbtv_00007040	4	MetadataSearch - createQuery() - 'startTime' field - Comparison: Greater than	TRUE	The terminal shall be able to generate a metadata query specifying that the programme's 'startTime' field is greater than a specified value when the createQuery() method is called from the MetadataSearch object
org.hbbtv_00007050	4	MetadataSearch - createQuery() - 'Programme.startTime' field - Comparison: Greater than or equal to	TRUE	The terminal shall be able to generate a metadata query specifying that the programme's 'startTime' field is greater than or equal to a specified value when the createQuery() method is called from the MetadataSearch object
org.hbbtv_00007060	4	MetadataSearch - createQuery() - 'startTime' field - Comparison: Less than	TRUE	The terminal shall be able to generate a metadata query specifying that the programme's 'startTime' field is less than a specified value when the createQuery() method is called from the MetadataSearch object
org.hbbtv_00007070	4	MetadataSearch - createQuery() - 'startTime' field - Comparison: Less than or equal to	TRUE	The terminal shall be able to generate a metadata query specifying that the programme's 'startTime' field is less than or equal to a specified value when the createQuery() method is called from the MetadataSearch object

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00007110	1	DASH: connecting state of A/V Control object.	TRUE	The A/V Control has transitioned to the connecting state (3) due to call play() method on DASH content.
org.hbbtv_00007120	1	DASH: buffering state of A/V Control	TRUE	The A/V Control has transitioned to the buffering state from connecting state due to play() method on DASH content.
org.hbbtv_00007121	3	DASH: MPD file size 100 kB	TRUE	The terminal correctly handles MPEG DASH MPD file with size 100 kbytes and plays content defined in it.
org.hbbtv_00007122	1	Terminal plays MPEG DASH video segment files that are fifteen seconds long.	TRUE	The A/V Control has played DASH content that contains fifteen seconds length segments.
org.hbbtv_00007124	1	Terminal plays last MPEG DASH video fragment that is shorter than 1 second.	TRUE	A/V Control displays correct DASH video when last segment is shorter than one second.
org.hbbtv_00007181	1	DASH, change dimensions of A/V player	TRUE	Terminal shall correctly play DASH content when video player layer dimensions change from 1/4 x 1/4 of logical video plane to fullscreen.
org.hbbtv_00007201	1	DASH: maximum number of Adaptation Sets (16).	TRUE	Terminal supports the mpd with maximum number of Adaptation Sets (16) in the period.
org.hbbtv_00007236	1	hasCapability method returns +DRM string for terminal supporting DRM feature	TRUE	A terminal that supports the DRM feature must indicate this by returning the option string "+DRM" by hasCapability method.
org.hbbtv_00007354	1	DASH: XML validation error (updated mpd)	TRUE	A/V control object shall switch play state to 6 - 'error' with error value 4 - 'content corrupt or invalid' if updated mpd is invalid. The playback starts with correct mpd file.
org.hbbtv_00007374	1	DASH: update with overlapping Periods.	TRUE	Dynamic mpd file contains one period only, after updating second period is available. Second period @start attribute points to the end time of the first period. Terminal shall start playing the second Period.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00007375	1	DASH: update with non-overlapping Periods.	TRUE	Dynamic mpd file contains one period only, it have set @duration attribute. After updating second period without start time is available. Terminal shall start playing the second Period.
org.hbbtv_00007377	1	DASH: update baseURL on MPD level.	TRUE	Terminal should change request address, when baseURL is updated on MPD level.
org.hbbtv_00007378	1	DASH: update of SegmentTimeline on AdaptationSet level.	TRUE	After MPD update, terminal shall play MPD with SegmentTimeline inside SegmentTemplate on AdaptationSet level
org.hbbtv_00007402	1	DASH: BaseURL at the Adaptation Set, SegmentTemplates at Representation.	TRUE	BaseURL defined at the Adaptation Set level and segments described by SegmentTemplates in Representation Level.
org.hbbtv_00007403	1	DASH: BaseURL at the MPD level, SegmentTemplates in Adaptation Set.	TRUE	Terminal shall present content when BaseURL is defined at the MPD level and segments are described by SegmentTemplates at Adaptation Set level.
org.hbbtv_00008000	4	MetadataSearch - findProgrammesFromStream() - Scheduled programmes in the current channel after and including the current programme	TRUE	When the findProgrammesFromStream() method is called from the application/oipfSearchManager with the channel specified as the current channel and the startTime specified as null; the terminal shall return results for all programmes on the current service after the current time when the getResults() method is called.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00008010	4	MetadataSearch - findProgrammesFromStream() - Scheduled programmes from a different channel after and including the current programme	TRUE	When the findProgrammesFromStream() method is called from the application/oipfSearchManager with the channel specified as a channel other than the current channel and the startTime specified as null; the terminal shall return results for all programmes on the channel after and including the current programme when the getResults() method is called.
org.hbbtv_00008020	4	MetadataSearch - findProgrammesFromStream() - Scheduled programmes from a different channel after and including the following programme	TRUE	When the findProgrammesFromStream() method is called from the application/oipfSearchManager with the channel specified as a channel other than the current channel and the startTime specified as the startTime of the following programme (UTC, expressed in seconds from Unix epoch); the terminal shall return all programmes after and including the following programme when the getResults() method is called.
org.hbbtv_0000D000	3	item() method in SearchResults class	TRUE	The item() method of the SearchResults object shall return the item at the expected position in the collection, or undefined if no item is present at that position
org.hbbtv_0000F000	4	abort() method in SearchResults class	TRUE	When the abort() method of a SearchResults instance is called after its getResults() method is called, its 'length' property shall equal 0 and the item() method shall return undefined when its 'index' parameter is specified as 0
org.hbbtv_0000G000	3	setQuery() in MetadataSearch class	TRUE	When a MetadataSearch object's setQuery() method is called with its 'query' parameter set to a Query object, no exception shall be thrown

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_0000G001	3	setQuery(Query) - Transition from 'Found' to 'Idle' State	TRUE	After the setQuery() method is called on the MetadataSearch object while it is in the search state 'Found', the 'length' property of the associated SearchResults object shall be equal to 0
org.hbbtv_0000G002	3	setQuery(Query) - Abort event when in 'Found' state	TRUE	When a search has completed and the MetadataSearch object is in the search state 'Found', calling the setQuery() method with its 'query' argument specified as a Query object shall cause a 'MetadataSearch' event with its 'state' context equal to 3 to be dispatched
org.hbbtv_00012000	2	XML Capabilities: Base features	TRUE	The xmlCapabilities property of the application/oipfCapabilities object contains all mandatory elements and attributes specified in 10.2.4 of [HBBTV].
org.hbbtv_00012010	2	XML Capabilities: Base features and E-AC3	TRUE	When a terminal supports the base level requirements and E-AC3, the xmlCapabilities property of the application/oipfCapabilities object contains all mandatory elements and attributes specified in 10.2.4 of [HBBTV].
org.hbbtv_00013000	3	ChannelConfig object in application/oipfSearchManager object	TRUE	Terminal shall be able to create a ChannelConfig object when the getChannelConfig() method is called on the application/oipfSearchManager object and its 'channelList' property shall contain all expected channels
org.hbbtv_00020041	1	The Window object supports close() method.	TRUE	The terminal shall support the window.close() method. close() is equivalent to calling method destroyApplication().
org.hbbtv_00020042	1	The Window object supports debug() method.	TRUE	The terminal shall support the window.debug() method.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00021000	1	Test for on-demand support of AVC - 1280 x 720 px MP4 - with moov box size = 2.5 Mb	TRUE	The terminal shall correctly present an AVC encoded video file with a moov box size of 2.5 MB
org.hbbtv_00021010	2	A/V Control object - HTTP chunked transfer coding	TRUE	The terminal shall be able to present A/V content which is served using HTTP chunked transfer coding
org.hbbtv_00021011	2	Video Object - HTTP chunked transfer coding	TRUE	The terminal shall be able to present HTML5 video content which is served using HTTP chunked transfer coding
org.hbbtv_00021020	1	HTTP Status Code 302 (Found) - MP4 AVC	TRUE	When an HTTP request is initiated by the A/V Control object and an HTTP response with status code 302 (found) and content type 'video/mp4' is received, the terminal shall then correctly present the MP4 AVC file referenced by the URL in the 'Location' field of the HTTP response
org.hbbtv_00021030	1	HTTP Status Code 307 (Temporary Redirect) - MP4 AVC file	TRUE	When an HTTP request is initiated by the A/V Control object and an HTTP response with status code 307 (temporary redirect) and content type 'video/mp4' is received, the terminal shall then correctly present the MP4 AVC file referenced by the URL in the 'Location' field of the HTTP response
org.hbbtv_00027213	1	DASH video transitions: profile and level, over Period boundaries.	TRUE	Terminal supports video transitions between DASH Representations which differ by profile and level during during playback over Period boundaries.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00027215	1	DASH video transitions: full-screen resolution (high to low), over Period boundaries.	TRUE	Terminal supports video transitions between DASH Representations which differ by full-screen resolution (from high resolution to low resolution) during playback over Period boundaries. During transition video does not contain artifacts or picture corruption.
org.hbbtv_00027216	1	DASH video transitions: full-screen resolution (low to high), over Period boundaries.	TRUE	Terminal supports video transitions between DASH Representations which differ by full-screen resolution (from low resolution to high resolution) during playback over Period boundaries. During transition video does not contain artifacts or picture corruption.
org.hbbtv_00027223	1	DASH video transitions: bitrate - low to high, over Period boundaries.	TRUE	Terminal supports video transitions between DASH Representations which differ by bitrate, from low bitrate to high bitrate during playback over Period boundaries. During transition video does not contain artifacts or picture corruption.
org.hbbtv_00027224	1	Terminal supports video transitions between MPEG DASH Representations which differ by bitrate, from high bitrate to low bitrate during playback over Period boundaries.	TRUE	Terminal supports video transitions between DASH Representations which differ by bitrate, from high bitrate to low bitrate during playback over Period boundaries. During transition video does not contain artifacts or picture corruption.
org.hbbtv_00152100	1	HTTP User-Agent header for general content HTTP requests	TRUE	After application of the optional LWS and TEXT processing described in 2.2 of RFC2616 the user-agent string contained in the User-Agent header sent by the terminal when requesting application content shall match the EcmaScript regular expression 'HbbTV/1.2.1 \(?(\+DL|\+PVR|\+DRM)* ?;(.*;){4} ?\)' and shall not contain any US-ASCII control characters (octets 0 - 31 and DEL, 127)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_00152110	1	HTTP User-Agent header for constant bitrate streaming HTTP requests	TRUE	After application of the optional LWS and TEXT processing described in 2.2 of RFC2616 the user-agent string contained in the User-Agent header sent by the terminal when requesting constant bitrate video content for an A/V embedded object shall match the EcmaScript regular expression 'HbbTV/1.2.1 \(?(\+DL|\+PVR|\+DRM)* ?;(.*;){4} ?\)' and shall not contain any US-ASCII control characters (octets 0 - 31 and DEL, 127)
org.hbbtv_02003101	1	The Window object supports "document" property.	TRUE	The terminal shall support the window.document property.
org.hbbtv_02003102	1	The Window object supports "frames" property.	TRUE	The terminal shall support the window.frames property.
org.hbbtv_02003103	1	The Window object supports "history" property	TRUE	The terminal shall support the window.history property.
org.hbbtv_02003104	1	The Window object supports "innerHeight" and "innerWidth" properties	TRUE	The terminal shall support the window.innerHeight and window.innerWidth properties.
org.hbbtv_02003105	1	The Window object supports "location" property	TRUE	The terminal shall support the window.location property.
org.hbbtv_02003107	1	The Window object supports "name" property	TRUE	The terminal shall support the window.name property.
org.hbbtv_02003108	1	The Window object supports "navigator" property	TRUE	The terminal shall support the window.navigator property. The userAgent indicates HbbTV marker.
org.hbbtv_02003109	1	The Window object supports "oipfObjectFactory" property	TRUE	The terminal shall support the window.oipfObjectFactory property.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_02003111	1	The Window object supports "onkeydown", "onkeyup" and "onkeypress" properties	TRUE	The terminal shall support the properties: window.onkeydown, window.onkeyup and window.onkeypress. The sequence of events triggering shall be correct.
org.hbbtv_02003112	1	The Window object supports "parent" property	TRUE	The terminal shall support the window.parent property.
org.hbbtv_02003114	1	The Window object supports "self" property	TRUE	The terminal shall support the window.self property.
org.hbbtv_02003115	1	The Window object supports "top" property	TRUE	The terminal shall support the window.top property.
org.hbbtv_02003116	1	The Window object supports "XMLHttpRequest" property	TRUE	The terminal shall support the window.XMLHttpRequest property.
org.hbbtv_02003117	1	The Window object supports setTimeout() method.	TRUE	The terminal shall support the window.setTimeout() method.
org.hbbtv_02003118	1	The Window object supports setInterval() method.	TRUE	The terminal shall support the window.setInterval() method.
org.hbbtv_02003119	1	The Window object supports clearTimeout() method.	TRUE	The terminal shall support the window.clearTimeout() method.
org.hbbtv_02003120	1	The Window object supports clearInterval() method.	TRUE	The terminal shall support the window.clearInterval() method.
org.hbbtv_02003121	1	The Window object supports addEventListener() method.	TRUE	The terminal shall support the window.addEventListener() method.
org.hbbtv_02003122	1	The Window object supports removeEventListener() method.	TRUE	The terminal shall support the window.removeEventListener() method.
org.hbbtv_02003123	1	The Window object supports "onfocus" callback.	TRUE	The terminal shall support the window.onfocus callback.
org.hbbtv_02003124	1	The Window object supports "onblur" callback.	TRUE	The terminal shall support the window.onblur callback.
org.hbbtv_02003125	1	The Window object supports "frameElement" property.	TRUE	The terminal shall support the window.frameElement property.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11Y_0010	1	Accessibility JSON-RPC capability negotiation	TRUE	A newly started application is connected to the JSON-RPC WSS server but has not yet negotiated any capabilities. The application incrementally negotiates the Accessibility capabilities using valid and correctly formed org.hbbtv.negotiateMethods request messages, confirming each capability is added in turn by inspecting the responses to ensure that each capability has been added. All the request messages listed below are dispatched in the following order and each request is only sent after the response to a previous request has been received. The following appToTerminal capabilities are incrementally negotiated and successfully confirmed by inspection of a valid and correct org.hbbtv.negotiateMethods response message. - org.hbbtv.af.featureSupportInfo - org.hbbtv.af.featureSuppress - org.hbbtv.af.featureSettingsQuery - org.hbbtv.subscribe - org.hbbtv.unsubscribe The following terminalToApp capabilities are then negotiated in a single org.hbbtv.negotiateMethods request message and are successfully confirmed by inspecting the valid and correctly formed org.hbbtv.negotiateMethods response message: - org.hbbtv.negotiateMethods - org.hbbtv.notify

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11Y_0020	1	Accessibility Framework Feature Query	TRUE	An application is connected to the JSON-RPC WSS server, and negotiates the capability for the org.hbbtv.af.featureSettingsQuery, org.hbbtv.af.featureSuppress and org.hbbtv.af.featureSupportInfo methods. The application to queries the terminals accessibility feature support by issuing a sequence of org.hbbtv.af.featureSupportInfo request messages to the terminal, with the following feature queries: - subtitles - dialogueEnhancement - uiMagnifier - highContrast - screenReader - responseToUserAction - audioDescription - inVisionSigning The responses are recorded for later comparison with the declared "support level" in the manufacturer supplied Accessibility Result Declaration. Then the application requests to suppress the same features by issuing a sequence of org.hbbtv.af.featureSuppress request messages to the terminal. The responses are recorded for consistency checking and later comparison with the declared "support response" in the manufacturer supplied Accessibility Result Declaration. Then the application requests feature setting information for all the same features by issuing a sequence of org.hbbtv.af.featureSettingsQuery request messages to the terminal. The responses are recorded for consistency checking and later comparison with the declared "settings query info" in the manufacturer supplied Accessibilty Result Declaration. The consistency

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11Y_0030	1	Accessibility Settings Change Notifications	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.subscribe and org.hbbtv.notify messages and registers for all notifications using the org.hbbtv.subscribe API for each of the Accessibility features defined by the msgType list from Table 10d. For all Accessibility features that expose settings to the user (declared as "Setting supported" and "survives" in the manufacturer supplied Accessibility Result Declaration), the tester changes a corresponding setting for that feature which the application records if any corresponding notification is subsequently received (i.e. reception of correctly formed org.hbbtv.notify messages that correspond the modified setting). The comparison of the recorded notifications with the manufacturer supplied Accessibility Result Declaration is consistent.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11Y_0040	1	Accessibility Feature Suppression	FALSE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSuppress and org.hbbtv.af.featureSupportInfo methods and requests suppression (using the org.hbbtv.af.featureSuppress method) of all features where the terminal responds to org.hbbtv.af.featureSupportInfo request with a response of tvosAndHbbTV or supportedNoSetting. The application records the responses and informs the tester which features responded with suppressing or notSuppressing, and which features the application did not attempt to suppress. The tester then manually needs to confirm that the features are suppressed or not suppressed accordingly.
org.hbbtv_A11YAD0030	1	Verifying the Audio Description Preference Change Message for enabling Audio Description	TRUE	The application queries the org.hbbtv.af.featureSettingsQuery API with feature="audioDescription". The response message shall have the value set to '"enabled" : false' for the "audioDescription" feature. The application is subscribed to receive Audio Description Preference Change Messages. When enabling the Audio Description in the TV OS settings, the application shall receive an Audio Description Preference Change Message with the value set to '"enabled" : true' for the "audioDescriptionPrefChange" msgType. Each response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YAD0040	1	Verifying the Audio Description Preference Change Message for disabling Audio Description	TRUE	The application queries the org.hbbtv.af.featureSettingsQuery API with feature="audioDescription". The response message shall have the value set to '"enabled" : true' for the "audioDescription" feature. The application is subscribed to receive Audio Description Preference Change Messages. When disabling the Audio Description in the TV OS settings, the application shall receive an Audio Description Preference Change Message with the value set to '"enabled" : false' for the "audioDescriptionPrefChange" msgType. Each response message shall conform with the respective schema.
org.hbbtv_A11YAD0050	1	Verifying the Audio Description Preference Change Message for the Gain Preference	TRUE	The application queries the org.hbbtv.af.featureSettingsQuery API with feature="audioDescription". The response message shall also include the "gainPreference" field. The application is subscribed to receive Audio Description Preference Change Messages. When changing the "gainPreference" of the Audio Description in the TV OS settings to the minimal posible value, the application shall receive an Audio Description Preference Change Message. The "gainPreference" field of the "value" field shall be now set to a lower value compared to the previous recorded value. Each response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YAD0060	1	Verifying the Audio Description Preference Change Message for the Pan Azimuth Preference	TRUE	The application queries the org.hbbtv.af.featureSettingsQuery API with feature="audioDescription". The response message shall have the "panAzimuthPreference" field. The application is subscribed to receive Audio Description Preference Change Messages. When changing the "panAzimuthPreference" of the Audio Description in the TV OS settings to "right", the application shall receive an Audio Description Preference Change Message. The "panAzimuthPreference" field of the "value" field shall be now set to a lower value compared to the previous recorded value. Each response message shall conform with the respective schema.
org.hbbtv_A11YDE0010	1	DE - negotiateMethods response message reflects dialogueEnhancement API support	TRUE	A newly started application is connected to the JSON-RPC WSS server but has not yet negotiated any capabilities. The application sends a org.hbbtv.negotiateMethods JSON-RPC request to the terminal that includes "org.hbbtv.af.dialogueEnhancementOverride" in the "appToTerminal" array. A valid and correct org.hbbtv.negotiateMethods response message is received that also contains "org.hbbtv.af.dialogueEnhancementOverride" in the "appToTerminal" array.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YDE0011	1	DE - negotiateMethods response message reflects non existant dialogueEnhancement API support	TRUE	A newly started application is connected to the JSON-RPC WSS server but has not yet negotiated any capabilities. The application sends a org.hbbtv.negotiateMethods JSON-RPC request to the terminal that includes "org.hbbtv.af.dialogueEnhancementOverride" in the "appToTerminal" array. A valid and correct org.hbbtv.negotiateMethods response message is received that does not contain "org.hbbtv.af.dialogueEnhancementOverride" in the "appToTerminal" array.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YHCUI_0010	1	Accessibility - High Contrast UI Settings Query (disabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. The High Contrast UI feature is successfully determined to be supported by sending an org.hbbtv.af.featureSupportInfo request message with feature field of the params object set to "highContrastUI" and confirming that the feature is supported by inspecting a valid and correct response message where the "value" field of the "result" object is set to "tvosSettingOnly", "tvosOnly" or "tvosAndHbbTV". Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "highContrastUI". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "false".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YHCUI_0020	1	Accessibility - High Contrast UI Settings Query (enabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. The High Contrast UI feature is successfully determined to be supported by sending an org.hbbtv.af.featureSupportInfo request message with feature field of the params object set to "highContrastUI" and confirming that the feature is supported by inspecting a valid and correct response message where the "value" field of the "result" object is set to "tvosSettingOnly", "tvosOnly" or "tvosAndHbbTV". Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "highContrastUI". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "true" and an "hcType" field set to either "monochrome" or "other" depending on the High Contrast UI type described in the Accessibility Result Declaration

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YIVSL_0010	1	Accessibility - In-Vision Sign Language Settings Query (disabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. The In Vision Sign Language feature is successfully determined to be supported by sending an org.hbbtv.af.featureSupportInfo request message with feature field of the params object set to "inVisionSigning" and confirming that the feature is supported by inspecting a valid and correct response message where the "value" field of the "result" object is set to "tvosSettingOnly", "tvosOnly" or "tvosAndHbbTV". Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "inVisionSigning". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "false".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YIVSL_0020	1	Accessibility - In-Vision Sign Language Settings Query (enabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. The In Vision Sign Language feature is successfully determined to be supported by sending an org.hbbtv.af.featureSupportInfo request message with feature field of the params object set to "inVisionSigning" and confirming that the feature is supported by inspecting a valid and correct response message where the "value" field of the "result" object is set to "tvosSettingOnly", "tvosOnly" or "tvosAndHbbTV". Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "inVisionSigning". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "true".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YMAG_0010	1	Accessibility - Magnification Settings Query (disabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. The Magnification UI feature is successfully determined to be supported by sending an org.hbbtv.af.featureSupportInfo request message with feature field of the params object set to "uiMagnifier" and confirming that the feature is supported by inspecting a valid and correct response message where the "value" field of the "result" object is set to "tvosSettingOnly", "tvosOnly" or "tvosAndHbbTV". Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "uiMagnifier". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn only contains an "enabled" field set to "false" and no other fields.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YMAG_0020	1	Accessibility - Magnification Settings Query (enabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. The Magnification UI feature is successfully determined to be supported by sending an org.hbbtv.af.featureSupportInfo request message with feature field of the params object set to "uiMagnifier" and confirming that the feature is supported by inspecting a valid and correct response message where the "value" field of the "result" object is set to "tvosSettingOnly", "tvosOnly" or "tvosAndHbbTV". Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "uiMagnifier". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "true" and a "magType" field set to either "textMagnification", "magnifierGlass", "screenZoom", "largeLayout" or "other" depending on the UI Magnification type described in the Accessibility Results Declaration

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YRESP2U_0010	1	Accessibility - Response to User Action feature: Settings Query (disabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. The 'Response to a User Action' feature is successfully determined to be supported by sending an org.hbbtv.af.featureSupportInfo request message with feature field of the params object set to "responseToUserAction" and confirming that the feature is supported by inspecting a valid and correct response message where the "value" field of the "result" object is set to "tvosSettingOnly", "tvosOnly" or "tvosAndHbbTV". Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "responseToUserAction". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "false".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YRESP2U_0020	1	Accessibility - Response to User Action feature: Settings Query (enabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. The 'Response to a User Action' feature is successfully determined to be supported by sending an org.hbbtv.af.featureSupportInfo request message with feature field of the params object set to "responseToUserAction" and confirming that the feature is supported by inspecting a valid and correct response message where the "value" field of the "result" object is set to "tvosSettingOnly", "tvosOnly" or "tvosAndHbbTV". Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "responseToUserAction". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "true" and a "type" field set to either "audio", "visual", "haptic", "other" or "none" depending on the User Response type described in the Accessibility Results Declaration

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YRESP2U_0050	1	Accessibility Response to a User Action Behaviour	TRUE	An application is connected to the JSON-RPC Websocket Server and successfully confirms that org.hbbtv.af.triggerResponseToUserAction and org.hbbtv.af.featureSettingsQuery request messages from appToTerminal are supported using the org.hbbtv.negotiateMethods API. The application sends an org.hbbtv.af.featureSettingsQuery for the 'responseToUserAction' feature and informs the tester of the value of the response 'type' parameter. The application sends a sequence of org.hbbtv.af.triggerResponseToUserAction request messages to the terminal for each of the three magnitude parameter values "triggerPrimary", "triggerSecondary" and "triggerException", with a 5 second interval between each response message and each new request. Correctly formed org.hbbtv.af.triggerResponseToUserAction response messages are received for each of the requests. The tester confirms that the responses from the terminal are 100% consistent with the indicated response type and magnitude against the descriptions provided in the Accessibility Result Declaration

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YSCRE_0010	1	Accessibility - Screen Reader Settings Query (disabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. The Screen Reader feature is successfully determined to be supported by sending an org.hbbtv.af.featureSupportInfo request message with feature field of the params object set to "screenReader" and confirming that the feature is supported by inspecting a valid and correct response message where the "value" field of the "result" object is set to "tvosSettingOnly", "tvosOnly" or "tvosAndHbbTV". Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "screenReader". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "false".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YSCRE_0020	1	Accessibility - Screen Reader Settings Query (enabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. The Screen Reader feature is successfully determined to be supported by sending an org.hbbtv.af.featureSupportInfo request message with feature field of the params object set to "screenReader" and confirming that the feature is supported by inspecting a valid and correct response message where the "value" field of the "result" object is set to "tvosSettingOnly", "tvosOnly" or "tvosAndHbbTV". Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "screenReader". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "true".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YSUBS_0010	1	Accessibility - Subtitles Settings Query (disabled)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "subtitles". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "false".
org.hbbtv_A11YSUBS_0020	1	Accessibility - Subtitles Settings Query (enabled - simple variant)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "subtitles". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "true". No fields (other than "language" or "enabled") are present in the "value" object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_A11YSUBS_0030	1	Accessibility - Subtitles Settings Query (enabled - rich settings variant)	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.af.featureSettingsQuery and org.hbbtv.af.featureSupportInfo methods. Then the application sends an org.hbbtv.af.featureSettingsQuery message to the terminal with the feature field of the params object set to "subtitles". The application receives a valid and correct response message where the "result" field contains a "value" object, which in turn contains an "enabled" field set to "true". At least one other fields in the value object other than "language" or "enabled" are present which shall (as closely as possible) relate to the 'rich' subtitle subsetting(s) that had been modified from the terminal default by the tester as part of the test preconditions.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-AD0030	1	Verifying the Audio Description Preference Change Message for enabling Audio Description (AC-4 Audio)	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio including two Preselections. The first Preselection of the media contains an Audio Description while the second Preselection does not contain any Audio Description. While playing the content, the application queries the org.hbbtv.af.featureSettingsQuery API with feature="audioDescription". The response message shall have the value set to '"enabled" : false' for the "audioDescription" feature, and the terminal shall play the Preselection containing no Audio Description. The application is subscribed to receive Audio Description Preference Change Messages. When enabling the Audio Description in the TV OS settings, the application shall receive an Audio Description Preference Change Message with the value set to '"enabled" : true' for the "audioDescriptionPrefChange" msgType, and the Preselection with Audio Description shall be played back by the terminal. Each response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-AD0040	1	Verifying the Audio Description Preference Change Message for disabling Audio Description (AC-4 Audio)	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio including two Preselections. The first Preselection of the media contains an Audio Description while the second Preselection does not contain any Audio Description. While playing the content, the application queries the org.hbbtv.af.featureSettingsQuery API with feature="audioDescription". The response message shall have the value set to '"enabled" : true' for the "audioDescription" feature, and the terminal shall play the Preselection containing Audio Description. The application is subscribed to receive Audio Description Preference Change Messages. When disabling the Audio Description in the TV OS settings, the application shall receive an Audio Description Preference Change Message with the value set to '"enabled" : false' for the "audioDescriptionPrefChange" msgType, and the Preselection with no Audio Description should be played back by the terminal. Each response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-AD0050	1	Verifying the Audio Description Preference Change Message for the Gain Preference (AC-4 Audio)	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio including a preselection containing both an Audio Description dialogue and the main dialogue. The audio test material shall be constructed such that the Audio Description dialogue and the main dialogue will play back at roughly the same loudness when an Audio Description dialogue gain of 0 dB is used. The preselection is signalled in the AC-4 elementary stream table of contents by setting presentation_config=2 (“Main + associate”). The presentation references a substream with the associated dialog. The substream is signalled by setting the content_classifier=2 (“Associated service: visually impaired”) in the elementary stream and the content_classifier=2 (“Associated service: visually impaired”) in the DSI. In the DASH manifest, an Accessibility descriptor shall indicate "Audio description for the visually impaired" according to ETSI TS 103 285 clause 6.3.2.6. The Terminal shall select the preselection containing the Audio Description based on the procedural preconditions. While playing the content, the application queries the org.hbbtv.af.featureSettingsQuery API with feature="audioDescription". The response message shall also include the "gainPreference" field. If the "gainPreference" field holds a positive value, the Audio Description shall be played back louder than the main dialog. The application shall record the current

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-ADAPTATION-0010	2	HTML5 DASH audio AC-4 Representation transition to lower bit rate within the same adaptation set	TRUE	When the available bandwidth is restricted, the device shall seamlessly switch from an AC-4 192kbps audio representation to an AC-4 128kbps audio representation within the same adaptation set of the played HTML5 DASH content.
org.hbbtv_AC4-ADINS0001	2	HTML5 mid-roll advert insertion, DASH AC-4/HEVC and DASH HE-AAC/HEVC	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with AC-4/HEVC is paused, and a second HTML5 media element with DASH HE-AAC/HEVC media is played in its entirety, and then the playing of the previous DASH media is resumed.
org.hbbtv_AC4-ADINS0002	2	HTML5 mid-roll advert insertion, DASH AC-4/HEVC and MP4 HE-AAC/HEVC	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with AC-4/HEVC is paused, and a second HTML5 media element with preloaded MP4 with HE-AAC/HEVC media is played in its entirety, and then the playing of the previous DASH media is resumed.
org.hbbtv_AC4-ADINS0010	3	HTML5 post-roll advert insertion, DASH AC-4/HEVC and MP4 AAC/AVC	TRUE	When content playback of a HTML5 media element referencing DASH with AC-4/HEVC is ended, a preloaded MP4 advertisement with AAC/AVC media is played in its entirety afterwards.
org.hbbtv_AC4-ADINS0020	3	HTML5 pre-roll advert insertion, MP4 AAC/AVC and DASH AC-4/HEVC	TRUE	When content of a preloaded MP4 advertisement with AAC/AVC media is played back in its entirety, an HTML5 media element referencing DASH AC-4/HEVC media is played back afterwards.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-BROADBAND0010	1	AC-4 broadband capability reported correctly and AC-4 media is presented	TRUE	When an HbbTV application queries the xmlCapabilities a <video_profile> element is present in the document returned with name attribute of "MP4_HEVC_HD_25_8_AC4-CIP_EBUTTD", type attribute of "video/mp4", sync_tl attribute of "dash_pr", and a transport attribute containing the protocol name "dash". When play() is called on an HTMLVideoElement referencing an MPD containing HEVC_HD_25_8 video and AC-4 audio, the video and audio are presented without glitches or decoding artefacts.
org.hbbtv_AC4-BROADBAND0020	1	AC-4 broadband capability reported correctly	TRUE	When an HbbTV application queries the xmlCapabilities no <video_profile/> element with @name attribute containing the sub-string "AC4-C" is present in the document returned.
org.hbbtv_AC4-BROADCAST0010	1	AC-4 broadcast capability reported correctly and AC-4 media presented	TRUE	When an HbbTV application queries the xmlCapabilities object a <broadcast>urn:dvb:broadcast:ird:audio:AC-4_channel_based_immersive_personalized</broadcast> element is present in the document returned. When an MPEG-2 TS containing HEVC_HD_25_8 video and AC-4 audio is signalled to the terminal, audio and video from that stream are presented without glitches or decoding artefacts.
org.hbbtv_AC4-BROADCAST0020	1	AC-4 broadcast capability reported correctly	TRUE	When an HbbTV application queries the xmlCapabilities a <broadcast>urn:dvb:broadcast:ird:audio:AC-4_channel_based_immersive_personalized</broadcast> element is not present in the document returned.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-CLEARKEY-0010	2	HTML5 static video element to display DASH HEVC and AC-4 content with EME CLEARKEY description	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object which media source is initialized with a static MPD defining a stream containing AC-4 audio and HEVC video content protected with the "Clear Key" System the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
org.hbbtv_AC4-COMPONENTS0010	1	AC-4 preferred-language audio component selection	TRUE	When the terminal's preferred user language is set to German and an HTMLVideoElement plays an MPD referencing one MP4_HEVC_HD_25_10 video AdaptationSet, one AC-4 audio AdaptationSet with its @lang attribute set to 'en', and one AC-4 audio AdaptationSet with its @lang attribute set to 'de', the terminal presents the video and the German language audio AdaptationSet without artefacts or glitches.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-COMPONENTS0020	1	AC-4 Role-based audio component selection	TRUE	When the terminal has enabled Audio Description and an HTMLVideoElement plays an MPD referencing one MP4_HEVC_HD_25_8 video AdaptationSet, one AC-4 audio AdaptationSet containing a Role element with its @schemeIdUri set to "urn:mpeg:dash:role:2011" and its @value set to "main", and one AC-4 audio AdaptationSet containing a Role element with its @schemeIdUri set to "urn:mpeg:dash:role:2011" and its @value set to "alternate" and with an Accessibility element with its @schemeIdUri set to "urn:tva:metadata:cs:AudioPurposeCS:2007" and its @value set to "1", the terminal presents the video and the audio description without artefacts or glitches.
org.hbbtv_AC4-DASH-PRESELECTION0010	1	Expose AC-4 DASH preselection to HTML5 AudioTrack in AudioTrackList	TRUE	A DASH MPD contains multiple Preselection and Adaptation Set elements. Preselection elements reference one Adaptation Set. The same Period contains an Adaptation Set that is not referenced by any of the Preselections. The AudioTrackList shall contain one HTML5 AudioTrack for each Preselection and one for the Adaptation Set that is not referenced by any of the Preselections. The order of AudioTracks in the AudioTrackList shall be the same as the order of the corresponding elements in the MPD.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DASH-PRESELECTION0020	1	AC-4 Preselection of preferred language	TRUE	When the terminal's preferred language is set to French and an HTMLVideoElement is played, referencing a static MPD containing AC-4 audio, and the MPD comprises a single audio AdaptationSet, a Preselection with Role@value set to "main" and @lang set to "en", a second Preselection with Role@value set to "dub" and @lang set to "fr", and a third Preselection with Role@value set to "dub" and @lang set to "de", then the terminal shall present the Preselection with @lang set to "fr".
org.hbbtv_AC4-DE0001	1	DE Query - dialogueEnhancementGainPreference reflects terminal preference setting	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio. The application sends a request to org.hbbtv.af.featureSettingsQuery with a request message where the "feature" field of the "params" object is set to "dialogueEnhancement" The response message has a value of dialogueEnhancementGainPreference field that is different from zero. Each response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DE0003	1	DE Query - dialogueEnhancementGain reflects active gain value	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio signaling a maximum limit (carried in the audio stream) of 12dB for dialogue enhancement processing. The application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a gain override of 12dB. The application sends a request to org.hbbtv.af.featureSettingsQuery with a request message where the "feature" field of the "params" object is set to "dialogueEnhancement" and checks that the response message's dialogueEnhancementGain field is 12. The application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a gain override of 0dB. The application sends a request to org.hbbtv.af.featureSettingsQuery with a request message where the "feature" field of the "params" object is set to "dialogueEnhancement" and checks that the response message's dialogueEnhancementGain field is 0. Each response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DE0005	1	DE Query - dialogueEnhancementLimit response reflects stream signaling	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio signaling a maximum limit (carried in the audio stream) of 12dB for dialogue enhancement processing. The application sends a request to org.hbbtv.af.featureSettingsQuery with a request message where the "feature" field of the "params" object is set to "dialogueEnhancement". The application checks that the response message carries the value zero in the min field and the value 12 in the max field of the dialogueEnhancementLimit field. Each response message shall conform with the respective schema.
org.hbbtv_AC4-DE0070	1	DE gain override - clamping the gain to allowed range	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio signaling a maximum limit (carried in the audio stream) of 12dB for dialogue enhancement processing. When the application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a dialogueEnhancementGain parameter value of +15, the dialogueEnhancementGain field of the response message has a value of +12. When the application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a dialogueEnhancementGain parameter value of -15, the dialogueEnhancementGain field of the response message has a value of 0. Each response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DE0080	1	DE gain override - resetting the gain to default	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio signaling a maximum limit (carried in the audio stream) of 12dB for dialogue enhancement processing. The application sends a org.hbbtv.af.featureSettingsQuery request message where the "feature" field of the "params" object is set to "dialogueEnhancement". The value of the dialogueEnhancementGainPreference field of the response message is recorded. If dialogueEnhancementGainPreference is 0, the application calls the org.hbbtv.af.dialogueEnhancementOverride API method with the dialogueEnhancementGain parameter set to +12; else it calls the org.hbbtv.af.dialogueEnhancementOverride API method with the dialogueEnhancementGain parameter set to 0. The application then calls the org.hbbtv.af.dialogueEnhancementOverride API method again with no dialogueEnhancementGain parameter provided and checks that the dialogueEnhancementGain field of the response message has a value that is equal to the previously recorded dialogueEnhancementGainPreference value. Each response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DE0100	1	DE gain override - setting the amount of processing (AC4 audio)	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio containing noise and DE data to boost the noise. The audio has alternating segments where in one segment, the DE maximum gain limit is set to 12 dB and is set to 3 dB in the other. The segments are approximately 0.5 seconds each in duration and repeat over 10 seconds or more. The application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a gain override of 12 dB. The tester verifies aurally that the signal changes volume approximately twice every second. Then, the application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a gain override of zero. The tester verifies aurally that the signal is now at a constant audio volume.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DE0110	1	DE gain override - reset of gain at application exit	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio signaling a maximum limit (carried in the audio stream) of 12dB for dialogue enhancement processing. The application calls the org.hbbtv.af.featureSettingsQuery API method and stores the dialogueEnhancementGain field of the response message in persistent storage. If the dialogueEnhancementGain is zero, the application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a gain override of 12dB; else, the application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a gain override of 0dB. The application exits. A second application is started. The application calls the org.hbbtv.af.featureSettingsQuery API method and checks that the dialogueEnhancementGain field is identical to the previously saved persistent storage. Each response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DE0120	1	DE gain override - immutable user preferences	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio signaling a maximum limit (carried in the audio stream) of 12dB for dialogue enhancement processing. The application calls the org.hbbtv.af.featureSettingsQuery API method and makes a copy of the dialogueEnhancementGainPreference field. If the dialogueEnhancementGainPreference is zero, the application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a gain override of 12dB; else, the application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a gain override of 0dB. The application calls the org.hbbtv.af.featureSettingsQuery API method and checks that the dialogueEnhancementGainPreference field is identical to the previously saved value. Each response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DE0130	1	DE gain override - override error code	TRUE	The application uses an HTML5 media element to play an A/V DASH stream with AC-4 audio. The application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a dialogueEnhancementGain parameter value of "NOTAVALUE" (that is, a string not a number). The application checks that the terminal replies with a valid JSON-RPC error response message with a code value of -24 and a message value of "Dialogue Enhancement override failed". The response message shall conform with the respective schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DE0150	1	DE change notification - DE enabled/disabled in terminal preference settings	TRUE	An application that is registered for JSON-RPC notifications from the terminal uses an HTML5 media element to play an A/V DASH stream with AC-4 audio signaling a maximum limit (carried in the audio stream) of 12dB for dialogue enhancement processing. The user enables the dialogue enhancement in the terminal settings. The application receives a dialogueEnhancementPrefChange notification with a value of dialogueEnhancementGainPreference field greater than 0. The user disables the dialogue enhancement in the terminal settings. The application receives a dialogueEnhancementPrefChange notification with value of dialogueEnhancementGainPreference field equal to 0. Each notification message shall conform with the notification__org.hbbtv.af.dialogueEnhancement.schema.json schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DE0160	1	DE change notification - gain change by an application	TRUE	An application that is registered for JSON-RPC notifications from the terminal uses an HTML5 media element to play an A/V DASH stream with AC-4 audio signaling a maximum limit (carried in the audio stream) of 12dB for dialogue enhancement processing. Application requests org.hbbtv.af.featureSettingsQuery to store the returned current values of dialogueEnhancementGain, dialogueEnhancementLimit min attribute, and dialogueEnhancementLimit max attribute. The application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a dialogueEnhancementGain value that is different than zero and the stored current setting value, and which is within the min and max limits stored for current stream. Application receives a dialogueEnhancementPrefChange notification with the value of dialogueEnhancementGain field equal to value in dialogueEnhancementOverride request. Then the application calls the org.hbbtv.af.dialogueEnhancementOverride API method with a dialogueEnhancementGain value equal to zero to disable DE. Application receives a dialogueEnhancementPrefChange notification with the value of dialogueEnhancementGain field equal to zero. Each notification message shall conform with the notification__org.hbbtv.af.dialogueEnhancement.schema.json schema.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-DE0170	1	DE change notification - DE limits change in played stream	TRUE	An application that is registered for JSON-RPC notifications from the terminal uses an HTML5 media element to play an audio-only DASH stream with AC-4 audio. The AC-4 audio stream signals a maximum limit (carried in the audio stream) of 12dB for dialogue enhancement processing, changing to 3dB after 3 seconds. When the limit changes during the playback, the terminal sends a notification to the application. The notification message carries the new maximum limit in the dialogueEnhancementLimit.max field. Each notification message shall conform with the notification__org.hbbtv.af.dialogueEnhancement.schema.json schema.
org.hbbtv_AC4-FRAMERATES0010	1	AC-4 frame rate transition native -> 25 fps at Period boundary transition: HEVC/AC-4 to HEVC/AC-4	TRUE	The terminal shall correctly decode and playback audio content from a stream defined by a static DASH MPD containing a period containing AC-4 media at the codec's native frame rate (48000/2048) fps followed by a period containing AC-4 media at a frame rate of 25 fps, both with HEVC video. Audio and video from both periods is played back in sync without glitches and the transition is successful.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-FRAMERATES0020	1	AC-4 frame rate transition 25fps -> 50fps at Period boundary transition: HEVC/AC-4 to HEVC/AC-4	TRUE	The terminal shall correctly decode and playback audio content from a stream defined by a static DASH MPD containing a period containing AC-4 media at the frame rate of 25 fps followed by a period containing AC-4 media at a frame rate of 50 fps, both with HEVC video. Audio and video from both periods is played back in sync without glitches and the transition is successful.
org.hbbtv_AC4-HTML5-ACTIONS-0010	2	Pause AC-4 audio HTML5 media element	TRUE	Pausing the playback of a HTML5 media element referencing AC-4 that is currently playing, shall cause the video to freeze and the audio to suspend.
org.hbbtv_AC4-HTML5-ACTIONS-0020	2	Playback of paused AC-4 audio HTML5 media element from next AC-4 sync sample	TRUE	When resuming the playback of a HTML5 media element referencing AC-4 that has previously been paused, the terminal shall start audio playback at or before the AC-4 sync sample following the pause position.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-MDEVSYNC1780	1	Master Terminal: Control Timestamp within minimum accuracy requirement 10ms in terms of a PTS synchronization timeline when master media is a broadcast MPEG TS containing AC-4/HEVC content	TRUE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing a video/broadcast object presenting an MPEG-TS broadcast containing containing HEVC_HD_25_8 video and AC-4 audio as the master media. The application has enabled inter-device synchronization, and a connection has been established to the CSS-TS endpoint of the master terminal with which the initial setup-data message sent to the master terminal requested a PTS timeline and the master terminal has sent back a Control Timestamp indicating that the timeline is available. When the timing of presentation indicated by the value of the Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-MSTRSYNC0010	1	Synchronised presentation of broadcast MP2TS HEVC (TEMI) video (master) with DASH AC-4 (DASH-PR) audio	TRUE	When a MediaSynchroniser is initialised with a video/broadcast object in the presenting state with broadcast MPEG 2 TS HEVC video, a TEMI timeline that ticks with 50 ticks per second is selected and located in the adaptation field of TS packets carrying the video elementary stream. Once the DUT has started to present the broadcast video, a call is made to addMediaObject() with an HTML5 Video object referencing DASH AC-4 audio as its 'mediaObject', a valid DASH-PR 'timelineSpecification' string that ticks with 50 ticks per second and no correlation timestamp or tolerance values specified. When the synchronised presentation is started, and again 2 minutes later, the audio and video are observed to be synchronised to within a margin of plus 50ms to minus 35ms for a period of 15 seconds.
org.hbbtv_AC4-NOT-SUPPORTED	1	Play an alternative Representation if AC-4 is not supported.	TRUE	The DASH MPD contains in the same Period an Adaptation Set signalling profile "urn:dvb:dash:profile:dvb-dash:2017" with AC-4 audio and Role@value set to "main", and a second Adaptation Set signalling profile "urn:dvb:dash:profile:dvb-dash:2014" with HE-AAC audio and Role@value not set to "main". A terminal that doesn't support AC-4 shall playback the HE-AAC audio Representation.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-PERIOD-TRANS0010	1	Period boundary transitions: HEVC/AC-4 to HEVC/AAC	TRUE	The terminal shall correctly decode and playback audio content from a stream defined by a static DASH MPD containing a period containing AC-4 media followed by a period containing AAC media, both with HEVC video. Audio and video from both periods is played back in its entirety without artifacts or glitches and the transition is successful.
org.hbbtv_AC4-PERIOD-TRANS0020	1	Period boundary transitions: HEVC/AAC to HEVC/AC-4	TRUE	The terminal shall correctly decode and playback audio content from a stream defined by a static DASH MPD containing a period containing AAC media followed by a period containing AC-4 media, both with HEVC video. Audio and video from both periods is played back in its entirety without artifacts or glitches and the transition is successful.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-PERIOD-TRANS0030	1	Period boundary transitions: AC-4 continuous	TRUE	The terminal shall correctly decode and play audio content from a stream defined by a static DASH MPD containing two Periods, each containing an AC-4 audio AdaptationSet with the same AdaptationSet@id value, each containing an HEVC video AdaptationSet with a second AdaptationSet@id value, and each of the AdaptationSets in the second Period carrying a SupplementalProperty descriptor with @schemeIdUri set to urn:dvb:dash:period_continuity:2014 and @value matching the Period@id attribute of the first Period, and the Periods meeting the signalling and content constraints for period continuity. Audio and video is played back seamlessly through the period boundary without artifacts or glitches.
org.hbbtv_AC4-PLAYBACK0002	1	Playback of 2.0 Channel AC-4 audio only HbbTV ISOBMFF Live profile in a HTML5 video object	TRUE	The terminal shall correctly decode and present 2.0 Channel AC-4 audio from an audio only DASH MPD with HbbTV ISOBMFF Live profile when played in a HTML5 video object.
org.hbbtv_AC4-SEEKACCURACY0010	1	Seek to start of video media segment in live period and playback in alignment with AC-4 audio	TRUE	An application starts DASH content playback with AC-4 audio and then seeks to a position that is in a live period and is identifiable from the MPD as being the start of a media segment. The seek shall be frame accurate. The position reported by the media player API reports the true media position after the seek.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-SEEKACCURACY0030	1	seek to other positions in AC-4 DASH content - live period - nearest position before target	TRUE	An application starts DASH content playback with AC-4 audio and then seeks to a position that is in a live Period but not identifiable from the MPD as being the start of a media segment and where the nearest position that is identifiable as random access point is before the target position but after the current position. The seek shall be either frame accurate or the seek shall navigate the media position to that nearest position. The position reported by the media player API reports the true media position after the seek.
org.hbbtv_AC4-WEBAUDIO0010	2	PCM audio from memory played in combination with broadcasted AC-4	TRUE	A broadcast-related HbbTV application that is connected to the broadcast of the current channel which includes HEVC video and AC4 audio. The application loads 16-bit PCM audio via XMLHttpRequest and then plays that through the Web Audio API. The PCM audio is heard and the broadcast video playback is not interrupted. The audio from the Web Audio API shall be either mixed with AC-4 broadcast audio or temporarily replace it, i.e after the audio from the Web Audio Api ends, the AC-4 broadcast audio plays or continues playing.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AC4-WEBAUDIO0020	2	MP3 Audio from memory mixed with broadcasted AC-4	TRUE	A broadcast-related HbbTV application that is connected to the broadcast of the current channel which includes HEVC video and AC4 audio. The application loads MP3 audio via XMLHttpRequest, decodes it via AudioContext.decodeAudioData and then plays that through the Web Audio API. The MP3 audio is heard and the broadcast video playback is not interrupted. The audio shall be either mixed with AC-4 broadcast audio or temporarily replace it, i.e after the audio from the Web Audio Api ends, the AC-4 broadcast audio plays or continues playing.
org.hbbtv_ACCESSIBILITY0010	1	audio description enabled	TRUE	When the user has enabled audio description streams, the audioDescriptionEnabled property of the Configuration class returns true.
org.hbbtv_ACCESSIBILITY0020	1	audio description disabled	TRUE	When the user has disabled audio description streams, the audioDescriptionEnabled property of the Configuration class returns false.
org.hbbtv_ADB_AIT02	1	server_field query string in AIT request (HDMI)	TRUE	An audio watermark with a server_code in the VP1 payload is present. When a change in the server code of the audio watermark appears, then: The terminal retrieves the AIT from the AIT server with server_field query equal to the most recent value from the audio watermark payload, the encoding of the server_field query is hexadecimal numbers without leading zeros and using lower case letters.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_AIT03	1	interval_field query string in AIT request (HDMI)	TRUE	An audio watermark with a query flag value in the VP1 payload is present. When a change of the query flag value appears in the audio watermark, then: The terminal retrieves the AIT from the AIT server with interval_field query equal to the most recent value from the audio watermark payload, the encoding of the interval_field query is hexadecimal numbers without leading zeros and using lower case letters.
org.hbbtv_ADB_AIT04	1	queryFlag not matching to VP1 query_flag (HDMI)	TRUE	An AIT related to a server code S1 is not cached on the terminal. When an ATSC3.0 watermark with the server code S1 appears in an audio, then an AIT discovery and retrieval is performed. When in the Discovered AIT a queryFlag element is present, but does not match to the value of query_flag detected from the watermark, and no 'loss of watermark' occurs for at least 5 minutes, then: The HbbTV AUTOSTART application from the Discovered AIT is not launched and the terminal does not retrieve the AIT again for the next 5 minutes.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CAPABILITIES01	1	applicationDiscovery urn:hbbtv:discovery:atsc3audio (HDMI)	TRUE	An HbbTV application discovered using audio watermark is launched. When an application controlled by watermark reads applicationDiscovery element from the xmlCapabilities property of the application/oipfCapabilities object, then it receives 'urn:hbbtv:discovery:atsc3audio'. applicationDiscovery element position in the xmlCapabilities tree is from the root: profilelist/ui_profile/ext.
org.hbbtv_ADB_CAPABILITIES03	1	HDMI monitoringWhileBroadband=true	TRUE	An HbbTV application discovered using audio watermark is launched. When device supports monitoring HDMI delivered content for watermarks while broadband delivered video and audio are being presented, then xmlCapabilities property of the application/oipfCapabilities object has 'hdmi' element with monitoringWhileBroadband attribute equal to 'true'. 'hdmi' element position in the xmlCapabilities tree is from the root: profilelist/ui_profile/ext.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CAPABILITIES04	1	HDMI monitoringWhileBroadband=false	TRUE	An HbbTV application discovered using audio watermark is launched. When device does not support monitoring HDMI delivered content for watermarks while broadband delivered video and audio are being presented, then xmlCapabilities property of the application/oipfCapabilities object has 'hdmi' element with monitoringWhileBroadband attribute equal to 'false'. 'hdmi' element position in the xmlCapabilities tree is from the root: profilelist/ui_profile/ext.
org.hbbtv_ADB_CAPABILITIES05	1	HDMI scaling=false	TRUE	An HbbTV application discovered using audio watermark is launched. When device does not support scaling HDMI received content to fit into a video/broadcast object, then xmlCapabilities property of the application/oipfCapabilities object has 'hdmi' element with 'scaling' attribute equal to 'false'. 'hdmi' element position in the xmlCapabilities tree is from the root: profilelist/ui_profile/ext.
org.hbbtv_ADB_CAPABILITIES06	1	HDMI scaling=true	TRUE	An HbbTV application discovered using audio watermark is launched. When device supports scaling HDMI received content to fit into a video/broadcast object, then xmlCapabilities property of the application/oipfCapabilities object has 'hdmi' element with 'scaling' attribute equal to 'true'. 'hdmi' element position in the xmlCapabilities tree is from the root: profilelist/ui_profile/ext.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CAPABILITIES07	1	HDMI broadbandOverlay=true	TRUE	An HbbTV application discovered using audio watermark is launched. When device supports overlaying video delivered via HDMI by broadband delivered video, then xmlCapabilities property of the application/oipfCapabilities object has 'hdmi' element with 'broadbandOverlay' attribute equal to 'true'. 'hdmi' element position in the xmlCapabilities tree is from the root: profilelist/ui_profile/ext.
org.hbbtv_ADB_CAPABILITIES08	1	HDMI broadbandOverlay=false	TRUE	An HbbTV application discovered using audio watermark is launched. When device does not support overlaying video delivered via HDMI by broadband delivered video, then xmlCapabilities property of the application/oipfCapabilities object has 'hdmi' element with 'broadbandOverlay' attribute equal to 'false'. 'hdmi' element position in the xmlCapabilities tree is from the root: profilelist/ui_profile/ext.
org.hbbtv_ADB_CAPABILITIES10	1	Broadband video overlays HDMI	TRUE	An HbbTV application discovered using audio watermark is launched. An HTML5 video object size is: width:'320px', height:'180px', an HDMI video is played in the video logical plane. When the HTML5 video object starts to present a DASH HD content, then the HDMI video continues to be displayed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CAPABILITIES23	1	HDMI monitoringAWMWhilePlayingBroadband	TRUE	The device correctly reports ability to monitoring HDMI delivered content for audio watermarks while broadband delivered video and audio are being presented. When device supports monitoring, then xmlCapabilities property of the application/oipfCapabilities object has 'hdmi' element with monitoringAWMWhilePlayingBroadband attribute equal to 'true'. When device does not support it, then 'hdmi' element has monitoringAWMWhilePlayingBroadband attribute equal to 'false'. 'hdmi' element position in the xmlCapabilities tree is from the root: profilelist/ui_profile/ext.
org.hbbtv_ADB_CAPABILITIES34	1	HDMI audio_output_interface 'local', speakers integrated into the TV.	TRUE	When the terminal audio output is via speakers integrated into the TV, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_output_interface attribute equal to 'local'.
org.hbbtv_ADB_CAPABILITIES36	1	HDMI audio_output_interface 'hdmi-arc-sac', ARC	TRUE	When the terminal audio output is using HDMI Audio Return Channel and HDMI System Audio Control is supported to switch the audio output device to use the audio from the TV and back to use audio from the STB, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_output_interface attribute equal to 'hdmi-arc-sac'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CAPABILITIES37	1	HDMI audio_output_interface 'hdmi-arc-sac', eARC	TRUE	When the terminal audio output is using HDMI Enhanced Audio Return Channel and HDMI System Audio Control is supported to switch the audio output device to use the audio from the TV and back to use audio from the STB, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_output_interface attribute equal to 'hdmi-arc-sac'.
org.hbbtv_ADB_CAPABILITIES38	1	HDMI audio_output_interface 'disabled', local audio disabled	TRUE	When the terminal has local audio disabled using a setting in the terminal UI, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_output_interface attribute equal to 'disabled'.
org.hbbtv_ADB_CAPABILITIES39	1	HDMI audio_output_interface 'disabled', mute	TRUE	When the audio is muted (by pressing MUTE button or similar functionality), then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_output_interface attribute equal to 'disabled'.
org.hbbtv_ADB_CAPABILITIES40	1	HDMI audio_output_interface 'disabled', audio volume zero	TRUE	When the audio volume is set to zero, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_output_interface attribute equal to 'disabled'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CAPABILITIES41	1	HDMI audio_output_interface 'other'	TRUE	When the connected audio system does not give the information if the audio is controlled from TV, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_output_interface attribute equal to 'other'.
org.hbbtv_ADB_CAPABILITIES42	1	HDMI audio format is pcm.	TRUE	When audio format on the HDMI interface is pcm, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with hdmi_audio_pcm attribute equal to true. Terminal is using HDMI (e)ARC.
org.hbbtv_ADB_CAPABILITIES43	1	HDMI audio format is bitstream.	TRUE	When audio format on the HDMI interface is bitstream, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with hdmi_audio_pcm attribute equal to false. Terminal is using HDMI (e)ARC.
org.hbbtv_ADB_CAPABILITIES44	1	audio_system_between_TV_and_STB set to true.	TRUE	When HDMI audio output device is between TV and STB, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_system_between_TV_and_STB attribute equal to true. Terminal is using HDMI (e)ARC.
org.hbbtv_ADB_CAPABILITIES45	1	audio_system_between_TV_and_STB set to false.	TRUE	When HDMI audio output device is not between TV and STB, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_system_between_TV_and_STB attribute equal to false. Terminal is using HDMI (e)ARC.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CAPABILITIES46	1	XMLCapabilities - "urn:hbbtv:ta-hdmi:profile*" profile signalling.	TRUE	The XMLCapabilities property of the application/oipfCapabilities embedded object contains a 'ta' element with child element 'profile' including appropriate TA profile. If "urn:hbbtv:ta-hdmi:profile:2020:3" is supported, then the 'ta' element includes "urn:hbbtv:ta-hdmi:profile:2020:3", "urn:hbbtv:ta-hdmi:profile:2020:2", and "urn:hbbtv:ta-hdmi:profile:2020:1". If "urn:hbbtv:ta-hdmi:profile:2020:2" is supported, then the 'ta' element includes "urn:hbbtv:ta-hdmi:profile:2020:2" and "urn:hbbtv:ta-hdmi:profile:2020:1" but does not include "urn:hbbtv:ta-hdmi:profile:2020:3". If "urn:hbbtv:ta-hdmi:profile:2020:1" is supported, then the 'ta' element includes "urn:hbbtv:ta-hdmi:profile:2020:1" but does not include "urn:hbbtv:ta-hdmi:profile:2020:3" and "urn:hbbtv:ta-hdmi:profile:2020:2". If none of "urn:hbbtv:ta-hdmi:profile:2020" is supported, then the 'ta' element does not include any "urn:hbbtv:ta-hdmi:profile:2020:*" profile.
org.hbbtv_ADB_CAPABILITIES52	1	HDMI audio_output_interface 'local', point to point connection.	TRUE	When the terminal audio output is via speakers directly connected to the TV via a point to point connection, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_output_interface attribute equal to 'local'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CAPABILITIES53	1	HDMI audio_output_interface 'local', headphone socket.	TRUE	When the terminal audio output is via headphone socket on the TV, then xmlCapabilities property of the application/oipfCapabilities object has audio_system element with audio_output_interface attribute equal to 'local'.
org.hbbtv_ADB_CHANNEL01	1	Update Discovered AIT, ID_DVB_T2, TYPE_TV, ChannelConfig.channelList (HDMI)	TRUE	An HbbTV application discovered using watermark is launched and activated. The AIT update is triggered by loss and next appearance of audio watermark, the server_field remains unchanged. When the updated AIT carries 'channel' element with changed 'tsid', 'sid', 'name' and 'majorChannel', then - ChannelChangeSucceeded event is generated, - ChannelConfig.channelList collection contains only one channel object with properties matching to the updated AIT. 'channelType' in Discovered AIT is 'TYPE_TV', 'idType' is 'ID_DVB_T2'.
org.hbbtv_ADB_CHANNEL02	1	Update Discovered AIT, ID_DVB_S2, TYPE_RADIO, ChannelConfig.currentChannel (HDMI)	TRUE	An HbbTV application discovered using watermark is launched and activated. When an AIT discovered using audio watermark is updated due to server_field change, and 'channel' element in the new AIT version has changed 'nid' 'onid', 'tsid', 'sid', 'name', 'majorChannel' and 'channelType' then, - onChannelChangeSucceeded event is generated, - ChannelConfig.currentChannel object contains properties matching to the updated AIT. Discovered AIT have channelType 'TYPE_RADIO', idType is 'ID_DVB_S2'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CHANNEL03	1	Application start, channel, ID_DVB_C, TYPE_OTHER, ApplicationPrivateData.currentChannel (HDMI)	TRUE	An HbbTV application discovered using watermark is launched. When a Discovered AIT has a 'channel' element with channelType equal to 'TYPE_OTHER' and idType equal to 'ID_DVB_C' then ApplicationPrivateData.currentChannel object contains properties matching to the AIT.
org.hbbtv_ADB_CHANNEL04	1	ccid, dsd and terminalChannel (HDMI)	TRUE	An HbbTV application discovered using watermark is launched. video/broadcast object is in the 'presenting' state. The currentChannel property of video/broadcast have readonly properties set: - string ccid with prefix 'ccid:', - string dsd, - Number terminalChannel.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CHANNEL06	1	Change in audio component set triggered by state change (HDMI)	TRUE	An HbbTV application discovered using watermark is launched. A Discovered AIT carries single audioComponent. The state is "Audio watermark detected only". Next the AIT on the server is updated and carries two audioComponent elements, only one audioComponent has serverField property matching to the server_field in VP1 payload in watermark. When a discontinuity in interval code happens and the state changes to 'No watermark detected' and next to "Audio watermark detected only" then: - AIT update is requested; - at least one onSelectedComponentChanged event is generated with call argument = 1; After that, when last onSelectedComponentChanged event is generated then, - call to getComponents(0) returns an empty collection; - call to getComponents(1) returns collection with two components with properties matching to the audioComponent elements from the updated AIT; - call to getCurrentActiveComponents(1) returns a collection with one audio component, with properties matching to the audioComponent with the serverField equal to the server_field in the VP1 payload in watermark, - call to getCurrentActiveComponents(0) returns the empty collection.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CHANNEL09	1	selectComponent(AVAudioComponent) (HDMI)	TRUE	A Discovered AIT have 2 audioComponent elements. An HbbTV application discovered using watermark is launched. When application calls to selectComponent(AVAudioComponent) of video/broadcast with AVAudioComponent matching to not active component, then - SelectedComponentChanged event is not generated and - return value of getCurrentActiveComponents(1) remains unchanged.
org.hbbtv_ADB_CHANNEL10	1	unselectComponent(COMPONENT_TYPE_AUDIO) and selectComponent(COMPONENT_TYPE_AUDIO) (HDMI)	TRUE	An HbbTV application discovered using watermark is launched. After call to unselectComponent(1) in both 'Audio watermark detected only' and 'No watermark detected' states: - SelectedComponentChanged event is not generated and - audio presentation is not stopped. After that when call to selectComponent(1) of video/broadcast is done SelectedComponentChanged event is not generated.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CHANNEL11	1	selectComponent(AVVideoComponent) (HDMI)	TRUE	An HbbTV application discovered using watermark is launched. A Discovered AIT has 2 videoComponent elements, getCurrentActiveComponents(0) returns collection with ActiveComponent. After call to selectComponent(AVVideoComponent) of video/broadcast with AVVideoComponent not being active component: - SelectedComponentChanged event is not generated, - return value of getCurrentActiveComponents(0) remains unchanged. selectComponent is called in each state: - 'Audio watermark detected only', - 'Audio and unverified video watermarks detected only', - 'Audio and verified video watermarks detected', - 'Verified video watermark detected only'.
org.hbbtv_ADB_CHANNEL12	1	unselectComponent(COMPONENT_TYPE_VIDEO), selectComponent(COMPONENT_TYPE_VIDEO) (HDMI)	TRUE	An HbbTV application discovered using watermark is launched. When unselectComponent(0) of video/broadcast object is called: - SelectedComponentChanged event is not generated, - video is rendered, - return value of getCurrentActiveComponents remains unchanged. After that when selectComponent(0) is called SelectedComponentChanged event is not generated. Calls to unselectComponent and selectComponent are done in: - 'Audio watermark detected only', - 'Audio and unverified video watermarks detected only', - 'Audio and verified video watermarks detected', - 'Verified video watermark detected only'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CHANNEL13	1	prevChannel failure (HDMI)	TRUE	An HbbTV application discovered using watermark is launched. Call to prevChannel method of video/broadcast fails and onChannelChangeError event is generated with errorState argument equal to 11.
org.hbbtv_ADB_CHANNEL14	1	nextChannel failure (HDMI)	TRUE	An HbbTV application discovered using watermark is launched. Call to nextChannel method of video/broadcast fails and onChannelChangeError event is generated with context info errorState equal to 11.
org.hbbtv_ADB_CHANNEL15	1	stopped state of video/broadcast and audio watermark detection	TRUE	An HbbTV application discovered using watermark is launched. Call to 'bindToCurrentChannel' method transits video/broadcast object through the Connecting state to the Presenting state, PlayStateChange event is generated with matching 'state' context info. When after that 'stop' is called then: - PlayStateChange event is generated, - the video/broadcast object transits to Stopped state, - audio and video are not presented. Then a HTML5 video is played. After that, when audio watermark server code is changed, WatermarkStateChangedEvent is generated, new AIT is retrieved, currently running application is killed and autostart application from new AIT is run.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CHANNEL17	1	release method of video/broadcast and watermarking (HDMI)	TRUE	An HbbTV application discovered using watermark is launched. Video/broadcast object is in 'presenting' state, after call to release() method broadcast video and audio presentation continues, the playState property is 2 ('presenting'), set of components does not change.
org.hbbtv_ADB_CHANNEL20	1	HDMI, video/broadcast scaling supported	TRUE	An HbbTV application discovered using watermark is launched. Video/Broadcast object is in the 'presenting' state, the 'fullscreen' property is equal to 'true'. When call to setFullScreen(false)' is made then: - 'fullscreen' property is equal to false, - FullScreenChange event is generated, - the video is scaled to the Video/Broadcast object area.
org.hbbtv_ADB_CHANNEL21	1	HDMI, video/broadcast scaling not supported	TRUE	An HbbTV application discovered using watermark is launched. Video/Broadcast object is in 'presenting' state, when application reads 'fullscreen' property, then it receives 'true'. After that, when call to setFullScreen(false) is made then: - fullscreen property is equal to true, - FullScreenChange event is not generated, - the video is not scaled to the Video/Broadcast object area, - both 'width' and 'height' properties are read only.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CHANNEL22	1	unselectComponent(AVAudioComponent) (HDMI)	TRUE	A Discovered AIT have two audioComponent elements. An HbbTV application discovered using watermark is launched. The first audioComponent have - serverField matching to server_field of VP1 payload, and - lang different than preferredAudioLanguage. The second audioComponent have - serverField not matching to server_field of VP1 payload, and - lang equal to preferredAudioLanguage. getCurrentActiveComponents(1) returns collection with single ActiveAudioComponent. The ActiveAudioComponent 'lang' property does not match to the preferredAudioLanguage. When application calls to unselectComponent(ActiveAudioComponent) of video/broadcast, then - SelectedComponentChanged event is not generated and - return value of getCurrentActiveComponents(1) remains unchanged, - presentation of both audio and video is not stopped or frozen.
org.hbbtv_ADB_CHANNEL23	1	unselectComponent(AVVideoComponent) (HDMI)	TRUE	An HbbTV application discovered using watermark is launched. When application calls to unselectComponent(ActiveVideoComponent) of video/broadcast, then - SelectedComponentChanged event is not generated and - return value of getCurrentActiveComponents(1) remains unchanged, - presentation of both audio and video is not stopped or frozen.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_CHANNEL35	1	Monitoring audio watermark while playing broadband.	TRUE	An HbbTV application discovered using audio watermark is launched and activated. The watermarkState is 'wm-audio-only'. The application changes V/B object state to 'stopped', and both audio and video from HDMI are not presented. Then the application plays AVC/HEAAC mp4 file using HTML5 video element. When monitoringAWMWhilePlayingBroadband is true and audio watermark disappears, then WatermarkStateChangedEvent is generated and the watermarkState is equal to 'wm-none'.
org.hbbtv_ADB_DNS01	1	Server field cache - caching single entry (HDMI)	TRUE	A terminal does not have any server_field cached e.g. due to factory reset. An audio watermark with server_field is received by the terminal. After that the terminal is switched to 'stand-by' state for 5 minutes next powered off. When the watermark segments are not present in audio and the terminal is powered on then DNS request to <server_field>.a336.watermark.hbbtvdns.org is performed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_DNS02	1	Server field cache, adding up to 200 server_field (HDMI)	TRUE	A terminal has single server_field cached. An audio watermark changes 200 times not rapidly, each time VP1 payload carries server_field values different than previous ones. After that the terminal is switched to 'stand-by' state for 5 minutes next powered off. When the watermark segments are not present in audio and the terminal is powered on, at least 200 discoveries of broadcasters AIT servers in alphabetical order by HbbTV DNS FQDN are performed. After that, when audio watermark carries server_field different than previous ones, associated AIT is discovered and an HbbTV application is launched.
org.hbbtv_ADB_DNS03	1	DNS resource records cache clearing after power cycle (HDMI)	TRUE	A terminal obtains AIT related to server_field in audio watermark. After that the terminal is powered off. When the terminal is powered on, then a DNS request to <server_field>.a336.watermark.hbbtvdns.org is performed.
org.hbbtv_ADB_DNS04	1	DNS resource records caching (HDMI)	TRUE	A terminal cached 200 server fields. Next, the terminal is powered off and on. Next, in 2 minutes there is no watermark in audio. After that, an audio watermark is introduced and then changed 200 times (not rapidly), each time VP1 payload carries a server_field value already cached before power-on, and each time the server_field is different from the previous ones, no DNS requests are made prior to the AIT retrieval.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_DNS05	1	name error caching 24 hours (HDMI)	TRUE	The DNS service associated with a server field is configured to return a name error (NE). The server field is cached. The terminal during power up makes DNS resolution, and the name error is returned. After that, when during next 24 hours the watermark with the server_field related to DNS with name error appears and disappears not rapidly, then no DNS request for the AIT is performed.
org.hbbtv_ADB_DNS06	1	Refreshing DNS information, TTL (HDMI)	TRUE	A DNS service associated with server field S1 returns DNS record with TTL 300 (5 min). The server field is cached by the terminal. After terminal power-up, the request to the DNS service is performed, and DNS record with TTL 300 is retrieved by the terminal. During 10 minutes the watermark is not present in audio. Next a watermark with server_field S1 appears in audio. During next 15 minutes the query_flag changes in the watermark with 1 minute interval triggering AIT discovery. During 25 minutes after power on, at least 4 requests to the DNS service associated with server field S1 is performed.
org.hbbtv_ADB_LIFECYCLE01	1	HbbTV application launching triggered by appearance of audio watermark (HDMI)	TRUE	A broadcast signal does not carry watermarks, HbbTV application is not buffered nor launched. Both AIT and DNS FQDN is not cached by the terminal. When an audio watermark appears, an AIT is discovered and next an HbbTV application is launched.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_LIFECYCLE02	1	HbbTV application launching after power on (HDMI)	TRUE	Audio watermark segment with information allowing XML AIT discovery is present. After terminal power on, the terminal obtains watermark information to discover an XML AIT and next to launch an HbbTV application.
org.hbbtv_ADB_LIFECYCLE03	1	Change in server code and discontinuity in interval code, new application launching (HDMI)	TRUE	Audio watermark segment is present and an HbbTV application obtained using the audio watermark information is running. When discontinuity and change in server_code is detected in the audio watermark segment, terminal starts discovery process and after successful discovery and AIT retrieval, launches application indicated by the new value of server_code.
org.hbbtv_ADB_LIFECYCLE06	1	createApplication with 'dvb:' URL (HDMI)	TRUE	An ATSC3.0 watermark appears in an audio triggering an AIT discovery. The Discovered AIT contains two applications (A1 and A2), A1 has control code of AUTOSTART and A2 has control code of PRESENT. When application A1 calls to createApplication(URL) with url "dvb:\\current.ait\appId.orgId", with appId and orgId referring to A2, then application A2 is launched as broadcast related.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_LIFECYCLE10	1	Audio watermark detected(200) (HDMI)	TRUE	An HbbTV application discovered using watermark is launched and activated, the watermark state is 'Audio watermark detected only', the video/broadcast object is in the Presenting state. When terminal detects the end of an Audio Watermark Segment (complete loss of watermark) then: WatermarkStateChangedEvent is generated with 'oldState' equal to 'wm-audio-only' and 'newState' equal to 'wm-none', watermarkState property of application/oipfApplicationManager is equal to 'wm-none', the video/broadcast object transits to the Connecting state. After that, when terminal process the start of an Audio Watermark Segment referring to the same service then: WatermarkStateChangedEvent is generated with 'oldState' equal to 'wm-none' and 'newState' equal to 'wm-audio-only', watermarkState property of application/oipfApplicationManager is equal to 'wm-audio-only', the AIT retrieval is performed, the obtained AIT carries the running application, Finally, the video/broadcast object transits to the Presenting state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_LIFECYCLE20	1	Application.lifecycleControl and watermarking (HDMI)	TRUE	When a broadcast related application controlled by watermark reads Application.lifecycleControl then "xmlait-atsc3" is returned. After call to Application.createApplication(URL), with URL referring to XML AIT, a Broadcast-Independent application is launched. When Broadcast-Independent application reads Application.lifecycleControl then empty string is returned.
org.hbbtv_ADB_LIFECYCLE21	1	HbbTV application launching triggered by appearance of audio watermark, AIT not valid (HDMI)	TRUE	An ATSC3.0 watermark is present in an audio, an HbbTV application is not launched because a watermark-related AIT have a single audioComponent with the serverField element different than the server_code in VP1 payload. After that, the watermark is removed from the audio and the new version of the AIT with serverField element matching to the server_code appears. When after that the watermark appears again with the same server_code, then the new version of the AIT is discovered and retrieved, the HbbTV application is launched.
org.hbbtv_ADB_LIFECYCLE23	1	Watermarking and lifecycle of application which transits to broadcast independent (HDMI)	TRUE	A broadcast-related HbbTV application discovered using watermark stores current_channel, next it calls to setChannel(null). When a watermark server_field changes, the application is not killed. When after that the application calls to setChannel(current_channel), then it is killed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_LIFECYCLE24	1	Watermarking and lifecycle of newly created broadcast independent application (HDMI)	TRUE	An audio watermark is present in a current channel. A broadcast-related HbbTV application discovered using the watermark is launched. The broadcast-related application creates a Broadcast Independent(BI) application. When server_field changes in the watermark, the BI application is not killed. When after that, the BI application calls to setChannel(watermark_channel), then BI application is stopped. watermark_channel argument refers to channel with audio watermark.
org.hbbtv_ADB_LIFECYCLE25	1	HbbTV application launching triggered by appearance of audio watermark in HDMI, audio format - AC3	TRUE	A broadcast signal does not carry watermarks, HbbTV application is not buffered nor launched. Both AIT and DNS FQDN is not cached by the terminal. The format of audio from HDMI is AC3. When an audio watermark appears, an AIT is discovered and next an HbbTV application is launched.
org.hbbtv_ADB_LIFECYCLE30	1	Launched application, AIT retrieval failure.	TRUE	An ATSC-3 audio watermark is present in the audio delivered via HDMI input, and an AUTOSTART application discovered via watermark is launched and not activated. The watermark state is audio watermark detected only. When the discontinuity in interval code is detected, then the terminal attempts to acquire AIT by sending a request. After receiving 410 (Gone) response from the server, the application is stopped.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_LIFECYCLE51	1	AIT monitoring during broadband content presentation - loss of audio watermark.	TRUE	An ATSC-3 audio watermark is present in the audio delivered via external input. An AUTOSTART HbbTV application discovered using audio watermark is launched but not activated and is presenting broadband MPEG-DASH AVC-HEAAC-EBU-TTD content (dynamic MPD). If: the terminal supports monitoring of audio watermarks while broadband delivered video and audio are being presented and the audio watermark disappears then: the application is stopped and after that both the audio and the video from HDMI input are presented.
org.hbbtv_ADB_LIFECYCLE55	1	Watermark monitoring after audio mute.	TRUE	An ATSC-3 audio watermark is present in the audio delivered via HDMI input. The watermark state is audio watermark detected only. When audio is muted on the terminal (not on the STB), then: no WatermarkStateChange event is generated, the watermark state is audio watermark detected only, the timeupdate events are generated by the MediaSynchroniser, the query_flag change triggers AIT discovery.
org.hbbtv_ADB_LIFECYCLE64	1	broadcast-related application exit, video/broadcast object in the unrealized state.	TRUE	An ATSC-3 audio watermark is present in the audio delivered via external input. An AUTOSTART HbbTV application discovered using audio watermark is not activated, shown and presenting only square graphics (png format) with size 128px. The video/broadcast object is in the unrealized state and hidden. When the audio watermark disappears then both the video and audio from broadcast are presented without interruption and artifacts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_LIFECYCLE65	1	broadcast-related application exit, video/broadcast object in the presenting state.	TRUE	An ATSC-3 audio watermark is present in the audio delivered via external input. An AUTOSTART HbbTV application discovered using audio watermark is shown and has video/broadcast object in the presenting state and fullscreen flag set to true. When the audio watermark disappears, then the presentation of both the video and audio from broadcast continues.
org.hbbtv_ADB_LIFECYCLE66	1	broadcast-related application exit, video/broadcast object in the stopped state.	TRUE	An ATSC-3 audio watermark is present in the audio delivered via external input. An AUTOSTART HbbTV application discovered using audio watermark is: activated, shown, has Video/Broadcast object in the stopped state and is presenting video and audio using an HTML5 video element. A discovered AIT changes, and the running application is signalled with code KILLED and there is no AUTOSTART HbbTV application. When the application calls to destroyApplication() then both video and audio from broadcast are restored and presented without interruption and artifacts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_LOCALSYSTEM01	1	audioVolumeSetOnTerminal, update value.	TRUE	An HDMI with audio watermark is selected, and then an HbbTV application is discovered and launched. When the audio volume on the terminal is changed, an audioVolumeSetOnTerminal property of the localSystem in "application/oipfConfiguration" embedded object is updated and contains readonly Date object, referring to the date and time when the audio volume was changed. After one minute later, the audio volume is changed again, the audioVolumeSetOnTerminal is updated and carry the time of last audio volume modification. Attempt to change the audioVolumeSetOnTerminal value fails.
org.hbbtv_ADB_LOCALSYSTEM02	1	audioVolumeSetOnTerminal, other HDMI inputs selected and audio volume changed.	TRUE	An HDMI with audio watermark is selected, and then an HbbTV application is discovered and launched. The volume is set on the terminal, an audioVolumeSetOnTerminal property of the localSystem in "application/oipfConfiguration" embedded object has the Date D1. After that, the other HDMI input is selected (without watermark) and then audio volume is changed again. After that when HDMI with audio watermark is selected again, then the audioVolumeSetOnTerminal refers to the D1 Date.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_LOCALSYSTEM03	1	audioVolumeSetOnTerminal, non-HDMI service selected and audio volume changed.	TRUE	An HDMI with audio watermark is selected, and then an HbbTV application is discovered and launched. The volume is set on the terminal, an audioVolumeSetOnTerminal property of the localSystem in "application/oipfConfiguration" embedded object has the Date D1. After that, the audio volume is set while non-HDMI service is selected. After that, when HDMI with audio watermark is selected again, then the audioVolumeSetOnTerminal refers to the D1 Date.
org.hbbtv_ADB_LOCALSYSTEM04	1	audioVolumeSetOnTerminal, across power cycles.	TRUE	An HDMI with audio watermark is selected, and then an HbbTV application is discovered and launched. The volume is set on the terminal, an audioVolumeSetOnTerminal property of the localSystem in "application/oipfConfiguration" embedded object has the Date D1. 5 minutes later the terminal is powered down. When terminal is powered on and the discovered HbbTV application is launched, then the audioVolumeSetOnTerminal refers to the D1 Date.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_LOCALSYSTEM05	1	Update of audioVolumeSetOnTerminal.	TRUE	An HDMI with audio watermark is selected, and then an HbbTV application is discovered and launched. When the volume key is pressed on the STB, an audioVolumeSetOnTerminal property of the localSystem in "application/oipfConfiguration" embedded object has the Date D1. When 30s after that the mute key is pressed on the STB, an audioVolumeSetOnTerminal property of the localSystem in "application/oipfConfiguration" embedded object has the Date D2 different then D1.
org.hbbtv_ADB_LOCALSYSTEM06	1	volume property of LocalSystem.	TRUE	An HDMI with audio watermark is selected, an HbbTV application is discovered and launched. When the application reads the volume property of LocalSystem then it receives current value. After that when the volume up key is pressed, the value of the volume is increased. After that when the volume down key is pressed, the value of the volume is decreased. The volume property has value in range 0-100. Attempt to change the volume property fails.
org.hbbtv_ADB_LOCALSYSTEM07	1	mute property of LocalSystem.	TRUE	An HDMI with audio watermark is selected, an HbbTV application is discovered and launched. The terminal is unmuted. When the application reads the mute property of LocalSystem then it receives false. After that when the user mutes the audio, the mute property is true. After that when the user unmute the audio, the mute property is false. Attempt to change the mute property by the application fails.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_RELIABILITY05	1	Malformed input, failed DNS CNAME (HDMI)	TRUE	Terminal performs DNS CNAME requests for each server_field in the server field cache after terminal power on. Two DNS CNAME requests fail. When after that ATSC3.0 watermark appears in audio and the server_field in VP1 payload does not refer to any failed DNS CNAME, then the terminal performs AIT discovery and application is launched.
org.hbbtv_ADB_RELIABILITY07	1	Malformed input, DNS CNAME referring to non-existing servers (HDMI)	TRUE	Terminal performs DNS CNAME requests after terminal power on. Two DNS CNAME responses are referring to non-existing server. When after that an ATSC3.0 watermark appears in the audio stream, and the server_field in VP1 payload does not refer to one of the prior DNS CNAME responses with a non-existing server, then the terminal performs AIT discovery and application is launched.
org.hbbtv_ADB_RELIABILITY09	1	Malformed input, Incomplete AITs (HDMI)	TRUE	An ATSC3.0 audio watermark with given server_code in VP1 payload appears and disappears, next again appears and disappears. Each time the watermark appears an AIT discovery is performed, and each time incomplete AIT responses are received as a result of successful HTTP downloads. When after that the audio watermark disappears and next appears again with the same server_code in VP1 payload, then the terminal performs AIT discovery. After obtaining valid and complete AIT an autostart application is launched.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_RELIABILITY10	1	Malformed input, Unavailable AITs (HDMI)	TRUE	An ATSC3.0 watermark appears in audio and terminal sends request for an AIT. The AIT response is 404. Next the watermark disappears. When after that the watermark appears again, then the terminal performs AIT discovery and an autostart application is launched.
org.hbbtv_ADB_RELIABILITY11	1	Malformed input, HDMI input lost then restored	TRUE	A watermark is present in an audio and a related HbbTV application is launched, and activated. When HDMI input is lost then the application is stopped. When HDMI input with watermark in audio appears again then the application is launched again.
org.hbbtv_ADB_RELIABILITY13	1	Malformed input, AIT over 5MB in size (HDMI)	TRUE	An ATSC3.0 watermark appears in audio, and as a result AIT discovery is performed. The Discovered AIT is valid except it is over 5MB in size. When after that ATSC3.0 watermark changes and different server_field is present in VP1 payload, then the terminal: - discovers an AIT related to the new server_field that is smaller than 256KB and - launches the related HbbTV application.
org.hbbtv_ADB_RELIABILITY15	1	Malformed input, loss of watermark during DNS request (HDMI)	TRUE	DNS address related to server_field S1 is not cached. Audio watermark with the server_field S1 appears triggering DNS request. When during DNS request audio watermark is lost then S1 related application is not launched. When after that the audio watermark with S1 appears, the AIT discovery is performed and the S1 related HbbTV application is launched.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_RELIABILITY16	1	Malformed input, loss of watermark during AIT fetching (HDMI)	TRUE	An ATSC3.0 audio watermark with server_field S1 appears triggering AIT discovery. During AIT fetching audio watermark is lost. When after that the audio watermark appears with server_field S2 different than S1, then: - an S2 related AIT discovery is performed and - an S2-related application is launched. S1 related app is never launched.
org.hbbtv_ADB_RELIABILITY17	1	Long-term use, rapidly switching back and forth between broadcast-independent and broadcast-related modes (HDMI)	TRUE	A launched HbbTV autostart application is broadcast related. Lifecycle of application is controlled by an audio watermark. The application calls to setChannel(null), next it performs following sequence 99 times: - calls setChannel(currentChannel) in ChannelChangeSucceeded event listener following setChannel(null), - calls setChannel(null) in ChannelChangeSucceeded event listener following setChannel(currentChannel). After that, when the application calls to setChannel(currentChannel) it is switched to broadcast related.
org.hbbtv_ADB_RELIABILITY18	1	Long-term use, overflow of interval_field in audio watermark (HDMI)	TRUE	Audio watermark with interval_field value close to 0x1FFFFFF appears what triggers the discovery and launching of an HbbTV application. After some time an overflow in the interval_field value appears. When 30s after the overflow the audio watermark server code and interval field changes, then AIT discovery is performed and a new HbbTV application is launched.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_RELIABILITY19	1	query_flag changes 200 times in row	TRUE	An ATSC3.0 watermark is present in audio. When after the query_flag field changed 199 times in a row the query_flag changes again, the AIT discovery is performed.
org.hbbtv_ADB_RELIABILITY21	1	AIT download in progress, loss of power (HDMI)	TRUE	AIT discovery is triggered by change of query_flag in ATSC3.0 audio watermark. During AIT download the power is lost. When the terminal is powered on and the ATSC3.0 watermark appears in audio again, then the watermark controlled HbbTV application is launched.
org.hbbtv_ADB_RELIABILITY22	1	mediaTimeAnchor and intervalFieldAnchor fields change 200 times in row (HDMI)	TRUE	A query_flag field in VP1 payload of audio watermark changes 200 times in a row, triggering AIT discovery and retrieval. Each time the retrieved AIT have different both mediaTimeAnchor and intervalFieldAnchor in an audioComponent element. After that, the currentTime property of MediaSynchroniser is set accordingly to the latest (200th) AIT.
org.hbbtv_ADB_RELIABILITY23	1	Malformed input, selecting input different then current HDMI, and coming back	TRUE	A watermark is present in an audio and a related HbbTV application is launched and activated. After that when input is switched to source different than currently used HDMI, then the application is stopped. When input is switched again to the HDMI with watermark then the application is launched again.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_SE01	1	Audio stream event (HDMI)	TRUE	An ATSC3.0 audio watermark is present in an audio. An HbbTV application calls to addStreamEventListener('urn:hbbtv:streamevent:a336:audio', 'TheIgnoredName', listener) of video/broadcast object. When query_flag changes in audio watermark then the 'listener' function is called once with StreamEvent call argument with: 'data' equal to hex-encoded VP1 payload, 'text' being empty string, 'status' equal to 'trigger'. When after that the query_flag changes again then the 'listener' function is called once again with matching call argument. Next removeStreamEventListener('urn:hbbtv:streamevent:a336:audio', 'TheIgnoredName', listener) is called. When after that the query_flag changes again then the 'listener' function is not called.
org.hbbtv_ADB_SE02	1	Audio stream event error	TRUE	A terminal is in 'Audio watermark detected only' state, an HbbTV application is activated and calls to addStreamEventListener('urn:hbbtv:streamevent:a336:audio', 'TheIgnoredName', listener) of video/broadcast object. When server_code changes in audio watermark, then: - the watermark state changes to "No watermark detected", - 'listener' function is called once with StreamEvent call argument 'status' equal to 'error'. When after that the query_flag changes then the 'listener' function is not called.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_SE11	1	Broadcast independent application and watermark stream events (HDMI)	TRUE	A broadcast related application controlled by an audio watermark is running. A terminal is in the "Audio watermark detected only" watermark state. The HbbTV application calls to addStreamEventListener('urn:hbbtv:streamevent:a336:audio', 'TheIgnoredName', listenerAudio1) of video/broadcast object and after that calls to setChannel(null). After that the HbbTV application calls to addStreamEventListener('urn:hbbtv:streamevent:a336:audio', 'TheIgnoredName', listenerAudio2). When after that query_flag changes in audio watermark, then both listenerAudio1 and listenerAudio2 are not called.
org.hbbtv_ADB_SWITCH01	1	HDMI-delivered video and opaque graphics covering whole screen, show/hide.	TRUE	An HDMI with audio watermark is selected, an AUTOSTART HbbTV application is discovered and launched. No video-broadcast object is used by the application. The application is not shown (no call to Application.show() method). The application has graphics designed to cover the entire screen with opaque graphics. When the application calls to show() method of Application class, the application became visible. When after that the application calls to hide() method of the Application class, then the HDMI-delivered video is visible.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_SWITCH02	1	HDMI-delivered video and opaque graphics covering whole or part of the screen.	TRUE	An HDMI with audio watermark is selected, an AUTOSTART HbbTV application is discovered and launched. No video-broadcast object is used by the application. The application has graphics covering part of the screen with opaque graphics. When the application calls to Application.show() method, then at least the part not covered by the graphics must present the HDMI video. After that the application changes the graphics to cover the entire screen. When after that the application changes the graphics to not cover the entire screen, then the part not covered by the graphics must present the HDMI video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_SWITCH03	1	HDMI-broadcast video switch, source referring to https URL.	TRUE	An HDMI with audio watermark is selected, an AUTOSTART HbbTV application is discovered and launched. The application has: - an HTML5 video element with source element referring to https mp4 file with AVC 1080p25/HE-AAC content - 30s long; - a png image with the highest z-index (always visible). The application do following steps: - call to show(); - obtains a video/broadcast (v/b) object associated with presentation of content from HDMI; - calls the stop method on that v/b object; - when v/b object enters stopped state, calls play on the HTML5 video element. After the HTML5 video element dispatches 'playing' event, the video and audio referred by the URL is played, and the HDMI video and audio is not. When playout reaches the end, the application removes source element and calls to 'load' method on the HTML5 video element. After that HTML5 video element is removed from the DOM tree and all references to the video element are set to null. When application calls to bindToCurrentChannel and the v/b object enters 'presenting' state, the HDMI video and audio is played, and the video and audio referred by the URL is not.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_SWITCH04	1	HDMI-broadcast video switch, src referring to Media Source Extention.	TRUE	An HDMI with audio watermark is selected, an AUTOSTART HbbTV application is discovered and launched. The application has: - an HTML5 video element with src referring to URL returned by calling createObjectURL with a MediaSource as the argument, content is AVC 720p25/HE-AAC content - 60s long; - a png image with the highest z-index (always visible). The application do following steps: - call to show(); - obtains a video/broadcast (v/b) object associated with presentation of content from HDMI; - calls the stop method on that v/b object; - when v/b object enters stopped state, calls play on an HTML5 video. After the HTML5 video element dispatches 'playing' event, the video and audio referred by the URL is played, and the HDMI video and audio is not. After 30s, the application pauses presentation, sets src property to empty string and calls to 'load' method on the HTML5 video element. After that HTML5 video element is removed from the DOM tree and all references to the video element are set to null. When application calls to bindToCurrentChannel and the v/b object enters 'presenting' state, the HDMI video and audio is played, and the video and audio referred by the URL is not.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_SWITCH05	1	Watermark loss, switch from broadcast to an advert.	TRUE	An ATSC-3 audio watermark is present in the audio delivered via external input. An AUTOSTART HbbTV application discovered using audio watermark is activated. The application requested switch to broadband MSE by call to switchMediaPresentation and as a result a promise is returned. When the discontinuity in the audio watermark is detected and AIT acquisition failed, then the promise is rejected with an InvalidStateError. The broadband content is not presented.
org.hbbtv_ADB_SWITCH06	1	Watermark loss, switch from advert to broadcast.	TRUE	An ATSC-3 audio watermark is present in the audio delivered via external input. An AUTOSTART HbbTV application discovered using audio watermark is activated. The application requested switch to broadband MSE by call to switchMediaPresentation and the switch happened. After that the application requested switch to broadcast by call to switchMediaPresentation and as a result a promise is returned. When the watermark is removed from audio, then the switch to broadcast happens immediately and promise is resolved with undefined.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_SWITCH07	1	broadbandOverlay false, playout by HTML5 element.	TRUE	An HDMI with audio watermark is selected, an AUTOSTART HbbTV application is discovered launched, but not shown. The application has: a video/broadcast object in the unrealised state and an HTML5 video element in the HAVE_ENOUGH_DATA state. The HTML5 video element is in front of the video/broadcast object and has size 1/2x1/2 of the logical video plane. The src element of HTML5 element refers to AVC/HEAAC MP4 content. Except the both v/b object and the video element the application does not have any graphics rendered on the screen. The application calls to show(), moves the video-broadcast object to the presenting state and sets the fullscreen to true. When the application calls to play() method, then: - if the broadbandOverlay attribute is false then the play request fails and the "dedicated media source failure steps" defined for the HTML5 video element is followed; - if the broadbandOverlay attribute is true then the HTML5 video presents the content; - in both cases the HDMI video presentation is continued in the background.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_TA01	1	Advert insertion: static MPEG DASH, watermark state is audio-watermark-detected-only, then immediate switch with switchTime ignored.	TRUE	An AUTOSTART HbbTV application discovered using audio watermark is not activated and shown, the watermark timeline starts at 4958860037. The broadband content is AVC 1080p25/HE-AAC, 30s long, delivered using static MPEG-DASH MPD. The application requests a HDMI to broadband switch calling switchMediaPresentation with "urn:hbbtv:sync:timeline:wm" timelineSelector, timelineSource equal to true, switchTime referring to 20s into the future using the audio watermark timeline, minimumSwitchPerformanceRequired - the highest supported profile - either: empty string or "urn:hbbtv:ta-hdmi:profile:2020:1" or "urn:hbbtv:ta-hdmi:profile:2020:2" or "urn:hbbtv:ta-hdmi:profile:2020:3", permittedWatermarkStates is "audio-watermark-detected-only". The call to switchMediaPresentation returns Promise. The watermark state is "wm-audio-only" (Audio Watermark Detected Only). The switch happens, the Promise is resolved with undefined. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time within the accuracy for the requested profile and within the duration for the requested profile. 10 seconds after the switch the application requests a broadband to HDMI switch calling to switchMediaPresentation again, with urn:hbbtv:sync:timeline:immediate timeline, switchTime equal to 20 seconds, timelineSource equal to true

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_TA02	1	Advert insertion: broadband over Basic HTTP, play to end of media, watermark state is audio-and-verified-video-watermarks-detected.	TRUE	An AUTOSTART HbbTV application discovered using audio watermark is not activated and shown, the watermark timeline starts at 4958860037. The broadband content is AVC 1080p25/HE-AAC, 30s long, MP4. The application requests an HDMI to broadband switch calling switchMediaPresentation with "urn:hbbtv:sync:timeline:wm" timelineSelector, timelineSource equal to true, switchTime referring to 20s into the future using the audio watermark timeline, minimumSwitchPerformanceRequired - the highest supported profile - either: empty string or "urn:hbbtv:ta-hdmi:profile:2020:1" or "urn:hbbtv:ta-hdmi:profile:2020:2" or "urn:hbbtv:ta-hdmi:profile:2020:3", permittedWatermarkStates is "audio-watermark-detected-only,verified-video-watermark-detected-only,audio-and-verified-video-watermarks-detected,audio-and-unverified-video-watermarks-detected". The call to switchMediaPresentation returns Promise. The switch happens, the Promise is resolved with undefined. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time within the accuracy for the requested profile and within the duration for the requested profile. During broadband presentation onTimeUpdate intrinsic event and timeupdate DOM2 event are dispatched with monotonically increasing currentTime. 10 seconds after the switch the application requests a broadband to

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_TA03	1	Advert insertion: broadband over MSE, timelineSource false.	TRUE	An AUTOSTART HbbTV application discovered using audio watermark is not activated and shown, the watermark timeline starts at 4958860037. The broadband content is AVC 720p25/HE-AAC, 60s long delivered via Media Source Extension. The application requests an HDMI to broadband switch calling switchMediaPresentation with "urn:hbbtv:sync:timeline:wm" timelineSelector, timelineSource equal to true, switchTime referring to 20s into the future using the audio watermark timeline, minimumSwitchPerformanceRequired - the highest supported profile - either: empty string or "urn:hbbtv:ta-hdmi:profile:2020:1" or "urn:hbbtv:ta-hdmi:profile:2020:2" or "urn:hbbtv:ta-hdmi:profile:2020:3". The call to switchMediaPresentation returns Promise. The switch happens, the Promise is resolved with undefined. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time within the accuracy for the requested profile and within the duration for the requested profile. 20 seconds after the switch the application requests a broadband to HDMI switch calling to switchMediaPresentation again, with timelineSource equal to false, "urn:hbbtv:sync:timeline:wm" timelineSelector, minimumSwitchPerformanceRequired equal to the same, highest supported profile. The call to switchMediaPresentation returns Promise. If

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_TA10	1	Advert insertion: monitoringAWMWhilePlayingBroadband is false.	TRUE	An AUTOSTART HbbTV application discovered using audio watermark is activated and shown. The application calls to switchMediaPresentation with "urn:hbbtv:sync:timeline:wm" timelineSelector, timelineSource equal to true, switchTime referring to 20s into the future using the audio watermark timeline, minimumSwitchPerformanceRequired - the highest supported profile - either: empty string or "urn:hbbtv:ta-hdmi:profile:2020:1" or "urn:hbbtv:ta-hdmi:profile:2020:2" or "urn:hbbtv:ta-hdmi:profile:2020:3" and the permittedWatermarkStates equal to "audio-and-verified-video-watermarks-detected,verified-video-watermark-detected-only". The returned promise is rejected with NotSupportedError.
org.hbbtv_ADB_TIMELINE06	1	No matching audio component, timeline not initialized (HDMI)	TRUE	An ATSC3.0 watermark with server_field value equal to S1 is present in an audio. An AIT discovered using the audio watermark carries a single audioComponent element with a serverField value S1. An HbbTV application discovered using the watermark is launched and activated. After that the audio watermark is lost and appears again with the different server_field value S2 not equal to S1. S2 refers to the same AIT as S1. When the application reads currentTime property of MediaSynchroniser then it receives NaN.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_TIMELINE08	1	Broadcast AIT controls lifecycle, currentTime from audio watermark (HDMI)	TRUE	An HbbTV application lifecycle is controlled by Broadcast AIT. The application initialise MediaSynchroniser using “urn:hbbtv:sync:timeline:wm” timeline selector. When application reads currentTime property of MediaSynchroniser, then it receives time based on watermarking timeline.
org.hbbtv_ADB_TIMELINE12	1	Maintaining synchronization to audio watermark, frame rate 50Hz (HDMI)	TRUE	The watermark state is 'Audio Watermark Detected Only'. An input video has 50 fps frame rate. When the timeline associated with interval_field value in the most recently detected audio watermark and currentTime of MediaSynchroniser differs greater than 0.01 second, then the terminal adjusts the timeline based on detected audio watermark.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_TIMELINE14	1	Restoring timeline after audio watermark is restored (HDMI)	TRUE	An AIT discovered using an audio watermark contains audioComponent with mediaTimeAnchor and intervalFieldAnchor and an HbbTV AUTOSTART application. The application is launched and activated, watermark state is 'Audio Watermark Detected Only'. When the application reads currentTime property of MediaSynchroniser object, then it receives media time based on the mediaTimeAnchor and intervalFieldAnchor values. After that, when the watermark state changes to 'No Watermark Detected' due to complete loss of watermark then: - Error DOM 2 event is generated with lastError equal to 15 and lastErrorSource referring to video/broadcast object, - currentTime property of MediaSynchroniser is equal to NaN. After that, when state changes to 'Audio Watermarks Detected Only' and the application re-initialises MediaSynchroniser object and reads currentTime, then it receives media time based on the mediaTimeAnchor and intervalFieldAnchor elements of the audioComponent from updated AIT.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB_TIMELINE15	1	Restoring timeline when there is discontinuity in interval_field (HDMI)	TRUE	An AIT discovered using an audio watermark contains audioComponent with mediaTimeAnchor and intervalFieldAnchor and an HbbTV AUTOSTART application. The application is launched and activated, watermark state is 'Audio Watermark Detected Only'. When the application reads currentTime property of MediaSynchroniser object, then it receives media time based on mediaTimeAnchor and intervalFieldAnchor elements of an audioComponent. After that AIT on AIT server is changed, both the mediaTimeAnchor and intervalFieldAnchor values are changed. After that when discontinuity in the interval_field value happens then the currentTime is re-calculated and reflects current value of all: the mediaTimeAnchor, the intervalFieldAnchor and the interval_field.
org.hbbtv_ADB0300	1	AppDiscovery-Application Control code	TRUE	The PMT of the broadcast "Service 3" does not reference a PID carrying a valid application_signalling_descriptor. The XML AIT via Broadband linked to this service references five apps "App A", "App B", "App C", "App D" and "App E". The control code of "App D" is set to autostart, the control code of all other apps to "present". The serviceBound flag of "App B" is set to "1", the serviceBound flag of all other apps to "0". Following a service change to "Service 3", the terminal starts "App D".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB0310	1	AppDiscovery-Service Bound flag is false (not set)	TRUE	The PMTs of the broadcast services "Service 3" and "Service 4" do not reference a PID carrying a valid application_signalling_descriptor. The XML AIT via Broadband linked to both services are identical and reference five apps "App A", "App B", "App C", "App D" and "App E". The control code of "App D" is set to autostart, the control code of all other apps to "present". The serviceBound flag of "App B" is set to "1", the serviceBound flag of all other apps to "0". Following a service change to "Service 3", the terminal starts "App D". "App D" shall then start "App A" using the app_id. "App A" has to launch. "App A" shall then tune to "Service 4". The tuning shall be successful and "App A" shall still be running after tuning.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADB0320	1	AppDiscovery-Service Bound flag is true (set)	TRUE	The PMTs of the broadcast services "Service 3" and "Service 4" do not reference a PID carrying a valid application_signalling_descriptor. The XML AIT via Broadband linked to both service are identical and reference five apps "App A", "App B", "App C", "App D" and "App E". The control code of "App D" is set to autostart, the control code of all other apps to "present". The serviceBound flag of "App B" is set to "1", the serviceBound flag of all other apps to "0". Following a service change to "Service 3", the terminal starts "App D". "App D" shall then start "App B" using the app_id. "App B" has to launch. "App B" shall then tune to "Service 4". The tuning shall be successful and "App B" shall be killed and "App D" shall be started after tuning.
org.hbbtv_ADD00010	1	AV Object Toggle Whole screen (MP4 640x720i HP@L4)	TRUE	Terminals shall be able to resize the A/V Control object from the top-left quarter of the screen to whole-screen. For both sizes, 640x720i video shall not be cropped, it shall be positioned in the centre of A/V Control object and its aspect ratio shall be preserved. Under these conditions the video shall be scaled to fill as much of the A/V Control object as possible.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADD00020	1	AV Object Toggle Whole screen (MP4 720x576i MP@L3)	TRUE	Terminals shall be able to resize the A/V Control object from the top-left quarter of the screen to whole-screen. For both sizes, 720x576i video shall not be cropped, it shall be positioned in the centre of A/V Control object and its aspect ratio shall be preserved. Under these conditions the video shall be scaled to fill as much of the A/V Control object as possible.
org.hbbtv_ADD00030	1	AV Object Toggle Whole screen (MP4 352x288i MP@L3)	TRUE	Terminals shall be able to resize the A/V Control object from the top-left quarter of the screen to whole-screen. For both sizes, 352x288i video shall not be cropped, it shall be positioned in the centre of A/V Control object and its aspect ratio shall be preserved. Under these conditions the video shall be scaled to fill as much of the A/V Control object as possible.
org.hbbtv_ADINS001	1	HTML5 mid-roll advert insertion, DASH E-AC-3/HEVC and HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with E-AC-3/HEVC is paused, and preloaded DASH with HE-AAC/AVC_HD_25 media is played in its entirety, and then the playing of the DASH media is resumed.
org.hbbtv_ADINS002	1	HTML5 mid-roll advert insertion, DASH E-AC-3 audio only and HE-AAC audio only	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH E-AC-3 audio only is paused, and preloaded DASH with HE-AAC audio only media is played in its entirety, and then the playing of the DASH media is resumed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADINS003	1	HTML5 mid-roll advert insertion, DASH E-AC-3/AVC_HD_25 and MP4 HE-AAC/AVC_SD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with E-AC-3/AVC_HD_25 is paused, and preloaded MP4 with HE-AAC/AVC_SD_25 media is played in its entirety, and then the playing of the DASH media is resumed.
org.hbbtv_ADINS004	1	HTML5 post-roll advert insertion, DASH E-AC-3/HEVC and MP4 HE-AAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with E-AC-3/HEVC has ended, and preloaded MP4 with HE-AAC/AVC_HD_25 media is played in its entirety.
org.hbbtv_ADINS005	1	HTML5 pre-roll advert insertion, DASH E-AC-3/HEVC and MP4 HE-AAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a preloaded MP4 with HE-AAC/AVC_HD_25 media is played in its entirety, and then a HTML5 media element referencing DASH with E-AC-3/HEVC is played.
org.hbbtv_ADINS006	1	HTML5 mid-roll advert insertion with 3 media elements, DASH E-AC-3/HEVC, MP4 HE-AAC/AVC_HD_25 and DASH HE-AAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with E-AC-3/HEVC is paused, and preloaded MP4 with HE-AAC/AVC_SD_25 media is played and then paused, and then a preloaded HTML5 media element referencing DASH with HE-AAC/AVC_HD_25 is played.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADINS007	1	HTML5 mid-roll advert insertion, MP4 E-AC-3/HEVC and MP4 HE-AAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing MP4 content with E-AC3/HEVC is paused, and preloaded MP4 with HEAAC/AVC_HD_25 media is played in its entirety, and then the playing of the E-AC3/HEVC media is resumed.
org.hbbtv_ADINS008	1	HTML5 mid-roll advert insertion with 3 media elements, DASH E-AC-3/HEVC, MP4 HE-AAC/AVC_SD_25 and MP4 HE-AAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with E-AC-3/HEVC is paused, and preloaded MP4 with HE-AAC/AVC_SD_25 media is played and then paused, and then a preloaded HTML5 media element referencing MP4 with HE-AAC/AVC_HD_25 is played.
org.hbbtv_ADINS009	1	HTML5 mid-roll advert insertion, MP4 E-AC-3 audio only and DASH HE-AAC audio only	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing MP4 with E-AC-3 audio only is paused, and preloaded DASH with HE-AAC audio only media is played in its entirety, and then the playing of the E-AC-3 media is resumed.
org.hbbtv_ADINS010	1	HTML5 mid-roll advert insertion, DASH E-AC-3/HEVC with in-band EBU-TT-D subtitles and MP4 HE-AAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with E-AC3/HEVC is paused, and preloaded MP4 with HEAAC/AVC_HD_25 media is played in its entirety, and then the playing of the DASH media is resumed. In-band EBU-TT-D subtitles are displayed without artefacts and continue to be presented in sync with content.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADINS011	1	HTML5 mid-roll advert insertion, DASH E-AC-3/HEVC with out-of-band EBU-TT-D subtitles and MP4 HE-AAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with E-AC-3/HEVC is paused, and preloaded MP4 with HE-AAC/AVC_HD_25 media is played in its entirety, and then the playing of the DASH media is resumed. Out-of-band EBU-TT-D subtitles are displayed without artefacts and continue to be presented in sync with content.
org.hbbtv_ADINS012	1	HTML5 mid-roll advert insertion, DASH HEAAC/AVC_HD_25 and MP4 HEAAC/AVC_SD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with HEAAC/AVC_HD_25 media is paused, and preloaded MP4 with HEAAC/AVC_SD_25 media is played in its entirety, and then the playing of the DASH media is resumed.
org.hbbtv_ADINS013	1	HTML5 post-roll advert insertion, DASH HEAAC/AVC_HD_25 and MP4 HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with HEAAC/AVC_HD_25 media is ended, and preloaded MP4 with HEAAC/AVC_HD_25 media is played in its entirety.
org.hbbtv_ADINS014	1	HTML5 pre-roll advert insertion, DASH HEAAC/AVC_HD_25 and MP4 HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when an MP4 with HEAAC/AVC_HD_25 media is played in its entirety, and then an HTML5 media element referencing DASH with HEAAC/AVC_HD_25 media is played.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADINS015	1	HTML5 mid-roll advert insertion, DASH HEAAC/AVC_HD_25 and MP4 HEAAC/AVC_HD_25 with in-band EBU-TT-D subtitles	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with HEAAC/AVC_HD_25 is paused, and preloaded MP4 with HEAAC/AVC_HD_25 media is played in its entirety, and then the playing of the initial media is resumed. Subtitles are displayed without artefacts and continue to be presented in sync with content.
org.hbbtv_ADINS024	1	HTML5 pre-roll advert insertion, DASH HEAAC/AVC_HD_25 and DASH HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a DASH stream with HEAAC/AVC_HD_25 media is played in its entirety and then an HTML5 media element referencing DASH with HEAAC/AVC_HD_25 media is played.
org.hbbtv_ADINS025	1	HTML5 mid-roll advert insertion with 3 video elements, DASH HEAAC/AVC_HD_25, MP4 HEAAC/AVC_HD_25, DASH HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with HEAAC/AVC_HD_25 media is paused, and preloaded MP4 with HEAAC/AVC_HD_25 media is played in its entirety, and then a preloaded HTML5 media element referencing DASH with HEAAC/AVC_HD_25 media is played.
org.hbbtv_ADINS027	1	HTML5 mid-roll advert insertion with 3 video elements, DASH HEAAC/AVC_HD_25, MP4 HEAAC/AVC_SD_25, MP4 HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with HEAAC/AVC_HD_25 is paused, and preloaded MP4 with HEAAC/AVC_SD_25 media is played in its entirety, and then a preloaded HTML5 media element referencing MP4 with HEAAC/AVC_HD_25 is played.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ADINS030	1	HTML5 mid-roll advert insertion, DASH HEAAC/AVC_HD_25 and DASH HEAAC/AVC_SD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with HEAAC/AVC_HD_25 media is paused, and preloaded DASH with HEAAC/AVC_SD_25 media is played in its entirety, and then the playing of the first DASH media is resumed.
org.hbbtv_ADINS100	1	HTML5 transition from DASH HEAAC/AVC_HD_25 to preloaded MP4 with HEAAC/AVC_HD_25 media in less than 250ms	TRUE	When a currently playing HTMLMediaElement referencing DASH content with HEAAC/AVC_HD_25 media is paused and play is called on a preloaded HTMLMediaElement referencing MP4 content with HEAAC/AVC_HD_25 media (beginning with a random access point) in the same spin of the event loop, the terminal shall transition to presenting the second HTMLMediaElement in less than 250ms
org.hbbtv_ADINS101	1	HTML5 transition from MP4 with HEAAC/AVC_HD_25 to preloaded DASH HEAAC/AVC_HD_25 media in less than 250ms	TRUE	When a currently playing HTMLMediaElement referencing MP4 content with HEAAC/AVC_HD_25 media is paused and play is called on a preloaded HTMLMediaElement referencing DASH content with HEAAC/AVC_HD_25 media (beginning with a random access point) in the same spin of the event loop, the terminal shall transition to presenting the second HTMLMediaElement in less than 250ms

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ANALYTICS0010	1	Beacon is sent on application termination due to service change	TRUE	When a running broadcast-related service-bound application has added an event listener for the visibilitychange event that calls sendBeacon when the document.visibilityState attribute becomes 'hidden', then, when the user changes the selected channel, the requested Beacon is sent within 5 seconds.
org.hbbtv_ANALYTICS0020	1	Beacon is sent on application termination due to AIT change	TRUE	When a running broadcast-related application has added an event listener for the visibilitychange event that calls sendBeacon when the document.visibilityState attribute becomes 'hidden', then, when the AIT changes to set the application control code to KILL, the requested Beacon is sent within 5 seconds.
org.hbbtv_ANALYTICS0040	1	Beacon is sent on application termination due to application exit	TRUE	When a running application has added an event listener for the visibilitychange event that calls sendBeacon when the document.visibilityState attribute becomes 'hidden', then, when the application calls Application.destroyApplication(), the requested Beacon is sent within 5 seconds.
org.hbbtv_ANALYTICS0050	1	Beacon is sent on application termination due to user EXIT function	TRUE	When a running application has added an event listener for the visibilitychange event that calls sendBeacon when the document.visibilityState attribute becomes 'hidden', then, when the user presses the "EXIT or comparable button", the requested Beacon is sent within 5 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ANALYTICS0060	1	Beacon is sent on application termination due to source selection	TRUE	When a running broadcast-independent application has added an event listener for the visibilitychange event that calls sendBeacon when the document.visibilityState attribute becomes 'hidden', then, when the user selects one of the terminal's external video inputs or other sources, the requested Beacon is sent within 5 seconds.
org.hbbtv_ANALYTICS0080	1	Beacon is sent on standby	TRUE	When a running application has added an event listener for the visibilitychange event that calls sendBeacon when the document.visibilityState attribute becomes 'hidden', then, when the user puts the terminal into standby, the requested Beacon is sent within 5 seconds.
org.hbbtv_ANALYTICS0090	1	Beacon is sent on starting other app or feature	TRUE	A broadcast-related application is running. It has added an event listener for the visibilitychange event that calls sendBeacon when the document.visibilityState attribute becomes 'hidden'. The terminal native UI is used to start a feature outside the scope of HbbTV that takes over the whole of the screen, for example an application from a global VOD provider. When the HbbTV application is no longer visible to the user, the Beacon is sent within 5 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_ANALYTICS0100	1	Beacon is sent on selecting external input	TRUE	A broadcast-related application is running. It has added an event listener for the visibilitychange event that calls sendBeacon when the document.visibilityState attribute becomes 'hidden'. The terminal native UI is used to select an external input, for example HDMI. When the HbbTV application is no longer visible to the user, the Beacon is sent within 5 seconds.
org.hbbtv_ANALYTICS0110	1	Beacon is sent on starting native terminal feature	TRUE	A broadcast-related application is running. It has added an event listener for the visibilitychange event that calls sendBeacon when the document.visibilityState attribute becomes 'hidden'. The terminal native UI is used to invoke a native terminal feature that causes the HbbTV application to stop being visible to the user (if there is such), for example a guide or configuration menu. Either the HbbTV application remains visible to the user, or when it is no longer visible to the user, the Beacon is sent within 5 seconds.
org.hbbtv_APP2APP0010	1	App2App - HbbTV app connects to local end-point	TRUE	An application successfully opens a WebSocket connection to the URL consisting of the URL of the local endpoint of the app2app service endpoint it has discovered via Java Script API suffixed with the application specific suffix string "myapp.mychannel.org".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2APP0020	1	App2App - CS app connects to a remote end-point	TRUE	A companion screen application successfully opens a WebSocket connection to the URL consisting of the URL of the remote endpoint of the app2app service endpoint it has discovered via the HbbTV terminal discovery suffixed with the application specific suffix string "myapp.mychannel.org".
org.hbbtv_APP2APP0070	1	App2App - Pairing clients with maximum app end-point	TRUE	When an application connects to the local app2app service endpoint with an app endpoint that contains all allowed characters for a resource-name as defined in RFC 6455, that has a query component and that is exactly 1000 characters in length, and a companion screen application connects to the remote app2app service end-point with the same app endpoint, the terminal shall open a Web Socket connection for both clients, and once both connections are open the terminal shall send them both a 'pairingcompleted' message encoded in UTF-8.
org.hbbtv_APP2APP0071	1	App2App - Do not pair clients with different maximum app end-points	TRUE	When an application connects to the local app2app service endpoint with an app endpoint that contains all allowed characters for a resource-name as defined in RFC 6455, that has a query component and that is exactly 1000 characters in length, and a companion screen application connects to the remote app2app service end-point with the app endpoint that only differs in the last character, the terminal shall open a Web Socket connection for both clients, but does not send any message to the clients after both connections are opened.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2APP0130	1	App2App - Max concurrent connections	TRUE	When 10 companion screen applications running on 10 different terminals connect to the remote endpoint of the app2app service with the app-endpoint "myapp.mychannel.org/?pairing" and subsequently an HbbTV application opens 10 connections to the local app2app service end-point using the same app-endpoint, the terminal shall pair each connection from the local client with one of the waiting remote connections and it shall send a UTF-8 encoded message 'pairingcompleted' to each client connection.
org.hbbtv_APP2APP0170	1	App2App - Ignore origin header	TRUE	When a companion screen application connects to the URL consisting of the URL of the app2app service endpoint suffixed with the application specific suffix string "myapp.mychannel.org" and includes an Origin header in the request handshake, the terminal accepts the request and establishes a WebSocket connection with the client.
org.hbbtv_APP2APP0180	1	App2App - ignoring Sec-WebSocket-Extensions	TRUE	If a companion screen application connects to the URL consisting of the URL of the remote app2app service endpoint suffixed with the application specific suffix string "myapp.mychannel.org" and including the Sec-WebSocket-Extensions header in the request handshake, then the terminal ignores Sec-WebSocket-Extensions and connection is established, without sending Sec-WebSocket-Extensions reply header.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2APP0220	1	App2App - Waiting connection	TRUE	If a HbbTV application connects to the local endpoint of the app2app service with the app endpoint "myapp.mychannel.org/?pairing_1" and then a companion screen application connects to the remote endpoint with the app endpoint "myapp.mychannel.org/?pairing_2", the terminal will open a Web Socket connection for both, the terminal will not pair them, i.e. no message "pairingcompleted" is sent, but keep them in a waiting state and if after some time a second companion screen application connects with the app-endpoint "myapp.mychannel.org/?pairing_1" the terminal will pair this connection with the waiting connection from the HbbTV application and send a "pairingcompleted" message to both ends of the newly paired clients.
org.hbbtv_APP2APP0315	1	App2App - Discard data frames of local client in waiting state	TRUE	When an HbbTV application connects to the local app2app service endpoint and immediately sends a message after the connection has been established and after the application has sent the message a companion screen application connects to the remote endpoint using the same app-endpoint as the HbbTV application, the terminal shall pair the two connections and send the "pairingcompleted" message to the both clients but shall not relay the message initially sent by the HbbTV application to the companion screen application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2APP0316	1	App2App - Discard data frames of remote client in waiting state	TRUE	When a companion screen application connects to the remote app2app service endpoint and immediately sends a message after the connection has been established and after the companion screen application has sent the message an HbbTV application connects to the local endpoint using the same app-endpoint as the companion screen application, the terminal shall pair the two connections and send the "pairingcompleted" message to the both clients but shall not relay the message initially sent by the companion screen application to the HbbTV application.
org.hbbtv_APP2APP0360	1	App2App - Unfragmented data frame with maximum size.	TRUE	After the connections to the app2app service end-point of an HbbTV application and a companion screen application have been paired, and the companion screen application sends an unfragmented frame containing a binary message with a size of 131 072 bytes using an unfragmented data frame to the app2app service, the terminal delivers the binary message properly to the application on the local client.
org.hbbtv_APP2APP0365	1	App2App - maximum message size from local client.	TRUE	After the connections to the app2app service end-point of an HbbTV application and a companion screen application have been paired, and the HbbTV application on the local client sends a text message with a size of 131 072 bytes to the app2app service, the terminal delivers the message either in fragmented or unfragmented frames properly to the companion screen application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2APP0370	1	App2App - Fragmented data frames with maximum size.	TRUE	After the connections to the app2app service end-point of an HbbTV application and a companion screen application have been paired, and the companion screen application sends a fragmented frame containing a text message with a size of 131 072 bytes where 127 fragments have a size of 1024 bytes and 1 fragment has a size of 1 byte and one fragment has a size of 1023 bytes to the app2app service, the terminal delivers the text message properly to the application on the local client.
org.hbbtv_APP2APP0371	1	App2App - Single Pairing - 10 large messages in 10 sec sent to local end-point	TRUE	After the connections to the app2app service end-point of an HbbTV application and a companion screen application have been paired, and the HbbTV application sends a text message with a size of 131 072 bytes every second for a duration of at least 60 seconds to just one connected companion, the terminal relays each message immediately either in fragmented or unfragmented frames to that companion screen application.
org.hbbtv_APP2APP0372	1	App2App - Single Pairing - 10 large messages in 10 sec to remote end-point	TRUE	After the connections to the app2app service end-point of an HbbTV application and a companion screen application have been paired, the companion screen application sends a binary message with a size of 131 072 bytes using unfragmented frames every second for a duration of at least 60 seconds and the terminal shall immediately relay the frames and deliver all contained messages to the HbbTV application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2APP0373	1	App2App - Single Pairing - 200 small messages in 10sec to local end-point	TRUE	After the connections to the app2app service end-points of an HbbTV application and a companion screen application have been paired, and the HbbTV application sends a text messages with a payload size of 512 bytes every 50ms for a duration of 60 seconds the terminal shall immediately relay the messages as either fragmented or unfragmented text frames to the companion screen application.
org.hbbtv_APP2APP0374	1	App2App - Single Pairing - 200 small messages in 10sec to remote end-point	TRUE	After the connections to the app2app service end-points of an HbbTV application and a companion screen application have been paired, and the companion screen application sends a binary message in a frame with a payload size of 512 bytes every 50ms for a duration of 60 seconds the terminal shall immediately relay them as binary messages to the HbbTV application.
org.hbbtv_APP2APP0375	1	App2App - 10 pairings - 5 large messages per pairing in 10 sec to local end-point	TRUE	When a HbbTV application has 10 paired connections with 10 companion screen applications, and the HbbTV application sends one binary message with a size of 131 072 bytes every 2 seconds to each single connection over a period of 60 seconds the terminal shall immediately relay every binary message either as fragmented or unfragmented frames to the corresponding companion screen application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2APP0376	1	App2App - 10 pairings - 5 large messages per pairing in 10 sec to remote end-point	TRUE	When a HbbTV application has 10 paired connections with 10 companion screen applications, and each companion screen application sends a text message with a size of 131 072 bytes every 2 seconds over a period of 60 seconds the terminal immediately relays the text message to the HbbTV application via the corresponding connection.
org.hbbtv_APP2APP0377	1	App2App - 10 pairings - 25 small messages per pairing in 10 sec to local end-point	TRUE	When a HbbTV application has 10 paired connections with 10 companion screen applications, and the HbbTV application sends one text message with a size of 512 bytes every 400ms to each single connection over a period of 60 seconds the terminal shall immediately relay every text message either as fragmented or unfragmented frames to the corresponding companion screen application.
org.hbbtv_APP2APP0378	1	App2App - 10 pairings - 25 small messages per pairing in 10 sec to remote end-point	TRUE	When a HbbTV application has 10 paired connections with 10 companion screen applications, and each companion screen application sends a binary message with a size of 512 bytes every 400 ms over a period of 60 seconds the terminal immediately relays the binary message to the HbbTV application via the corresponding connection.
org.hbbtv_APP2APP0380	1	App2App - Answering client's ping request	TRUE	After the connections to the app2app service end-points of an HbbTV application and a companion screen application have been paired, the client connected to the remote end-point sends a Ping frame, the terminal responds with a Pong frame.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2APP0385	1	App2App - Application disconnects paired connection	TRUE	When an application closes a paired connection to the local app2app service end-point, the terminal closes the connection to the client connected to the remote end-point by sending a Close frame.
org.hbbtv_APP2APP0386	1	App2App - Application disconnects paired connection: Application stopped by terminal	TRUE	When an application that has a paired connection to the local app2app service end-point is stopped by the terminal due to a channel change, the terminal closes the connection to the client connected to the remote end-point.
org.hbbtv_APP2APP0390	1	App2App - Initiating disconnection of clients (sending a close frame)	TRUE	After a local and a remote client have been paired and subsequently the remote client sends a WebSocket data message with a close frame to the app2app service, the terminal disconnects both of the clients.
org.hbbtv_APP2APP0395	1	App2App - Initiating disconnection of clients (disconnect)	TRUE	After a local and a remote client have been paired and subsequently the remote client disconnects without sending a close frame to the app2app service, the terminal disconnects both of the clients by sending a corresponding close frame.
org.hbbtv_APP2APP0500	1	App2App - HbbTV app from HTTPS connects to local endpoint	TRUE	An application that was started via HTTPS successfully opens a WebSocket connection to the URL consisting of the URL of the local endpoint of the app2app service endpoint it has discovered via Java Script API suffixed with the application specific suffix string "myapp.mychannel.org".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2AV0010	1	APP2AV: HTML5 currentTime is accurate	TRUE	The playback position returned by an HTML5 media object is the time of the current video frame composed with the application graphics and accurate within 100ms.
org.hbbtv_APP2AV0020	1	APP2AV: AVO playPosition is accurate	TRUE	The playback position returned by an A/V control object is the time of the current video frame composed with the application graphics and accurate within 100ms.
org.hbbtv_APP2AV0030	1	APP2AV: AVO playPosition correlates with 25fps	TRUE	The playback position returned by the A/V control object for a service with a 25 fps video component, is updated at least every 40ms.
org.hbbtv_APP2AV0040	1	APP2AV: AVO playPosition correlates with 50fps	TRUE	The playback position returned by the A/V control object for a service with a 50 fps video component, is updated at least every 20ms.
org.hbbtv_APP2AV0050	1	APP2AV: AVO playPosition correlates with the audio frame of MPEG1 audio track	TRUE	The playback position returned by the A/V control object for an audio-only stream encoded with MPEG1L3@48kHz, is updated at least every 24ms.
org.hbbtv_APP2AV0060	1	APP2AV: AVO playPosition correlates with audio frame of AAC audio track	TRUE	The playback position returned by the A/V control object for a audio only stream encoded with HE-AAC@48kHz, is updated at least every 42.67ms.
org.hbbtv_APP2AV0070	1	APP2AV: AVO value of playPosition for on-demand	TRUE	The value of the playPosition property of the A/V control object that is in the playing state presenting on-demand but not MPEG DASH content shall be the play position of that content in milliseconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2AV0080	1	APP2AV: AVO value of playPosition for DASH	TRUE	An application is presenting in an A/V control object MPEG DASH content with a dynamic MPD. While playing the content, the MPD is updated and the first Period that was present initially disappeared, then the value returned by the playPosition property of the A/V control object shall be a value in milliseconds assuming time 0 is the start time of the first Period that was present in the MPD when the MPD was first loaded.
org.hbbtv_APP2AV0110	1	APP2AV: accuracy of MediaSynchroniser.currentTime with broadcast TS and MPEG TEMI	TRUE	When an application reads the currentTime from a MediaSynchroniser that was initialized with a DVB TV service and a reference to a MPEG TEMI timeline carried on the audio component in that service and there are multiple timelines with different timeline IDs present on the video and audio component, the terminal shall return the current value of the referenced TEMI timeline corresponding to the last frame that was composed with graphics before the currentTime property was queried with an accuracy of at least 100ms.
org.hbbtv_APP2AV0111	1	APP2AV: accuracy of MediaSynchroniser.currentTime with broadcast TS using PTS timeline	TRUE	When an application reads the currentTime from a MediaSynchroniser that was initialized with a DVB TV service and a reference to a MPEG PTS timeline, the terminal shall return the current value of the referenced PTS timeline corresponding to the last frame that was composed with graphics before the currentTime property was queried with an accuracy of at least 100ms.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2AV0120	1	APP2AV: accuracy of MediaSynchroniser.currentTime with DASH	TRUE	When an application reads the currentTime from a MediaSynchroniser that was initialized with an HTML5 media object presenting an MPEG-DASH stream, the terminal shall return the current value of the DASH-PR timeline corresponding to the last frame that was composed with graphics before the currentTime property was queried with an accuracy of at least 100ms.
org.hbbtv_APP2AV0130	1	APP2AV: Precision of MediaSynchroniser.currentTime for 25fps video	TRUE	When an application repeatedly reads the currentTime property of a MediaSynchroniser intialised with an HD broadcast carrying a TEMI timeline and encoded at 1080i25, the terminal updates the returned value at least every 40ms.
org.hbbtv_APP2AV0140	1	APP2AV: Precision of MediaSynchroniser.currentTime for 50fps video	TRUE	When an application repeatedly reads the currentTime property of a MediaSynchroniser intialised with an HTML5 media object presenting an MPEG DASH stream that is encoded at 720p50, the terminal returns the value of the DASH-PR timeline updated at least every 20ms.
org.hbbtv_APP2AV0150	1	APP2AV: Precision of MediaSynchroniser.currentTime for MPEG1L2 audio	TRUE	When an application repeatedly reads the currentTime property of a MediaSynchroniser intialised with a broadcast audio-only service encoded with MPEG1L2 audio and a reference to an MPEG TEMI timeline carried in the adaptation field of the TS header of a separate component that carries PES packets with PTS timestamps but with no data carried in the PES packet payload, in that service, the terminal returns the value of that TEMI timeline updated at least every 24ms.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2AV0160	1	APP2AV: Precision of MediaSynchroniser.currentTime for HEAAC audio	TRUE	When an application repeatedly reads the currentTime property of a MediaSynchroniser intialised with a DASH audio-only stream encoded with HE-AAC, the terminal returns the value of the DASH-PR timeline updated at least every 42.67ms.
org.hbbtv_APP2AV0170	1	APP2AV: Value of MediaSynchroniser.currentTime on slave terminal	TRUE	When an application reads the currentTime property from a MediaSynchroniser that has been successfully initialised for inter-device synchronisation on a slave terminal and on the master terminal the master media is broadcast TS with TEMI timeline, the currentTime property of the slave terminal MediaSynchroniser returns the value of the TEMI timeline of the current playback position on the master terminal (within uncertainty bounds quantified by the value of the interDeviceSyncDispersion property at the slave terminal)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2AV0180	1	APP2AV: Precision of MediaSynchroniser.currentTime on slave for 50fps video as other media	TRUE	When an application repeatedly reads the currentTime property from a MediaSynchroniser that has been successfully initialised for inter-device synchronisation on a slave terminal using the initSlaveMediaSynchroniser method and an MPEG DASH stream with 50fps video is added as other media to this slave MediaSynchroniser, the currentTime property of the slave terminal MediaSynchroniser returns the value of the synchronisation timeline of the current playback position on the master terminal (within uncertainty bounds quantified by the value of the interDeviceSyncDispersion property at the slave terminal) updated at least every 20ms.
org.hbbtv_APP2AV0190	1	APP2AV: Precision of MediaSynchroniser.currentTime on slave for MPEG1L2 audio as other media	TRUE	When an application repeatedly reads the currentTime property from a MediaSynchroniser that has been successfully initialised for inter-device synchronisation on a slave terminal using the initSlaveMediaSynchroniser method and a broadcast audio-only service encoded with MPEG1-L2 is added as other media to this slave MediaSynchroniser, the currentTime property of the slave terminal MediaSynchroniser returns the value of the playback position of the MediaSynchroniser on the master terminal (within uncertainty bounds quantified by the value of the interDevSyncAccuracy property at the slave terminal) updated at least every 24ms.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2AV0200	1	APP2AV: Precision of MediaSynchroniser.currentTime on slave with no other media	TRUE	When an application repeatedly reads the currentTime property from a MediaSynchroniser that has been successfully initialised for inter-device synchronisation on a slave terminal using the initSlaveMediaSynchroniser method and no other media is attached to this slave MediaSynchroniser, the currentTime property of the slave terminal MediaSynchroniser returns the value of the playback position of the MediaSynchroniser on the master terminal (within uncertainty bounds quantified by the value of the interDeviceSyncDispersion property at the slave terminal) updated at least every 100ms.
org.hbbtv_APP2AV0300	1	APP2AV: accuracy of MediaSynchroniser.currentTime with broadcast TS and MPEG TEMI (large TEMI values)	TRUE	When an application reads the currentTime from a MediaSynchroniser that was initialized with a DVB TV service and a reference to a MPEG TEMI timeline, those tickrate is 48000, that is using the 64 bit timestamp format and those current values are larger than 4133977199468, carried on the audio component in that service and there are multiple timelines with different timeline IDs present on the video and audio component, the terminal shall return the current value of the referenced TEMI timeline corresponding to the last frame that was composed with graphics before the currentTime property was queried with an accuracy of at least 100ms.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APP2AV1111	1	APP2AV:MediaSynchroniser.currentTime with broadcast TS and PTS values larger than 2^32	TRUE	When an application reads the currentTime from a MediaSynchroniser that was initialized with a DVB TV service and a reference to a MPEG PTS timeline with large PTS values close to 2^33, then the terminal shall return the current value of the referenced PTS timeline.
org.hbbtv_APPSIG0010	1	Autostart app with micro version greater than supported (v2)	TRUE	The terminal shall not launch autostart applications where the micro version needed by the application is greater than the micro version of the specification version supported by the terminal (1.3.1).
org.hbbtv_APPSIG0020	1	Autostart app with micro version greater than supported (v1.5)	TRUE	The terminal shall not launch autostart applications where the micro version needed by the application is greater than the micro version of the specification version supported by the terminal (1.2.1).
org.hbbtv_APPSIG0030	1	Autostart app with micro version greater than supported (v1)	TRUE	The terminal shall not launch autostart applications where the micro version needed by the application is greater than the micro version of the specification version supported by the terminal (1.1.1).
org.hbbtv_APPSIG0031	1	Autostart app with micro version greater than supported (v2.0.1)	TRUE	The terminal shall not launch autostart applications where the micro version needed by the application is greater than the micro version of the specification version supported by the terminal (1.4.1).
org.hbbtv_APPSIG0032	1	Autostart app with micro version greater than supported (v2.0.2)	TRUE	The terminal shall not launch autostart applications where the micro version needed by the application is greater than the micro version of the specification version supported by the terminal (1.5.1).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APPSIG0033	1	Autostart app with micro version greater than supported (v2.0.3)	TRUE	The terminal shall not launch autostart applications where the micro version needed by the application is greater than the micro version of the specification version supported by the terminal (1.6.1).
org.hbbtv_APPSIG0034	1	Autostart app with micro version greater than supported (v2.0.4)	TRUE	The terminal shall not launch autostart applications where the micro version needed by the application is greater than the micro version of the specification version supported by the terminal (1.7.1).
org.hbbtv_APPSIG0035	1	Autostart app with micro version greater than supported (v2.0.5)	FALSE	The terminal shall not launch autostart applications where the micro version needed by the application is greater than the micro version of the specification version supported by the terminal (1.8.1).
org.hbbtv_APPSIG0040	1	Autostart app with minor version greater than supported (v2)	TRUE	The terminal shall not launch autostart applications where the minor version of the application is greater than the minor version of the specification version supported by the terminal (1.3.1).
org.hbbtv_APPSIG0041	1	Autostart app with minor version greater than supported (v2.0.1)	TRUE	The terminal shall not launch autostart applications where the minor version of the application is greater than the minor version of the specification version supported by the terminal (1.4.1).
org.hbbtv_APPSIG0042	1	Autostart app with minor version greater than supported (v2.0.2)	TRUE	The terminal shall not launch autostart applications where the minor version of the application is greater than the minor version of the specification version supported by the terminal (1.5.1).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APPSIG0043	1	Autostart app with minor version greater than supported (v2.0.3)	TRUE	The terminal shall not launch autostart applications where the minor version of the application is greater than the minor version of the specification version supported by the terminal (1.6.1).
org.hbbtv_APPSIG0044	1	Autostart app with minor version greater than supported (v2.0.4)	TRUE	The terminal shall not launch autostart applications where the minor version of the application is greater than the minor version of the specification version supported by the terminal (1.7.1).
org.hbbtv_APPSIG0045	1	Autostart app with minor version greater than supported (v2.0.5)	FALSE	The terminal shall not launch autostart applications where the minor version of the application is greater than the minor version of the specification version supported by the terminal (1.8.1).
org.hbbtv_APPSIG0050	1	Autostart app with minor version greater than supported (v1.5)	TRUE	The terminal shall not launch autostart applications where the minor version of the application is greater than the minor version of the specification version supported by the terminal (1.2.1).
org.hbbtv_APPSIG0060	1	Autostart app with minor version greater than supported (v1)	TRUE	The terminal shall not launch autostart applications where the minor version of the application is greater than the minor version of the specification version supported by the terminal (1.1.1).
org.hbbtv_APPSIG0070	1	Autostart app with major version greater than supported	TRUE	The terminal shall not launch autostart applications where the major version of the application is greater than the major version of the specification version supported by the terminal.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APPSIG0080	1	apps requiring A/V content download feature	TRUE	Terminals not supporting the DL option shall not launch autostart applications signalled as requiring the A/V content download feature
org.hbbtv_APPSIG0090	1	apps requiring PVR feature	TRUE	Terminals not supporting the PVR option shall not launch autostart applications signalled as requiring the PVR feature
org.hbbtv_APPSIG0100	1	Non-supported application types are ignored	TRUE	Terminals not supporting an arbitrary other application type shall launch an HbbTV application when autostart apps of both types are signalled
org.hbbtv_APPSIG0110	1	AIT application priority between application types	TRUE	Terminals also supporting MHP shall launch an HbbTV app when autostart apps of both types are signalled and the HbbTV app has a higher priority
org.hbbtv_APPSIG0120	1	MHP application type is ignored when not supported	TRUE	Terminals not supporting MHP shall launch an HbbTV application when both autostart MHP and HbbTV apps are signalled
org.hbbtv_APPSIG0130	1	HbbTV v1 apps shall be supported	TRUE	Terminals shall launch applications whose application profile version is major=1, minor=1 and micro=1
org.hbbtv_APPSIG0140	1	HbbTV v1.5 apps shall be supported	TRUE	Terminals shall launch applications whose application profile version is major=1, minor=2 and micro=1
org.hbbtv_APPSIG0141	1	HbbTV v2 apps shall be supported	TRUE	Terminals shall launch applications whose application profile version is major=1, minor=3 and micro=1
org.hbbtv_APPSIG0142	1	HbbTV v2.0.1 apps shall be supported	TRUE	Terminals shall launch applications whose application profile version is major=1, minor=4 and micro=1
org.hbbtv_APPSIG0143	1	HbbTV v2.0.2 apps shall be supported	TRUE	Terminals shall launch applications whose application profile version is major=1, minor=5 and micro=1

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_APPSIG0144	1	HbbTV v2.0.3 apps shall be supported	TRUE	Terminals shall launch applications whose application profile version is major=1, minor=6 and micro=1
org.hbbtv_APPSIG0145	1	HbbTV v2.0.4 apps shall be supported	TRUE	Terminals shall launch applications whose application profile version is major=1, minor=7 and micro=1
org.hbbtv_APPSIG0146	1	HbbTV v2.0.5 apps shall be supported	FALSE	Terminals shall launch applications whose application profile version is major=1, minor=8 and micro=1
org.hbbtv_APPSIG0500	1	Support for AITs with two sections.	TRUE	Terminals shall launch an autostart application whose signalling is contained in the last section of an AIT sub-table which has two sections.
org.hbbtv_APPSIG0510	1	Support for AITs with eight sections.	TRUE	If the HbbTV AIT sub-table has 8 sections and there is only one autostart application in the first section of that sub-table and there is a second application in the last section of that sub-table with control code 2 (present) and the autostart application launches the second application via the createApplication method, the terminal shall on channel tuning first launch the autostart application and then the second application.
org.hbbtv_AUDIO_COMMUTING0010	1	AV Components: Selecting audio components from an HTTP MP4 stream with Spanish and English languages	TRUE	Using the AV Control object functions getComponents and selectComponent, the terminal shall correctly switch to presenting the unplayed audio component from a HTTP MP4 stream containing Spanish and English language components that is currently being presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AUDIO_COMMUTING0020	1	AV Components: Selecting audio components from an HbbTV ISOBMFF DASH Live stream with Spanish and English languages	TRUE	Using the A/V Control object functions getComponents and selectComponent, the terminal shall correctly switch to presenting the unplayed audio component from a HbbTV ISOBMFF DASH Live stream containing Spanish and English language adaptation sets.
org.hbbtv_AUDIOMIX0010	1	video/broadcast object volume control	TRUE	A service has two audio tracks A and B and is being presented using the video/broadcast object. The audio level in A is 12dB higher than in B. The application selects audio track A. When setVolume(70) is called on the v/b object, the audio becomes quieter without any audible glitches within 20 milliseconds. getVolume() returns 70. When setVolume(88) is called, the audio gets louder in volume without any audible glitches within 20 milliseconds. When audio track B is selected and setVolume(100) is immediately called, then after a possible brief transient, the audible volume remains the same.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AUDIOMIX0020	1	HTMLMediaElement volume control	TRUE	A DASH stream has two audio tracks A and B and is being presented using an HTML video element. The audio level in A is 12dB higher than in B. The application enables audio track A and disables B. When the media element volume is set to 0.03, the audio becomes quieter without any audible glitches within 20 milliseconds. When the media element volume is set to 0.25, the audio gets louder in volume without any audible glitches within 20 milliseconds. When audio track A is disabled, B enabled and the media element volume is immediately set to 1.0, then after a possible brief transient, the audible volume remains the same.
org.hbbtv_AUDIOMIX0030	1	WebAudio GainNode	TRUE	There are two WAV files A and B. The audio level in A is 12dB higher than in B. The application plays A using the WebAudio API. The application then plays A again with a GainNode with gain set to 0.03. The audio is quieter. The application then plays A again with gain set to 0.25. The audio is louder. Finally, the application then plays B with gain set to 1.0. The audible volume remains the same.
org.hbbtv_AUDIOMIX0040	1	Audio pass-through status	TRUE	The XML configuration contains an audio_system element that has a pass_through attribute. The terminal's pass-through mode is enabled. The XML configuration audio_system element pass_though attribute has the value "true". The terminal's pass-through mode is disabled. The XML configuration audio_system element pass_through attribute has the value "false".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AUDIOMIX0100	1	Audio mixing - stereo broadcast, stereo WebAudio	TRUE	A broadcast-related HbbTV application that is connected to the broadcast of the current channel which has unencrypted stereo audio loads a stereo 48 kHz WAV file with XMLHttpRequest and AudioContext.decodeAudioData and then plays that through the Web Audio API. The WAV file's audio is heard and the broadcast audio and video playback are not interrupted. The audio is mixed together.
org.hbbtv_AUDIOMIX0110	1	Audio mixing - stereo DASH, stereo WebAudio	TRUE	An HbbTV application is playing a DASH stream that has unencrypted stereo audio and loads a stereo 48 kHz WAV file with XMLHttpRequest and AudioContext.decodeAudioData and then plays that through the Web Audio API. The WAV file's audio is heard and the DASH audio and video playback are not interrupted. The audio is mixed together.
org.hbbtv_AVC00010	1	video/broadcast object supports media playback extensions API.	TRUE	Video/broadcast object shall support: constants - COMPONENT_TYPE_VIDEO, COMPONENT_TYPE_AUDIO, COMPONENT_TYPE_SUBTITLE, methods - getComponents, getCurrentActiveComponents, selectComponent and unselectComponent.
org.hbbtv_AVC00020	1	Correct collection of AVcomponents is returned by getComponents(null) method of video/broadcast.	TRUE	getComponents method shall return collection of components with length = 8, all 8 items contain valid AVcomponents. Array notation to access AVcomponents is supported.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AVC00030	1	video/broadcast object correctly converts component_tag field in the stream_identifier_descriptor in PMT into componentTag property of AVComponent.	TRUE	getComponents(null) method of video/broadcast object shall return collection of AVcomponents where componentTag property of items is respectively 1, 2, 3, 4, 5, 6, 7, 8.
org.hbbtv_AVC00040	1	video/broadcast object correctly converts elementary_pid field in the stream_identifier_descriptor in PMT into pid property of AVComponent.	TRUE	getComponents(null) method of video/broadcast object shall return collection of AVcomponents where pid field of items are respectively 0x62, 0x65, 0x66, 0x74, 0x75, 0x76, 0x67, 0x68
org.hbbtv_AVC00045	1	Terminal correctly recognizes type of AVComponent.	TRUE	getComponents(null) method of video/broadcast object shall return following collection of AVcomponents: type=COMPONENT_TYPE_VIDEO, pid = 0x62, pid = 0x65, type=COMPONENT_TYPE_AUDIO, pid = 0x66, pid = 0x74, pid = 0x75, pid = 0x76, type=COMPONENT_TYPE_SUBTITLE, pid = 0x67, pid = 0x68.
org.hbbtv_AVC00050	1	getComponents(COMPONENT_TYPE_VIDEO) method of video/broadcast object returns correct collection of video AVcomponents.	TRUE	getComponents method shall return collection of video components with length = 2, one component has pid=0x62, componentTag=1, other pid=0x65, componentTag=2
org.hbbtv_AVC00060	1	getComponents(COMPONENT_TYPE_AUDIO) method of video/broadcast object returns correct collection of audio AVcomponents.	TRUE	getComponents method shall return collection of audio components with length = 4, components have parameters: pid=0x66, componentTag=3, pid=0x74, componentTag=4. pid=0x75, componentTag=5. pid=0x76, componentTag=6
org.hbbtv_AVC00070	1	getComponents(COMPONENT_TYPE_SUBTITLE) method of video/broadcast object returns correct collection of subtitle AVcomponents.	TRUE	getComponents method shall return collection of subtitle components with length = 2, components have parameters: pid=0x67, componentTag=7, pid=0x68, componentTag=8

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AVC00085	1	Terminal correctly recognizes scrambling of AVComponent.	TRUE	getComponents method of video/broadcast object shall return collection of AVcomponents where: audio component with componentTag=5 has property encrypted=true.
org.hbbtv_AVC00090	1	Terminal correctly calculates 'aspectRatio' property of AVVideoComponents	TRUE	When the video/broadcast object is bound to an MPEG-2 TS stream containing one 4:3 aspect ratio and one 16:9 aspect ratio elementary video stream, getComponents() shall return an AVComponentCollection containing two AVVideoComponents with 'aspectRatio' properties of 1.33 and 1.78, respectively
org.hbbtv_AVC00100	1	Terminal correctly recognizes language of audio AVComponents.	TRUE	getComponents method of video/broadcast object shall return collection of AVcomponents where: audio component with componentTag=3 has language='eng', audio component with componentTag=4 has language='pol', audio component with componentTag=5 has language='kor', audio component with componentTag=6 has language='ita',
org.hbbtv_AVC00110	1	Terminal correctly sets audioDescription of audio AVComponent.	TRUE	getComponents method of video/broadcast object shall return collection of AVcomponents where: one audio component has audioDescription=true.
org.hbbtv_AVC00130	1	Terminal correctly recognizes language of subtitle AVComponent.	TRUE	getComponents method of video/broadcast object shall return collection of AVcomponents where subtitle components have languages 'pol' and 'eng'.
org.hbbtv_AVC00140	1	Terminal correctly recognizes hearing impaired of subtitle AVComponent.	TRUE	getComponents method of video/broadcast object shall return collection of AVcomponents where 1 subtitle component have hearingImpaired=true.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AVC00145	1	Terminal correctly returns active AVComponents using getCurrentActiveComponents(componentType) method of video/broadcast object.	FALSE	When the video/broadcast object is playing a stream containing multiple video, audio and subtitle components, a call to getCurrentActiveComponents() with a componentType of COMPONENT_TYPE_VIDEO, COMPONENT_TYPE_AUDIO or COMPONENT_TYPE_SUBTITLE, shall return the currently active AVComponent for the video, audio or subtitle component, respectively
org.hbbtv_AVC00150	1	Terminal correctly switches AVComponents using selectComponent(AVComponent component) method of video/broadcast object.	TRUE	Terminal shall read current active components (video, audio and subtitle), next it selects from all components non-active audio and subtitle.
org.hbbtv_AVC00155	1	Terminal correctly updates active AVComponents collection.	TRUE	Terminal shall read collection of current active components (video, audio and subtitle) using getCurrentActiveComponents(Integer componentType) method, and compares it with active AVcomponents after switching.
org.hbbtv_AVC00160	1	SelectedComponentChange callback is called when selectComponent switches AVComponents.	TRUE	Terminal shall read current active audio and subtitle components, next it selects from all components non-active audio and subtitle. After each switching, callback SelectedComponentChange with appropriate argument is called.
org.hbbtv_AVC00170	1	Unselecting COMPONENT_TYPE_VIDEO stops rendering video AVComponent.	TRUE	When unselectComponent(COMPONENT_TYPE_VIDEO) is called video/broadcast object shall stop to render video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AVC00180	1	Terminal stops presenting audio AV component when unselectComponent(COMPONENT_TYPE_AUDIO) of video/broadcast object is called.	TRUE	When unselectComponent(COMPONENT_TYPE_AUDIO) is called video/broadcast object shall stop to render audio.
org.hbbtv_AVC00190	1	Unselecting COMPONENT_TYPE_SUBTITLE stops rendering subtitle AVComponent.	TRUE	When unselectComponent(COMPONENT_TYPE_SUBTITLE) is called video/broadcast object shall stop to render subtitle.
org.hbbtv_AVC00200	1	Terminal restore rendering video AVComponents after selectComponent(COMPONENT_TYPE_VIDEO) calling.	TRUE	Terminal shall restore rendering video component, when selectComponent(COMPONENT_TYPE_VIDEO) is called.
org.hbbtv_AVC00201	1	Terminal restores rendering audio AVComponents after selectComponent(COMPONENT_TYPE_AUDIO) calling.	TRUE	Terminal shall restore rendering audio component, when selectComponent(COMPONENT_TYPE_AUDIO) is called.
org.hbbtv_AVC00202	1	Terminal restore rendering subtitle AVComponents after selectComponent(COMPONENT_TYPE_SUBTITLE) calling.	FALSE	Terminal shall restore rendering subtitle component, when selectComponent(COMPONENT_TYPE_SUBTITLE) is called.
org.hbbtv_AVC00210	1	Terminal selects by default audio AV component with language equal preferredAudioLanguage property of Configuration object.	TRUE	Language of current active audio component and preferredAudioLanguage in Configuration object ('eng') shall be the same.
org.hbbtv_AVC00220	1	Terminal selects by default subtitle AVcomponent with language equal preferredSubtitleLanguage property of Configuration object.	TRUE	Language of current active subtitle component and preferredSubtitleLanguage in Configuration object ('eng') shall be the same.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AVC00230	1	video/broadcast object updates component collection, if broadcasted data related to AV components changes.	TRUE	7 components: 1 video, 4 audio and 2 subtitle is broadcasted in the current channel. getComponents method shall return correct number and type of components. Next 4 components are broadcasted: 1 video, 2 audio and 1 subtitle. Terminal shall update number and type of components. Next 5 components are broadcasted: 1 video, 3 audio and 1 subtitle. Terminal shall update number and type of components.
org.hbbtv_AVC00235	1	SelectedComponentChange is called, if AVcomponent being presented is no longer available.	TRUE	1 video, 4 audio and 2 subtitle components are broadcasted, sequently video, audio and subtitle selected components are no longer broadcasted. Each time selected components is no longer available SelectedComponentChange shall be called.
org.hbbtv_AVC01010	1	A/V Control object supports media playback extensions API.	TRUE	A/V Control object shall support: constants - COMPONENT_TYPE_VIDEO, COMPONENT_TYPE_AUDIO, COMPONENT_TYPE_SUBTITLE, methods - getComponents, getCurrentActiveComponents, selectComponent and unselectComponent.
org.hbbtv_AVC01020	1	getComponents(null) method of A/V control object returns collection of AVcomponents defined in played MPEG-2 TS file.	TRUE	getComponents method shall return collection of components with length = 8, items contains AV components.
org.hbbtv_AVC01030	1	getComponents(null) method of A/V control object returns correct collection of AVcomponents defined mp4 file.	TRUE	getComponents method shall return collection of components with length = 5, items contains AV components which corresponds to tracks in mp4 file.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AVC01040	1	A/V Control object correctly converts trackID of mp4 file into pid property of AVComponent.	TRUE	getComponents(null) method of A/V Control object shall return collection of AVComponents where pid field of items are respectively 1, 2, 3, 4, 5.
org.hbbtv_AVC01050	1	getComponents(COMPONENT_TYPE_VIDEO) method of A/V control object returns correct collection of video AVcomponents from mp4 file.	TRUE	getComponents method shall return collection of components with length = 2, items contain AV video components which corresponds to tracks with sample description type 'avc1'.
org.hbbtv_AVC01060	1	getComponents(COMPONENT_TYPE_AUDIO) method of A/V control object returns correct collection of audio AVcomponents from mp4 file.	TRUE	getComponents method returns collection of components with length = 3, items shall contain AV audio components which corresponds to tracks with sample description type 'mp4a'.
org.hbbtv_AVC01070	1	A/V Control object correctly sets language of audio AVComponents.	TRUE	A/V control object shall play mp4 file, in which media header 'mdhd' contains language code 'pol' for track 3, 'eng' for track 4 and 'kor' for track 5. getComponents method of A/V control object returns collection of AVComponents which contains components with: pid=3 and language='pol', pid=4 have language='eng', pid=5 have language='kor'.
org.hbbtv_AVC01080	1	Terminal correctly reads active AVComponents using getCurrentActiveComponents(componentType) method of A/V Control object.	TRUE	Terminal shall read current active components (video and audio) from mp4 file using getCurrentActiveComponents(Integer componentType) method, and compares it with output.
org.hbbtv_AVC01099	1	onSelectedComponentChanged callback is called when terminal switches AVComponents using unselectComponent(AVComponent component) method of A/V Control object.	TRUE	Terminal unselects AVcomponents (video and audio). After each unselecting, callback onSelectedComponentChanged with valid argument shall be called.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AVC01101	1	Terminal correctly switches AVComponents using selectComponent(AVComponent) method of A/V control object	TRUE	When a playing A/V Control object's selectComponent() method is called with an AVComponent representing an inactive video or audio from an mp4 file, the currently active video or audio component shall be changed to that of the inactive AVComponent and a SelectedComponentChange event shall be dispatched
org.hbbtv_AVC01110	1	Terminal stops presenting video AV component when unselectComponent(COMPONENT_TYPE_VIDEO) of A/V Control object is called.	TRUE	When unselectComponent(COMPONENT_TYPE_VIDEO) is called A/V Control object shall stop to render video from mp4 file.
org.hbbtv_AVC01120	1	Terminal stops presenting audio AVcomponent when unselectComponent(COMPONENT_TYPE_AUDIO) of A/V Control object is called.	TRUE	When unselectComponent(COMPONENT_TYPE_AUDIO) is called A/V Control object shall stop to render audio from mp4 file.
org.hbbtv_AVC01130	1	Terminal starts to render AVComponents using selectComponent(componentType) method of A/V Control object.	TRUE	First, terminal shall stop rendering AVComponent using unselectComponent() method, next terminal starts to render video and audio components from mp4 file, when selectComponent() is called.
org.hbbtv_AVC01140	2	A/V control object updates component collection after start of playing different mp4 file.	TRUE	Terminal shall update information of A/V Components when next mp4 file is played. When second mp4 file is played A/V Control shall contain information of 5 A/V components: 2 video (pid=1 and pid=2) and 3 audio : pid=3, language='pol', pid=4, language = 'eng', pid=5, language='kor'. When third mp4 file is played A/V Control shall contain information of 2 A/V components, 1 video (pid=1) and 1 audio(pid=2) with language 'rus'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AVC-HD-009-009	1	Fragmented MP4 - HD - H.264/AVC - HP 3.1 - 1280 x 720 px @ 25i - 16:9 - 8 Mbps	TRUE	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 3.1 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 25i frame rate, 8 Mbps bandwidth
org.hbbtv_AVC-HD-009-017	1	Fragmented MP4 - HD - H.264/AVC - HP 3.2 - 1920 x 1080 px @ 25i - 16:9 - 8 Mbps	TRUE	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 3.2 profile, 16:9 aspect ratio, 1920 x 1080 px resolution, 25i frame rate, 8 Mbps bandwidth
org.hbbtv_AVC-HD-009-025	1	Fragmented MP4 - HD - H.264/AVC - HP 3.2 - 1280 x 720 px @ 50p - 16:9 - 8 Mbps	TRUE	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 3.2 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 50p frame rate, 8 Mbps bandwidth
org.hbbtv_AVC-HD-009-028	1	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1920 x 1080 px @ 25p - 16:9 - 8 Mbps	TRUE	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 4.0 profile, 16:9 aspect ratio, 1920 x 1080 px resolution, 25p frame rate, 8 Mbps bandwidth
org.hbbtv_AVC-HD-009-032	1	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1280 x 720 px @ 25p - 16:9 - 8 Mbps	TRUE	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 4.0 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 25p frame rate, 8 Mbps bandwidth
org.hbbtv_AVC-HD-009-035	1	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1920 x 1080 px @ 25i - 16:9 - 8 Mbps	TRUE	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 4.0 profile, 16:9 aspect ratio, 1920 x 1080 px resolution, 25i frame rate, 8 Mbps bandwidth

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_AVC-HD-009-039	1	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1280 x 720 px @ 25i - 16:9 - 8 Mbps	TRUE	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 4.0 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 25i frame rate, 8 Mbps bandwidth
org.hbbtv_AVC-HD-009-043	1	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1280 x 720 px @ 50p - 16:9 - 8 Mbps	TRUE	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 4.0 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 50p frame rate, 8 Mbps bandwidth
org.hbbtv_BR_APPLAUNCH0010	1	Broadcast-related application launching another from same service - URL with triplet	TRUE	A broadcast-related application requests to launch another broadcast related application signalled in the current service using the dvb: URL for the other application with the current service referred to using its dvb triplet. The second application is launched.
org.hbbtv_BR_APPLAUNCH0020	1	Broadcast-related application launching another from same service - URL with current.ait	TRUE	A broadcast-related application requests to launch another broadcast related application signalled in the current service using the dvb: URL for the other application with the current service referred to using 'current.ait'. The second application is launched.
org.hbbtv_BR_APPLAUNCH0030	1	Broadcast-related application launching another from different service - failure by DOM0 event	TRUE	A broadcast-related application requests to launch another broadcast related application signalled in a different service using the dvb: URL for the other application. The second application fails as if the initial page could not be loaded. The onApplicationLoadError handler of the first application is called.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_BR_APPLAUNCH0035	1	Broadcast-related application launching another from different service - failure by DOM2 event	TRUE	A broadcast-related application that registered a callback for the DOM2 Event ApplicationLoadError requests to launch another broadcast related application signalled in a different service using the dvb: URL for the other application. The second application fails as if the initial page could not be loaded. The terminal calls the function registered as callback for the ApplicationLoadError.
org.hbbtv_BR_APPLAUNCH0040	1	Broadcast-related application changing channel and then launching - DVB triplet	TRUE	A broadcast-related application (not service bound) starts in one service, changes channel to a second service where it is allowed to run by the signalling and then requests to launch another broadcast related application signalled in the second service (but not signalled in the first) using the dvb: URL for the other application using the DVB triplet for the second service. The second application is launched as defined in the second service.
org.hbbtv_BR_APPLAUNCH0050	1	Broadcast-related application changing channel and then launching - current.ait	TRUE	A broadcast-related application (not service bound) starts in one service, changes channel to a second service where it is allowed to run by the signalling and then requests to launch another broadcast related application signalled in the second service (but not signalled in the first) using the dvb: URL for the other application using 'current.ait' to refer to the second service. The second application is launched as defined in the second service.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_BR_APPLAUNCH0060	1	Broadcast-independent application becomes broadcast-related and then launches app on current service - DVB triplet	TRUE	A broadcast-independent application selects a broadcast service where it meets the conditions for becoming broadcast-related and survives. It then requests to launch another application signalled in the newly selected service using the dvb: URL for the other application referring to the service using its DVB triplet. The second application is launched.
org.hbbtv_BR_APPLAUNCH0070	1	Broadcast-independent application becomes broadcast-related and then launches app on current service - current.ait	TRUE	A broadcast-independent application selects a broadcast service where it meets the conditions for becoming broadcast-related and survives. It then requests to launch another application signalled in the newly selected service using the dvb: URL for the other application referring to the service using 'current.ait'. The second application is launched.
org.hbbtv_BR_APPLAUNCH0080	1	Broadcast-independent application becomes broadcast-related , changes channel and then launches app on current service - DVB triplet	TRUE	A broadcast-independent application selects a broadcast service where it meets the conditions for becoming broadcast-related and survives. It then changes to a second channel and requests to launch another application signalled in that second channel (but not the first) using a dvb: URL for the other application where the reference to the service is in the form of its DVB triplet. The second application is launched.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_BR_APPLAUNCH0090	1	Broadcast-independent application becomes broadcast-related, changes channel and then launches app on current service - current.ait	TRUE	A broadcast-independent application selects a broadcast service where it meets the conditions for becoming broadcast-related and survives. It then changes to a second channel and requests to launch another application signalled in that second channel (but not the first) using a dvb: URL for the other application where the reference to the service is 'current.ait'. The second application is launched.
org.hbbtv_BR_APPLAUNCH0100	1	Broadcast-related application becomes broadcast-independent , back to broadcast-related on a different channel and then launches app on current service - DVB triplet	TRUE	A broadcast-related application running as part of one service becomes broadcast-independent and then selects a different broadcast service where it meets the conditions for becoming broadcast-related and survives. It then requests to launch another application signalled in that second service (but not the first) using a dvb: URL for the other application where the reference to the service is in the form of its DVB triplet. The second application is launched.
org.hbbtv_BR_APPLAUNCH0110	1	Broadcast-related application becomes broadcast-independent , back to broadcast-related on a different channel and then launches app on current service - current.ait	TRUE	A broadcast-related application running as part of one service becomes broadcast-independent and then selects a different broadcast service where it meets the conditions for becoming broadcast-related and survives. It then requests to launch another application signalled in that second service (but not the first) using a dvb: URL for the other application where the reference to the service is 'current.ait'. The second application is launched.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_CS000001	1	Test to verify HbbTVCSManager embedded object support with correct MIME type	TRUE	The terminal shall support HbbTVCSManager embedded object with MIME type “application/hbbtvCSManager”.
org.hbbtv_CS000002	1	Discovering a Companion Screen Launcher Application with a valid enum_id	TRUE	When a Companion Screen Launcher Application is discovered, the terminal shall respond to discoverCSLaunchers() by calling onCSDiscovery() callback function with an Array containing a single DiscoveredCSLauncher object with a 'enum_id' property of type Number
org.hbbtv_CS000003	1	Responding to the second discoverCSLaunchers() call with the same enum_id for a connected (associated) Companion Screen Launcher Application	TRUE	When a Companion Screen Launcher Application is discovered with a valid enum_id and the HbbTV application calls discoverCSLaunchers() function again while the Companion Screen Launcher Application is connected (associated), the terminal shall call onCSDiscovery() callback function with an Array containing a single DiscoveredCSLauncher with an 'enum_id' property with the same value as the previous callback.
org.hbbtv_CS000004	2	Responding to the second discoverCSLaunchers() call with different enum_id for a disconnected (dis-associated) Companion Screen Launcher Application	TRUE	When a connected (associated) Companion Screen Launcher Application is disconnected (dis-associated) and the HbbTV application calls discoverCSLaunchers() function again, the CS Launcher Application shall cause the terminal to call the onCSDiscovery() callback function with an array of csLaunchers consisting of a single DiscoveredCSLauncher object having a different enum_id.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_CS000005	2	Discovering two Companion Screen Launcher Applications with unique enum_ids	TRUE	When two Companion Screen Launcher Applications are discovered, the terminal shall respond to discoverCSLaunchers() by calling onCSDiscovery() callback function once with an array of csLaunchers consisting of two DiscoveredCSLauncher objects each having a unique enum_id.
org.hbbtv_CS000006	2	Discovering a Companion Screen Launcher Application with an empty friendly_name string	TRUE	When a Companion Screen Launcher Application is discovered, the terminal shall respond to discoverCSLaunchers() by calling onCSDiscovery() callback function with an array of csLaunchers consisting of a single DiscoveredCSLauncher object having an empty friendly_name string in case of Companion Screen Launcher Application not providing one.
org.hbbtv_CS000007	2	Discovering a Companion Screen Launcher Application with a valid CS_OS_id	TRUE	When a Companion Screen Launcher Application is discovered, the terminal shall respond to discoverCSLaunchers() by calling onCSDiscovery() callback function with an array of csLaunchers consisting of a single DiscoveredCSLauncher object having a valid CS_OS_id.
org.hbbtv_CS000008	1	Test to check return value of bool discoverCSLaunchers() in case of no errors	TRUE	When the HbbTV application calls HbbTVCSManager.discoverCSLaunchers() function with a 'onCSDiscovery' argument, the terminal shall return true in the case of no errors.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_CS000010	1	onCSDiscovery() callback fired within 1 sec for a currently connected Companion Screen	TRUE	When there is a Companion Screen Launcher Application currently running and the Companion Screen Device is connected to the same network as the HbbTV terminal at the time of the call to HbbTVCSManager.discoverCSLaunchers(), the CS Launcher Application shall cause the terminal to call the 'onCSDiscovery' callback function within 1 second of the function returning true.
org.hbbtv_CS000012	1	Launching a Native Application (Android)	TRUE	When the Launch Native instruction is supplied in the payload field of the launchCSApp() method, the Companion Screen Launcher Application shall cause the terminal to attempt to launch the native application.
org.hbbtv_CS000012_IOS	1	Launching a Native Application (iOS)	TRUE	When the Launch Native instruction is supplied in the payload field of the launchCSApp() method, the iOS Companion Screen Launcher Application shall cause the terminal to attempt to launch the native application.
org.hbbtv_CS000013	1	Launching an HTML Application (Android)	TRUE	When the Launch HTML instruction is supplied in the payload field of the launchCSApp() method, the Companion Screen Launcher Application shall cause the terminal to attempt to launch the HTML application.
org.hbbtv_CS000013_IOS	1	Launching an HTML Application (iOS)	TRUE	When the Launch HTML instruction is supplied in the payload field of the launchCSApp() method, the iOS Companion Screen Launcher Application shall cause the terminal to attempt to launch the HTML application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_CS000016	1	Launching both Native and HTML Applications where the Native Application is available (Android)	TRUE	When both launch native and launch HTML instructions are supplied in the payload field of the launchCSApp() method, the Companion Screen Launcher Application shall cause the terminal to attempt to launch the native application first.
org.hbbtv_CS000016_IOS	1	Launching both Native and HTML Applications where the Native Application is available (iOS)	TRUE	When both launch native and launch HTML instructions are supplied in the payload field of the launchCSApp() method, the iOS Companion Screen Launcher Application shall cause the terminal to attempt to launch the native application first.
org.hbbtv_CS000017	1	Launching both Native and HTML Applications where the Native Application is not available (Android)	TRUE	When both launch native and launch HTML instructions are supplied in the payload field of the launchCSApp() method, If the launch Native application is not successful, then the Companion Screen Launcher Application shall cause the terminal to attempt to launch the HTML application
org.hbbtv_CS000017_IOS	1	Launching both Native and HTML Applications where the Native Application is not available (iOS)	TRUE	When both launch native and launch HTML instructions are supplied in the payload field of the launchCSApp() method, If the launch Native application is not successful, then the iOS Companion Screen Launcher Application shall cause the terminal to attempt to launch the HTML application

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_CS000018	1	Launching a Native Application with invalid JSON data	TRUE	When the launch native application instruction is supplied in the payload field of the launchCSApp() method with invalid JSON data, the CS Launcher Application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with error code 4 (general_error).
org.hbbtv_CS000019	1	Launching an HTML Application with invalid JSON data	TRUE	When the launch HTML application instruction is supplied in the payload field of the launchCSApp() method with invalid JSON data, the CS Launcher Application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with error code 4 (general_error).
org.hbbtv_CS000020	1	Installing a (Native) Application with invalid JSON data (Android)	TRUE	When the install (Native) application instruction is supplied in the payload field of the launchCSApp() method with invalid JSON data, the CS Launcher Application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with error code 4 (general_error).
org.hbbtv_CS000020_IOS	1	Installing a (Native) Application with invalid JSON data (iOS)	TRUE	When the install (Native) application instruction is supplied in the payload field of the launchCSApp() method with invalid JSON data, the iOS CS Launcher Application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with error code 4 (general_error).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_CS000021	1	Launching both Native and HTML Applications with invalid JSON data (Android)	TRUE	When both launch native and launch HTML instructions are supplied in the payload field of the launchCSApp() method with invalid JSON data, the CS Launcher Application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with error code 4 (general_error).
org.hbbtv_CS000021_IOS	1	Launching both Native and HTML Applications with invalid JSON data (iOS)	TRUE	When both launch native and launch HTML instructions are supplied in the payload field of the launchCSApp() method with invalid JSON data, the iOS CS Launcher Application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with error code 4 (general_error).
org.hbbtv_CS000022	1	Launching an application with JSON data of 65536 bytes (Android)	TRUE	When the launch application instruction is supplied in the payload field of the launchCSApp() method with JSON formatted data of 65536 bytes, the Companion Screen Launcher Application shall cause the terminal to attempt to launch the application.
org.hbbtv_CS000022_IOS	1	Launching an application with JSON data of 65536 bytes (iOS)	TRUE	When the launch application instruction is supplied in the payload field of the launchCSApp() method with JSON formatted data of 65536 bytes, the iOS Companion Screen Launcher Application shall cause the terminal to attempt to launch the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_CS000023	1	Installing a (Native) application from a single source with store name (Android)	TRUE	When the install (Native) application instruction is supplied with single source information having store name in the payload field of the launchCSApp() method, the Companion Screen Launcher Application shall cause the terminal to attempt to install the native application using the provided store information.
org.hbbtv_CS000024	1	Installing a (Native) application from a single source without store name (Android)	TRUE	When the install (Native) application instruction is supplied with single source information not having store name in the payload field of the launchCSApp() method, the Companion Screen Launcher Application shall cause the terminal to attempt to install the native application using the default store information.
org.hbbtv_CS000025	1	Installing a (Native) application from the first store of multiple sources (Android)	TRUE	When the install (Native) application instruction is supplied with multiple source information in the payload field of the launchCSApp() method, the Companion Screen Launcher Application shall cause the terminal to attempt to install the native application using the first store information.
org.hbbtv_CS000026	1	Installing a (Native) application from the last store of multiple sources with store name (Android)	TRUE	When the install (Native) application instruction is supplied with multiple source information all having store names in the payload field of the launchCSApp() method, and only the last one is valid, the Companion Screen Launcher Application shall cause the terminal to attempt to install the native application using the last store information.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_CS000027	1	Installing a (Native) application from the default store of multiple sources (Android)	TRUE	When the install (Native) application instruction is supplied with multiple source information all having store names but the last one in the payload field of the launchCSApp() method, and all of them are invalid, the Companion Screen Launcher Application shall cause the terminal to attempt to install the native application using the default store information.
org.hbbtv_CS000028	1	Installing a Native Companion Screen application with the correct enum_id returned (Android)	TRUE	When a Native Companion Screen application is installed, the CS Launcher application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with the same enum_id
org.hbbtv_CS000028_IOS	1	Installing a Native Companion Screen application with the correct enum_id returned (iOS)	TRUE	When a Native Companion Screen application is installed, the iOS CS Launcher application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with the same enum_id
org.hbbtv_CS000029	1	Launching a Native Companion Screen application with the correct enum_id returned (Android)	TRUE	When a Native Companion Screen application is launched, the CS Launcher application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with the same enum_id.
org.hbbtv_CS000029_IOS	1	Launching a Native Companion Screen application with the correct enum_id returned (iOS)	TRUE	When a Native Companion Screen application is launched, the iOS CS Launcher application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with the same enum_id.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_CS000030	1	Launching an HTML Companion Screen application with the correct enum_id returned (Android)	TRUE	When an HTML Companion Screen application is launched, the CS Launcher application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with the same enum_id..
org.hbbtv_CS000030_IOS	1	Launching an HTML Companion Screen application with the correct enum_id returned (iOS)	TRUE	When an HTML Companion Screen application is launched, the iOS CS Launcher application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with the same enum_id.
org.hbbtv_CS000031	1	Launching a Native and an HTML Companion Screen application with the correct enum_id returned (Android)	TRUE	When a Native and an HTML Companion Screen application is launched, the CS Launcher application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with the same enum_id."
org.hbbtv_CS000031_IOS	1	Launching a Native and an HTML Companion Screen application with the correct enum_id returned (iOS)	TRUE	When a Native and an HTML Companion Screen application is launched, the iOS CS Launcher application shall cause the terminal to respond to launchCSApp() by calling onCSLaunch() callback function with the same enum_id."
org.hbbtv_CS000032	1	Test to check return value of bool launchCSApp() in case of no errors	TRUE	When the HbbTV application calls the launchCSApp() function, the terminal shall return true to the HbbTV application when the enum_id refers to a launcher application.
org.hbbtv_CS000033	1	Test to check return value of bool launchCSApp() in case of any error	TRUE	When the HbbTV application calls launchCSApp() function, the terminal shall return false to the HbbTV application in case of any error.
org.hbbtv_D00007040	1	The A/V Control have state stopped when transitioning from playing to stopped on video (MPEG DASH).	FALSE	The A/V control has transitioned to stopped state from playing state due to the stop() method on DASH content.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_D00007050	1	DASH: finished state of A/V Control object	TRUE	The A/V control is transitioned to finished state due to reaching end of video content.
org.hbbtv_D00007060	1	DASH: error state reporting when mpd contains invalid xml.	TRUE	A/V Control object shall go to error state 6 with error value 'content corrupt or invalid', when it tries to play mpd file containing invalid xml.
org.hbbtv_D1000020	1	Update of BaseURL at the Period level.	TRUE	When an MPD contains one Period with a BaseURL on the Period level, and the BaseURL is updated during playback, the terminal shall request the segments from the new location.
org.hbbtv_D1000030	1	Update of BaseURL at the Adaptation Set level.	TRUE	When an MPD contains one Period with a BaseURL on the Adaptation Set level, and the BaseURL is updated during playback, the terminal shall request the segments from the new location.
org.hbbtv_D1000040	1	Update of BaseURL at the Representation level.	TRUE	When an MPD contains one Period with a BaseURL on the Representation level, and the BaseURL is updated during playback, the terminal shall request the segments from the new location.
org.hbbtv_D1000110	3	DASH: Increasing @availabilityEndTime	TRUE	When the @availabilityEndTime attribute of a dynamic, single-Period MPD is extended, the A/V control object shall continue playing segments past the original @availabilityEndTime
org.hbbtv_D1000200	1	DASH: update of playPosition.	TRUE	playPosition property of A/V Control object shall be correctly updated due to normal playout. MPD type is static.
org.hbbtv_D1000230	1	Request for segments shall respect format tag when $Number$ identifier is used.	TRUE	When $Number$ identifier is used and number of digits is less than [width], the result shall be padded with zeros.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_D1000231	1	Request for segments shall respect format tag when $Bandwidth$ identifier is used.	TRUE	When $Bandwidth$ identifier is used and number of digits is less than [width], the result shall be padded with zeros.
org.hbbtv_D1000232	1	Request for segments shall respect format tag when $Time$ identifier is used.	TRUE	When $Time$ identifier is used and number of digits is less than [width], the result shall be padded with zeros.
org.hbbtv_D1000233	1	Request for segments shall contain not truncated number, even if $Number$ value have more digits than format tag.	TRUE	When $Number$ identifier is used and number of digits is bigger than [width], the result shall not be truncated.
org.hbbtv_D1000234	1	Request for segments shall contain not truncated number, even if $Bandwidth$ value have more digits than format tag.	TRUE	When $Bandwidth$ identifier is used and number of digits is bigger than [width], the result shall not be truncated.
org.hbbtv_D1000400	1	DASH: SegmentTemplate@startNumber	TRUE	The first url of media segment request send by terminal shall contain value of @startNumber parameter of segmentTemplate.
org.hbbtv_D1000410	1	DASH: absence of SegmentTemplate@startNumber.	TRUE	If the @startNumber attribute is not present in the corresponding SegmentTemplate element at Period level, the $Number$ identifier shall be replaced with 1 in the URL when the terminal requests the first segment
org.hbbtv_DA540290	3	Simple DASH A/V stream	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static MPD containing one audio adaptation set with one representation, and one video adaptation set with one representation.
org.hbbtv_DA540300	3	Simple DASH A/V stream (Audio check) DASH Audio stream with one representation	TRUE	The terminal shall correctly decode and display audio content from a stream defined by a static MPD containing one audio adaptation set with one representation, and one video adaptation set with one representation.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540310	3	DASH A/V stream with two video representations	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD containing one audio adaptation set with one representation and one video adaptation set with two representations.
org.hbbtv_DA540320	3	DASH A/V stream with 16 video representations	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD containing one audio adaptation set with one representation and one video adaptation set with 16 representations.
org.hbbtv_DA540340	3	DASH streams with HE-AAC Broadcast-mix Audio Description (main audio only)	TRUE	Terminal correctly presents main broadcast audio from a DASH stream containing 1 video and 2 HE-AAC audio AdaptationSets, where 1 audio AdaptationSet is signalled as containing broadcast mix Audio Description using the AudioPurpose classification scheme
org.hbbtv_DA540341	4	DASH streams with HE-AAC Broadcast-mix Audio Description (audio description only)	TRUE	Terminal correctly presents broadcast mix Audio Description from a DASH stream containing 1 video and 2 HE-AAC audio AdaptationSets, where 1 audio AdaptationSet is signalled as containing broadcast mix Audio Description using the AudioPurpose classification scheme
org.hbbtv_DA540360	3	DASH streaming with one period, without a start or duration attribute	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD containing one period, the period not having a start or duration attribute defined.
org.hbbtv_DA540370	3	DASH streaming with one period with start attribute and no duration attribute	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD containing one period with a start attribute and no duration attribute.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540380	3	DASH streaming with one period with duration attribute and no start attribute	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD containing one period with a duration attribute and no start attribute.
org.hbbtv_DA540390	3	DASH streaming with one period with start and duration attributes	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD containing one period with a start attribute and a duration attribute.
org.hbbtv_DA540400	3	DASH streaming with two contiguous periods, both with start and duration attributes	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static MPD containing two contiguous periods, each having a start and a duration attribute defined. The terminal shall be able to transition between the two periods
org.hbbtv_DA540405	3	DASH streaming with two contiguous periods, both with start and duration attributes (audio check)	TRUE	The terminal shall correctly decode and play audio content from a stream defined by a static MPD containing two contiguous periods, each having a start and a duration attribute defined. The terminal shall correctly transition between the two periods.
org.hbbtv_DA540410	3	DASH streaming with two contiguous periods, one with start and duration attributes, the other with start attribute and a SegmentTimeline	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD containing two contiguous periods, the first period having a start and a duration attribute defined, the second having a start attribute defined and containing a SegmentTimeline element. The terminal shall be able to transition between the two periods

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540420	3	DASH streaming with three contiguous periods, one with start and duration attributes, the others with start attribute and SegmentTimeline	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD containing three contiguous periods, the first period having a start and a duration attribute defined, the second and third having a start attribute defined and containing a SegmentTimeline element.
org.hbbtv_DA540430	3	DASH streaming with 32 contiguous periods, each with start and duration attributes	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD containing 32 contiguous periods, the first having a start attribute defined, and others having a duration attribute defined. The terminal shall correctly and smoothly transition between periods.
org.hbbtv_DA540440	3	DASH stream with 'lmsg' compatibility brand in last segment of one period	TRUE	The terminal shall correctly play a DASH stream described by a static MPD containing three periods, where the last media segment of the second period carries the 'lmsg' compatibility brand
org.hbbtv_DA540460	3	DASH streaming with segments described per Representation by SegmentTemplates defined using $Number$	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD in which segments are described by SegmentTemplates at the Representation level using the $Number$ identifier
org.hbbtv_DA540470	4	DASH streaming with segments described per Representation by SegmentTemplates defined using $Time$ and SegmentTimeline	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD in which segments are described by SegmentTemplates at the Representation level using the $Time$ identifier and the SegmentTimeline element

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540480	3	DASH streaming with segments described per AdaptationSet by SegmentTemplates defined using $Number$ and $Bandwidth$	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD in which segments are described by SegmentTemplates at the AdaptationSet level using the $Number$ and $Bandwidth$ identifiers
org.hbbtv_DA540490	4	DASH streaming with segments described per AdaptationSet by SegmentTemplates defined using $Time$, $Bandwidth$ and SegmentTimeline	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD in which segments are described by SegmentTemplates at the AdaptationSet level using the $Time$ and $Bandwidth$ identifiers and the SegmentTimeline element
org.hbbtv_DA540500	3	DASH streaming with segments described per AdaptationSet by SegmentTemplates defined using $Number$ and $RepresentationID$	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD in which segments are described by SegmentTemplates at the AdaptationSet level using the $Number$ and $RepresentationID$ identifiers
org.hbbtv_DA540510	4	DASH streaming with segments described per AdaptationSet by SegmentTemplates defined using $Time$ and $RepresentationID$	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD in which segments are described by SegmentTemplates at the AdaptationSet level using the $Time$ and $RepresentationID$ identifiers and the SegmentTimeline element
org.hbbtv_DA540520	3	DASH streaming with BaseURL defined at top level of MPD and segments described per Representation by SegmentTemplates	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD in which a BaseURL is defined at the top level of the MPD, and segments are described by SegmentTemplates at the Representation level

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540530	3	DASH streaming with BaseURL defined per Period and segments described per Representation by SegmentTemplates	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD in which BaseURL is defined in each Period, and segments are described by SegmentTemplates at the Representation level
org.hbbtv_DA540540	3	DASH streaming with BaseURL defined per Representation and segments described per AdaptationSet by SegmentTemplates	TRUE	The terminal shall correctly decode and display AV content from a stream defined by a static MPD in which BaseURL is defined in each Representation, and segments are described by SegmentTemplates at the AdaptationSet level
org.hbbtv_DA540550	4	Test that dynamic MPD updates are requested	TRUE	When playing content described by an MPD which has @type="dynamic" the terminal shall make requests for an updated MPD according to the @minimumUpdatePeriod attribute of the MPD element.
org.hbbtv_DA540560	4	Test dynamic MPD with @mediaPresentationDuration attribute	TRUE	When playing content described by an MPD which has @type="dynamic" and @mediaPresentationDuration set to the full length of the video, the terminal shall play the video to the end.
org.hbbtv_DA540570	1	Early available period - Test dynamic MPDs with the addition of content to an empty Period.	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic". The MPD shall initially be served to the terminal containing a single empty Period element. The MPD shall then be updated so that the Period contains accessible segments. The terminal shall then start playing content.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540580	4	Addition of a Period to a dynamic MPD with 1 Period.	TRUE	When playing content described by an MPD which has @type="dynamic" and has one Period element when initially served to the terminal, the terminal shall correctly play content described in a Period element which is dynamically added to the MPD.
org.hbbtv_DA540590	4	Added Period in a Dynamic MPD - Low to High	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic" and contains a single Period, which shall have @start=0. The MPD shall then be updated to change the segments described by the video Representation to a higher bitrate Representation with a different @id. Playback of video on the terminal shall continue without interruption using the segments described in the new Representation.
org.hbbtv_DA540595	4	Added Period in a Dynamic MPD - High to Low	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic" and contains a single Period, which shall have @start=0. The MPD shall then be updated to change the segments described by the video Representation to a lower bitrate Representation with a different @id. Playback of video on the terminal shall continue without interruption using the segments described in the new Representation.
org.hbbtv_DA540600	4	Removal of a completed period from a dynamic MPD	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic" and which contains two Periods. Once playback of the first Period has completed, the MPD shall be updated to remove it. The terminal shall continue to correctly play content without interruption.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540605	4	Removal of a completed period from a dynamic MPD (Audio check)	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic" and which contains two Periods. Once playback of the first Period has completed, the MPD shall be updated to remove it. The terminal shall continue to correctly play audio content without interruption.
org.hbbtv_DA540610	4	Addition of a new representation to a dynamic MPD	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic". Once playback has commenced the MPD shall be updated to add a Representation. The terminal shall continue to correctly play video content without interruption and shall use the added Representation when the bandwidth to use other Representations is not available.
org.hbbtv_DA540615	4	Addition of a new representation to a dynamic MPD (audio check)	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic". Once playback has commenced the MPD shall be updated to add a Representation. The terminal shall continue to correctly play audio content without interruption and shall use the added Representation when the bandwidth to use other Representations is not available.
org.hbbtv_DA540620	4	Change to the SegmentTemplate of a dynamic MPD	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic". Once playback has commenced the MPD shall be updated with a modified SegmentTemplate. The terminal shall continue to correctly play content without interruption.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540630	4	Change to the BaseURL of a dynamic MPD	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic". Once playback has commenced the MPD shall be updated with a modified BaseURL element. The terminal shall continue to correctly play content without interruption.
org.hbbtv_DA540640	4	Termination of MPD updates when @mediaPresentationDuration is set	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic" and which specifies a value for @minimumUpdatePeriod. Once playback has commenced the MPD shall be updated to replace the @minimumUpdatePeriod attribute with the @mediaPresentationDuration. The terminal shall make no further requests for the MPD.
org.hbbtv_DA540655	4	Correct handling of a decrease in @minimumUpdatePeriod in a dynamic MPD	TRUE	The terminal shall play a stream defined by an MPD which has @type="dynamic". The MPD shall initially be served to the terminal containing a single Period and the @minimumUpdatePeriod set to 30 seconds. After 1 minute the MPD shall be replaced by one with the @minimumUpdatePeriod reduced to 10 seconds. The terminal shall increase the frequency at which it updates the MPD to 10 seconds.
org.hbbtv_DA540660	5	DASH stream transitioning from high to low bitrate interlaced video content	TRUE	During playout of a stream defined in a static MPD the terminal shall transition seamlessly from a video representation with a high bit rate (1.5Mbps) and interlaced content to a representation with a low bit rate (256kbps) and interlaced content.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540670	5	DASH stream transitioning from low to high bitrate interlaced video content	TRUE	During playout of a stream defined in a static MPD the terminal shall transition seamlessly from a video representation with a low bit rate (256kbps) and interlaced content to a representation with a high bit rate (1.5Mbps) and interlaced content.
org.hbbtv_DA540680	5	DASH stream transitioning from high to low bitrate progressive video content	TRUE	During playout of a stream defined in a static MPD the terminal shall transition seamlessly from a video representation with a high bit rate (1.5Mbps) and progressive content to a representation with a low bit rate (256kbps) and progressive content.
org.hbbtv_DA540690	5	DASH stream transitioning from low to high bitrate progressive video content	TRUE	During playout of a stream defined in a static MPD the terminal shall transition seamlessly from a video representation with a low bit rate (256kbps) and progressive content to a representation with a high bit rate (1.5Mbps) and progressive content.
org.hbbtv_DA540700	4	DASH stream transitioning from 576i to 1080i video content	TRUE	During playout of a stream defined in a static MPD the terminal shall transition across a period boundary, from a 576i video representation to a 1080i video representation without decoding artefacts or picture corruption
org.hbbtv_DA540710	4	DASH stream transitioning from 1080i to 576i video content	TRUE	During playout of a stream defined in a static MPD the terminal shall transition across a period boundary, from a 1080i video representation to a 576i video representation without decoding artefacts or picture corruption

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540720	4	DASH stream transitioning video content from luminance resolution 480x576 to luminance resolution 720x576	TRUE	During playout of a stream defined in a static MPD the terminal shall transition across a period boundary, from a video representation with a luminance resolution of 480x576 to a video representation with a luminance resolution of 720x576 without decoding artefacts or picture corruption
org.hbbtv_DA540730	4	DASH stream transitioning video content from luminance resolution 720x576 to luminance resolution 480x576	TRUE	During playout of a stream defined in a static MPD the terminal shall transition across a period boundary, from a video representation with a luminance resolution of 720x576 to a video representation with a luminance resolution of 480x576 without decoding artefacts or picture corruption
org.hbbtv_DA540740	4	DASH stream transitioning from interlaced to progressive video content	TRUE	During playout of a stream defined in a static MPD the terminal shall transition across a period boundary, from a video representation with interlaced frames to a video representation with progressive frames without decoding artefacts or picture corruption
org.hbbtv_DA540750	4	DASH stream transitioning from progressive to interlaced video content	TRUE	During playout of a stream defined in a static MPD the terminal shall transition across a period boundary, from a video representation with progressive frames to a video representation with interlaced frames without decoding artefacts or picture corruption
org.hbbtv_DA540760	4	DASH stream transitioning from 25fps video to 50fps video content	TRUE	During playout of a stream defined in a static MPD the terminal shall transition across a period boundary, from a 25fps video representation to a 50fps video representation without decoding artefacts or picture corruption

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540770	4	DASH stream transitioning from 50fps video to 25fps video content	TRUE	During playout of a stream defined in a static MPD the terminal shall transition across a period boundary, from a 50fps video representation to a 25fps video representation without decoding artefacts or picture corruption
org.hbbtv_DA540780	5	DASH stream transitioning HEAAC audio content from low to high bitrate Representations	TRUE	During playout of a stream defined in a static MPD in response to increased bandwidth availability the terminal shall seamlessly transition from an audio representation with a bitrate of 56kbps to an audio representation with a bitrate of 384kbps, both representations being encoded using HEAAC.
org.hbbtv_DA540790	5	DASH stream transitioning HEAAC audio content from high to low bitrate Representations	TRUE	During playout of a stream defined in a static MPD in response to decreased bandwidth availability the terminal shall seamlessly transition from an audio representation with a bitrate of 384kbps to an audio representation with a bitrate of 54kbps, both representations being encoded using HEAAC.
org.hbbtv_DA540820	4	DASH stream transitioning from HE-AAC audio content to E-AC3 audio content	TRUE	During playout of a stream defined in a static MPD, the terminal shall transition from an audio representation using HE-AAC encoding to one using E-AC3 encoding
org.hbbtv_DA540830	4	DASH stream transitioning from EAC-3 audio content to HE-AAC audio content	TRUE	During playout of a stream defined in a static MPD, the terminal shall transition from an audio representation using E-AC3 encoding to one using HE-AAC encoding
org.hbbtv_DA540840	4	DASH stream transitioning from an audio representation with 2 channels to one with 5.1 channels	TRUE	During playout of a stream defined in a static MPD the terminal shall transition from an audio representation with 2 channels to one with 5.1 channels

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540850	4	DASH stream transitioning from an audio representation with 5.1 channels to one with 2 channels	TRUE	During playout of a stream defined in a static MPD, the terminal shall transition from an audio representation with 5.1 channels to one with 2 channels
org.hbbtv_DA540860	4	DASH stream transitioning from an audio representation with a high sample rate to one with a low sample rate	TRUE	During playout of a stream defined in a static MPD, the terminal shall transition from an audio representation with a high sample rate to one with a low sample rate
org.hbbtv_DA540870	4	DASH stream transitioning from an audio representation with a low sample rate to one with a high sample rate	TRUE	During playout of a stream defined in a static MPD, the terminal shall transition from an audio representation with a low sample rate to one with a high sample rate
org.hbbtv_DA540880	4	MPEG DASH - Redirect to an MPD - HTTP 302 (Found)	TRUE	When a HTTP 302 (Found) status code is received as a response to a request for an MPD, the terminal shall request the MPD from the URI provided in the Location field of the HTTP response
org.hbbtv_DA540890	4	MPEG DASH - Redirect to an MPD - HTTP 307 (Temporary Redirect)	TRUE	When a HTTP 307 (Temporary Redirect) status code is received as a response to a request for an MPD, the terminal shall request the MPD from the URI provided in the Location field of the HTTP response
org.hbbtv_DA540900	4	HTTP 400 error when trying to load a DASH MPD	TRUE	When an HTTP 400 (bad request) status code is received as a response to a request for an MPD, the AV object shall generate an onPlayStateChange event and transition to state 6 (error)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540910	3	HTTP 502 error when trying to load a DASH MPD	TRUE	When a HTTP 502 (bad gateway) status code is received as a response to a request for an MPD, the AV object shall generate an onPlayStateChange event and transition to state 6 (error)
org.hbbtv_DA540920	3	HTTP 401 error when trying to load a DASH MPD	TRUE	When a HTTP 401 (unauthorised) status code is received as a response to requests for an MPD, the AV object shall generate an onPlayStateChange event and transition to state 6 (error)
org.hbbtv_DA540930	4	HTTP 404 error when trying to load a DASH initialization segment	TRUE	When a HTTP 404 (not found) status code is received as a response to a request for an Initialization Segment, the AV object shall generate an onPlayStateChange event and transition to playState 6 ('error')
org.hbbtv_DA540940	4	HTTP 404 errors when trying to load a DASH segment	TRUE	When a HTTP 404 (not found) status code is received as a response to requests for a DASH media segment, the AV object shall generate a onPlayStateChange event and transition to state 6 (error), and the terminal shall stop presenting DASH media and blank the display.
org.hbbtv_DA540950	4	MPEG DASH - Redirect to a Video Segment - HTTP 302 (Found)	TRUE	When a HTTP 302 (found) status code is received as a response to a request for a media segment, the terminal shall request the segment from the URI provided in the Location field of the HTTP response

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA540960	4	MPEG DASH - Redirect to a Video Segment - HTTP 307 (Temporary Redirect)	TRUE	When a HTTP 307 (temporary redirect) status code is received as a response to a request for a media segment, the terminal shall request the segment from the URI provided in the Location field of the HTTP response and successfully play the DASH stream.
org.hbbtv_DA540980	3	DASH stream with 1 video AdaptationSet and 15 audio AdaptationSets	TRUE	The terminal shall play a DASH stream described by an MPD containing 1 video and 15 audio AdaptationSets, with each audio AdaptationSet having a different @lang attribute. When the stream is played the terminal shall select an appropriate language AdaptationSet, and correctly play both audio and video content.
org.hbbtv_DA540990	3	DASH stream with 1 video representation and 16 audio representations	TRUE	The terminal shall play a DASH stream described by an MPD containing 1 video and 1 audio AdaptationSet, with the audio AdaptationSet containing 16 Representations. When the stream is played the terminal shall select an audio Representation, and correctly play both audio and video content.
org.hbbtv_DA541000	3	Playback of DASH stream with 1 second segments	TRUE	The terminal shall correctly play back video in a stream defined in a static MPD in which audio and video are encoded in segments 1 second in duration.
org.hbbtv_DA541005	3	Playback of DASH stream with 1 second segments (audio check)	TRUE	The terminal shall correctly play back audio a stream defined in a static MPD in which audio and video are encoded in segments 1 second in duration.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA541010	3	Playback of DASH stream with 15 second segments	TRUE	The terminal shall correctly play back video in a stream defined in a static MPD in which audio and video are encoded in segments 15 seconds in duration.
org.hbbtv_DA541015	3	Playback of DASH stream with 15 second segments (audio check)	TRUE	The terminal shall correctly play back audio in a stream defined in a static MPD in which audio and video are encoded in segments 15 seconds in duration.
org.hbbtv_DA541020	3	Playback of DASH stream with 3 second video segments and 15 second audio segments (video check)	TRUE	The terminal shall correctly play back video in a stream defined in a static MPD in which video is encoded in segments 3 seconds duration, and audio is encoded in segments 15 seconds in duration.
org.hbbtv_DA541025	3	Playback of DASH stream with 3 second video segments and 15 second audio segments (audio check)	TRUE	The terminal shall correctly play back audio in a stream defined in a static MPD in which video is encoded in segments 3 seconds duration, and audio is encoded in segments 15 seconds in duration.
org.hbbtv_DA541030	3	Playback of DASH stream with 15 second video segments and 3 second audio segments (video check)	TRUE	The terminal shall correctly play back video in a stream defined in a static MPD in which video is encoded in segments 15 seconds in duration and audio is encoded in segments 3 seconds in duration.
org.hbbtv_DA541035	3	Playback of DASH stream with 15 second video segments and 3 second audio segments (audio check)	TRUE	The terminal shall correctly play back audio in a stream defined in a static MPD in which video is encoded in segments 15 seconds in duration and audio is encoded in segments 3 seconds in duration.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA541040	3	Playback of DASH stream with audio segments described by a SegmentTemplate containing a SegmentTimeline at the Period level of the associated MPD.	TRUE	The terminal shall correctly play a stream defined by a static MPD in which the segments for the audio Representation are described by a SegmentTemplate containing a SegmentTimeline at the Period level. The video segments shall be described by a SegmentTemplate within the Representation which overrides the higher level SegmentTemplate and SegmentTimeline.
org.hbbtv_DA541050	3	Playback of DASH stream with audio segments described by a SegmentTemplate at the Representation level inheriting a SegmentTimeline from the Period Level.	TRUE	The terminal shall correctly play a stream defined by a static MPD in which the audio segments are described by a SegmentTemplate containing a SegmentTimeline at the Period level and a second SegmentTemplate containing @media and @initialization at the Representation level. The video segments shall be described by a SegmentTemplate within the Representation which overrides the higher level SegmentTemplate and SegmentTimeline.
org.hbbtv_DA541060	3	Playback of DASH stream with segments described by a SegmentTemplate containing a SegmentTimeline at the AdaptationSet level of the associated MPD.	TRUE	The terminal shall correctly play a stream defined by a static MPD in which the segments are described by a SegmentTemplate containing a SegmentTimeline at the AdaptationSet level.
org.hbbtv_DA541070	3	Playback of DASH stream with segments described by a SegmentTemplate with SegmentTimeline at the AdaptationSet level inheriting attributes from a SegmentTemplate at the Period Level.	TRUE	The terminal shall correctly play a stream defined by a static MPD in which the segments are described by a SegmentTemplate containing a SegmentTimeline at the AdaptationSet level and a second SegmentTemplate containing @media and @initialization at the Period level.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA541080	3	Playback of DASH stream with segments described by a SegmentTemplate containing a SegmentTimeline at the Representation level of the associated MPD.	TRUE	The terminal shall correctly play a stream defined by a static MPD in which the segments are described by a SegmentTemplate containing a SegmentTimeline at the Representation level.
org.hbbtv_DA541090	3	Playback of DASH stream with segments described by a SegmentTemplate with SegmentTimeline at the Representation level inheriting attributes from a SegmentTemplate at the Period Level.	TRUE	The terminal shall correctly play a stream defined by a static MPD in which the segments are described by a SegmentTemplate containing a SegmentTimeline at the Representation level and a second SegmentTemplate containing @media and @initialization at the Period level.
org.hbbtv_DA541150	2	Play with speed specified as 4x for DASH encoded clear content	TRUE	The terminal shall play a DASH stream. In response to a request to play back at 4x normal speed, the terminal shall select and use an appropriate playback speed (greater than or equal to 1) and the terminal shall dispatch a PlaySpeedChanged event, correctly reporting the actual playback speed.
org.hbbtv_DA541160	2	Play with speed specified as -4x for DASH encoded clear content	TRUE	The terminal shall play a DASH stream. In response to a request to play back at -4x normal speed, the terminal shall select and use an appropriate playback speed (less than or equal to -1) and the terminal shall dispatch a PlaySpeedChanged event, correctly reporting the actual playback speed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA541170	1	Play with speed specified as 0.5x for DASH encoded clear content	TRUE	The terminal shall play a DASH stream. In response to a request to play back at 0.5x normal speed, the terminal shall select and use an appropriate playback speed (less than or equal to 1, and greater than 0) and the terminal shall dispatch a PlaySpeedChanged event, correctly reporting the actual playback speed.
org.hbbtv_DA541180	1	Play with speed specified as -0.5x for DASH encoded clear content	TRUE	The terminal shall play a DASH stream. In response to a request to play back at -0.5x normal speed, the terminal shall select and use an appropriate playback speed (greater than or equal to -1, and less than 0) and the terminal shall dispatch a PlaySpeedChanged event, correctly reporting the actual playback speed.
org.hbbtv_DA541190	3	Support for normal playback of DASH encoded clear content streamed over HTTP	TRUE	Terminal shall correctly decode and display AV content from DASH stream delivered over HTTP
org.hbbtv_DA541200	3	Support for pausing DASH encoded clear content streamed over HTTP.	TRUE	Terminal shall correctly pause playback of DASH video content streamed over HTTP when the "play" method of the A/V control object is called with 0 passed as the "speed" parameter.
org.hbbtv_DA541220	4	AV Object Seeking (Forward 5s) in DASH encoded clear content streamed over HTTP	TRUE	The terminal shall correctly seek to 5 seconds ahead of the current position in a DASH stream delivered over HTTP using the seek() method of the A/V control object.
org.hbbtv_DA541230	4	AV Object Seeking Outside Buffer (Forward 6 minutes) in DASH encoded clear content streamed over HTTP.	TRUE	The terminal shall correctly seek to 6 minutes ahead of the current position in a DASH stream delivered over HTTP using the seek() method of the A/V control object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA541240	4	AV Object Seeking Within Buffer (Backward 5s) in DASH encoded clear content streamed over HTTP	TRUE	The terminal shall correctly seek to 5 seconds before the current position in a DASH stream delivered over HTTP using the seek() method of the A/V control object.
org.hbbtv_DA541250	5	AV Object Seeking Outside Buffer (Backwards 60s) in DASH content streamed over HTTP.	TRUE	The terminal shall correctly seek to 60 seconds before the current position in a DASH stream delivered over HTTP using the seek() method of the A/V control object.
org.hbbtv_DA541500	1	Support for trick mode Fast Forward for DASH encoded clear content with multiple representations	TRUE	The terminal shall play a DASH stream defined by a static MPD which defines a single AdaptationSet for video, and a single AdaptationSet for audio. The audio AdaptationSet shall define one Representation, and the video AdaptationSet shall define three Representations, with bandwidths of 256000, 1500000 and 7500000 and @maxPlayoutRate elements set to 5, 3 and 2 respectively. In response to a request to play back at 4x normal speed the terminal shall select and use an appropriate playback speed (greater than or equal to 1) and the terminal shall dispatch a PlaySpeedChanged event correctly reporting the actual playback speed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA541510	1	Support for trick mode Fast Rewind for DASH encoded clear content with multiple representations	TRUE	The terminal shall play a DASH stream defined by a static MPD which defines a single AdaptationSet for video, and a single AdaptationSet for audio. The audio AdaptationSet shall define one Representation, and the video AdaptationSet shall define three Representations, with three different bandwidths and @maxPlayoutRate elements set to 5, 3 and 2 respectively. In response to a request to play back at -4x normal speed the terminal shall select and use an appropriate playback speed (less than or equal to -1) and the terminal shall dispatch a PlaySpeedChanged event correctly reporting the actual playback speed.
org.hbbtv_DA541800	1	'language' property of the AVAudioComponent is 'und' if the audio component's 'lang' attribute in the MPD is not primary language subtag	TRUE	If the MPD contains one video component and one audio component, and the audio component's 'lang' attribute is absent, then the value of the 'language' property of the corresponding AVComponent object shall be 'und'
org.hbbtv_DA541820	1	MPD schema validation error	TRUE	If the A/V Control object's 'data' attribute is set to an MPD containing one <Representation> element, and the MPD / associated A/V content are otherwise valid except that the <Representation> element does not have a @bandwidth attribute, after the play() method is called on the A/V Control object the A/V Control object shall go to play state 6 (error) with an error code of 4 (content corrupt or invalid)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA541830	1	AVComponent's componentTag property is equal to the adaptation sets @id property	TRUE	If the A/V Control object's 'data' attribute is set to an MPD containing both video and audio adaptation sets and the corresponding <AdaptationSet> element has an @id attribute with the value '123' for audio and '11' for video, then the 'componentTag' property of the associated AVComponent instance shall be a number of the given value.
org.hbbtv_DA541840	1	AVAudioComponent 'language' property on the 'mdhd' of the audio track is ignored	TRUE	If the MPD contains one video component and one audio component where the audio component's 'lang' attribute contains a valid language code - 'eng' according to ISO 639-2 -- and the 'mdhd' of the audio track contains the ISO-639-2 language code 'deu', then the value of the 'language' property of the corresponding AVComponent object shall be 'eng'.
org.hbbtv_DA541850	1	<AdaptationSet> element with Role@value of 'main' - Lower element position	TRUE	If an MPD contains 1 period containing 2 video adaptation sets, and each adaptation set has a corresponding <AdaptationSet> element, namely [1] and [2]. If [1] appears above [2] in the XML document, but [2] contains a <Role> element where its @value attribute has a value of 'main', then the video referenced by [2] shall be presented

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DA541860	1	<AdaptationSet> element with Role@value of 'main' - Higher @id attribute	TRUE	If an MPD contains 1 period containing 2 video adaptation sets, and each adaptation set has a corresponding <AdaptationSet> element, namely [1] and [2]. If [1] has an @id attribute with a value of '2' and a <Role> element where its @value attribute has a value of 'main', and [2] has an @id attribute with a value of '1' but no <Role> element, then the video referenced by [1] shall be presented
org.hbbtv_DA541870	1	DASH MPD with Multiple Profiles	TRUE	The terminal shall be able to present a DASH stream where the MPD contains 2 valid adaptation sets in which the 1st adaptation set uses a profile mandated by the DASH specification but not the HbbTV specification and the 2nd adaptation set uses the 'urn:hbbtv:dash:profile:isoff-live:2012' profile
org.hbbtv_DA541880	1	DASH - AVC_SD_25	TRUE	The terminal shall be able to present DASH content from an MPD containing one video component that uses AVC_SD_25 encoded segments
org.hbbtv_DA541890	1	DASH - AVC_HD_25	TRUE	The terminal shall be able to present DASH content from an MPD containing one video component that uses AVC_HD_25 encoded segments
org.hbbtv_DASH_PROFILES0010	1	MPD: DASH-IF not supported	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates only "http://dashif.org/guidelines/dash264". The MPD is rejected and a MEDIA_ERR_SRC_NOT_SUPPORTED error is generated.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH_PROFILES0020	1	MPD: Non-standard HbbTV profile not supported	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates only "urn:hbbtv:dash:profile:isoff-live:2013". The MPD is rejected and a MEDIA_ERR_SRC_NOT_SUPPORTED error is generated.
org.hbbtv_DASH_PROFILES0030	1	MPD: Non-standard DVB profile not supported	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates only "urn:dvb:dash:profile:dvb-dash:2015". The MPD is rejected and a MEDIA_ERR_SRC_NOT_SUPPORTED error is generated.
org.hbbtv_DASH_PROFILES0050	1	AdaptationSet: DASH-IF not supported	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates "http://dashif.org/guidelines/dash264", "urn:dvb:dash:profile:dvb-dash:2014" and "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014". The MPD includes Video, Audio and subtitle Adaptation Sets with @profiles "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014", Video, Audio and subtitle Adaptation Sets with @profiles "http://dashif.org/guidelines/dash264" and Video, Audio and subtitle Adaptation Sets with both of these. When the load() method is called, no VideoTrack, AudioTrack or TextTrack objects are created for the Adaptation Sets where @profiles only contains "http://dashif.org/guidelines/dash264".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH_PROFILES0060	1	Adaptation Set: Non-standard HbbTV not supported	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates "urn:hbbtv:dash:profile:isoff-live:2013", "urn:dvb:dash:profile:dvb-dash:2014" and "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014". The MPD includes Video, Audio and subtitle Adaptation Sets with @profiles "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014", Video, Audio and subtitle Adaptation Sets with @profiles "urn:hbbtv:dash:profile:isoff-live:2013" and Video, Audio and subtitle Adaptation Sets with both of these. When the load() method is called, no VideoTrack, AudioTrack or TextTrack objects are created for the Adaptation Sets where @profiles only contains "urn:hbbtv:dash:profile:isoff-live:2013".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH_PROFILES0070	1	Adaptation Set: Non-standard DVB not supported	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates "urn:dvb:dash:profile:dvb-dash:2015", "urn:dvb:dash:profile:dvb-dash:2014" and "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014". The MPD includes Video, Audio and subtitle Adaptation Sets with @profiles "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014", Video, Audio and subtitle Adaptation Sets with @profiles "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2015" and Video, Audio and subtitle Adaptation Sets with both of these. When the load() method is called, no VideoTrack, AudioTrack or TextTrack objects are created for the Adaptation Sets where @profiles only contains "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2015".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH_PROFILES0080	1	Adaptation Set: rejection of non-supported profile	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates "urn:example:future-dash-profile", "urn:dvb:dash:profile:dvb-dash:2014" and "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014". The MPD includes Video, Audio and subtitle Adaptation Sets with @profiles "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014", Video, Audio and subtitle Adaptation Sets with @profiles "urn:example:future-dash-profile" and Video, Audio and subtitle Adaptation Sets with both of these. When the load() method is called, no VideoTrack, AudioTrack or TextTrack objects are created for the Adaptation Sets where @profiles only contains "urn:example:future-dash-profile".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH_PROFILES0100	1	Representation: DASH-IF not supported	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates "http://dashif.org/guidelines/dash264", "urn:dvb:dash:profile:dvb-dash:2014" and "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014". The MPD includes one each of Video, Audio and subtitle Adaptation Sets with no @profiles element. Each Adaptation Set includes one or more Representations with @profiles set to "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014", one or more Representations with @profiles set to "http://dashif.org/guidelines/dash264" and one or more representations with @profiles set to both of these. When the play method is called on the video element, no segments for Representations with @profiles set only to "http://dashif.org/guidelines/dash264" are requested by the terminal".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH_PROFILES0110	1	Representation: Non-standard HbbTV not supported	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates "urn:hbbtv:dash:profile:isoff-live:2013", "urn:dvb:dash:profile:dvb-dash:2014" and "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014". The MPD includes one each of Video, Audio and subtitle Adaptation Sets with no @profiles element. Each Adaptation Set includes one or more Representations with @profiles set to "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014", one or more Representations with @profiles set to "urn:hbbtv:dash:profile:isoff-live:2013" and one or more representations with @profiles set to both of these. When the play method is called on the video element, no segments for Representations with @profiles set only to "urn:hbbtv:dash:profile:isoff-live:2013" are requested by the terminal.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH_PROFILES0120	1	Representation: Non-standard DVB not supported	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates "urn:dvb:dash:profile:dvb-dash:2014", "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014" and "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2015". The MPD includes one each of Video, Audio and subtitle Adaptation Sets with no @profiles element. Each Adaptation Set includes one or more Representations with @profiles set to "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014", one or more Representations with @profiles set to "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2015" and one or more representations with @profiles set to both of these. When the play method is called on the video element, no segments for Representations with @profiles set only to "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2015" are requested by the terminal.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH_PROFILES0130	1	Representation: rejection of non-supported profile	TRUE	The src of an HTML5 video element points to a DASH MPD where the @profiles indicates "urn:example:future-dash-profile", "urn:dvb:dash:profile:dvb-dash:2014" and "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014". The MPD includes one each of Video, Audio and subtitle Adaptation Sets with no @profiles element. Each Adaptation Set includes one or more Representations with @profiles set to "urn:example:future-dash-profile", one or more Representations with @profiles set to "urn:dvb:dash:profile:dvb-dash:isoff-ext-live:2014" and one or more Representations with @profiles set to both of these. When the play method is called on the video element, no segments for Representations with @profiles set only to "urn:example:future-dash-profile" are requested by the terminal.
org.hbbtv_DASH-131_0010	1	Segments greater than 960ms	TRUE	The terminal shall play back, without artefacts or glitches, using an HTML5 video element, a stream defined in a dynamic DVB-DASH MPD in which HE-AAC audio and AVC video are encoded in segments 960 milliseconds in duration.
org.hbbtv_DASH-131_0100	1	Multiple moof / mdat boxes per DASH segment	TRUE	When playing content, using an HTML5 video element, described by an MPD which has @type="dynamic", where the video (AVC) and audio (HE-AAC) representations have multiple moof / mdat boxes per DASH media segment, the terminal shall play the video and audio without artefacts or glitches.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-131_0110	1	Multiple moof / mdat boxes per DASH segment - adaptation	TRUE	When the available bandwidth becomes unrestricted, the device shall smoothly transition from an AVC representation with multiple moof / mdat boxes per DASH media segment whose bandwidth is below the restriction to a representation that is identical except for the bandwidth being above the restriction and the resolution being higher. The codecs being AVC and HE-AAC respectively. The moof / mdat pairs being evenly distributed through the part of the media timeline occupied by the DASH media segment.
org.hbbtv_DASH-131_0120	1	Multiple moof / mdat boxes per DASH segment - EME clearkey	TRUE	The terminal is able to play, without artefacts or glitches, using an HTML5 video element, linearly from beginning to end, a DASH stream where the AVC video and HE-AAC audio representations have multiple moof / mdat boxes per DASH media segment and are encrypted using CENC with keys delivered using EME clearkey.
org.hbbtv_DASH-131_0130	1	Multiple moof / mdat boxes per DASH segment for video but not for audio	TRUE	The terminal is able to play without artefacts or glitches, using an HTML5 video element, linearly from beginning to end, a DASH stream where AVC video representations have multiple moof / mdat boxes per DASH media segment and HE-AAC audio representations have one moof / mdat box per DASH media segment.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-131_0200	1	UTC Timing xsdate	TRUE	When an application requests playback of MPEG DASH content with an MPD in which (a) MPD@type="dynamic", (b) MPD@availabilityStartTime is present, (c) MPD@timeshiftBufferDepth is set to a finite value, (d) segmentTemplate is used and (e) has one UTCTiming element with @schemeIdURI set to "urn:mpeg:dash:utc:http-xsdate:2014" with @value set to an HTTP URL that returns in the body a valid xs:dateTime string of the form 2002-05-30T09:30:10.567Z that is offset into the past by at least 10 seconds more than the value of MPD@timeshiftBufferDepth, the terminal requests segments that are within the availability time window with respect to the referenced server clock and does not request any segments that are not. The terminal either ignores the fractional part of the returned time or observes it.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-131_0210	1	UTC timing http-iso	TRUE	When an application requests playback of MPEG DASH content with an MPD in which (a) MPD@type="dynamic", (b) MPD@availabilityStartTime is present, (c) MPD@timeshiftBufferDepth is set to a finite value, (d) segmentTemplate is used and (e) has one UTCTiming element with @schemeIdURI set to "urn:mpeg:dash:utc:http-iso:2014" with @value set to an HTTP URL that returns in the body a valid ISO 8601 string of the form 2002-05-30T09:30:10.567Z that is offset into the past by at least 10 seconds more than the value of MPD@timeshiftBufferDepth, if the terminal requests the HTTP URL specified then the terminal requests segments that are within the availability time window with respect to the referenced server clock and does not request any segments that are not. The terminal either ignores the fractional part of the returned time or observes it.
org.hbbtv_DASH-131_0300	1	Adaptation sets have different segment lengths	TRUE	The terminal shall play back, without artefacts or glitches, using an HTML5 video element, a stream defined in a static MPD where AVC video, HE-AAC audio and subtitle representations all have different segment lengths (that are not integer multiples of each-other).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-131_0400	1	Maximum poll rate for dynamic MPDs	TRUE	While playing, using an HTML5 video element, a stream defined using a dynamic MPD with HE-AAC audio and AVC video with 8s video segments, 1s audio segments and minimumUpdatePeriod of 1 minute, the terminal does not poll for MPD updates more frequently than an interval of 44 seconds.
org.hbbtv_DASH-131_0500	1	Unknown essential property descriptor	TRUE	While playing, using an HTML5 video element, a stream defined using a static MPD with 3 AVC video and 3 HE-AAC audio Adaptation Sets where the first and last of each Adaptation Set in the order found in the MPD have an Essential Property descriptor with schemeIdURI "urn:hbbtv:testing:dash:notToBeSupported", the Adaptation Sets with the EssentialProperty descriptor shall not be played by the terminal as a result of component selection by the terminal. Attempts to play those Adaptation Sets by the application shall fail.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-131_0510	1	Unknown essential property descriptor - @id	TRUE	When play() is called on an HTMLVideoElement with its 'src' set to the absolute URL of an MPD referencing HEVC_UHD_25 / HLG10 video and HE-AAC audio with the HLG10 Adaptation Set having 1) an EssentialProperty descriptor with i) @schemeIdUri = "urn:mpeg:mpegB:cicp:ColourPrimaries", ii) @value="9" and iii) an @id attribute of "100" and 2) an EssentialProperty descriptor with i) @schemeIdURI = "urn:hbbtv:testing:dash:notToBeSupported" and ii) an @id attribute of "100"; the video and audio are played from beginning to end.
org.hbbtv_DASH-131_0600	1	Non LL-DASH player behaviour, availabilityTimeComplete attribute set to false	TRUE	When playing content, using an HTML5 video element, described by a dynamic MPD where video (AVC) and audio (HE-AAC) representations with SegmentTemplate@availabilityTimeOffset set and SegmentTemplate@availabilityTimeComplete="false", the terminal does not request any segment until the complete segment becomes available.
org.hbbtv_DASH-131-EVENTS0010	1	MPD events with XML in other namespaces	TRUE	The terminal is able to play, using an HTML5 video element, linearly from beginning to end, a DASH stream where the MPD contains 1) an AVC video Adaption Set, 2) an HE-AAC audio AdaptationSet and 3) DASH Event elements containing child XML elements in other namespaces - specifically SCTE35.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-131-EVENTS0020	1	MPD events with optional XML attributes absent - @presentationTime, @duration	TRUE	The terminal is able to play, using an HTML5 video element, linearly from beginning to end, a DASH stream where the MPD contains 1) an AVC video Adaptation Set, 2) an HE-AAC audio Adaptation Set and 3) DASH Event elements where the optional @presentationTime and @duration attributes of the Event element are not present. When @presentationTime is absent, the DataCue generated has a startTime that is the time offset of the start of the period from the start of the presentation. When @duration is absent, the DataCue generated has endTime that is Number.MAX_VALUE.
org.hbbtv_DASH-131-EVENTS0030	1	MPD events with optional XML attributes absent - @id	TRUE	The terminal is able to play, using an HTML5 video element, linearly from beginning to end, a DASH stream where the MPD contains 1) an AVC video Adaptation Set, 2) an HE-AAC audio Adaptation Set and 3) more than one DASH Event element where the optional @id attribute of the Event element is absent. DataCues are generated for all MPD events. The DataCue has @id being an empty string.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-131-EVENTS0100	1	MPD events with @contentEncoding equals base64	TRUE	The terminal is able to play, using an HTML5 video element, linearly from beginning to end, a DASH stream where the MPD contains 1) an AVC video Adaptation Set, 2) an HE-AAC audio Adaptation Set and 3) more than one DASH Event element with the optional contentEncoding attribute being set to "base64" and the Event element having a value that is a valid base 64 encoded string. DataCues are generated for each MPD event and DataCue.data is correctly set to the contents of the value of the Event element after base64 decoding.
org.hbbtv_DASH-131-EVENTS0110	1	MPD events with XML child elements	TRUE	The terminal is able to play, using an HTML5 video element, linearly from beginning to end, a DASH stream where the MPD contains 1) an AVC video Adaptation Set, 2) an HE-AAC audio Adaptation Set and 3) more than one DASH Event element containing SCTE35 child elements. DataCues are generated for each MPD event and DataCue.data is correctly set to an XML document subset whose canonical form is identical to the canonical form of the Event element in the MPD starting with the opening <Event> tag and ending with the closing </Event> tag.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-131-EVENTS0120	1	MPD events which are empty	TRUE	The terminal is able to play, using an HTML5 video element, linearly from beginning to end, a DASH stream where the MPD contains 1) an AVC video Adaptation Set, 2) an HE-AAC audio Adaptation Set and 3) more than one DASH Event element that is empty (no child elements, no character data or string content). DataCues are generated for each MPD event and DataCue.data is correctly set to an XML document subset whose canonical form is the same as the canonical XML of the corresponding Event element in the MPD starting with the opening <Event> tag and ending with the closing </Event> tag.
org.hbbtv_DASH-BASEURL0010	1	DASH BaseURL - selecting BaseURL [by priority]	TRUE	A live profile MPD has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 2 <BaseURL1> with @priority == 1 <BaseURL2> with @priority == 3. When a terminal starts playing the DASH stream described by this MPD, it makes segment requests using <BaseURL1> as its BaseURL.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-BASEURL0020	1	DASH BaseURL - selecting BaseURL [by priority with default]	TRUE	A live profile MPD has a single Period and Adaptation Set and contains multiple absolute BaseURLs within its Period element, as follows: <BaseURL0> with @priority == 2 <BaseURL1> with @priority == 3 <BaseURL2> with no @priority attribute. The MPD also has a relative BaseURL, <BaseURL3>, within its MPD element. When a terminal starts playing the DASH stream described by this MPD, it makes segment requests using <BaseURL2> as its BaseURL.
org.hbbtv_DASH-BASEURL0030	1	DASH BaseURL - selecting BaseURL [by weight]	TRUE	A live profile MPD has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @weight == 50 <BaseURL1> with @priority == 1, @weight == 30 <BaseURL2> with @priority == 1, @weight == 20. When a terminal starts playing the DASH stream described by this MPD, it randomly selects either <BaseURL0>, <BaseURL1> or <BaseURL2> for segment requests such that over 100 separate playback sessions, <BaseURL0> is used between 40 and 60 times inclusive, <BaseURL1> is used between 21 and 39 times inclusive and <BaseURL2> is used between 12 and 28 times inclusive.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-BASEURL0040	1	DASH BaseURL - selecting BaseURL [by weight with default]	TRUE	A live profile MPD has a single Period and Adaptation Set and contains multiple absolute BaseURLs within its Period element, as follows: <BaseURL0> with @priority == 1, @weight == 2 <BaseURL1> with @priority == 1 and no @weight attribute. When a terminal starts playing the DASH stream described by this MPD, it randomly selects either <BaseURL0> or <BaseURL1> for segment requests such that over 90 separate playback sessions, <BaseURL0> is used between 51 and 69 times inclusive.
org.hbbtv_DASH-BASEURL0050	1	DASH BaseURL - resolving BaseURL [absolute in MPD; relative in AdaptationSet]	TRUE	A live profile MPD has a single Adaptation Set and contains an absolute BaseURL, <BaseURL0>, within its MPD element and a relative BaseURL, <BaseURL1>, within its AdaptationSet element. The MPD contains no other BaseURLs. When a terminal starts playing the DASH stream described by this MPD, it makes segment requests using as its BaseURL the result of resolving <BaseURL1> according to RFC3986 with respect to <BaseURL0>.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-BASEURL0060	1	DASH BaseURL - resolving BaseURL [absolute in Period; relative in Representation]	TRUE	A live profile MPD has a single Period containing a single Adaptation Set, which itself contains a single Representation. The MPD contains an absolute BaseURL, <BaseURL0>, within its Period element and a relative BaseURL, <BaseURL1>, within its Representation element. The MPD contains no other BaseURLs. When a terminal starts playing the DASH stream described by this MPD, it makes segment requests using as its BaseURL the result of resolving <BaseURL1> according to RFC3986 with respect to <BaseURL0>.
org.hbbtv_DASH-BASEURL0070	1	DASH BaseURL - resolving BaseURL [only relative in MPD]	TRUE	A live profile MPD requested from <MPD URL> has a relative BaseURL, <BaseURL0>, within its MPD element, and contains no other BaseURLs. When a terminal starts playing the DASH stream described by this MPD, it makes segment requests using as its BaseURL the result of resolving <BaseURL0> according to RFC3986 with respect to <MPD URL>.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-BASEURL0080	1	DASH BaseURL - resolving BaseURL [relative to document Base URI following 301 permanent redirect]	TRUE	A live profile MPD has a relative BaseURL, <BaseURL0>, within its MPD element, and contains no other BaseURLs. The MPD is requested from <MPD URL1> and the server responds with an HTTP 301 permanent redirect to a different location <MPD URL2>. The terminal follows the redirection and retrieves the MPD from <MPD URL2>. When the terminal starts playing the DASH stream described by this MPD, all segment requests are made with request URLs that are relative to <BaseURL0> and <MPD URL2> and not relative to <MPD URL1>.
org.hbbtv_DASH-BASEURL0090	1	DASH BaseURL - resolving BaseURL [relative to document Base URI following 302 temporary redirect]	TRUE	A live profile MPD has a relative BaseURL, <BaseURL0>, within its MPD element, and contains no other BaseURLs. The MPD is requested from <MPD URL1> and the server responds with an HTTP 302 temporary redirect to a different location <MPD URL2>. The terminal follows the redirection and retrieves the MPD from <MPD URL2>. When the terminal starts playing the DASH stream described by this MPD, all segment requests are made with request URLs that are relative to <BaseURL0> and <MPD URL2> and not relative to <MPD URL1>.
org.hbbtv_DASH-COMPATIBILITY0100	1	DASH video AdaptationSet with unknown video codec is ignored	TRUE	When an application uses an HTML5 video element to play a DASH MPD containing an AVC HD video AdaptationSet that has the @codecs attribute "xxxx" then the video is not presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-COMPATIBILITY0200	1	DASH video AdaptationSet with unknown EssentialProperty descriptor is ignored	TRUE	When an application uses an HTML5 video element to play a DASH MPD containing an AVC HD video AdaptationSet that has an EssentialProperty descriptor with schemeIdUri "urn:hbbtv:undefined" then the video is not presented.
org.hbbtv_DASH-COMPATIBILITY0210	1	DASH audio AdaptationSet with unknown EssentialProperty descriptor is ignored	TRUE	When an application uses an HTML5 video element to play a DASH MPD containing an AAC audio AdaptationSet that has an EssentialProperty descriptor with schemeIdUri "urn:hbbtv:undefined" then the audio is not presented.
org.hbbtv_DASH-COMPATIBILITY0220	1	DASH AdaptationSets with an unknown EssentialProperty descriptor are ignored but ones without are selected	TRUE	When an application uses an HTML5 video element to play a DASH MPD containing two AVC HD video AdaptationSets and two AAC audio AdaptationSets where the first video AdaptationSet and the second audio AdaptationSet have an EssentialProperty descriptor with schemeIdUri "urn:hbbtv:undefined" then video from the second video AdaptationSet is seen and audio from the first audio AdaptationSet is heard.
org.hbbtv_DASH-DTS001	1	Support for DTSE stereo, HbbTV ISOBMFF On Demand profile	TRUE	The terminal shall correctly decode and present DTSE stereo audio as part of AV content from an MPEG DASH On Demand stream.
org.hbbtv_DASH-DTS002	1	Support for DTSE 5.1 channel AV Content, HbbTV ISOBMFF On Demand profile	TRUE	The terminal shall correctly decode and present 5.1 channel DTSE audio as part of AV content from an MPEG DASH On Demand stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0001	2	DASH Error Handling - heavy server load [static MPD; failed DNS resolution]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" and a hostname that does not exist in DNS; <BaseURL1> with @priority == 2, @serviceLocation == "B" and a hostname that does exist in DNS. When a terminal starts to play the stream described by this MPD, it makes segment requests using <BaseURL1> after retrying to resolve the hostname of <BaseURL0> up to 3 seconds from the first failure.
org.hbbtv_DASH-ERRORHANDLE0002	2	DASH Error Handling - heavy server load [static MPD; host unreachable]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal starts to play the DASH stream described by this MPD, and it encounters an unreachable host error in response to its first segment request, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0003	2	DASH Error Handling - heavy server load [static MPD; connection refused]	FALSE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal starts to play the DASH stream described by this MPD, and it encounters a refused connection in response to its first segment request, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0004	2	DASH Error Handling - heavy server load [static MPD; HTTP 500]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, receives an HTTP 500 (Internal server error) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0005	2	DASH Error Handling - heavy server load [static MPD; HTTP 503]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, receives an HTTP 503 (Service unavailable) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0006	2	DASH Error Handling - heavy server load [static MPD; HTTP 504]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, receives an HTTP 504 (Gateway timeout) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0007	3	DASH Error Handling - Missing Segments [HTTP 404; Static MPD]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A"; <BaseURL1> with @priority == 2, @serviceLocation == "B". When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters a HTTP 404 (Not found) error code, it shall switch from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> and shall not attempt any retries of the failed segment.
org.hbbtv_DASH-ERRORHANDLE0008	3	DASH Error Handling - Missing Segments [HTTP 404; Dynamic MPD; No Timing; Request No Longer Valid]	TRUE	When a terminal, which is playing the DASH stream described by a live profile MPD with @type == dynamic, encounters a HTTP 404 (Not found) error code in response to a request for a segment, it reloads the MPD. When the reloaded MPD does not contain any UTCTiming elements, and the segment that caused the HTTP 404 error is no longer a member of the set of segments described by the updated MPD, the terminal adjusts its position in the media to reflect the new MPD.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0009	3	DASH Error Handling - Missing Segments [HTTP 404; Dynamic MPD; Timing Present; Request No Longer Valid]	TRUE	When a terminal, which is playing the DASH stream described by a live profile MPD with @type == dynamic, encounters a HTTP 404 (Not found) error code in response to a request for a segment, it reloads the MPD. When the reloaded MPD contains at least one UTCTiming element, the terminal resynchronises its system time to the time server referenced by one of the UTCTiming elements; and when the segment that caused the HTTP 404 error is not, according to the updated MPD, available at the updated system time, the terminal adjusts its position in the media to reflect the new MPD and time.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0010	3	DASH Error Handling - Missing Segments [HTTP 404; Dynamic MPD; Timing Present; Request Still Valid]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A"; <BaseURL1> with @priority == 2, @serviceLocation == "B". When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters a HTTP 404 (Not found) error code, it shall reload the MPD. When the reloaded MPD contains at least one UTCTiming element, the terminal shall resynchronise its system time to the time server referenced by one of the UTCTiming elements; and when the segment that does not exist is still a member of the set of segments described by the updated MPD, and is still expected to be available according to the updated clock, the terminal shall switch from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0, 1 or 2 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0011	2	DASH Error Handling - missing segments [HTTP 410; static MPD]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 410 (Gone) error code it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> without attempting any retries of the failed segment.
org.hbbtv_DASH-ERRORHANDLE0012	2	DASH Error Handling - missing segments [HTTP 410; dynamic MPD; no timing; request no longer valid]	TRUE	When a terminal, which is playing the DASH stream described by a live profile MPD with @type == dynamic, encounters an HTTP 410 (Gone) error code in response to a request for a segment, it reloads the MPD. When the reloaded MPD does not contain any UTCTiming elements, and the segment that caused the HTTP 410 error is no longer a member of the set of segments described by the updated MPD, the terminal adjusts its position in the media to reflect the new MPD.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0013	2	DASH Error Handling - missing segments [HTTP 410; dynamic MPD; timing present; request no longer valid]	TRUE	When a terminal, which is playing the DASH stream described by a live profile MPD with @type == dynamic, encounters an HTTP 410 (Gone) error code in response to a request for a segment, it reloads the MPD. When the reloaded MPD contains at least one UTCTiming element, the terminal resynchronises its system time to the time server referenced by one of the UTCTiming elements; and when the segment that caused the HTTP 410 error is not, according to the updated MPD, available at the updated system time, the terminal adjusts its position in the media to reflect the new MPD and time.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0014	2	DASH Error Handling - missing segments [HTTP 410; dynamic MPD; request still valid]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 410 (Gone) error code, it reloads the MPD. When the reloaded MPD contains at least one UTCTiming element, the terminal resynchronises its system time to the time server referenced by one of the UTCTiming elements; and when the segment that caused the HTTP 410 error is still a member of the set of segments described by the updated MPD, and is still available at the updated system time, the terminal switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0, 1 or 2 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0015	2	DASH Error Handling - missing segments [HTTP 416; static MPD]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 416 (Requested range not satisfiable) error code it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> without attempting any retries of the failed segment.
org.hbbtv_DASH-ERRORHANDLE0019	2	DASH Error Handling - configuration errors [static MPD; HTTP 502]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 502 (Bad gateway) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0020	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 405]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 405 (Method not allowed) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0021	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 406]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 406 (Not acceptable) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0022	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 407]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 407 (Proxy authentication required) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0023	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 409]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 409 (Conflict) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0024	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 411]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 411 (Length required) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0025	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 412]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 412 (Precondition failed) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0026	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 413]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 413 (Request entity too large) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0027	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 414]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 414 (Request-URI too long) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0028	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 415]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 415 (Unsupported media type) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0029	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 417]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 417 (Expectation failed) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0030	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 408]	FALSE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 408 (Request timeout) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0031	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 501]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 501 (Not implemented) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0032	2	DASH Error Handling - miscellaneous request errors [static MPD; HTTP 505]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 505 (HTTP version not supported) error code,it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0033	2	DASH Error Handling - authentication errors [static MPD; HTTP 401]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 401 (Unauthorized) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0034	2	DASH Error Handling - authentication errors [static MPD; HTTP 402]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 402 (Payment required) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0035	2	DASH Error Handling - authentication errors [static MPD; HTTP 403]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 403 (Forbidden) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0038	2	DASH Error Handling - changing BaseURL [blacklisting matching serviceLocations; empty result; A/V Control]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, each of which have different @priority values but identical @serviceLocation values. When a terminal, which has been playing the DASH stream described by this MPD in an A/V Control object with no errors since the session began, encounters an HTTP 404 (Not found) error code, presentation of the DASH stream stops and the A/V Control object transitions to play state 6 with error code 5.
org.hbbtv_DASH-ERRORHANDLE0039	2	DASH Error Handling - changing BaseURL [blacklisting matching priorities; empty result; A/V Control]	TRUE	A live profile MPD with @type == static has a single Period and Adaptation Set and contains multiple absolute BaseURLs within its Period element, each of which have identical @priority values but different @serviceLocation values. When a terminal, which has been playing the DASH stream described by this MPD in an A/V Control object with no errors since the session began, encounters an HTTP 404 (Not found) error code, presentation of the DASH stream stops and the A/V Control object transitions to play state 6 with error code 5.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0040	2	DASH Error Handling - changing BaseURL [blacklisting matching serviceLocations and priorities; empty result; A/V Control]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "A" <BaseURL2> with @priority == 1, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD in an A/V Control object with no errors since the session began, encounters an HTTP 404 (Not found) error code, presentation of the DASH stream stops and the A/V Control object transitions to play state 6 with error code 5.
org.hbbtv_DASH-ERRORHANDLE0041	2	DASH Error Handling - changing BaseURL [blacklisting matching serviceLocations; single result]	TRUE	A live profile MPD with @type == static has a single Period and Adaptation Set and contains multiple absolute BaseURLs within its Period element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "A" <BaseURL2> with @priority == 3, @serviceLocation == "B" The MPD also has a relative BaseURL, <BaseURL3>, within its MPD element. When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 404 (Not found) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL2>.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0042	2	DASH Error Handling - changing BaseURL [blacklisting matching priorities; single result]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A", weight == 16777215 <BaseURL1> with @priority == 1, @serviceLocation == "B" <BaseURL2> with @priority == 2, @serviceLocation == "C" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 404 (Not found) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL2>.
org.hbbtv_DASH-ERRORHANDLE0044	2	DASH Error Handling - changing BaseURL [blacklisting matching priorities and serviceLocations; single result]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A", weight == 16777215 <BaseURL1> with @priority == 2, @serviceLocation == "A" <BaseURL2> with @priority == 1, @serviceLocation == "B" <BaseURL3> with @priority == 3, @serviceLocation == "C" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 404 (Not found) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL3>.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0050	1	DASH Error Handling - blacklist retained after MPD reload	TRUE	A live profile MPD with @type == dynamic and a defined @minimumUpdatePeriod (e.g. PT1M) has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A", weight == 16777215 <BaseURL1> with @priority == 2, @serviceLocation == "A" <BaseURL2> with @priority == 1, @serviceLocation == "B" <BaseURL3> with @priority == 3, @serviceLocation == "C" On a terminal which has switched to making segment requests using <BaseURL3> due to an HTTP 503 error occurring some time before the first required MPD update, then when the terminal subsequently reloads its MPD, it continues to use <BaseURL3> for subsequent segment requests.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0060	1	DASH Error Handling - Missing Segments [HTTP 404; Dynamic MPD; Request No Longer Valid; Further 404]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A"; <BaseURL1> with @priority == 2, @serviceLocation == "B". When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters a HTTP 404 (Not found) error code, it shall reload the MPD. When the reloaded MPD contains at least one UTCTiming element, the terminal shall resynchronise its system time to the time server referenced by one of the UTCTiming elements; and when the segment that caused the HTTP 404 error is not, according to the updated MPD, available at the updated system time, the terminal shall adjust its position in the media to reflect the new MPD and time. When a HTTP 404 error is returned in response to the terminal's first segment request at its new media position, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after a maximum of 2 retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0070	1	DASH Error Handling - heavy server load [dynamic MPD; failed DNS resolution]	FALSE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" and a hostname that does not exist in DNS; <BaseURL1> with @priority == 2, @serviceLocation == "B" and a hostname that does exist in DNS. When a terminal starts to play the stream described by this MPD, it makes segment requests using <BaseURL1> after retrying to resolve the hostname of <BaseURL0> up to 3 seconds from the first failure.
org.hbbtv_DASH-ERRORHANDLE0080	1	DASH Error Handling - heavy server load [dynamic MPD; host unreachable]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal starts to play the DASH stream described by this MPD, and it encounters an unreachable host error in response to its first segment request, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0090	1	DASH Error Handling - heavy server load [dynamic MPD; connection refused]	FALSE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal starts to play the DASH stream described by this MPD, and it encounters a refused connection in response to its first segment request, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0100	1	DASH Error Handling - heavy server load [dynamic MPD; HTTP 500]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, receives an HTTP 500 (Internal server error) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0110	1	DASH Error Handling - heavy server load [dynamic MPD; HTTP 503]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, receives an HTTP 503 (Service unavailable) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0120	1	DASH Error Handling - heavy server load [dynamic MPD; HTTP 504]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, receives an HTTP 504 (Gateway timeout) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0130	1	DASH Error Handling - configuration errors [dynamic MPD; HTTP 502]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 502 (Bad gateway) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0140	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 405]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 405 (Method not allowed) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0150	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 406]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 406 (Not acceptable) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0160	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 407]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 407 (Proxy authentication required) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0170	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 409]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 409 (Conflict) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0180	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 411]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 411 (Length required) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0190	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 412]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 412 (Precondition failed) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0200	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 413]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 413 (Request entity too large) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0210	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 414]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 414 (Request-URI too long) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0220	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 415]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 415 (Unsupported media type) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0230	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 417]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 417 (Expectation failed) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0240	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 408]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 408 (Request timeout) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0250	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 501]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 501 (Not implemented) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0260	1	DASH Error Handling - miscellaneous request errors [dynamic MPD; HTTP 505]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 505 (HTTP version not supported) error code,it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0270	1	DASH Error Handling - authentication errors [dynamic MPD; HTTP 401]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 401 (Unauthorized) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0280	1	DASH Error Handling - authentication errors [dynamic MPD; HTTP 402]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 402 (Payment required) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0290	1	DASH Error Handling - authentication errors [dynamic MPD; HTTP 403]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 403 (Forbidden) error code, it switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0 or 1 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0300	2	DASH Error Handling - Missing Segments [HTTP 404; Dynamic MPD; No Timing; Request Still Valid]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A"; <BaseURL1> with @priority == 2, @serviceLocation == "B". When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters a HTTP 404 (Not found) error code, it reloads the MPD. When the reloaded MPD does not contain any UTCTiming elements, and the segment that caused the HTTP 404 error is still a member of the set of segments described by the updated MPD and is still available, the terminal switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0, 1 or 2 failed retry attempts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0310	1	DASH Error Handling - missing segments [HTTP 410; dynamic MPD; no timing; request still valid]	TRUE	A live profile MPD with @type == dynamic has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters an HTTP 410 (Gone) error code, it reloads the MPD. When the reloaded MPD does not contain any UTCTiming elements, and the segment that caused the HTTP 410 error is still a member of the set of segments described by the updated MPD and is still available, the terminal switches from making segment requests using <BaseURL0> to making segment requests using <BaseURL1> after 0, 1 or 2 failed retry attempts.
org.hbbtv_DASH-ERRORHANDLE0330	1	DASH Error Handling - changing BaseURL [blacklisting matching serviceLocations; empty result; HTML5 Video]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, each of which have different @priority values but identical @serviceLocation values. When a terminal, which has been playing the DASH stream described by this MPD in an HTML5 Video element with no errors since the session began, encounters an HTTP 404 (Not found) error code, presentation of the DASH stream stops and the error attribute of the HTML5 Video element is set to MEDIA_ERR_NETWORK.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0340	1	DASH Error Handling - changing BaseURL [blacklisting matching priorities; empty result; HTML5 Video]	TRUE	A live profile MPD with @type == static has a single Period and Adaptation Set and contains multiple absolute BaseURLs within its Period element, each of which have identical @priority values but different @serviceLocation values. When a terminal, which has been playing the DASH stream described by this MPD in an HTML5 Video element with no errors since the session began, encounters an HTTP 404 (Not found) error code, presentation of the DASH stream stops and the error attribute of the HTML5 Video element is set to MEDIA_ERR_NETWORK.
org.hbbtv_DASH-ERRORHANDLE0350	1	DASH Error Handling - changing BaseURL [blacklisting matching serviceLocations and priorities; empty result; HTML5 Video]	TRUE	A live profile MPD with @type == static has a single Adaptation Set and contains multiple absolute BaseURLs within its MPD element, as follows: <BaseURL0> with @priority == 1, @serviceLocation == "A" <BaseURL1> with @priority == 2, @serviceLocation == "A" <BaseURL2> with @priority == 1, @serviceLocation == "B" When a terminal, which has been playing the DASH stream described by this MPD in an HTML5 Video element with no errors since the session began, encounters an HTTP 404 (Not found) error code, presentation of the DASH stream stops and the error attribute of the HTML5 Video element is set to MEDIA_ERR_NETWORK.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORHANDLE0360	2	DASH Error Handling - Missing Segments [HTTP 404; Dynamic MPD; Request Still Valid, But No Alternative BaseURLs; HTML5 Video]	TRUE	A live profile MPD with @type == dynamic contains a single BaseURL. When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, encounters a HTTP 404 (Not found) error code, it reloads the MPD. When the reloaded MPD contains at least one UTCTiming element, the terminal resynchronises its system time to the time server referenced by one of the UTCTiming elements; and when the segment that caused the HTTP 404 error is still a member of the set of segments described by the updated MPD, and is still available at the updated system time according to the updated MPD, then after 0, 1 or 2 failed retry attempts presentation of the DASH stream stops and the error attribute of the HTML5 Video element is set to MEDIA_ERR_NETWORK.
org.hbbtv_DASH-ERRORHANDLE0370	2	DASH Error Handling - heavy server load [HTTP 500; dynamic MPD; request still valid, single BaseURL; HTML5 video]	TRUE	A live profile MPD with @type == dynamic contains a single BaseURL. When a terminal, which has been playing the DASH stream described by this MPD with no errors since the session began, receives an HTTP 500 (Internal server error) error code, then after 0 or 1 failed retry attempts presentation of the DASH stream stops and the error attribute of the HTML5 Video element is set to MEDIA_ERR_NETWORK.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0001	1	DASH Errors - becoming a reporting client when probability=1000	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL, which indicates a serviceLocation of "hbbtvTest". When an application requests playback of this MPD the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=S00 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0002	1	DASH Errors - becoming a reporting client with probability=700	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="700" @dvb:reportingUrl=<HTTP URL to test server other than the one serving the MPD> The MPD contains one absolute BaseURL, which indicates a serviceLocation of "hbbtvTest". An application plays this MPD 75 times, closing the DASH player each time. Each time it is played a record is made of whether the terminal made an error report with: errorcode=S00 After each playback of the MPD there should be two numbers available: * numPlays - the number of times the MPD has been played during this test * numReports - the number of times the errorcode S00 has been reported during this test. The test passes if 0.6 < (numReports/numPlays) < 0.8

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0003	1	DASH Errors - becoming a reporting client with probability=1	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1" @dvb:reportingUrl=<HTTP URL to test server other than the one serving the MPD> The MPD contains one absolute BaseURL, which indicates a serviceLocation of "hbbtvTest". An application plays this MPD 50 times, closing the DASH player each time. Each time it is played a record is made of whether the terminal made an error report with: errorcode=S00 After each playback of the MPD there should be two numbers available: * numPlays - the number of times the MPD has been played during this test * numReports - the number of times the errorcode S00 has been reported during this test. The test passes if (numReports/numPlays) <= 0.05

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0004	1	DASH Errors - becoming a reporting client when probability attribute missing	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:reportingUrl=<URL to test server> The @dvb:probability attribute is not present. The MPD contains one absolute BaseURL, which indicates a serviceLocation of "hbbtvTest". When an application requests playback of this MPD the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=S00 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0005	1	DASH Errors - reporting a DNS lookup failure	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL, which indicates a hostname which does not exist in DNS and the serviceLocation "hbbtvTest". When an application requests playback of the MPD the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=C00 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0006	1	DASH Errors - reporting an unreachable host	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL, which indicates a hostname and the serviceLocation "hbbtvTest". The IP address to which the hostname resolves is not assigned to any machine. When an application requests playback of this MPD the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=C01 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0007	1	DASH Errors - reporting a connection refused	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL, which indicates a hostname and port identifier and the serviceLocation "hbbtvTest". The port identifier gives a port on the test server which does not accept connections. When an application requests playback of this MPD the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=C02 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0008	1	DASH Errors - reporting corrupt media	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". On the media server the third segment in all video representations is a file containing twenty bytes each with the value 0x0F. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=M00 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0009	1	DASH Errors - reporting a change of Base URL after an error	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains two absolute BaseURLs. One with the attributes @serviceLocation="hbbtv1" and @priority="1" and one with the attributes @serviceLocation "hbbtvB" and @priority="2". On the server which the priority 1 URL points to, any request for the third media segment of any video representation returns a 403 Forbidden response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=F00 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server from BaseURL with priority=1> servicelocation=hbbtv1 (the serviceLocation of BaseURL with priority=1) The client may also make error reports to the same server with the errorcode S00 and 403. This is expected, but testing those reports are not part of this assertion. However the client shall not make error reports with any other error codes.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0010	1	DASH Errors - reporting HTTP error codes - 401 Unauthorized	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". The media server is configured such that any request for the 3rd media segment of any video representation will get a 401 Unauthorized response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=401 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0011	1	DASH Errors - reporting HTTP error codes - 403 Forbidden	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". The media server is configured such that any request for the 3rd media segment of any video representation will get a 403 Forbidden response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=403 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0012	1	DASH Errors - reporting HTTP error codes - 404 Not Found	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". On the media server the third segment is missing from all video representations. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=404 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0013	1	DASH Errors - reporting HTTP error codes - 410 Gone	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". The media server is configured such that any request for the 3rd media segment of any video representation will get a 410 Gone response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=410 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0014	1	DASH Errors - reporting HTTP error codes - 500 Internal Server Error	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". The media server is configured such that any request for the 3rd media segment of any video representation will get a 500 Internal Server Error response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=500 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0015	1	DASH Errors - reporting HTTP error codes - 501 Not Implemented	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". The media server is configured such that any request for the 3rd media segment of any video representation will get a 501 Not Implemented response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=501 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0016	1	DASH Errors - reporting HTTP error codes - 502 Bad Gateway	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". The media server is configured such that any request for the 3rd media segment of any video representation will get a 502 Bad Gateway response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=502 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0017	1	DASH Errors - reporting HTTP error codes - 503 Service Unavailable	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". The media server is configured such that any request for the 3rd media segment of any video representation will get a 503 Service Unavailable response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=503 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0018	1	DASH Errors - reporting HTTP error codes - 504 Gateway Timeout	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". The media server is configured such that any request for the 3rd media segment of any video representation will get a 504 Gateway Timeout response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=504 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0019	1	DASH Errors - reporting unrecognised HTTP status codes - in error range - 418 I'm A Teapot	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". The media server is configured such that any request for the 3rd media segment of any video representation will get a 418 I'm a Teapot response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=418 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0020	1	DASH Errors - reporting unrecognised HTTP status codes - undefined range - 750 Wibble	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". The media server is configured such that any request for the 3rd media segment of any video representation will get a 750 Wibble response. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=750 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0021	1	DASH Errors - ceasing being a reporting client after errors - incorrect HTTP status code from reporting server	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL, which indicates a serviceLocation of "hbbtvTest". The 20th media segment of all video representations is missing on the media server. A test server is available to accept GET requests at the URL indicated by <URL to test server>; however, that server responds with a 403 Forbidden status code to any reports logged. When an application requests playback of this MPD the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=S00 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> servicelocation=hbbtvTest For the test to pass the terminal must make that initial report and continue playing the media to the missing segments, but must not make any further error reports, either attempting to repeat the initial S00 report or to report the missing media segments.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0022	1	DASH Errors - ceasing being a reporting client after errors - unable to reach reporting server	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL, which indicates a serviceLocation of "hbbtvTest". The 20th media segment of all video representations is missing on the media server. <URL to test server> uses a hostname which resolves in DNS to an IP address which is not present on the network. When an application requests playback of this MPD the client must try to open a connection to the host indicated by <URL to test server>. However, when that fails it must make no further attempts to connect to that host. It must continue playing the media until the missing segments.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0023	1	DASH Errors - using an HTTPS reporting server - reporting to a working TLS server	FALSE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<HTTPS URL to test server> The MPD contains one absolute BaseURL, which indicates a serviceLocation of "hbbtvTest". A test server is available to accept GET requests at the URL indicated by <HTTPS URL to test server>. The test server must have a valid TLS certificate which is trusted based on the list of mandatory CAs. When an application requests playback of this MPD the client opens a TLS connection to the test server and makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=S00 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> servicelocation=hbbtvTest

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0024	1	DASH Errors - using an HTTPS reporting server - not reporting to an untrusted server	FALSE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<HTTPS URL to test server> The MPD contains one absolute BaseURL, which indicates a serviceLocation of "hbbtvTest". A test server is available to accept GET requests at the URL indicated by <HTTPS URL to test server>. The test server must have a TLS certificate which is correct, but signed by an otherwise unknown CA (ie the CA certificate should be created for this purpose and self signed). When an application requests playback of this MPD the client attempts to open a TLS connection to the test server, but must abort opening the connection with a TLS Alert and not make the error report.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0025	1	DASH Errors - using an HTTPS reporting server - not reporting to a server whose certificate does not match the host name	FALSE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<HTTPS URL to test server> The MPD contains one absolute BaseURL, which indicates a serviceLocation of "hbbtvTest". A test server is available to accept GET requests at the URL indicated by <HTTPS URL to test server>. The test server must have a valid TLS certificate which is trusted based on the list of mandatory CAs; however, that certificate's Common Name must not be the same as the hostname present in the <HTTPS URL to test server> When an application requests playback of this MPD the client attempts to open a TLS connection to the test server, but must abort opening the connection with a TLS Alert and not make the error report.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0026	1	DASH Errors - using an HTTPS reporting server - not reporting to a server with an expired certificate	FALSE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<HTTPS URL to test server> The MPD contains one absolute BaseURL, which indicates a serviceLocation of "hbbtvTest". A test server is available to accept GET requests at the URL indicated by <HTTPS URL to test server>. The test server must have a TLS certificate which is issued by one of the mandatory CAs; however, that certificate must expire before the current time. When an application requests playback of this MPD the client attempts to open a TLS connection to the test server, but must abort opening the connection with a TLS Alert and not make the error report.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0027	1	DASH Errors - downloadable fonts - unreachable server	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL, which indicates a hostname and the serviceLocation "hbbtvTest". The MPD contains one period containing three adaptation sets - one audio, one video and one subtitles. The subtitles adaptation set contains an EssentialProperty descriptor with @schemeIdUri="urn:dvb:dash:fontdownload:2014", @value="1", @mimeType="application/font-woff", @url="<URL of font on non-existent server>" @fontFamily="<something appropriate>". When an application requests playback of this MPD the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=C01 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of font on non-existent server> ipaddress=<IP address of font server>

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0028	1	DASH Errors - downloadable fonts - 404 not found	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL, which indicates a hostname and the serviceLocation "hbbtvTest". The MPD contains one period containing three adaptation sets - one audio, one video and one subtitles. The subtitles adaptation set contains an EssentialProperty descriptor with @schemeIdUri="urn:dvb:dash:fontdownload:2014", @value="1", @mimeType="application/font-woff", @url="<absolute URL which points at non-existent file on a real server>" @fontFamily="<something appropriate>". When an application requests playback of this MPD the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=404 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<absolute URL which points at non-existent file on a real server> ipaddress=<IP address of font server>

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0029	1	DASH Errors - downloadable fonts - invalid file format	TRUE	An MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL, which indicates a hostname and the serviceLocation "hbbtvTest". The MPD contains one period containing three adaptation sets - one audio, one video and one subtitles. There is a file containing 20 bytes, each 0xFF, on an HTTP server which the terminal can access. The subtitles adaptation set contains an EssentialProperty descriptor with @schemeIdUri="urn:dvb:dash:fontdownload:2014", @value="1", @mimeType="application/font-woff", @url="<absolute URL which points to the corrupt file>" @fontFamily="<something appropriate>". When an application requests playback of this MPD the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=M01 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<absolute URL which points to the corrupt file> ipaddress=<IP address of font server>

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0030	1	DASH Errors - player maintains status as a reporting player with dynamic MPD after refresh period	TRUE	A dynamic MPD for a live A/V stream contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="500" @dvb:reportingUrl=<URL to test server> The MPD@minimumUpdatePeriod is set to cause the terminal to refresh the MPD. Media segments are arranged to become unavailable some time after the first MPD refresh will have occurred. Whenever the terminal plays the stream, then after an MPD update occurs, the reporting status of the terminal does not change. Specifically, each of 6 times the terminal is requested to play the stream, it either (a) makes exactly one report with errorcode=S00, with the report being made before the MPD update, and then makes up to three subsequent reports after the update with errorcode=404, or (b) makes no report.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0031	1	DASH Errors - player maintains status as a reporting player with dynamic MPD after an MPD update event message	TRUE	A dynamic MPD for a live A/V stream contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="500" @dvb:reportingUrl=<URL to test server> The MPD indicates that there will be inband MPD events on the video representation. An MPD expiration event is present in the video representation some time into the stream. Segments become unavailable from the server some time later. Whenever the terminal plays the stream, then after an MPD update occurs, the reporting status of the terminal does not change. Specifically, each of 6 times the terminal is requested to play the stream, it either (a) makes exactly one report with errorcode=S00, with the report being made before the MPD update, and then makes up to three subsequent reports after the update with errorcode=404, or (b) makes no report.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ERRORREP0032	1	DASH Errors - player reports missing segments in an audio only stream	TRUE	A static MPD contains a Metrics element with the attribute @metrics="DVBErrors". Within that is a Reporting element with the following attributes: @schemeIdUri="urn:dvb:dash:reporting:2014" @value="1" @dvb:probability="1000" @dvb:reportingUrl=<URL to test server> The MPD contains one absolute BaseURL with the serviceLocation "hbbtvTest". There is only one adaptation set in the MPD. This adaptation set contains one audio Representation. On the media server the fourth media segment is missing from the audio representation. When an application requests playback of this MPD (from the beginning) the client makes a GET request to the URL indicated by <URL to test server> with a query string including the following field, value pairs: errorcode=404 mpdurl=<URL of the MPD in use> terror=<expected time including timezone +/-10s> url=<URL of a media or initialisation segment> ipaddress=<IP address of media server> servicelocation=hbbtvTest
org.hbbtv_DASH-EVENT0010	1	DASH - Events - Poll for new MPD based on MPD validity expiration event with @value = 1	TRUE	When a terminal is presenting a DASH MPD with an InbandEventStream with its @schemeIdUri attribute set to "urn:mpeg:dash:event:2012" and its @value attribute set to 1, on a Representation that is currently being decoded, and an MPD validity expiration event is received on a Representation that is currently being decoded, the terminal polls for a new MPD.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0011	1	DASH - Events - Do not poll for new MPD based on minimumUpdateTime when validity expiration InbandEventStream is present with @value = 1	TRUE	When a terminal is presenting a DASH MPD with an InbandEventStream with its @schemeIdUri attribute set to "urn:mpeg:dash:event:2012" and its @value attribute set to "1", on a Representation that is currently being decoded, and the MPD@minimumUpdatePeriod is defined and segment duration is no longer than the minimumUpdatePeriod, and no MPD validity expiration event is present in the segments of any Representation that is currently being decoded, then the terminal does not poll for a new MPD.
org.hbbtv_DASH-EVENT0020	1	DASH - Events - Poll for new MPD based on MPD validity expiration event with @value = 2	TRUE	Two dynamic MPDs exist. (A) contains a single Representation with @id "1", which contains an InbandEventStream with its @schemeIdUri attribute set to "urn:mpeg:dash:event:2012" and its @value attribute set to "2". (B) is identical except that the media URLs for the Representation with @id "1" differ. <C> is defined as the patch which can be applied to (A) to yield (B). When presenting A, and an MPD validity expiration event with presentation_time_delta 0 and message_data <C> is received on the Representation that is currently being decoded, the terminal starts downloading media segments with URLs as in MPD (B).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0021	1	DASH - Events - Do not poll for new MPD based on minimumUpdateTime when validity expiration InbandEventStream is present with @value = 2	TRUE	When a terminal is presenting a DASH MPD with an InbandEventStream with its @schemeIdUri attribute set to "urn:mpeg:dash:event:2012" and its @value attribute set to "2", on a Representation that is currently being decoded, and the MPD@minimumUpdatePeriod is defined and segment duration is no longer than the minimumUpdatePeriod, and no MPD validity expiration event is present in the segments of any Representation that is currently being decoded, then the terminal does not poll for a new MPD.
org.hbbtv_DASH-EVENT0022	1	DASH - Events - Terminal stops presentation when MPD validity expiration event with presentation_time_delta 0 and event_duration 0 is received	TRUE	When a terminal is presenting a DASH MPD with an InbandEventStream with its @schemeIdUri attribute set to "urn:mpeg:dash:event:2012" and @value set to "1", on a Representation that is currently being decoded, and an MPD validity expiration event with presentation_time_delta 0 and event_duration 0 is received on that Representation, the terminal stops the presentation.
org.hbbtv_DASH-EVENT0040	1	DASH - Events - Do not download Representations solely to access InbandEventStream	TRUE	An MPD contains three adaptation sets: one video, one audio and one alternative audio. Each adaptation set contains a single representation. Each representation contains an InbandEventStream with a @schemeIdUri unique with the MPD. When a terminal configured for video and main audio playback presents this MPD, it does not download any segments from the alternative audio Representation.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0050	1	DASH - Events - Do not create TextTrack for MPEG DASH-specific InbandEventStreams	TRUE	When a terminal is presenting a DASH MPD with an InbandEventStream with @schemeIdUri set to "urn:mpeg:dash:event:2012" in the MPD or a selected representation, the terminal does not provide a TextTrack for the "urn:mpeg:dash:event:2012" event stream.
org.hbbtv_DASH-EVENT0060	1	DASH - Events - Do not create TextTrack for DVB DASH-specific InbandEventStreams	TRUE	When a terminal is presenting a DASH MPD with an InbandEventStream with @schemeIdUri set to "urn:dvb:iptv:cpm:2014" in the MPD or a selected representation, the terminal does not provide a TextTrack for the "urn:dvb:iptv:cpm:2014" event stream.
org.hbbtv_DASH-EVENT0070	1	DASH - Events - Do not create TextTrack for MPEG DASH-specific EventStreams	TRUE	When a terminal is presenting a DASH MPD with an EventStream with @schemeIdUri set to "urn:mpeg:dash:event:2012" in the MPD or a selected representation, the terminal does not provide a TextTrack for the "urn:mpeg:dash:event:2012" event stream.
org.hbbtv_DASH-EVENT0080	1	DASH - Events - Do not create TextTrack for DVB DASH-specific EventStreams	TRUE	When a terminal is presenting a DASH MPD with an EventStream with @schemeIdUri set to "urn:dvb:iptv:cpm:2014" in the MPD or a selected representation, the terminal does not provide a TextTrack for the "urn:dvb:iptv:cpm:2014" event stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0090	1	DASH - Events - Handling InbandEventStreams with identical @schemeIdUri and @value in multiple AdaptationSets	TRUE	An MPD contains two AdaptationSets with @id A and B respectively, each with a single Representation, and each Representation with an InbandEventStream with @schemeIdUri "<X>", @value "<Y>", where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB, and <Y> is a valid value for <X>. The media for A's Representation contains ten events with the following properties: scheme_id_uri: <X> value: <Y> timescale: 1 presentation_time_delta: 0 event_duration: 0xFFFF id: z (where z is the event number from [1..10]) The media for B's representation also contains ten events with identical properties except that the id property takes the value for z from the range [11..20] When a terminal has completed presentation of the manifest with both AdaptationSets selected, the TextTrack with property inBandMetadataTrackDispatchType "<X> <Y>" contains all ten events from A OR all ten events from B.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0100	1	DASH - Events - Handling InbandEventStreams and EventStreams with identical @schemeIdUri and @value	TRUE	An MPD contains an EventStream with @schemeIdUri "<X>", @value "<Y>", containing ten Events with @id from the sequence 1..10], and a single Representation with an InbandEventStream with @schemeIdUri "<X>", @value "<Y>", where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB, and <Y> is a valid value for <X>. The media for the Representation contains ten events with the following properties: scheme_id_uri: <X> value: <Y> timescale: 1 presentation_time_delta: 0 event_duration: 0xFFFF id: z (where z is the event number from [11..20]) When a terminal has completed presentation of the manifest, there will be two TextTracks with property inBandMetadataTrackDispatchType "<X> <Y>". One of those will contain ten events with id property 1 through 10 and the other will contain ten events with id property 11 through 20.
org.hbbtv_DASH-EVENT0110	1	DASH - Events - Signalling removal of event streams from MPD	FALSE	Two dynamic DASH MPDs exist: (A) contains an MPD@EventStream with @schemeIdUri "<X>", @value 1, where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB; (B) is identical except that it does not contain any EventStream nodes. When presenting A, the terminal updates due to MPD@minimumUpdatePeriod expiring, and receives manifest B; the terminal fires a removetrack event on the TextTrackList.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0120	1	DASH - Events - Signalling addition of event streams from MPD	TRUE	Two dynamic DASH MPDs exist: (A) does not contain any EventStream nodes; (B) is identical except that it contains an MPD@EventStream with @schemeIdUri "<Y>", @value 1, where <Y> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB. When presenting A, the terminal updates due to MPD@minimumUpdatePeriod expiring, and receives manifest B; the terminal fires an addtrack event on the TextTrackList.
org.hbbtv_DASH-EVENT0130	1	DASH - Events - Signalling removal of event streams when selecting a different representation	TRUE	An MPD exists which contains a single AdaptationSet containing two Representations: (A) contains an InbandEventStream with @schemeIdUri "<X>", @value 1, where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB; (B) is identical except that it does not contain any InbandEventStream nodes. When a terminal is presenting representation A and a representation change to B is forced to occur, the terminal fires a removetrack event on the TextTrackList.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0140	1	DASH - Events - Signalling addition of event streams when selecting a different representation	TRUE	An MPD contains a single AdaptationSet containing two Representations: (A) does not contain any InbandEventStream nodes; (B) is identical except that it contains an InbandEventStream with @schemeIdUri "<X>", @value 1, where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB. When a terminal is presenting representation A and a representation change to B is forced to occur, the terminal fires an addtrack event on the TextTrackList.
org.hbbtv_DASH-EVENT0150	1	DASH - Events - Mapping of MPD EventStreams to TextTrack objects	TRUE	When a terminal starts presenting an MPD which contains an EventStream with @schemeIdUri "<X>", @value "<Y>", where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB, and <Y> is a valid value for <X>, the terminal creates a TextTrack object with properties set to the following values: kind: "metadata" label: "" language: "" id: "" inBandMetadataTrackDispatchType: "<X> <Y>" mode: "hidden"

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0160	1	DASH - Events - Mapping of InbandEventStreams to TextTrack objects	TRUE	When a terminal starts presenting a Representation which contains an InbandEventStream with @schemeIdUri "<X>", @value "<Y>", where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB, and <Y> is a valid value for <X>, the terminal creates a TextTrack object with properties set to the following values: kind: "metadata" label: "" language: "" id: "" inBandMetadataTrackDispatchType: "<X> <Y>" mode: "hidden"
org.hbbtv_DASH-EVENT0170	1	DASH - Events - Constrain minimum duration of DataCue	TRUE	An MPD contains an EventStream with @schemeIdUri "<X>", @value "<Y>", @timescale 1000, where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB, and <Y> is a valid value for <X>. The EventStream contains a single Event with @duration 100. When the terminal starts presenting the MPD, the terminal adds a cue to the TextTrack with inBandMetadataTrackDispatchType "<X> <Y>" with startTime 0 and endTime 250.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0180	1	DASH - Events - Raise cuechange event for any DataCue with duration of at least 250ms	TRUE	An MPD contains an EventStream with @schemeIdUri "<X>", @value "<Y>", @timescale 1000, where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB, and <Y> is a valid value for <X>. The EventStream contains a single Event with @duration 100, @id 1. When the terminal starts presenting the MPD, the terminal raises a cuechange event with a cue with startTime 0, endTime 250 and id 1 in the activeCues list.
org.hbbtv_DASH-EVENT0210	1	DASH - Events - TextTrack cues contents for InbandEventStreams	TRUE	An MPD contains a single representation with <InbandEventStream schemeIdUri="<X>" value="<Y>" />, where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB, and <Y> is a valid value for <X> The media for the representation contains an emsg box with parameters as follows: scheme_id_uri: "<X>" value: "<Y>" timescale: 1 presentation_time_delta: 0 event_duration: 0xFFFF id: 1 message_data: 0x54455354 When a terminal presents the MPD and encounters the emsg box, the cues attribute of the TextTrack with inBandMetadataTrackDispatchType "<X> <Y>" contains a cue with startTime 0, endTime Number.MAX_VALUE, id 1 and data 0x54455354.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0240	1	DASH - Events - Detecting and handling repeated events	TRUE	An MPD contains a single representation with <InbandEventStream schemeIdUri="<X>" value="<Y>" />, where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB, and <Y> is a valid value for <X>. Two consecutive media segments for the representation each contain an emsg box, the first with parameters as follows: scheme_id_uri: "<X>" value: "<Y>" timescale: 1 presentation_time_delta: 0 event_duration: 15000 id: 1 message_data: 0x5445535431 The second emsg box is identical except that event_duration is reduced by the duration of the first segment in milliseconds. When a terminal completes presentation of the MPD, the TextTrack with inBandMetadataTrackDispatchType "<X> <Y>" contains a single cue with data property 0x5445535431.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0260	1	DASH - Events - Minimum concurrent events handled per event stream	TRUE	An MPD contains a single representation with <InbandEventStream schemeIdUri="<X>" value="<Y>" />, where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB, and <Y> is a valid value for <X>. The media for the representation contains eleven emsg boxes with parameters as follows: scheme_id_uri: "<X>" value: "<Y>" timescale: 1 presentation_time_delta: 0 event_duration: 0xFFFF message_data: 0x54455354 The boxes are identical except that id is a value in the range 0..10, taken sequentially. When the terminal has completed presentation of the MPD, the TextTrack with inBandMetadataTrackDispatchType "<X> <Y>" contains at least the ten cues with id 1..10.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0270	1	DASH - Events - Handling InbandEventStreams in every decoded Representation	TRUE	An MPD contains three AdaptationSets: video, audio and subtitles, each containing a single Representation, each of those with a single InbandEventStream with an identical @schemeIdUri. video @value 1, audio @value 2, subtitles @value 3. The media for each representation contains a single emsg box with the following values: scheme_id_uri: @schemeIdUri value: @value timescale: 1 presentation_time_delta: 0 event_duration: 0xFFFF message_data: 0x54455354 When a terminal has presented the MPD with all three AdaptationSets selected, four TextTracks exist. One TextTrack corresponds to the subtitle AdaptationSet, and three contain one cue each with the correct message payload and id.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT0280	1	DASH - Events - Signalling cuechange events	TRUE	An MPD contains <EventStream schemeIdUri="<X>" value="<Y>" timescale="1000"> <Event presentationTime="0" id="1">TEST</Event> <Event presentationTime="100" id="2">TEST</Event> <Event presentationTime="200" id="3">TEST</Event> <Event presentationTime="300" id="4">TEST</Event> <Event presentationTime="400" id="5">TEST</Event> <Event presentationTime="500" id="6">TEST</Event> <Event presentationTime="600" id="7">TEST</Event> <Event presentationTime="700" id="8">TEST</Event> <Event presentationTime="800" id="9">TEST</Event> <Event presentationTime="900" id="10">TEST</Event> </EventStream>, where <X> is any valid schemeIdURI other than those reserved as DASH-specific by MPEG or DVB, and <Y> is a valid value for <X> When a terminal presents the MPD, the cuechange event is raised at least four times.
org.hbbtv_DASH-EVENT1000	1	DASH - Events - Compatibility with emsg box in a video stream	TRUE	When a terminal presents a valid DASH stream containing audio and video in which each video media segment has a valid emsg box at the start, the DASH stream plays normally.
org.hbbtv_DASH-EVENT1010	1	DASH - Events - Compatibility with emsg box in an audio stream	TRUE	When a terminal presents a valid DASH stream containing audio and video in which each audio media segment has a valid emsg box at the start, the DASH stream plays normally.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-EVENT1022	1	DASH - Events - Terminal stops presentation and stops requesting segments when notified of stream end	TRUE	A dynamic DASH MPD indicates an adaptation set with an InbandEventStream with its @schemeIdUri attribute set to "urn:mpeg:dash:event:2012" and @value set to "1". The MPD contains one period. Initially the MPD indicates no @mediaPresentationDuration attribute and the period element contains no @duration attribute. The media segments contain no sidx boxes. The terminal is instructed to play the MPD. No seek operations are made by the application. During playback, the MPD is updated on the server to include a @mediaPresentationDuration attribute. This value indicates that the stream ends at media time Tend. The @publishTime attribute is updated to indicate the time when the MPD change was made. All media segments with a segment availability start time after the time at which the MPD was updated include an event message box. All of these event message boxes have the same id, and a duration of 0. Their message_data is a time which is 1s before the @publishTime of the updated MPD, indicating that MPDs dated up to that time no longer correctly describe the presentation. The presentation_time_delta value is the difference between Tend and the first presentation time in the media segment, in units of the Timescale set in the event message box. The client stops presentation when the media time reaches Tend and does not request any media segments which would have a presentation time after Tend.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ISOBMFF0010	1	DASH stream scenarios - negative composition time offsets	TRUE	When the video representations within a DASH media presentation use a version 1 trun box including negative values within the composition time offset field within that box the terminal shall correctly play the stream.
org.hbbtv_DASH-ISOBMFF0020	1	DASH stream scenarios - version 1 tfdt boxes	TRUE	When the audio and video representations within a DASH media presentation use a version 1 tfdt box including a 64 bit baseMediaDecodeTime the terminal shall correctly play the presentation.
org.hbbtv_DASH-ISOBMFF0030	1	DASH stream scenarios - no styp or sidx with live profile	TRUE	When a DASH media presentation using the live profile has media segments which contain neither styp nor sidx boxes and the $Time$ parameter is not used in a segment template then the terminal shall play the presentation correctly.
org.hbbtv_DASH-ISOBMFF0040	1	DASH stream scenarios - styp with live profile	TRUE	When a DASH media presentation using the live profile has media segments which contain an styp box at the start of each media segment, but do not contain an sidx box and the $Time$ parameter is not used in a segment template then the terminal shall play the presentation correctly.
org.hbbtv_DASH-ISOBMFF0050	1	DASH stream scenarios - sidx with live profile	TRUE	When a DASH media presentation using the live profile has media segments which contain a valid sidx box at the start of each media segment, but do not contain an styp box and the $Time$ parameter is not used in a segment template then the terminal shall play the presentation correctly.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-ISOBMFF0060	1	DASH stream scenarios - styp and sidx with live profile	TRUE	When a DASH media presentation using the live profile has media segments which contain an styp box indicating the 'msdh' compatible brand at the start of each media segment followed by a valid sidx box and the $Time$ parameter is not used in a segment template then the terminal shall play the presentation correctly.
org.hbbtv_DASH-ISOBMFF0070	1	DASH stream scenarios - unreferenced data in mdat (AVC)	TRUE	When a valid DASH media presentation using the live profile has audio, subtitle and AVC video Representations in all three of which there are (a) segments in which the 'mdat' box contains arbitrary data (unreferenced from the 'trun' box) preceding the media data, and (b) segments in which the 'mdat' box contains arbitrary data (unreferenced from the 'trun' box) following the media data, and the presentation is played using the HTML5 video element, the terminal plays the video, audio and subtitles correctly.
org.hbbtv_DASH-ISOBMFF0080	1	DASH stream scenarios - unreferenced data in mdat (HEVC)	TRUE	When a valid DASH media presentation using the live profile has audio, subtitle and HEVC video Representations in all three of which there are (a) segments in which the 'mdat' box contains arbitrary data (unreferenced from the 'trun' box) preceding the media data, and (b) segments in which the 'mdat' box contains arbitrary data (unreferenced from the 'trun' box) following the media data, and the presentation is played using the HTML5 video element, the terminal plays the video, audio and subtitles correctly.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-MISC0010	1	DASH Miscellany - HTTP session cookie support	TRUE	A live profile MPD has only relative URLs. The HTTP server returning the MPD includes a Set-Cookie header that is valid according to RFC 6265 Section 4.1.1 and includes a cookie name, cookie value and Domain and Path attributes covering all media segment locations, and does not include an Expires attribute. When the terminal starts playing the DASH presentation described by this MPD, all segment requests made by the terminal include an HTTP Cookie header containing the cookie name and value.
org.hbbtv_DASH-ONDEMAND001	1	Test for DASH On Demand Profile	TRUE	When the terminal is asked to play an MPEG DASH on-demand MPD with @profiles containing "urn:dvb:dash:profile:dvb-dash:2014,urn:dvb:dash:profile:dvb-dash:isoff-ext-on-demand:2014" and a Representation consisting of a single Segment that complies with the requirements for an Indexed Self-Initializing Media Segment and for which SegmentBase@indexRange is present, it plays correctly.
org.hbbtv_DASH-SE0001	1	DASH - avc3 sample entry in ISO BMFF segments (static parameter sets in samples)	TRUE	When an application requests presentation of MPEG DASH content with a single H.264 video Representation using ISO BMFF segments and an 'avc3' sample entry name in which static parameter sets are present in the samples but not in the sample entry, the Representation plays.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-SE0002	1	DASH - avc3 sample entry in ISO BMFF segments (parameter sets in sample entry)	TRUE	When an application requests presentation of MPEG DASH content with a single H.264 video Representation using ISO BMFF segments and an 'avc3' sample entry name in which parameter sets are present in the sample entry but not in the samples, the Representation plays.
org.hbbtv_DASH-SE0003	1	DASH - avc3 sample entry in ISO BMFF segments (parameter set changes in samples)	TRUE	When an application requests presentation of MPEG DASH content with two H.264 video Representations using ISO BMFF segments and an 'avc3' sample entry name, the Representations having the resolutions 1920x1080 and 704x396 (as indicated both in the Representation @width and @height attributes in the MPD and in the width and height fields within the AVCSampleEntry in the Representation's Initialisation Segment), with the parameter sets present in the samples but not in the sample entry, with only those parameter sets needed for each Representation included in the samples of that Representation, then when a representation change is forced to occur, the stream continues to play with unchanged picture size but different resolution.
org.hbbtv_DASH-SE0004	1	DASH - hev1 sample entry in ISO BMFF segments (static parameter sets in samples)	TRUE	When an application requests presentation of MPEG DASH content with a single HEVC video Representation using ISO BMFF segments and an 'hev1' sample entry name in which static parameter sets are present in the samples but not in the sample entry, the Representation plays.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-SE0005	1	DASH - hev1 sample entry in ISO BMFF segments (parameter sets in sample entry)	TRUE	When an application requests presentation of MPEG DASH content with a single HEVC Representation using ISO BMFF segments and an 'hev1' sample entry name in which parameter sets are present in the sample entry but not in the samples, the Representation plays.
org.hbbtv_DASH-SE0006	1	DASH - hev1 sample entry in ISO BMFF segments (parameter set changes in samples)	TRUE	When an application requests presentation of MPEG DASH content with two HEVC video Representations using ISO BMFF segments and an 'hev1' sample entry name, the Representations having the resolutions 1920x1080 and 704x396 (as indicated both in the Representation@width and @height attributes in the MPD and in the width and height fields within the HEVCSampleEntry in the Representation's Initialisation Segment), with the parameter sets present in the samples but not in the sample entry, with only those parameter sets needed for each Representation included in the samples of that Representation, then when a representation change is forced to occur, the stream continues to play with unchanged picture size but different resolution.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-SE0031	1	DASH - avc3 sample entry in ISO BMFF segments (parameter set changes in samples, common init segment)	TRUE	When an application requests presentation of MPEG DASH content with two H.264 video Representations using ISO BMFF segments and an 'avc3' sample entry name, the Representations having the resolutions 1920x1080 and 704x396 (as indicated both in the Representation@width and @height attributes in the MPD) but with both Representations having a common Initialisation Segment in which the width and height fields within the AVCSampleEntry are 1920 and 1080 respectively, with the parameter sets present in the samples but not in the sample entry, with only those parameter sets needed for each Representation included in the samples of that Representation, then when a representation change is forced to occur, the stream continues to play with unchanged picture size but different resolution.
org.hbbtv_DASH-TIME0001	1	DASH - UTCTiming - http-head in Dynamic MPD	TRUE	When an application requests playback of MPEG DASH content with a dynamic MPD that contains one UTCTiming element with @schemeIdURI set to "urn:mpeg:dash:utc:http-head:2014" with @value set to an HTTP URL, the terminal makes an HTTP HEAD request for the specified URL.
org.hbbtv_DASH-TIME0002	1	DASH - UTCTiming - http-head in Static MPD with MPD@availabilityStartTime	TRUE	When an application requests playback of MPEG DASH content with a static MPD with MPD@availabilityStartTime present that contains one UTCTiming element with @schemeIdURI set to "urn:mpeg:dash:utc:http-head:2014" with @value set to an HTTP URL, the terminal makes an HTTP HEAD request for the specified URL.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-TIME0003	1	DASH - UTCTiming - http-head in dynamic MPD - correct use of time reference for availability time check	FALSE	When an application requests playback of MPEG DASH content with an MPD in which (a) MPD@type="dynamic", (b) MPD@timeshiftBufferDepth is set to a finite value, (c) segmentTemplate is used and (d) has one UTCTiming element with @schemeIdURI set to "urn:mpeg:dash:utc:http-head:2014" and @value set to an HTTP URL to a server on which the time is set in the past by at least 10 seconds more than the value of MPD@timeshiftBufferDepth, the terminal requests segments that are within the availability time window with respect to the referenced server clock and does not request any segments that are not.
org.hbbtv_DASH-TIME0004	1	DASH - UTCTiming - http-xsdate in dynamic MPD	TRUE	When an application requests playback of MPEG DASH content with a dynamic MPD with MPD@availabilityStartTime present that contains one UTCTiming element with @schemeIdURI set to "urn:mpeg:dash:utc:http-xsdate:2014" with @value set to an HTTP URL, the terminal makes an HTTP GET request for the specified URL.
org.hbbtv_DASH-TIME0005	1	DASH - UTCTiming - http-xsdate in static MPD with MPD@availabilityStartTime	TRUE	When an application requests playback of MPEG DASH content with a static MPD with MPD@availabilityStartTime present that contains one UTCTiming element with @schemeIdURI set to "urn:mpeg:dash:utc:http-xsdate:2014" with @value set to an HTTP URL, the terminal makes an HTTP GET request for the specified URL.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-TIME0006	1	DASH - UTCTiming - http-xsdate in dynamic MPD - correct use of time reference for availability time check	FALSE	When an application requests playback of MPEG DASH content with an MPD in which (a) MPD@type="dynamic", (b) MPD@availabilityStartTime is present, (c) MPD@timeshiftBufferDepth is set to a finite value, (d) segmentTemplate is used and (e) has one UTCTiming element with @schemeIdURI set to "urn:mpeg:dash:utc:http-xsdate:2014" with @value set to an HTTP URL that returns in the body a valid xs:dateTime string of the form 2002-05-30T09:30:10Z that is offset into the past by at least 10 seconds more than the value of MPD@timeshiftBufferDepth, the terminal requests segments that are within the availability time window with respect to the referenced server clock and does not request any segments that are not.
org.hbbtv_DASH-TIMELINE0010	1	DASH on demand stream using live profile and segment template with fixed segment duration - seek works	TRUE	When the terminal is playing a static DASH media presentation, which uses the live profile and has an MPD containing a SegmentTemplate including the $Number$ parameter with fixed segment duration, and the application asks to seek to a position which corresponds to the start of a video media segment in the presentation, the terminal seeks to the correct position and plays from there.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-TIMELINE0020	1	DASH on demand stream using live profile and segment template with fixed segment duration - terminal does not request non-existent segments at end of stream	TRUE	When the terminal is playing a static DASH media presentation, which uses the live profile and has an MPD containing a SegmentTemplate including the $Number$ parameter with fixed segment duration, the terminal only requests the segments which are present in the stream as indicated by the mediaPresentationDuration attribute of the MPD.
org.hbbtv_DASH-TIMELINE0050	1	DASH on demand stream using live profile, segment template and segment timeline with short first and last segments - seek works	TRUE	A static DASH media presentation has one audio and one video representation and uses the live profile. Within the MPD each Adaptation Set has a SegmentTemplate which uses the $Number$ parameter in the media attribute and a SegmentTimeline element. Within the SegmentTimeline element the first and last segments have duration d1 and all other segments have duration d2. d1 is much smaller than d2. The actual duration of the media segments must be the same as this timeline. When the terminal is playing this presentation and the application asks to seek to a point which corresponds to the start of a video media segment the terminal seeks to the correct position and plays from there.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-TIMELINE0070	1	DASH on demand stream using live profile, segment template and segment timeline with short first and last segments - terminal reports correct play position	TRUE	A static DASH media presentation has one audio and one video representation and uses the live profile. Within the MPD each Adaptation Set has a SegmentTemplate which uses the $Number$ parameter in the media attribute and a SegmentTimeline element. Within the SegmentTimeline element the first segment has duration d1, the last segment has duration d2 and all other segments have duration d3. d1 and d2 are much smaller than d3. The actual duration of the media segments must be the same as this timeline. When the terminal is playing this presentation it reports the correct current play position to the application.
org.hbbtv_DASH-TIMELINE0080	1	DASH on demand stream using live profile and segment template with fixed segment duration - terminal plays with correct A/V sync when the audio timeline starts slightly later	TRUE	A static DASH media presentation has audio and video representations and uses the live profile and has an MPD which contains a SegmentTemplate including the $Number$ parameter with fixed segment duration. The media timeline of the video representation starts at 0ms, so the first presentation time in the first media segment of the video is at 0ms. The media timeline of the audio representation starts at 100ms, with the first media segment having a baseMediaDecodeTime of 100ms, thereby producing a first audio presentation time of 100ms. There are no presentationTimeOffset values set in the MPD. When asked to play this presentation, the terminal plays the presentation correctly, specifically with the correct A/V synchronisation.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-TIMELINE0130	1	DASH live stream using live profile and segment template with different segment duration between audio and video and with AvailabilityStartTime more than 20 years ago - stream plays	TRUE	A dynamic DASH media presentation uses an MPD with an availabilityStartTime at least 20 years ago and a timeshiftBufferDepth set to a reasonable value. It contains audio and video representations, each using SegmentTemplates which include the $Number$ parameter in the media attribute, but with different fixed segment durations for audio and video. When the terminal plays this presentation, it is played correctly - with the start of each media segment being presented no more than 45 seconds after its segment availability start time and with correct A/V sync.
org.hbbtv_DASH-TIMELINE0140	1	DASH live stream using live profile and segment template with different segment duration between audio and video and with AvailabilityStartTime more than 20 years ago - seek works	TRUE	A dynamic DASH media presentation uses an MPD with an availabilityStartTime at least 20 years ago and a timeshiftBufferDepth set to a reasonable value. It contains audio and video representations, each using SegmentTemplates which include the $Number$ parameter in the media attribute, but with different fixed segment durations for audio and video. When the terminal is playing this presentation and the application asks to seek to a position behind the live edge which is available and corresponds to the start of a video media segment the terminal seeks to the correct position and plays from there.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-TIMELINE0150	1	DASH live stream using live profile and segment template with different segment duration between audio and video and with AvailabilityStartTime more than 20 years ago - terminal reports correct play position.	TRUE	A dynamic DASH media presentation uses an MPD with an availabilityStartTime at least 20 years ago and a timeshiftBufferDepth set to a reasonable value. It contains audio and video representations, each using SegmentTemplates which include the $Number$ parameter in the media attribute, but with different fixed segment durations for audio and video. When the terminal is playing this presentation, the terminal reports the correct current play position to the application.
org.hbbtv_DASH-TIMELINE0160	1	DASH on demand stream using live profile and segment template with same presentationTimeOffset on both components - stream plays	FALSE	A static DASH media presentation has one audio and one video representation, uses the live profile and has an MPD which contains a SegmentTemplate including the $Number$ parameter with fixed segment duration. The media segments of both audio and video representations are simulating an extract from a live stream and as such the first composition time of the first segment of each representation must be at least 10 minutes into the media timeline. All representations have the same first composition times. There is a presentationTimeOffset attribute in each SegmentTemplate representing the first composition time in the representation it refers to. When asked to play this presentation, the terminal plays the presentation correctly with the correct A/V synchronisation.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-UHDCOLORIMETRY0010	1	MPEG DASH UHD BT.2020 colorimetry support	TRUE	When the terminal presents (a) a DASH HEVC 10-bit hev1 BT.2020 stream consisting of a static image that includes areas of white and of saturated colours, followed by (b) a DASH HEVC 10-bit hev1 stream consisting of an identical video elementary stream but signalled in both the MPD and the initialisation and media segments as having BT.709 colorimetry, the resulting picture displayed or output from the terminal for (a) and (b) differs in colour or saturation.
org.hbbtv_DASH-VRESHD002	1	MPEG DASH, 1600x900p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 1600x900p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.
org.hbbtv_DASH-VRESHD004D	1	Scaling video down, MPEG DASH, 1024x576p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content 1024x576p@25, when video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object.
org.hbbtv_DASH-VRESHD005	1	MPEG DASH, 960x540p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 960x540p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD006	1	MPEG DASH, 852x480p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 852x480p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.
org.hbbtv_DASH-VRESHD007D	1	Scaling video down, MPEG DASH, 768x432p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content 768x432p@25, when video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object.
org.hbbtv_DASH-VRESHD008U	1	Scaling video up, MPEG DASH, 720x404p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content 720x404p@25, when video object is scaled up to 2 by 2 of the width and height of the logical video plane. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. The decoded and processed video corner shall match to the A/V control object corner.
org.hbbtv_DASH-VRESHD009	1	MPEG DASH, 704x396p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 704x396p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.
org.hbbtv_DASH-VRESHD010	1	MPEG DASH, 640x360p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 640x360p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD011	1	MPEG DASH, 512x288p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 512x288p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.
org.hbbtv_DASH-VRESHD012U	1	Scaling video up, MPEG DASH, 480x270p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content 480x270p@25, when video object is scaled up to 2 by 2 of the width and height of the logical video plane. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. The decoded and processed video corner shall match to the A/V control object corner.
org.hbbtv_DASH-VRESHD013	1	MPEG DASH, 384x216p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 384x216p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.
org.hbbtv_DASH-VRESHD017U	1	Scaling video up, MPEG DASH, 704x576i@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content 704x576i@25, when video object is scaled up to 2 by 2 of the width and height of the logical video plane. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. The decoded and processed video corner shall match to the A/V control object corner.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD020D	1	Scaling video down, MPEG DASH, 720x576i@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content 720x576i@25, when video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object.
org.hbbtv_DASH-VRESHD022	1	MPEG DASH, HTML5 media object, 1600x900p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 1600x900p@50. The video object is in full screen resolution.
org.hbbtv_DASH-VRESHD024D	1	Scaling video down, MPEG DASH, HTML5 media object, 1024x576p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 1024x576p@50, when HTML5 video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object.
org.hbbtv_DASH-VRESHD025	1	MPEG DASH, HTML5 media object, 960x540p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 960x540p@50. The HTML5 video object is in full screen resolution.
org.hbbtv_DASH-VRESHD026	1	MPEG DASH, HTML5 media object, 852x480p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 852x480p@50. The HTML5 video object is in full screen resolution.
org.hbbtv_DASH-VRESHD027D	1	Scaling video down, MPEG DASH, HTML5 media object, 768x432p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 768x432p@50, when HTML5 video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD028U	1	Scaling video up, MPEG DASH, HTML5 media object, 720x404p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 720x404p@50, when HTML5 video object is scaled up to 2 by 2 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. The decoded and processed video corner shall match to the A/V control object corner.
org.hbbtv_DASH-VRESHD029	1	MPEG DASH, HTML5 media object, 704x396p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 704x396p@50. The HTML5 video object is in full screen resolution.
org.hbbtv_DASH-VRESHD030D	1	Scaling video down, MPEG DASH, HTML5 media object, 640x360p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 640x360p@50, when HTML5 video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object.
org.hbbtv_DASH-VRESHD031U	1	Scaling video up, MPEG DASH, HTML5 media object, 512x288p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 512x288p@50, when HTML5 video object is scaled up to 2 by 2 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. The decoded and processed video corner shall match to the A/V control object corner.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD032	1	MPEG DASH, HTML5 media object, 480x270p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 480x270p@50. The HTML5 video object is in full screen resolution.
org.hbbtv_DASH-VRESHD033D	1	Scaling video down, MPEG DASH, HTML5 media object, 384x216p@50, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 384x216p@50, when HTML5 video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object.
org.hbbtv_DASH-VRESHD1001	1	MPEG DASH, 1920x1080p@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 1920x1080p@25 in which the video Representation is encoded using at least 11.5 Mbps and in which the total packaged data rate of the media presentation does not exceed 12 Mbps. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.
org.hbbtv_DASH-VRESHD1016	1	MPEG DASH, 1920x1080i@25, AVC_25	TRUE	The terminal shall correctly decode and display DASH AVC_25 content at 1920x1080i@25 in which the video Representation is encoded using at least 11.5 Mbps and in which the total packaged data rate of the media presentation does not exceed 12 Mbps. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.
org.hbbtv_DASH-VRESHD104	1	MPEG DASH, A/V control object, 1024x576p@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content at 1024x576p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD105D	1	Scaling video down, A/V control object, MPEG DASH, 960x540p@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 960x540p@25, when video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corners shall match to the A/V control object corners.
org.hbbtv_DASH-VRESHD106U	1	Scaling video up, A/V control object, MPEG DASH, 852x480p@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 852x480p@25, when video object is scaled up to 2 by 2 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corner shall match to the A/V control object corner.
org.hbbtv_DASH-VRESHD107	1	MPEG DASH, A/V control object, 768x432p@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content at 768x432p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD108D	1	Scaling video down, A/V control object, MPEG DASH, 720x404p@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 720x404p@25, when video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corners shall match to the A/V control object corners.
org.hbbtv_DASH-VRESHD109U	1	Scaling video up, A/V control object, MPEG DASH, 704x396p@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 704x396p@25, when video object is scaled up to 2 by 2 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corner shall match to the A/V control object corner.
org.hbbtv_DASH-VRESHD110	1	MPEG DASH, A/V control object, 640x360p@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content at 640x360p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD111D	1	Scaling video down, A/V control object, MPEG DASH, 512x288p@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 512x288p@25, when video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corners shall match to the A/V control object corners.
org.hbbtv_DASH-VRESHD112U	1	Scaling video up, A/V control object, MPEG DASH, 480x270p@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 480x270p@25, when video object is scaled up to 2 by 2 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled AV object. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corner shall match to the A/V control object corner.
org.hbbtv_DASH-VRESHD113	1	MPEG DASH, A/V control object, 384x216p@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content at 384x216p@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.
org.hbbtv_DASH-VRESHD119	1	MPEG DASH, A/V control object, 352x288i@25, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content at 352x288i@25. The video object is in full screen resolution, the 'fullscreen' property of A/V control object is set to false.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD124	1	MPEG DASH, HTML5 media object, 1024x576p@50, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content at 1024x576p@50. The HTML5 video object is in full screen resolution.
org.hbbtv_DASH-VRESHD1240	1	MPEG DASH, HTML5 media object, 3840x2160p@50, HEVC, 10bit	TRUE	The terminal shall correctly decode and display DASH HEVC 10bit content at 3840x2160p@50 in which the video Representation is encoded using at least 25 Mbps and in which the total packaged data rate of the media presentation does not exceed 26 Mbps. The HTML5 video object is in full screen resolution.
org.hbbtv_DASH-VRESHD1241	1	MPEG DASH, HTML5 media object, 1920x1080p@50, HEVC, 10bit	TRUE	The terminal shall correctly decode and display DASH HEVC 10bit content at 1920x1080p@50 in which the video Representation is encoded using at least 11.5 Mbps and in which the total packaged data rate of the media presentation does not exceed 12 Mbps. The HTML5 video object is in full screen resolution.
org.hbbtv_DASH-VRESHD1242	1	MPEG DASH, HTML5 media object, 3840x2160p50, HEVC, 10bit, max bitrate, non-TLS	TRUE	The terminal shall correctly decode and display DASH HEVC 10bit content at 3840x2160p@50 in which the video Representation is encoded using at least 38 Mbps and in which the total packaged data rate of the media presentation does not exceed 39 Mbps. The DASH MPD and all initialisation and media segments are delivered over HTTP without TLS. The HTML5 video object is in full screen resolution.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD1243	1	MPEG DASH, HTML5 media object, 3840x2160p50, HEVC, 10bit, max bitrate, TLS	TRUE	The terminal shall correctly decode and display DASH HEVC 10bit content at 3840x2160p@50 in which the video Representation is encoded using at least 38 Mbps and in which the total packaged data rate of the media presentation does not exceed 39 Mbps. The DASH MPD and all initialisation and media segments are delivered over TLS. The HTML5 video object is in full screen resolution.
org.hbbtv_DASH-VRESHD125D	1	Scaling video down, MPEG DASH, HTML5 media object, 960x540p@50, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 960x540p@50, when HTML5 video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled HTML5 video object. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corners shall match to the HTML5 media object corners.
org.hbbtv_DASH-VRESHD126U	1	Scaling video up, MPEG DASH, HTML5 media object, 852x480p@50, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 852x480p@50, when HTML5 video object is scaled up to 2 by 2 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled HTML5 video object. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corner shall match to the HTML5 media object corner.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD127	1	MPEG DASH, HTML5 media object, 768x432p@50, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content at 768x432p@50. The HTML5 video object is in full screen resolution.
org.hbbtv_DASH-VRESHD128D	1	Scaling video down, MPEG DASH, HTML5 media object, 720x404p@50, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 720x404p@50, when HTML5 video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled HTML5 video object. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corners shall match to the HTML5 media object corners.
org.hbbtv_DASH-VRESHD129U	1	Scaling video up, MPEG DASH, HTML5 media object, 704x396p@50, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 704x396p@50, when HTML5 video object is scaled up to 2 by 2 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled HTML5 video object. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corner shall match to the HTML5 media object corner.
org.hbbtv_DASH-VRESHD130	1	MPEG DASH, HTML5 media object, 640x360p@50, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content at 640x360p@50. The HTML5 video object is in full screen resolution.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD131D	1	Scaling video down, MPEG DASH, HTML5 media object, 512x288p@50, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 512x288p@50, when HTML5 video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled HTML5 video object. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corners shall match to the HTML5 media object corners.
org.hbbtv_DASH-VRESHD132U	1	Scaling video up, MPEG DASH, HTML5 media object, 480x270p@50, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content 480x270p@50, when HTML5 video object is scaled up to 2 by 2 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled HTML5 video object. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corner shall match to the HTML5 media object corner.
org.hbbtv_DASH-VRESHD133	1	MPEG DASH, HTML5 media object, 384x216p@50, HEVC, 8bit	TRUE	The terminal shall correctly decode and display DASH HEVC 8bit content at 384x216p@50. The HTML5 video object is in full screen resolution.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHD225D	1	Scaling video down, MPEG DASH, HTML5 media object, 960x540p@50, HEVC, 10bit	TRUE	The terminal shall correctly decode and display DASH HEVC 10bit content 960x540p@50, when HTML5 video object is scaled down to 1/4 by 1/4 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled HTML5 video object. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corners shall match to the HTML5 media object corners.
org.hbbtv_DASH-VRESHD229U	1	Scaling video up, MPEG DASH, HTML5 media object, 704x396p@50, HEVC, 10bit	TRUE	The terminal shall correctly decode and display DASH HEVC 10bit content 704x396p@50, when HTML5 video object is scaled up to 2 by 2 of the width and height of the logical video plane. The decoded and processed video shall be correctly aligned within the scaled HTML5 video object. The video shall be correctly cropped at the edges of the display, since the decoded video is larger than the display. Aspect ratio shall be preserved, no black bars are present, the decoded and processed video corner shall match to the HTML5 media object corner.
org.hbbtv_DASH-VRESHFR0010	1	MPEG DASH, HTML5 media object, 3840x2160p100, HEVC, 10bit, max bitrate	TRUE	The terminal shall correctly decode and display DASH HEVC 10bit content at 3840x2160p@100 in which the video Representation is encoded using at least 50 Mbps and in which the total packaged data rate of the media presentation does not exceed 51 Mbps. The HTML5 video object is in full screen resolution.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-VRESHFR0020	1	MPEG DASH, HTML5 media object, 3840x2160p100, HEVC, 10bit, max bitrate, TLS	TRUE	The terminal shall correctly decode and display DASH HEVC 10bit content at 3840x2160p@100 in which the video Representation is encoded using at least 50 Mbps and in which the total packaged data rate of the media presentation does not exceed 51 Mbps. The DASH MPD and all initialisation and media segments are delivered over TLS. The HTML5 video object is in full screen resolution.
org.hbbtv_DASH-VRESHFR0030	1	MPEG DASH, HTML5 media object, 1920x1080p100, HEVC, 10bit	TRUE	The terminal shall correctly decode and display DASH HEVC 10bit content at 1920x1080p@100.
org.hbbtv_DASH-XLINK0001	1	Test for DASH MPD using xlink (single remote period)	TRUE	Terminal plays content with a manifest that contains a single remote period
org.hbbtv_DASH-XLINK0002	1	Test for DASH MPD using xlink (three remote periods)	TRUE	Terminal plays content with a manifest containing three remote periods
org.hbbtv_DASH-XLINK0003	1	Test for DASH MPD using xlink (remote period, two local periods)	TRUE	Terminal plays content with a manifest containing one remote period before two local periods
org.hbbtv_DASH-XLINK0004	1	Test for DASH MPD using xlink (local, remote, local periods)	TRUE	Terminal plays content with a manifest having a remote period between two local periods
org.hbbtv_DASH-XLINK0005	1	Test for DASH MPD using xlink (local period, two remote periods)	TRUE	Terminal plays content with a manifest having two remote periods after a local period
org.hbbtv_DASH-XLINK0006	1	Test for DASH MPD using xlink (single remote period resolving to two periods)	TRUE	Terminal plays content with a manifest that contains a single remote period resolving to two periods
org.hbbtv_DASH-XLINK0007	1	Test for DASH MPD using xlink (resolved remote period)	TRUE	Terminal plays content from resolved remote period, not manifest period
org.hbbtv_DASH-XLINK0008	1	Test for DASH MPD using xlink (remote period fallback)	TRUE	Terminal plays content from manifest local period, when remote period resolution fails
org.hbbtv_DASH-XLINK0009	1	Test for DASH MPD using xlink (remote and local adaptation sets)	TRUE	Single remote adaptation set with local adaptation sets

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DASH-XLINK0010	1	Test for DASH MPD using xlink (remote adaptation sets)	TRUE	all adaptation sets are remotely loaded
org.hbbtv_DASH-XLINK0011	1	Test for DASH MPD using xlink (failed remote adaptation sets)	TRUE	failed remote adaptation sets do not affect playout of others
org.hbbtv_DASH-XLINK0012	1	Test for DASH MPD using xlink (remote adaptation set replaces local)	TRUE	remote adaptation set replaces that defined in MPD
org.hbbtv_DASH-XLINK0013	1	Test for DASH MPD using xlink (remote adaptation set fallback)	TRUE	failure to resolve remote adaptation set uses adaptation set defined locally in MPD
org.hbbtv_DDP-GC-CODEC-DASH	1	AV Components: getComponents() returns correct the 'encoding' strings for DD+ (E-AC3) and HEAAC in a DASH stream	TRUE	The terminal shall correctly return values of E-AC3 and HEAAC for the 'encoding' parameter when calling getComponents on an AV Control object playing a stream with DD+ (E-AC3) and HEAAC audio (respectively) as part of a DASH stream
org.hbbtv_DDP-GC-CODEC-MP4	1	AV Components: getComponents() returns correct the 'encoding' strings for DD+ (E-AC3) and HEAAC in an mp4 stream	TRUE	The terminal shall correctly return values of E-AC3 and HEAAC for the 'encoding' parameter when calling getComponents on an AV Control object playing a stream with DD+ (E-AC3) and HEAAC audio (respectively) as part of an mp4 stream
org.hbbtv_DDP-GC-CODEC-TS	1	AV Components: getComponents() returns correct the 'encoding' strings for DD+ (E-AC3) and HEAAC in a TS stream	TRUE	The terminal shall correctly return values of E-AC3 and HEAAC for the 'encoding' parameter when calling getComponents on an AV Control object playing a stream with DD+ (E-AC3) and HEAAC audio (respectively) as part of a TS stream
org.hbbtv_DDP-GC-LANG-DASH	1	AV Components: getComponents() returns correct the 'language' strings for multiple DD+ (EAC3) audio components in a DASH stream	TRUE	The terminal shall return the correct ISO 639-2 value for the 'language' parameter when calling getComponents on an AV Control object playing a DASH stream for each of multiple DD+ audio components

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DDP-GC-LANG-MP4	1	AV Components: getComponents() returns correct the 'language' strings for multiple DD+ (EAC3) audio components in an mp4 stream	TRUE	The terminal shall return the correct ISO 639-2 value for the 'language' parameter when calling getComponents on an AV Control object playing an mp4 stream for each of multiple DD+ audio components
org.hbbtv_DDP-GC-LANG-TS	1	AV Components: getComponents() returns correct the 'language' strings for multiple DD+ (EAC3) audio components in a TS stream	TRUE	The terminal shall return the correct ISO 639-2 value for the 'language' parameter when calling getComponents on an AV Control object playing a TS stream for each of multiple DD+ audio components
org.hbbtv_DDP-SC-CODEC-DASH	1	AV Components: Selecting audio components from a DASH stream with DD+ (E-AC3) and HE-AAC audio components	TRUE	The terminal shall correctly select and play the audio component which is not initially played, by using the selectComponents function on an AV Control object playing a DASH stream with DD+ (E-AC3) and HEAAC audio components
org.hbbtv_DDP-SC-CODEC-MP4	1	AV Components: Selecting audio components from an mp4 stream with DD+ (E-AC3) and HE-AAC audio components	TRUE	The terminal shall correctly select and play the audio component which is not initially played, by using the selectComponents function on an AV Control object playing an mp4 stream with DD+ (E-AC3) and HEAAC audio components
org.hbbtv_DDP-SC-CODEC-TS	1	AV Components: Selecting audio components from a TS stream with DD+ (E-AC3) and HE-AAC audio components	TRUE	The terminal shall correctly select and play the audio component which is not initially played, by using the selectComponents function on an AV Control object playing a TS stream with DD+ (E-AC3) and HEAAC audio components
org.hbbtv_DDP-SC-LANG-DASH	1	AV Components: Selecting audio components from a DASH stream with multiple language DD+ (EAC3) audio components	TRUE	The terminal shall correctly select and play the audio component which is not initially played, by using the selectComponents function on an AV Control object playing a DASH stream with multiple language DD+ (EAC3) audio components

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DDP-SC-LANG-MP4	1	AV Components: Selecting audio components from an mp4 stream with multiple language DD+ (EAC3) audio components	TRUE	The terminal shall correctly select and play the audio component which is not initially played, by using the selectComponents function on an AV Control object playing an mp4 stream with multiple language DD+ (EAC3) audio components
org.hbbtv_DDP-SC-LANG-TS	1	AV Components: Selecting audio components from a TS stream with multiple language DD+ (EAC3) audio components	TRUE	The terminal shall correctly select and play the audio component which is not initially played, by using the selectComponents function on an AV Control object playing a TS stream with multiple language DD+ (EAC3) audio components
org.hbbtv_DEMUX0010	1	AIT monitoring when playing MPEG-2 TS via IP	TRUE	A broadcast-related application starts presenting A/V delivered over broadband in an MPEG-2 transport stream. Later the AIT in the broadcast service changes such that the running app is removed from the AIT and a new autostart app is added. The running app is killed and the new autostart app is started.
org.hbbtv_DEMUX0020	2	Carousel access when playing MPEG-2 TS via IP	TRUE	A broadcast-related application carried in a DSM-CC object carousel starts presenting A/V delivered over broadband in an MPEG-2 transport stream. When a file in its carousel is updated, the running application is able to access the updated file.
org.hbbtv_DEMUX0030	1	Stream event monitoring when mplaying MPEG-2 TS via IP	TRUE	A broadcast-related application starts presenting A/V delivered over broadband in an MPEG-2 transport stream. The application registers to listen to DSM-CC stream events in the broadcast. When the stream events are received by the terminal, events are dispatched to the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DEMUX0040	1	ProgrammesChanged event generation when playing MPEG-2 TS via IP	TRUE	A broadcast-related application starts presenting A/V delivered over broadband in an MPEG-2 transport stream. The application registers to receive ProgrammesChanged events. While the broadband delivered transport stream is playing, the DVB-SI event in the broadcast changes and a ProgrammesChanged event is sent to the registered listener.
org.hbbtv_DEMUX0110	1	AIT monitoring when playing ISOBMFF via IP	TRUE	A broadcast-related application starts presenting A/V delivered over broadband by HTTP streaming of an ISOBMFF file. Later the AIT in the broadcast service changes such that the running app is removed from the AIT and a new autostart app is added. The running app is killed and the new autostart app is started.
org.hbbtv_DEMUX0220	2	Carousel access when playing DASH via IP	TRUE	A broadcast-related application carried in a DSM-CC object carousel starts presenting A/V delivered over broadband using MPEG DASH. When a file in its carousel is updated, the running application is able to access the updated file.
org.hbbtv_DEVICEID0010	1	Device Id, access granted	TRUE	An HbbTV application reads the deviceId property of the Configuration class. When access to deviceId is granted, then an identifier containing only alphanumeric characters and/or hyphen is returned.
org.hbbtv_DEVICEID0020	1	Read device ID by 2 documents from the same web origin	TRUE	An HbbTV application contains two documents delivered by HTTP from the same origin. When each document reads the deviceId property of the Configuration class, the same value is returned.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DEVICEID0030	1	Read device ID by 2 documents from different web origins	TRUE	An HbbTV application contains two documents delivered by HTTP from different origins. When each document reads the deviceId property of the Configuration class, a different value is returned.
org.hbbtv_DEVICEID0040	1	Read device ID by 2 documents from HTTP and HTTPS	FALSE	An HbbTV application contains two documents, one referenced by an HTTP URL and one referenced by an HTTPS URL but both from the same server. When each document reads the deviceId property of the Configuration class, a different value is returned.
org.hbbtv_DEVICEID0050	1	Read device ID by 2 documents from the same broadcast origin	TRUE	An HbbTV application contains two documents delivered by DSM-CC from the same channel. When each document reads the deviceId property of the Configuration class, the same value is returned.
org.hbbtv_DEVICEID0060	1	Read device ID by 2 documents from different broadcast origins	TRUE	An HbbTV application contains two documents delivered by DSM-CC from different channels. When each document reads the deviceId property of the Configuration class, a different value is returned.
org.hbbtv_DEVICEID0070	1	User generates new device ID	TRUE	An HbbTV application reads the deviceId property of the Configuration class. The user then generates a new device ID. The HbbTV application then reads the device ID again and the ID is different.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DISCOVERY0010	1	Discovery - MSearch response	TRUE	The terminal shall respond to a M-SEARCH request as defined in clause 5.1 of DIAL where the ST header (Search Target) contains "urn:dial-multiscreen-org:service:dial:1" as the identifier with an M-SEARCH response as defined in clause 5.2 of DIAL, including a HTTP "Location" header containing an absolute HTTP URL where the host portion of the URL shall either resolve to an IPv4 address or be an IPv4 address.
org.hbbtv_DISCOVERY0020	1	Discovery - Device description response (1)	TRUE	The terminal shall respond to an HTTP GET request to the URL provided in the Location header of the DIAL M-SEARCH response with a UPnP device description and an HTTP header Application-URL where the value is an absolute URL.
org.hbbtv_DISCOVERY0030	1	Discovery - Device description response (2)	TRUE	The terminal shall not redirect an HTTP GET request to the URL provided in the Location header of the DIAL M-SEARCH response.
org.hbbtv_DISCOVERY0040	1	Discovery - Device description response (3)	TRUE	The terminal shall respond to an HTTP GET request to the DIAL Application Resource URL for HbbTV of the terminal with a 200 OK response code, with the HTTP header Content-Type signalling a mime type "text/xml" and a character encoding UTF-8 and with a response body conforming to the XML schema defined in annex A of DIAL and where the additionalData element conforms to the XML schema defined in clause 14.7.2.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DISCOVERY0080	1	Discovery - Cross Origin request	TRUE	When a client is requesting the DIAL XML document using CORS, i.e. including an HTTP Origin header, the terminal shall include HTTP headers as defined in CORS, i.e. the Access-Control-Allow-Origin header shall be present and either contain the asterik character "*" or a case-sensitive match for the value of the Origin header from the HTTP request.
org.hbbtv_DISPLAY_SIZE0010	1	Display size - built in display	TRUE	The XML capabilities include a display_size element with a measurement_type attribute that is "built-in" and width and height attributes indicating the horizontal width and vertical height of the display respectively, both in units of centimeters and both accurate within 5cm.
org.hbbtv_DISPLAY_SIZE0020	1	Display size - HDMI display accurately reporting size within 5cm	TRUE	The XML capabilities include a display_size element with width and height attributes indicating the horizontal width and vertical height of the connected HDMI display respectively, both in units of centimeters and a measurement_type attribute that is "hdmi-accurate". The accuracy of the width and height attributes is within 5cm.
org.hbbtv_DISPLAY_SIZE0030	1	Display size - HDMI display not accurately reporting size within 5cm	TRUE	The XML capabilities include a display_size element with width and height attributes and a measurement_type attribute that is "hdmi-other".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSM200	1	Cache validity - carousel unmounted	FALSE	A broadcast-related application retrieves a file from an object carousel that contains content 1. The application becomes broadcast-independent. The object carousel is then updated to contain content 2, but the version number of the module containing the content is not changed. The application becomes broadcast-related again. When the application retrieves the same file, content 2 is retrieved.
org.hbbtv_DSM210	1	Cache validity - carousel removed from PMT	TRUE	A broadcast-related application retrieves a file from an object carousel that contains content 1. The data_broadcast_id_descriptor and carousel_id_descriptor for the carousel are removed from the PMT. The object carousel is then updated to contain content 2, but the version number of the module containing the content is not changed. The descriptors are re-added to the PMT. When the application retrieves the same file, content 2 is retrieved.
org.hbbtv_DSM230	1	Cache validity - service change - different carousel	TRUE	A broadcast-related application retrieves a file from an object carousel that contains content 1. The object carousel is then updated to contain content 2 and the carousel ID is also changed, but the version number of the module containing the content is not changed. The service is then changed to a second service, which contains the same carousel (i.e. the same PID and association tags) but signals the new carousel ID. When the second application retrieves the same file, content 2 is retrieved.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSM250	1	Cache validity - files and directories updated	TRUE	An object carousel contains three different files: //data.txt //dir/data.txt //dir/subdir/data.txt At regular intervals, the content of all three files changes, and the directory "subdir" is renamed "newdir" and back to "subdir" again. When an application makes regular attempts to retrieve files, the results are as follows: //data.txt - content A1, then content A2, then content A3, then content A4 //dir/data.txt - content B1, then content B2, then content B3, then content B4 //dir/subdir/data.txt - content C1, then 404, then content C3, then 404 //dir/newdir/data.txt - 404, then content C2, then 404, then content C4
org.hbbtv_DSM260	1	Cache validity - carousel structure updated	TRUE	An object carousel contains the files //real/data.txt and //dummy/data.txt. Module 1 contains the directory "real" and the file "//dummy/data.txt" and module 2 contains the directory "dummy" and the file "//real/data.txt". At regular intervals, the file and directory objects swap modules. During the first swap, the object keys are unchanged; during the second swap, the object keys change to new values; during the third swap, the object keys are also swapped; during the fourth swap, the object keys return to their original values. When an application retrieves //real/data.txt during each state of the carousel, the correct content is retrieved.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC001	1	Adding stream event listeners: valid stream event	TRUE	The addStreamEventListener method is called with a valid targetURL and eventName of a valid and available StreamEvent. The EventListener supplied to the method is also valid and instantiated. A StreamEvent of type "StreamEvent" with status equal to "trigger" shall be dispatched and passed to the event listener.
org.hbbtv_DSMCC002	1	Adding stream event listeners: malformed targetURL	TRUE	The addStreamEventListener method is called with a malformed targetURL. The EventListener supplied to the method is valid and instantiated. A StreamEvent of type "StreamEvent" with status equal to "error" shall be dispatched and passed to the event listener.
org.hbbtv_DSMCC003	1	Adding stream event listeners: malformed eventName	TRUE	The addStreamEventListener method is called with a malformed eventName. The EventListener supplied to the method is valid and instantiated. A StreamEvent of type "StreamEvent" with status equal to "error" shall be dispatched and passed to the event listener.
org.hbbtv_DSMCC004	1	Adding stream event listeners: eventName not found	TRUE	The addStreamEventListener method is called with a well formed eventName. However, the StreamEvent object pointed to by targetURL does not contain the event specified by eventName. The EventListener supplied to the method is valid and instantiated. A StreamEvent of type "StreamEvent" with status equal to "error" shall be dispatched and passed to the event listener.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC005	1	Removing stream event listeners with an altered eventName	TRUE	It shall be impossible to remove a registered stream event listener via removeStreamEventListener with all matching parameters but a different eventName value compared with the one used when registering the listener. The registered listener shall function as before.
org.hbbtv_DSMCC006	1	Adding stream event listeners: identical instances	TRUE	The addStreamEventListener method is called with a valid targetURL and eventName of a valid and available StreamEvent. The EventListener supplied to the method is valid and instantiated and the call succeeds. Upon the reception of multiple identical instances of the MPEG private data section carrying an event (including the version number), only one event shall be dispatched. A StreamEvent of type "StreamEvent" with status equal to "trigger" shall be dispatched and passed to the event listener.
org.hbbtv_DSMCC007	1	Adding stream event listeners: different version numbers	TRUE	The addStreamEventListener method is called with a valid targetURL and eventName of a valid and available StreamEvent. The EventListener supplied to the method is valid and instantiated and the call succeeds. Upon receiving multiple instances of an event, with the same event name (but different version numbers), one event shall be dispatched for each different event received. A StreamEvent of type "StreamEvent" with status equal to "trigger" shall be dispatched and passed to the event listener in each case.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC008	1	Removing stream event listeners with matching parameters	TRUE	It shall be possible to remove a registered stream event listener via removeStreamEventListener with matching parameters and the removed listeners shall not receive any stream event afterwards.
org.hbbtv_DSMCC009	1	Removing stream event listeners with an altered targetURL value	TRUE	It shall be impossible to remove a registered stream event listener via removeStreamEventListener with all matching parameters but a different targetURL value compared with the one used when registering the listener. The registered listener shall function as before.
org.hbbtv_DSMCC010	1	Removing stream event listeners with an altered listener function value	TRUE	It shall be impossible to remove a registered stream event listener via removeStreamEventListener with all matching parameters but a different listener function value compared with the one used when registering the listener. The registered listener shall function as before.
org.hbbtv_DSMCC011	1	DSM-CC StreamEvent event: returns valid name	TRUE	The addStreamEventListener method is called with a valid targetURL and eventName of a valid and available StreamEvent. The EventListener supplied to the method is also valid and instantiated. When a StreamEvent of type "StreamEvent" with status equal to "trigger" is dispatched and passed to the event listener we check that the name element of the StreamEvent returned matches the eventName made in the call to the addStreamEventListener method.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC012	1	DSM-CC StreamEvent event: returns well formed data element	TRUE	The addStreamEventListener method is called with a valid targetURL and eventName of a valid and available StreamEvent. The EventListener supplied to the method is also valid and instantiated. When a StreamEvent of type "StreamEvent" with status equal to "trigger" is dispatched and passed to the event listener we check that the data element of the StreamEvent returned is well formed.
org.hbbtv_DSMCC013	1	DSM-CC StreamEvent event: returns well formed text element	TRUE	The addStreamEventListener method is called with a valid targetURL and eventName of a valid and available StreamEvent. The EventListener supplied to the method is also valid and instantiated. When a StreamEvent of type "StreamEvent" with status equal to "trigger" is dispatched and passed to the event listener we check that the text element of the StreamEvent returned is well formed.
org.hbbtv_DSMCC014	1	Carousel objects access with XMLHttpRequest: XML file via relative URL	TRUE	The status returned from accessing a relative URL to a DSM-CC xml file object (with extension ".xml") via open() method of XMLHttpRequest shall be 200, the responseText and responseXml returned shall be as defined in XMLHTTPRequest [11]
org.hbbtv_DSMCC015	1	Carousel objects access with XMLHttpRequest: A directory via relative URL	TRUE	The status returned from accessing a relative URL to a DSM-CC directory object via open() method of XMLHttpRequest shall be 200, the responseText returned shall be a comma-separated list of all objects in the directory including path and name information, the responseXML returned shall be null.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC016	1	Carousel objects access with XMLHttpRequest: XML file via absolute URL	TRUE	The status returned from accessing an absolute URL to a DSM-CC xml file object (with extension ".xml") via open() method of XMLHttpRequest shall be 200, the responseText and responseXml returned shall be as defined in XMLHTTPRequest [11]
org.hbbtv_DSMCC017	1	Carousel objects access with XMLHttpRequest: A directory via absolute URL	TRUE	The status returned from accessing an absolute URL to a DSM-CC directory object via open() method of XMLHttpRequest shall be 200, the responseText returned shall be a comma-separated list of all objects in the directory including path and name information, the responseXML returned shall be null.
org.hbbtv_DSMCC018	1	Carousel objects access with XMLHttpRequest: stream event listing via relative URL	TRUE	The status returned from accessing a relative URL to a DSM-CC stream event object via open() method of XMLHttpRequest shall be 200, the responseText returned shall be a comma-separated list of all events in the stream event, the responseXML returned shall be null.
org.hbbtv_DSMCC019	1	Carousel objects access with XMLHttpRequest: stream event listing via absolute URL	TRUE	The status returned from accessing an absolute URL to a DSM-CC stream event object via open() method of XMLHttpRequest shall be 200, the responseText returned shall be a comma-separated list of all events in the stream event, the responseXML returned shall be null.
org.hbbtv_DSMCC040	1	Mounting carousel via broadcasting initial page in the same transport stream.	TRUE	The initial page of the application is broadcast in the current channel, the carousel shall be mounted and the application shall be launched successfully.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC042	1	Mounting carousel via the component_tag of a carousel containing service gateway.	TRUE	A broadcast-related application, whose initial page is not broadcast in the current channel, launches. It contains an "img" element referencing an image file and also makes an XMLHttpRequest to a file, which are both in the current channel's carousel encoded with service gateway. The two files shall be retrieved and shall be presented on the screen correctly.
org.hbbtv_DSMCC043	1	Mounting carousel via the component_tag of a carousel containing no service gateway.	TRUE	A broadcast-related application, whose initial page is not broadcast in the current channel, launches. It contains an "img" element referencing an image file and also makes an XMLHttpRequest to a second file, which are both in the current channel's carousel carrying no service gateway. The two files shall not be retrieved and shall not be presented.
org.hbbtv_DSMCC044	1	Mounting the carousel in broadcast-independent application	TRUE	Application2 is created via a broadcast-related application, whose initial page is not broadcast, by using createApplication method. Application2 tries to access a file via XMLHttpRequest in the current channel's carousel encoded with service gateway via XMLHttpRequest, the file shall not be retrieved. Application2 is converted to broadcast-related application via using the setchannel(current channel) method and requires the same file again, the content of file shall be retrieved and shall be presented correctly.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC045	1	One carousel mounted for a running application	TRUE	A broadcast-related application, whose initial page is broadcast, a stream event is signalled regularly in current stream, the application requires the file via XMLHttpRequest in another carousel. The file shall be retrieved and shall be present, then the StreamEvent shall be only received once before retrieving the file.
org.hbbtv_DSMCC046	1	Carousel update	TRUE	A broadcast-related application, whose initial page is broadcast, requires one file via XMLHttpRequest carried in the current mounted carousel. The file shall be retrieved and shall be presented correctly. After a few seconds, the carousel is updated and the content of the file is updated as well. The file is required again. The updated content of the file shall be retrieved and shall be presented correctly.
org.hbbtv_DSMCC047	1	Carousel split across: Minimum 3 elementary streams	TRUE	A broadcast-related application, whose initial page is broadcast, requires four files (file1, file2, file3 and file4) via XMLHttpRequest. The entries of the four files are in the current mounted carousel. The actual content of file1 is located in the current carousel's DDB which is different from the one carrying the application's initial page. The actual content of file2 is located in the same DDB as the one carrying the application's initial page. The actual content of file3 and file4 are located in different carousels, which are different from the ones carrying initial page and file1. The four files shall be retrieved and shall be presented correctly.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC048	1	Carousel split across: minimum 3 elementary streams plus one reserved for StreamEvent.	TRUE	A broadcast-related application, whose initial page is not broadcast, requires two files (file1 and file2) via XMLHttpRequest and calls the addStreamEventListener() method to listen for a StreamEvent. The entries of the two files and the StreamEvent are in the current mounted carousel (carousel1), which contains the service gateway. The actual content of file1 and file2 are located in two other carousels (carousel2 and carousel3). The StreamEvent is signalled in another carousel (carousel4). Only carousel1 contains the service gateway. The two files shall be retrieved and presented correctly and the StreamEvent shall be captured.
org.hbbtv_DSMCC049	1	Subsequent carousel mounting in the same transport stream.	TRUE	A broadcast-related application that requests a file from a valid carousel other than the one that is currently mounted, causes the new carousel to be mounted and the requested file to be loaded successfully.
org.hbbtv_DSMCC051	1	Subsequent carousel mounting in the same transport stream: The pending requests	TRUE	A broadcast-related application with pending requests from a currently mounted carousel that requires a file from a valid carousel other than the one that is currently mounted, causes the pending requests to the currently mounted carousel to be cancelled, the new carousel to be mounted and the requested file to successfully be loaded.
org.hbbtv_DSMCC053	1	The length constraint of DSM-CC object reference: File object	TRUE	A broadcast-related application, whose initial page has a DSM-CC object reference which is 64 bytes long, shall be possible to launch.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC054	1	The length constraint of DSM-CC object reference: StreamEvent object	TRUE	It shall be possible to subscribe to a stream event whose DSM-CC object reference is 64 bytes long.
org.hbbtv_DSMCC101	2	CRC errors in DSM-CC sections	TRUE	An object carousel composed of DSM-CC sections with and without CRC32 errors is received.
org.hbbtv_DSMCC102	2	last_section_number for DDB sections is 0xFE	TRUE	An DSM-CC object carousel with all sections that transport DDB messages have last_section_number set to 0xFE must be received successfully
org.hbbtv_DSMCC103	2	Maximum DSM-CC section length is 4096 bytes	TRUE	An object carousel with DSM-CC sections using maximum allowed section size of 4096 must be received.
org.hbbtv_DSMCC104	2	Maximum number of four DSM-CC sections per TS packet	TRUE	A DSM-CC object carousel composed of DSM-CC sections with the maximum allowed number of sections per TS packet must be received successfully.
org.hbbtv_DSMCC105	2	Ignore dsmccAdaptationHeader	TRUE	A DSM-CC object carousel with dsmccDownloadDataHeader and dsmccMessageHeader with non empty dsmccAdaptationHeader must be received successfully.
org.hbbtv_DSMCC106	2	Maximum size 4066 bytes for DII blockSize	TRUE	A DSM-CC object carousel with maximum size (4066 bytes) of DII blockSize must be received successfully.
org.hbbtv_DSMCC107	2	Ignore privateData field in DII messages	TRUE	A DSM-CC object carousel with non-empty privateData in the DII messages must be received successfully.
org.hbbtv_DSMCC108	2	Ignore id and selector fields of BIOP::ModuleInfo::Taps	TRUE	A DSM-CC object carousel with a DII message which encodes a moduleInfo with different values for the tap id and non-empty selector fields must be received successfully.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC109	2	Ignore additional taps in the BIOP::ModuleInfo::Taps.	TRUE	A DSM-CC object carousel with a DII message which encodes a moduleInfo with a BIOP::ModuleInfo::Taps with more than one tap must be successfully received.
org.hbbtv_DSMCC110	2	Support compressed modules in DSM-CC object carousels	TRUE	A DSM-CC object carousel with compressed modules must be supported.
org.hbbtv_DSMCC111	2	Ignore unknown descriptors in BIOP::ModuleInfo::UserInfo	TRUE	A DSM-CC object carousel with a DII message which encodes a moduleInfo with a BIOP::ModuleInfo::UserInfo with unknown descriptors must be succesfully received.
org.hbbtv_DSMCC112	2	BIOP::ModuleInfo::moduleTimeOut, blockTimeOut and minBlockTime	TRUE	A DSM-CC object carousel whose repetition rate is with the duration defined in its moduleTimeout, blockTimeOut and minBlockTime must be received successfully
org.hbbtv_DSMCC113	2	Ignore BIOP::ServiceGatewayInfo::downloadTaps	TRUE	A DSM-CC object carousel with a DSI message which encodes a non-empty BIOP::ServiceGatewayInfo::downloadTaps must be successfully received.
org.hbbtv_DSMCC114	2	Ignore BIOP::ServiceGatewayInfo::serviceContextList	TRUE	A DSM-CC object carousel with a DSI message which encodes a non-empty BIOP::ServiceGatewayInfo::serviceContextList must be succesfully received.
org.hbbtv_DSMCC115	2	Ignore BIOP::ServiceGatewayInfo::UserInfo	TRUE	A DSM-CC object carousel with a DSI message which encodes a non-empty BIOP::ServiceGatewayInfo::UserInfo must be succesfully received.
org.hbbtv_DSMCC116	2	Ignore DownloadCancel messages in DSM-CC object carousels	TRUE	A DSM-CC object carousel with a DownloadCancel message must be successfully received.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC117	2	BIOP::FileMessage with empty MessageSubHeader::ObjectInfo	TRUE	A DSM-CC object carousel with a BIOP::FileMessage with empty MessageSubHeader::ObjectInfo must be received successfully.
org.hbbtv_DSMCC118	2	BIOP:FileMessage with MessageSubHeader::ObjectInfo with DSM::File::ContentSize	TRUE	A DSM-CC object carousel with a BIOP::FileMessage which encodes a MessageSubHeader::ObjectInfo with a DSM::File::ContentSize and no descriptors must be received successfully.
org.hbbtv_DSMCC119	2	BIOP:FileMessage with MessageSubHeader::ObjectInfo with content_type descriptor	TRUE	A DSM-CC object carousel with a BIOP::FileMessage which encodes a MessageSubHeader::ObjectInfo with a DSM::File::ContentSize and a content_type_descriptor must be received successfully.
org.hbbtv_DSMCC120	2	BIOP:FileMessage with MessageSubHeader::ObjectInfo unknown descriptors	TRUE	A DSM-CC object carousel with a BIOP::FileMessage which encodes a MessageSubHeader::ObjectInfo with a DSM::File::ContentSize followed by unknown descriptors must be received successfully.
org.hbbtv_DSMCC121	2	Ignore the MessageSubHeader::ServiceContextList in a BIOP::FileMessage	TRUE	A DSM-CC object carousel with a non-empty MessageSubHeader::ServiceContextList in a BIOP::FileMessage must be received successfully.
org.hbbtv_DSMCC122	2	Ignore MessageSubHeader::ObjectInfo in a BIOP::DirectoryMessage	TRUE	A DSM-CC object carousel with a BIOP::DirectoryMessage with non-empty MessageSubHeader::ObjectInfo must be received successfully.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC123	2	Ignore MessageSubHeader::ServiceContextList in a BIOP::DirectoryMessage	TRUE	A DSM-CC object carousel with a BIOP::DirectoryMessage with non-empty MessageSubHeader::ServiceContextList must be received successfully.
org.hbbtv_DSMCC124	2	Different length for names in BIOP::DirectoryMessage	TRUE	A DSM-CC object carousel with names from length 2 to 255 (inclusive null-termination) must be supported in a BIOP::DirectoryMessage.
org.hbbtv_DSMCC125	2	BIOP::DirectoryMessage with empty BIOP::Binding::ObjectInfo	TRUE	A DSM-CC object carousel with a BIOP::DirectoryMessage with empty BIOP::Binding::ObjectInfo must be received successfully.
org.hbbtv_DSMCC126	2	BIOP::DirectoryMessage with BIOP::Binding::ObjectInfo with DSM::File::ContentSize	TRUE	A DSM-CC object carousel with a BIOP::DirectoryMessage with BIOP::Binding::ObjectInfo with DSM::File::ContentSize must be received successfully.
org.hbbtv_DSMCC127	2	BIOP::DirectoryMessage with BIOP::Binding::ObjectInfo with content_type_descriptor	TRUE	A DSM-CC object carousel with a BIOP::DirectoryMessage with BIOP::Binding::ObjectInfo with DSM::File::ContentSize followed by a content_type_descriptor must be received successfully.
org.hbbtv_DSMCC128	2	Ignore unknown descriptors in BIOP::Binding::ObjectInfo in BIOP::DirectoryMessage	TRUE	A DSM-CC object carousel with a BIOP::DirectoryMessage with BIOP::Binding::ObjectInfo with unknown descriptors must be received successfully.
org.hbbtv_DSMCC129	2	Ignore BIOP::IOR with unknown profile	TRUE	BIOP object references with unknown profiles must be ignored.
org.hbbtv_DSMCC130	2	BIOP::IOR: Ignore additional IOP::taggedProfiles	TRUE	IOP::TaggedProfiles following the first profile in a BIOP::IOR must be received successfully.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC131	2	BiopProfileBody: ignore additional BIOP::LiteComponents	TRUE	BiopProfileBody::LiteComponents following the BiopObjectLocation and DSM::ConnBinder in a BIOP Profile Body must be ignored.
org.hbbtv_DSMCC132	2	Ignore BIOP object reference with wrong tap type in DSM::ConnBinder	TRUE	BIOP object references with wrong tap type in DSM::ConnBinder must be ignored.
org.hbbtv_DSMCC133	2	BiopProfileBody: Ignore additional taps in DSM::ConnBinder	TRUE	Taps following the first one in DSM::ConnBinder must be ignored.
org.hbbtv_DSMCC134	2	BiopProfileBody: Ignore id field of tap in a DSM::ConnBinder	TRUE	The id field in a tap of a DSM::ConnBinder must be ignored
org.hbbtv_DSMCC135	2	LiteOptionsProfileBody: ignore additional BIOP::LiteComponents	FALSE	BIOP::LiteComponents following the initial DSM::ServiceLocation component in a LiteOptionsProfileBody may be ignored. The terminal shall not crash when accessing such a file.
org.hbbtv_DSMCC136	2	LiteOptionsProfileBody: ignore DSM::ServiceLocation::InitialContext	FALSE	The DSM::ServiceLocation::InitialContext may be ignored.
org.hbbtv_DSMCC137	2	Add file to DSM-CC object carousel	TRUE	A new file added to a DSM-CC object carousel must be received.
org.hbbtv_DSMCC138	2	Update file of DSM-CC object carousel	TRUE	Updates of files of a DSM-CC object carousel must be received.
org.hbbtv_DSMCC139	2	Add directory to DSM-CC object carousel	TRUE	A new directory added to a DSM-CC object carousel must be received.
org.hbbtv_DSMCC140	2	Update directory of DSM-CC object carousel	TRUE	An updated directory of a DSM-CC object carousel must be received.
org.hbbtv_DSMCC141	2	Move file object to different module in DSM-CC object carousel	TRUE	Object moved from one module to another module in a DSM-CC object carousel must still be accessible.
org.hbbtv_DSMCC142	2	Change PID of DSM-CC object carousel	TRUE	The PIDs where an object carousel is transmitted may be updated. The carousel must still be accessible.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DSMCC143	2	Add new PID for DSM-CC object carousel	TRUE	The data transmitted on the new PID must be accessible.
org.hbbtv_DTS0001	1	Support for DTSE stereo, streamed over HTTP in MP4 container	FALSE (DTS)	The terminal shall correctly decode and present DTSE stereo audio as part of AV content from an MP4 container streamed over HTTP.
org.hbbtv_DTS0002	1	Support for DTSE 5.1 channel AV Content, streamed over HTTP in MP4 container	FALSE (DTS)	The terminal shall correctly decode and present 5.1 channel DTSE audio as part of AV content from an MP4 container streamed over HTTP.
org.hbbtv_DTS0003	1	Support for DTSE stereo, HbbTV ISOBMFF Live profile	FALSE (DTS)	The terminal shall correctly decode and present DTSE stereo audio as part of AV content from an MPEG DASH live stream.
org.hbbtv_DTS0004	1	Support for DTSE 5.1 channel AV Content, HbbTV ISOBMFF Live profile	FALSE (DTS)	The terminal shall correctly decode and present 5.1 channel DTSE audio as part of AV content from an MPEG DASH live stream.
org.hbbtv_DTS0005	1	getComponents() return for playing DTSE 5.1 channel AV Content, streamed over HTTP in MP4 container	FALSE (DTS)	getComponents() returns COMPONENT_TYPE_AUDIO AVComponent with encoding string 'DTS' for a playing DTSE, 5.1 channel, AV Content, streamed over HTTP in an MP4 container.
org.hbbtv_DTS0006	1	getComponents() return for playing DTSE 5.1 channel AV Content, HbbTV ISOBMFF Live profile	FALSE (DTS)	getComponents() returns COMPONENT_TYPE_AUDIO AVComponent with encoding string 'DTS' for a playing DTSE, 5.1 channel, AV Content, from an MPEG DASH live stream.
org.hbbtv_DTS0007	1	Downmixing DTSE 5.1 channel AV Content, streamed over HTTP in MP4 container	FALSE (DTS)	The terminal shall correctly downmix 5.1 channel DTSE audio content for presentation over a stereo output

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DTS0008	1	AV Components: Selecting audio components from an HTTP MP4 stream with DTS (DTSE) and AAC audio components	FALSE (DTS)	Using the AV Control object functions getComponents and selectComponent, the terminal shall correctly switch to presenting the unplayed audio component from a HTTP MP4 stream containing DTS (DTSE) and AAC audio components that is currently being presented
org.hbbtv_DTS0009	1	AV Components: Selecting audio components from an HbbTV ISOBMFF DASH Live stream with DTS (DTSE) and AAC audio components	FALSE (DTS)	Using the A/V Control object functions getComponents and selectComponent, the terminal shall correctly switch to presenting the unplayed audio component from a HbbTV ISOBMFF DASH Live stream containing DTS (DTSE) and AAC audio components that is currently being presented
org.hbbtv_DTS0010	1	AV Components: getComponents() returns correct the 'language' strings for multiple DTS (DTSE) audio components in a MP4 stream	FALSE (DTS)	The terminal shall return the correct ISO 639-2 value for the 'language' parameter when calling getComponents on an AV Control object playing an MP4 stream over HTTP for each of the multiple DTS (DTSE) audio components
org.hbbtv_DTS0011	1	AV Components: getComponents() returns correct the 'language' strings for multiple DTS (DTSE) audio components in a HbbTV ISOBMFF DASH Live stream	FALSE (DTS)	The terminal shall return the correct ISO 639-2 value for the 'language' parameter when calling getComponents on an AV Control object playing an HbbTV ISOBMFF DASH Live stream for each of the multiple DTS (DTSE) audio components
org.hbbtv_DTS0012	1	DASH - Dynamically Switching Representations in Response to Changes in Bandwidth - HbbTV ISOBMFF DASH Live Profile - DTSE 5.1 Channel - Low to High	FALSE (DTS)	During playout of a stream defined in a static HbbTV ISOBMFF DASH Live profile MPD: in response to increased bandwidth availability, the terminal shall transition from an audio representation with a bit rate of 192 kbps to one with a bit rate of 510 kbps, where both representations are encoded using DTSE

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DTS0013	1	DASH - Dynamically Switching Representations in Response to Changes in Bandwidth - HbbTV ISOBMFF DASH Live Profile - DTSE 5.1 Channel - High to Low	FALSE (DTS)	During playout of a stream defined in a static HbbTV ISOBMFF DASH Live profile MPD: in response to decreased bandwidth availability, the terminal shall transition from an audio representation with a bit rate of 510 kbps to one with a bit rate of 192 kbps, where both representations are encoded using DTSE
org.hbbtv_DVBI_APP2AV0010	1	DVB-I; Accuracy of MediaSynchroniser.currentTime with broadband-delivered content	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked 'application with media in parallel' signalled in the service element. The application is not service bound. The application creates a video/broadcast object and calls bindToCurrentChannel. Once that has completed, the application creates and initalises a media synchroniser using a reference to an MPEG DASH Period relative timeline. The currentTime property returns the current value of the Period relative timeline corresponding to the last frame that was composed with graphics before the currentTime property was queried with an accuracy of at least 100ms.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0010	1	DVB-I;Test for running AUTOSTART application after change from DVB-DASH to DVB-RF	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked 'application controlling media presentation' signalled in the service element. The application is not service bound. A new service is selected with a service instance delivered by classic RF-based broadcast with the same application signaled with control code AUTOSTART in the broadcast AIT. The terminal shall allow the application to run uninterrupted.
org.hbbtv_DVBI_APPLC0020	2	DVB-I;Test for running PRESENT application after change from DVB-DASH to DVB-RF	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked application controlling media presentation signalled in the service element. The application is not service bound. A new service is selected with a service instance delivered by classic RF-based broadcast with the same application signaled with control code PRESENT in the broadcast AIT. The terminal shall allow the application to run uninterrupted.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0030	2	DVB-I; Test for KILLED application after service selection from DVB-DASH to DVB-RF	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked application controlling media presentation signalled in the service element. The application is not service bound. A new service is selected with a service instance delivered by classic RF-based broadcast with the same application signaled with control code KILL in the broadcast AIT of the newly selected service, the terminal shall kill the currently running application.
org.hbbtv_DVBI_APPLC0040	1	DVB-I; Test for NOT SIGNALLED application after service selection from DVB-DASH to DVB-RF	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked application controlling media presentation signalled in the service element. The application is not service bound. A new service is selected with a service instance delivered by classic RF-based broadcast with the same application not signaled at all in the broadcast AIT of the newly selected service, the terminal shall kill the currently running application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0100	1	DVB-I; Application lifecycle - switching from DVB RF channel without app to DVB-I channel with app	TRUE	A DVB-I service with a single service instance delivered by classic RF-based broadcast is selected that has no application signalled. A DVB-I service is then selected with a single service instance delivered by DVB-DASH and a broadcast-related AUTOSTART application signalled in the service element as a linked application controlling media presentation. The application is started.
org.hbbtv_DVBI_APPLC0110	1	DVB-I;Test for running AUTOSTART application after change from DVB-RF to DVB-DASH	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by classic RF-based broadcast and application signalling in a broadcast AIT. The application is not service bound. A new service is selected with a single service instance delivered by DVB-DASH with the already running application signalled in the service element as an application controlling media presentation with control code AUTOSTART. The terminal shall allow the application to run uninterrupted.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0120	2	DVB-I;Test for running PRESENT application after change from DVB-RF to DVB-DASH	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by classic RF-based broadcast and application signalling in a broadcast AIT. The application is not service bound. A new service is selected with a single service instance delivered by DVB-DASH with the already running application signalled in the service element as an application controlling media presentation with control code PRESENT. The terminal shall allow the application to run uninterrupted.
org.hbbtv_DVBI_APPLC0130	2	DVB-I; Test for KILLED application after service selection from DVB-RF to DVB-DASH	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by classic RF-based broadcast and application signalling in a broadcast AIT. The application is not service bound. A new service is selected with a single service instance delivered by DVB-DASH with the already running application signalled in the service element as an application controlling media presentation with control code KILL. The terminal shall kill the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0140	1	DVB-I; Test for NOT SIGNALLED application after service selection after service selection from DVB-RF to DVB-DASH	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a service instance delivered by classic RF-based broadcast and application signalling in a broadcast AIT. The application is not service bound. A new service is selected with a single service instance delivered by DVB-DASH with the already running application not signaled at all in the newly selected service, the terminal shall kill the currently running application.
org.hbbtv_DVBI_APPLC0200	1	DVB-I; Application lifecycle - switching from DVB-I service without app to DVB-I service with app	TRUE	A DVB-I service with a single service instance delivered by DVB-DASH is selected that has no application signalled. Another DVB-I service with a single service instance delivered by DVB-DASH is then selected that has a broadcast-related AUTOSTART application signalled in the service element as a linked application controlling media presentation. The application is started.
org.hbbtv_DVBI_APPLC0210	1	DVB-I;Test for running AUTOSTART application after change from DVB-DASH to DVB-DASH	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked application controlling media presentation signalled in the service element. The application is not service bound. A new service is selected with a single service instance delivered by DVB-DASH with the same application signaled in the service element with control code AUTOSTART. The terminal shall allow the application to run uninterrupted.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0220	2	DVB-I;Test for running PRESENT application after change from DVB-DASH to DVB-DASH	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked application controlling media presentation signalled in the service element. The application is not service bound. A new service is selected with a single service instance delivered by DVB-DASH with the same application signaled in the service element with control code PRESENT. The terminal shall allow the application to run uninterrupted.
org.hbbtv_DVBI_APPLC0230	2	DVB-I; Test for KILLED application after service selection from DVB-DASH to DVB-DASH	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked application controlling media presentation signalled in the service element. The application is not service bound. A new service is selected with a single service instance delivered by DVB-DASH with the same application signaled in the service element with control code KILL. The terminal shall kill the currently running application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0240	1	DVB-I; Test for NOT SIGNALLED application after service selection from DVB-DASH to DVB-DASH	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked application controlling media presentation signalled in the service element. The application is not service bound. A new service is selected with a single service instance delivered by DVB-DASH with the same application not signaled at all for the newly selected service, the terminal shall kill the currently running application.
org.hbbtv_DVBI_APPLC0250	1	DVB-I;Test for running AUTOSTART application after change from DVB-DASH to DVB-DASH - serviceBound is true	TRUE	An autostart broadcast-related application starts as a result of selecting a single DVB-I service with a service instance delivered by DVB-DASH and a linked application controlling media presentation signalled in the service element. The application is signalled with serviceBound as true. A new service is selected with a single service instance delivered by DVB-DASH with the same application signaled in the service element with control code AUTOSTART. The terminal shall kill and restart the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0300	2	DVB-I; AIT changes while broadcast related application is running, application still signalled	TRUE	A DVB-I service delivered by DVB-DASH is selected that has an AUTOSTART broadcast-related application linked to the service signalled in the service element. The MPD contains an event stream with an event signalling the application consistently with the signalling in the DVB-I service list. The event has a duration. The MPD also signals a second event starting at the end of the first event that changes the application signalling but continues to signal the autostart application with a control other than KILL. The application SHALL continue to run.
org.hbbtv_DVBI_APPLC0310	2	DVB-I; AIT changes while broadcast related application is running, application signaled with KILL and new application signaled instead	TRUE	A DVB-I service delivered by DVB-DASH is selected that has an AUTOSTART broadcast-related application linked to the service signalled in the service element. The MPD contains an event stream with an event signalling the application consistently with the signalling in the DVB-I service list. The event has a duration. The MPD also signals a second event starting at the end of the first event that signals the previous autostart application with a KILL control code and adds a new AUTOSTART application. The running application SHALL be killed and the new application shall be started.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0320	2	DVB-I; AIT changes while broadcast related application is running, application no longer signalled and new application signalled instead	TRUE	A DVB-I service delivered by DVB-DASH is selected that has an AUTOSTART broadcast-related application linked to the service signalled in the service element. The MPD contains an event stream with an event signalling the application consistently with the signalling in the DVB-I service list. The event has a duration. The MPD also signals a second event starting at the end of the first event that does not signal the previous autostart application at all but adds a new AUTOSTART application. The running application SHALL be killed and the new application shall be started.
org.hbbtv_DVBI_APPLC0330	2	DVB-I; AIT changes from no application signalled to add AUTOSTART application	TRUE	A DVB-I service delivered by DVB-DASH is selected that has no application linked to the service signalled anywhere. The MPD contains an event stream with an event starting some time in the future that signals one application with control code AUTOSTART. The terminal shall not start the application initially. When the start of the event is reached, the application shall be started.
org.hbbtv_DVBI_APPLC0340	2	DVB-I; AIT changes from no broadcast related application is running to add PRESENT app to service	TRUE	A DVB-I service delivered by DVB-DASH is selected that has no application linked to the service signalled anywhere. The MPD contains an event stream with an event starting some time in the future that signals one application with control code PRESENT. The terminal shall not start the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0350	2	DVB-I; AIT changes from no broadcast related application is running to add multiple AUTOSTART applications, highest priority app runs	TRUE	A DVB-I service delivered by DVB-DASH is selected that has no application linked to the service signalled anywhere. The MPD contains an event stream with an event starting some time in the future that signals two AUTOSTART applications carried via HTTP, App1 and App2; App1 has a higher priority. The terminal shall start App1.
org.hbbtv_DVBI_APPLC0360	2	AIT changes from no broadcast related application is running to add multiple AUTOSTART applications, highest priority app cannot be loaded successfully, lower priority app runs	TRUE	A DVB-I service delivered by DVB-DASH is selected that has no application linked to the service signalled anywhere. The MPD contains an event stream with an event starting some time in the future that signals two AUTOSTART applications carried via HTTP, App1 and App2; App1 has a higher priority. App1 is temporarily unavailable. The terminal shall finally start App2.
org.hbbtv_DVBI_APPLC0370	2	DVB-I; AIT changes while broadcast related application is running, application still signalled - service instance	TRUE	A DVB-I service delivered by DVB-DASH is selected that has an AUTOSTART broadcast-related application signalled in the service instance. The MPD contains an event stream with an event signalling the application consistently with the signalling in the DVB-I service list. The event has a duration. The MPD also signals a second event starting at the end of the first event that changes the application signalling but continues to signal the autostart application with a control other than KILL. The application SHALL continue to run.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0400	1	DVBI; Stability - service selection - DVB-RF service with app in carousel and DVB-DASH service	TRUE	There are two DVB-I services carrying broadcast-related autostart applications, one with a service instance delivered by classic RF-based broadcast with the application signalled in a broadcast AIT and delivered in a carousel and the other with the application signalled in the service element and the video, audio and application delivered over broadband. The selected service is repeatedly changed from one service to the other (as if by user interaction), no faster than at 50 ms intervals and no slower than at 1 second intervals (or the time required for the application to start fully, if greater than 1 second). After 20 service changes at varying intervals, the correct application starts successfully and presents the correct audio and video.
org.hbbtv_DVBI_APPLC0410	1	DVBI; Stability - no A/V glitches when application launches - autostart/IP	TRUE	When a terminal is presenting audio and video from a single DVB-I service instance delivered by DVB-DASH, a broadcast-related autostart (linked) application delivered over broadband launches, and the application does not try to control video playback, there are no artifacts or glitches in the presented audio or video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0500	4	Broadcast Independent Applications started from a Broadcast Related application (DVB-I)	TRUE	When a broadcast-related application on a DVB-I service delivered by DVB-DASH successfully starts a broadcast-independent application, the DVB-I service ceases to be selected and the video and audio of the service cease to be presented. The new application shall not have access to APIs listed as "broadcast-related" in table A.1.
org.hbbtv_DVBI_APPLC0510	3	Transition of an Application from Broadcast Related to Broadcast Independent state using Set Channel (DVB-I)	TRUE	When a broadcast-related application linked to a DVB-I service delivered by DVB-DASH calls the setChannel method on the video/broadcast object with a value of null for its channel argument, it shall become a broadcast independent application. As a consequence, the DVB-I service ceases to be selected and the video and audio of the service cease to be presented. The application shall not have access to APIs listed as "broadcast-related" in table A.1.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0520	4	DVB-I; A broadcast-independent application started by createApplication successfully transitions to a broadcast-related application	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked application controlling media presentation. The application creates a broadcast-independent application using createApplication. The broadcast-independent application attempts to become a broadcast-related application, by successfully selecting a DVB-I service delivered by DVB-DASH. The application is signalled as a linked application controlling media presentation. It SHALL NOT be killed if all the following conditions are met: 1. The broadcast-independent application has an organization_id and application_id (whether obtained through a broadcast AIT or an XML AIT). 2. An application of the same organization_id and application_id is signalled in the DVB-I service to be selected with control code AUTOSTART or PRESENT. 3. The application signalled in the DVB-I service with the same organization_id and application_id includes a transport_protocol_descriptor with protocol_id equal to 3. 4. The URL of the entry point document of the broadcast-independent application has the same origin as at least one of the URLs signalled in DVB-I for that organization_id and application_id. 5. The URL of the page currently loaded in the broadcast-independent application is inside the application boundary of the application as defined in clause 6.3.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0530	4	DVB-I; A broadcast-independent application originally started as a broadcast-related autostart application successfully transitions back to a broadcast-related application	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH and a linked application controlling media presentation. The application transitions itself to become a broadcast-independent application using setChannel(null). The broadcast-independent application attempts to become a broadcast-related application, by successfully selecting a DVB-I service delivered by DVB-DASH. The application is signalled as a linked application controlling media presentation. It SHALL NOT be killed if all the following conditions are met: 1. The broadcast-independent application has an organization_id and application_id (whether obtained through a broadcast AIT or an XML AIT). 2. An application of the same organization_id and application_id is signalled in the DVB-I service to be selected with control code AUTOSTART or PRESENT. 3. The application signalled in the DVB-I service with the same organization_id and application_id includes a transport_protocol_descriptor with protocol_id equal to 3. 4. The URL of the entry point document of the broadcast-independent application has the same origin as at least one of the URLs signalled in DVB-I for that organization_id and application_id. 5. The URL of the page currently loaded in the broadcast-independent application is inside the application boundary of the application as defined in clause 6.3.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0540	4	DVB-I; A broadcast-independent application started by DIAL successfully transitions to a broadcast-related application	TRUE	A broadcast-independent application is started using DIAL. The terminal has a DVB-I service list installed that a service with the "urn:hbbtv:dvbi:service:serviceIdentifierTriplet" extension with known values for the DVB triplet and that signals, in its service element, a broadcast-related linked application meeting the following requirements; 1. the Application.applicationIdentifier matches the Application.applicationIdentifier of the broadcast-independent application, 2. it is signalled with control code AUTOSTART, 3. it includes an HTTP transport protocol descriptor, 4. the URL signalled by the HTTP transport protocol descriptor has the same origin as the entry point document of the broadcast-independent application and 5. it has an application boundary that contains the URL of the page currently loaded in the broadcast-independent application. The broadcast-independent application creates a Channel object by calling createChannelObject with idType equal to ID_DVB_I and onid, tsid and sid equal to the known values for the DVB-I service referred to earlier. The broadcast-independent application calls the setChannel method with that Channel object. The broadcast-related application successfully transitions to become broadcast-related.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0550	4	DVB-I; A broadcast-independent application started from app store successfully transitions to a broadcast-related application	TRUE	A broadcast-independent application is started from an app store. The terminal has a DVB-I service list intalled that a service with the "urn:hbbtv:dvbi:service:serviceIdentifierTriplet" extension with known values for the DVB triplet and that signals, in its service element, a broadcast-related linked application meeting the following requirements: 1. the Application.applicationIdentifier matches the Application.applicationIdentifier of the broadcast-independent application, 2. it is signalled with control code AUTOSTART, 3. it includes an HTTP transport protocol descriptor, 4. the URL signalled by the HTTP transport protocol descriptor has the same origin as the entry point document of the broadcast-independent application and 5. it has an application boundary that contains the URL of the page currently loaded in the broadcast-independent application. The broadcast-independent application creates a Channel object by calling createChannelObject with idType equal to ID_DVB_I and onid, tsid and sid equal to the known values for the DVB-I service referred to earlier. The broadcast-independent application calls the setChannel method with that Channel object. The broadcast-related application successfully transitions to become broadcast-related.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0600	2	DVB-I broadcast-related application exits - application controlling media presentation	TRUE	While a DVB-I service delivered by DVB-DASH is selected and a broadcast related application is running (application controlling media presentation), the application exits. An autostart application is signalled in the service element. The terminal SHALL start the autostart application.
org.hbbtv_DVBI_APPLC0610	2	DVB-I broadcast-related application exits - application with media in parallel	TRUE	While a DVB-I service delivered by DVB-DASH is selected and a broadcast related application is running (application with media in parallel) that did not attempt to control video presentation, the application exits. An autostart application is signalled in the service element. The terminal starts the autostart application. Video and audio presentation continue without artifacts or glitches while this happens.
org.hbbtv_DVBI_APPLC0620	2	DVB-I; CreateApplication with parameters in URL	TRUE	An AUTOSTART broadcast-related application in a DVB-I service delivered by DVB-DASH that is a linked application controlling media presentation calls createApplication to start a second broadcast-related application in the same service that is signalled as PRESENT including some parameters (?param2=value2) with the method call. The second application has parameters in the XML AIT (?param1=value1). The parameters of the createApplication call and from the XML AIT are combined.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0630	1	DVB-I; Service is inactive	TRUE	A service signalled using DVB-I has a linked application of type 1.1, a linked application of type 2 and a RelatedMaterial link to a still image. The service is outside its availability period. When the service is selected, the linked application of type 2 runs. The linked application has a launch context query parameter of the form "lloc=availability".
org.hbbtv_DVBI_APPLC0640	1	DVB-I; Application lifecycle - Content Guide - On Demand Content deep-linked XML AIT without AuxiliaryURL	TRUE	An on-demand programme includes a ProgramURL link to an XML AIT referencing a broadcast-independent application, without an AuxiliaryURL. When the on-demand programme is selected using the terminal UI (backwards EPG), the terminal requests the XML AIT with at least the launch location "epg". An XML AIT is returned from which the terminal starts the broadcast-independent application.
org.hbbtv_DVBI_APPLC0641	1	DVB-I; Application lifecycle - Content Guide - On Demand Content deep-linked XML AIT with AuxiliaryURL	TRUE	An on-demand programme includes a ProgramURL link to an XML AIT referencing a broadcast-independent application, with an AuxiliaryURL. When the on-demand programme is selected using the terminal UI (backwards EPG), the terminal requests the XML AIT with at least the launch location "epg". An XML AIT is returned from which the terminal starts the broadcast-independent application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0650	2	DVB-I; Application lifecycle on changing service instance	TRUE	A DVB-I service is selected that has a broadcast-delivered service instance with an availability window and a broadband-delivered service instance without an availability window. The broadcast-delivered service instance has the highest priority. A broadcast-related application is signalled as autostart in the AIT for the broadcast-delivered service instance and as present in the service instance element of the broadband-delivered service instance. A switch is triggered from the broadcast-delivered service instance to the broadband-delivered service instance. The application continues to run uninterrupted. The value of currentServiceInstance changes from the broadcast service instance to the broadband service instance.
org.hbbtv_DVBI_APPLC0660	2	DVB-I; Service-bound application started from service instance delivered over broadband	TRUE	An autostart broadcast-related application starts as a result of selecting a DVB-I service with a single service instance delivered by DVB-DASH. The application is signalled as service bound and 'application with media in parallel'. A new service is selected with a service instance delivered by classic RF-based broadcast with the same application signaled with control code PRESENT in the broadcast AIT. The terminal shall kill the currently running application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0680	2	DVB-I; Application lifecycle on changing service instance - application initiated - application killed	TRUE	A DVB-I service is selected that has a broadcast-delivered service instance and a broadband-delivered service instance. The broadcast-delivered service instance has the highest priority. Different applications are signalled as autostart in the AIT of the broadcast-delivered service instances and the service instance element of the broadband-delivered service instance. The autostart application in the broadcast service instance calls setChannel with a Channel object corresponding to the broadband-delivered service instance. The broadband-delivered service instance is selected, the running application killed and the application signalled in the broadband-delivered service is started.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0690	2	DVB-I; Application lifecycle on changing service instance - application initiated - application keeps running	TRUE	A DVB-I service is selected that has a broadcast-delivered service instance and a broadband-delivered service instance. The broadcast-delivered service instance has the highest priority. The same applications is signalled as autostart in the AIT of the broadcast-delivered service instance and in the service instance element of the broadband-delivered service instance. The application is signalled with service_bound_flag set to 1 in the broadcast AIT and serviceBound set to true in the XML AIT. The autostart application in the broadcast service instance calls setChannel with a Channel object corresponding to the broadband-delivered service instance. The broadband-delivered service instance is selected, the running application continues to run uninterrupted.
org.hbbtv_DVBI_APPLC0700	1	DVB-I; Application lifecycle - Application with media in parallel - signalling in service instance only	TRUE	A DVB-I service with a single service instance delivered by DVB-DASH is selected. The service has a broadcast-related AUTOSTART linked application with media in parallel signalled in the service instance element. The application is started.
org.hbbtv_DVBI_APPLC0710	1	DVB-I; Application lifecycle - Application with media in parallel - signalling in service instance and service	TRUE	A DVB-I service with a single service instance delivered by DVB-DASH is selected. The service has a broadcast-related AUTOSTART linked application with media in parallel signalled in the service instance element and a different application signalled in the service element. The application signalled in the service instance element is started.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0730	1	DVB-I; Application lifecycle - Application with media in parallel - inconsistent signalling in service and MPD	TRUE	A DVB-I service with a single service instance delivered by DVB-DASH is selected. The service has a linked application with media in parallel signalled in the service element. A different application is signalled in the MPD. The terminal begins to start the application signalled in the service element but stops this process and instead starts the application signalled in the MPD.
org.hbbtv_DVBI_APPLC0740	1	DVB-I; Application lifecycle - Application with media in parallel - inconsistent signalling in service instance and MPD	TRUE	A DVB-I service with a single service instance delivered by DVB-DASH is selected. The service has a linked application with media in parallel signalled in the service instance element. A different application is signalled in the MPD. The terminal begins to start the application signalled in the service instance element but stops this process and instead starts the application signalled in the MPD.
org.hbbtv_DVBI_APPLC0750	1	DVB-I; Application lifecycle - Application controlling media presentation - signalling in service instance only	TRUE	A DVB-I service with a single service instance delivered by DVB-DASH is selected. The service has a broadcast-related AUTOSTART linked application controlling media presentation signalled in the service instance element. The application is started.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0760	1	DVB-I; Application lifecycle - Application controlling media presentation - signalling in both service instance and service	TRUE	A DVB-I service with a single service instance delivered by DVB-DASH is selected. The service has a broadcast-related AUTOSTART linked application controlling media presentation signalled in the service instance element and a different application signalled in the service element. The application signalled in the service instance element is started.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0770	1	DVB-I; Service transitions in and out of availability window - same application - application with media in parallel	TRUE	A service signalled using DVB-I has a linked application of type 1.1, the same application is signalled as a linked application of type 2 and a RelatedMaterial link to a still image. The service has one broadband-delivered service instance that alternates between being available and not available. When the service is selected, the linked application is started with the appropriate launch context depending on how the current time of day fits in the alternating availability windows. The application has a video/broadcast object and calls bindToCurrentChannel when it starts. If the service is available, the video/broadcast object goes to the Presenting state. If the service is not available, the video/broadcast object enters the Connecting state. At the end of an availability period, the application continues running and the video/broadcast object transitions to the Connecting state with a PlayStateChange event being generated. At the start of an availability period, the application continues running, the video and audio of the service is presented and the video/broadcast object transitions to the Presenting state with a PlayStateChange event being generated.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0780	1	DVB-I; Service transitions in and out of availability window - different application	TRUE	A service signalled using DVB-I has a linked application of type 1.1, a different linked application of type 2 and a RelatedMaterial link to a still image. The service alternates between being available and not available. When the service is selected, the appropriate linked application is started depending on how the current time of day fits in the alternating availability windows. Both applications have a video/broadcast object and call bindToCurrentChannel when they start. For the application of type 2, the video/broadcast object goes to the Connecting state. For the application of type 1.1, the video/broadcast object goes to the Presenting state. When the service changes from being available to not being available, the type 1.1 application is stopped and the type 2 application is started. When the service changes from not being available to being available, the type 2 application is stopped and the type 1.2 application is started.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_APPLC0790	1	DVB-I; Service transitions in and out of availability window - same application - application controlling media presentation	TRUE	A service signalled using DVB-I has a linked application of type 1.2, the same application is signalled as a linked application of type 2 and a RelatedMaterial link to a still image. The service alternates between being available and not available. When the service is selected, the linked application is started with the appropriate launch context depending on how the current time of day fits in the alternating availability windows. The application has a video/broadcast object and calls bindToCurrentChannel when it starts. The video/broadcast object enters the Connecting state. When the service changes from being available to not being available, the application continues running. When the service changes from not being available to being available, the application continues running. The video/broadcast object remains in the Connecting state in each case.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_CHAN0010	1	DVB-I; ChannelList object includes DVB-I services - DVB-I linked application	FALSE	A DVB-I service list is installed on a terminal including services with only DVB-C/S/S2/T/T2 instances, only broadband-delivered instances and both. A service is selected with only a broadband-delivered service instance. A broadcast-related application is signalled as a linked application controlling media presentation. Once started, the application reads the ChannelList. The ChannelList contains all the RF broadcast-delivered services and all the broadband-delivered services from the installed service list with the Channel corresponding to each service having the correct service instances referenced by Channel.serviceInstances. Services are identified by Service@UniqueIdentifier, DVB-DASH service instances by DisplayName. Each Channel object corresponding to a service (and not a service instance) has the serviceInstances property correctly populated. Each Channel object corresponding to a service instance (and not a service) has the parentService correctly populated.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_CHAN0020	1	DVB-I; ChannelList object includes DVB-I services - broadcast application	FALSE	A DVB-I service list is installed on a terminal including services with only DVB-C/S/S2/T/T2 instances, only broadband-delivered instances and both. A service is selected with only a DVB-C/S/S2/T/T2 service instance with a regular HbbTV broadcast-related application signalled using a broadcast AIT. Once started, the application reads the ChannelList. The ChannelList contains all the RF broadcast-delivered services and all the broadband-delivered services from the installed service list with the Channel corresponding to each service having the correct service instances referenced by Channel.serviceInstances. Services are identified by Service@UniqueIdentifier, DVB-DASH service instances by DisplayName. Each Channel object corresponding to a service (and not a service instance) has the serviceInstances property correctly populated. Each Channel object corresponding to a service instance (and not a service) has the parentService correctly populated.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_CHAN0100	1	DVB-I; Channel class corresponding to DVB-I service - TYPE_RADIO	TRUE	The installed DVB-I service list includes a DVB-I service signalled with Service.ServiceType="urn:dvb:metadata:cs:ServiceTypeCS:2019:linear-radio" and one Service.ServiceName element. The service list has a single LCNTable with no TargetRegion. An application reads the ChannelList and obtains the Channel object corresponding to the service. Channel.channelType is TYPE_RADIO. Channel.name is Service.ServiceName. Channel.ipBroadcastID is Service.UniqueIdentifier. Channel.majorChannel is LCNTableEntry.channelNumber for the LCNTableEntry whose @serviceRef field matches the UniqueIdentifier of the service.
org.hbbtv_DVBI_CHAN0110	1	DVB-I; Channel class corresponding to DVB-I service - TYPE_TV	TRUE	The installed DVB-I service list includes a DVB-I service signalled with Service.ServiceType="urn:dvb:metadata:cs:ServiceTypeCS:2019:linear" and one Service.ServiceName element. The service list has a single LCNTable with no TargetRegion. An application reads the ChannelList and obtains the Channel object corresponding to the service. Channel.channelType property is TYPE_TV. Channel.name is Service.ServiceName. Channel.ipBroadcastID is Service.UniqueIdentifier. Channel.majorChannel is LCNTableEntry.channelNumber for the LCNTableEntry whose @serviceRef field matches the UniqueIdentifier of the service.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_CHAN0120	1	DVB-I; Channel class corresponding to DVB-I service - TYPE_HBBTV_DATA	TRUE	The installed DVB-I service list includes a DVB-I service that was signalled with Service.ServiceType = "urn:dvb:metadata:cs:ServiceTypeCS:2019:data" and Service.RelatedMaterial containing at least one RelatedMaterial element with both i) a HowRelated element with an @href attribute carrying a value from urn:dvb:metadata:cs:LinkedApplicationCS:2019 and ii) MediaLocator that contains a MediaUri whose @contentType attribute contains application/vnd.dvb.ait+xml. There is one Service.ServiceName element. There is a single LCNTable with no TargetRegion. An application reads the ChannelList and obtains the Channel object corresponding to the service. Channel.channelType property is TYPE_HBBTV_DATA. Channel.name is Service.ServiceName. Channel.ipBroadcastID is Service.UniqueIdentifier. Channel.majorChannel property is LCNTableEntry.channelNumber for the LCNTableEntry whose @serviceRef field matches the UniqueIdentifier of the service.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_CHAN0130	1	DVB-I; Channel class corresponding to DVB-I service delivered only by one single DVB-RF physical layer and not broadband with AdditionalServiceParameters	TRUE	The installed DVB-I service list includes a service only delivered by one of the DVB-RF physical layers (DVB-C/S/S2/T/T2) and not by broadband. The service has AdditionalServiceParameters with an extension with extensionName "urn:hbbtv:dvbi:service:serviceIdentifierTriplet" that extension contains origNetId, serviceId and tsId that are different from the values in the DVB-SI in the DVB-RF. There is one Service.ServiceName element. There is a single LCNTable with no TargetRegion. An application reads the ChannelList and obtains the Channel object corresponding to the service using the getChannelByTriplet method with the triplet values used in the extension. Channel.idType is the appropriate one of DVB_C, DVB_S, DVB_S2, DVB_T and DVB_T2. Channel.onid, .tsid and .sid are the appropriate value from Service.AdditionalServiceParameters. Channel.name is Service.ServiceName. Channel.ipBroadcastID is Service.UniqueIdentifier. Channel.majorChannel property is LCNTableEntry.channelNumber for the LCNTableEntry whose @serviceRef field matches the UniqueIdentifier of the service.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_CHAN0135	1	DVB-I; Channel class corresponding to DVB-I service instance delivered only by one single DVB-RF physical layer with AdditionalServiceParameters	FALSE	The installed DVB-I service list includes a service only delivered by one of the DVB-RF physical layers (DVB-C/S/S2/T/T2) and not by broadband. The service has AdditionalServiceParameters with an extension with extensionName "urn:hbbtv:dvbi:service:serviceIdentifierTriplet" that extension contains origNetId, serviceId and tsId that are different from the values in the broadcast DVB-SI. There is one Service.ServiceName element. There is a single LCNTable with no TargetRegion. The ServiceInstance element for the broadcast service has one DisplayName element. An application reads the ChannelList and obtains the Channel object corresponding to the DVB-RF service instance using the getChannelByTriplet method with the triplet values found in the broadcast DVB-SI. Channel.idType is the appropriate one of DVB_C, DVB_S, DVB_S2, DVB_T and DVB_T2. Channel.onid, .tsid and .sid are the appropriate value from the broadcast DVB-SI. Channel.name is the DisplayName from the ServiceInstance element in the service list.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_CHAN0140	1	DVB-I; Channel class corresponding to DVB-I service with both DVB-RF and broadband service instances.	TRUE	The installed DVB-I service list includes a service delivered by both broadcast DVB-C/S/S2/T/T2 and broadband. The service has AdditionalServiceParameters with an extension with extensionName "urn:hbbtv:dvbi:service:serviceIdentifierTriplet", that extension contains origNetId, serviceId and tsId that match the values in the broadcast DVB-SI. There is one Service.ServiceName element. There is a single LCNTable with no TargetRegion. An application reads the ChannelList and obtains the Channel object corresponding to the service using the getChannelByTriplet method. Channel.idType is ID_DVB_I. Channel.onid, .tsid and .sid are the appropriate value from Service.AdditionalServiceParameters. Channel.name shall be set to Service.ServiceName. Channel.ipBroadcastID shall be set to Service.UniqueIdentifier. The value of the majorChannel property shall be LCNTableEntry.channelNumber for the LCNTableEntry whose @serviceRef field matches the UniqueIdentifier of the service.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_CHAN0150	1	DVB-I; Channel class for services with names in multiple languages	TRUE	The installed DVB-I service list includes a service delivered by both DVB-RF and broadband. There are Service.ServiceName elements in a large number of languages. The service has AdditionalServiceParameters with an extension with extensionName "urn:hbbtv:dvbi:service:serviceIdentifierTriplet", that extension contains origNetId, serviceId and tsId that match the values in the broadcast DVB-SI. There is a single LCNTable with no TargetRegion. An application reads the ChannelList and obtains the Channel object corresponding to the service using the getChannel(channelID) method with the unique identifier of the service. If Configuration.preferredUILanguage is one of the languages for which there is a Service.ServiceName element then Channel.name shall be set to that ServiceName. Channel.idType shall be ID_DVB_I. Channel.onid, .tsid and .sid are the appropriate value from Service.AdditionalServiceParameters. Channel.ipBroadcastID is Service.UniqueIdentifier. Channel.majorChannel is LCNTableEntry.channelNumber for the LCNTableEntry whose @serviceRef field matches the UniqueIdentifier of the service.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_CHAN0160	1	DVB-I; Channel class for a broadband-delivered service instance	TRUE	The installed DVB-I service list includes a service delivered by both DVB-RF and broadband. The service has AdditionalServiceParameters with an extension with extensionName "urn:hbbtv:dvbi:service:serviceIdentifierTriplet", that extension contains origNetId, serviceId and tsId that match the values in the broadcast DVB-SI. The DVB-DASH service instance includes a number of DisplayName elements in different languages. There is a single LCNTable with no TargetRegion. An application reads the ChannelList and obtains the Channel object corresponding to the broadband-delivered service instance via the Channel object corresponding to the service. If Configuration.preferredUILanguage is one of the languages for which there is a ServiceInstance.DisplayName element then Channel.name shall be set to that DisplayName. Channel.idType is ID_DVB_DASH. Channel onid, tsid and sid properties are the appropriate value from Service.AdditionalServiceParameters. Channel.ipBroadcastID is ServiceInstance.DASHDeliveryParameters.UriBasedLocation.URI. Channel.majorChannel property is LCNTableEntry.channelNumber for the LCNTableEntry whose @serviceRef field matches the UniqueIdentifier of the service.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_CHAN0170	1	DVB-I; Channel class for a broadcast-delivered service instance	TRUE	The installed DVB-I service list includes a service delivered by both DVB-RF and broadband. There is a single LCNTable with no TargetRegion. The service does not have an AdditionalServiceParameters with an extension with extensionName "urn:hbbtv:dvbi:service:serviceIdentifierTriplet". An application reads the ChannelList and obtains the Channel object corresponding to the broadcast-delivered service instance using getChannelByTriplet(Integer onid, Integer tsid, Integer sid, Integer nid) where the triplet are the values in the broadcast DVB-SI. Channel.idType is the appropriate one of DVB_C, DVB_S, DVB_S2, DVB_T and DVB_T2. Channel.onid, .tsid and .sid are the appropriate value from the broadcast DVB-SI. Channel.name is the service name from the DVB-SI service descriptor.
org.hbbtv_DVBI_COMP0030	1	DVB-I; video/broadcast object correctly converts AdaptationSet@id into componentTag property of AVComponent.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes 8 Adaptation Sets with AdaptationSet@id from 1 to 8. The application starts and calls the getComponents(null) method of video/broadcast object that returns a collection of AVcomponents where the componentTag property of the items is respectively 1, 2, 3, 4, 5, 6, 7, 8. Array notation to access AVcomponents is supported.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_COMP0060	1	DVB-I; getComponents(COMPONENT_TYPE_VIDEO) method of video/broadcast object returns correct collection of video AVcomponents.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes two video adaptation sets with AdaptationSet@id being 1 and 2. The application calls the getComponents method with COMPONENT_TYPE_VIDEO that returns a collection of components with length = 2, one component has componentTag=1, the other other componentTag=2. Both have AVComponent.type as COMPONENT_TYPE_VIDEO.
org.hbbtv_DVBI_COMP0070	1	DVB-I; getComponents(COMPONENT_TYPE_AUDIO) method of video/broadcast object returns correct collection of audio AVcomponents.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes 4 audio Adaptation Sets with AdaptationSet@id being 3, 4, 5 and 6. The application calls the getComponents method which returns a collection of audio components with length = 4, where the components have parameters: componentTag=3, componentTag=4, componentTag=5 and componentTag=6 respectively. Both have AVComponent.type as COMPONENT_TYPE_AUDIO.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_COMP0080	1	DVB-I; getComponents(COMPONENT_TYPE_SUBTITLE) method of video/broadcast object returns correct collection of subtitle AVcomponents.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes two subtitle Adaptation Sets that have AdaptationSet@id being 7 and 8. The application calls the getComponents method which returns a collection of subtitle components with length = 2, where the components have parameters: componentTag=7 and componentTag=8. Both have AVComponent.type as COMPONENT_TYPE_SUBTITLE.
org.hbbtv_DVBI_COMP0090	1	DVB-I; Terminal correctly recognizes scrambling of AVComponent.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes an encrypted Adaptation Set with AdaptationSet@id being 5. The application calls the getComponents method of video/broadcast object that returns a collection of AVcomponents with one audio component with componentTag=5 and property encrypted=true.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_COMP0100	1	DVB-I; Terminal correctly calculates 'aspectRatio' property of AVVideoComponents	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes one video Adaptation Set with HD 16:9 and one SD Adaptation Set with SD 4:3. The application calls the getComponents method that returns an AVComponentCollection containing two AVVideoComponents with 'aspectRatio' properties of 1.33 and 1.78.
org.hbbtv_DVBI_COMP0110	1	DVB-I; Terminal correctly recognizes language of audio AVComponents.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes 4 audio adaptation sets with AdaptationSet@id and AdaptationSet@lang as follows - 3, 'en' ; 4, 'pl'; 5, 'ko', 6, 'it'. The application calls the getComponents method with COMPONENT_TYPE_AUDIO and the method returns a collection of AVAudioComponents with componentTag and language matching the contents of the MPD.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_COMP0120	1	DVB-I; Terminal correctly sets audioDescription of audio AVComponent.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes a number of audio Adaptation Sets where one has 1) a Role element with @schemeIdUri = "urn:mpeg:dash:role:2011" and @value = "alternate" and 2) an Accessibility element with @schemeIdUri = "urn:tva:metadata:cs:AudioPurposeCS:2007" and @value = "1". The application calls the getComponents method of the video/broadcast object which returns a collection of AVAudioComponents where one audio component has audioDescription=true and other AVAudioComponents have audioDescription=false.
org.hbbtv_DVBI_COMP0130	1	DVB-I; Terminal correctly recognizes language of subtitle AVComponent.	TRUE	t A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes two subtitle adaptation sets with @lang="en" and "pl" respectively. The application calls the getComponents method of the video/broadcast object which returns a collection of AVSubtitleComponents with componentTag and language matching the contents of the MPD.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_COMP0140	1	DVB-I; Terminal correctly recognizes hearing impaired of subtitle AVComponent.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes one subtitle Adaptation Set with 1) a Role element with @schemeIdUri "urn:mpeg:dash:role:2011" and @value "main" and 2) an Accessibility element with @schemeIdUri "urn:tva:metadata:cs:AudioPurposeCS:2007" and @value=2. The application calls the getComponents method of the video/broadcast object with COMPONENT_TYPE_SUBTITLE which returns a collection of AVcomponents where 1 subtitle component has hearingImpaired=true.
org.hbbtv_DVBI_COMP0150	1	DVB-I; Terminal correctly returns active AVComponents using getCurrentActiveComponents(componentType) method of video/broadcast object.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes more than one Adaptation Set for each of video, audio and subtitles. The application calls bindToCurrentChannel and then getCurrentActiveComponents() three times, once with each componentType of COMPONENT_TYPE_VIDEO, COMPONENT_TYPE_AUDIO and COMPONENT_TYPE_SUBTITLE. Each call returns the currently active AVComponent for the video, audio or subtitle component, respectively.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_COMP0160	1	DVB-I; Terminal correctly switches AVComponents using selectComponent(AVComponent component) method of video/broadcast object.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes more than one Adaptation Set for each of video, audio and subtitles. The terminal calls the selectComponent method to change the audio component and subtitle component. The Adaptation Set corresponding to the newly selected component of each type is presented.
org.hbbtv_DVBI_COMP0170	1	DVB-I; Terminal correctly updates active AVComponents collection after changing audio selection	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes more than one audio Adaptation Set. The application starts and calls getCurrentActiveComponents to find the current audio language. The terminal UI is used to change the audio language. The application calls getCurrentActiveComponents a second time. The collection returned correctly reflects the change of selected audio component.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_COMP0180	1	DVB-I; SelectedComponentChange callback is called when selectComponent switches AVComponents.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes more than one audio Adaptation Set and more than one subtitle Adaptation Set. The application calls the selectComponent method to switch AVAudioComponent and again to switch AVSubtitleComponent. After each switch, SelectedComponentChange is called with the appropriate argument.
org.hbbtv_DVBI_COMP0220	1	DVB-I; Terminal stops and re-starts rendering video AVComponents after calling unselectComponent and selectComponent.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes at least one video component. The application calls unselectComponent(COMPONENT_TYPE_VIDEO) and the video component stops being rendered. Then, the application calls selectComponent(COMPONENT_TYPE_VIDEO) and the video component is rendered again.
org.hbbtv_DVBI_COMP0230	1	DVB-I; Terminal stops and re-starts rendering audio AVComponents after calling unselectComponent and selectComponent.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes at least one audio component. The application calls unselectComponent(COMPONENT_TYPE_AUDIO) and the audio component stops being rendered. Then, the application calls selectComponent(COMPONENT_TYPE_AUDIO) and the audio component is rendered again.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_COMP0240	1	DVB-I; Terminal stops and re-starts rendering subtitle AVComponents after calling unselectComponent and selectComponent.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes at least one subtitle component. The application calls unselectComponent(COMPONENT_TYPE_SUBTITLE) and the subtitle component stops being rendered. Then, the application calls selectComponent(COMPONENT_TYPE_SUBTITLE) and the subtitle component is rendered again.
org.hbbtv_DVBI_COMP0250	1	DVB-I; Terminal selects by default audio AV component with preferred language	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes audio Adaptation Sets in at least English, Polish, Korean and Italian. The language of the current active audio component is the same as the first of the language codes in preferredAudioLanguage47 in the Configuration object.
org.hbbtv_DVBI_COMP0260	1	DVB-I; Terminal selects by default subtitle AVcomponent with preferred language	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes at least a subtitle Adaptation Set in English. The English subtitles are displayed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_COMP0270	1	DVB-I; video/broadcast object updates component collection when service components change - Period boundary.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance includes multiple Periods, alternating between ones with more than one audio Adaptation Set and with at least one subtitle Adaptation Set and Periods with one audio Adaptation Set and no subtitles. The application repeatedly calls the getComponents method which returns the correct number and type of components at all times. Whenever the application detects the addition of an Adaptation Set, it modifies the currently selected components so ones that will be removed in a future Period are selected. Whenever a selected component is removed, a SelectedComponentChange event is dispatched.
org.hbbtv_DVBI_COMP0280	1	DVB-I; video/broadcast object updates component collection when service components change - MPD update.	TRUE	A DVB-I service instance delivered by DASH has a broadcast-related application that is a DVB-I linked application "with media in parallel". The MPD for the service instance periodically updates and new Adaptation Sets are added. The application repeatedly calls the getComponents method which returns the correct number and type of components at all times.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_EVENTS0010	1	DVB-I; MPD events - Multiple stream events with the same name - correctness of received data	TRUE	A broadcast-related autostart application registers to receive stream events from the current DVB-I broadband-delivered service. The service includes a DASH EventStream with events that have varying payloads including binary data, text data and mixtures. The binary data includes all values from 0 to 255 inclusive, with repetitions and random positions. The text data uses UTF-8 encoding and includes values outside 7-bit ASCII. Every event is received in the correct order, with the correct encoding of the data and text properties, with status=trigger and with all of the remaining properties of the StreamEvent and DataCue set correctly.
org.hbbtv_DVBI_EVENTS0020	1	DVB-I; Inband events - Multiple stream events with the same name - correctness of received data	TRUE	A broadcast-related application that is a DVB-I linked application "with media in parallel" registers to receive stream events. The current service has only a DASH service instance and the MPD includes an InbandEventStream with a variety of inband events including binary data, text data and mixtures. The binary data includes all values from 0 to 255 inclusive, with repetitions and random positions. The text data uses UTF-8 encoding and includes values outside 7-bit ASCII. Every event is received in the correct order, with the correct encoding of the data and text properties, with status=trigger and with all of the remaining properties of the StreamEvent and DataCue set correctly.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_EVENTS0030	1	DVB-I; Single stream event is not dispatched after application re-launching	TRUE	A DVB-I service instance delivered by DASH has an MPD that carries an event stream with MPD events at 4 second intervals with different event@id and payloads. A broadcast-related application that is a DVB-I linked application "with media in parallel" registers to receive stream events. Once two stream events have been received, the application is killed by user e.g. by pressing EXIT. When the application is re-launched and the stream event listener is added again with the same targetURL, eventName and listener then stream events are received but none of the events match the ones which were received before the application was killed and re-launched.
org.hbbtv_DVBI_EVENTS0040	1	DVB-I; Stream events after broadband content being presented after transition to broadcast independent	TRUE	A DVB-I service instance delivered by DASH has an MPD that carries MPD events. A broadcast-related application that is a DVB-I linked application "with media in parallel" starts and registers to receive stream events. Stream events are received correctly. The application then: transitions to broadcast-independent, starts to present DASH content over broadband using an HTML5 video element. When the A/V playback ends, the application transitions back to broadcast-related. Once that succeeds, the application re-subscribes to the stream events and then the correct stream events for that point in the broadcast stream are received. This process is repeated at least 3 times.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_EVENTS0050	1	DVB-I; Multiple stream events with different names - correctness of transmitting events by event listener	TRUE	A DVB-I service instance delivered by DASH has an MPD that carries an EventStream with EventStream@value being "N1" and an InbandEventStream with EventStream@value being "N2". The events in streams N1 and N2 have different payloads. A broadcast-related application that is a DVB-I linked application "with media in parallel" starts and registers to receive stream events with name N1 on event listener L1 and then receives the correct events for the name N1 and no others. After that the application removes the stream event listener for the N1 events and adds an event listener L2 to receive events with name N2. The correct events corresponding to N2 are received on the L2 listener and no others. The application re-registers to receive events with name N1 on L1 without removing the registration for the name N2 and registers to receive events with eventName equals null on event listener L3. L1, L2 and L3 each receive the correct events for which they are registered.
org.hbbtv_DVBI_EVENTS0060	1	DVB-I; Multiple stream events with the same name - order reliability	TRUE	A DVB-I service instance delivered by DASH has an MPD that carries an event stream with 100 stream events distributed at varying intervals over 5 minutes with varying payloads and different Event@id. A broadcast-related application that is a DVB-I linked application "with media in parallel" registers to receive stream events. All stream events are received in the correct order.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_EVENTS0100	1	DVB-I; Adding stream event listeners: eventName not found	TRUE	A DVB-I service instance delivered by DASH has an MPD that carries an event stream with MPD events. A broadcast-related application that is a DVB-I linked application "with media in parallel" registers to receive stream events using a non-null eventName argument that does not match EventStream@value. A StreamEvent of type "StreamEvent" with status equal to "error" shall be dispatched and passed to the event listener.
org.hbbtv_DVBI_EVENTS0110	1	DVB-I; Adding stream event listeners: targetURL not found	TRUE	A DVB-I service instance delivered by DASH has an MPD that carries an event stream with MPD events. A broadcast-related application that is a DVB-I linked application "with media in parallel" registers to receive stream events using a non-null targetURL argument that does not match EventStream@schemeIdUri. The EventListener supplied to the method is valid and instantiated. A StreamEvent of type "StreamEvent" with status equal to "error" shall be dispatched and passed to the event listener.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_EVENTS0120	1	DVB-I; Removing stream event listeners with an altered eventName	TRUE	A DVB-I service instance delivered by DASH has an MPD that carries an event stream with MPD events. A broadcast-related application that is a DVB-I linked application "with media in parallel" registers to receive stream events using a targetURL argument that matches EventStream@schemeIdUri and an eventName that matches EventStream@value. After an event has been received, the application calls removeStreamEvent with a targetURL argument that matches EventStream@schemeIdUri and the correct event listener but an eventName that does not match EventStream@value. Stream events continue to be received.
org.hbbtv_DVBI_EVENTS0130	1	DVB-I; Adding stream event listeners: identical instances	TRUE	A DVB-I service instance delivered by DASH has an MPD that carries an event stream with MPD events, some of which have the same Event@id. A broadcast-related application that is a DVB-I linked application "with media in parallel" registers to receive stream events using a targetURL argument that matches EventStream@schemeIdUri and an eventName that matches EventStream@value. Exactly one StreamEvent is received for each unique value of Event@id.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_EVENTS0150	1	DVB-I; Removing stream event listeners with matching parameters	TRUE	A DVB-I service instance delivered by DASH has an MPD that carries an event stream with MPD events. A broadcast-related application that is a DVB-I linked application "with media in parallel" registers to receive stream events using a targetURL argument that matches EventStream@schemeIdUri and an eventName that matches EventStream@value. After an event has been received, the application calls removeStreamEvent with a targetURL argument that matches EventStream@schemeIdUri, an eventName that matches EventStream@value and the correct event listener. The removed listener does not receive any stream event afterwards.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_GUIDE0010	1	DVB-I; findProgrammesFromStream(currentChannel, startTime,...) of Metadata API shall retrieve programme showing at the startTime on current channel.	TRUE	A broadcast-related application linked to a DVB-I service delivered by DVB-DASH calls findProgrammesFromStream(currentChannel, startTime) where startTime represents a time that is within the period covered by the current or next programme on the current channel. After calling getResults(), a Programme object is retrieved which starts before startTime and is showing at the startTime. Programme.name shall correspond to ProgramInformation / BasicDescription / Title with type="main". Programme.description shall correspond to ProgramInformation / BasicDescription / Synopsis with length="medium". Programme.longDescription shall be undefined. Programme.startTime shall correspond to ScheduleEvent / PublishedStartTime. Programme.duration shall correspond to ScheduleEvent / PublishedDuration Programme.channelID shall be the same as Channel.ccid for the Channel object of the service concerned. Programme.programmeID shall be ScheduleEvent / Program which, by definition, matches ProgramInformation@programId Programme.programmeIDType shall be ID_TVA_CRID Programme.parentalRatings shall correspond to ProgramInformation / BasicDescription / ParentalGuidance

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_GUIDE0020	1	DVB-I; findProgrammesFromStream(Channel, startTime,...) of Metadata API shall retrieve programme showing at the startTime from given (not current) Channel.	TRUE	A broadcast-related application linked to a DVB-I service delivered by DVB-DASH calls findProgrammesFromStream(Channel, startTime) where the Channel parameter refers to a different DVB-I service delivered by DVB-DASH and startTime represents a time that is within the period covered by the current or next programme on Channel. After calling getResults, a Programme object is retrieved which starts before startTime and is showing at the startTime. Programme.name shall correspond to ProgramInformation / BasicDescription / Title with type="main". Programme.description shall correspond to ProgramInformation / BasicDescription / Synopsis with length="medium". Programme.longDescription shall be undefined. Programme.startTime shall correspond to ScheduleEvent / PublishedStartTime. Programme.duration shall correspond to ScheduleEvent / PublishedDuration Programme.channelID shall be the same as Channel.ccid for the Channel object of the service concerned. Programme.programmeID shall be ScheduleEvent / Program which, by definition, matches ProgramInformation@programId Programme.programmeIDType shall be ID_TVA_CRID Programme.parentalRatings shall correspond to ProgramInformation / BasicDescription / ParentalGuidance

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_GUIDE0030	4	DVB-I; MetadataSearch - findProgrammesFromStream() - Scheduled programmes in the current channel after and including the current programme	TRUE	A broadcast-related application linked to a DVB-I service delivered by DVB-DASH calls findProgrammesFromStream(currentChannel, startTime) where startTime is null. After calling getResults, at least the current and next programmes are returned and that all other programmes that are present in the result are consecutive and have the correct information. For each programme returned: Programme.name shall correspond to ProgramInformation / BasicDescription / Title with type="main". Programme.description shall correspond to ProgramInformation / BasicDescription / Synopsis with length="medium". Programme.longDescription shall be undefined. Programme.startTime shall correspond to ScheduleEvent / PublishedStartTime. Programme.duration shall correspond to ScheduleEvent / PublishedDuration Programme.channelID shall be the same as Channel.ccid for the Channel object of the service concerned. Programme.programmeID shall be ScheduleEvent / Program which, by definition, matches ProgramInformation@programId Programme.programmeIDType shall be ID_TVA_CRID Programme.parentalRatings shall correspond to ProgramInformation / BasicDescription / ParentalGuidance

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_GUIDE0040	4	DVB-I; MetadataSearch - findProgrammesFromStream() - Scheduled programmes from a different channel after and including the current programme	TRUE	A broadcast-related application linked to a DVB-I service delivered by DVB-DASH calls findProgrammesFromStream(Channel, startTime) where the Channel parameter refers to a different DVB-I service delivered by DVB-DASH and startTime is null. After calling getResults, at least the current and next programmes are returned and that all other programmes that are present in the result are consecutive and have the correct information. For each programme returned: Programme.name shall correspond to ProgramInformation / BasicDescription / Title with type="main". Programme.description shall correspond to ProgramInformation / BasicDescription / Synopsis with length="medium". Programme.longDescription shall be undefined. Programme.startTime shall correspond to ScheduleEvent / PublishedStartTime. Programme.duration shall correspond to ScheduleEvent / PublishedDuration Programme.channelID shall be the same as Channel.ccid for the Channel object of the service concerned. Programme.programmeID shall be ScheduleEvent / Program which, by definition, matches ProgramInformation@programId Programme.programmeIDType shall be ID_TVA_CRID Programme.parentalRatings shall correspond to ProgramInformation / BasicDescription / ParentalGuidance

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_GUIDE0050	4	DVB-I; EIT Schedule - MetadataSearch object can decode all required UTF-8 characters	TRUE	An application requests a Programme object for a programme where ProgramInformation / BasicDescription / Synopsis with length="medium" is filled with characters from the "Generic Western European character set" as defined in annex C of TS 102 809 excluding characters between 32 and 127. All characters shall have the expected UTF-16 character codes when retrieved using the application/oipfSearchManager object.
org.hbbtv_DVBI_KEY0010	1	DVB-I; Fast forwards and rewind before activation - application controlling media presentation	TRUE	An application starts that is a broadcast-related autostart application signalled in a DVB-I service as 'application controlling media presentation'. The application requests the fast forwards and fast rewind key events, this request is granted and the key events received when the keys concerned are pressed.
org.hbbtv_DVBI_KEY0020	1	DVB-I; play, stop, pause keys before activation - application controlling media presentation	TRUE	An application starts that is a broadcast-related autostart application signalled in a DVB-I service as 'application controlling media presentation'. The application requests the play, stop and pause key events, this request is granted and the key events received when the keys concerned are pressed.
org.hbbtv_DVBI_KEY0030	1	DVB-I; play-pause, stop keys before activation - application controlling media presentation	TRUE	An application starts that is a broadcast-related autostart application signalled in a DVB-I service as 'application controlling media presentation'. The application requests the play-pause and stop key events, this request is granted and the key events received when the keys concerned are pressed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_KEY0040	1	DVB-I; Record key before activation - application controlling media presentation	TRUE	An application starts that is a broadcast-related autostart application signalled in a DVB-I service as 'application controlling media presentation'. The application requests the record key event, this request is granted and the key event received when the key is pressed.
org.hbbtv_DVBI_KEY0100	1	DVB-I; Record key before activation - application with media in parallel	TRUE	An application starts that is a broadcast-related autostart application signalled in a DVB-I service as 'application with media in parallel'. It requests the record key, the request is refused and no key event is delivered if the key is pressed
org.hbbtv_DVBI_KEY0110	1	DVB-I; Fast forwards and rewind before activation - application with media in parallel	TRUE	An application starts that is a broadcast-related autostart application signalled in a DVB-I service as 'application with media in parallel'. It requests the fast forwards and fast rewind keys, the request is refused and no key events are delivered if the keys are pressed
org.hbbtv_DVBI_KEY0120	1	DVB-I; play, stop, pause keys before activation - application with media in parallel	TRUE	An application starts that is a broadcast-related autostart application signalled in a DVB-I service as 'application with media in parallel'. It requests the play, stop and pause keys, the request is refused and these key events are not delivered if the keys are pressed
org.hbbtv_DVBI_KEY0130	1	DVB-I; play-pause, stop keys before activation - application with media in parallel	TRUE	An application starts that is a broadcast-related autostart application signalled in a DVB-I service as 'application with media in parallel'. It requests the play-pause and stop keys, the request is refused and these key events are not delivered if the keys are pressed

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_PVR0010	1	DVB-I; Application lifecycle - timeshiftSafe is false	TRUE	A broadcast-related application is running that is linked to a DVB-I service delivered by DVB-DASH as an application with media in parallel. The application has not registered to receive VK_PAUSE or VK_PLAY_PAUSE. The application is signalled with the timeshiftSafe element in the XML AIT set to false. When the mechanism is activated that would normally generate VK_PAUSE or VK_PLAY_PAUSE (e.g. either the pause or play-pause button on the remote control is pressed), either (a) the service is paused and the application is terminated or (b) the service is not paused and the application continues to run uninterrupted.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_PVR0050	1	DVB-I; Timeshift indicated by terminal	TRUE	When the currentChannel is a DVB-I service delivered by DVB-DASH, a broadcast-related application, running in parallel with media presentation with the timeshiftSafe element in the XML AIT set to true, that has not requested VK_PLAY, VK_PAUSE or VK_PLAY_PAUSE, listens for onPlaySpeedChanged event. When the the mechanism is activated that would normally generate VK_PAUSE or VK_PLAY_PAUSE (e.g. either the pause or play-pause button on the remote control is pressed), either (a) presentation of the DVB-I service is paused, an onPlaySpeedChanged event is generated, playSpeed is zero and the application is not terminated. While the application waits, the playbackOffset is equal to the incrementing positive offset of the live edge in seconds relative to the time at which playback was paused and the playPosition is the sum of the PeriodStart of the Period being played and the "Media Presentation Time relative to the Period Start" corresponding to the last video frame composed with graphics and currentTimeShiftMode is 3; or (b) no onPlaySpeedChanged event is generated, service playback continues without interruption and the app is not killed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_PVR0070	1	DVB-I; timeshift, resume, playPosition	TRUE	When the currentChannel is a DVB-I service delivered by DVB-DASH, a broadcast-related application, running in parallel with media presentation with the timeshiftSafe element in the XML AIT set to true, listens for PlaySpeedChanged events and calls the pause method then playback of the broadband-delivered video is paused, a PlaySpeedChanged event is dispatched, playSpeed is set to zero and playPosition stops changing. The application then waits for a period during which the playPosition is the “Media Presentation time relative to the PeriodStart” of the last video frame composed with graphics plus the value of PeriodStart of the Period being played and playbackOffset is equal to the incrementing offset in seconds between the playPosition and the position given by now() - MPD@availabilityStartTime. At the end of the wait, the resume method is called after which playback of time-shifted DVB-I service resumes with play speed equal to 1.0. A PlaySpeedChanged event is dispatched, playbackOffset stops incrementing and playPosition starts incrementing reflecting the sum of the PeriodStart of the Period being played and the "Media Presentation Time relative to the Period Start" for the last video frame composed with graphics.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_PVR0080	1	DVB-I; seek within the timeshift buffer with the location specified relative to POSITION_CURRENT	TRUE	When the currentChannel is a DVB-I service delivered by DVB-DASH, a broadcast-related application, running in parallel with media presentation with the timeshiftSafe element in the XML AIT set to true, calls the pause method. It waits for a period and then seeks forwards by half the period for which it was paused. The playback position shall be set to the value specified by offset and reference point. It waits for a period and then seeks backwards to a location within the time-shift buffer. The playback position shall be set to the specified value.
org.hbbtv_DVBI_PVR0090	1	DVB-I; seek within the timeshift buffer with the location specified relative to POSITION_START	TRUE	When the currentChannel is a DVB-I service delivered by DVB-DASH, a broadcast-related application, running in parallel with media presentation with the timeshiftSafe element in the XML AIT set to true enters timeshift mode by calling the pause method. It waits for a period and then resumes playback. Once playback has resumed, the application seeks to a location in the time-shift buffer, specified relative to POSITION_START. The seek is to the correct location. The application then seeks to a location before the start of the time-shift buffer, specified relative to POSITION_START. The seek is to the earliest point in the time-shift buffer that the player can play.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_PVR0100	1	DVB-I; Check stopTimeshift during buffered content is paused	TRUE	When the currentChannel is a DVB-I service delivered by DVB-DASH, a broadcast-related application, running in parallel with media presentation with the timeshiftSafe element in the XML AIT set to true enters timeshift mode by calling the pause method. After playback has been paused for some time, the stopTimeshift() method is called which shall return true, video shall present the DVB-I service with at most 45 seconds delay behind the live edge, currentTimeShiftMode shall be 3.
org.hbbtv_DVBI_PVR0130	1	DVB-I; Seek back from live edge and play	TRUE	A DVB-I service is started that has a broadband service instance and an autostart broadcast-related "application with media in parallel" signalled with timeshiftSafe as true. The DASH MPD for the service has MPD@timeShiftBufferDepth of at least 3 minutes and contains video, audio and subtitles. The application seeks backwards 1m30s from reference point POSITION_CURRENT and requests playback to start from that time. The correct video, audio and subtitles are presented. After 30s of playback, the application seeks to the live edge (position 0, reference point POSITION_END), and requests playback to start. Video, audio and subtitles are presented from within 45s of the live edge.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0010	2	DVB-I; Change of state of a video/broadcast object when the bindToCurrentChannel() method is called while it is in the unrealized state (application with media in parallel)	TRUE	An autostart broadcast-related application is linked to a DVB-I service as an "Application with media in parallel". The application has a video/broadcast object. When a video/broadcast object is in the unrealized state and the bindToCurrentChannel() method is called, the video/broadcast object shall transition to the Presenting state. A PlayStateChange DOM event shall be triggered with the state property set to 2 (Presenting) and the error property set to undefined (i.e. unallocated error value).
org.hbbtv_DVBI_VBO0015	2	DVB-I; Change of state of a video/broadcast object when the bindToCurrentChannel() method is called while it is in the unrealized state (application controlling media presentation)	FALSE	An autostart broadcast-related application is linked to a DVB-I service as an "Application controlling media presentation". The application has a video/broadcast object. When a video/broadcast object is in the unrealized state and the bindToCurrentChannel() method is called, the video/broadcast object shall transition to the Connecting state. A PlayStateChange DOM event shall be triggered with the state property set to 1 (Connecting) and the error property set to undefined (i.e. unallocated error value). The video/broadcast object shall never transition to the Presenting state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0020	2	DVB-I; video/broadcast object presentation - presenting state	TRUE	An autostart broadcast-related application is linked to a DVB-I service as an "Application with media in parallel". The application has a video/broadcast object. When the video/broadcast object is in the presenting state, the video/broadcast object contains the video being presented.
org.hbbtv_DVBI_VBO0030	2	DVB-I; Change of state of a video/broadcast object when the stop() method is called while it is in the presenting state	TRUE	An autostart broadcast-related application is linked to a DVB-I service as an "Application with media in parallel". The application has a video/broadcast object. When a video/broadcast object is in the presenting state and the stop() method is called, the video/broadcast object shall transition to the stopped state. A PlayStateChange DOM event shall be triggered with the state property set to 3 (stopped) and the error property set to undefined (i.e. unallocated error value) and the target property set to the video/broadcast object. The playState property of the video/broadcast object shall be 3 while the state is stopped.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0040	2	DVB-I; Change of state of a video/broadcast object when the bindToCurrentChannel() method is called while it is in the stopped state	FALSE	An autostart broadcast-related application is linked to a DVB-I service as an "Application with media in parallel". The application has a video/broadcast object. When a video/broadcast object is in the stopped state and the bindToCurrentChannel() method is called, the video/broadcast object shall transition to the connecting state. A PlayStateChange DOM event shall be triggered with the state property set to 1 (connecting) and the error property set to undefined (i.e. unallocated error value). This is followed by a PlayStateChange DOM event with the state property set to 2 (presenting) the error property set to undefined.
org.hbbtv_DVBI_VBO0050	2	DVB-I; video.currentChannel after application start	TRUE	An autostart broadcast-related application is linked to a DVB-I service as an "Application with media in parallel". The application has a video/broadcast object. The application starts and calls bindToCurrentChannel. Once the call to bindToCurrentChannel has succeeded, the currentChannel property on the video/broadcast shall reflect the channel the application was started from.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0060	2	DVB-I; Change of state of a video/broadcast object when the release() method is called while it is in the presenting state	TRUE	An autostart broadcast-related application is linked to a DVB-I service as an "Application with media in parallel". The application has a video/broadcast object. When a video/broadcast object is in the presenting state and the release() method is called, the video/broadcast object shall transition to the unrealized state. A PlayStateChange DOM event shall be triggered with the state property set to 0 (unrealized) and the error property set to undefined (i.e. unallocated error value) and the target property set to the video/broadcast object.
org.hbbtv_DVBI_VBO0100	1	DVB-I; selecting a Channel corresponding to a DVB-I service	TRUE	An autostart broadcast-related application is linked, as an "Application with media in parallel", to a DVB-I service with a single service instance delivered by DVB-DASH. The application has a video/broadcast object. The application binds the video/broadcast object to the current channel. When it calls the setChannel method on that video/broadcast object with a Channel object referring to a DVB-I service with a single service instance delivered by DVB-DASH and the optional quiet argument is absent, the HbbTV terminal changes to the specified channel. PlayStateChange events are generated from Presenting to Connecting and then back to Presenting.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0110	2	DVB-I; selecting a Channel corresponding to a DVB-I service - quiet=1	TRUE	An autostart broadcast-related application is linked, as an "Application with media in parallel", to a DVB-I service with a single service instance delivered by DVB-DASH. The application has a video/broadcast object. The application binds the video/broadcast object to the current channel. When it calls the setChannel method on that video/broadcast object with a Channel object referring to a DVB-I service with a single service instance delivered by DVB-DASH and the quiet argument set to 1, the HbbTV terminal changes to the specified channel. PlayStateChange events are generated from Presenting to Connecting and then back to Presenting. No channel change banner or equivalent is drawn by the HbbTV terminal. Any front panel display or channel info UI shows the new channel.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0120	1	DVB-I; selecting a Channel object corresponding to a DVB-I service instance - change of service	TRUE	An autostart broadcast-related application is linked, as an "Application with media in parallel", to a DVB-I service with a single service instance delivered by DVB-DASH. The application has a video/broadcast object. A second DVB-I service contains two service instances, one delivered by DVB-RF and one delivered by DVB-DASH where the DASH-delivered service instance has a lower priority. The application binds the video/broadcast object to the current channel. When it calls the setChannel method on that video/broadcast object with the Channel object referring to the DVB-I service instance delivered by DVB-DASH from the second DVB-I service and the optional quiet argument absent, the HbbTV terminal changes to the specified channel. PlayStateChange events are generated from Presenting to Connecting and then back to Presenting.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0125	1	DVB-I; selecting a Channel object corresponding to a DVB-I service instance - within the same service	TRUE	An autostart broadcast-related application is linked, as an "Application with media in parallel", to a DVB-I service with one service instance delivered by DVB-DASH and another delivered by DVB-RF broadcast. The DASH-delivered service instance has a lower priority. The application has a video/broadcast object. The application binds the video/broadcast object to the current channel. When it calls the setChannel method on that video/broadcast object with a Channel object referring to the service instance delivered by DVB-DASH and the optional quiet argument absent, the HbbTV terminal changes to the specified channel. PlayStateChange events are generated from Presenting to Connecting and then back to Presenting.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0130	2	DVB-I; selecting a Channel corresponding to a DVB-I service instance - quiet=1	TRUE	An autostart broadcast-related application is linked, as an "Application with media in parallel", to a DVB-I service with a single service instance delivered by DVB-DASH. The application has a video/broadcast object. A second DVB-I service contains two service instances, one delivered by DVB-RF and one delivered by DVB-DASH where the DASH-delivered service instance has a lower priority. The application binds the video/broadcast object to the current channel. When it calls the setChannel method on that video/broadcast object with the Channel object referring to a single DVB-I service instance delivered by DVB-DASH from the second DVB-I service and the quiet argument set to 1, the HbbTV terminal changes to the specified channel. PlayStateChange events are generated from Presenting to Connecting and then back to Presenting. No channel change banner or equivalent is drawn by the HbbTV terminal. Any front panel display or channel info UI shows the new channel.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0135	2	DVB-I; changing from Channel corresponding to a DVB-I service to one corresponding to the not selected service instance from that service - quiet=1	TRUE	An autostart broadcast-related application is linked, as an "Application with media in parallel", to a DVB-I service with one service instance delivered by DVB-DASH and another delivered by DVB-RF broadcast. The DASH-delivered service instance has a lower priority. The application has a video/broadcast object. The application binds the video/broadcast object to the current channel. When it calls the setChannel method on that video/broadcast object with a Channel object referring to the service instance delivered by DVB-DASH and the quiet argument set to 1, the HbbTV terminal changes to the specified channel and the currentChannel changes from one corresponding to the DVB-I service to one corresponding to the DVB-I service instance delivered by DVB-DASH. PlayStateChange events are generated from Presenting to Connecting and then back to Presenting. No channel change banner or equivalent is drawn by the HbbTV terminal.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0137	2	DVB-I; changing from Channel corresponding to a DVB-I service to one corresponding to the selected service instance from that service - quiet=1	TRUE	An autostart broadcast-related application is linked, as an "Application with media in parallel", to a DVB-I service with one service instance delivered by DVB-DASH and another delivered by DVB-RF broadcast. The DASH-delivered service instance has a higher priority. The application has a video/broadcast object. The application binds the video/broadcast object to the current channel. When it calls the setChannel method on that video/broadcast object with a Channel object referring to the service instance delivered by DVB-DASH and the quiet argument set to 1, PlayStateChange events are generated from Presenting to Connecting and then back to Presenting and the currentChannel changes from one corresponding to the DVB-I service to one corresponding to the DVB-I service instance delivered by DVB-DASH. The change is not visible, no channel change banner or equivalent is drawn by the HbbTV terminal and video and audio presentation continue uninterrupted and without artifacts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0140	2	DVB-I; video/broadcast object presentation - presenting state - scaling	TRUE	An autostart broadcast-related application is linked to a DVB-I service as an "Application with media in parallel". The application has a video/broadcast object. When the video/broadcast object is in the presenting state, the video/broadcast object contains the video being presented. The video is scaled by a series of factors, 1/2 x 1/2, 1/3 x 1/3, 1/4 x 1/4, 1/5 x 1/5, 1/6 x 1/6, 1/7 x 1/7 and 1/8 x 1/8. The video is also scaled to 2x2. For each factor, the video is displayed with the correct size. For 1/2, 1/3 and 1/4, the video is scaled. For 1/5, 1/6, 1/7 and 1/8, the video is either scaled or cropped. For 2, the video is cropped.
org.hbbtv_DVBI_VBO0200	1	DVB-I; Selection of service permanently blocked by parental rating in content guide	FALSE	A DVB-I service delivered via broadband is selected. The service element includes a reference to a content guide. The ProgramInformation element for the current program in the selected service includes a BasicDescription element that in turn includes a ParentalGuidance element that signals a minimum age of 18. No content is shown or heard. The video/broadcast object continues in the connecting state. At some later time, the video/broadcast object may enter the unrealized state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0210	1	DVB-I; Selection of service temporarily blocked by parental rating in content guide	FALSE	A DVB-I service delivered via broadband is selected. The service element includes a reference to a content guide. The ProgramInformation element for the current program in the selected service includes a BasicDescription element that in turn includes a ParentalGuidance element that signals a minimum age of 18. No content is shown or heard, the video/broadcast object stays in the connecting state and the user is given the opportunity to override the blocking. When the blocking is overridden, the video/broadcast object enters the presenting state and the video and audio are shown.
org.hbbtv_DVBI_VBO0220	1	DVB-I; Selection of service blocked by parental rating in MPD - no authorisation	FALSE	A DVB-I service is selected with a single service instance delivered by DVB-DASH. The MPD includes an EventStream with an event containing content programme metadata for the current programme of the selected service. That content programme metadata contains a parental guidance element signalling a minimum recommended age of 18. No content is shown or heard. At some later time, there is an error and the video/broadcast object enters the unrealized state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBI_VBO0230	1	DVB-I; Selection of service blocked by parental rating in MPD - authorisation	TRUE	A DVB-I service is selected with a single service instance delivered by DVB-DASH. The MPD includes an EventStream with an event containing content programme metadata for the current programme of the selected service. That content programme metadata contains a parental guidance element signalling a minimum recommended age of 18. No content is shown or heard, the video/broadcast object stays in the connecting state and the user is given the opportunity to override the blocking. When the blocking is overridden, the video/broadcast object enters the presenting state and the video and audio are shown.
org.hbbtv_DVBNID0010	1	Application can access DVB NID values (broadcast-independent)	TRUE	When a broadcast-independent application obtains a Configuration object and reads the dtt_network_ids property, the value is a list of the DVB network_ids from the DTT channels in the terminal's channel list.
org.hbbtv_DVBNID0020	1	Application can access DVB NID values (broadcast-related)	TRUE	When a broadcast-related application obtains a Configuration object and reads the dtt_network_ids property, the value is a list of the DVB network_ids from the DTT channels in the terminal's channel list.
org.hbbtv_DVBNID0030	1	dtt_network_ids with no DTT receiver (broadcast-independent)	TRUE	When a broadcast-independent application obtains a Configuration object and reads the dtt_network_ids property, the value is undefined.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_DVBNID0040	1	dtt_network_ids with no DTT receiver (broadcast-related)	TRUE	When a broadcast-related application obtains a Configuration object and reads the dtt_network_ids property, the value is undefined.
org.hbbtv_DVBNID0050	1	dtt_network_ids with no DTT channels (broadcast-independent)	TRUE	When the terminal's channel list is empty and a broadcast-independent application obtains a Configuration object and reads the dtt_network_ids property, the value is undefined.
org.hbbtv_E1210020	4	EIT P/F - video/broadcast object can decode all required UTF-8 characters	FALSE	When all the characters in the "Generic Western European character set" as defined in annex C of TS 102 809 excluding 0149 and 066B are encoded in the EIT present/following table with UTF-8 encoding; all characters shall have the expected UTF-16 character codes when retrieved using the video/broadcast object
org.hbbtv_E1210030	4	EIT Schedule - MetadataSearch object can decode all required UTF-8 characters	TRUE	When all characters in the "Generic Western European character set" as defined in annex C of TS 102 809 excluding codes 0149 and 066B are encoded in the EIT schedule table with UTF-8 encoding; all characters shall have the expected UTF-16 character codes when retrieved using the application/oipfSearchManager object
org.hbbtv_E1210040	2	Correct graphics display and aspect ratio when showing broadband video which contains 4:3 to 16:9 transition.	TRUE	When a full screen 1280 x 720 PNG is displayed on top of a full screen SD broadband video; it shall not be changed in any way when the video transitions from 4:3 to 16:9 aspect ratio
org.hbbtv_E1210050	2	Correct graphics display and aspect ratio when showing broadband video which contains 16:9 to 4:3 transition.	TRUE	When a full screen 1280 x 720 PNG is displayed on top of a full screen SD broadband video; it shall not be changed in any way when the video transitions from 16:9 to 4:3 aspect ratio

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_E1210060	3	Correct graphics display and aspect ratio when showing broadcast video which contains 4:3 to 16:9 transition.	FALSE	When a full screen 1280 x 720 PNG is displayed on top of full screen SD broadcast video, which is bound to the video/broadcast object; it shall not be changed in any way when the video transitions from 4:3 to 16:9 aspect ratio
org.hbbtv_E1210070	3	Correct graphics display and aspect ratio when showing broadcast video which contains 16:9 to 4:3 transition.	FALSE	When a full screen 1280 x 720 PNG is displayed on top of full screen SD broadcast video, which is bound to the video/broadcast object; it shall not be changed in any way when the video transitions from 16:9 to 4:3 aspect ratio
org.hbbtv_E1210080	3	Correct graphics display and aspect ratio when transitioning from 4:3 broadband video to 16:9 broadcast video	TRUE	When a full screen 1280 x 720 PNG is displayed on top of 4:3 full screen SD broadband video; it shall not be changed in any way when the video transitions to 16:9 full screen SD broadcast video
org.hbbtv_E1210090	3	Correct graphics display and aspect ratio when transitioning from 16:9 broadband video to 4:3 broadcast video	TRUE	When a full screen 1280 x 720 PNG is displayed on top of 16:9 full screen SD broadband video; it shall not be changed in any way when the video transitions to 4:3 full screen SD broadcast video
org.hbbtv_E12100A0	1	Correct graphics display and aspect ratio when transitioning from 4:3 broadcast video to 16:9 broadband video	TRUE	When a full screen 1280 x 720 PNG is displayed on top of 4:3 full screen SD broadcast video which has been bound using the video/broadcast object, it shall not be changed in any way when the video transitions to 16:9 full screen SD broadband video
org.hbbtv_E12100B0	1	Correct graphics display and aspect ratio when transitioning from 16:9 broadcast video to 4:3 broadband video	TRUE	When a full screen 1280 x 720 PNG is displayed on top of 16:9 full screen SD broadcast video which has been bound using the video/broadcast object, it shall not be changed in any way when the video transitions to 4:3 full screen SD broadband video

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_E1210100	1	Broadcast / Broadband Video Multiple Switch - Full Screen - Broadcast-related - CSS 'visibility' Property	TRUE	Using the 'visibility' CSS property to show/hide the respective objects, where both objects are scaled to fill the entire graphics plane, the terminal shall correctly play broadcast and broadband video when performing the following: show video/broadcast object and call bindToCurrentChannel() (broadcast video plays); stop showing video/broadcast object, show A/V Control object and play broadband video; stop broadband video, stop showing A/V Control object, show video/broadcast object and call bindToCurrentChannel() (broadcast video plays); stop showing video/broadcast object, show A/V Control object and play broadband video
org.hbbtv_E1210110	1	Broadcast / Broadband Video Multiple Switch - Full Screen - Broadcast-independent - CSS 'visibility' Property	TRUE	Using the 'visibility' CSS property to show/hide the respective objects, where both objects are scaled to fill the entire graphics plane, the terminal shall correctly play broadcast and broadband video when performing the following: show video/broadcast object and make application broadcast-independent; stop showing video/broadcast object, show A/V Control object and play broadband video; stop broadband video, stop showing A/V Control object, show video/broadcast object and call setChannel() (application becomes broadcast-related and broadcast video plays); make application broadcast-independent (broadcast video plays); stop showing video/broadcast object, show A/V Control object and play broadband video

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_E1210120	1	Broadcast / Broadband Video Multiple Switch - Full Screen - Broadcast-related - CSS 'display' Property	TRUE	Using the 'display' CSS property to start/stop rendering the respective objects, where both objects are scaled to fill the entire graphics plane, the terminal shall correctly play broadcast and broadband video when performing the following: render video/broadcast object and call bindToCurrentChannel() (broadcast video plays); stop rendering video/broadcast object, render A/V Control object and play broadband video; stop broadband video, stop rendering A/V Control object, render video/broadcast object and call bindToCurrentChannel() (broadcast video plays); stop rendering video/broadcast object, render A/V Control object and play broadband video

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_E1210130	1	Broadcast / Broadband Video Multiple Switch - Full Screen - Broadcast-independent - CSS 'display' Property	TRUE	Using the 'display' CSS property to start/stop rendering the respective objects, where both objects are scaled to fill the entire graphics plane, the terminal shall correctly play broadcast and broadband video when performing the following: render video/broadcast object and make application broadcast-independent (broadcast video plays); stop rendering video/broadcast object, render A/V Control object and play broadband video; stop broadband video, stop rendering A/V Control object, render video/broadcast object and call setChannel() (application becomes broadcast-related and broadcast video plays); make application broadcast-independent (broadcast video plays); stop rendering video/broadcast object, render A/V Control object and play broadband video
org.hbbtv_E1210140	1	Broadcast / Broadband Video Multiple Switch - Full Screen - Broadcast-related - Add/Remove objects	TRUE	Using the DOM API to add/remove the respective objects, where both objects are scaled to fill the entire graphics plane, the terminal shall correctly play broadcast and broadband video when performing the following: add video/broadcast object and call bindToCurrentChannel() (broadcast video plays); remove video/broadcast object, add A/V Control object and play broadband video; stop broadband video, remove A/V Control object, add video/broadcast object and call bindToCurrentChannel() (broadcast video plays); remove video/broadcast object, add A/V Control object and play broadband video

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_E1210150	1	Broadcast / Broadband Video Multiple Switch - Full Screen - Broadcast-independent - Add/Remove objects	TRUE	Using the DOM API to add/remove the respective objects, where both objects are scaled to fill the entire graphics plane, the terminal shall correctly play broadcast and broadband video when performing the following: add video/broadcast object and make application broadcast-independent (broadcast video plays); remove video/broadcast object, add A/V Control object and play broadband video; stop broadband video, remove A/V Control object, add video/broadcast object and call setChannel() (application becomes broadcast-related and broadcast video plays); make application broadcast-independent (broadcast video plays); remove video/broadcast object, add A/V Control object and play broadband video
org.hbbtv_EAC30001	2	Test of support for E-AC3 stereo, Streamed over HTTP. MP4 container.	TRUE	The terminal shall correctly decode and present E-AC3 stereo AV content from an MP4 container streamed over HTTP.
org.hbbtv_EAC30002	3	Test of support for down-mixed E-AC3; 5.1 channel, AV Content, Streamed over HTTP. MP4 container.	TRUE	The terminal shall correctly decode and present down-mixed 5.1 channel E-AC3 AV content from an MP4 container streamed over HTTP.
org.hbbtv_EAC30003	3	Test of support for down-mixed E-AC3; 7.1 channel, AV Content, Streamed over HTTP. MP4 container.	TRUE	The terminal shall correctly decode and present down-mixed 7.1 channel E-AC3 AV content from an MP4 container streamed over HTTP.
org.hbbtv_EAC30004	3	Test of support for E-AC-3 stereo. HbbTV ISOBMFF Live profile	TRUE	The terminal shall correctly decode and present E-AC3 stereo AV content from an MPEG DASH live stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_EAC30004_NEW_URI	1	New Audio Channel Configuration schemeURI for E-AC-3 (2.0 channels)	TRUE	The terminal shall correctly decode and present 2.0 channel E-AC-3 AV content from an MPEG DASH live stream which uses the "urn:dolby:dash:audio_channel_configuration:2011" scheme URI with value: A000 for Audio Channel Configuration.
org.hbbtv_EAC30005	4	Test of support for down-mixed E-AC3; 5.1 channel, AV Content, HbbTV ISOBMFF Live profile	TRUE	The terminal shall correctly decode and present down-mixed 5.1 channel E-AC3 AV content from an MPEG DASH live stream
org.hbbtv_EAC30005_NEW_URI	1	New Audio Channel Configuration schemeURI for E-AC-3 (5.1 channels)	TRUE	The terminal shall correctly decode and present down-mixed 5.1 channel E-AC-3 AV content from an MPEG DASH live stream which uses the "urn:dolby:dash:audio_channel_configuration:2011" scheme URI with value: F801 for Audio Channel Configuration.
org.hbbtv_EAC30006	4	Test of support for down-mixed E-AC3; 7.1 channel, AV Content, HbbTV ISOBMFF Live profile	TRUE	The terminal shall correctly decode and present down-mixed 7.1 channel E-AC3 AV content from an MPEG DASH live stream
org.hbbtv_EAC30006_NEW_URI	1	New Audio Channel Configuration schemeURI for E-AC-3 (7.1 channels)	TRUE	The terminal shall correctly decode and present down-mixed 7.1 channel E-AC-3 AV content from an MPEG DASH live stream which uses the "urn:dolby:dash:audio_channel_configuration:2011" scheme URI with value: FA01 for Audio Channel Configuration.
org.hbbtv_EAC30007	2	Test of support for E-AC3 stereo, Streamed over HTTP. MPEG-2 TS container.	TRUE	The terminal shall correctly decode and present E-AC3 stereo AV content from an MPEG-2 TS container streamed over HTTP.
org.hbbtv_EAC30008	3	Test of support for down-mixed E-AC3; 5.1 channel, AV Content, Streamed over HTTP. MPEG-2 TS container.	TRUE	The terminal shall correctly decode and present down-mixed 5.1 channel E-AC3 AV content from an MPEG-2 TS container streamed over HTTP

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_EAC30009	3	Test of support for down-mixed E-AC3; 7.1 channel, AV Content, Streamed over HTTP. MPEG-2 TS container.	TRUE	The terminal shall correctly decode and present down-mixed 7.1 channel E-AC3 AV content from an MPEG-2 TS container streamed over HTTP
org.hbbtv_EAC3000D	2	Test of support for an E-AC-3 Audio Description. HbbTV ISOBMFF Live profile (audio description only)	TRUE	Terminal correctly presents broadcast mix Audio Description from an MPEG DASH stream containing 1 video and 2 E-AC-3 audio AdaptationSets, where 1 audio AdaptationSet is signalled as containing broadcast mix Audio Description (Live Streaming Profile).
org.hbbtv_EAC3000D_2	2	Test of support for an E-AC-3 Audio Description. HbbTV ISOBMFF Live profile (main audio only)	TRUE	Terminal correctly presents main broadcast audio from an MPEG DASH stream containing 1 video and 2 E-AC-3 audio AdaptationSets, where 1 audio AdaptationSet is signalled as containing broadcast mix Audio Description (Live Streaming Profile).
org.hbbtv_EAC3000F	3	HbbTV ISOBMFF Live profile, DD+ 5.1, single bitrate, contradicting channel layout metadata	TRUE	When an MPD contains channel layout metadata that contradicts the channel layout of the audio content, the terminal shall correctly play the audio content.
org.hbbtv_EAC30010	3	DASH Live Profile, DD+ 5.1, single bitrate, contradicting codec metadata	TRUE	When an MPD contains codec metadata contradicting the audio content, the terminal shall correctly play the audio content.
org.hbbtv_EAC30013	4	Test of support for Multiple Languages from multiple E-AC-3 elementary streams, MP4 container (audio language change during test)	TRUE	For a terminal that supports changing the audio language while an application is running, it shall be able to decode and present multiple languages (English and French) from multiple E-AC-3 elementary streams stored in an MP4 container.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_EAC30013_2	4	Test of support for Multiple Languages from multiple E-AC-3 elementary streams, MP4 container (English) (audio language change before test)	TRUE	For a terminal that only supports changing the audio language when an application is not running, The terminal shall be able to decode and present the selected language (English) from multiple E-AC-3 elementary streams stored in an MP4 container.
org.hbbtv_EAC30013_3	4	Test of support for Multiple Languages from multiple E-AC-3 elementary streams, MP4 container (French) (audio language change before test)	TRUE	For a terminal that only supports changing the audio language when an application is not running, The terminal shall be able to decode and present the selected language (French) from multiple E-AC-3 elementary streams stored in an MP4 container.
org.hbbtv_EAC30014	4	Test of support for Multiple Languages from multiple E-AC-3 elementary streams, HbbTV ISOBMFF Live profile (English) (audio language change during test)	TRUE	For a terminal that supports changing the audio language while an application is running, the terminal shall be able to decode and present multiple languages (English and French) from multiple E-AC-3 Adaptation Sets in an MPEG-DASH stream (HbbTV ISOBMFF Live profile)
org.hbbtv_EAC30014_2	4	Test of support for Multiple Languages from multiple E-AC-3 elementary streams, HbbTV ISOBMFF Live profile (English) (audio language change before test)	TRUE	For a terminal that only supports changing the audio language when an application is not running, the terminal shall be able to decode and present the selected language (English) from multiple E-AC-3 Adaptation Sets in an MPEG-DASH stream (HbbTV ISOBMFF Live profile)
org.hbbtv_EAC30014_3	4	Test of support for Multiple Languages from multiple E-AC-3 elementary streams, HbbTV ISOBMFF Live profile (French) (audio language change before test)	TRUE	For a terminal that only supports changing the audio language when an application is not running, the terminal shall be able to decode and present the selected language (French) from multiple E-AC-3 Adaptation Sets in an MPEG-DASH stream (HbbTV ISOBMFF Live profile)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_EAC30016	4	HbbTV ISOBMFF Live profile, DD+ Stereo MultiRate, Low to High	TRUE	During playout of a stream defined in a static MPD in response to increased bandwidth availability the terminal shall transition seamlessly from an audio representation with a bitrate of 96kbps to an audio representation with a bitrate of 384kbps, both representations being encoded using E-AC3.
org.hbbtv_EAC30017	4	HbbTV ISOBMFF Live profile, DD+ Stereo MultiRate, High to Low	TRUE	During playout of a stream defined in a static MPD in response to decreased bandwidth availability the terminal shall transition seamlessly from an audio representation with a bitrate of 384kbps to an audio representation with a bitrate of 96kbps, both representations being encoded using E-AC3.
org.hbbtv_EME0010	1	Clear Key: successful call to requestMediaKeySystemAccess method	TRUE	When the application calls requestMediaKeySystemAccess with 'org.w3.clearkey' as the keysystem and a MediaKeySystemConfiguration specifying 'cenc' as an initialization data format and a valid audio/video MediaKeySystemMediaCapability, a new MediaKeySystemAccess object is returned
org.hbbtv_EME0020	1	Clear Key: successful call to createMediaKeys method	TRUE	An application obtains a MediaKeySystemAccess object for the "Clear Key" key system and then calls the createMediaKeys method. A MediaKeys object is created.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_EME0030	1	Clear Key: successful call to setMediaKeys method	TRUE	An application that has created a MediaKeys object for the Clear Key keysystem and a video element and has set the source of the video element to refer to an MPEG DASH MPD then calls the setMediaKeys method to link the MediaKeys object to the video element. The method call succeeds.
org.hbbtv_EME0040	1	Clear Key: successful call to createSession method	TRUE	An application that has created a MediaKeys object for the Clear Key system and a video element and has set the source of the video element to refer to an MPEG DASH MPD then calls the createSession method to create a session for the key system. The method call succeeds.
org.hbbtv_EME0050	1	Clear Key: successful call to generateRequest method	TRUE	An application that has created a MediaKeys object for the Clear Key system, created a session for that MediaKeys object and provided the MediaKeys object to a video element then generates a license request based on init data for the Clear Key system. The handler for license request events is called.
org.hbbtv_EME0060	1	Clear Key: content is decrypted	TRUE	An application sets a video element to point to a DASH MPD where the content is encrypted using the Clear Key system and then calls the play method. In the callback of the 'message' event, the application is asked for the key to decrypt the content and after providing the correct key to the update method, the content is successfully decrypted and presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_EME0070	1	Clear Key: HTML5 transition from encrypted DASH HEAAC/AVC_HD_25 to preloaded unencrypted MP4 with HEAAC/AVC_HD_25 media in less than 250ms	FALSE	When a currently playing HTMLMediaElement referencing DASH content with HEAAC/AVC_HD_25 media encrypted with Clear Key is paused and play is called on a preloaded HTMLMediaElement referencing MP4 content with unencrypted HEAAC/AVC_HD_25 media (beginning with a random access point) in the same spin of the event loop, the terminal shall transition to presenting the second HTMLMediaElement in less than 250ms
org.hbbtv_EME0080	1	Clear Key: HTML5 transition from MP4 with HEAAC/AVC_HD_25 to paused encrypted DASH HEAAC/AVC_HD_25 media	TRUE	Content is presented without artefacts or glitches when a currently playing HTMLMediaElement referencing DASH content with Clear Key encrypted HEAAC/AVC_HD_25 media is paused and a preloaded HTMLMediaElement referencing MP4 content with HEAAC/AVC_HD_25 media is played to completion, and then play is then called on the first HTMLMediaElement.
org.hbbtv_EME0090	1	Clear key: HTML5 pre-roll advert insertion, unencrypted DASH HEAAC/AVC_HD_25 to preloaded Clear Key encrypted DASH HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a DASH stream with unencrypted HEAAC/AVC_HD_25 media is played in its entirety and then an HTML5 media element, for which the readyState attribute has reached HAVE_FUTURE_DATA or greater, referencing DASH with Clear Key encrypted HEAAC/AVC_HD_25 media is played.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING0010	1	Channel changing using P+ with broadcast-related app presenting broadband-delivered video	TRUE	When a broadcast-related application is presenting broadband-delivered content and the P+ key is pressed, the terminal changes to the next channel in the channel list relative to the one whose application signalling is controlling the lifecycle of the broadcast-related application.
org.hbbtv_GAPFILLING0020	1	Channel changing using number keys with broadcast-related app presenting broadband-delivered video	TRUE	A broadcast-related application is presenting broadband-delivered content and does not have number keys in its keyset. When a channel is selected using the number keys, the terminal changes to that channel.
org.hbbtv_GAPFILLING0030	1	Presentation of broadcast video stops when broadcast-independent application is started	TRUE	A broadcast-related application is running and displayed simultaneously with broadcast video. When the application successfully starts a broadcast-independent application, the presentation of the broadcast video is stopped.
org.hbbtv_GAPFILLING0040	1	service_bound_flag from broadcast signalling for application originally started as broadcast-independent	TRUE	An application originally launched as broadcast-independent successfully transitions to become broadcast-related in a service where it is signalled in the broadcast AIT with the service_bound_flag set to 1. The application changes to another service where it is signalled as PRESENT with the same transport protocol. The application is killed as required by the broadcast AIT of the first service.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING0060	1	HTML5 mid-roll advert insertion with 3 video elements, DASH HEAAC/AVC_HD_25, DASH HEAAC/AVC_HD_25, DASH HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with HEAAC/AVC_HD_25 media is paused, and preloaded DASH with HEAAC/AVC_HD_25 media is played in its entirety, and then a preloaded HTML5 media element referencing DASH with HEAAC/AVC_HD_25 media is played.
org.hbbtv_GAPFILLING0070	1	HTML5 mid-roll advert insertion with 3 video elements, MP4 HEAAC/AVC_HD_25, MP4 HEAAC/AVC_HD_25, MP4 HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing MP4 with HEAAC/AVC_HD_25 media is paused, and preloaded MP4 with HEAAC/AVC_HD_25 media is played in its entirety, and then a preloaded HTML5 media element referencing MP4 with HEAAC/AVC_HD_25 media is played.
org.hbbtv_GAPFILLING0080	1	Buffering broadband video while playing broadcast	TRUE	An application presents broadcast video using a video/broadcast object. The application creates an HTML5 video element with the src attribute referring to some content and calls the load method. The content starts to be loaded.
org.hbbtv_GAPFILLING0090	1	Graphics co-ordinate system seen by application is always 1280x720	TRUE	An application presents graphics at 1280x720. These cover the full graphics area of the terminal.
org.hbbtv_GAPFILLING0100	1	Data stored through web storage API persists across power outage	TRUE	When an application stores some data using the Web Storage API and the terminal is turned off and on again the data is still available to the application

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING0210	1	Video via HTTP in page delivered via HTTPS - HTML5 video element	TRUE	An application loaded via HTTPS requests playback of video using the HTML5 video element where the video is non-adaptive streaming and delivered by HTTP (not HTTPS). The playback succeeds.
org.hbbtv_GAPFILLING0220	1	DASH MPD via HTTP in page delivered via HTTPS - HTML5 video element	TRUE	An application loaded via HTTPS requests playback of video using the HTML5 video element where the video is DASH with both the MPD and the content delivered using HTTP (not HTTPS). The playback succeeds.
org.hbbtv_GAPFILLING0500	1	Additional tables on object carousel PID - general	TRUE	A service includes an autostart application launched from an object carousel. The elementary stream(s) carrying the object carousel sections also carry data using a number of other table_ids (e.g. 0x3e, 0x7d, 0xfe). When the service is selected, the autostart application is successfully launched from the carousel.
org.hbbtv_GAPFILLING0510	1	Additional tables on object carousel PID - 0x7b	TRUE	A service includes an autostart application launched from an object carousel. The elementary stream(s) carrying the object carousel sections also carry data using a number of other table_ids (e.g. 0x7b). When the service is selected, the autostart application is successfully launched from the carousel.
org.hbbtv_GAPFILLING0520	1	Additional tables on AIT PID - general	TRUE	The elementary stream that carries the AIT for a service also carries data using a number of other table_ids (e.g. 0x3e, 0x7d, 0xfe). An autostart application signalled in the AIT is successfully started when the service is selected.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING0530	1	Additional tables on AIT PID - 0x7b	TRUE	The elementary stream that carries the AIT for a service also carries data using a number of other table_ids (e.g. 0x7b). An autostart application signalled in the AIT is successfully started when the service is selected.
org.hbbtv_GAPFILLING0600	1	Subtitles disabled by terminal UI	TRUE	An application reads the subtitlesEnabled property and it returns false. The application plays some broadband video including subtitles and uses the component selection API to attempt to display the subtitles. The subtitles are not displayed.
org.hbbtv_GAPFILLING0610	1	Subtitles enabled by terminal UI	TRUE	An application reads the subtitlesEnabled property and it returns true. The application plays some broadband video including subtitles and uses the component selection API to attempt to display the subtitles. The subtitles are displayed.
org.hbbtv_GAPFILLING0900	1	Event not available to applications - TEXT	TRUE	A service contains a broadcast-related autostart application and a digital teletext application. While the broadcast-related autostart application is running, the mechanism to start a digital teletext application is activated (e.g. the TEXT button is pressed) and no other buttons are pressed. The autostart application does not receive any key events before it is killed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING0910	1	Event not available to applications - P+	TRUE	A running broadcast-related application is bound to the currently selected channel/service. It is not signalled as service-bound. It is signalled as either present or autostart in the next channel in the channel list. The P+ key is pressed (and no other). The channel changes to the next channel in the channel list. The application continues to run. No key event is received.
org.hbbtv_GAPFILLING0920	1	Event not available to applications - P-	TRUE	A running broadcast-related application is bound to the currently selected channel/service. It is not signalled as service-bound. It is signalled as either present or autostart in the previous channel in the channel list. The P- key is pressed (and no other). The channel changes to the previous channel in the channel list. The application continues to run. No key event is received.
org.hbbtv_GAPFILLING1110	1	Channel.idType for DVB-S channel	TRUE	An application obtains an instance of the Channel class for a channel carried on DVB-S and reads the idType property. The value is ID_DVB_S.
org.hbbtv_GAPFILLING1120	1	Channel.idType for DVB-T channel	TRUE	An application obtains an instance of the Channel class for a channel carried on DVB-T and reads the idType property. The value is ID_DVB_T.
org.hbbtv_GAPFILLING1140	1	Channel.idType for DVB-S2 channel	TRUE	An application obtains an instance of the Channel class for a channel carried on DVB-S2 and reads the idType property. The value is ID_DVB_S2.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING1150	1	Channel.idType for DVB-T2 channel	TRUE	An application obtains an instance of the Channel class for a channel carried on DVB-T2 and reads the idType property. The value is ID_DVB_T2.
org.hbbtv_GAPFILLING1420	1	Tuning to channel not listed in SDT actual - DVB-T	TRUE	An HbbTV terminal is able to receive a DVB-T multiplex with a number of MPEG programs where some but not all are listed in the SDT actual. A broadcast-related application on a regular channel populates a DVB-SI delivery system descriptor with the values for this multiplex and then creates a locally defined Channel object for one of the MPEG programs not listed in the SDT actual. The application selects the locally defined channel and the video and audio are presented. The application keeps running.
org.hbbtv_GAPFILLING1520	1	DSD tune to regular service - DVB-T	TRUE	A broadcast-related HbbTV application creates a locally defined Channel object for a service in a different DVB-T multiplex specifying the delivery system descriptor and service_id. The application is signalled as PRESENT in that other service. The application selects the other service. The video and audio from the other service are presented and the application keeps running.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING2810	1	A/V control object presentation from the first to the last frame	TRUE	An HbbTV application has video/broadcast object in the 'stopped' state and an A/V control object not obscured by graphics. When the application calls to play(1) method of the A/V control object, then the video content is played from the first frame to the last one, the first frames of video are visible, the first samples of audio are audible, the last frames of video are visible, the last samples of audio are audible.
org.hbbtv_GAPFILLING2820	1	HTML5 video element presentation from the first to the last frame	TRUE	An HbbTV application has video/broadcast object in the 'stopped' state and an HTML5 video element not obscured by graphics. When the application calls to play() method of the video element, then the video content is played from the first frame to the last frame, the first frames of video are visible, the first samples of audio are audible, the last frames of video are visible, the last samples of audio are audible.
org.hbbtv_GAPFILLING2840	1	Single stream event is not dispatched after application re-launching	TRUE	A broadcast carries a stream event, delivered only at a certain time and no more. An autostart broadcast-related application at the start adds stream event listener. The single stream event appears, and 5 s after that the application is killed by user e.g. by pressing EXIT. When the application is re-launched and the stream event listener is added again with the same targetURL eventName and listener name then in the next 60s the listener is not run.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING2850	1	Stream events after broadband content being presented after transition to broadcast independent	TRUE	An autostart broadcast-related application starts in a service that contains stream events. The application registers to receive stream events and these are received correctly. The application then: transitions to broadcast-independent, starts to present MPEG2-TS content over broadband using an A/V control object. When the A/V playback ends, the application transitions back to broadcast-related. Once that succeeds, the application re-subscribes to the stream events and then the correct stream events for that point in the broadcast stream are received. This process is repeated at least 3 times.
org.hbbtv_GAPFILLING2860	1	Stream events after broadband content being presented, v/b object not moved to the stopped state	TRUE	An autostart broadcast-related application starts in a service that contains stream events. The application registers to receive stream events and these are received correctly. The application then starts to presents MPEG DASH content over broadband using an A/V control object. There was no call to stop() of video/broadcast object. 60s after A/V playback has started, but before the broadband content presentation has finished, applications stops A/V playback by calling stop() to the A/V Control object. The terminal if it had paused monitoring of stream events resumes stream event monitoring. The correct stream events for that point in the broadcast stream are received. This process is repeated at least 3 times.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING2870	1	Stream events after broadband content being presented, v/b object in stopped state	TRUE	An autostart broadcast-related application starts in a service that contains stream events. The application registers to receive stream events and these are received correctly. The application then calls stop() on the video broadcast object and presents MP4 content over broadband using an A/V control object. After the broadband content presentation has ended with 'finished' state, the application returns to the broadcast by calling bindToCurrentChannel. The terminal if it had paused monitoring of stream events resumes stream event monitoring. The correct stream events for that point in the broadcast stream are received. This process is repeated at least 3 times.
org.hbbtv_GAPFILLING2880	1	Multiple stream events with different names - correctness of transmitting events by event listener	TRUE	A broadcast-related autostart application starts in a broadcast service that includes stream events with two different event names N1 and N2 and different payloads transmitted on the same PID. The application adds event listener to receive events with name N1 to event listener L1 and then receives the correct events for the name N1 and no others. After that when the application removes the stream event listener from the N1 and adds event listener L2 to receive events with name N2, then receives the correct events corresponding to N2 on the L2 listener and no others. If then re-registers to receive events from the N1 without removing for the second name and receives the correct events for both names, each on the correct listener.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING2890	1	Multiple stream events with the same name - correctness of received data	TRUE	A broadcast-related autostart application registers to receive stream events from the current broadcast service. The broadcast service includes stream events with the same event name, different version numbers, varying payloads including binary data, text data and mixtures. The binary data includes all values from 0 to 255 inclusive, with repetitions and random positions. The text data uses UTF-8 encoding and includes values outside 7-bit ASCII. All stream events are received in the correct order with the correct encoding of data and text property.
org.hbbtv_GAPFILLING2910	1	Multiple stream events with the same name - order reliability	TRUE	A broadcast-related autostart application registers to receive stream events from the current broadcast service. The broadcast service includes 100 stream events distributed at varying intervals over 5 minutes with the same event name id, varying payloads, different version numbers. All stream events are received in the correct order.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING2920	1	HTML5 audio element presenting ISOBMFF mp4, return to broadcast	TRUE	A broadcast service includes AVC HD video + HEAAC audio + broadcast subtitles. A broadcast related HbbTV application has a video/broadcast object covering whole screen (fullScreen equal to false) presenting broadcast content, an HTML5 audio element, visibility:hidden, src referring to ISOBMFF mp4 HEAAC (audio only) in readyState bigger than HAVE_CURRENT_DATA. The application moves video/broadcast to stopped state and sets CSS visibility to hidden. Next, the application sets the audio element CSS visibility to visible, and starts playback. Before playout reaches the end of media, the application removes the audio element from the DOM tree, and moves the video/broadcast to presenting state and sets its CSS visibilty back to visible. After that, the video/broadcast presents broadcast video, audio and subtitles.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING2930	1	HTML5 video element presenting ISOBMFF mp4, return to broadcast	TRUE	A broadcast service includes MPEG-2 SD video + MPEG-1 layer 2 audio + broadcast subtitles. A broadcast related HbbTV application has a video/broadcast object covering whole screen (fullScreen equal to false) presenting broadcast content, an HTML5 video element with size 1/4x1/4 of screen size, visibility:hidden, src referring to ISOBMFF mp4 in readyState bigger than HAVE_CURRENT_DATA. The application moves video/broadcast to stopped state and sets CSS visibility to hidden. Next, the application sets the video element CSS visibility to visible, and starts playback. Before playout reaches the end of media, the application removes the video element from the DOM tree, and moves the video/broadcast to presenting state and sets its CSS visibility back to visible. After that, the video/broadcast presents broadcast video, audio and subtitles.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING2940	1	HTML5 video element presenting DASH, return to broadcast	TRUE	A broadcast service has AVC HD video + HEAAC audio + broadcast subtitles. A broadcast related HbbTV application has a video/broadcast object with full screen mode presenting broadcast content, an HTML5 video element covering whole screen, behind the video/broadcast object (on z-axis). The application moves video/broadcast to stopped state, sets CSS to move the video/broadcast behind the video element (on z-axis) and starts playback of static MPEG DASH using the video element. When the playout reaches end of media (ended event), the application removes the video element from the DOM tree, moves the video/broadcast to presenting state. After that, the video/broadcast presents broadcast video, audio and subtitles.
org.hbbtv_GAPFILLING2950	1	A/V control object presenting DASH, return to broadcast	TRUE	A broadcast service has AVC HD video + HEAAC audio + broadcast subtitles. A broadcast related HbbTV application has a video/broadcast object in full screen mode, an A/V control object with data attribute referring to a static MPEG-DASH MPD. The video/broadcast is in the stopped state, hidden, and the A/V control plays content. When the playout ends with playState 'finished', the application hides A/V control object and calls to 'bindToCurrentChannel' of the video/broadcast. After that, at the same time: the video/broadcast object enters the presenting state(2), the presentation appears on video/broadcast screen area and the audio is rendered.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING2960	1	video/broadcast presentation and receiving play state presenting (after stopped) are at the same time	TRUE	A broadcast service has AVC HD video + EAC-3 audio + broadcast subtitles. A broadcast related HbbTV application has a video/broadcast object with full screen mode presenting broadcast content, an A/V control object with full screen mode, behind the video/broadcast object (on z-axis). The application moves video/broadcast to stopped state, sets CSS to move the video/broadcast behind A/V control object (on z-axis) and starts playback of static MPEG DASH using the A/V control object. When the playout reaches end of media (state finished), the application moves video/broadcast to presenting state and sets CSS to move the video/broadcast behind the A/V control object. After that, the video/broadcast presents broadcast video, audio and subtitles and the playState event on the video/broadcast object is received at the application when broadcast video gets visible and audio gets audible and not earlier or later than that.
org.hbbtv_GAPFILLING2970	1	video/broadcast presentation and setting stopped state (from presenting) are at the same time	TRUE	A broadcast service has MPEG-2 SD video + MPEG-1 layer 2 audio + broadcast subtitles. A broadcast related HbbTV application has a video/broadcast object in full screen mode. The video/broadcast is in the presenting state. When the application calls to 'stop', then at the same time: the video/broadcast objects enters the stopped state(3), the video/broadcast screen area become opaque black and the audio become muted.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING2980	1	video/broadcast presentation and setting playing state (from unrealised) are at the same time	TRUE	A broadcast service has AVC HD video + HEAAC audio + broadcast subtitles. A broadcast related HbbTV application has a video/broadcast object scaled to 1/2x1/2 of the screen size. The video/broadcast is in undefined state, presentation of service is under terminal control. When the application calls to 'bindToCurrentChannel', then at the same time: the video/broadcast objects enters the presenting state(2), and the presentation of video appears on video/broadcast screen area.
org.hbbtv_GAPFILLING2990	1	video/broadcast object changes state, no terminal UI	TRUE	A broadcast-related HbbTV application includes a video broadcast object presenting MPEG-2 SD video + MPEG-1 layer 2 audio + broadcast subtitles (Aspect Ratio 4:3). When the application calls to 'stop', then terminal does not display any UI. When after that application calls to bindToCurrentChannel, then the terminal does not display any UI.
org.hbbtv_GAPFILLING3000	2	video/broadcast object presentation - presenting state - scaling	TRUE	An autostart broadcast-related application is started. The application has a video/broadcast object. When the video/broadcast object is in the presenting state, the video/broadcast object contains the video being presented. The video is scaled through by a series of factors, 1/2 x 1/2, 1/3 x 1/3, 1/4 x 1/4, 1/5 x 1/5, 1/6 x 1/6, 1/7 x 1/7 and 1/8 x 1/8. The video is also scaled to 2x2.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GAPFILLING3010	1	Stream event monitoring when playing DASH via IP	TRUE	A broadcast-related application starts presenting A/V delivered over broadband using MPEG DASH. The application registers to listen to DSM-CC stream events in the broadcast. When the stream events are received by the terminal, events are dispatched to the application.
org.hbbtv_GAPFILLING3100	1	Play HTML5 media object - static DASH MPD - server supports IPv4 and IPv6	TRUE	The code of a test (HTML, JavaScript, CSS), as well as the DASH MPD and DASH media segments are all hosted one or more test servers supporting both IPv6 and IPv4. The DNS servers for the test server(s) include both an A record and a AAAA record for the domain name(s) of the test server(s). The test application is launched and has an HTML5 media element referencing a DASH MPD where MPD@type is static. When play() is called on the media element, this triggers 'play' and 'playing' events, sets the 'paused' property to false and starts the video playback.
org.hbbtv_GRAPHICS0010	1	Graphics co-ordinate system seen by application is 1280x720 with no GraphicsConstraints AIT element	TRUE	An application launched from a broadcast AIT with no graphics constraints AIT descriptor presents graphics at 1280x720. These cover the full graphics area of the terminal and window.innerWidth is 1280 and window.innerHeight is 720.
org.hbbtv_GRAPHICS0020	1	Graphics co-ordinate system seen by application is 1280x720 with no GraphicsConstraints XML AIT element	TRUE	An application launched from an XML AIT with no GraphicsConstraints AIT element presents graphics at 1280x720. These cover the full graphics area of the terminal and window.innerWidth is 1280 and window.innerHeight is 720.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GRAPHICS0030	1	Graphics co-ordinate system seen by application is 1920x1080 where AIT indicates app supports this	TRUE	An application launched from a broadcast AIT with a graphics constraints AIT descriptor that includes a graphics_configuration_byte of 4 presents graphics at 1920x1080. These cover the full graphics area of the terminal AND detail is visible at the full 1920x1080 resolution AND window.innerWidth is 1920 AND window.innerHeight is 1080.
org.hbbtv_GRAPHICS0040	1	Graphics co-ordinate system seen by application is 1920x1080 where XML AIT indicates app supports this	TRUE	An application launched from an XML AIT with a GraphicsConstraints AIT element that includes a GraphicsConfiguration element containing the string "urn:hbbtv:graphics:resolution:1920x1080" presents graphics at 1920x1080. These cover the full graphics area of the terminal AND detail is visible at the full 1920x1080 resolution AND window.innerWidth is 1920 AND window.innerHeight is 1080.
org.hbbtv_GRAPHICS0050	1	Graphics co-ordinate system seen by application is 3840x2160 where AIT indicates app supports this	TRUE	An application launched from a broadcast AIT with a graphics constraints AIT descriptor that includes a graphics_configuration_byte of 5 presents graphics at 3840x2160. These cover the full graphics area of the terminal AND detail is visible at the full 3840x2160 resolution AND window.innerWidth is 3840 AND window.innerHeight is 2160.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_GRAPHICS0060	1	Graphics co-ordinate system seen by application is 3840x2160 where XML AIT indicates app supports this	TRUE	An application launched from an XML AIT with a GraphicsConstraints AIT element that includes a GraphicsConfiguration element containing the string "urn:hbbtv:graphics:resolution:3840x2160" presents graphics at 3840x2160. These cover the full graphics area of the terminal AND detail is visible at the full 3840x2160 resolution AND window.innerWidth is 3840 AND window.innerHeight is 2160.
org.hbbtv_HD0010	1	Window.devicePixelRatio property	TRUE	An application contains three img elements with height 600 pixels. The first element is used to display a PNG image of height 600 pixels, with black and white alternating pixels in the vertical dimension. The second element is used to display a PNG image of height 900 pixels, with black and white alternating pixels in the vertical dimension. The third element is used to display a PNG image of height 1800 pixels, with black and white alternating pixels in the vertical dimension. The first image is rendered without loss of resolution, and the second image is rendered without loss of resolution if Window.devicePixelRatio is 1.5 or greater, and the third image is rendered without loss of resolution if Window.devicePixelRatio is 3 or greater.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HD0020	1	High resolution graphics - srcset contains 1x pixel density descriptor	TRUE	An application contains an img element with a src attribute and a srcset attribute that includes multiple different pixel density descriptors and one of the descriptors is equal to Window.devicePixelRatio. If Window.devicePixelRatio is not 1, the image displayed is the one referenced by the pixel density descriptor equal to Window.devicePixelRatio. If Window.devicePixelRatio is 1, the image displayed is either the one referenced by the pixel density descriptor equal to 1 or the one referenced by the src attribute.
org.hbbtv_HD0030	1	High resolution graphics - srcset contains width descriptors and sizes attribute	TRUE	An application contains an img element with a src attribute and a srcset attribute that includes multiple different width descriptors and one of the descriptors is equal to (640 x Window.devicePixelRatio). The sizes attribute is "640px" and the width attribute is "640". If Window.devicePixelRatio is not 1, the image displayed is the one referenced by the width descriptor equal to (640 x Window.devicePixelRatio). If Window.devicePixelRatio is 1, the image displayed is either the one referenced by the width descriptor equal to 640 or the one referenced by the src attribute.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50010	1	HTML5 video element and non-adaptively streamed A/V (HTTP URL - MPEG-2 TS)	TRUE	The video/audio shall be presented when the 'src' attribute of an HTML5 video element is an HTTP URL referring to non-adaptively streamed video/audio in MPEG-2 TS format and the play() method is called
org.hbbtv_HTML50020	1	HTML5 video element and non-adaptively streamed A/V (HTTP URL - ISOBMFF)	TRUE	The video/audio shall be presented when the 'src' attribute of an HTML5 video element is an HTTP URL referring to non-adaptively streamed video/audio in ISOBMFF format and the play() method is called
org.hbbtv_HTML50030	1	HTML5 video element and non-adaptively streamed A/V (Content Access Streaming Descriptor - MPEG-2 TS)	TRUE	The audio/video shall be presented when the 'src' attribute of an HTML5 video element is an HTTP URL referring to a Content Access Streaming Descriptor whose 'ContentURL' element is an HTTP URL that refers to non-adaptively streamed audio/video in MPEG-2 TS format and the play() method is called
org.hbbtv_HTML50040	1	HTML5 video element and non-adaptively streamed A/V (Content Access Streaming Descriptor - ISOBMFF)	TRUE	The audio/video shall be presented when the 'src' attribute of an HTML5 video element is an HTTP URL referring to a Content Access Streaming Descriptor whose 'ContentURL' element is an HTTP URL that refers to non-adaptively streamed audio/video in ISOBMFF format and the play() method is called
org.hbbtv_HTML50050	1	HTML5 video element and adaptively streamed A/V (HTTP URL - MPEG DASH MPD)	TRUE	The MPEG DASH content shall be presented when the 'src' attribute of an HTML5 video element is set to an HTTP URL referring to an MPEG DASH MPD and the play() method is called

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50055	1	HTML5 video element and adaptively streamed A/V - CASD	TRUE	When the src attribute of an HTML5 video element is set to an HTTP URL referring to a content access streaming descriptor that in turn refers to a MPEG DASH MPD and the play method is called, the MPEG DASH content is presented.
org.hbbtv_HTML50060	1	HTML5 video element and downloaded content	TRUE	When the src attribute of an HTML5 video element is set to a URI returned by an instance of the Download class in the completed state and the play method is called, the downloaded content is presented.
org.hbbtv_HTML50070	1	HTML5 video and recorded content	TRUE	When the src attribute of an HTML5 video element is set to a URI returned by an instance of the Recording class and the play method is called, the recorded content is presented.
org.hbbtv_HTML50080	1	Support buffered attribute of HTML5 video element - MPEG DASH	TRUE	When an application starts to present video using the HTML5 video element and delivered via MPEG DASH, the end of the TimeRange returned by the 'buffered' attribute shall be within +/- the segment duration of the time corresponding to the last data loaded from the network
org.hbbtv_HTML50090	1	Support buffered attribute of HTML5 video element - basic HTTP streaming (MPEG-2 TS)	TRUE	When an application is presenting video (from an MPEG-2 TS) using the HTML5 video element and delivered via basic HTTP streaming, the end of the TimeRange returned by the 'buffered' attribute shall be within +/- 5 seconds of the time corresponding to the last data loaded from the network

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50100	1	Support buffered attribute of HTML5 video element - basic HTTP streaming (ISOBMFF)	TRUE	When an application is presenting video (from an ISO BMFF file) using the HTML5 video element and delivered via basic HTTP streaming, the end of the TimeRange returned by the 'buffered' attribute shall be within +/- 5 seconds of the time corresponding to the last data loaded from the network
org.hbbtv_HTML50110	1	HTML5 video element and parental access control	TRUE	When an application is presenting video using the HTML5 video element and this is blocked due to parental access control, the application receives a MediaError with the code set to MEDIA_ERR_DECODE.
org.hbbtv_HTML50120	1	HTML5 video element and playable_download content - registerDownloadURL	TRUE	When an application starts a download using registerDownloadURL, sets the source of an HTML5 video element to the URI of that download and then calls play, the downloaded content starts being loaded and, once enough data has been downloaded and then loaded, played.
org.hbbtv_HTML50130	1	HTML5 video element and playable_download content - CADD	TRUE	When an application starts a download using a Content Access Download descriptor with <TransferType> "playable_download", sets the source of an HTML5 video element to the URI of that download and then calls play, the downloaded content starts being loaded and, once enough data has been downloaded and then loaded, played.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50140	1	HTML5 video element and full_download content	TRUE	When an application starts a download using a Content Access Download descriptor with <TransferType> "full_download", sets the source of an HTML5 video element to the URI of that download and then calls play before the download has finished, the application receives a MediaError with the code set of MEDIA_ERR_NETWORK.
org.hbbtv_HTML50160	1	Primary Audio Language and Multiple Language Audio Tracks - MP4 - English	TRUE	When an application starts playing a media file (ISO BMFF) using the HTML5 media element delivered using basic HTTP streaming and that media file contains audio tracks in multiple languages, the one in the user preferred language is selected even if this is not first in the file.
org.hbbtv_HTML50165	2	Primary Audio Language and Multiple Language Audio Tracks - MPEG-DASH (HbbTV ISOBMFF Live Profile) - English	TRUE	When English is selected as the primary audio language and an application starts playing MP4 audio/video, delivered using MPEG-DASH via the HTML5 media element where: the MPD uses the HbbTV ISOBMFF Live profile; the MPD contains AAC-encoded, French and English language audio AdaptationSet elements; the French audio AdaptationSet element has a lower index than the English audio AdaptationSet element; the MPD contains an accompanying AVC_SD_25 video AdaptationSet element — then the English language audio is presented

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50170	1	enabling audio and video tracks as selected by the media player - preferred audio track in a downloaded media file	TRUE	When an application starts playing a downloaded media file (ISO BMFF) using the HTML5 media element and that media file contains audio tracks in multiple languages, the one in the user preferred language is selected even if this is not first in the file.
org.hbbtv_HTML50180	1	enabling audio and video tracks as selected by the media player - preferred audio track in a recording	TRUE	When an application starts playing a recording using the HTML5 media element and that recording contains audio tracks in multiple languages, the one in the user preferred language is selected even if this is not first in the file.
org.hbbtv_HTML50190	1	HTML5 video element always behaves as full screen mode false - same aspect ratio, no cropping	TRUE	When an application presents video (without AFD, bar data or default display window) using an HTML5 video element and the video element has the same aspect ratio as the video then the four corners of the video match exactly the corners of the video element.
org.hbbtv_HTML50200	1	HTML5 video element always behaves as full screen mode false - different aspect ratio, no cropping	TRUE	When an application presents video (without AFD, bar data or default display window) using an HTML5 video element and the video element does not have the same aspect ratio as the video then one side of the video fully fills the video element without cropping and the other side is centred and the area of the video plane not containing video is opaque black.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50230	1	HTML5 video element and downloaded content blocked by parental access control	TRUE	When an application requests downloaded video be presented using an HTML5 video element and this is denied due to the parental rating in the CADD used to download the content being above the current parental rating system threshold, a MediaError is sent to the HTML5 video element with the code set to MEDIA_ERR_DECODE.
org.hbbtv_HTML50240	1	HTML5 video element and recorded content blocked by parental access control	TRUE	When an application requests recorded video be presented using an HTML5 video element and this is denied due to the parental rating of the recording being above the current parental rating system threshold, a MediaError is sent to the HTML5 video element with the code set to MEDIA_ERR_DECODE.
org.hbbtv_HTML50250	1	HTML5 in XML capabilities	TRUE	When the XML capabilities are read, they include an element whose name is "html5_media" and whose value is "true".
org.hbbtv_HTML50400	1	AudioTrack.id with MPEG-2 TS	TRUE	When an application requests an MPEG-2 transport stream be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an Audio elementary stream in that transport stream, the id property of the AudioTrack is the component_tag in the stream_identifier_descriptor of the Audio elementary stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50410	1	AudioTrack.kind with MPEG-2 TS - iso_639_language_descriptor	TRUE	When an application requests an MPEG-2 transport stream be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an Audio elementary stream in that transport stream and the audio elementary stream has an ISO_639_language_descriptor in the PMT with the audio_type field set to 0x03 then the kind property is "description"
org.hbbtv_HTML50420	1	AudioTrack.kind with MPEG-2 TS - supplementary_audio_descriptor	TRUE	When an application requests an MPEG-2 transport stream be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an Audio elementary stream in that transport stream and the audio elementary stream has an supplementary_audio_descriptor in the PMT with the editorial_classification field set to 0x01 then the kind property is "description"
org.hbbtv_HTML50430	1	AudioTrack.kind with MPEG-2 TS - e-ac3 audio descriptor	TRUE	When an application requests an MPEG-2 transport stream be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an Audio elementary stream in that transport stream and the audio elementary stream has an enhanced_ac-3_descriptor in the PMT with a component_type field with the service_type flags set to Visually Impaired then the kind property is "description"

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50440	1	AudioTrack.language with MPEG2-TS - no supplementary_audio_descriptor	FALSE	When an application requests an MPEG-2 transport stream be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an Audio elementary stream in that transport stream and the ES loop of the PMT contains an ISO_639_language_descriptor for that ES but not a supplementary_audio_descriptor then the language property shall be the contents of the ISO_639_language_code field in the ISO_639_language_descriptor in the ES loop of the PMT for that ES.
org.hbbtv_HTML50450	1	AudioTrack.language with MPEG2-TS - supplementary_audio_descriptor	TRUE	When an application requests an MPEG-2 transport stream be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an Audio elementary stream in that transport stream and the ES loop of the PMT contains a supplementary_audio_descriptor and an ISO_639_language_descriptor for that ES then the language property shall be the contents of the ISO_639_language_code field in the supplementary_audio_descriptor in the ES loop of the PMT for that ES.
org.hbbtv_HTML50500	1	AudioTrack.id with ISOBMFF	TRUE	When an application requests an ISOBMFF file be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an Audio track in that file, the id property of the AudioTrack is the track_id of the Audio track.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50510	1	AudioTrack.language with ISOBMFF	FALSE	When an application requests an ISOBMFF file be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an Audio track in that file, the language property of the AudioTrack is the the language field in the "mdhd" media header for the track.
org.hbbtv_HTML50600	2	AudioTrack.id with MPEG DASH	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an audio AdaptationSet in the MPD, the id property of the AudioTrack is the id attribute in the AdaptationSet.
org.hbbtv_HTML50610	2	AudioTrack.kind with MPEG DASH - main	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an audio AdaptationSet in the MPD, and the AdaptationSet has @role equals "main" and nothing else then the kind property of the AudioTrack is "main".
org.hbbtv_HTML50620	2	AudioTrack.kind with MPEG DASH - main and dub	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an audio AdaptationSet in the MPD, and if the AdaptationSet has @role elements for both "dub" and "main" then the kind property of the AudioTrack is "translation".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50625	1	AudioTrack.kind with MPEG DASH - descriptions	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an audio Adaptation Set in the MPD, and the Adaptation Set has a role element set to "descriptions" and also a role element set to "supplementary" then the kind property of the AudioTrack is "descriptions".
org.hbbtv_HTML50630	2	AudioTrack.kind with MPEG DASH - alternate	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an audio AdaptationSet in the MPD, and the AdaptationSet has an @role element for "alternate" and does not have @role elements for "main", "commentary" or "dub" then the kind property of the AudioTrack is "alternative".
org.hbbtv_HTML50635	1	AudioTrack.kind with MPEG DASH - main-desc	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an audio Adaptation Set in the MPD, and the Adaptation Set has a role element set to "description" and also a role element set to "main" then the kind property of the AudioTrack is "main-desc".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50640	2	AudioTrack.kind with MPEG DASH - commentary	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an audio AdaptationSet in the MPD, and the AdaptationSet has a role element set to "commentary" and does not have a role element set to "main" then the kind property of the AudioTrack is "commentary".
org.hbbtv_HTML50650	1	AudioTrack.language with MPEG DASH - Explicit	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an audio AdaptationSet in the MPD, the audio AdaptationSet has a @lang attribute and the language field in the "mdhd" of the track has a different language then the language property of the AudioTrack is the value of that @lang attribute.
org.hbbtv_HTML50651	1	AudioTrack.language with MPEG DASH - Explicit 2-letter language code	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the AudioTrack corresponding to an audio AdaptationSet in the MPD, the audio AdaptationSet has a @lang attribute with a 2-letter language code and the language field in the "mdhd" of the track has a different language then the language property of the AudioTrack is the value of that @lang attribute.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50670	1	AudioTrack selection with HTML5	TRUE	An MPEG DASH stream containing a video AdaptationSet and two audio AdaptationSets - A and B - is being presented by an HTML5 media object, and initially only audio AdaptationSet A is being presented. When the application sets the enabled attribute of the AudioTrack that maps to A to false and sets the enabled attribute of the AudioTrack that maps to B to true, the terminal stops presenting audio AdaptationSet A and presents audio AdaptationSet B and, when the switch is completed, video is presented correctly.
org.hbbtv_HTML50675	1	AudioTrack deselection with HTML5	TRUE	An MPEG DASH stream containing a video AdaptationSet and an audio AdaptationSet is being presented by an HTML5 media object. When the application sets the enabled attribute of the AudioTrack that maps to the audio AdaptationSet to false, the terminal stops presenting audio and, when the switch is completed, video is presented correctly.
org.hbbtv_HTML50680	1	AudioTrack multiple selection with HTML5 - mixing supported	TRUE	An MPEG DASH stream containing a video AdaptationSet and two audio AdaptationSets - A and B - is being presented by an HTML5 media object, and initially only audio AdaptationSet A is being presented. When the application sets the enabled attribute of the AudioTrack that maps to B to true, the terminal presents both audio AdaptationSets mixed and the enabled attribute of the AudioTrack that maps to A remains true and, when the switch is completed, video is presented correctly.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50685	1	AudioTrack multiple selection with HTML5 - mixing not supported	TRUE	An MPEG DASH stream containing a video AdaptationSet and two audio AdaptationSets - A and B - is being presented by an HTML5 media object, and initially only audio AdaptationSet A is being presented. When the application sets the enabled attribute of the AudioTrack that maps to B to true, the terminal stops presenting audio AdaptationSet A and presents audio AdaptationSet B and the enabled attribute of the AudioTrack that maps to A changes to false and, when the switch is completed, video is presented correctly.
org.hbbtv_HTML50700	1	VideoTrack.id with MPEG-2 TS	TRUE	When an application requests an MPEG-2 transport stream be presented by an HTML5 video element and then obtains the VideoTrack corresponding to an video elementary stream in that transport stream, the id property of the VideoTrack is the component_tag in the stream_identifier_descriptor of the Video elementary stream.
org.hbbtv_HTML50710	1	VideoTrack.id with ISOBMFF	TRUE	When an application requests an ISOBMFF file be presented by an HTML5 video element and then obtains the VideoTrack corresponding to a video track in that file, the id property of the VideoTrack is the track_id of the video track.
org.hbbtv_HTML50720	1	VideoTrack.id with MPEG DASH	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the VideoTrack corresponding to a video Adaptation Set in the MPD, the id property of the VideoTrack is the id attribute in the Adaptation Set.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50730	1	VideoTrack.kind with MPEG DASH - alternative	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the VideoTrack corresponding to a video Adaptation Set in the MPD and the Adaptation Set has a role of "alternate" without also having a role of "main", "commentary" or "dub" then the kind property of the VideoTrack is "alternative"
org.hbbtv_HTML50740	1	VideoTrack.kind with MPEG DASH - captions	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the VideoTrack corresponding to a video Adaptation Set in the MPD and the Adaptation Set has roles of "caption" and "main" then the kind property of the VideoTrack is "captions"
org.hbbtv_HTML50750	1	VideoTrack.kind with MPEG DASH - main	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the VideoTrack corresponding to a video Adaptation Set in the MPD and the Adaptation Set has a role of "main" without also having a role of "caption", "subtitle" or "dub" then the kind property of the VideoTrack is "main"
org.hbbtv_HTML50760	1	VideoTrack.kind with MPEG DASH - subtitle	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the VideoTrack corresponding to a video Adaptation Set in the MPD and the Adaptation Set has roles of both "subtitle" and "main" then the kind property of the VideoTrack is "subtitles"

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50770	1	VideoTrack selection with HTML5	TRUE	An MPEG DASH stream containing an audio AdaptationSet and two video AdaptationSets - A and B - is being presented by an HTML5 media object, and initially only video AdaptationSet A is being presented. When the application sets the enabled attribute of the VideoTrack that maps to B to true, the terminal stops presenting video AdaptationSet A and presents video AdaptationSet B and the enabled attribute of the VideoTrack that maps to A changes to false and, when the switch has completed, audio is presented correctly.
org.hbbtv_HTML50780	1	VideoTrack deselection with HTML5	TRUE	An MPEG DASH stream containing an audio AdaptationSet and a video AdaptationSet is being presented by an HTML5 media object. When the application sets the enabled attribute of the the VideoTrack that maps to the video AdaptationSet to false, the terminal stops presenting video and, when the switch is completed, audio is presented correctly.
org.hbbtv_HTML50800	1	TextTrack.id with MPEG-2 TS	TRUE	When an application requests an MPEG-2 transport stream be presented by an HTML5 video element and then obtains the TextTrack corresponding to an subtitle elementary stream in that transport stream, the id property of the TextTrack is the component_tag in the stream_identifier_descriptor of that elementary stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML50810	1	TextTrack.kind with MPEG-2 TS - subtitles	TRUE	When an application requests an MPEG-2 transport stream be presented by an HTML5 video element and then obtains the TextTrack corresponding to an subtitle elementary stream in that transport stream and the elementary stream has a subtitling_descriptor with the subtitling_type field set to 0x10 then the kind property of the TextTrack is "subtitles"
org.hbbtv_HTML50840	1	TextTrack.language with MPEG-2 TS - teletext_descriptor	TRUE	When an application requests an MPEG-2 transport stream be presented by an HTML5 video element and then obtains the TextTrack corresponding to an subtitle elementary stream in that transport stream and the elementary stream has a teletext_descriptor then the language property of the TextTrack is the ISO_639_language_code field in that descriptor
org.hbbtv_HTML50940	1	TextTrack.id with MPEG DASH	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the TextTrack corresponding to a subtitle Adaptation Set in the MPD, the id property of the TextTrack is the id attribute in the Adaptation Set.
org.hbbtv_HTML50950	1	TextTrack.kind with MPEG DASH - role is main and no accessibility scheme specified	TRUE	When an application requests that MPEG DASH content be presented by an HTML5 video element and then obtains the TextTrack corresponding to a subtitle Adaptation Set in the MPD that has @role as "main" and does not have an accessibility scheme, the kind property of the TextTrack is "subtitles".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML51000	1	Graphics Performance 1 - Frame/background-color	TRUE	At least 4 simultaneous animations of the background-color CSS property of a Frame (where the colour is opaque) shall be presented at a update rate of at least 25Hz
org.hbbtv_HTML51010	1	Graphics Performance 1 - Frame/background-color, opacity	TRUE	The terminal shall support at least 4 simultaneous animations of the background-color CSS property of a Frame (where the colour includes opacity) at a update rate of at least 25Hz
org.hbbtv_HTML51020	1	Graphics Performance 1 - Frame/left,top	TRUE	The terminal shall support at least 4 simultaneous animations of the left and top CSS properties of a Frame at a frame rate of at least 25Hz
org.hbbtv_HTML51030	1	Graphics Performance 1 - Frame/opacity	TRUE	The terminal shall support at least 4 simultaneous animations of the opacity property of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51040	1	Graphics Performance 1 - Frame/transform: scale	TRUE	The terminal shall support at least 4 simultaneous animations of the CSS transform "scale" property of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51050	1	Graphics Performance 1 - Frame/border-radius	TRUE	The terminal shall support at least 4 simultaneous animations of the CSS border-radius property of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51060	1	Graphics Performance 1 - Frame/width,height	TRUE	The terminal shall support at least 4 simultaneous animations of the CSS width and height properties of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51070	1	Graphics Performance 1 - Frame/linear-gradient	TRUE	The terminal shall support at least 4 simultaneous animations of a linear gradient assigned to the CSS background-image property of a Frame at a update rate of at least 25Hz

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML51080	1	Graphics Performance 1 - Image/left,top	TRUE	The terminal shall support at least 4 simultaneous animations of the left and top CSS properties of an Image at a frame rate of at least 25Hz
org.hbbtv_HTML51090	1	Graphics Performance 1 - Image/opacity	TRUE	The terminal shall support at least 4 simultaneous animations of the opacity property of an Image at a update rate of at least 25Hz
org.hbbtv_HTML51100	1	Graphics Performance 1 - Image/transform:scale	TRUE	The terminal shall support at least 4 simultaneous animations of the CSS transform "scale" property of an Image at a update rate of at least 25Hz
org.hbbtv_HTML51110	1	Graphics Performance 1 - Text/left,top	TRUE	The terminal shall support at least 4 simultaneous animations of the left and top CSS properties of a Text at a frame rate of at least 25Hz
org.hbbtv_HTML51120	1	Graphics Performance 1 - Text/opacity	TRUE	The terminal shall support at least 4 simultaneous animations of the opacity property of Text at a update rate of at least 25Hz
org.hbbtv_HTML51130	1	Graphics Performance 1 - Text/transform: scale	TRUE	The terminal shall support at least 4 simultaneous animations of the CSS transform "scale" property of Text at a update rate of at least 25Hz
org.hbbtv_HTML51200	1	Graphics Performance 2 - Frame/background-color	TRUE	At least 16 simultaneous animations of the background-color CSS property of a Frame (where the colour is opaque) shall be presented at a update rate of at least 25Hz
org.hbbtv_HTML51210	1	Graphics Performance 2 - Frame/background-color, opacity	TRUE	The terminal shall support at least 16 simultaneous animations of the background-color CSS property of a Frame (where the colour includes opacity) at a update rate of at least 25Hz

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML51220	1	Graphics Performance 2 - Frame/left,top	TRUE	The terminal shall support at least 16 simultaneous animations of the left and top CSS properties of a Frame at a frame rate of at least 25Hz
org.hbbtv_HTML51230	1	Graphics Performance 2 - Frame/opacity	TRUE	The terminal shall support at least 16 simultaneous animations of the opacity property of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51240	1	Graphics Performance 2 - Frame/transform: rotate	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "rotate" property of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51250	1	Graphics Performance 2 - Frame/transform: scale	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "scale" property of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51260	1	Graphics Performance 2 - Frame/transform: skew	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "skew" property of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51270	1	Graphics Performance 2 - Frame/transform: matrix	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "matrix" property of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51280	1	Graphics Performance 2 - Frame/border-radius	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS border-radius property of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51290	1	Graphics Performance 2 - Frame/width,height	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS width and height properties of a Frame at a update rate of at least 25Hz

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML51300	1	Graphics Performance 2 - Frame/linear-gradient	TRUE	The terminal shall support at least 16 simultaneous animations of a linear gradient assigned to the CSS background-image property of a Frame at a update rate of at least 25Hz
org.hbbtv_HTML51310	1	Graphics Performance 2 - Image/left,top	TRUE	The terminal shall support at least 16 simultaneous animations of the left and top CSS properties of an Image at a frame rate of at least 25Hz
org.hbbtv_HTML51320	1	Graphics Performance 2 - Image/opacity	TRUE	The terminal shall support at least 16 simultaneous animations of the opacity property of an Image at a update rate of at least 25Hz
org.hbbtv_HTML51330	1	Graphics Performance 2 - Image/transform:rotate	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "rotate" property of an Image at a update rate of at least 25Hz
org.hbbtv_HTML51340	1	Graphics Performance 2 - Image/transform:scale	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "scale" property of an Image at a update rate of at least 25Hz
org.hbbtv_HTML51350	1	Graphics Performance 2 - Image/transform:skew	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "skew" property of an Image at a update rate of at least 25Hz
org.hbbtv_HTML51360	1	Graphics Performance 2 - Image/transform:matrix	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "matrix" property of an Image at a update rate of at least 25Hz
org.hbbtv_HTML51370	1	Graphics Performance 2 - Text/left,top	TRUE	The terminal shall support at least 16 simultaneous animations of the left and top CSS properties of a Text at a frame rate of at least 25Hz

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML51380	1	Graphics Performance 2 - Text/opacity	TRUE	The terminal shall support at least 16 simultaneous animations of the opacity property of Text at a update rate of at least 25Hz
org.hbbtv_HTML51390	1	Graphics Performance 2 - Text/transform: rotate	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "rotate" property of Text at a update rate of at least 25Hz
org.hbbtv_HTML51400	1	Graphics Performance 2 - Text/transform: scale	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "scale" property of Text at a update rate of at least 25Hz
org.hbbtv_HTML51410	1	Graphics Performance 2 - Text/transform: skew	TRUE	The terminal shall support at least 16 simultaneous animations of the CSS transform "skew" property of Text at a update rate of at least 25Hz
org.hbbtv_HTML52000	1	Existence within DOM of one playing HTML5 media element together with two paused HTML5 media elements	TRUE	Given one HTML5 media element is in the playing state and its data condition meets readyState of HAVE_ENOUGH_DATA, and two HTML5 media elements are in paused state and their data condition meet readyState of HAVE_ENOUGH_DATA, then the terminal shall successfully present the playing media.
org.hbbtv_HTML52010	1	Forced transition of HTML5 media element to paused state by another HTML5 media element	TRUE	When one HTML5 media element is in playing state, and one HTML5 media element is in paused state, then the transition to the playing state of the paused element shall force the playing element to transition to the paused state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML52020	1	Deferred playing state of HTML5 media element when forcing transition of another HTML5 media element to paused state	TRUE	When a paused HTML5 media element A forces a playing HTML5 media element B into the paused state, then the HTML5 media element A shall not transition to the playing state until HTML5 media element B has entered the paused state.
org.hbbtv_HTML52030	1	HTML5 media element pause event and attribute when forced into paused state	TRUE	When a playing HTML5 media element is forced into the paused state, then it shall emit a "pause" event and set the "paused" attribute to true.
org.hbbtv_HTML52040	1	Play/Pause Responsiveness when Switching Media using Multiple HTML5 audio Elements - MPEG-DASH - E-AC-3 (audio-only)	TRUE	Given an unplayed HTML5 media element referencing MP4 with HE-AAC that begins on an IDR access unit and for which a "canplay" or "canplaythrough" event has already been received; when a playing DASH with E-AC-3 element is paused due to the MP4 HE-AAC starting playing, then the delay between pausing the E-AC-3 element and playing the HE-AAC element shall be less than 250ms.
org.hbbtv_HTML52050	1	Play/Pause Responsiveness when Switching Media using Multiple HTML5 Video Elements - MPEG-DASH - AVC	TRUE	Given an unplayed HTML5 media element referencing MP4 with AVC that begins on an IDR access unit and for which a "canplay" or "canplaythrough" event has already been received; when a playing DASH with HEVC element is paused due to the MP4 AVC starting playing, then the delay between pausing the HEVC element playing the AVC element shall be less than 250ms.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML52060	1	Playback of paused audio HTML5 media element from next frame	TRUE	When resuming the playback of a HTML5 media element referencing E-AC-3 that has previously been paused, the terminal shall start playback at or before the frame following the pause position.
org.hbbtv_HTML52070	1	Playback of paused video HTML5 media element from next frame	TRUE	When resuming the playback of a HTML5 media element referencing HEVC that has previously been paused, the terminal shall start playback at or before the IDR following the pause position.
org.hbbtv_HTML52080	1	HTTP Chunked Transfer Coding - HTML5 - HEVC - Video Playback	TRUE	When requested to present a HEVC HTML5 media element referencing a Unicast stream over HTTP 1.1, and the content is delivered using HTTP Chunked Transfer Coding, then the whole content is successfully played without artefacts.
org.hbbtv_HTML52090	1	HTML5 media element seek using Content-range header	TRUE	When requested to seek to an unbuffered position in a HEAAC HTML5 media element referencing a large (much greater than 10 seconds) Unicast stream over HTTP 1.1, then the terminal shall make a Content-range header request that encompasses the seek position.
org.hbbtv_HTML54000	1	HTML5 delivered by DSM-CC	TRUE	The first page of a broadcast-related application is an HTML5 page carried in an object carousel. When the application is launched, the page is loaded and processed as an HTML5 page (and not as an HTML4/XHTML page).
org.hbbtv_HTML5-DASH001	1	getStartDate HTML5 media object and static DASH MPD	TRUE	The terminal shall use a relative origin of media timeline for a HTML5 media object with a static MPD. Call of getStartDate() shall return NaN.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML5-DASH002	1	getStartDate HTML5 media object and dynamic DASH MPD	TRUE	The terminal shall correctly set the origin of media timeline of an HTML5 media object with a dynamic MPD. Call of getStartDate() shall return the @availabilityStartTime of the MPD.
org.hbbtv_HTML5-DASH003	1	getStartDate HTML5 media object and dynamic DASH MPD: when 1st period is removed	TRUE	The terminal shall correctly set the origin of media timeline of an HTML5 media object with a dynamic MPD, after an MPD update where the first period is removed. Call of getStartDate() shall return the start time of the first (removed) Period.
org.hbbtv_HTML5-DASH004	1	getStartDate HTML5 media object and change the source to new DASH MPD.	TRUE	The terminal shall update the origin of media timeline of an HTML5 media object with a dynamic MPD, when the src attribute of the video changes to a different MPD. Call of getStartDate() shall return the @availabilityStartTime of the new MPD.
org.hbbtv_HTML5-DASH005	1	getStartDate HTML5 media object and call "load", src points to DASH MPD.	TRUE	The terminal shall update the origin of the media timeline of an HTML5 media object with a dynamic MPD, when load() is called to update the MPD. Call of getStartDate() shall return the @availabilityStartTime of the new MPD.
org.hbbtv_HTML5-DASH010	1	duration parameter of HTML5 media object and static DASH MPD	TRUE	The terminal shall set duration of media timeline of the HTML5 media object to MPD@mediaPresentationDuration. MPD@type is static.
org.hbbtv_HTML5-DASH011	1	duration parameter of HTML5 media object and dynamic DASH MPD	TRUE	The terminal shall set duration of media timeline of the HTML5 media object to MPD@mediaPresentationDuration. MPD@type is dynamic.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML5-DASH012	1	duration parameter of HTML5 media object and updating @mediaPresentationDuration in dynamic DASH MPD	TRUE	The duration parameter of HTML5 media object shall be updated when @mediaPresentationDuration is changed. MPD@type is dynamic.
org.hbbtv_HTML5-DASH013	1	duration parameter of HTML5 media object equals positive infinity if dynamic DASH MPD does not contain @mediaPresentationDuration	TRUE	The duration parameter of HTML5 media object shall be positive infinity when the MPD does not contain @mediaPresentationDuration. MPD@type is dynamic.
org.hbbtv_HTML5-DASH014	1	duration parameter of HTML5 media object and removing @mediaPresentationDuration in dynamic DASH MPD	TRUE	The duration parameter of HTML5 media object shall be changed to positive infinity, when @mediaPresentationDuration is not present after the MPD update. MPD@type is dynamic.
org.hbbtv_HTML5-DASH015	1	duration parameter of HTML5 media object undefined and adding @mediaPresentationDuration in dynamic DASH MPD	TRUE	The duration parameter of HTML5 media object shall be correctly set, when before update the @mediaPresentationDuration is not present and after MPD update @mediaPresentationDuration contains valid value. MPD@type is dynamic.
org.hbbtv_HTML5-DASH016	1	seekable parameter of HTML5 media object and dynamic DASH MPD with @timeShiftBufferDepth	TRUE	The seekable parameter of HTML5 media object shall be set accordingly to MPD@timeShiftBufferDepth. MPD@type is dynamic.
org.hbbtv_HTML5-DASH017	1	seekable parameter of HTML5 media object and dynamic DASH MPD with updated @timeShiftBufferDepth	TRUE	The seekable parameter of HTML5 media object shall be updated accordingly to change of MPD@timeShiftBufferDepth. MPD@type is dynamic.
org.hbbtv_HTML5-DASH018	1	seekable parameter of HTML5 media object and static DASH MPD	TRUE	The seekable parameter of HTML5 media object shall reflect the full content. MPD@type is static.
org.hbbtv_HTML5-DASH019	1	seekable parameter of HTML5 media object and dynamic DASH MPD without MPD@timeShiftBufferDepth	TRUE	The seekable parameter of HTML5 media object shall reflect the full content if MPD@timeShiftBufferDepth is not present. MPD@type is dynamic.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML5-DASH020	1	seekable parameter of HTML5 media object and dynamic DASH MPD without MPD@timeShiftBufferDepth, removing period	TRUE	The seekable parameter of HTML5 media object shall reflect the removing of period if MPD@timeShiftBufferDepth is not present. MPD@type is dynamic.
org.hbbtv_HTML5-DASH021	1	seekable parameter of HTML5 media object and static DASH MPD, two periods	TRUE	The seekable parameter of HTML5 media object shall reflect the full content, if MPD contains two periods. MPD@type is static.
org.hbbtv_HTML5-DASH022	1	Pause HTML5 media object - static DASH MPD	TRUE	Calling pause() method of HTML5 media object shall trigger 'pause' event, set 'paused' property to true and pause the video playback when MPD@type is static
org.hbbtv_HTML5-DASH023	1	Play paused HTML5 media object - static DASH MPD	TRUE	Calling play() method of HTML5 media object shall trigger 'play' event, set 'paused' property to false and start the video playback when playback was previously paused and MPD type is static.
org.hbbtv_HTML5-DASH024	1	Play HTML5 media object - static DASH MPD	TRUE	Calling play() method of HTML5 media object shall trigger 'play' and 'playing' events, set 'paused' property to false and start the video playback when MPD@type is static
org.hbbtv_HTML5-DASH025	1	Play paused HTML5 media object - dynamic DASH MPD	TRUE	Calling play() method of HTML5 media object shall trigger 'play' event, set 'paused' property to false and start the video playback when playback was previously paused and MPD type is dynamic.
org.hbbtv_HTML5-DASH026	1	play paused HTML5 media object and dynamic DASH MPD, play position outside time shift buffer	TRUE	MPEG DASH content with MPD@type=dynamic is being presented in an HTML5 media element and playback is paused and the current play position is no longer in the time shift buffer defined by MPD@timeShiftBufferDepth. When the play() method is called, an error Event with code MEDIA_ERR_NETWORK is raised.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML5-DASH027	1	play paused HTML5 media object and dynamic DASH MPD, play position in removed period	TRUE	MPEG DASH content with MPD@type=dynamic is being presented in an HTML5 media element and playback is paused and the current play position is inside the removed period (no longer in the time shift buffer defined by MPD@timeShiftBufferDepth). When the play() method is called, an error Event with code MEDIA_ERR_NETWORK is raised.
org.hbbtv_HTML5-DASH034	1	Start Position of HTML5 media object - MPD DASH Anchor with 't' key only	TRUE	HTML5 media object shall begin playback at the requested position when 't' key of MPD Anchor is used and 'period' key is not present and MPD is static.
org.hbbtv_HTML5-DASH035	1	Start Position of HTML5 media object - MPD DASH Anchor with 'period' key only	TRUE	HTML5 media object shall begin playback at the requested position when 'period' key of MPD Anchor is used, 't' key is not present and MPD@type is static.
org.hbbtv_HTML5-DASH036	1	Start Position of HTML5 media object - MPD DASH Anchor with 'period' and 't' keys	TRUE	HTML5 media object shall begin playback at the requested position when 'period' and 't' keys of MPD Anchor are used together and MPD@type is static
org.hbbtv_HTML5-DASH037	1	Start Position of HTML5 media object, static MPD DASH	TRUE	HTML5 media object shall begin playback at the beginning of the MPD, if there is no MPD Anchor and MPD@type is static.
org.hbbtv_HTML5-DASH038	1	Start Position of HTML5 media object, dynamic MPD DASH, MPD@suggestedPresentationDelay not present	TRUE	HTML5 media object shall begin playback from a point such that the media is being presented no more than 45 seconds behind the time at which it becomes available. There is no MPD Anchor, MPD@suggestedPresentationDelay not present. MPD@type is 'dynamic'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTML5-DASH134	1	Start Position of HTML5 media object - MPD DASH Anchor with 't' key only, dynamic MPD	TRUE	HTML5 media object shall begin playback at the requested position when 't' key of MPD Anchor is used and 'period' key is not present and MPD@type is 'dynamic'.
org.hbbtv_HTML5-DASH135	1	Start Position of HTML5 media object - MPD DASH Anchor with 'period' key only, dynamic MPD	TRUE	HTML5 media object shall begin playback at the requested position when 'period' key of MPD Anchor is used, 't' key is not present and MPD@type is 'dynamic'.
org.hbbtv_HTML5-DASH136	1	Start Position of HTML5 media object - MPD DASH Anchor with 'period' and 't' keys, dynamic MPD	TRUE	HTML5 media object shall begin playback at the requested position when 'period' and 't' keys of MPD Anchor are used together and MPD@type is 'dynamic'.
org.hbbtv_HTTP0010	1	HTTP - If-Modified-Since	TRUE	When an application makes two HTTP requests for content, and the first request is for content with a modification time more recent than the specified time, and the second request is for content with a modification time older than the specified time, and the terminal has cached both items of content, the terminal retrieves the first content from the server and the second content from its cache.
org.hbbtv_HTTP0020	1	HTTP - If-None-Match - content matches	TRUE	When an application makes an HTTP request for content, and the terminal has cached the content with an ETag value, and the specified ETag value matches the requested content, the terminal retrieves the content from its cache.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTTP0030	1	HTTP - If-None-Match - content does not match	TRUE	When an application makes an HTTP request for content, and the terminal has cached the content with an ETag value, and the server has been updated so that the specified ETag value no longer matches the requested content, the terminal retrieves the content from the server.
org.hbbtv_HTTP0050	1	HTTP - 301 Moved Permanently	TRUE	When an application makes an HTTP request for an http: URI and receives a response of 301 Moved Permanently with a Location header indicating an http: URI, the terminal follows the redirect.
org.hbbtv_HTTP0060	1	HTTP - 302 Found	TRUE	When an application makes an HTTP request for an http: URI and receives a response of 302 Found with a Location header indicating an https: URI, the terminal follows the redirect.
org.hbbtv_HTTP0070	1	HTTP - 303 See Other	TRUE	When an application is loaded from an http: URI and then makes an HTTP request for an https: URI and receives a response of 303 See Other with a Location header indicating an http: URI, the terminal follows the redirect.
org.hbbtv_HTTP0080	1	HTTP - 307 Temporary Redirect	TRUE	When an application makes an HTTP request for an https: URI and receives a response of 307 Temporary Redirect with a Location header indicating an https: URI, the terminal follows the redirect.
org.hbbtv_HTTP0090	1	HTTP redirections - browser	TRUE	When an application is loaded from an http: URI and then the browser requests content which results in a chain of 10 HTTP redirects, including both http: and https: URIs, the content is retrieved.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_HTTP0100	1	HTTP redirections - media player	TRUE	When the media player requests content which results in a chain of 3 HTTP redirects, including both http: and https: URIs, the content is retrieved.
org.hbbtv_HTTP0110	1	HTTP - infinite loop detection	TRUE	When an application makes an HTTP request which results in an infinite loop of redirects, including both http: and https: URIs, the terminal terminates the request.
org.hbbtv_HTTP0120	1	HTTP cookies over TLS	TRUE	When an application makes an HTTP request which includes a cookie with the Secure attribute set, and the request results in a non-TLS connection, the cookie is not transmitted.
org.hbbtv_HTTP0130	1	Simultaneous HTTP connections	TRUE	An application has an open HTTP connection for media streaming. When the application makes two additional HTTP requests, and the first request takes a long time to complete, the second request is not delayed.
org.hbbtv_HTTP0140	1	HTTP cookie store	TRUE	A broadcast-related application makes an HTTP request which results in a cookie being stored by the terminal. When a broadcast-independent application makes an HTTP request to a server with the same origin, the cookie is transmitted.
org.hbbtv_INLINE0010	1	Inline images - HTML	TRUE	An HTML document contains an img element, where the src attribute is a data: URL containing Base64 characters and whitespace and represents an image. The image is presented.
org.hbbtv_INLINE0020	1	Inline images - CSS	TRUE	A CSS stylesheet contains a rule applying the background-image property to an element, where the property value is a data: URL containing Base64 characters and whitespace and represents an image. The image is presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_INLINE0030	1	Inline images - URI size limit	TRUE	An HTML document contains an img element, where the src attribute is a data: URL with length 22 000 characters. The image is presented.
org.hbbtv_INLINE0040	1	Inline images - image size limit	TRUE	An HTML document contains an img element, where the src attribute is a data: URL representing an image with size 16 384 bytes. The image is presented.
org.hbbtv_JSON-RPC-WSS0010	1	The JSON-RPC WebSocketServer is available on localhost and is secure	TRUE	An application confirms that only a single <json_rpc_server> element exists in the xmlCapabilities. Then the application confirms that the location of the JSON-RPC WebSocket service endpoint is only available on a potentially trustworthy localhost network binding.
org.hbbtv_JSON-RPC-WSS0020	1	The JSON-RPC WSS endpoint URL is static for the lifetime of an application and also regenerated at terminal startup	TRUE	An application determines the JSON-RPC WSS endpoint location within 5 seconds of starting, then does some other activities for a period of over 30 seconds, and then successfully confirms that the JSON-RPC WSS endpoint location is the same as previously determined. Then the terminal is restarted and the application is run a second time, and the JSON-RPC WSS endpoint shall be different from the previously determined value obtained during the first run.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_JSON-RPC-WSS0110	1	JSON-RPC message batching is prohibited	TRUE	An application connects to the JSON-RPC WSS server and arranges for the required capability negotiations (for the messages to be transmitted later in the test) to be successfully conducted. Then, the application transmits a rapid sequence of 8 (eight) individual (i.e. not batched) conformant and valid JSON-RPC request messages to the terminals JSON-RPC WSS server. Corresponding messages returned from the terminal are inspected to successfully confirm that the responses are not batched.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_JSON-RPC-WSS0120	1	JSON-RPC Notifications are only transmitted if subscribed for	TRUE	An application is connected to the JSON-RPC WSS server and the subscribe and unsubscribe methods have been successfully negotiated using the capability negotiation mechanism. The application has not subscribed for any notifications. When actions are triggered that would cause a notification should it have been subscribed for, the application successfully confirms that no notifications are received within 5 seconds. Then the application subscribes for a notification message of a particular type by sending a conformant and valid message, successfully confirming that the subscribe response message is correctly received and conformant. When the corresponding action that triggers the subscribed notification, the application receives a notification message within 5 seconds. Then the application unsubscribes to the notification message by sending a conformant and valid message, successfully confirming that the unsubscribe response message is correcly received and conformant. When the same action that would trigger the notification occurs, the application successfully confirms that no notifications are received.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_JSON-RPC-WSS0210	1	Malformed JSON-RPC messages produce correct error responses from the terminal	TRUE	An application is connected to the JSON-RPC WSS server and negotiates the capability for the org.hbbtv.subscribe method. Then the application transmits a series of malformed org.hbbtv.subscribe JSON-RPC messages to the terminal and confirms that a valid and correct error response is received within 6 seconds. The following list of malformed org.hbbtv.subscribe JSON-RPC messages must all be correctly responded to as indicated here: (1) An otherwise valid JSON-RPC message (with no trailing whitespace) that is missing that last 5 characters will result in a "Parse error" with error code 32700. (2) The Method property is missing from an otherwise valid JSON-RPC request will result in an "Invalid Request" with error code 32600. (3) The jsonrpc property is missing from an otherwise valid JSON-RPC request will result in an "Invalid Request" with an error code 32600. (4) An invalid method e.g. "abcdefghijklm" is used will result in a "Method not found" with an error code 32601. (5) A message with an incorrect property type will result in an "Invalid params" with an error code 32602.
org.hbbtv_KEYREQCON0010	1	Loss of focus	TRUE	If another feature of the terminal takes any of the mandatory keys away from an HbbTV application then the application loses focus and a blur event is sent to the application's window object to indicate the loss of focus.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_KEYREQCON0020	1	Regaining focus	TRUE	If an HbbTV application that has lost input focus regains it then a focus event is sent to the application's window object and all the mandatory input keys will be available to the application. Remote control is equipped with separate buttons VK_PAUSE and VK_PLAY, VK_PLAY_PAUSE is not required to be supported.
org.hbbtv_KEYREQCON0021	1	Regaining focus (VK_PLAY_PAUSE)	TRUE	If an HbbTV application that has lost input focus regains it then a focus event is sent to the application's window object and all the mandatory input keys will be available to the application.
org.hbbtv_KEYREQCON0100	1	Back button before activation - broadcast-related autostart app	TRUE	When a broadcast-related autostart application starts and requests the back key, the request is granted and the key event is delivered when the key is pressed
org.hbbtv_KEYREQCON0110	1	Back button before activation - b-i app	TRUE	When a broadcast-independent application starts and requests the back key, this request is granted and the key event received when the key is pressed.
org.hbbtv_KEYREQCON0120	1	Back button before activation - broadcast-related present app	TRUE	When an application starts a broadcast-related application signalled as present, and the newly started application requests the BACK key event, this request is granted and the key event received when the key is pressed.
org.hbbtv_KEYREQCON0130	1	Record key before activation - broadcast-related autostart app	TRUE	When a broadcast-related autostart application starts and requests the record key, the request is refused and no key event is delivered if the key is pressed

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_KEYREQCON0140	1	Record key before activation - b-i app	TRUE	When a broadcast-independent application starts and requests the record key, this request is granted and the key event received when the key is pressed.
org.hbbtv_KEYREQCON0150	1	Record key before activation - broadcast-related present app	TRUE	When an application starts a broadcast-related application signalled as present, and the newly started application requests the record key event, this request is granted and the key event received when the key is pressed.
org.hbbtv_KEYREQCON0160	1	Fast forwards and rewind before activation - broadcast-related autostart app	TRUE	When a broadcast-related autostart application starts and requests the fast forwards and fast rewind keys, the request is refused and no key events are delivered if the keys are pressed
org.hbbtv_KEYREQCON0170	1	Fast forwards and rewind before activation - b-i app	TRUE	When a broadcast-independent application starts and requests the fast forwards and fast rewind keys, this request is granted and the key events received when the keys are pressed.
org.hbbtv_KEYREQCON0180	1	Fast forwards and rewind before activation - broadcast-related present app	TRUE	When an application starts a broadcast-related application signalled as present, and the newly started application requests the fast forwards and fast rewind key events, this request is granted and the key events received when the keys concerned are pressed.
org.hbbtv_KEYREQCON0300	1	play, stop, pause keys before activation - broadcast-related autostart app	TRUE	When a broadcast-related autostart application starts and requests the play, stop and pause keys, the request is refused and these key events are not delivered if the keys are pressed
org.hbbtv_KEYREQCON0310	1	play, stop, pause keys before activation - broadcast-independent app	TRUE	When a broadcast-independent application starts and requests the play, stop and pause keys, this request is granted and the key events received when the keys are pressed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_KEYREQCON0320	1	play, stop, pause keys before activation - broadcast-related present app	TRUE	When an application starts a broadcast-related application signalled as present, and the newly started application requests the play, stop and pause key events, this request is granted and the key events received when the keys concerned are pressed.
org.hbbtv_KEYREQCON0330	1	play-pause, stop keys before activation - broadcast-related autostart app	TRUE	When a broadcast-related autostart application starts and requests the play-pause and stop keys, the request is refused and these key events are not delivered if the keys are pressed
org.hbbtv_KEYREQCON0340	1	play-pause, stop keys before activation - broadcast-independent app	TRUE	When a broadcast-independent application starts and requests the play-pause and stop keys, this request is granted and the key events received when the keys are pressed.
org.hbbtv_KEYREQCON0350	1	play-pause, stop keys before activation - broadcast-related present app	TRUE	When an application starts a broadcast-related application signalled as present, and the newly started application requests the play-pause and stop key events, this request is granted and the key events received when the keys concerned are pressed.
org.hbbtv_KEYREQCON0500	1	red key activates an autostart broadcast-related application (+VK_PLAY_PAUSE)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is red, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received. (VK_PLAY_PAUSE)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_KEYREQCON0501	1	red key activates an autostart broadcast-related application (+PVR)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is red, it is activated. If the application then requests to receive the key VK_RECORD that is only available to applications once activated then that request is granted and the key VK_RECORD can be received.
org.hbbtv_KEYREQCON0505	1	red key activates an autostart broadcast-related application (+VK_PAUSE+VK_PLAY)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is red, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received.
org.hbbtv_KEYREQCON0510	1	green key activates an autostart broadcast-related application (+VK_PLAY_PAUSE)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is green, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received. (VK_PLAY_PAUSE)
org.hbbtv_KEYREQCON0511	1	green key activates an autostart broadcast-related application (+PVR)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is GREEN, it is activated. If the application then requests to receive the key VK_RECORD that is only available to applications once activated then that request is granted and the key VK_RECORD can be received.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_KEYREQCON0515	1	green key activates an autostart broadcast-related application (+VK_PAUSE+VK_PLAY)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is green, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received.
org.hbbtv_KEYREQCON0520	1	yellow key activates an autostart broadcast-related application (+VK_PLAY_PAUSE)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is yellow, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received. (VK_PLAY_PAUSE)
org.hbbtv_KEYREQCON0521	1	yellow key activates an autostart broadcast-related application (+PVR)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is yellow, it is activated. If the application then requests to receive the key VK_RECORD that is only available to applications once activated then that request is granted and the key VK_RECORD can be received.
org.hbbtv_KEYREQCON0525	1	yellow key activates an autostart broadcast-related application (+VK_PAUSE+VK_PLAY)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is yellow, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_KEYREQCON0530	1	blue key activates an autostart broadcast-related application (+VK_PLAY_PAUSE)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is blue, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received. (VK_PLAY_PAUSE)
org.hbbtv_KEYREQCON0531	1	blue key activates an autostart broadcast-related application (+PVR)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is blue, it is activated. If the application then requests to receive the key VK_RECORD that is only available to applications once activated then that request is granted and the key VK_RECORD can be received.
org.hbbtv_KEYREQCON0535	1	blue key activates an autostart broadcast-related application (+VK_PAUSE+VK_PLAY)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is blue, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received.
org.hbbtv_KEYREQCON0540	1	up key activates an autostart broadcast-related application	TRUE	When an autostart broadcast-related application starts and the first key event it receives is up, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received. Remote control is equipped with separate buttons VK_PAUSE and VK_PLAY, VK_PLAY_PAUSE is not required to be supported.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_KEYREQCON0541	1	up key activates an autostart broadcast-related application (VK_PLAY_PAUSE)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is up, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received.
org.hbbtv_KEYREQCON0550	1	down key activates an autostart broadcast-related application	TRUE	When an autostart broadcast-related application starts and the first key event it receives is down, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received. Remote control is equipped with separate buttons VK_PAUSE and VK_PLAY, VK_PLAY_PAUSE is not required to be supported.
org.hbbtv_KEYREQCON0551	1	down key activates an autostart broadcast-related application (VK_PLAY_PAUSE)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is down, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received.
org.hbbtv_KEYREQCON0560	1	left key activates an autostart broadcast-related application	TRUE	When an autostart broadcast-related application starts and the first key event it receives is left, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received. Remote control is equipped with separate buttons VK_PAUSE and VK_PLAY, VK_PLAY_PAUSE is not required to be supported.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_KEYREQCON0561	1	left key activates an autostart broadcast-related application (VK_PLAY_PAUSE)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is left, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received.
org.hbbtv_KEYREQCON0570	1	right key activates an autostart broadcast-related application	TRUE	When an autostart broadcast-related application starts and the first key event it receives is right, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received. Remote control is equipped with separate buttons VK_PAUSE and VK_PLAY, VK_PLAY_PAUSE is not required to be supported.
org.hbbtv_KEYREQCON0571	1	right key activates an autostart broadcast-related application (VK_PLAY_PAUSE)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is right, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received.
org.hbbtv_KEYREQCON0580	1	enter key activates an autostart broadcast-related application	TRUE	When an autostart broadcast-related application starts and the first key event it receives is enter, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received. Remote control is equipped with separate buttons VK_PAUSE and VK_PLAY, VK_PLAY_PAUSE is not required to be supported.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_KEYREQCON0581	1	enter key activates an autostart broadcast-related application (VK_PLAY_PAUSE)	TRUE	When an autostart broadcast-related application starts and the first key event it receives is enter, it is activated. If the application then requests to receive the keys that are only available to applications once activated then that request is granted and those keys can be received.
org.hbbtv_KEYREQCON0600	1	Number keys before activation - broadcast-related autostart app	TRUE	When a broadcast-related autostart application starts and requests the number keys, the request is refused and no key events are delivered if the keys are pressed
org.hbbtv_KEYREQCON0610	1	Number keys before activation - b-i app	TRUE	When a broadcast-independent application starts and requests the number keys, this request is granted and the key events received when the keys are pressed.
org.hbbtv_KEYREQCON0620	1	Number keys before activation - broadcast-related present app	TRUE	When an application starts a broadcast-related application signalled as present, and the newly started application requests the number key events, this request is granted and the key events received when the keys concerned are pressed.
org.hbbtv_KEYREQCON1000	1	Key events while application has no focus	TRUE	If all mandatory keys of table 12 are pressed sequentially after an activated application, that requested all mandatory keys from table 12, has lost focus, the terminal does not deliver any key event to the application. Remote control is equipped with separate buttons VK_PAUSE and VK_PLAY, VK_PLAY_PAUSE is not required to be supported.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_KEYREQCON1001	1	Key events while application has no focus (VK_PLAY_PAUSE)	TRUE	If all mandatory keys of table 12 are pressed sequentially after an activated application, that requested all mandatory keys from table 12, has lost focus, the terminal does not deliver any key event to the application.
org.hbbtv_MDEVSYNC0011	1	The master terminal allows multiple CSS-TS connections from the same CSA	TRUE	A HbbTV application has initialised a MediaSynchroniser, enabled inter-device synchronisation causing the terminal to become a master terminal. After a CSA has established a connection of the CSS-TS protocol with the master terminal and the master terminal receives a websocket connection request from the same CSA on the same CSS-TS service end-point, the master terminal will accept such connection request.
org.hbbtv_MDEVSYNC0016	1	Synchronisation timeline requested by CSA is TEMI and becomes available	TRUE	A HbbTV application has initialised a MediaSynchroniser, passed to it a media object representing a DVB broadcast, and enabled inter-device synchronisation causing the terminal to become a master terminal. After a newly connected CSA has requested a MPEG-TS TEMI timeline for synchronisation, but no frame with a TEMI timeline has yet been received by the master terminal since the request from the CSA, and then the master terminal receives, from the DVB broadcast, a frame containing a TEMI timestamp, the master terminal will send out a Control Timestamp whose contentTime property is different from null.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC0017	1	Synchronisation timeline from a DVB service requested by CSA is MPEG-TS PTS timeline that becomes available	TRUE	A HbbTV application has initialised a MediaSynchroniser, passed to it a media object representing one service from a DVB broadcast (consisting of two services) and enabled inter-device synchronisation causing the terminal to become a master terminal. A newly connected CSA has sent a setup-data message with contentIdStem matching that of the other service of the above mentioned DVB broadcast (but not the one represented in the media object) and with timelineSelector indicating a MPEG-TS PTS timeline for synchronisation. After the HBBTV application on the master terminal has instructed the video object to change to the other service contained within the DVB broadcast stream and this timeline becomes available, the master terminal will send out, to the above mentioned CSA, a Control Timestamp whose contentTime propery is different from null.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC0020	1	Synchronisation timeline requested by CSA is DASH p-r and becomes unavailable	TRUE	A HbbTV application has initialised a MediaSynchroniser, passed to it a media object representing a live broadband stream which contains a MPEG DASH service, and enabled inter-device synchronisation causing the terminal to become a master terminal. After a newly connected CSA has requested a DASH p-r timeline for sychronisation, and the periodId specified in the timelineSelector property of the setup-data message sent by the CSA is present in the current MPD at the master terminal, and then the master terminal updates the MPD and the new MPD does not contain anymore the period whose periodId was specified in the setup-data message sent by the CSA, the master terminal will send out a Control Timestamp whose "contentTime" property has value null.
org.hbbtv_MDEVSYNC0029	1	Synchronisation timeline functionality becoming unavailable because the master terminal is no longer presenting Timed Content	TRUE	A HbbTV application has initialised a MediaSynchroniser, and enabled inter-device synchronisation causing the terminal to become a master terminal. When the presentation of timed content stops, then the terminal will close the WebSocket connections, sending a WebSocket Close control frame with status code 1001 to all connected clients (slave terminals and/or CSAs) on the CSS-TS interface

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC0035	1	Master terminal tearing down a CSS-TS session terminated by the CSA	TRUE	A HbbTV application has initialised a MediaSynchroniser, and enabled inter-device synchronisation causing the terminal to become a master terminal. The terminal has two connections of the CSS-TS protocol with two distinct CSAs. After the terminal receives a Close control frame from one of the CSAs, the master terminal will send a Close control frame to the CSA from which it received the first Close control frame, and subsequently it will close the underlying TCP connection with it. The terminal sends none of these messages to the other connection from the other CSA as a result of this and that connection remains open.
org.hbbtv_MDEVSYNC0070	1	The master terminal accepts simultaneous sessions of the CSS-TS protocol until its supported limit	TRUE	A HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. After the terminal has established 9 sessions of the CSS-TS protocol, and then the terminal receives a continuous sequence of new CSS-TS connection requests from a CSA, at least one request will succeed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC0091	1	Master terminal ceasing to be a master due to destruction of the MediaSynchroniser object	TRUE	A HbbTV application has initialised a MediaSynchroniser, enabled inter-device synchronisation causing the terminal to become a master terminal and 3 sessions of the CSS-TS protocol have been established. When this media synchroniser object is destroyed, then the master terminal will send a WebSocket Close control frame with status code 1001 to all connected clients (slave terminals and/or CSAs) on the CSS-TS interface.
org.hbbtv_MDEVSYNC0092	1	Master terminal ceasing to be a master due to replacement of the MediaSynchroniser object	FALSE	A HbbTV application has initialised a MediaSynchroniser, enabled inter-device synchronisation causing the terminal to become a master terminal and 3 sessions of the CSS-TS protocol have been established. When this media synchroniser object is replaced (e.g. by initialising another MediaSynchroniser), then the master terminal will send a WebSocket Close control frame with status code 1001 to all connected clients (slave terminals and/or CSAs) on the CSS-TS interface. The HbbTV application on the terminal then calls removeMediaObject() on the original MediaSynchroniser (that was replaced) to try to remove the media object that it was initialised with. The error event with code '13' will be thrown.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC0100	1	Synchronisation timeline requested by the CSA is PTS and is available	TRUE	A HbbTV application has initialised a MediaSynchroniser, passed to it a media object representing a service from a DVB broadcast (consisting of that one service), and enabled inter-device synchronisation causing the terminal to become a master terminal. When a newly connected CSA requests a MPEG-TS PTS timeline for synchronisation (referring to the same service of the same DVB broadcast), then the master terminal will send out a control timestamp to that CSA.
org.hbbtv_MDEVSYNC0102	1	Synchronisation timeline requested by the CSA is CT and is available	TRUE	A HbbTV application has initialised a MediaSynchroniser, passed to it a media object representing a ISOBMFF service (using ISOBMFF Composition Time - CT - timeline), and enabled inter-device synchronisation causing the terminal to become a master terminal. When a newly connected CSA requests a ISOBMFF CT timeline for synchronisation (referring to the same service the master terminal is presenting), then the master terminal will send out a control timestamp to that CSA.
org.hbbtv_MDEVSYNC0110	1	Timing of the Control Timestamp message sent out by a master terminal	TRUE	A HbbTV application has initialised a MediaSynchroniser, enabled inter-device synchronisation causing the terminal to become a master terminal. When the master terminal receives a setup-data message on the CSS-TS service end point, then the master terminal will send out a Control Timestamp within 500 milliseconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC0130	1	The master terminal handles 2 Actual, Earliest and Latest Presentation timestamps received with 0.5s distance	TRUE	A HbbTV application has initialised a MediaSynchroniser, and enabled inter-device synchronisation causing the terminal to become a master terminal. After the terminal has established a connection with a CSA, received an "Actual, Earliest and latest Presentation timestamp", and after 0.5 seconds another "Actual, Earliest and latest Presentation timestamp" from that CSA, the master terminal will maintain the CSS-TS connections with that CSA
org.hbbtv_MDEVSYNC018	1	Synchronisation timeline requested by CSA is DASH p-r and becomes available	TRUE	A HbbTV application has initialised a MediaSynchroniser, passed to it a media object representing a live broadband stream which contains a MPEG DASH service, and enabled inter-device synchronisation causing the terminal to become a master terminal. After a newly connected CSA has requested a DASH p-r timeline for sychronisation, but the periodId specified in the timelineSelector property of the setup-data message sent by the CSA is not yet present in the current MPD at the master terminal, and then the master terminal updates the MPD and the new MPD contains the period whose periodId was specified in the setup-data message sent by the CSA, the master terminal will send out a Control Timestamp whose "contentTime" property is different from null.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC0201	1	timelineSpeedMultiplier value when playback moving at rate X for a MPEG-TS HD stream)	TRUE	A HbbTV application has initialised a MediaSynchroniser, passed to it a HTML5 media object (MPEG-TS in HD format, video on demand), enabled inter-device synchronisation causing the terminal to become a master terminal. After the playbackRate of the video object being currently displayed on the master terminal has been changed to X, the timelineSpeedMultiplier property of the following Control Timestamp sent out from the master terminal will have value X
org.hbbtv_MDEVSYNC0202	1	timelineSpeedMultiplier value when playback moving at rate X for a MPEG-TS 4K UHD 60fps stream)	TRUE	A HbbTV application has initialised a MediaSynchroniser, passed to it HTML5 media object representing a broadband service (MPEG-TS in 4K UHD 50fps format, video on demand), enabled inter-device synchronisation causing the terminal to become a master terminal. After the playbackRate of the video object being currently displayed on the master terminal has been changed to X, the timelineSpeedMultiplier property of the following Control Timestamp sent out from the master terminal will have value X

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC0203	1	timelineSpeedMultiplier value when playback moving at rate X for a broadcast stream (MPEG2 and HEAAC codecs)	TRUE	A HbbTV application has initialised a MediaSynchroniser (using the initMediaSynchroniser), passed to it a media object consisting of a video/broadcast object with MPEG2 video codec and HEAAC audio codec representing a broadcast service in SD distributed via MPEG-TS and enabled inter-device synchronisation causing the terminal to become a master terminal and that media object to become the master media. After the playSpeed of the master media has been changed to X, the timelineSpeedMultiplier property of the following Control Timestamp sent out from the master terminal will have value X.
org.hbbtv_MDEVSYNC0206	1	timelineSpeedMultiplier value when playback moving at rate X for a broadband DASH HD stream (AVC and HEAAC codecs)	TRUE	A HbbTV application has initialised a MediaSynchroniser (using the initMediaSynchroniser), passed to it a media object consisting of a HTML5 video element with AVC video codec and HE-AAC audio codec representing a video-on-demand service in HD distributed via MPEG DASH and enabled inter-device synchronisation causing the terminal to become a master terminal and that media object to become the master media. After the playSpeed of the master media has been changed to X, the timelineSpeedMultiplier property of the following Control Timestamp sent out from the master terminal will have value X.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC032	1	Master terminal refusing a CSS-TS connection when the CSS-TS service endpoint is unavailable	TRUE	When a HbbTV application has disabled inter-device synchronisation for a master terminal, and the terminal receives a websocket client handshake on its CSS-TS endpoint, it will respond with an HTTP response code of 403 "Forbidden".
org.hbbtv_MDEVSYNC071	1	The master terminal does not accept a number of sessions of the CSS-TS protocol higher than its supported limit	TRUE	A HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. After the terminal has established 9 sessions of the CSS-TS protocol, and then the terminal receives a continuous sequence of 400 new CSS-TS connection requests, these requests will either succeed or fail, and for those that failed the master terminal will refuse the connection and respond with an HTTP response code 503 "Service Unavailable".
org.hbbtv_MDEVSYNC080	1	MSAS ignoring Origin header	TRUE	A HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. When the master terminal receives a websocket connection request with an Origin header, which shall be validly formatted, and contain a URL that is not associated with (or representative of) the master, the client or the applications running on either (or the sources of any of these), from a CSA to connect on the CSS-TS protocol service endpoint, it will accept the connection.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC090	1	Master terminal ceasing to be a master due to call to disableInterDevSync method	TRUE	A HbbTV application has initialised a MediaSynchroniser, enabled inter-device synchronisation causing the terminal to become a master terminal and 3 sessions of the CSS-TS protocol have been established. When the disableInterDevSync method is called on the initialised MediaSynchroniser object, then the master terminal will send a WebSocket Close control frame with status code 1001 to all connected clients (slave terminals and/or CSAs) on the CSS-TS interface.
org.hbbtv_MDEVSYNC1000	1	Master Terminal: Implements CSS-CII endpoint on the broadband interface	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal receives a WebSocket "connection request" message from a CSA on the CSS-CII endpoint on its broadband interface. The master terminal in turn responds to the connection request with a CII message in the form of a WebSocket data frame.
org.hbbtv_MDEVSYNC1002	1	Master Terminal: Supports >5 concurrent connections to CSS-CII service endpoint	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal has 4 open connections on the same CSS-CII protocol service endpoint. When the master terminal receives a request from a CSA to connect on the same CSS-CII protocol service endpoint, it will accept the connection.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1003	1	Master Terminal: Allows connection until limit is reached.	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal has 5 open connections to the same CSS-CII protocol service endpoint. A CSA is set to initiate an additional sequence of 395 connections to the same CSS-CII protocol service point. The CSA starts sending the first connection request in the sequence. Every time a new connection from the CSA is received, the master terminal will accept the new connection until the total number of 400 simultaneous connections is reached, or until its own upper bound limit is reached. For requests that fail, the master terminal refuses the connection and responds with an HTTP response code of 503 "Service Unavailable".
org.hbbtv_MDEVSYNC1004	1	Master Terminal: Ignores Origin header	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. When the master terminal receives a websocket connection request with an Origin header, which shall be validly formatted, and contain a URL that is not associated with (or representative of) the master, the client or the applications running on either (or the sources of any of these), from a CSA to connect on the CSS-CII protocol service endpoint, it will accept the connection.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1007	1	presentationStatus is for master media	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The primary aspect of the presentationStatus sent by the master terminal once a connection to a CSA is made is either 'okay', 'transitioning' or 'fault'
org.hbbtv_MDEVSYNC1009	1	Master Terminal: presentationStatus derived as transitioning for a video/broadcast object in connecting state after channel change	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal receives a WebSocket "connection request" message from a CSA and responds with a CII message via a connection to the CSS-CII service endpoint. The master terminal calls 'nextChannel()' invoking a channel change. This causes the current state of the video/broadcast object presenting the master media to become 'connecting'. The primary aspect of the presentationStatus in the CII message sent by the master terminal to the CSA is 'transitioning'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC101	1	Synchronisation timeline requested by the CSA is TEMI and is available	TRUE	A HbbTV application has initialised a MediaSynchroniser, passed to it a media object presenting a service from a DVB broadcast (consisting of that one service and using MPEG-TS Timed External Media Information - TEMI-timeline), and enabled inter-device synchronisation causing the terminal to become a master terminal. A newly connected CSA requests a MPEG-TS TEMI timeline for synchronisation, referring to the same service of the same DVB broadcast. Within 3 seconds from the receipt of the request from the CSA, the master terminal will send out a control timestamp to that CSA.
org.hbbtv_MDEVSYNC1010	1	Master Terminal: presentationStatus derived as okay for a video/broadcast object in connecting state after a transient error	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal receives a WebSocket "connection request" message from a CSA and responds with a CII message via a connection to the CSS-CII service endpoint. There is a temporary loss of broadcast signal causing a transient error that causes the video/broadcast object presenting the master media to temporarily be in the state 'connecting'. While this is the case, the primary aspect of the presentationStatus sent by the master terminal (via the connection from a CSA to the CSS-CII endpoint) is 'okay'

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1011	1	Master Terminal: presentationStatus derived as okay for a video/broadcast object in presenting state	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal receives a WebSocket "connection request" message from a CSA and responds with a CII message via a connection to the CSS-CII service endpoint. When the current state of the video/broadcast object presenting the master media is 'presenting', then the primary aspect of the presentationStatus in the CII message sent by the master terminal to the CSA is 'okay'.
org.hbbtv_MDEVSYNC1017	1	Master Terminal: presentationStatus derived as transitioning for a HTML5 media element < HAVE_CURRENT_DATA	TRUE	An HbbTV application has successfully initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal receives a WebSocket "connection request" message from a CSA and responds with a CII message via a connection to the CSS-CII service endpoint with primary aspect of presentationStatus as 'okay'. When the application seeks ahead in HTML5 media element to a time index outside what is currently buffered, causing the HTML5 media element to stall and the readyState of the HTML5 media element presenting the master media to become < HAVE_CURRENT_DATA (2), then the next CII message sent by the master terminal to the CSA has the primary aspect of the presentationStatus as 'transitioning'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1018	1	Master Terminal: presentationStatus derived as okay for a HTML5 media element >= HAVE_CURRENT_DATA	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal receives a WebSocket "connection request" message from a CSA and responds with a CII message via a connection to the CSS-CII service endpoint. The readyState of the HTML5 media element presenting the master media (passed as an argument to initMediaSynchroniser) is >= HAVE_CURRENT_DATA (2). The primary aspect of the presentationStatus in the CII message sent by the master terminal to the CSA is 'okay'
org.hbbtv_MDEVSYNC103	1	Synchronisation timeline requested by the CSA is DASH p-r and is available	TRUE	A HbbTV application has initialised a MediaSynchroniser, passed to it a media object representing a DASH service (using DASH p-r timeline), and enabled inter-device synchronisation causing the terminal to become a master terminal. A newly connected CSA requests a DASH p-r timeline for synchronisation, which refers to the same service the master terminal is presenting and whose specified period-id is present in the MPD at the master terminal. Upon receipt of this request from the CSA, the master terminal will send out a control timestamp to that CSA.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1033	1	Master Terminal: CSS-CII: TV Device shall include properties defined in 5.6 of [47] in CSS message first time it is sent	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The first CII message sent by the master terminal once a connection to a CSA is made, which contains a JSON object matching the schema defined in Annex A.1.4 of ETSI TS 103 286-2 [47], has the value of the property protocolVersion set to 1.1 and the primary aspect of the property presentationStatus set to 'okay' or 'transitioning'. The values of the properties contentId, contentIdStatus, tsUrl and wcUrl are set to non-null values.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1036	1	Master Terminal: CSS-CII: TV Device shall send a new CII message if presentationStatus changes - video/broadcast object	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal receives WebSocket "connection request" messages from two CSAs and responds with a CII message via a connection to the same CSS-CII service endpoint. The master terminal calls 'setChannel()' invoking a channel change. This causes the current state of the video/broadcast object presenting the master media to become 'connecting'. The primary aspect of the presentationStatus in the CII message sent by the master terminal to the CSA is 'transitioning'. The master terminal successfully connects to the channel and presents its content. The current state of the video/broadcast object presenting the master media changes to 'presenting'. Then the primary aspect of the presentationStatus in the CII message sent by the master terminal to the CSA changes to 'okay'. The next CII message sent by the master terminal to all connected CSAs is updated to include the new value of presentationStatus property.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1039	1	Master Terminal: CSS-CII: TV Device shall send a new CII message if timeline changes (TEMI)	FALSE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The media object passed to the initMediaSynchroniser is a video/broadcast object presenting an MPEG-TS broadcast. The TEMI timeline signalled in the MPEG TS for the broadcast service being presented has a tick rate of 100 ticks per second. The master terminal receives WebSocket "connection request" messages from two CSAs and responds with a CII message via a connection to the same CSS-CII service endpoint. The timelines property of the CII message sent to the slave when it connected to the CSS-CII endpoint had a tick rate of 100 ticks per second. The master terminal calls 'setChannel()' invoking a channel change to one in which another MPEG Transport Stream is being delivered via broadcast at a tick rate of 50 ticks per second. This causes a change in the timeline property of the next CII message to a tick rate of 50 ticks per second.
org.hbbtv_MDEVSYNC1044	1	Master Terminal: CSS-CII: TV Device shall provide status code in a close frame when closing connection due to a client "going away"	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal closes the connection. The master terminal provides a status code of 1001 to indicate that the reason for a connection closure as "going away" as prescribed in the WebSocket protocol specification (Section 7 of RFC6455 [40]

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1048	1	Master Terminal: CSS-CII: presentationStatus in CII is primary aspect followed by optional extended aspects	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The status of presentation of Timed Content is represented by a primary aspect of the status, which is sent by the master terminal once a connection to a CSA is made, followed by zero or more extended aspects.
org.hbbtv_MDEVSYNC1055	1	Master Terminal: CSS-CII: protocolVersion in CII shall never change	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The media object passed to the initMediaSynchroniser is a video/broadcast object. The master terminal receives a WebSocket "connection request" message from a CSA and responds with a CII message (including a protocolVersion property) via a connection to the CSS-CII service endpoint. The master terminal calls 'nextChannel()' invoking a channel change. The master terminal successfully connects to the channel and presents its content. This causes a CII message to be sent by the master terminal to the CSA with the new value of presentationStatus property. The protocolVersion property, if present in a CII JSON object, has the same value as sent when the connection was established.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1056	1	Master Terminal: CSS-CII: presentationStatus in CII shall never be null	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The presentationStatus property is present in the CII message sent by the master terminal to a CSA, and is set to a non-null value.
org.hbbtv_MDEVSYNC1057	1	Master terminal: timeline information sent in the CII message is correct (MPEG-TS PTS: Presentation Time Stamp)	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal receives a WebSocket "connection request" message from a CSA and responds with a CII message via a connection to the CSS-CII service endpoint. The media object passed as an object to the initMediaSynchroniser is a MPEG Transport Stream delivered via broadcast or a Single program MPEG Transport Stream streamed via broadband. A MPEG Transport Stream PTS is used as the Timeline. The value of the Timeline Selector is 'urn:dvb:css:timeline:pts', the unitsPerTick of the timeline is 1 and the unitsPerSecond is 90,000. The timelines property sent, in the CII message, by the master terminal contains a list in which the first item is a timeline options JSON object which matches the Synchronisation Timeline passed as an argument to initMediaSynchroniser.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1059	1	Master terminal: timeline information sent in the CII message is correct (TEMI)	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. After at least 2.5 seconds from sending a WebSocket "connection request" message to the master terminal, a CII message via the CSS-CII service endpoint is received. The media object passed as an object to the initMediaSynchroniser is a MPEG Transport Stream delivered via broadcast or a Single program MPEG Transport Stream streamed via broadband. The MPEG-TS Timed External Media Information (TEMI) is used as the Timeline. The master terminal searches for the temi_timeline_descriptor in the media. The value of the Timeline Selector is "urn:dvb:css:timeline:temi:<component_tag>:<timeline_id>" where <component_tag> corresponds to the stream of the broadcast service that carries the temi timeline and <timeline_id> corresponds to the timeline id of the temi_timeline_descriptor. The unitsPerTick of the timeline is 1 and the unitsPerSecond is as signalled by the Timeline Tick Rate value carried in the transport stream adaptation layer. The timelines property sent, in the CII message, by the master terminal contains a list in which the first item is a timeline options JSON object which matches the Synchronisation Timeline passed as an argument to initMediaSynchroniser

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1060	1	Master Terminal: timelines provided, listing Media Synchroniser timeline (MPEG DASH : Period relative Timeline)	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal receives a WebSocket "connection request" message from a CSA and responds with a CII message via a connection to the CSS-CII service endpoint. The media object passed as an object to the initMediaSynchroniser is a MPEG DASH streamed via broadband. The MPEG DASH Period Relative Timeline is used as the Timeline. The Media Presentation Description (MPD) has been loaded, the id attribute of all Periods in the presentation is known and the availability of the timeline is determined. The value of the Timeline Selector is "urn:dvb:css:timeline:mpd:period:rel:<ticks-per-second>'. The unitsPerTick of the timeline is 1 and the unitsPerSecond of the timeline is the value of <ticks-per-second>. The timelines property sent, in the CII message, by the master terminal contains a list in which the first item is a timeline options JSON object which matches the Synchronisation Timeline passed as an argument to initMediaSynchroniser

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1061	1	Master Terminal: timelines provided, listing Media Synchroniser timeline (MPEG DASH : Period relative Timeline) with period-id	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. The master terminal receives a WebSocket "connection request" message from a CSA and responds with a CII message via a connection to the CSS-CII service endpoint. The media object passed as an object to the initMediaSynchroniser is a MPEG DASH streamed via broadband. The MPEG DASH Period Relative Timeline is used as the Timeline. The Media Presentation Description (MPD) has been loaded, the id attribute of all Periods in the presentation is known and the availability of the timeline is determined. The value of the Timeline Selector is "urn:dvb:css:timeline:mpd:period:rel:<ticks-persecond>:<period-id>" where <period-id> corresponds to the the value of Period@ID currently in the MPEG DASH Presentation Description (MPD), the unitsPerTick of the timeline is 1 and the unitsPerSecond of the timeline is the value of <ticks-per-second>. The timelines property sent, in the CII message, by the master terminal contains a list in which the first item is a timeline options JSON object which matches the Synchronisation Timeline passed as an argument to initMediaSynchroniser

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1062	1	Master Terminal: presentationStatus derived as transitioning for a video/broadcast object in connecting state after bind	TRUE	An HbbTV application has created a video/broadcast object and transitioned it to the STOPPED state, causing the terminal to cease presenting broadcast. The application calls 'setChannel()' to instruct the terminal to resume presenting a broadcast channel. This causes the video/broadcast object to enter the CONNECTING state. As soon as this happens, the application immediately initialises a MediaSynchroniser with the video/broadcast object; and then as quickly as possible the application enables inter-device synchronisation; and then as quickly as possible after this has happened, the terminal's CSS-CII endpoint is connected to by a CSA. The primary aspect of the presentationStatus in the first CII message received by the CSA shall be either "transitioning" or "okay". After the transition to the CONNECTING state occurs, the subsequent steps are performed as quickly as is reliably possible to maximise the chance of the video/broadcast object still being in the CONNECTING state. The video/broadcast may transition from the CONNECTING state to the PRSENTING state at any point during these steps, but the call to initMediaSynchroniser() and the enabling of inter-device synchronisation and the connection of a CSA to the CSS-CII service endpoint shall all succeed without error.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1500	1	Master Terminal: Wall Clock protocol response message reported measurement precision	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. When receiving a Wall Clock request message on the CSS-WC endpoint, the terminal will respond with a Wall Clock response message where the precision of the transmit_timevalue and receive_timevalue fields is 1ms or better (smaller) as indicated by the precision field being a value less than or equal to -9.
org.hbbtv_MDEVSYNC1501	1	Master Terminal: Wall Clock protocol response message reported max frequency error	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. After having received a Wall Clock request message on the CSS-WC endpoint, the terminal will respond with a Wall Clock response message where the value of the max_freq_error field is less than or equal to 128000.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1504	1	Master Terminal: CSS-WC endpoint can service 25 requests per second	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. When 25 Wall Clock request messages are sent (5 message sent by 5 entities representing individual CSAs or slave terminals) spread evenly over a period of 1 second to a master terminal, a response (consisting of a single message of message type 1 or two messages the first with type 2 and the second with type 3) is sent to each request within 200ms of it being received by the master terminal.
org.hbbtv_MDEVSYNC1514	1	Master Terminal: CSS-WC message nanosecond values within allowed range.	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. Upon receiving a Wall Clock protocol request message, the master terminal will send at least one response message within 200ms. The transmit_timevalue_nanos and receivetimevalue_nanos fields in these response messages have values between 0 and 999 999 999.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1515	1	Master Terminal: CSS-WC message sent by master has correct version	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. The value of the version field is 0 in a Wall Clock protocol message with message_type of 1, 2 or 3 sent by a master terminal in response to receiving a wall clock protocol request message.
org.hbbtv_MDEVSYNC1517	1	Master Terminal: CSS-WC message sent by master has correct message_type	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. 10 Wall Clock protocol message requests are sent to the master terminal. After each request, the master terminal responds with a Wall Clock protocol response message where the value of the message_type field is 1, 2 or 3.
org.hbbtv_MDEVSYNC1519	1	Master Terminal: CSS-WC message sent by master has correct reserved bits	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. The value of the reserved bits are 0 in a Wall Clock protocol message sent by a master terminal in response to receiving a Wall Clock protocol request message.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1521	1	Master Terminal: CSS-WC response includes originate_timevalue from request	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. The value of the originate_timevalue field in a Wall Clock protocol message sent by a master terminal in response to receiving a Wall Clock protocol request message is the same as the value in the request message, where in the request message, the originate_timevalue_nanos sub-field is a value greater than 999 999 999.
org.hbbtv_MDEVSYNC1522	1	Master Terminal: CSS-WC response includes originate_timevalue from request, where nanos field is greater than 999 999 999	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. A Wall Clock protocol request message is received with the originate_timevalue_nanos field containing a value greater than 999 999 999. The Wall Clock protocol response message (type 1 or 2 and 3 as appropriate) sent by a master terminal contains a value of the originate_timevalue field the same as the value of the originate_timevalue field in the request message

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1525	1	Master Terminal: CSS-WC follow-up response has specific fields unchanged.	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. The master terminal sends a Wall Clock protocol response message with message_type 3 after sending a Wall Clock protocol response message with message_type 2, which in turn was sent in response to receiving a Wall Clock protocol request message with message_type 0. The values of the version, precision, reserved, max_freq_error, originate_timevalue and receive_timevalue fields are the same in both response messages.
org.hbbtv_MDEVSYNC1526	1	Master Terminal: CSS-WC response sent in response to correctly formed request	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. When the master terminal receives a Wall Clock protocol request message where the message is 32 bytes and has version field equal to 0 and message_type equal to zero, the master terminal responds by sending back a Wall Clock protocol response message where the message_type is 1 or 2.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1527	1	Master Terminal: CSS-WC follow-up response sent if a message_type 2 response is sent	TRUE	An HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation (using the enableInterDeviceSync() method) causing the terminal to become a master terminal. The master terminal sends a Wall Clock protocol response message with message_type 3 after sending a Wall Clock protocol response message with message_type 2, which in turn was sent in response to receiving a Wall Clock protocol request message with message_type 0.
org.hbbtv_MDEVSYNC1531	1	Master Terminal: CSS-CII mrsUrl derived from DVB broadcast URI_linkage_descriptor	TRUE	An HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser method, passing it the video broadcast object that is presenting a DVB service. The application has also enabled inter device synchronisation causing the terminal to become a master terminal. The DVB service contains a URI_linkage_descriptor with uri_linkage_type of 2. The value of the descriptor is pushed in a CSS-CII message to a client connected to the CSS-CII endpoint within 2*N seconds where N is the period of repetition of the uri_linkage_descriptor in the broadcast transport stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1532	1	Master Terminal: CSS-CII mrsUrl derived from DVB broadcast URI_linkage_descriptor in NIT first loop when applying scoping rules.	TRUE	An HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser method, passing it the video broadcast object that is presenting a DVB service. The application has also enabled inter device synchronisation causing the terminal to become a master terminal. The DVB service contains a URI_linkage_descriptor with uri_linkage_type of 2 in the following descriptor loops that relate to the DVB service being presented by the terminal: NIT first loop. The value of the descriptor is in the NIT first loop is pushed in a CSS-CII message to a client connected to the CSS-CII endpoint within N seconds where N is the period of repetition of that uri_linkage_descriptor in the broadcast transport stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1533	1	Master Terminal: CSS-CII mrsUrl derived from DVB broadcast URI_linkage_descriptor in BAT first loop when applying scoping rules.	TRUE	An HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser method and passing as a parameter the video broadcast object that is presenting a DVB service. The application has also enabled inter device synchronisation causing the terminal to become a master terminal. The DVB service contains a URI_linkage_descriptor with uri_linkage_type of 2 in the following descriptor loops that relate to the DVB service being presented by the terminal: NIT first loop and BAT first loop. It is expected that the value of the descriptor in the BAT first loop is pushed in a CSS-CII message to a client connected to the CSS-CII endpoint within N seconds where N is the period of repetition of that uri_linkage_descriptor in the broadcast transport stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1534	1	Master Terminal: CSS-CII mrsUrl derived from DVB broadcast URI_linkage_descriptor in NIT TS loop when applying scoping rules.	TRUE	An HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser method, passing as a parameter the video broadcast object that is presenting a DVB service. The application has also enabled inter device synchronisation causing the terminal to become a master terminal. The DVB service contains a URI_linkage_descriptor with uri_linkage_type of 2 in the following descriptor loops that relate to the DVB service being presented by the terminal: NIT first loop, BAT first loop and NIT TS loop. It is expected that the value of the descriptor in the NIT TS loop is pushed in a CSS-CII message to a client connected to the CSS-CII endpoint within N seconds where N is the period of repetition of that uri_linkage_descriptor in the broadcast transport stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1535	1	Master Terminal: CSS-CII mrsUrl derived from DVB broadcast URI_linkage_descriptor in BAT TS loop when applying scoping rules.	TRUE	An HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser method, passing as a parameter the video broadcast object that is presenting a DVB service. The application has also enabled inter device synchronisation causing the terminal to become a master terminal. The DVB service contains a URI_linkage_descriptor with uri_linkage_type of 2 in the following descriptor loops that relate to the DVB service being presented by the terminal: NIT first loop, BAT first loop, NIT TS loop and BAT TS loop. It is expected that the value of the descriptor in the BAT TS loop is pushed in a CSS-CII message to a client connected to the CSS-CII endpoint within N seconds where N is the period of repetition of that uri_linkage_descriptor in the broadcast transport stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1536	1	Master Terminal: CSS-CII mrsUrl derived from DVB broadcast URI_linkage_descriptor in SDT when applying scoping rules.	TRUE	An HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser method, passing as a parameter the video broadcast object that is presenting a DVB service. The application has also enabled inter device synchronisation causing the terminal to become a master terminal. The DVB service contains a URI_linkage_descriptor with uri_linkage_type of 2 in the following descriptor loops that relate to the DVB service being presented by the terminal: NIT first loop, BAT first loop, NIT TS loop, BAT TS loop and SDT It is expected that the value of the descriptor in the SDT descriptor loop is pushed in a CSS-CII message to a client connected to the CSS-CII endpoint within N seconds where N is the period of repetition of that uri_linkage_descriptor in the broadcast transport stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1537	1	Master Terminal: CSS-CII mrsUrl derived from DVB broadcast URI_linkage_descriptor in EIT when applying scoping rules.	TRUE	An HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser method, passing as a parameter the video broadcast object that is presenting a DVB service. The application has also enabled inter device synchronisation causing the terminal to become a master terminal. The DVB service contains a URI_linkage_descriptor with uri_linkage_type of 2 in the following descriptor loops that relate to the DVB service being presented by the terminal: NIT first loop, BAT first loop, NIT TS loop, BAT TS loop, SDT and EIT It is expected that the value of the descriptor in the EIT descriptor loop for this is pushed in a CSS-CII message to a client connected to the CSS-CII endpoint within N seconds where N is the period of repetition of that uri_linkage_descriptor in the broadcast transport stream.
org.hbbtv_MDEVSYNC1538	1	Master Terminal: CSS-CII mrsUrl derived from MPD	TRUE	An HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser method, passing a media object presenting a DASH service. The application has also enabled inter device synchronisation causing the terminal to become a master terminal. The MPD for the DASH service contains an mrsUrl element. The value of the mrsUrl element in the MPD is pushed in a CSS-CII message to a client connected to the CSS-CII endpoint.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1539	1	Master Terminal: CSS-CII ci status for broadcast	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The value of a "contentIdStatus" property is "partial" or "final" in a CSS-CII message pushed from the terminal to a client connected to the CSS-CII endpoint.
org.hbbtv_MDEVSYNC1540	1	Master Terminal: CSS-CII ci status during broadcast service change	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The HbbTV application causes the video broadcast object to successfully retune to a different DVB broadcast service on a different multiplex (for which the HbbTV application is also permitted to run). From before the retune begins until after it has completed, the "contentIdStatus" property is either omitted or has the value "partial" or "final" in all CSS-CII message(s) pushed from the terminal to a client connected to the CSS-CII endpoint.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1542	1	Master Terminal: CSS-CII ci status for DASH service is immediately final because CI is known	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting a DASH stream, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The value of a "contentIdStatus" property is "final" in the first CSS-CII message pushed from the terminal to a client that immediately connects to the CSS-CII endpoint after it becomes available.
org.hbbtv_MDEVSYNC1543	1	Master Terminal: CSS-CII ci status for MPEG2 TS progressive download is immediately final because CI is known	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting an MPEG2 TS media stream delivered via broadband, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The value of a "contentIdStatus" property is "final" in the first CSS-CII message pushed from the terminal to a client that immediately connects to the CSS-CII endpoint after it becomes available.
org.hbbtv_MDEVSYNC1544	1	Master Terminal: CSS-CII ci status for ISOBMFF progressive download is immediately final because CI is known	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting an ISOBMFF media stream delivered via broadband, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The value of a "contentIdStatus" property is "final" in the first CSS-CII message pushed from the terminal to a client that immediately connects to the CSS-CII endpoint after it becomes available.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1550	1	Master Terminal: CSS-CII "broadcast" contentId begins "dvb"	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is a URI beginning with the scheme identifier "dvb".
org.hbbtv_MDEVSYNC1551	1	Master Terminal: CSS-CII "broadcast" contentId net path	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is a URI where the portion after the scheme is formatted correctly and corresponds to the DVB service currently being presented by the video broadcast object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1552	1	Master Terminal: CSS-CII "broadcast" contentId event constraint present	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The broadcast service contains EIT p/f actual that signals a "present" event for the service being presented. The event does does not include a TVA_id_descriptor. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal, once the "contentIdStatus" property value is "final", is a string where the event-constraint part is formatted correctly and corresponds to the DVB event currently being signalled as the "present" event for this service in EIT present/following.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1553	1	Master Terminal: CSS-CII "broadcast" contentID event constraint with tva_id	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The broadcast service contains EIT p/f actual that signals a "present" event for the service being presented. The event includes two or more TVA_id descriptors. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal, once the "contentIdStatus" property value is "final", is a string where the event-constraint part is formatted correctly and corresponds to the DVB event currently being signalled as the "present" event for this service in EIT present/following and using only the TVA_id conveyed in the first descriptor present in the event descriptor loop.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1554	1	Master Terminal: CSS-CII "broadcast" contentId with no event constraint	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The broadcast service does not contain EIT p/f actual that signals a "present" event for the service being presented. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal, once the "contentIdStatus" property value is "final", is a string where the event-constraint part is not included.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1555	1	Master Terminal: CSS-CII "broadcast" contentId no query part	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The broadcast service does not feature a TV Anytime CRID for the present event or service. It does not feature a ci_ancillary_data_descriptor in the descriptor loop of the SDT for the present service. It does not feature a ci_ancillary_data_descriptor in the 1st descriptor loop of a BAT corresponding to this service. It does not feature a ci_ancillary_data_descriptor in the 1st descriptor loop of a NIT that applies to this service. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal, once the "contentIdStatus" property value is "final", is a string that does not include a "?" character.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1556	1	Master Terminal: CSS-CII "broadcast" contentId episode CRID	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The broadcast service includes two or more TV Anytime episode CRIDs corresponding to what is currently being presented by the video/broadcast object. The value of the first episode CRID is different to that of the other episode CRIDs. The value of the first episode CRID includes the following characters in it: space (ASCII 32), underscore (ASCII 95), dash (ASCII 45), question mark (ASCII 63), ampersand (ASCII 38), equals (ASCII 61) and double quotemark (ASCII 34) as well as letters and numbers. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal, once the "contentIdStatus" property value is "final", includes a query part after a "?" that includes the key "ep_crid" with the value that is correctly formatted and corresponds to the first episode CRID.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1561	1	Master Terminal: CSS-CII "broadcast" query part key order	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The broadcast service includes a TV Anytime episode CRID corresponding to what is currently being presented. The broadcast service contains EIT p/f actual for the service being presented where the descriptor loop of the present event includes a ci_ancillary_data descriptor. The descriptor loop for the SDT corresponding to the service being presented contains a ci_ancillary_data descriptor. The 1st descriptor loop of the BAT corresponding to the service being presented contains a ci_ancillary_data descriptor. The 1st descriptor loop for the NIT corresponding to the service being presented contains a ci_ancillary_data descriptor. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal, once the "contentIdStatus" property value is "final", includes a query part after a "?" where if any of the following keys are present they are in the order listed here: "ep_crid", "anc_eit", "anc_sdt", "anc_bat", "anc_nit"

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1562	1	Master Terminal: CSS-CII "broadcast" contentId reaches "final" form on init	TRUE	An HbbTV application has created a video broadcast object that is presenting a DVB broadcast service. The application retunes that video broadcast object to a different DVB broadcast service. The application then immediately initialises a MediaSynchroniser, passing the video broadcast object, and then immediately enables inter-device synchronisation causing the terminal to become a master terminal. The value of the "contentIdStatus" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is the value "final" within N seconds of when the video broadcast object was tuned to the current DVB broadcast service where N is the longest repetition period of any of the SI tables in the broadcast: NIT, BAT, SDT, EIT.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1563	1	Master Terminal: CSS-CII "broadcast" contentId reaches "final" form on channel change	FALSE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. When the HbbTV application instructs the video broadcast object to retune to a different DVB service for which the application is still permitted to execute, the value of the "contentIdStatus" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is the value "final" within N seconds of when the tuning of the video broadcast object to a different DVB service completes, where N is the longest repetition period of any of the SI tables in the broadcast: NIT, BAT, SDT, EIT.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1564	1	Master Terminal: CSS-CII "broadcast" contentId updated and still final on SI event change	FALSE	An HbbTV application has initialised a MediaSynchroniser, passing a video broadcast object that is presenting a DVB broadcast service, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The broadcast service contains EIT p/f actual that signals a "present" event for the service being presented and includes a point at which the "present" event changes. The value of the "contentIdStatus" property that is obtained by connecting to the CSS-CII endpoint of the master terminal does not change from "final" when the "contentId" property (obtained from the same source) changes value at a DVB event boundary signalled by a change in EIT p/f actual for the service being presented
org.hbbtv_MDEVSYNC1565	1	Master Terminal: CSS-CII "DASH" contentId is an absolute URL matching the MPD location	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a HTML5 media object that is presenting a DASH stream, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is a URI that matches, up to the point before any fragment separator ('#') the absolute URL from which the MPD for the DASH stream was initially retrieved.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1566	1	Master Terminal: CSS-CII "DASH" contentId fragment part is correctly formatted	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting a DASH presentation, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is a URI with a fragment part (after a '#') that is correctly formatted according to table 5.2.4.1 of TS-103-286-2.
org.hbbtv_MDEVSYNC1567	1	Master Terminal: CSS-CII "DASH" contentId fragment period parameter	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting a DASH presentation, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The MPD for the DASH presentation contains Period@id attributes for all periods in the MPD. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is a URI with a fragment part (after a '#') that includes a period parameter whose value matches the Period ID of the period that is currently presenting, and is updated when playback crosses a period boundary.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1568	1	Master Terminal: CSS-CII "DASH" contentId fragment conveys mpd ancillary data	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting a DASH presentation, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The MPD for the DASH presentation contains a ciAncillaryData element as a child of the MPD element. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is a URI with a fragment part (after a '#') that includes a mpd_ci_ancillary key whose value matches the bytes carried in the ciAncillaryData element of the MPD.
org.hbbtv_MDEVSYNC1569	1	Master Terminal: CSS-CII "DASH" contentId fragment conveys period ancillary data for currently presenting period	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting a DASH presentation, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The MPD for the DASH presentation contains a ciAncillaryData element as a child of a period element corresponding to the period currently being presented. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is a URI with a fragment part (after a '#') that includes a period_ci_ancillary key whose value matches the bytes carried in the ciAncillaryData element of the MPD.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1570	1	Master Terminal: CSS-CII "DASH" contentId fragment does not convey period ancillary data for a period not currently being presented	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting a DASH presentation, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The MPD for the DASH presentation contains a ciAncillaryData element as a child of a period element but this is not the same period as the one that is currently being presented. The MPD does not contain a ciAncillaryData element as a child of the period element corresponding to the period currently being presented. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is a URI with a fragment part (after a '#') that does not include a period_ci_ancillary key.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1571	1	Master Terminal: CSS-CII "DASH" contentId MPD URL does not change when MPD is updated	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting a dynamic DASH presentation, and has enabled inter-device synchronisation causing the terminal to become a master terminal. When the URL provided by the application that points to the MPD is fetched by the terminal, it redirects to another URL. The "contentId" property in the CII message sent by the master terminal via a connection to the CSS-CII service endpoint is a URI whose part before the fragment separator (before a '#') is the initial URL (prior to redirection) that was provided by the application. After the MPD is updated (triggered by DASH event or the @minimumUpdatePeriod attribute) and re-fetched by the terminal, the value of the "contentId" property is still a URI whose part before the fragment separator matches the initial URL provided by the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1580	1	Master Terminal: CSS-CII "ISOBMFF" via broadband contentID	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting an ISOBMFF stream delivered via broadband, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The URL passed by the application as the source from which to obtain the broadband stream is redirected, via an HTTP 3xx redirect response, to a different URL from which the broadband stream is served. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is expected to match the URI provided by the HbbTV application to specify the location of the ISOBMFF media stream (not the different URL that the terminal was redirected to).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1581	1	Master Terminal: CSS-CII "MPEG2TS" via broadband contentID	TRUE	An HbbTV application has initialised a MediaSynchroniser, passing a media object that is presenting an MPEG2 TS stream delivered via broadband, and has enabled inter-device synchronisation causing the terminal to become a master terminal. The URL passed by the application as the source from which to obtain the broadband stream is redirected, via an HTTP 3xx redirect response, to a different URL from which the broadband stream is served. The value of the "contentId" property that is obtained by connecting to the CSS-CII endpoint of the master terminal is expected to match the URI provided by the HbbTV application to specify the location of the MPEG2 TS media stream (not the different URL that the terminal was redirected to).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1780	1	Master Terminal: Control Timestamp within minimum accuracy requirement 10ms in terms of a PTS synchronisation timeline when master media is a broadcast MPEG TS	TRUE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing a video/broadcast object presenting an MPEG-TS broadcast as the master media. The application has enabled inter-device synchronisation, and a connection has been established to the CSS-TS endpoint of the master terminal with where the initial setup-data message sent to the master terminal requested a PTS timeline and the master terminal has sent back a Control Timestamp indicating that the timeline is available. When the timing of presentation indicated by the value of the Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1781	1	Master Terminal: Control Timestamp within minimum accuracy requirement 10ms in terms of a PTS synchronisation timeline when master media is a broadband SPTS	FALSE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing a media object presenting a MPEG-TS single program streamed via broadband as the master media. The application has enabled inter-device synchronisation, and a connection has been established to the CSS-TS endpoint of the master terminal with where the initial setup-data message sent to the master terminal requested a PTS timeline and the master terminal has sent back a Control Timestamp indicating that the timeline is available. When the timing of presentation indicated by the value of the Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1782	1	Master Terminal: Control Timestamp within minimum accuracy requirement 10ms in terms of a CT synchronisation timeline when master media is ISOBMFF	TRUE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing a media object presenting an ISOBMFF (not DASH) media stream streamed via broadband as the master media. The application has enabled inter-device synchronisation, and a connection has been established to the CSS-TS endpoint of the master terminal with where the initial setup-data message sent to the master terminal requested a Composition Time timeline and the master terminal has sent back a Control Timestamp indicating that the timeline is available. The tick rate of the timeline is at least 100 ticks per second or faster, as determined by the timescale element of the movie header box and timescale element of the track header boxes in the ISOBMFF container. When the timing of presentation indicated by the value of the Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1783	1	Master Terminal: Control Timestamp within minimum accuracy requirement 10ms in terms of a TEMI synchronisation timeline when master media is broadcast MPEG TS	FALSE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing a video/broadcast object presenting an MPEG-TS broadcast as the master media. The application has enabled inter-device synchronisation, and a connection has been established to the CSS-TS endpoint of the master terminal with where the initial setup-data message sent to the master terminal requested a TEMI timeline and the master terminal has sent back a Control Timestamp indicating that the timeline is available. There is a TEMI timeline signalled in the MPEG TS for the broadcast service being presented and it has a tick rate of 100 ticks per second or greater. When the timing of presentation indicated by the value of the Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1784	1	Master Terminal: Control Timestamp within minimum accuracy requirement 10ms in terms of a DASH Period Relative synchronisation timeline when master media is MPEG DASH	TRUE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing a media object presenting an MPEG DASH presentation as the master media. The application has enabled inter-device synchronisation, and a connection has been established to the CSS-TS endpoint of the master terminal with where the initial setup-data message sent to the master terminal requested a DASH Period Relative timeline and the master terminal has sent back a Control Timestamp indicating that the timeline is available. The timeline requested has a tick rate of 100 ticks per second or greater and includes the optional field 'period ID' in it. When the timing of presentation indicated by the value of the Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1794	1	Slave Terminal: Presentation timing within accuracy requirement of 10ms for an MPEG DASH stream with DASH Period Relative timeline as other media	TRUE	The application on the terminal has initialised a MediaSynchroniser object using the initSlaveMediaSynchroniser method and has enabled inter-device sync. It has added a media object presenting an MPEG DASH presentation to the MediaSynchroniser with a tolerance specification of 0ms and specifying a DASH Period Relative timeline. The timeline requested has a tick rate of 100 ticks per second or greater. The timeline advertised to the slave terminal in the timelines property of the CII message sent to the slave when it connected to the CSS-CII endpoint had a tick rate of 100 ticks per second or greater. A Control Timestamp has been sent to the slave terminal to specify its presentation timing, via the connection it made using the CSS-TS protocol. When the timing of presentation indicated by the value of the Control Timestamp is compared to the timing of presentation of the media object at the slave terminal as observed by monitoring the light and sound emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current value of the interDeviceSyncDispersion property of the MediaSynchroniser object at the time of the observation.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC180	1	timelineSpeedMultiplier value when playback paused	TRUE	A HbbTV application has initialised a MediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal. When the pause() function is called on the media element of the master content, the timelineSpeedMultiplier property of the following Control Timestamp sent out from the master terminal will have value 0
org.hbbtv_MDEVSYNC1800	1	Effect of contentIdOverride property on CSS-CII when playing DASH	TRUE	An HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser method, passing it a media object that is playing a DASH stream containing at least 2 Periods. The application has set the contentIdOverride property to a string that is different to the URL of the DASH MPD, after which the application then enabled inter-device synchronisation causing the terminal to become a master terminal. When a connection is made to the CSS-CII endpoint of the terminal and CII messages are received, the contentId property in all received messages matches the value of the contentIdOverride property of the MediaSynchroniser object; and the contentIdStatus property in all received messages has the value "final" during at least the first two Periods of the DASH presentation.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC1801	1	Effect of contentIdOverride property on CSS-TS when playing DASH	TRUE	An HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser method, passing it a media object that is playing a DASH stream. The application has set the contentIdOverride property to a string that is different to the URL of the DASH MPD, after which the application then enabled inter-device synchronisation causing the terminal to become a master terminal. When a connection is made to the CSS-TS endpoint of the terminal and a setup-data message is sent with a timeline selector for a DASH-PR timeline that is available for the DASH stream that is playing and with a contentIdStem string that matches the start of the contentIdOverride property string; the Control Timestamp messages received shall indicate that the timeline is available (by having non-null values for all properties in the message). When a connection is made to the CSS-TS endpoint of the terminal and a setup-data message is sent with a timeline selector for a DASH-PR timeline that is available for the DASH stream that is playing and with a contentIdStem string that does not match the start of the contentIdOverride property string but does match the start of the contentId that has been overridden; the Control Timestamp messages received shall indicate that the timeline is not available (by having null values for the 'contentTime' and 'timelineSpeedMultiplier' properties in the message).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC2000	1	Master Terminal: Control Timestamp within minimum accuracy requirement 10ms in terms of a TEMI synchronisation timeline (large TEMI values) when master media is broadcast MPEG TS	TRUE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing a video/broadcast object presenting an MPEG-TS broadcast as the master media. The application has enabled inter-device synchronisation, and a connection has been established to the CSS-TS endpoint of the master terminal with where the initial setup-data message sent to the master terminal requested a TEMI timeline and the master terminal has sent back a Control Timestamp indicating that the timeline is available. There is a TEMI timeline signalled in the MPEG TS for the broadcast service being presented and it has a tick rate of 1000 ticks per second, it is using the 64 bit timestamp format and its current values start from TEMI0=2^52+12345. When the timing of presentation indicated by the value of the Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light and/or sound emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MDEVSYNC4111	1	Master Terminal: Control Timestamp within minimum accuracy requirement 10ms in terms of a PTS synchronisation timeline when master media is a broadcast MPEG TS with large PTS values	TRUE	An application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing a video/broadcast object presenting an MPEG-TS broadcast as the master media that contains PTS which are all larger than 2^32. The application has enabled inter-device synchronisation, and a connection has been established to the CSS-TS endpoint of the master terminal with where the initial setup-data message sent to the master terminal requested a PTS timeline and the master terminal has sent back a Control Timestamp indicating that the timeline is available. When the timing of presentation indicated by the value of the Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light and/or sound emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol)
org.hbbtv_MEDIAPLAYER0010	1	Seek while paused (not played previously) then call play	TRUE	When an application creates an A/V control object, sets the source to some DASH content, goes straight from the stopped state to the paused state, seeks and then plays, the content is played from the point seeked to.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MEDIAPLAYER0020	1	Seek while paused (played previously) then call play	TRUE	When an application creates an A/V control object, sets the source to some DASH content, plays from the start for some time, pauses, seeks and then plays, the content is played from the point seeked to.
org.hbbtv_MEDIAPLAYER0030	1	Seek while stopped - not played previously	TRUE	When an application creates an A/V control object, sets the source to some DASH content, seeks to a point in the content and then plays, the content is played from the point seeked to.
org.hbbtv_MEDIAPLAYER0040	1	Seek while stopped -played previously	TRUE	When an application creates an A/V control object, sets the source to some DASH content, plays the content, stops, seeks to a point in the content and then plays again, the content is played from the point seeked to.
org.hbbtv_MEDIAPLAYER0050	1	Video decoder transfer, MPEG-2 TS to ISOBMFF - different A/V control object	TRUE	When an application creates an A/V control object, plays an MPEG-2 transport stream, stops it, creates a second A/V control object and plays an ISOBMFF file using the second A/V control object, the ISOBMFF file plays.
org.hbbtv_MEDIAPLAYER0060	1	Video decoder transfer, MPEG-2 TS to DASH - different A/V control object	TRUE	When an application creates an A/V control object, plays an MPEG-2 transport stream, stops it, creates a second A/V control object and plays MPEG DASH using the second A/V control object, the MPEG DASH plays.
org.hbbtv_MEDIAPLAYER0070	1	Video decoder transfer, ISOBMFF to MPEG-2 TS - different A/V control object	TRUE	When an application creates an A/V control object, plays an ISO BMFF file, stops it, creates a second A/V control object and plays an MPEG-2 transport stream using the second A/V control object, the MPEG-2 transport stream plays.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MEDIAPLAYER0080	1	Video decoder transfer, ISOBMFF to MPEG-DASH - different A/V control object	TRUE	When an application creates an A/V control object, plays an ISO BMFF file, stops it, creates a second A/V control object and plays some MPEG DASH using the second A/V control object, the MPEG DASH plays.
org.hbbtv_MEDIAPLAYER0090	1	Video decoder transfer, MPEG-DASH to MPEG-2 TS - different A/V control object	TRUE	When an application creates an A/V control object, plays some MPEG DASH, stops it, creates a second A/V control object and plays an MPEG-2 transport stream using the second A/V control object, the MPEG-2 transport stream plays.
org.hbbtv_MEDIAPLAYER0100	1	Video decoder transfer, MPEG-DASH to ISOBMFF- different A/V control object	TRUE	When an application creates an A/V control object, plays some MPEG DASH, stops it, creates a second A/V control object and plays an ISOBMFF file using the second A/V control object, the ISO BMFF file plays.
org.hbbtv_MEDIAPLAYER0110	1	Video decoder transfer, MPEG-2 TS to ISOBMFF - same A/V control object	TRUE	When an application creates an A/V control object, plays an MPEG-2 transport stream, stops it, changes the MIME type to "video/mp4", sets the source to an ISO BMFF file and calls play, the ISOBMFF file plays.
org.hbbtv_MEDIAPLAYER0120	1	Video decoder transfer, MPEG-2 TS to DASH - same A/V control object	TRUE	When an application creates an A/V control object, plays an MPEG-2 transport stream, stops it, sets the source to an MPEG DASH MPD, changes the MIME type to "application/dash+xml" and calls play, the MPEG DASH content plays.
org.hbbtv_MEDIAPLAYER0130	1	Video decoder transfer, ISOBMFF to MPEG-2 TS - same A/V control object	TRUE	When an application creates an A/V control object, plays an ISO BMFF file, stops it, sets the source to an MPEG-2 transport stream, changes the MIME type to "video/mpeg" and calls play, the MPEG-2 transport stream plays.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MEDIAPLAYER0140	1	Video decoder transfer, ISOBMFF to MPEG-DASH - same A/V control object	TRUE	When an application creates an A/V control object, plays an ISO BMFF file, stops it, sets the source to an MPEG DASH MPD, changes the MIME type to "application/dash+xml" and calls play, the MPEG DASH plays.
org.hbbtv_MEDIAPLAYER0150	1	Video decoder transfer, MPEG-DASH to MPEG-2 TS - same A/V control object	TRUE	When an application creates an A/V control object, plays some MPEG DASH, stops it, sets the source to an MPEG-2 transport stream, changes the MIME type to "video/mpeg" and calls play, the MPEG-2 transport stream plays.
org.hbbtv_MEDIAPLAYER0160	1	Video decoder transfer, MPEG-DASH to ISOBMFF- same A/V control object	TRUE	When an application creates an A/V control object, plays some MPEG DASH, stops it, sets the source to an ISOBMFF file, changes the MIME type to "video/mp4" and calls play, the ISO BMFF file plays.
org.hbbtv_MEDIAPLAYER0170	1	No video presented when a newly created A/V control object goes straight to paused - DASH	TRUE	When an application creates an A/V control object, sets the source to some DASH content, calls play(0), waits some time and then calls play(1), no video is displayed in response to the call to play(0) but only after the call to play(1) has been made.
org.hbbtv_MEDIAPLAYER0180	1	No video presented when a newly created A/V control object goes straight to paused - non-adaptive HTTP streaming - ISOBMFF	TRUE	When an application creates an A/V control object, sets the source to an HTTP URL of an ISOBMFF file suitable for non-adaptive HTTP streaming, calls play(0), waits some time and then calls play(1), no video is displayed in response to the call to play(0) but only after the call to play(1) has been made.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MEDIAPLAYER0190	1	No video presented when a newly created A/V control object goes straight to paused - non-adaptive HTTP streaming - MPEG-2 transport stream	TRUE	When an application creates an A/V control object, sets the source to an HTTP URL of an MPEG-2 transport stream file suitable for non-adaptive HTTP streaming, calls play(0), waits some time and then calls play(1), no video is displayed in response to the call to play(0) but only after the call to play(1) has been made.
org.hbbtv_MPEGH-ADAPTATION0010	4	HbbTV ISOBMFF Live profile, MPEG-H Stereo MultiRate, Low to High	TRUE	During HTMLVideoElement playout of a stream defined in a static MPD consisting of a single AdaptationSet in which each Representation has a unique MHASPacketLabel, in response to increased bandwidth availability the terminal shall transition seamlessly from an audio representation with a bitrate of 64kbps to an audio representation with a bitrate of 192kbps, both representations being encoded using MPEG-H.
org.hbbtv_MPEGH-ADAPTATION0020	4	HbbTV ISOBMFF Live profile, MPEG-H Stereo MultiRate, High to Low	TRUE	During HTMLVideoElement playout of a stream defined in a static MPD consisting of a single AdaptationSet in which each Representation has a unique MHASPacketLabel, in response to decreased bandwidth availability the terminal shall transition seamlessly from an audio representation with a bitrate of 192kbps to an audio representation with a bitrate of 64kbps, both representations being encoded using MPEG-H.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-ADINS001	1	HTML5 mid-roll advert insertion, DASH MPEG-H/HEVC and HEAAC/HEVC	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with MPEG-H/HEVC is paused, and preloaded DASH with HE-AAC/HEVC media is played in its entirety, and then the playing of the original DASH media is resumed.
org.hbbtv_MPEGH-ADINS002	1	HTML5 mid-roll advert insertion, DASH MPEG-H/HEVC and MP4 HEAAC/HEVC	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with MPEG-H/HEVC is paused, and preloaded MP4 with HE-AAC/HEVC media is played in its entirety, and then the playing of the DASH media is resumed.
org.hbbtv_MPEGH-ADINS003	1	HTML5 mid-roll advert insertion, DASH MPEG-H/HEVC and HEAAC/AVC_SD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with MPEG-H/HEVC is paused, and preloaded DASH with HE-AAC/AVC_SD_25 media is played in its entirety, and then the playing of the original DASH media is resumed.
org.hbbtv_MPEGH-ADINS004	1	HTML5 mid-roll advert insertion, DASH MPEG-H/HEVC and MP4 HEAAC/AVC_SD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH with MPEG-H/HEVC is paused, and preloaded MP4 with HE-AAC/AVC_SD_25 media is played in its entirety, and then the playing of the original DASH media is resumed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-ADINS005	1	HTML5 mid-roll advert insertion, DASH MPEG-H audio only and HE-AAC audio only	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH MPEG-H audio only is paused, and preloaded DASH with HE-AAC audio only media is played in its entirety, and then the playing of the original DASH media is resumed.
org.hbbtv_MPEGH-BROADBAND0010	1	MP4_HEVC_HD_25_10_MPEGH_EBUTTD broadband capability reported correctly and is presented	TRUE	When an HbbTV application queries the xmlCapabilities a <video_profile name="MP4_HEVC_HD_25_10_MPEGH_EBUTTD" type="video/mp4" transport="dash" sync_tl="dash_pr"/> element is present in the document returned. When play() is called on an HTMLVideoElement referencing an MPD containing HEVC_HD_25_10 video and MPEG-H audio, the video and audio are presented without glitches or decoding artefacts.
org.hbbtv_MPEGH-BROADBAND0020	1	Lack of MPEGH broadband capability reported correctly	TRUE	When an HbbTV application queries the xmlCapabilities, no <video_profile> element with @name attribute containing the sub-string “MPEGH” is present in the document returned.
org.hbbtv_MPEGH-BROADCAST0010	1	MPEG-H broadcast capability reported correctly and A/V is presented	TRUE	When an HbbTV application queries the xmlCapabilities object, a <broadcast>urn:dvb:broadcast:ird:audio:MPEG-H</broadcast> element is present in the document returned. When an MPEG-2 TS containing HEVC_HD_25_10 video and MPEG-H audio is signalled to the terminal, audio and video from that stream are presented without glitches or decoding artefacts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-BROADCAST0020	1	MPEG-H broadcast capability reported correctly	TRUE	When an HbbTV application queries the xmlCapabilities object, a <broadcast>urn:dvb:broadcast:ird:audio:MPEG-H</broadcast> element is not present in the document returned.
org.hbbtv_MPEGH-COMBINATION0010	1	MPEG-H Playback Combinations: DASH / AVC_HD_25	TRUE	When play() is called on an HTMLVideoElement with its 'src' set to the absolute URL of an MPD referencing AVC_HD_25 video and MPEG-H audio, the audio and video are presented without decoding artefacts or glitches.
org.hbbtv_MPEGH-COMBINATION0020	1	MPEG-H Playback Combinations: DASH / HEVC_HD_25_8	TRUE	When play() is called on an HTMLVideoElement with its 'src' set to the absolute URL of an MPD referencing HEVC_HD_25_8 video and MPEG-H audio, the audio and video are presented without decoding artefacts or glitches.
org.hbbtv_MPEGH-COMBINATION0030	1	MPEG-H Playback Combinations: DASH / HEVC_UHD_25 / PQ10	TRUE	When play() is called on an HTMLVideoElement with its 'src' set to the absolute URL of an MPD referencing HEVC_UHD_25 / PQ10 video and MPEG-H audio, the audio and video are presented without decoding artefacts or glitches.
org.hbbtv_MPEGH-COMBINATION0040	1	MPEG-H Playback Combinations: DASH / HEVC_UHD_25 / HLG 10	TRUE	When play() is called on an HTMLVideoElement with its 'src' set to the absolute URL of an MPD referencing HEVC_UHD_25 / HLG10 video and MPEG-H audio, the audio and video are presented without decoding artefacts or glitches.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-COMBINATION0050	1	HTML5 static video element displaying DASH HEVC PQ10 with Temporal Layers with a higher frame rate (HFR) 100fps at Main 10, Level 5.1 and MPEG_H audio content	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object which references a static MPD defining a stream containing MPEG-H audio and DASH HEVC PQ10 with Temporal Layers with a higher frame rate (HFR) 100fps format video content with BT.2020 colour space, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
org.hbbtv_MPEGH-COMPONENTS0010	1	MPEG-H preferred-language audio component selection	TRUE	When the terminal's preferred user language is set to German and an HTMLVideoElement plays an MPD referencing one MP4_HEVC_HD_25_10 video AdaptationSet, one MPEG-H audio AdaptationSet with its @lang attribute set to 'en', and one MPEG-H audio AdaptationSet with its @lang attribute set to 'de', the terminal presents the video and the German language audio AdaptationSet without artefacts or glitches.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-COMPONENTS0020	1	MPEG-H Role-based audio component selection	TRUE	When the terminal has enabled Audio Description and an HTMLVideoElement plays an MPD referencing one MP4_HEVC_HD_25_10 video AdaptationSet, one MPEG-H audio AdaptationSet containing a Role element with its @schemeIdUri set to "urn:mpeg:dash:role:2011" and its @value set to "main", and one MPEG-H audio AdaptationSet containing a Role element with its @schemeIdUri set to "urn:mpeg:dash:role:2011" and its @value set to "alternate" and with an Accessibility element with its @schemeIdUri set to "urn:tva:metadata:cs:AudioPurposeCS:2007" and its @value set to "1", the terminal presents the video and the audio description without artefacts or glitches.
org.hbbtv_MPEGH-DASH-PRESELECTION0010	1	Expose MPEG-H DASH preselection to HTML5 AudioTrack in AudioTrackList	TRUE	A DASH MPD contains multiple MPEG-H Preselection elements, where each MPEG-H Preselection references one individual Adaptation Set contained in the same Period. Additionally, the same Period contains one Adaptation Set that is not referenced by any of the MPEG-H Preselections. The AudioTrackList shall contain one HTML5 AudioTrack for each MPEG-H Preselection and one for the Adaptation Set that is not referenced by any of the MPEG-H Preselections. The order of AudioTracks in the AudioTrackList shall be the same as the order of the corresponding elements in the MPD.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-EME0010	1	Clear Key: HTML5 transition from encrypted DASH MPEG-H/HEVC_HD_25_8 to preloaded unencrypted DASH MPEG-H/HEVC_HD_25_8 media in less than 250ms	TRUE	When a currently playing HTMLMediaElement referencing DASH content with MPEG-H/HEVC_HD_25_8 media encrypted with Clear Key is paused and play is called on a preloaded HTMLMediaElement referencing DASH content with unencrypted MPEG-H/HEVC_HD_25_8 media (beginning with a random access point) in the same spin of the event loop, the terminal shall transition to presenting the second HTMLMediaElement in less than 250ms
org.hbbtv_MPEGH-HTML5-ACTIONS-0010	2	Pause MPEG-H audio HTML5 media element	TRUE	Pausing the playback of a HTML5 media element referencing MPEG_H that is currently playing, shall cause the video to freeze and the audio to suspend.
org.hbbtv_MPEGH-HTML5-ACTIONS-0020	2	Playback of paused MPEG_H audio HTML5 media element from next Random Access Point	TRUE	When resuming the playback of a HTML5 media element referencing MPEG-H that has previously been paused, the terminal shall start audio playback at or before the MPEG-H Random Access Point following the pause position.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-IMMERSIVE0010	1	Playback of immersive (7.1+4H) MPEG-H channel-based, object-based and scene-based audio	TRUE	An HTMLVideoElement is played, referencing a static MPD. The MPD comprises four Periods, each with a duration of 20 seconds and each Period contains an audio AdaptationSet referencing the same MPEH-H audio stream which contains channel-based content, object-based content and scene-based content which uses Higher Order Ambisonics. The AdaptationSet contains a SupplementalProperty element with @schemeIdUri set to "urn:mpeg:dash:preselection:2016"". All Preselection elements within the MPD have @preselectionComponents set to the value of the @id of the AdaptationSet. All AudioChannelConfiguration elements in the MPD have @schemeIdUri set to "urn:mpeg:mpegB:cicp:ChannelConfiguration" and @value set to "19" (7.1 + 4 Height channels). All Role elements have @schemeIdUri set to "urn:mpeg:dash:role:2011". Each period contains a single preselection element with the role "main". The preselection elements each have a different "tag" value indicating that the device should play back different content in each period. During the first period, only the channel-based content shall be played. The second period shall play both the channel-based content and the object-based content. The third period shall play back only the object-based content. The final period shall play back the scene-based content and the object-based content. During each Period, the tester confirms

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-MDEVSYNC1780	1	Master Terminal: Control Timestamp within minimum accuracy requirement 10ms in terms of a PTS synchronization timeline when master media is a broadcast MPEG TS containing MPEG-H/HEVC content	FALSE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing a video/broadcast object presenting an MPEG-TS broadcast containing containing HEVC_HD_25_8 video and MPEG-H audio as the master media. The application has enabled inter-device synchronization, and a connection has been established to the CSS-TS endpoint of the master terminal with which the initial setup-data message sent to the master terminal requested a PTS timeline and the master terminal has sent back a Control Timestamp indicating that the timeline is available. When the timing of presentation indicated by the value of the Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol)

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-MSTRSYNC0010	1	Synchronised presentation of broadcast MP2TS HEVC_HD_25_8 (TEMI) video (master) with DASH MPEG-H (DASH-PR) audio	FALSE	When a MediaSynchroniser is initialised with a video/broadcast object in the presenting state with broadcast MPEG 2 TS HEVC_HD_25_8 video, a TEMI timeline that ticks with 50 ticks per second is selected and located in the adaptation field of TS packets carrying the video elementary stream. Once the DUT has started to present the broadcast video, a call is made to addMediaObject() with an HTML5 Video object referencing DASH MPEG-H audio as its 'mediaObject', a valid DASH-PR 'timelineSpecification' string that ticks with 50 ticks per second and no correlation timestamp or tolerance values specified. When the synchronised presentation is started, and again 2 minutes later, the audio and video are observed to be synchronised to within a margin of plus 50ms to minus 35ms for a period of 15 seconds..

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-MULTISTREAM0010	1	MPEG-H Multiple Representations, Multiple Preselection	TRUE	An HTMLVideoElement referencing a static MPD is played. The MPD comprises three AdaptationSets referencing MPEG-H with @id values of "1", "2" and "3" respectively, one AdaptationSet referencing HEVC_HD_10, and three Preselection elements. The 'main' audio AdaptationSet contains a SupplementalProperty element with @schemeIdUri set to "urn:mpeg:dash:preselection:2016". The other two AdaptationSets have an EssentialProperty element with @schemaIdUri set to "urn:mpeg:dash:preselection:2016". The first Preselection element has @preselectionComponents set to "1", @lang set to "en" and has a Role element with @value set to "main". The second Preselection element has @preselectionComponents set to "1, 2", @lang set to "en", has a Role element with @value set to "commentary" and has an Accessibility element with @value set to "1" ('Audio description for the visually impaired'). The third Preselection element has @preselectionComponents set to "1, 3", @lang set to "de" and has a Role element with @value set to "dub". When the HTMLVideoElement is played, confirm that audio from the AdaptationSets with @id of "1" and @id of "2" are heard.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-NOT-SUPPORTED0010	1	Play an alternative Representation if MPEG-H is not supported.	TRUE	When MPEG-H is not supported and the terminal is presented with an MPD comprising one Adaptation Set signalling profile "urn:dvb:dash:profile:dvb-dash:2017", MPEG-H audio codec and a Role element with @value='main', and a second Adaptation Set signalling profile "urn:dvb:dash:profile:dvb-dash:2014" and AAC audio codec, the terminal shall play the AAC audio.
org.hbbtv_MPEGH-PERIOD-TRANS-0010	1	DASH Stream containing 3 contiguous periods the first AVC_HD_25/HEAAC, the second AVC_HD_25/MPEG-H and the third AVC_HD_25/HEAAC plays and transitions between periods successfully.	TRUE	The terminal shall correctly decode and present video and audio content from a stream defined by a static MPD containing a period containing AVC_HD_25/HEAAC media, followed by a period containing AVC_HD_25/MPEG-H media, followed by a period containing AVC_HD_25/HEAAC media. Video and audio from all three periods is played back without artifacts or glitches and the transitions are successful.
org.hbbtv_MPEGH-PERIOD-TRANS-0020	1	DASH Stream containing 3 contiguous periods the first HEVC_HD_25_8/HEAAC, the second HEVC_HD_25_8/MPEG-H and the third HEVC_HD_25_8/HEAAC plays and transitions between periods successfully.	TRUE	The terminal shall correctly decode and present video and audio content from a stream defined by a static MPD containing a period containing HEVC_HD_25_8/HEAAC media followed by a period containing HEVC_HD_25_8/MPEG-H media, followed by a period containing HEVC_HD_25_8/HEAAC media. Video and audio from all three periods is played back without artifacts or glitches and the transitions are successful.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-PERIOD-TRANS-0030	1	DASH Stream containing 2 contiguous periods, with associated and period-continuous AdaptationSets containing HEVC_HD_25_8/MPEG-H, plays and transitions seamlessly between periods	TRUE	The terminal shall correctly decode and present video and audio content from a stream defined by a static MPD containing two contiguous Periods, where each Period contains HEVC_HD_25_8/MPEG-H media. The two video AdaptationSets share the same @id value. The two audio AdaptationSets share the same @id value. Values for @lang, @contentType, @par, Role, Accessibility, ViewPoint attributes and properties are unchanged for associated AdaptationSets between periods. The audio AdaptationSets also share the same values for @mimeType, @codecs, @audioSamplingRate, @AudioChannelConfiguration attributes. The second Period contains a SupplementalProperty descriptor with the @schemeIdUri attribute set to "urn:dvb:dash:period_continuity:2014" and the @value attribute set to the @id of the first Period. Video and audio from both Periods is played back without artifacts or glitches and the transition is seamless.
org.hbbtv_MPEGH-PLAYBACK0001	1	Playback of Mono MPEG-H audio only HbbTV ISOBMFF Live profile in a HTML5 video object	TRUE	The terminal shall correctly decode and present mono MPEG-H audio from an audio only HbbTV ISOBMFF Live profile DASH MPD when played in a HTML5 video object.
org.hbbtv_MPEGH-PLAYBACK0002	1	Playback of 2.0 MPEG-H audio only HbbTV ISOBMFF Live profile in a HTML5 video object	TRUE	The terminal shall correctly decode and present 2.0 MPEG-H audio from an audio only HbbTV ISOBMFF Live profile DASH MPD when played in a HTML5 video object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-PLAYBACK0003	1	Playback of 5.1 MPEG-H audio only HbbTV ISOBMFF Live profile in a HTML5 video object	TRUE	The terminal shall correctly decode and present 5.1 MPEG-H audio from an audio only HbbTV ISOBMFF Live profile DASH MPD when played in a HTML5 video object.
org.hbbtv_MPEGH-PLAYBACK0004	2	Playback of 7.1 MPEG-H audio only HbbTV ISOBMFF Live profile in a HTML5 video object	TRUE	The terminal shall correctly decode and present 7.1 MPEG-H audio from an audio only HbbTV ISOBMFF Live profile DASH MPD when played in a HTML5 video object.
org.hbbtv_MPEGH-PLAYBACK0005	2	Playback of 2.0 MPEG-H audio only HbbTV ISOBMFF On Demand profile in a HTML5 video object	TRUE	The terminal shall correctly decode and present 2.0 MPEG-H audio from an audio only HbbTV ISOBMFF On Demand profile DASH MPD when played in a HTML5 video object.
org.hbbtv_MPEGH-PLAYBACK0010	2	Playback of 7.1+4H MPEG-H audio only HbbTV ISOBMFF Live profile in a HTML5 video object	TRUE	The terminal shall correctly decode and present 7.1+4H MPEG-H audio from an audio only HbbTV ISOBMFF Live profile DASH MPD when played in a HTML5 video object.
org.hbbtv_MPEGH-PRESELECT0010	1	MPEG-H Preselection of Role "main"	TRUE	When an HTMLVideoElement is played, referencing a static MPD containing MPEG-H audio, and the MPD comprises a single AdaptationSet, a Preselection with Role@value set to "main", a second Preselection with Role@value set to "commentary" and a third Preselection with Role@value set to "supplementary", the terminal shall present the Preselection with Role@value set to "main".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-PRESELECT0020	1	MPEG-H Preselection of translated language	TRUE	When the terminal's preferred language is set to French and an HTMLVideoElement is played, referencing a static MPD containing MPEG-H audio, and the MPD comprises a single AdaptationSet, a Preselection with Role@value set to "main" and @lang set to "en", a second Preselection with Role@value set to "dub" and @lang set to "fr", and a third Preselection with Role@value set to "main" and @lang set to "de", then the terminal shall present the Preselection with @lang set to "fr".
org.hbbtv_MPEGH-PRESELECT0030	1	MPEG-H Preselection of Audio Description	TRUE	When the terminal's audio preference is set to Audio Description and an HTMLVideoElement is played, referencing a static MPD containing MPEG-H audio, and the MPD comprises a single AdaptationSet, a Preselection with Role@value set to "main", a second Preselection with Role@value set to "commentary" and Accessibility@value set to 1 (indicating visually impaired), and a third Preselection with Role@value set to "alternate" and Accessibility@value set to 2 (indicating hard of hearing), where all Preselections signal @lang as "en", then the receiver shall present the second Preselection.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-PRESELECT0031	1	MPEG-H Preselection of Dialogue Enhancement	TRUE	When the terminal's audio preference is set to Hard of Hearing and an HTMLVideoElement is played, referencing a static MPD containing MPEG-H audio, and the MPD comprises a single AdaptationSet, a Preselection with Role@value set to "main", a second Preselection with Role@value set to "commentary" and Accessibility@value set to 1 (indicating visually impaired), and a third Preselection with Role@value set to "alternate" and Accessibility@value set to 2 (indicating hard of hearing), where all Preselections signal @lang as "en", then the receiver shall present the third Preselection.
org.hbbtv_MPEGH-PRESELECT0040	1	MPEG-H Preselection of original language	TRUE	When the terminal's preferred language is set to French and an HTMLVideoElement is played, referencing a static MPD containing MPEG-H audio, and the MPD comprises a single AdaptationSet, a Preselection with @lang set to "en" and Role@value set to "main", a second Preselection with @lang set to "fr" and Role@value set to "main", a third Preselection with @lang set to "en", Role@value set to "commentary" and Accessibility@value set to 1 (indicating visually impaired), and a fourth Preselection with @lang set to "en", Role@value set to "alternate" and Accessibility@value set to 2 (indicating hard of hearing), then the receiver shall present the second Preselection with @lang set to "fr".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-PRESELECT0050	1	MPEG-H Preselection using switch group	TRUE	When the terminal's language preference is set to English and an HTMLVideoElement is played, referencing a static MPD containing MPEG-H audio, and the MPD comprises a single AdaptationSet, a Preselection with Role@value set to "main" referencing an MPEG-H group signalling "complete main" content kind plus an MPEG-H switch group comprising three "dialogue" content kind groups indicating English (marked as default in mae_switchGroupDefaultGroupID), French and German respectively, a second Preselection with Role@value set to "commentary" and Accessibility@value set to 1 (indicating visually impaired), and a third Preselection with Role@value set to "alternate" and Accessibility@value set to 2 (indicating hard of hearing), where all Preselections signal @lang as "en", then the receiver shall select the first Preselection and present the "complete main" audio group plus English language audio from the switch group. No audio in other languages is heard.
org.hbbtv_MPEGH-SEEKACCURACY0010	1	Seek to start of both HEVC_HD_25_8 video and MPEG-H audio media segments in live period	FALSE	An application starts playback of a DASH MPD with HEVC_HD_25_8 video and MPEG-H audio and then seeks to a location that is in a live period and is identifiable from the MPD as being the start of both an audio and a video media segment. The seek is frame accurate. The position reported by the media player API reports the true media position after the seek.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-SEEKACCURACY0020	1	Seek to start of HEVC_HD_25_8 video and MPEG-H audio subsegments in on-demand period	TRUE	An application starts playback of a DASH MPD with HEVC_HD_25_8 video and MPEG-H audio and then seeks to a location that is in a on-demand period and is identifiable from the Segment Index as being the start of a subsegment. The seek is frame accurate. The position reported by the media player API reports the true media position after the seek.
org.hbbtv_MPEGH-SEEKACCURACY0030	1	Seek to other positions in MPEG-H DASH content - live period - nearest position before target	TRUE	An application starts DASH content playback with MPEG-H audio and then seeks forward to a position that is in a live Period but which is not identifiable from the MPD as being the start of a media segment and where the nearest identifiable position as a random access point is before the target position but after the current position. The seek shall be either frame accurate or the seek shall navigate the media position to that nearest position. The position reported by the media player API reports the true media position after the seek.
org.hbbtv_MPEGH-WEBAUDIO0010	1	PCM audio from memory played in combination with broadcasted MPEG-H	TRUE	A broadcast-related HbbTV application that is connected to the broadcast of the current channel loads 16-bit PCM audio via XMLHttpRequest and then plays it through the Web Audio API. The PCM audio is heard and the broadcast video playback is not interrupted. The audio is either mixed with the MPEG-H broadcast audio or temporarily replaces it.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MPEGH-WEBAUDIO0020	1	MP3 Audio from memory mixed with broadcasted MPEG-H	TRUE	A broadcast-related HbbTV application that is connected to the broadcast of the current channel loads MP3 audio via XMLHttpRequest, decodes it via AudioContext.decodeAudioData and then plays it through the Web Audio API. The MP3 audio is heard and the broadcast video playback is not interrupted. The audio is either mixed with the MPEG-H broadcast audio or temporarily replaces it.
org.hbbtv_MSE0010	1	AIT monitoring when playing broadband MSE video and audio	TRUE	Terminal is playing a broadcast MPEG-2 transport stream and a broadcast-related application is running. When the application starts playback of a broadband MSE video and audio, they start presenting successfully. Later the AIT in the broadcast service changes such that the running app is removed from the AIT and a new autostart app is added. The running app is killed and the new autostart app is started.
org.hbbtv_MSE0020	1	DSMCC Stream Event fires while playing MSE video	TRUE	When the terminal is presenting video and audio using MSE within an HbbTV application and it receives a DSM-CC stream event to which the application has subscribed, then the terminal passes the stream event to the application and the video and audio continue to play without interruption.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE0030	1	Carousel access when playing broadband MSE video and audio	TRUE	Terminal is playing a broadcast MPEG-2 transport stream, and a broadcast-related application carried in a DSM-CC object carousel is running. When the application starts playback of a broadband MSE video and audio, they start presenting successfully. When a file in its carousel is updated, the running application is able to access the updated file.
org.hbbtv_MSE0040	1	ProgrammesChanged event generation when playing broadband MSE video and audio	TRUE	Terminal is playing a broadcast MPEG-2 transport stream and a broadcast-related application is running. The application registers to receive ProgrammesChanged events. When the application starts playback of a broadband MSE video and audio, they start presenting successfully. While the broadband delivered video and audio are playing, the DVB-SI event in the broadcast changes and a ProgrammesChanged event is sent to the registered listener.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE0050	1	Video decoder allocated at right time when starting MSE playback (from broadcast) (single-decoder terminals)	TRUE	A broadcast-related HbbTV application is playing A/V from broadcast using a video/broadcast object. The application creates a HTML5 video element for Media Source Extensions (MSE), and audio and video data is preloaded into it without starting playback. Preloading the MSE media element succeeds, and does NOT disturb broadcast A/V playback. The application then stops the broadcast video using the video/broadcast object and, when that action has successfully completed, calls play() on the HTML5 video element. The MSE video and audio starts playing.
org.hbbtv_MSE0070	1	Video decoder not allocated too early when starting MSE playback (from non-DASH broadband video)	TRUE	While playing non-DASH broadband video, an HTML5 Media Source Extensions (MSE) media element is created, and data is preloaded into it without starting playback. Preloading the MSE media element does NOT disturb running A/V playback from HTML5 <video> element playing non-DASH broadband video.
org.hbbtv_MSE0080	1	Video decoder not allocated too early when starting MSE playback (from DASH broadband video)	TRUE	While playing DASH broadband video, an HTML5 Media Source Extensions (MSE) media element is created, and data is preloaded into it without starting playback. Preloading the MSE media element does NOT disturb running A/V playback from HTML5 <video> element playing DASH broadband video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE0090	1	Multi-stream sync: Master is broadcast video and subtitles, slave is MSE audio	TRUE	When the terminal is configured to do multi-stream synchronization, with the master media being MPEG-2 SD video and DVB subtitles (if the terminal supports the +DVBSUB feature) from broadcast (using a TEMI timeline) and the slave media being HE-AAC MSE audio (using audio media element timeline), then the video and audio and (if the terminal supports the +DVBSUB feature) subtitles shall be presented in sync.
org.hbbtv_MSE0100	1	Multi-stream sync: Master is broadcast video, slave is MSE audio, MSE data acquisition stalls	FALSE	When the terminal is configured to do multi-stream synchronization, with the master media being MPEG-2 SD video from broadcast (using a TEMI timeline) and the slave media being HE-AAC MSE audio (using audio media element timeline), then the video and audio shall be presented in sync. When later the MSE audio player is not provided sufficient data, then playback of the video shall continue without glitch and playback of the audio shall cease. When more audio data is provided, the audio playback shall resume, the video playback shall continue without glitch, and the audio shall be in sync with the video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE0150	1	Inter-device sync master: MSE AVC video and audio	TRUE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing AVC MSE video and audio as the master media, and enabled inter-device synchronisation causing the terminal to become a master terminal and a connection has been established to the CSS-TS endpoint of the terminal. Using the analyzeAvNetSync() API check that the data emitted from the terminal is in sync with the terminal's presentation (as light and sound) of the master media.
org.hbbtv_MSE0160	1	Inter-device sync master: MSE HEVC video and audio	TRUE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing HEVC MSE video and audio as the master media, and enabled inter-device synchronisation causing the terminal to become a master terminal and a connection has been established to the CSS-TS endpoint of the terminal. Using the analyzeAvNetSync() API check that the data emitted from the terminal is in sync with the master media.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE0170	1	Inter-device sync master: MSE data acquisition stalls	FALSE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, providing AVC MSE video and audio as the master media, and enabled inter-device synchronisation causing the terminal to become a master terminal and a connection has been established to the CSS-TS endpoint of the terminal. Using the analyzeAvNetSync() API check that the data emitted from the terminal is in sync with the master media. When later the MSE video and audio player is not provided sufficient data, then playback of the video and audio shall cease. When more video and audio are provided, the video and audio playback shall resume, and using the analyzeAvNetSync() API check that the data emitted from the terminal is in sync with the master media.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE0200	1	Multi-stream: Master is broadcast video, slave is MSE audio - The application append to the SourceBuffer when it needs to do so	TRUE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, with the master media being MPEG-2 SD video from broadcast (TEMI timeline) and slave is a MSE DASH audio (using audio media element timeline) with 2 DASH segments. When the first audio DASH segment is playing, the application reads the buffered and currentTime properties of the media element. When the application receives a progress event that the first DASH segment is finished, then it appends a third DASH segment to the SourceBuffer. When the application receives a progress event that the second DASH segment is finished, then it appends a forth DASH segment to the SourceBuffer. The video and audio shall be presented in sync.
org.hbbtv_MSE0210	1	Multi-stream: Master is broadcast video, slave is MSE audio - Seek and sync	FALSE	The application on the terminal has initialised a MediaSynchroniser object using the initMediaSynchroniser method, with the master media being MPEG-2 SD video from broadcast with TEMI timeline (with TEMI discontinuities) and slave is a HE-AAC MSE audio (using audio media element timeline). When the broadcast TEMI timeline jumps (due to TEMI discontinuities), then the audio should seek so that it is presented in sync with the video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE0240	1	MSE video: pause and resume	TRUE	While playing AVC video and HE-AAC audio using MSE, check that the "currentTime" attribute is advancing and that the "paused" attribute returns false. Then, calling the pause() method makes video presentation pause, and makes the "paused" attribute become true, and makes the "currentTime" attribute stop advancing. Then, calling play() resumes presentation of the video where it paused, and makes the "paused" attribute become false, and makes the "currentTime" attribute start advancing again.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE0250	1	MSE video: seek	TRUE	A HbbTV application creates a HTML5 video element and uses the MSE with separate SourceBuffers for audio and video to play AVC video and HE-AAC audio. It sets the "duration" property on the HTML5 video element to 240 seconds. Throughout this test case, the application listens for "timeupdate" events, and obtains media data using XmlHttpRequest as needed and feeds it into the SourceBuffers, to try to ensure there is 20 seconds of data buffered. Once video is playing, the application then sets the "currentTime" attribute to a timestamp that is 60 seconds in the future. The "seeking" property reads as true, and the "currentTime" property reads as the value that was written to it. The "seeking" and "waiting" events are received (in that order) because that data is not available in the buffer. The "seeking" property still reads as true, and the "currentTime" property still reads as the value that was written to it. The application calls abort() on each SourceBuffer, calls the "remove(0, +Infinity)" method on each SourceBuffer to remove the old data and waits for the "updateend" events on each SourceBuffer to indicate the remove() call completed, then feeds in the appropriate media data using "appendBuffer()" calls. The "timeupdate", "seeked", "canplay" and "playing" events are received (in that order). The "seeking" property reads as false. The video from the correct timestamp is shown on the screen. The preceeding steps (from "Once video is playing...") are then repeated with a timestamp that is
org.hbbtv_MSE0260	1	MSE with combined Audio+Video SourceBuffer	TRUE	When using MSE to play AVC video and HE-AAC audio, using a single combined SourceBuffer with 1 audio track and 1 video track, then the video can be seen and the audio can be heard.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE0290	1	MSE changeType() method - Not supported	TRUE	When playing AVC MSE video, then either SourceBuffer.changeType is undefined, or calling the changeType() method to switch to the HEVC codec throws a NotSupportedError.
org.hbbtv_MSE0300	1	MSE changeType() method - Supported	TRUE	When playing AVC MSE video, the changeType() method is called to switch from the AVC codec to the HEVC codec. The video correctly transitions from the AVC encoded video to the HEVC encoded video. (Note that a glitch at the transition is allowed).
org.hbbtv_MSE-LL0010	1	Ad insertion with MSE - mid-roll with 3 video elements, MediaSource HEAAC/AVC_HD_25, DASH HEAAC/AVC_SD_25, DASH HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing a MediaSource with HEAAC/AVC_HD_25 content is paused, and a second media element with preloaded HEAAC/AVC_SD_25 DASH media is played in its entirety, and then a third media element with preloaded HEAAC/AVC_HD_25 DASH content is played.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0020	1	Ad insertion with MSE - mid-roll with 3 video elements, MediaSource HEAAC/AVC_HD_25, MP4 HEAAC/AVC_SD_25, MP4 HEAAC/AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing a MediaSource with HEAAC/AVC_HD_25 content is paused, and a second media element with preloaded HEAAC/AVC_SD_25 MP4 media is played in its entirety, and then a third media element with preloaded HEAAC/AVC_HD_25 MP4 content is played. The transition from the first to the second media element shall take place within 250 milliseconds and the transition between the second and third media element shall take place within 500 milliseconds.
org.hbbtv_MSE-LL0030	1	Ad insertion with MSE - mid-roll advert insertion, MediaSource HEAAC/AVC_HD_25 and MP4 HEAAC/AVC_SD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing a MediaSource with HEAAC/AVC_HD_25 media is paused, and a second media element with preloaded HEAAC/AVC_SD_25 MP4 media is played in its entirety, and then the playing of the MSE media is resumed. The transition from the first to the second media element shall take place within 250 milliseconds and the transition from the second back to the first media element shall take place within 500 milliseconds.
org.hbbtv_MSE-LL0100	1	MSE integration - ISO BMFF - emsg boxes	TRUE	When video and audio are played using MSE and video and audio segments contain an emsg box prior to the moof box, appending the content to the MSE SourceBuffers does not cause any error events and the content is presented without artefacts or glitches.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0110	1	MSE integration - ISO BMFF - CMAF box structure	TRUE	When video and audio are played using MSE and the video and audio segments appended to the MSE SourceBuffers include segments that (a) start with an styp box and a moof box, (b) start with a prft box and a moof box, (c) start with an emsg box and a moof box, (d) start with an styp box, a prft box, an emsg box, and a moof box, appending the content to the MSE SourceBuffers does not cause any error events and the content is presented without artefacts or glitches.
org.hbbtv_MSE-LL0120	1	MSE integration - ISO BMFF - negative composition time offset	TRUE	When A/V being sourced via MSE uses a version 1 trun box for video that includes negative values within the composition time offset field within that box, the terminal shall smoothly play the stream, with the audio and video correctly synchronised.
org.hbbtv_MSE-LL0150	1	MSE integration - ISO BMFF - HFR compatibility	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object referencing MSE and the video SourceBuffer is fed with segments from an HEVC UHD 50Hz video representation formed by taking the base temporal layer from a dual-layer 100Hz video encoding such that there exists within it a temporal layer that a UHD non-HFR decoder can decode, the 50Hz video is played back without artifacts or glitches.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0200	1	MSE integration - throughput - XHR HD	TRUE	When an application retrieves a sequence of VOD video and audio media segments of 960 ms duration using the XMLHttpRequest API from an https endpoint and the video bitrate is at least 11.5 Mbps and the total packaged data rate of audio and video does not exceed 12 Mbps and the segments are then appended to the MSE SourceBuffer following initialisation with an initialisation segment and played using an HTML5 media element whilst the application updates on-screen text and graphics every second, then once the media starts to play, playback continues without rebuffering, the rate of segment data arriving is not less than 12 Mbps and each update of the on-screen text and graphics is visible.
org.hbbtv_MSE-LL0210	1	MSE integration - throughput - Fetch HD	TRUE	When an application retrieves a sequence of VOD video and audio media segments of 960 ms duration using the Fetch API from an https endpoint and the video bitrate is at least 11.5 Mbps and the total packaged data rate of audio and video does not exceed 12 Mbps and the segments are then appended to the MSE SourceBuffer following initialisation with an initialisation segment and played using an HTML5 media element whilst the application updates on-screen text and graphics every second, then once the media starts to play, playback continues without rebuffering, the rate of segment data arriving is not less than 12 Mbps and each update of the on-screen text and graphics is visible.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0220	1	MSE integration - throughput - XHR UHD	TRUE	When an application retrieves a sequence of VOD video and audio media segments of 960 ms duration using the XMLHttpRequest API from an https endpoint and the video bitrate is at least 38 Mbps and the total packaged data rate of audio and video does not exceed 39 Mbps and the segments are then appended to the MSE SourceBuffer following initialisation with an initialisation segment and played using an HTML5 media element whilst the application updates on-screen text and graphics every second, then once the media starts to play, playback continues without rebuffering, the rate of segment data arriving is not less than 39 Mbps and each update of the on-screen text and graphics is visible.
org.hbbtv_MSE-LL0230	1	MSE integration - throughput - Fetch UHD	TRUE	When an application retrieves a sequence of VOD video and audio media segments of 960 ms duration using the Fetch API from an https endpoint and the video bitrate is at least 38 Mbps and the total packaged data rate of audio and video does not exceed 39 Mbps and the segments are then appended to the MSE SourceBuffer following initialisation with an initialisation segment and played using an HTML5 media element whilst the application updates on-screen text and graphics every second, then once the media starts to play, playback continues without rebuffering, the rate of segment data arriving is not less than 39 Mbps and each update of the on-screen text and graphics is visible.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0240	1	MSE integration - throughput - XHR UHD HFR	TRUE	When an application retrieves a sequence of VOD video and audio media segments of 960 ms duration using the XMLHttpRequest API from an https endpoint and the video bitrate is at least 50 Mbps and the total packaged data rate of audio and video does not exceed 51 Mbps and the segments are then appended to the MSE SourceBuffer following initialisation with an initialisation segment and played using an HTML5 media element whilst the application updates on-screen text and graphics every second, then once the media starts to play, playback continues without rebuffering, the rate of segment data arriving is not less than 51 Mbps and each update of the on-screen text and graphics is visible.
org.hbbtv_MSE-LL0250	1	MSE integration - throughput - Fetch UHD HFR	TRUE	When an application retrieves a sequence of VOD video and audio media segments of 960 ms duration using the Fetch API from an https endpoint and the video bitrate is at least 50 Mbps and the total packaged data rate of audio and video does not exceed 51 Mbps and the segments are then appended to the MSE SourceBuffer following initialisation with an initialisation segment and played using an HTML5 media element whilst the application updates on-screen text and graphics every second, then once the media starts to play, playback continues without rebuffering, the rate of segment data arriving is not less than 51 Mbps and each update of the on-screen text and graphics is visible.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0300	1	MSE integration - SourceBuffer size - audio	TRUE	After a sequence of audio segments totaling 2 Mbytes have been appended to an MSE SourceBuffer, the 'buffered' attribute of the SourceBuffer includes a time range that completely covers the time period of audio data appended and when the content is played without further data being appended, the full time period of audio data appended plays.
org.hbbtv_MSE-LL0310	1	MSE integration - SourceBuffer size - HD video	TRUE	After a sequence of audio segments totaling 2 Mbytes have been appended to an MSE SourceBuffer, and a sequence of video segments totaling 24 Mbytes have been appended to a second MSE SourceBuffer, and the audio data represents a duration no shorter than the video, then the 'buffered' attribute of the audio SourceBuffer includes a time range that completely covers the time period of audio data appended and the 'buffered' attribute of the video SourceBuffer includes a time range that completely covers the time period of video data appended and when the content is played without further data being appended, the full time period of video data appended plays, with accompanying audio.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0320	1	MSE integration - SourceBuffer size - UHD video	FALSE	After a sequence of audio segments totaling 2 Mbytes have been appended to an MSE SourceBuffer, and a sequence of video segments totaling 74 Mbytes have been appended to a second MSE SourceBuffer, and the audio data represents a duration no shorter than the video, then the 'buffered' attribute of the audio SourceBuffer includes a time range that completely covers the time period of audio data appended and the 'buffered' attribute of the video SourceBuffer includes a time range that completely covers the time period of video data appended and when the content is played without further data being appended, the full time period of video data appended plays, with accompanying audio.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0330	1	MSE integration - SourceBuffer size - UHD HFR video	FALSE	After a sequence of audio segments totaling 2 Mbytes have been appended to an MSE SourceBuffer, and a sequence of video segments totaling 96 Mbytes have been appended to a second MSE SourceBuffer, and the audio data represents a duration no shorter than the video, then the 'buffered' attribute of the audio SourceBuffer includes a time range that completely covers the time period of audio data appended and the 'buffered' attribute of the video SourceBuffer includes a time range that completely covers the time period of video data appended and when the content is played without further data being appended, the full time period of video data appended plays, with accompanying audio.
org.hbbtv_MSE-LL0400	1	MSE integration - start-up time - initial	TRUE	When an HTML5 video element that is not paused references MSE and valid initialisation segments have been appended to audio and video SourceBuffers, and the media element has not previously decoded any media, then once a sequence of complete video and audio CMAF chunks are appended to the SourceBuffers, starting from a random access point and extending 500ms beyond it, then playback starts within one second of the time when chunks have been appended that extend to 500ms for both video and audio.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0410	1	MSE integration - start-up time - subsequent	TRUE	When an HTML5 video element that is not paused references MSE and valid initialisation segments have been appended to audio and video SourceBuffers, and the media element has previously decoded media from the same stream and no action has occured that would take away decoder resources, then once a sequence of complete video and audio CMAF chunks are appended to the SourceBuffers, starting from a random access point at a new play position and extending 500ms beyond it, then playback starts within 250ms of the time when chunks have been appended that extend to 500ms for both video and audio.
org.hbbtv_MSE-LL0500	1	MSE integration - isTypeSupported is accurate	TRUE	For each audio_profile of type "audio/mp4" or video_profile element of type "video/mp4" that is included in the HbbTV specification, where the terminal lists that profile in the XML capabilities document with transport="dash", the terminal responds true to MediaSource.isTypeSupported for a range of MIME type strings that describe codecs, profiles and levels that are necessary to decode that audio_profile or video_profile and where the terminal either (i) does not list that profile in the XML capabilities document at all or (ii) lists that profile in the XML capabilities document but not with transport="dash", the terminal responds false to MediaSource.isTypeSupported for the MIME type string that describes the most demanding codec, profile and level that the profile would require.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0600	1	MSE integration - MPEG-H Preselection selection	TRUE	When MPEG-H audio that includes multiple preselections is written to an MSE SourceBuffer and played using an HTML5 video element, and exactly one of the preselections that is not the first matches the terminal user preferences for language and audio description, then the matching preselection is heard.
org.hbbtv_MSE-LL0610	1	MSE integration - AC4 Preselection selection	TRUE	When AC4 audio that includes multiple preselections is written to an MSE SourceBuffer and played using an HTML5 video element, and exactly one of the preselections that is not the first matches the terminal user preferences for language and audio description, then the matching preselection is heard.
org.hbbtv_MSE-LL0700	1	MSE integration - EME ClearKey	TRUE	An application sets a video element to reference MSE and encrypted content is appended to a SourceBuffer such that it can be decrypted using the Clear Key system and then the application calls the play method. In the callback of the 'message' event, the application is asked for the key to decrypt the content and after providing the correct key to the update method, the content is successfully decrypted and presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0810	1	MSE integration - seek to a point other than a RAP - seek time with less than 40% non reference frames	TRUE	For a 704x396 50Hz video track encoded using H.264/AVC High Profile Level 4.0, when video and AAC audio are playing and a portion of the tracks away from the current playback position starting from a random access point to at least 2.9 seconds beyond it have been written to MSE SourceBuffers, and the region of the video track from the random access point to 2.4 seconds beyond it contains less than 40% non-reference frames, then a seek to a position 2.4 seconds beyond the random access point completes within 1 450 ms with video playing smoothly starting at the seek point and with accompanying audio.
org.hbbtv_MSE-LL0820	1	MSE integration - seek to a point other than a RAP - seek time with over 40% non reference frames	TRUE	For a 704x396 50Hz video track encoded using H.264/AVC High Profile Level 4.0, when video and AAC audio are playing and a portion of the tracks away from the current playback position starting from a random access point to at least 2.9 seconds beyond it have been written to MSE SourceBuffers, and the region of the video track from the random access point to 2.4 seconds beyond it contains more than 40% non-reference frames, then a seek to a position 2.4 seconds beyond the random access point completes within 977 ms with video playing smoothly starting at the seek point and with accompanying audio.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSE-LL0900	1	Capability discovery - audio output - stereo only	TRUE	The terminal XML capabilities document either does not contain an audio_system element or it contains an audio_system element with audio_output_format="stereo" or audio_output_format="multichannel-preferred".
org.hbbtv_MSE-LL0910	1	Capability discovery - audio output - multichannel	TRUE	The terminal XML capabilities document contains an audio_system element with audio_output_format="multichannel".
org.hbbtv_MSE-LL0920	1	Capability discovery - variable speed playback	TRUE	If the terminal XML capabilities document contains an html5_media_variable_rate element, then when any content is played using an HTML5 media element, when playbackRate is changed in turn to the three values min, (min+max)/2 and max, where min and max are the values of the corresponding attributes from the html5_media_variable_rate element, then in each case the media timeline advances at a rate that is within +/- 5% of the requested rate and the audio plays at the original pitch.
org.hbbtv_MSE-LL1000	1	System performance	TRUE	When an application incorporates an unmodified release of dash.js that supports low latency playback, and the player is requested to present a valid DVB DASH low latency stream in low latency mode, the content plays.
org.hbbtv_MSR09010	1	"application/oipfSearchManager" implements API functions: "createSearch", "getChannelConfig".	TRUE	"application/oipfSearchManager" object implements API functions: "createSearch", "getChannelConfig".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSR09020	1	Calling the getChannelConfig function on "application/oipfSearchManager" and "video/broadcast" embedded objects return identical objects.	TRUE	Content of ChannelConfig objects returned by getChannelConfig function of "application/oipfSearchManager" and "video/broadcast" are compared. All properties, especially channels in channelList shall be identical. All included channel parameters: channelType, ccid, dsd, onid, tsid, sid and name are considered.
org.hbbtv_MSR09030	3	Function "createSearch(1)" of "application/oipfSearchManager" embedded object returns MetadataSearch type object.	TRUE	Function "createSearch(1)" of "application/oipfSearchManager" embedded object returns object which implements MetadataSearch class API methods: createQuery, setQuery, addChannelConstraint and findProgrammesFromStream, properties: searchTarget=1 and result.
org.hbbtv_MSR09060	1	onMetadataSearch callback shall be called with correct parameters.	TRUE	After calling getResults() method of application/oipfSearchManager object the onMetadataSearch callback shall be run with two parameters: first "MetadataSearch" type object, second Integer. MetadataSearch object contains following properties: searchTarget, result, setQuery, addChannelConstraint, createQuery and findProgrammesFromStream.
org.hbbtv_MSR09061	1	onMetadataSearch callback shall be called asynchronously.	TRUE	After calling getResults() method of application/oipfSearchManager object, the onMetadataSearch callback shall be run asynchronously.
org.hbbtv_MSR09062	1	When search is finished, onMetadataSearch callback with argument state=0 is called.	TRUE	When search is finished, onMetadataSearch(state=0,...) callback shall be run.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSR09064	1	When search is finished, the state argument of event object send to MetadataSearch listener is equal 0.	TRUE	The MetadataSearch Event interface object sent to the listener after terminal finishes search shall contain the property state equal to 0.
org.hbbtv_MSR09065	1	DOM2 'MetadataSearch' listener shall be called with correct event parameter.	TRUE	After calling the getResults method of the application/oipfSearchManager object, the DOM2 'MetadataSearch' event listener shall be called. The Event interface object sent to the listener shall contain properties: 'bubbles' equal 'false', 'cancelable' equal 'false', number 'state' and 'search' - an instance of the MetadataSearch class containing following properties and methods: 'searchTarget', 'result', 'setQuery', 'addChannelConstraint', 'createQuery' and 'findProgrammesFromStream'.
org.hbbtv_MSR09066	1	DOM2 'MetadataSearch' listener shall be dispatched asynchronously.	TRUE	After call of getResults method of the application/oipfSearchManager object the DOM2 event listener method shall be dispatched asynchronously.
org.hbbtv_MSR09067	1	MetadataSearch results are based on the updated metadata, if EIT table changes.	TRUE	After performing a search, if the EIT table changes, getResults() shall eventually get results based on the updated metadata.
org.hbbtv_MSR09068	1	Update of metadata due to EIT table changes shall not affect on the data exposed via the SearchResult.item() of MetadataSearch.	TRUE	After search performing, if EIT table is updated, objects returned by SearchResult.item() shall not change.
org.hbbtv_MSR09080	1	"SearchResults" type object implements API functions: "item", "getResults", "abort".	TRUE	"SearchResults" type object implements API functions: "item", "getResults", "abort".
org.hbbtv_MSR09081	1	Array notation of SearchResults.	TRUE	Access to i-th element of currently available results shall be realized by 'result[i]', where i = 0, 1, ..., result.length - 1.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSR09090	1	"offset" argument of getResults(offset,....) shift result set.	TRUE	The result collection retrieved by call of getResults(offset,...) method shall be correctly shifted by value of offset parameter.
org.hbbtv_MSR09091	1	Subsequent calls of getResults() method retrieves specified subset of items.	TRUE	When getResults() is called with its 'offset' and 'count' parameters specified to fetch a subset of programmes within the expected results, and is then called again to fetch the rest of the programmes after the subset in the previous search; both calls to getResults() shall retrieve the expected results.
org.hbbtv_MSR09092	1	'offset' parameter of result property.	TRUE	After each call of getResults(offset,...), the 'offset' parameter of the result property shall be set correctly.
org.hbbtv_MSR09093	1	'totalSize' parameter is not altered after subsequent calls of getResults().	TRUE	When getResults(offset, count) is called subsequently, the totalSize parameter of the result property shall stay unchanged.
org.hbbtv_MSR09100	1	Result property of MetadataSearch class shall be empty until getResults() is used.	TRUE	result property, until "getResults()" is used, shall have: length = 0, totalSize = 0. Call item() shall return undefined.
org.hbbtv_MSR09130	1	Value of "totalSize" property of "SearchResults" type object is equal to number of results found by MetadataSearch.	TRUE	When the getResults() method has been called, specifying a sub-set of the expected results; the 'totalSize' property of the resulting SearchResults object shall be equal to the total number of programmes matching the query.
org.hbbtv_MSR09210	3	Terminal correctly implements comparison type '0' in Metadata APIs for "Programme.name" parameter.	TRUE	MetadataSearch queries launched for compare field: 'Programme.name' with comparison type=0 (True if the specified value is equal to the value of the specified field) shall return correct set of programmes.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSR092101	3	Terminal correctly implements comparison type '0' in Metadata APIs for "Programme.startTime" parameter.	TRUE	MetadataSearch queries launched for compare field: 'Programme.startTime' with comparison type=0 (True if the specified value is equal to the value of the specified field) shall return correct set of programmes.
org.hbbtv_MSR092102	3	Terminal correctly implements comparison type '0' in Metadata APIs for "Programme.programmeID" parameter.	TRUE	MetadataSearch queries launched for compare field: 'Programme.programmeID' with comparison type=0 (True if the specified value is equal to the value of the specified field) shall return correct set of programmes.
org.hbbtv_MSR09211	3	Terminal correctly implements comparison type '1' in Metadata APIs for "Programme.name" parameter.	TRUE	MetadataSearch queries launched for compare field 'Programme.name', with comparison type=1 (True if the specified value is not equal to the value of the specified field) shall return correct set of programmes.
org.hbbtv_MSR092111	1	Terminal correctly implements comparison type '1' in Metadata APIs for "Programme.startTime" parameter.	TRUE	MetadataSearch queries launched for compare field 'Programme.startTime' with comparison type=1 (True if the specified value is not equal to the value of the specified field) shall return correct set of programmes.
org.hbbtv_MSR092112	1	Terminal correctly implements comparison type '1' in Metadata APIs for "Programme.programmeID" parameter.	TRUE	MetadataSearch queries launched for compare field 'Programme.programmeID' with comparison type=1 (True if the specified value is not equal to the value of the specified field) shall return correct set of programmes.
org.hbbtv_MSR09216	3	Terminal correctly implements comparison type '6' for compare field 'Programme.name' in Metadata APIs.	TRUE	MetadataSearch queries launched for compare field: 'Programme.name' with comparison type=6 (True if the string value of the specified field contains the specified value) shall return correct set of programmes.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSR092162	1	Comparison type '6' for compare field: 'Programme.name' shall be case-insensitive.	TRUE	MetadataSearch queries launched for compare field: 'Programme.name', with comparison type=6 (True if the string value of the specified field contains the specified value) shall be case-insensitive.
org.hbbtv_MSR09217	1	setQuery - remove existing query.	TRUE	If a search is performed on a MetadataSearch object using a Query object (Query A), and while the MetadataSearch object is in the 'found' state a 2nd search is performed using a new Query object (Query B) that matches different programmes and a sub-set of the programmes matched by Query A. The terminal shall only retrieve programmes that match Query B and Query A shall not affect the results.
org.hbbtv_MSR09240	1	Search manager shall be able to perform two independent searches.	TRUE	When two queries that match 2 distinct sets of results are assigned to two MetadataSearch objects using the setQuery() method, and results are obtained for each in turn; the SearchResult object associated with each MetadataSearch object shall contain the expected results.
org.hbbtv_MSR09241	1	Two independent searches with different channel constraints.	TRUE	Two MetadataSearch objects are instantiated, each object is given different channel constraints that will give two distinct sets of results with the following Query objects: Both Query objects are created using the createQuery() method of their respective MetadataSearch objects, and in each case, createQuery() is given identical parameters; after the search is performed the SearchResult object associated with each MetadataSearch object shall contain the expected results.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSR09242	1	Channel constraints shall be removed on given search object only.	TRUE	Two MetadataSearch objects are instantiated, each object is given the same channel constraints that will affect the expected results matched by the following Query objects: Both Query objects are created using the createQuery() method of the two MetadataSearch objects, and in each case, createQuery() is given identical parameters. When the channel constraints are removed from one of the MetadataSearch objects and the search is performed on each MetadataSearch object in turn, the SearchResult object associated with each MetadataSearch object shall contain the expected results.
org.hbbtv_MSR09243	1	Two independent "findProgrammesFromStream()" searches.	TRUE	When 2 MetadataSearch objects are instantiated, and findProgrammesFromStream() is called on each with different parameters specified that will return different sets of results; when the search is performed on each in turn, the SearchResult object associated with each MetadataSearch object shall contain the expected results.
org.hbbtv_MSR09250	3	Subsequent calls to addChannelConstraint SHALL add the specified channel to the list of channels from which results should be returned in Metadata API.	TRUE	Two calls of addChannelConstraint(Channel) for different channels shall limit search results to programmes on those channels.
org.hbbtv_MSR09260	1	findProgrammesFromStream(currentChannel, startTime,...) of Metadata API shall retrieve programme showing at the startTime on current channel.	TRUE	findProgrammesFromStream(currentChannel, startTime,...) shall retrieve programme, which starts before startTime and is showing at the startTime.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSR09262	1	findProgrammesFromStream() removes channel constraints.	TRUE	When calling findProgrammesFromStream() on the MetadataSearch object, the existing channel constraints shall be removed.
org.hbbtv_MSR09263	1	findProgrammesFromStream(Channel, startTime,...) of Metadata API shall retrieve programme showing at the startTime from given (not current) Channel.	TRUE	findProgrammesFromStream (Channel, startTime,...) shall retrieve programme, which starts before startTime and is showing at the startTime. Channel parameter does not refer to the currentChannel.
org.hbbtv_MSR09270	3	The "and()" method of query object performs the logical AND operation on queries.	TRUE	The MetadataSearch object shall be able to combine two queries using AND boolean logic when the and() method is called on a Query object, specifying a second Query object as its argument.
org.hbbtv_MSR09280	3	The "or()" method of query object performes the logical OR operation on queries.	TRUE	The MetadataSearch object shall be able to combine two queries using OR boolean logic when the or() method is called on a Query object, specifiying a second Query object as its argument.
org.hbbtv_MSR09290	3	The "not" method of query object creates a query based on the logical NOT operation.	TRUE	The logical NOT operation on query shall be realized by "not()" method of given Query type object.
org.hbbtv_MSR09295	1	Complex queries using the Metadata API "not" "and" and "or" method of query object are supported.	TRUE	A complex query using the and(), or() and not() methods available on the Query object can be created and when set to the MetadataSearch object, shall produce the expected results.
org.hbbtv_MSR09300	1	All search results of MetadataSearch type object shall be returned ordered first by channel, in the same order as presented to applications through a ChannelList object, then by start time in ascending order.	TRUE	All search results of MetadataSearch type object shall be returned ordered first by channel, in the same order as presented to applications through a ChannelList object, then by start time in ascending order.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSR09310	3	Metadata APIs channel constraint is removed by addChannelConstraint(null) call.	TRUE	addChannelConstraint(null) shall remove constraint set by call addChannelConstraint(Channel).
org.hbbtv_MSR09510	1	MetadataSearch: Idle state after channel constraint adding.	TRUE	When constraints are added; the 'length' and totalSize parameters of the SearchResults object shall be equal to 0; calling item() with the 'index' parameter specified as 0 shall return undefined, the 0th element of SearchResults array shall be undefined.
org.hbbtv_MSR09511	1	MetadataSearch: Idle state after channel constraint removing.	TRUE	When constraints are removed; the 'length' and totalSize parameters of the SearchResults object shall be equal to 0; calling item() with the 'index' parameter specified as 0 shall return undefined, the 0th element of SearchResults array shall be undefined.
org.hbbtv_MSR09530	1	getResults(.., count): results limited to count.	TRUE	Achieved length of search results collection shall be equal to the 'count' parameter of the getResults(..., count) method. The total number of programmes which matches to the query is greater than the count value.
org.hbbtv_MSTRSYNC0010	1	MSTRSYNC deactivate broadcast audio in favor of broadband audio	TRUE	When an application uses multi-stream sync with a broadcast service and a broadband stream where each stream has one audio and the application has unselected the broadcast audio before starting the multistream sync, the terminal shall not present the broadcast audio but it shall present the broadband audio after the synched presentation started.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC0020	1	MSTRSYNC deactivate broadcast subtitles in favor of broadband subtitles	FALSE	When an application uses multi-stream sync with a broadcast service and a broadband stream where each stream has a subtitle track and the application has unselected the broadcast subtitle track and it has selected the broadband subtitle track, the terminal shall not present the broadcast subtitle but it shall present the broadband subtitles after the synched presentation started
org.hbbtv_MSTRSYNC0100	1	MSTRSYNC of BC-TS/TEMI V with DASH A - no tolerance, no correlation timestamps needed	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 50 ticks per second and is located in the adaption header of TS packets carrying the video elementary stream. After that an HTML5 media element associated with a DASH stream containing audio is added specifying no correlation timestamp and no tolerance value. The broadcast service shall be an SD service and have a video component using AVC encoding. The DASH media presentation shall have an audio component with AAC encoding using the High Efficiency Profile. After the terminal has started to present the broadcast video and an audio component it is requested to present the audio component of the broadband stream if that is not already the case. After the synchronised presentation started and again 2 minutes later, the audio and video are observed to be synchronised to within a margin of plus 50ms to minus 35ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC0110	1	MSTRSYNC of BC-TS/TEMI V with DASH A and oob EBUTTD ST - no tolerance, no correlation timestamps needed	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 50 ticks per second and is located in the adaptation header of TS packets carrying a separate PES component with no PES payload. After that an HTML5 media element associated with a DASH stream containing audio and EBU-TT-D subtitle, are added specifying no correlation timestamp and no tolerance value. The timeline specified, when the media object presenting the DASH stream is added, ticks at 50 ticks per second. The broadcast service shall be an HD service and have a video component using AVC 720p50 encoding. The DASH media presentation shall have an audio component with AAC encoding using the Low Complexity Profile. After the terminal has started to present the broadcast video, an audio component and the subtitles, it is requested to present the audio component of the broadband stream and the EBU-TT-D subtitles if that is not already the case. After the synchronised presentation started and again 2 minutes later, the presented broadcast component is observed to be synchronised to the presented broadband audio component within a margin of plus 50ms to minus 35ms and to the presented broadband subtitle component within a margin of plus 900ms to minus 500ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC0115	1	MSTRSYNC of BC-TS/TEMI A/V with oob EBUTTD ST - no tolerance, no correlation timestamps needed	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 25 ticks per second and is located in the adaption header of TS packets carrying a separate PES component with no PES payload. After HTML5 media object for a DASH stream with EBU-TT-D document as an out of band text track is added specifying no correlation timestamp and no tolerance value. The broadcast service shall be an SD service and have a video component using MPEG2 video encoding and MPEG1 Layer 2 audio coding. The DASH service shall have a single HEAAC audio component. After the terminal has setup media synchronisation with the DASH stream, the app makes sure audio from broadcast and the OOB subtitles are presented. After the synchronised presentation started and again 2 minutes later, subtitles are observed to be synchronised with the broadcast service to within a margin of plus 900ms to minus 500ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC0120	1	MSTRSYNC of BC-TS/TEMI A/V with DASH ST - no tolerance, no correlation timestamps needed	FALSE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 50 ticks per second and is located in the adaption header of TS packets carrying the audio elementary stream. After that HTML5 media object associated with an MPEG DASH stream containing EBU-TT-D subtitles is added specifying no correlation timestamp and no tolerance value. The timeline specified, when the media object presenting the DASH stream is added, ticks at 50 ticks per second. The broadcast service shall be an HD service and have a video component using AVC 1080i25 encoding and an audio component using AAC encoding with the Low Complexity profile. After the terminal has started to present the broadcast video, an audio component and subtitles, it is requested to present the audio component of the broadcast stream and the DASH EBU-TT-D subtitles if that is not already the case. After the synchronised presentation started and again 2 minutes later, the presented video and subtitle components are observed to be synchronised to within a margin of plus 900ms to minus 500ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC0130	1	MSTRSYNC of BC-TS/TEMI V/ST with DASH A - no tolerance, no correlation timestamps needed	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state of a DVB service including at least video and DVB subtitles as the master media using and selecting a TEMI timeline that ticks with 50 ticks per second and is located in the adaption header of TS packets carrying a separate PES component with no PES payload. After that an HTML5 media element (audio tag) associated with an MPEG DASH stream containing AAC audio is added specifying no correlation timestamp and no tolerance value. The timeline specified, when the media object presenting the DASH stream is added, ticks at 50 ticks per second. The broadcast service shall be an HD service and have a video component using AVC 1080p50 encoding. The DASH media presentation shall have an audio component with AAC encoding using the Low Complexity Profile. After the terminal has started to present the broadcast video, an audio component and subtitles, it is requested to present the subtitle component of the broadcast stream and the broadband audio if that is not already the case. After the synchronised presentation started and again 2 minutes later, the presented video and audio components are observed to be synchronised to within a margin of plus 50ms to minus 35ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC0140	1	MSTRSYNC of BC-TS/TEMI V with DASH A/ST - no tolerance, no correlation timestamps needed	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state of a DVB service as the master media using and selecting a TEMI timeline that ticks with 50 ticks per second and is located in the adaption header of TS packets carrying the video component. After that an HTML5 media element associated with an MPEG DASH stream containing AAC audio and EBU-TT-D subtitles is added specifying no correlation timestamp and no tolerance value. The timeline specified, when the media object presenting the DASH stream is added, ticks at 50 ticks per second. The broadcast service shall be an SD service and have a video component using MPEG-2 video encoding. The DASH media presentation shall have an audio component with AAC encoding using the High Efficiency Profile. After the terminal has started to present the broadcast video, an audio component and subtitles, it is requested to present the subtitle and audio component of the broadband stream if that is not already the case. After the synchronised presentation started and again 2 minutes later, the presented broadcast component is observed to be synchronised to the presented broadband audio component within a margin of plus 50ms to minus 35ms and to the presented broadband subtitle component within a margin of plus 900ms to minus 500ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC0150	1	MSTRSYNC of BC-TS/TEMI A/V with DASH V - no tolerance, no correlation timestamps needed	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state of a DVB service as the master media using and selecting a TEMI timeline that ticks with 50 ticks per second and is located in the adaption header of TS packets carrying the video component. After that an HTML5 media element associated with an MPEG DASH stream containing AVC video is added with the multiDecoderMode set to true but specifying no correlation timestamp and no tolerance value. The timeline specified, when the media object presenting the DASH stream is added, ticks at 50 ticks per second. The HTML5 media element is scaled down and placed above the video/broadcast object. The broadcast service shall be an HD service and have a video component using AVC 720p50 encoding and an audio component with AAC encoding using the High Efficiency profile. The DASH media presentation shall have a video component with AVC 576p25 encoding. The terminal starts to present video, audio from broadcast and the video from broadband. After the synchronised presentation started and again 2 minutes later, the presented video and audio components are observed to be synchronised to within a margin of plus 50ms to minus 35ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC0650	1	Synchronised presentation of broadcast MP2TS AVC (TEMI) video (master) with DASH E-AC-3 (DASH-PR) audio	TRUE	When a MediaSynchroniser is initialised with a video/broadcast object in the presenting state with broadcast MPEG 2 TS AVC video, a TEMI timeline that ticks with 50 ticks per second is selected and located in the adaptation field of TS packets carrying the video elementary stream. Once the DUT has started to present the broadcast video, a call is made to addMediaObject() with an HTML5 Video object referencing DASH E-AC-3 audio as its 'mediaObject', a valid DASH-PR 'timelineSpecification' string that ticks with 50 ticks per second and no correlation timestamp or tolerance values specified. When the synchronised presentation is started, and again 2 minutes later, the audio and video are observed to be synchronised to within a margin of plus 50ms to minus 35ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC0730	1	Synchronised presentation of broadcast MP2TS AVC (TEMI) video (master) with DASH E-AC-3 (DASH-PR) audio and DASH (DASH-PR) subtitles	TRUE	When a MediaSynchroniser is initialised with a video/broadcast object in the presenting state with broadcast MPEG-2 TS AVC video, a TEMI timeline that ticks with 50 ticks per second is selected and located in the adaptation field of TS packets carrying the video elementary stream. Once the DUT has started to present the broadcast video, a call is made to addMediaObject() with HTML5 media object referencing DASH E-AC-3 audio and DASH subtitles as its 'mediaObject', a valid DASH-PR 'timelineSpecification' string that ticks with 50 ticks per second and no correlation timestamp or tolerance values specified. After the terminal has started to present the broadcast video, it is requested to present the audio and subtitle components of the broadband stream if that is not already the case. When the synchronised presentation is started, and again 2 minutes later, the presented broadcast component is observed to be synchronised to the presented broadband audio component within a margin of plus 50ms to minus 35ms and to the presented broadband subtitle component within a margin of plus 900ms to minus 500ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC1723	1	MSTRSYNC of BC-TS/TEMI V/A with DASH ST - DASH not available in time, tolerance of 2 sec.	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media. After that an HTML5 media element associated with a DASH stream with subtitles is added specifying a correlation timestamp and a tolerance value for 2 seconds. The size of any segment of the DASH stream shall be 2 secs. The MPD availability start time of any segment of the DASH stream shall be 2 seconds after the corresponding part of the broadcast service is delivered to the terminal. The tolerance value enables the terminal to time its presentation of the broadband DASH stream to synchronise with the broadcast without having to adjust the presentation timing of the broadcast. After the terminal has started to present the broadcast video and a subtitle component, it is requested to present the subtitle component of the broadband stream if that is not already the case. The synchronised presentation starts after addMediaObject was called without pausing the broadcast service and the gap in synchronisation between subtitles and broadcast video is not larger than 2 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC1751	1	MSTRSYNC of BC-TS/TEMI V with DASH A - gen-locked timelines, TEMI tickrate 50, correlationTimestamp present	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 50 ticks per second. After that an HTML5 audio element associated with a DASH stream containing audio is added specifying a correlation timestamp and no tolerance value. The DASH media shall be deemed to be synchronised with the broadcast service if the DASH timeline value is 0 and the TEMI timeline value is 231, i.e. the correlation timestamp passed to addMediaObject is {'tlvMaster': 231, 'tlvOther': 0}. The timelines shall be gen-locked, i.e. no updateCorrelationTimestamp is needed. The broadcast service shall be an SD service and have a video component using AVC encoding. The DASH media presentation shall have an audio component with AAC encoding using the High Efficiency Profile. After the terminal has started to present the broadcast video and an audio component it is requested to present the audio component of the broadband stream if that is not already the case. After the synchronised presentation started and again 2 minutes later, the audio and video are observed to be synchronised to within a margin of plus 50ms to minus 35ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC1752	1	MSTRSYNC of BC-TS/TEMI V with DASH A and oob EBUTTD ST - TEMI tickrate 50, drifting timelines.	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 50 ticks per second. After HTML5 media object associated with a DASH stream containing audio is added specifying a correlation timestamp and no tolerance value and out-of-band EBU-TT-D subtitles specifying a correlation timestamp and no tolerance value. The DASH timeline and the EBU-TT-D timeline both shall have a drift of 10ms per 20 seconds. The application updates the correlation timestamp for HTML5 media object every 10 seconds. The broadcast service shall be an HD service and have a video component using AVC 720p50 encoding. The DASH media presentation shall have an audio component with AAC encoding using the Low Complexity Profile. After the terminal has started to present the broadcast video, an audio component and a subtitle component, it is requested to present the audio component and the subtitles of the broadband streams if that is not already the case. After the synchronised presentation started and again 2 minutes later, the presented broadcast component is observed to be synchronised to the presented broadband audio component within a margin of plus 50ms to minus 35ms and to the presented broadband subtitle component within a margin of plus 900ms to minus 500ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC1753	1	MSTRSYNC of BC-TS/TEMI A/V with DASH ST - TEMI tickrate 25, drifting timelines.	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 25 ticks per second. After that an HTML5 media element associated with a DASH stream containing EBU-TT-D subtitles is added specifying a correlation timestamp and no tolerance value. The DASH timeline shall have a drift of 20ms per 20 seconds. The application updates the correlation timestamp for HTML5 media element every 5 seconds. The broadcast service shall be an HD service and have a video component using AVC 1080i25 encoding and an audio component using AAC encoding with the Low Complexity profile. After the terminal has started to present the broadcast video and a subtitle component, it is requested to present the subtitle component of the broadband stream if that is not already the case. After the synchronised presentation started and again 2 minutes later, the subtitles and video are observed to be synchronised to within a margin of plus 900ms to minus 500ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC1754	1	MSTRSYNC of BC-TS/TEMI V/ST with DASH A - TEMI tickrate 50, drifting timelines.	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 50 ticks per second. After that an HTML5 media element associated with a DASH audio stream is added specifying a correlation timestamp and no tolerance value. The DASH timeline shall have a drift of 20ms per 20 seconds. The application updates the correlation timestamp for the HTML5 media element every 5 seconds. The broadcast service shall be an HD service and have a video component using AVC 1080p50 encoding. The DASH media presentation shall have an audio component with AAC encoding using the Low Complexity Profile. After the terminal has started to present the broadcast video and an audio component, it is requested to present the audio component of the broadband stream if that is not already the case. After the synchronised presentation started and again 2 minutes later, the audio and video are observed to be synchronised to within a margin of plus 50ms to minus 35ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC1755	1	MSTRSYNC of BC-TS/TEMI V with DASH A/ST - TEMI tickrate 25, drifting timelines.	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 25 ticks per second. After that an HTML5 media element associated with a DASH stream with audio and subtitles is added specifying a correlation timestamp and no tolerance value. The timeline specified, when the media object presenting the DASH stream is added, ticks at 50 ticks per second. The DASH timeline shall have a drift of 13 ms per 10 seconds. The application updates the correlation timestamp for the HTML5 media element every 10 seconds. The broadcast service shall be an SD service and have a video component using MPEG-2 video encoding. The DASH media presentation shall have an audio component with AAC encoding using the High Efficiency Profile. After the terminal has started to present the broadcast video and an audio and a subtitle component, it is requested to present the audio and subtitle component of the broadband stream if that is not already the case. After the synchronised presentation started and again 2 minutes later, the video component is observed to be synchronised to the audio component within a margin of plus 50ms to minus 35ms and to the subtitles component within a margin of plus 900ms to minus 500ms for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC1855	1	MSTRSYNC of BC-TS/TEMI V with DASH A/ST - DASH not available in time	TRUE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 50 ticks per second. After that an HTML5 media element associated with a DASH stream with audio and subtitles is added specifying a correlation timestamp and no tolerance value. The timeline specified, when the media object presenting the DASH stream is added, ticks at 50 ticks per second. The size of any segment of the DASH stream shall be 2 secs. The MPD availability start time of any segment of the DASH stream shall be 12 seconds later than the corresponding part of the broadcast service is delivered to the terminal. The broadcast service shall have a constant bitrate of 15 Mbit/s total for all of its components. The DASH timeline shall have a drift of 5 ms per 10 seconds. The application updates the correlation timestamp for the HTML5 media element every 20 seconds. The broadcast service shall be an HD service and have a video component using AVC 720p50 encoding. The DASH media presentation shall have an audio component with AAC encoding using the High Efficiency Profile. The terminal adjusts for the delivery delay between the broadcast service and the broadband stream using an internal buffer. After the terminal has started to present the broadcast video and an audio and a subtitle component, it is requested to present the audio and subtitle component of the broadband stream if that is not already the case. After

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC1900	1	MSTRSYNC of BC-TS/TEMI V with DASH A - TEMI with large values and tickrate 1000, drifting timelines.	FALSE	A MediaSynchroniser is initialised with a video/broadcast object in the presenting state as the master media using and selecting a TEMI timeline that ticks with 1000 ticks per second, uses the 64 bit timestamp format and its current values are larger than 2^52. After that a HTML5 media element associated with a DASH stream containing audio is added specifying a correlation timestamp and no tolerance value. The DASH timeline shall have a drift of 10ms per 20 seconds. The application updates the correlation timestamp for HTML5 media element every 10 seconds. The broadcast service shall be an HD service and have a video component using AVC 720p50 encoding. The DASH media presentation shall have an audio component with AAC encoding using the Low Complexity Profile. After the terminal has started to present the broadcast video and an audio component, it is requested to present the audio component of the broadband DASH media presentation if that is not already the case. After the synchronised presentation started and again 2 minutes later, the presented broadcast component is observed to be synchronised to the presented broadband component to within a margin of 40ms if audio is ahead of video or 55ms if audio is behind for a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2000	1	lastError and lastErrorSource when no error has happened	TRUE	A broadcast is playing including video and audio. A broadcast-related application creates a media synchroniser, creates a video/broadcast object and initialises the media synchroniser with the video/broadcast object. The application creates an HTML5 audio element whose source is a DASH audio stream that contains valid data for the current time in the broadcast and adds that to the media synchroniser and waits for synchronisation to start. At each point in the process, the lastError and lastErrorSource properties are both null.
org.hbbtv_MSTRSYNC2100	1	Completion of initMediaSynchroniser	TRUE	A broadcast is playing including video and audio. A broadcast-related application creates a media synchroniser, creates a video/broadcast object, sets the onSynchroniserInitialised property of the media synchroniser to a method, adds a listener to the media synchroniser for SynchroniserInitialised events and then initialises the media synchroniser with the video/broadcast object. After currentTime starts being updated with correct values for the broadcast timeline, a SynchroniserInitialised event is sent to the DOM-2 event listener and the onSynchroniserInitialised method is called.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2110	1	Completion of addMediaObject - change of selected components due to language	FALSE	A broadcast is playing with video and an audio track that is not the favourite audio language as defined by the user preferences. A broadcast-related application creates a media synchroniser and a video/broadcast object and initialises the media synchroniser with the video broadcast object as the master media object. The application sets the onMediaObjectAdded property to point to a function and adds an event listener for MediaObjectAdded events on the media synchroniser. The application adds an HTML5 audio element whose source is a DASH audio stream to the media synchroniser using addMediaObject. The DASH audio stream includes exactly one AdaptationSet whose language is the favourite audio language as defined by user preferences. The terminal changes the set of media components to be presented to include the DASH audio and starts presenting that audio synchronised with the broadcast video. After this has happened, the onMediaObjectAdded function is called and a MediaObjectAdded event is sent to the registered listener.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2120	1	Completion of addMediaObject - change of selected components due to accesibility settings	FALSE	A broadcast is playing with video and one audio track that is not signalled as audio description. The terminal UI is used to enable audio description streams. A broadcast-related application creates a media synchroniser and a video/broadcast object, initialises the media synchroniser with the video broadcast object as the master media object. The application sets the onMediaObjectAdded property to point to a function and adds an event listener for MediaObjectAdded events on the media synchroniser. The application adds a DASH audio stream to the media synchroniser using addMediaObject. The DASH audio stream includes exactly one AdaptationSet signalled as providing audio description in the same language as the broadcast audio. The terminal changes the set of media components to be presented to include the DASH audio and starts presenting that audio synchronised with the broadcast video. After this has happened, the onMediaObjectAdded function is called and a MediaObjectAdded event is sent to the registered listener.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2130	1	Completion of addMediaObject - no change of selected components	TRUE	A broadcast is playing with video and one audio track. A broadcast-related application creates a media synchroniser and a video/broadcast object, initialises the media synchroniser with the video broadcast object as the master media object. The application sets the onMediaObjectAdded property to point to a function and adds an event listener for MediaObjectAdded events on the media synchroniser. The application adds a DASH audio stream to the media synchroniser using addMediaObject. The DASH audio stream has a defined beginning and end; it includes exactly one AdaptationSet signalled as providing clean audio in the same language as the broadcast audio. If the terminal UI includes a user preference or setting to enable clean audio then this is disabled. The broadcast audio continues to be presented, the DASH audio stream is not presented, the onMediaObjectAdded function is called and a MediaObjectAdded event is sent to the registered listeners.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2200	1	read currentTime after removeMediaObject	FALSE	While a synchronised single presentation of broadcast video using TEMI as timeline and broadband DASH audio presented by an HTML5 audio element is being performed, the application calls removeMediaObject to remove the HTML5 audio element from the MediaSynchroniser and then stops the HTML5 audio element. The currentTime property of the media synchroniser continues to reflect the value of the TEMI timeline.
org.hbbtv_MSTRSYNC2210	1	removeMediaObject on master media object	FALSE	While a synchronised single presentation of broadcast video using TEMI as timeline and broadband DASH audio presented by an HTML5 audio element is being performed, the application calls removeMediaObject to remove the HTML5 audio element from the MediaSynchroniser and then stops the HTML5 audio element. The currentTime property of the media synchroniser continues to reflect the value of the TEMI timeline. The application calls removeMediaObject to remove the master media object (the video/broadcast object). Monitoring of the TEMI timeline stops, an error event is sent with error code 18 and the currentTime property is set to NaN.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2300	1	Switch BC->BB and back: Current time before the start of the broadband stream - application component selection	FALSE	A broadcast is playing with video and one audio track. A broadcast-related application creates a media synchroniser and a video/broadcast object, initialises the media synchroniser with the video broadcast object as the master media object. The application adds a DASH audio stream to the media synchroniser using addMediaObject. The DASH audio stream has a defined beginning and end; it includes exactly one AdaptationSet with @role="alternate"and language being different from the terminal preferred audio language. The correlationTimestamp is such that the beginning of the DASH audio stream is some seconds in the future on the broadcast timeline. A transient error of the media synchroniser is reported, an error with value 11 is sent to any registered listeners and the broadcast audio continues to be presented. The application polls the currentTime of the mediaSynchroniser waiting for the time on the broadcast timeline corresponding to the start of the DASH audio stream. When that time is reached, the application sets the enabled property of the AudioTrack on the HTML5 audio element to true. The terminal switches the audio from the broadcast to the broadband. During this process, a SelectedComponentChange event will be generated on the video/broadcast object when the broadcast audio is stopped and a playing event will be generated on the audio element when the alternate audio is about to be started. After the broadband audio is being presented

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2310	1	Switch BC->BB and back: Current time before the start of the broadband stream - automatic component selection - language	FALSE	A broadcast is playing with video and one audio track that is not the favourite audio language as defined by user preferences. A broadcast-related application creates a media synchroniser and a video/broadcast object, initialises the media synchroniser with the video broadcast object as the master media object. The application adds a DASH audio stream to the media synchroniser using addMediaObject. The DASH audio stream has a defined beginning and end; it includes exactly one AdaptationSet whose language is the favourite audio language as defined by user preferences. The correlationTimestamp is such that the beginning of the DASH audio stream is some seconds in the future on the broadcast timeline. A transient error of the media synchroniser is reported, an error with value 11 is sent to any registered listeners and the broadcast audio continues to be presented. When the broadcast media time reaches the value corresponding to the start of the DASH audio stream, the broadcast audio stream is stopped and the DASH audio stream is presented. When playback of the DASH audio stream reaches the end, a transient error of the media synchroniser occurs, an error event of type 2 is dispatched to any registered listeners, audio presentaiton reverts to the broadcast audio.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2320	1	Switch BC->BB and back: Current time before the start of the broadband stream - automatic component selection - accessibility	FALSE	A broadcast is playing with video and one audio track that is not signalled as audio description. The terminal UI is used to enable audio description streams. A broadcast-related application creates a media synchroniser and a video/broadcast object, initialises the media synchroniser with the video broadcast object as the master media object. The application adds a DASH audio stream to the media synchroniser using addMediaObject. The DASH audio stream has a defined beginning and end; it includes exactly one AdaptationSet that has @role set to identify it as providing audio description in the same language as the broadcast audio. The correlationTimestamp is such that the beginning of the DASH audio stream is some seconds in the future on the broadcast timeline. A transient error of the media synchroniser is reported, an error with value 11 is sent to any registered listeners and the broadcast audio continues to be presented. When the broadcast media time reaches the value corresponding to the start of the DASH audio stream, the broadcast audio stream is stopped and the DASH audio stream is presented. When playback of the DASH audio stream reaches the end, a transient error of the media synchroniser occurs, an error event of type 2 is dispatched to any registered listeners, audio presentaiton reverts to the broadcast audio.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2330	1	Switch BC->BB and back: Current time during the broadband stream - application component selection	TRUE	A broadcast is playing with video and one audio track. A broadcast-related application creates a media synchroniser and a video/broadcast object and initialises the media synchroniser with the video broadcast object as the master media object. The application adds a DASH audio stream to the media synchroniser using addMediaObject. The DASH audio stream has a defined beginning and end; it includes exactly one AdaptationSet with @role="alternate"and language being different from the terminal preferred audio language. The correlationTimestamp is such that the current position on the broadcast timeline corresponds to a time in the DASH audio stream that is soon after the beginning and before the end. When the call to addMediaObject is completed, the application sets the enabled property of the AudioTrack on the HTML5 audio element to true. The terminal switches the audio from the broadcast to the broadband. During this process, a SelectedComponentChange event will be generated on the video/broadcast object when the broadcast audio is stopped and a playing event will be generated on the audio element when the alternate audio is about to be started. After the broadband audio is being presented, timeupdate events will be sent to the HTML5 audio element for the usual monotonic increase of media time.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2340	1	Switch BC->BB and back: Do not switch when current time after end of the broadband stream.	TRUE	A broadcast is playing with video and one audio track that is not the favourite audio language as defined by user preferences. A broadcast-related application creates a media synchroniser and a video/broadcast object, initialises the media synchroniser with the video broadcast object as the master media object. The application adds a DASH audio stream to the media synchroniser using addMediaObject. The DASH audio stream has a defined beginning and end; it includes exactly one AdaptationSet whose language is the favourite audio language as defined by user preferences. The correlationTimestamp is such that the current position on the broadcast timeline is after the end of the DASH audio stream. A transient error of the media synchroniser is reported, an error with value 2 is sent to any registered listeners and the broadcast audio continues to be presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_MSTRSYNC2350	1	Swich BC->BB and back: broadband stream is live DASH.	FALSE	A broadcast is playing with video and one audio track. A broadcast-related application creates a media synchroniser and a video/broadcast object and initialises the media synchroniser with the video broadcast object as the master media object. The application adds a DASH audio stream to the media synchroniser using addMediaObject. The DASH audio stream is live DASH and has no defined beginning and end; it includes exactly one AdaptationSet with @role="alternate" and language being different from the terminal preferred audio language. When the call to addMediaObject is completed, the application sets the enabled property of the AudioTrack on the HTML5 audio element to true. The terminal switches the audio from the broadcast to the broadband. During this process, a SelectedComponentChange event will be generated on the video/broadcast object when the broadcast audio is stopped and a playing event will be generated on the audio element when the alternate audio is about to be started. After the broadband audio is being presented, timeupdate events will be sent to the HTML5 audio element for the usual monotonic increase of media time. Some time later, the application removes the HTML5 audio element from the media synchroniser. Some time later, the application selects broadcast audio and next, in the same event loop removes the HTML5 audio element from the media synchroniser. Broadband audio stops being presented, broadcast audio starts being

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OBF08170	1	Method oipfObjectFactory.isObjectSupported() shall return true for all mandatory embedded objects.	TRUE	window.oipfObjectFactory.isObjectSupported() shall return true for all mandatory objects (mime types: video/broadcast, application/oipfApplicationManager, application/oipfCapabilities, application/oipfConfiguration, application/oipfSearchManager, application/oipfParentalControlManager).
org.hbbtv_OPAPP_APP01	1	opAppRequestForeground call from background state in onkeydown event	TRUE	A regular HbbTV application has input focus. An operator application is in the background state having requested an operator application key event, onkeydown callback function makes a call to the 'opAppRequestForeground' method. When the key generating requested key event is pressed: opAppRequestForeground returns true, onOperatorApplicationStateChange callback is run with call arguments oldState="background", newState="foreground", opAppState is set to 'foreground'.
org.hbbtv_OPAPP_APP02	1	opAppRequestForeground call from background state in keyup event	TRUE	There is no regular HbbTV application. An operator application is in the background state having requested an operator application key event, keyup event listener function makes a call to the 'opAppRequestForeground' method. When the key generating requested key event is pressed: opAppRequestForeground returns true, OperatorApplicationStateChange event is generated with context info: oldState="background", newState="foreground", opAppState is set to 'foreground'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP03	1	opAppRequestForeground call from background state in keypress event	TRUE	There is no regular HbbTV application. An operator application is in the background state having requested a regular application key event, keypress event listener function makes a call to the 'opAppRequestForeground' method. When the key generating requested key event is pressed: opAppRequestForeground returns true, OperatorApplicationStateChange event is generated with context info: oldState="background", newState="foreground", opAppState is set to 'foreground'.
org.hbbtv_OPAPP_APP04	1	opAppRequestForeground call from background state in 'Notification' click event	TRUE	An operator application is in the background state, the 'Notification' object has registered a click event listener function which calls 'opAppRequestForeground' method. When notification is activated by user: opAppRequestForeground returns true, OperatorApplicationStateChange event is generated with context info: oldState="background", newState equal "foreground" or "overlaid-foreground", opAppState value is equal to value of newState.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP05	1	opAppRequestForeground call from background state in load event	TRUE	The operator application 'load' event of the initial document makes a call to the 'opAppRequestForeground' method. When the application is loaded: opAppRequestForeground returns true, onOperatorApplicationStateChange callback is run with call arguments oldState="background", newState is either "foreground" or "overlaid-foreground", finally opAppState is set to either "foreground" or "overlaid-foreground".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP06	1	Failure of opAppRequestForeground call from background state - general conditions	TRUE	The operator application being in background state and makes a call to the 'opAppRequestForeground' method. When none of conditions allowing successful call happen, opAppRequestForeground returns false, OperatorApplicationStateChange event is not generated and opAppState property is not switched. Conditions allowing successful call are: The call is was made within a handler for keydown, keyup or keypress events in the operator application, The call is made within a handler for a click event for a notification requested by the operator application and activated by the user. The call is made within a handler for the load event of the initial document of the operator application only when the operator application is started. The call is made within a handler for OperatorApplicationContextChange events in the operator application. The call is made within the handler for onPlayStateChange events due to a transient error (transition from connecting to connecting) or permanent error (transition from either connecting or presenting to unrealized). The call is made within the handler for an ApplicationUnloaded event due to the termination of a Regular Application launched by the OpApp as defined in table A.1 for the application/oipfApplicationManager embedded object. The call is made within the handler for an onMessage event of the WebSocket interface as a result of a message received from a regular application using the communication mechanism defined in clause 15

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP07	1	Failure of opAppRequestForeground call in background state - load event	FALSE	The operator application registers a 'load' event handler on element which is not an initial document of the operator application. When the element is loaded and the 'load' event handler makes call to the 'opAppRequestForeground' method: opAppRequestForeground returns false, onOperatorApplicationStateChange callback is not run and opAppState property value is "background".
org.hbbtv_OPAPP_APP08	1	opAppRequestForeground call in transient state, onkeypress event	TRUE	An operator application is in the transient state, has input focus and requested a key event. The keypress event listener function makes a call to the 'opAppRequestForeground' method. When the key generating the requested key event is pressed: opAppRequestForeground returns true, onOperatorApplicationStateChange callback is run with call arguments oldState="transient", newState="foreground", opAppState is set to "foreground", countdown timer is disabled.
org.hbbtv_OPAPP_APP09	1	opAppRequestForeground call in transient state, load event	TRUE	The operator application is in 'transient' state, a 'load' event of the initial document calls to the 'opAppRequestForeground' method. When application is loaded: OperatorApplicationStateChange event is generated with context info: newState="foreground" or "overlaid-foreground", opAppState is set to "foreground" or "overlaid-foreground, countdown timer is disabled.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP10	1	Failure of opAppRequestForeground call in transient state - general conditions	TRUE	The operator application being in transient state makes a call to the 'opAppRequestForeground' method. When none of conditions allowing successful call happen, opAppRequestForeground returns false, OperatorApplicationStateChange event is not generated, opAppState property is not switched and countdown timer (60s) is not stopped. Conditions allowing successful call are: The call is made within a handler for keydown, keyup or keypress events in the operator application, The call is made within a handler for a click event for a notification requested by the operator application and activated by the user. The call is made within a handler for the load event of the initial document of the operator application only when the operator application is started. The call is made within a handler for OperatorApplicationContextChange events in the operator application. The call is made within the handler for onPlayStateChange events due to a transient error (transition from connecting to connecting) or permanent error (transition from either connecting or presenting to unrealized). The call is made within the handler for an ApplicationUnloaded event due to the termination of a Regular Application launched by the OpApp as defined in table A.1 for the application/oipfApplicationManager embedded object. The call is made within the handler for an onMessage event of the WebSocket interface as a result of a message received from a regular application using the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP11	1	Terminal displaying UI over application, opAppRequestForeground call in background state in keydown event	TRUE	A regular HbbTV application is present. An operator application is in the background state. The operator application requested operator application key events and added event listener function. Requested key events are not taken by the terminal to support its user interface. The keydown event listener function makes a call to the 'opAppRequestForeground' method. When key generating requested key event is pressed and the terminal displaying some UI over application: opAppRequestForeground returns true, OperatorApplicationStateChange event is generated with context info: oldState="background", newState="overlaid-foreground", opAppState is set to 'overlaid-foreground'.
org.hbbtv_OPAPP_APP12	1	Terminal displaying UI over application, opAppRequestForeground call in background state in keypress event	TRUE	There is no regular HbbTV application. An operator application is in the background state with requested a regular application key event, not used by terminal. A keypress event listener function makes a call to the 'opAppRequestForeground' method. When a key generating the requested key event is pressed and the terminal displaying some UI over the application: opAppRequestForeground returns true, OperatorApplicationStateChange event is generated with context info: oldState="background", newState="overlaid-foreground", opAppState is set to 'overlaid-foreground'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP13	1	Terminal displaying UI over application, opAppRequestForeground call in background state in keyup event	TRUE	There is no regular HbbTV application. An operator application is in the background state with requested an operator application key event, keyup event listener function makes a call to the 'opAppRequestTransient' method. When key generating the requested key event is pressed: opAppRequestTransient returns true, onOperatorApplicationStateChange callback is run with call arguments oldState="background", newState="transient", opAppState is set to 'transient'.
org.hbbtv_OPAPP_APP14	1	opAppRequestTransient call from foreground state in keyup event	TRUE	An operator application is in the foreground state requested a regular application key event, keyup event listener function makes a call to the 'opAppRequestTransient' method. When key generating requested key event is pressed: opAppRequestTransient returns true, onOperatorApplicationStateChange callback is run with call arguments oldState="foreground", newState="transient", opAppState is set to 'transient'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP15	1	opAppRequestTransient call in background state in onkeypress event	TRUE	A HbbTV regular application has focus, an operator application is in the 'background' state having requested an operator application key event, onkeypress callback function makes a call to the 'opAppRequestTransient' method. When key generating requested key event is pressed: opAppRequestTransient returns true, OperatorApplicationStateChange event is generated with context info: oldState="background", newState="transient", opAppState is set to 'transient'.
org.hbbtv_OPAPP_APP16	1	opAppRequestTransient call from 'background' state in BroadcastSupervisor ChannelChangeSucceeded event initiated by regular HbbTV application	TRUE	The operator application is in 'background' state, the BroadcastSupervisor has registered event listener ChannelChangeSucceeded. Event listener makes a call to the 'opAppRequestTransient' method. When regular HbbTV application initiates channel change using 'setChannel(, , , quiet=0) of 'video/broadcast' object: opAppRequestTransient returns true, OperatorApplicationStateChange event is generated with context info: oldState="background", newState="transient", opAppState is set to 'transient'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP17	1	opAppRequestTransient call from 'foreground' state in 'video/broadcast' ChannelChangeSucceeded event	FALSE	The operator application is in 'foreground' state, the 'video/broadcast' has registered event listener ChannelChangeSucceeded. Event listener makes a call to the 'opAppRequestTransient' method. When operator HbbTV application initiates channel change using 'setChannel(, , , quiet=0) of 'video/broadcast' object: opAppRequestTransient returns true, one or more onOperatorApplicationStateChange callbacks are run, the first one has oldState="foreground", the last one has newState="transient" or "overlaid-transient", finally opAppState is set to "transient" or "overlaid-transient", application after 1 minute is moved to background state.
org.hbbtv_OPAPP_APP19	1	opAppRequestTransient call in 'Notification' click event	TRUE	An operator application is in the background state, the 'Notification' object has registered an onclick callback which made a call to the 'opAppRequestTransient' method. When the notification is activated by user: opAppRequestTransient returns true, OperatorApplicationStateChange event is generated with context info: newState="transient" or newState="overlaid-transient", opAppState is set to "transient" or "overlaid-transient" and is equal to the 'newState' context info of the OperatorApplicationStateChange, application after 1 minute is moved to background state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP20	1	Failure of opAppRequestTransient call from foreground state, no condition allowing successful call happen	TRUE	An operator application being in the foreground state makes a call to the 'opAppRequestTransient' method. When none of the conditions allowing successful call happen, opAppRequestTransient method returns false, OperatorApplicationStateChange event is not generated and opAppState property is not switched. Conditions allowing successful call are: the call is made within a handler for ChannelChangeSucceeded events in the operator application where the quiet argument to the ChannelChangeSucceeded event was not ‘1’ or ‘2’, the call is made within a handler for keydown, keyup or keypress events in the operator application, the call is made within a handler for click events for a notification requested by the operator application and activated by the user. application after 1 minute is not moved to background state.
org.hbbtv_OPAPP_APP21	1	Failure of opAppRequestTransient call in ChannelChangeSucceeded event initiated by setChannel with quiet argument equal '1'	TRUE	An operator application is in the 'background' state, the BroadcastSupervisor has registered ChannelChangeSucceeded event listener. The event listener makes a call to the 'opAppRequestTransient' method. When a regular HbbTV application initiates channel change using the 'setChannel(, , , quiet=1) method of 'video/broadcast' object: opAppRequestTransient returns false, onOperatorApplicationStateChange callback is not run, opAppState is 'background'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP22	1	Failure of opAppRequestTransient call in ChannelChangeSucceeded event initiated by setChannel with quiet argument equal '2'	TRUE	An operator application is in the 'foreground' state, the 'video/broadcast' object has registered a onChannelChangeSucceeded callback. The callback makes a call to the 'opAppRequestTransient' method. When the operator application initiates a channel change using the 'setChannel(, , , quiet=2) method of 'video/broadcast' object: opAppRequestTransient returns false, onOperatorApplicationStateChange callback is not run, opAppState is 'foreground', application after 1 minute is not moved to background state.
org.hbbtv_OPAPP_APP23	1	opAppRequestTransient call from onChannelChangeSucceeded, switch from 'background' to 'overlaid transient' state	TRUE	An operator application is in the 'background' state. The 'BroadcastSupervisor' object has registered onChannelChangeSucceeded callback, which makes a call to the 'opAppRequestTransient' method. When terminal is displaying some UI and initiates channel change: opAppRequestTransient returns true, onOperatorApplicationStateChange callback is run with with call arguments: oldState="background", newState="overlaid-transient", opAppState is set to 'overlaid-transient', After 1 minute, the application has moved to the background state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP24	1	opAppRequestTransient call from keypress event handler, switch from 'overlaid foreground' to 'overlaid transient' state	FALSE	An operator application is in the 'overlaid foreground' state with requested key event not registered by terminal UI that appears on top of the operator application. In the onkeypress callback function a call to the 'opAppRequestTransient' method is made. When key that generates the requested event is pressed: opAppRequestTransient returns true, OperatorApplicationStateChange event is generated with context info: oldState="overlaid-foreground", newState="overlaid-transient", opAppState is set to 'overlaid-transient', application is moved to background state after 1 minute.
org.hbbtv_OPAPP_APP25	1	opAppRequestBackground call from foreground state	TRUE	When an operator application is in the 'foreground' state and a call to the 'opAppRequestBackground' method is made: - OperatorApplicationStateChange event is generated with context info: oldState="foreground", newState="background", - opAppState is set to 'background'.
org.hbbtv_OPAPP_APP26	1	opAppRequestBackground call from transient state	TRUE	When an operator application is in the 'transient' state and a call to the 'opAppRequestBackground' method is made: OperatorApplicationStateChange event is generated with context info: oldState="transient", newState="background", opAppState is set to 'background'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP27	1	opAppRequestBackground call from overlaid-foreground state	TRUE	When an operator application is in the 'overlaid-foreground' state and makes a call to the 'opAppRequestBackground' method: onOperatorApplicationStateChange callback is invoked with the following parameters: oldState="overlaid-foreground", newState="background", opAppState is set to 'background'.
org.hbbtv_OPAPP_APP28	1	createApplication with a URL to a HTTP web page and parameters: createChild=false, runAsOpApp=false	TRUE	An operator application is in the transient state. When the operator application makes a call to the createApplication(uri, createChild=false, runAsOpApp=false) with 'uri' being HTTP URL referring to valid HTML page, a regular, broadcast independent application is created, the operator application is moved to background state, when the regular HbbTV application is destroyed, the ApplicationUnloaded event is not generated.
org.hbbtv_OPAPP_APP29	1	createApplication, URL to HTTPS web page, createChild=true, runAsOpApp=false	TRUE	An operator application is in the foreground state. When the operator application makes a call to the createApplication(uri, createChild=true, runAsOpApp=false), with 'uri' being HTTPS URL referring to valid HTML page: a regular, broadcast independent application is created, the operator application is moved to background state, when the regular HbbTV application is destroyed, the ApplicationUnloaded event is generated.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP30	1	createApplication with an URL to an HTTP XML-AIT and parameters: createChild=true, runAsOpApp=false	TRUE	An operator application is in the overlaid foreground state. When an operator application makes a call to the createApplication(uri, createChild=true, runAsOpApp=false), where 'uri' is referenced using HTTP URL to XML-AIT: a regular, broadcast independent application is created, the operator application is moved to background state and after regular HbbTV application destroy, the ApplicationUnloaded event is generated.
org.hbbtv_OPAPP_APP31	1	Transition to HbbTV application created using createApplication(uri, createChild=true, runAsOpApp=false)	TRUE	An operator application makes a call to the createApplication(uri, createChild=true, runAsOpApp=false), with 'uri' being HTTPS URL referring to a valid XML-AIT. As a result a regular, broadcast independent HbbTV application is created. Next, the regular HbbTV application makes a call to the 'setChannel(channel)' method and successfully transitions to the broadcast related application. When the regular application is destroyed, the ApplicationUnloaded event is generated.
org.hbbtv_OPAPP_APP33	1	Application in background state, createApplication(uri, false, runAsOpApp=true), uri refers to HTML page	TRUE	An operator application is in the background state. When the operator application makes a call to the createApplication(uri, createChild=false, runAsOpApp=true) method, where the 'uri' is referencing HTML page using HTTPS scheme then application referred by uri is not loaded and ApplicationLoadError event is generated.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP34	1	Application in transient state, createApplication(uri, false, runAsOpApp=true) uri refers to "hbbtv-package://appid.orgid"	TRUE	An operator application is in the transient state. When the operator application calls to the createApplication(uri, createChild=false, runAsOpApp=true) where the 'uri' is referenced using the "hbbtv-package://appid.orgid" scheme: the running operator application is destroyed an operator application is loaded from 'uri' location, then launched. The launched application is in the inherited 'transient' state and is moved to the background state when an inherited countdown timer expires.
org.hbbtv_OPAPP_APP35	1	createApplication in foreground state, HTTPS to XML-AIT runAsOpApp=true	TRUE	When an operator application in the foreground state calls createApplication(uri, createChild=false, runAsOpApp=true), where the 'uri' is referenced using an HTTPS URL to the XML-AIT, a new operator application is correctly replacing the existing one. The new operator application is in foreground state.
org.hbbtv_OPAPP_APP36	1	Application in overlaid-foreground state, createApplication(uri, false, runAsOpApp=true), uri refers to "hbbtv-package://appid.orgid/index.html"	TRUE	An operator application in the overlaid-foreground state. When the operator application calls to the createApplication(uri, createChild=false, runAsOpApp=true) method with the 'uri' that is referenced using the "hbbtv-package://appid.orgid/index.html" scheme: the running operator application is destroyed an operator application is loaded from location in the 'uri' field, and then launched. The launched application is in the inherited overlaid-foreground state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP37	1	Application in overlaid-transient state, createApplication(uri, false, runAsOpApp=true), uri refers to "hbbtv-package://appid.orgid/applications/my-other-application.html" scheme	TRUE	An operator application is in the overlaid transient state. When the operator application calls to the createApplication(uri, createChild=false, runAsOpApp=true) where the 'uri' is referenced using the "hbbtv-package://appid.orgid/foo/baz.html" scheme: the running operator application is destroyed an operator application is loaded from 'uri' location, then launched. The launched application is in the inherited 'overlaid transient' state and is moved to the background state when an inherited countdown timer expires.
org.hbbtv_OPAPP_APP38	1	createApplication that replaces a regular broadcast-related HbbTV application	TRUE	A regular, broadcast-related HbbTV application is running. When an operator application calls to the createApplication(uri, createChild=false, runAsOpApp=false): the running broadcast-related regular HbbTV application is destroyed, a regular broadcast-independent application is created.
org.hbbtv_OPAPP_APP39	1	createApplication, HTTP URL, createChild=true, runAsOpApp=false, new application replaces teletext application	FALSE	A regular teletext HbbTV application is running. When an operator application calls the createApplication(uri, createChild=true, runAsOpApp=false): a new, regular, broadcast independent application is starting and replacing the teletext application, onApplicationUnloaded is not called when teletext application is killed and onApplicationUnloaded is called when the child broadcast independent application is about to exit.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP40	1	Regular HbbTV application creates next regular HbbTV application	FALSE	An operator HbbTV application calls to the createApplication(URL1, createChild=true, runAsOpApp=false), as a result a regular HbbTV application is loaded from URL1 and launched. When the regular HbbTV application calls to the createApplication(URL2, false): a next, new regular HbbTV application is loaded from URL2 and launched, the regular HbbTV application loaded from URL1 is destroyed and onApplicationUnloaded event is generated in the operator application.
org.hbbtv_OPAPP_APP41	1	createApplication does not create broadcast-related child application	TRUE	When an operator application calls the createApplication(uri, createChild=true, runAsOpApp=false) method, where the 'uri' is referenced using DVB URL, the terminal either: does not create a new application and createApplication returns false, the new application is created and is broadcast independent.
org.hbbtv_OPAPP_APP42	1	createApplication failure, 'hbbtv-package' - not installed application	TRUE	When operator HbbTV application calls the createApplication(URL, createChild=false, runAsOpApp=true) with a URL that points to not existing application the createApplication returns null or generates onApplicationLoadError.
org.hbbtv_OPAPP_APP43	1	createApplication failure, URL is HTTP instead of HTTPS	TRUE	When an operator HbbTV application calls createApplication(URL, createChild=false, runAsOpApp=true), where the URL schema specifies the HTTP protocol, createApplication returns null.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP44	1	createApplication failure, HTTPS, not available initial web page	TRUE	When operator HbbTV application is calling createApplication(URL, createChild=true, runAsOpApp=true), where URL schema is HTTPS but web page is not available, ApplicationLoadError is generated.
org.hbbtv_OPAPP_APP45	1	Failure when regular application calls to the createApplication(uri, createChild=true, false)	TRUE	When a regular HbbTV application calls to the createApplication(URL, createChild=true, false): the createApplication returns null, a new application is not created. The URL refers to an HTML page with valid regular HbbTV application.
org.hbbtv_OPAPP_APP46	1	Failure when regular application calls to the createApplication(uri, false, runAsOpApp=true)	TRUE	When regular HbbTV application calls to the createApplication(URL, createChild=false, runAsOpApp=true), the method returns null and the new application is not created.
org.hbbtv_OPAPP_APP47	1	createApplication failure, broken XML AIT	TRUE	An Operator HbbTV application calls to the createApplication(uri, createChild=false, runAsOpApp=true), where the uri is referencing to the XML AIT. When XML AIT is malformed, an ApplicationLoadError is dispatched.
org.hbbtv_OPAPP_APP48	1	Call to the opAppUninstall removes privileged application	FALSE	When a privileged application calls to the opAppUninstall method, the method returns true and application is removed.
org.hbbtv_OPAPP_APP49	1	opAppUninstall failure, HbbTV regular application	TRUE	When a regular HbbTV application calls to the opAppUninstall method, the method returns false.
org.hbbtv_OPAPP_APP50	1	opAppUninstall failure, broadband operator application	TRUE	When operator application running over broadband calls opAppUninstall method, the method returns false.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP51	1	opAppRequestForeground failure in 'Notification' show event	TRUE	An operator application is in the background state, a 'show' event listener has been added to the 'Notification' object. The event listener calls to the 'opAppRequestForeground' method. When notification is shown: opAppRequestForeground returns false, OperatorApplicationStateChange event is not generated, opAppState property is not switched.
org.hbbtv_OPAPP_APP52	1	opAppRequestTransient call restarts countdown timer in transient state	FALSE	When the operator application is in 'transient' state and makes a successful call to the 'opAppRequestTransient' method, the countdown timer is restarted.
org.hbbtv_OPAPP_APP53	1	opAppRequestTransient call restarts countdown timer in overlaid transient state	TRUE	When the operator application is in the 'overlaid transient' state and makes a successful call to the 'opAppRequestTransient' method, the countdown timer is restarted.
org.hbbtv_OPAPP_APP54	1	opAppRequestTransient failure does not restart countdown timer	TRUE	The operator application being in transient state makes a call to the 'opAppRequestTransient' method. When none of conditions allowing successful call happen, opAppRequestTransient returns false and the countdown timer is not restarted.
org.hbbtv_OPAPP_APP55	1	opAppState read by regular HbbTV application	TRUE	When a regular HbbTV application reads the opAppState property of the Application object then it receives "undefined".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP56	1	ApplicationLoaded event generated after call to createApplication(..., true, false)	TRUE	When an operator application makes a call to createApplication(uri, createChild=true, runAsOpApp=false), and a regular HbbTV application referred by 'uri' is successfully loaded, then an ApplicationLoaded event is generated. A context info of the ApplicationLoaded event contains an 'Application appl' property.
org.hbbtv_OPAPP_APP57	1	ApplicationLoaded event not generated after failure of call to createApplication(..., true, false)	TRUE	When an operator application makes a call to createApplication(uri, createChild=true, runAsOpApp=false) and terminal fails to load application from 'uri' then an ApplicationLoaded event is not generated.
org.hbbtv_OPAPP_APP58	1	opAppRequestTransient in load event	TRUE	An operator application 'load' event of the initial document makes a call to 'opAppRequestTransient' method. When the application is loaded: opAppRequestTransient returns true, onOperatorApplicationStateChange callback is run with call arguments oldState="background", newState="transient" and opAppState is set to 'transient'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_APP59	1	opAppRequestTransient in OperatorApplicationContextChange event	TRUE	An operator application is in the background state and adds a OperatorApplicationContextChange event listener. The operator application is displayed due to the user making a request from the terminal UI. As a result, a OperatorApplicationContextChange event is generated. When the OperatorApplicationContextChange listener makes a call to the opAppRequestTransient method, then: opAppRequestTransient returns true, opAppState is set to either "transient" or "overlaid transient", after 60s the transition to the background state occurs.
org.hbbtv_OPAPP_APP60	1	opAppRequestForeground in OperatorApplicationContextChange event	TRUE	An operator application is in the background state and adds an OperatorApplicationContextChange event listener. When each application entry point is entered, an OperatorApplicationContextChange event is generated. When a call to opAppRequestForeground is made within the OperatorApplicationContextChange event listener then: opAppRequestForeground returns true, opAppState is set to either "foreground" or "overlaid foreground".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BROWSER01	1	Terminal launches operator application, URL	TRUE	The terminal launches an installed operator application with given application_id and organization_id. When the application reads the document.domain then it receives "application_id.organization_id". When application reads the document.location.protocol it receives "hbbtv-package:". When application reads the document.location.href it receives string beginning with "hbbtv-package://application_id.organization_id".
org.hbbtv_OPAPP_BROWSER02	1	Operator application calls to the destroyApplication	FALSE	When an operator application calls to the destroyApplication, then the terminal performs an action determined by the bilateral agreement.
org.hbbtv_OPAPP_BROWSER03	1	Application with "hbbtv-package:/" scheme, XHR success	TRUE	An installed operator application attempts to perform XHR request to HTTP server. When the response contains Access-Control-Allow-Origin header with URL matching to origin of the application then the request succeeds.
org.hbbtv_OPAPP_BROWSER04	1	Application with "hbbtv-package:/" scheme, XHR fail due to Cross-Origin Resource Sharing	TRUE	An installed operator application attempts to perform XHR request to HTTP server. When the response contains Access-Control-Allow-Origin header with URL not matching to origin of the application then the request fails. The Access-Control-Allow-Origin header cannot be '*'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BROWSER05	1	getTVProprietaryFunctions	FALSE	When an operator-specific operator application calls to getTVProprietaryFunctions(namespace), then an array containing all available proprietary functions from 'namespace' are returned. When the global 'namespace' is used, the names in the array are prefixed by the namespace of each proprietary function and separated from the name by a "." character.
org.hbbtv_OPAPP_BROWSER06	1	queryTVProprietaryFunction	TRUE	When an operator-specific operator application calls to the queryTVProprietaryFunction(namespace, name) with 'namespace' and 'name' call parameters matching to available proprietary function, then the return value is true.
org.hbbtv_OPAPP_BROWSER07	1	invokeTVProprietaryFunction	TRUE	When an operator-specific operator application calls to the invokeTVProprietaryFunction(String namespace, String name, Object[] arguments) with 'namespace' and 'name' and 'arguments' call parameters matching to available proprietary function, then the method returns an object and do not throw an exception.
org.hbbtv_OPAPP_BROWSER08	1	Failure of running getTVProprietaryFunctions function by regular HbbTV application	FALSE	When a regular HbbTV application calls to the getTVProprietaryFunctions(namespace) then the call fails and terminal does not share information related to proprietary functions. 'namespace' call parameter matches to namespace of the available proprietary function.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BROWSER09	1	Failure of running queryTVProprietaryFunction function by regular HbbTV application	TRUE	When a regular HbbTV application calls to the queryTVProprietaryFunction(namespace, name) then the call fails and terminal does not share information related to proprietary functions. 'namespace' and 'name' call parameters matches to available proprietary function.
org.hbbtv_OPAPP_BROWSER10	1	invokeTVProprietaryFunction(namespace, name) failure, 'namespace' and 'name' refers to not existing function	TRUE	When an operator-specific operator application calls to the invokeTVProprietaryFunction(namespace, name, ...), and the function with name 'name' is not present in the referenced namespace then the TypeError exception is thrown.
org.hbbtv_OPAPP_BROWSER11	1	Default access to Web Notifications	FALSE	When the operator application creates the Notifications objects with 'title', 'body' and 'tag' in each state, then the Notifications are correctly displayed. The permission property is 'granted'.
org.hbbtv_OPAPP_BROWSER12	1	click event in Web Notifications	FALSE	When an operator application creates the Notification object and notification is displayed then the user is able to activate a notification. After activation the onclick event is generated.
org.hbbtv_OPAPP_BROWSER13	1	icons in Web Notifications	FALSE	When an operator application creates the Notification object and sets the 'icon' property then the terminal displays the notification with an image referenced by the 'icon'.
org.hbbtv_OPAPP_BROWSER15	1	application overlay descriptor blocks Notifications	TRUE	An AIT of channel being presented contains an application overlay descriptor that lists an organisation_id of currently running operator application. When the operator application creates the Notification object then the terminal does not display the notification.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BROWSER16	1	Discarding notification after application exit	TRUE	An operator application creates a notification, the notification is displayed by terminal. When the operator application exits, then the notification is not displayed and cannot be activated.
org.hbbtv_OPAPP_BROWSER17	1	Blocking notification created by hidden regular application	TRUE	An operator application is running in the foreground state and regular HbbTV application is hidden. When a regular application creates a notification, then the notification is not displayed and cannot be activated.
org.hbbtv_OPAPP_BROWSER18	1	top level browsing context	TRUE	When a terminal runs both regular and operator applications, then the 'window.top' read by regular application refers to different browsing context than 'window.top' read by operator application.
org.hbbtv_OPAPP_BROWSER19	1	hbbtv-package origin potentially trustworthy	TRUE	When an installed operator applications reads the isSecureContext property then the value of property is 'true'.
org.hbbtv_OPAPP_BROWSER20	1	Change the numbering of channel	TRUE	When an operator application changes the value of the terminalChannel property of given channel object, then the terminal use updated value in all UIs to present corresponding channel.
org.hbbtv_OPAPP_BROWSER21	1	Conflicting channel number	TRUE	An operator application changes the value of the terminalChannel property of given channel object. When the new value of terminalChannel is used by another channel, then the another channel number shall be re-assigned to an unused number.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BROWSER22	1	queryTVProprietaryFunction, proprietary function not available	FALSE	An operator-specific operator application calls to queryTVProprietaryFunction(namespace, name). When 'namespace' and 'name' call parameters do not refer to available proprietary function, then the return value is FALSE.
org.hbbtv_OPAPP_BROWSER23	1	invokeTVProprietaryFunction, proprietary function not available	TRUE	An operator-specific operator application calls to the invokeTVProprietaryFunction(String namespace, String name, Object[] arguments). When 'namespace' and 'name' call parameters do not refer to available proprietary function, then the TypeError exception is thrown.
org.hbbtv_OPAPP_BS02	1	BroadcastSupervisor, ChannelChangeError event initiated by operator HbbTV application	FALSE	The operator HbbTV application has 'video/broadcast' object in state different than 'unrealized' and initiates channel change using 'video/broadcast' object. When switch to new channel resulted in an error preventing the broadcasted content from being rendered, the 'ChannelChangeError' event is generated in both the video/broadcast object and the BroadcastSupervisor object, with matching context info 'channel' and 'errorState'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS04	1	BroadcastSupervisor, ChannelChangeSucceeded event initiated by regular HbbTV application	TRUE	An operator HbbTV application is in background state. A regular HbbTV application binds the 'video/broadcast' object to current channel. When the regular application initiates channel change by call to the setChannel(newChannel,,,quiet=2) then the ChannelChangeSucceeded is generated on both the video/broadcast object of the regular HbbTV application with context info 'channel' equal to new channel and the BroadcastSupervisor object of the operator application with matching context info 'channel' - new channel, 'viewerChannel' - old channel and 'quiet' = 2.
org.hbbtv_OPAPP_BS05	1	BroadcastSupervisor, onChannelChangeSucceeded event initiated by operator HbbTV application	FALSE	An operator HbbTV application is in foreground state. The operator HbbTV application binds the 'video/broadcast' object to current channel. When the operator application initiates channel change by call to the setChannel(newChannel,,,quiet=1), the ChannelChangeSucceeded is generated on both video/broadcast object and BroadcastSupervisor object with matching context info 'channel' - new channel, 'viewerChannel' - new channel and 'quiet' = 1.
org.hbbtv_OPAPP_BS06	1	BroadcastSupervisor, onChannelChangeSucceeded event initiated by terminal	FALSE	The operator application is in overlaid transient state. When switch to new channel is initiated by terminal the 'onChannelChangeSucceeded' callback is called in BroadcastSupervisor object with matching call arguments 'channel' - new channel, 'viewerChannel' - new channel, Number quiet.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS10	1	BroadcastSupervisor, not presenting playState	TRUE	A regular HbbTV application is not present, an operator application does no have active instance of video/broadcast object. When the terminal does not present content due to lack of media data, then the value of 'playState' property of BroadcastSupervisor object is not set to 2 "presenting".
org.hbbtv_OPAPP_BS13	1	BroadcastSupervisor, PlayStateChange initiated by createApplication(URL, false, false)	TRUE	A broadcasted video is presented. When operator application calls createApplication(URL, false, false) and a new broadcast independent HbbTV application is created the BroadcastSupervisor object generates PlayStateChange event with 'state' context info value not equal 2 ('presenting').
org.hbbtv_OPAPP_BS18	1	BroadcastSupervisor, ChannelChangeSucceeded initiated by operator application setChannel(,,, quiet=2)	TRUE	An operator application have both BroadcastSupervisor object and video-broadcast object in presenting state. When the application calls to setChannel(newChannel, , , quiet=2) method of the video/broadcast object, the ChannelChangeSucceeded events are generated on both the BroadcastSupervisor and the video-broadcast objects with context info: 'channel' matching to the newChannel call argument, 'viewerChannel' matching to previous channel and 'quiet' equal 2. After that the newChannel is presented and currentChannel property of both video/broadcast and BroadcastSupervisor shall also be set to the newChannel,

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS20	1	BroadcastSupervisor, programmes, video/broadcast object of operator application.	TRUE	A regular application with video-broadcast object in unrealized state and an operator application in foreground state with active video/broadcast object are running. When device is tuned to channel with metadata, both video/broadcast and BroadcastSupervisor objects in the operator application have the same value of 'programmes', matching to metadata. The 'programmes' property of video/broadcast object in the regular HbbTV application has length equal 0.
org.hbbtv_OPAPP_BS21	1	BroadcastSupervisor, programmes.	TRUE	There is no HbbTV regular application, operator application does not have instance of video/broadcast object. When operator application is in transient state and device is tuned to channel with metadata, 'programmes' property of BroadcastSupervisor object contains programmes available on the currently tuned channel.
org.hbbtv_OPAPP_BS22	1	BroadcastSupervisor, programmes, change of channel.	FALSE	There are two channels with different metadata. After channel change indicated by operator application, onProgrammesChanged callback is run, the programmes property of BroadcastSupervisor object is updated and matches to current channel.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS27	1	BroadcastSupervisor, ParentalRatingChange when switching to previous/next channel, new rating above threshold.	FALSE	Programme on first channel have parental rating below threshold, programme on the second channel have parental rating above threshold. Operator application is in foreground state and call prevChannel or nextChannel method of video/broadcast object. When device starts to present second channel, the onParentalRatingChange callback is run with matching call arguments. The programme collection of BroadcastSupervisor object contains programme with matching parental rating.
org.hbbtv_OPAPP_BS28	1	BroadcastSupervisor, ParentalRatingChange when call setChannel(,,,quiet=2) with moving to transient state.	FALSE	Programme on first channel have parental rating above threshold, programme on the second channel have parental rating below threshold. Operator application in foreground state calls in the same event loop setChannel(secondChannel, , , quiet=2) and opAppRequestTransient(). When device starts to present second channel, the onParentalRatingChange callback is run with matching call arguments. The programme collection of BroadcastSupervisor object contains programme with matching parental rating.
org.hbbtv_OPAPP_BS33	1	BroadcastSupervisor, currentChannel change	TRUE	When broadcast related regular application changes channel using setChannel(,,,quiet=1) method of video/broadcast method, the currentChannel properties of: video/broadcast object of regular application and BroadcastSupervisor object of operator application are the same and are matching to currently displayed channel.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS36	1	BroadcastSupervisor, onSelectedComponentChanged, audio change triggered by operator application	TRUE	When operator HbbTV application changes audio component using video/broadcast object, onSelectedComponentChanged callbacks are run with call argument componentType=1 (COMPONENT_TYPE_AUDIO) in both BroadcastSupervisor and video/broadcast objects. Operator application is in foreground state.
org.hbbtv_OPAPP_BS37	1	BroadcastSupervisor, SelectedComponentChange, subtitle change triggered by operator application	TRUE	When terminal changes subtitle component, SelectedComponentChange event is generated with contextInfo componentType=2.
org.hbbtv_OPAPP_BS38	1	BroadcastSupervisor.getChannelConfig	FALSE	When an operator application calls to BroadcastSupervisor.getChannelConfig(), a ChannelConfig instance is created. Call to getChannelConfig() of video/broadcast object returns another instance of ChannelConfig object. Both instances have the same set of properties and methods. channelList properties in both instances have the same length and channel order.
org.hbbtv_OPAPP_BS39	1	BroadcastSupervisor.createChannelObject(Integer idType, String dsd, Integer sid), channel listed in SDT	TRUE	Operator application in background state creates instance of channel object using BroadcastSupervisor.createChannelObject(Integer idType, String dsd, Integer sid) method. Newly created channel object points to broadcasted channel not being current channel. When operator application uses newly created channel as argument of BroadcastSupervisor.setChannel(channel) method, the terminal successfully tunes to new channel.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS41	1	BroadcastSupervisor.createChannelObject(idType, onid, tsid, sid)	TRUE	An operator application in the transient state creates an instance of a channel object using the BroadcastSupervisor.createChannelObject(idType, onid, tsid, sid) method. The newly created channel object points to a broadcast channel not being the current channel. When the operator application uses the newly created channel as argument of the BroadcastSupervisor.setChannel(channel) method, the terminal successfully tunes to new channel. After the change, an onChannelChangeSucceeded callback is run with the channel call argument matching to the newly created channel. BroadcastSupervisor.currentChannel is adjusted to the new channel.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS42	1	BroadcastSupervisor.setChannel regular HbbTV application has active video broadcast object	FALSE	A regular HbbTV application has an active and scaled video/broadcast object presenting a current channel. An operator application in the transient state creates an instance of a channel object using the BroadcastSupervisor.createChannelObject(idType, onid, tsid, sid) method. The newly created channel object points to a broadcast channel not being the current channel. When the operator application uses the newly created channel as an argument of the BroadcastSupervisor.setChannel(channel) method, the terminal successfully tunes to the new channel. After the change, a ChannelChangeSucceeded event is generated with the channel contextInfo matching to the newly created channel. The BroadcastSupervisor.currentChannel is adjusted to the new channel.
org.hbbtv_OPAPP_BS43	1	BroadcastSupervisor.prevChannel, operator HbbTV application has active video broadcast object	FALSE	An operator HbbTV application in the foreground state has an active and scaled video/broadcast object presenting a current channel. When the operator application calls the BroadcastSupervisor.prevChannel() method, the terminal successfully tunes to the previous channel. After the change, a ChannelChangeSucceeded event is generated with the channel contextInfo matching to the newly created channel. The BroadcastSupervisor.currentChannel is adjusted to new channel.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS46	1	BroadcastSupervisor.getComponents(1), operator HbbTV application has active video broadcast object	TRUE	An operator HbbTV application has an active, scaled video/broadcast object. When the operator application calls the BroadcastSupervisor.getComponents(1) method, the terminal returns a collection with available audio components.
org.hbbtv_OPAPP_BS47	1	BroadcastSupervisor.getComponents(2)	TRUE	When an operator application calls the BroadcastSupervisor.getComponents(2) method, the terminal returns a collection with available subtitle components. The presentation is under control of the terminal.
org.hbbtv_OPAPP_BS48	1	BroadcastSupervisor.getCurrentActiveComponents(0)	TRUE	When an operator application calls the BroadcastSupervisor.getCurrentActiveComponents(0) method, the terminal returns a collection with active video components. The presentation of the broadcast video is under control of the terminal.
org.hbbtv_OPAPP_BS50	1	BroadcastSupervisor.getCurrentActiveComponents(2)	TRUE	An operator HbbTV application has an active video/broadcast object. When the operator application calls the BroadcastSupervisor.getCurrentActiveComponents(2) method, the terminal returns a collection with active subtitle components.
org.hbbtv_OPAPP_BS52	1	BroadcastSupervisor.getComponents(2), the set of available components decreases	TRUE	An operator HbbTV application calls BroadcastSupervisor.getComponents(2) to get an initial set of subtitle components. The PMT is updated. The new PMT contains no subtitle components. When the operator application calls BroadcastSupervisor.getComponents(2) again, the terminal returns an empty collection.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS53	1	BroadcastSupervisor, pause()	TRUE	An operator application adds an onPlaySpeedChanged event listener to a BroadcastSupervisor object. When the application calls the pause() method of the BroadcastSupervisor object then: the method returns true, an onPlaySpeedChanged(speed) event with speed=0 is generated, the currentTimeShiftMode of the BroadcastSupervisor object is bigger than 0, the playSpeed property of the BroadcastSupervisor object is equal 0, the timeShiftMode property of the BroadcastSupervisor object is bigger than 0 and the rendering of the broadcast content is paused.
org.hbbtv_OPAPP_BS54	1	BroadcastSupervisor and playSpeeds	FALSE	When an operator application reads the playSpeeds property of a BroadcastSupervisor object then it receives an array containing at least two elements: numbers 1.0 and 0.0.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS56	1	BroadcastSupervisor, resume()	TRUE	An operator application sets onPlaySpeedChanged callback on BroadcastSupervisor object. The BroadcastSupervisor object is in timeshift mode, the play speed is 0. When the application calls to resume() method of BroadcastSupervisor object then: the method returns true, the onPlaySpeedChanged(speed) callback with speed=1 is invoked, currentTimeShiftMode of BroadcastSupervisor object is bigger than 0, playSpeed property of BroadcastSupervisor object is 1, timeShiftMode property of BroadcastSupervisor object is bigger than 0 and the video presentation resumes.
org.hbbtv_OPAPP_BS57	1	BroadcastSupervisor, stopTimeshift()	TRUE	An operator application sets an onPlaySpeedChanged callback on a BroadcastSupervisor object. The BroadcastSupervisor object is in the timeshift mode, the play speed is 0. When the application calls the stopTimeshift() method of the BroadcastSupervisor object then: the method returns true, the video presentation resumes.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS58	1	BroadcastSupervisor, seek()	TRUE	An operator application adds a PlayPositionChanged event listener to a BroadcastSupervisor object. The BroadcastSupervisor object is in the timeshift mode, the play speed is 1. When the application calls the seek(position) method of the BroadcastSupervisor object, with position inside the buffered content then: the method returns true, the PlayPositionChanged event listener is run with 'position' context info matching to call parameter, the playbackOffset of the BroadcastSupervisor is equal to the positive offset of the live broadcast, the playPosition of the BroadcastSupervisor matches to the current playback position of the media, measured in milliseconds from the start of the timeshift buffer and the video presentation is continued.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_BS60	1	BroadcastSupervisor, recordNow and stopRecording	TRUE	An operator application sets an onRecordingEvent callback on a BroadcastSupervisor object. When the application calls the recordNow() method of the BroadcastSupervisor object then: the methods returns string (recordingID), the onRecordingEvent(state) event with state call argument value 3 is generated and the onRecordingEvent(state) event with state call argument value 4 is generated. After that, the 'recordings' property of the 'application/oipfRecordingScheduler' object keeps the recording with: the id equal to recordingID and the matching recordingStartTime. After that, when the operator application calls the stopRecording() method of the BroadcastSupervisor object, then the onRecordingEvent(state) event with state call argument value 6 is generated. Finally, the 'recordings' property of the 'application/oipfRecordingScheduler' object keeps the recording with: the id equal to recordingID and the matching recordingStartTime and recordingDuration.
org.hbbtv_OPAPP_CERT01	1	Request to XML AIT with client certificate	FALSE	The terminal performs request to download XML AIT. When during TLS handshake server requests a certificate, the terminal sends valid client's certificate chain.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CERT02	1	Request to application package URL with client certificate	FALSE	The terminal performs request to download the encrypted application package. When during TLS handshake server requests a client certificate, the terminal sends valid client's certificate chain.
org.hbbtv_OPAPP_CERT03	1	createApplication, request with client certificate	TRUE	An operator application calls to the 'createApplication' When during TLS handshake server requests a certificate, the terminal sends valid client's certificate chain.
org.hbbtv_OPAPP_CERT04	1	HTTPS request by operator application, request with client certificate	TRUE	An operator application uses XMLHTTPRequest to send request to https url. When during TLS handshake server requests a certificate, the terminal sends valid client's certificate chain.
org.hbbtv_OPAPP_CERT05	1	Client certificate, Invalidity Date is 25 years from inclusion	FALSE	When a server requests a client certificate during the TLS handshake, the terminal sends a valid client certificate. The certificate Invalidity Date is at least 25 years older than the point of inclusion on a terminal..
org.hbbtv_OPAPP_CERT06	1	Request XML AIT with client certificate containing Intermediate CA in trust chain.	FALSE	The terminal performs request to download XML AIT. When during TLS handshake server requests a client certificate, the terminal sends valid client's certificate chain.
org.hbbtv_OPAPP_CERT07	1	Request to application package URL with client certificate containing Intermediate CA in trust chain	FALSE	The terminal performs request to download the encrypted application package. When during TLS handshake server requests a certificate, the terminal sends valid client's certificate chain.
org.hbbtv_OPAPP_CERT08	1	createApplication, request with client certificate containing Intermediate CA in trust chain	TRUE	When operator application calls to the 'createApplication', and during TLS handshake server requests a client certificate, the terminal sends valid client's certificate chain.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CERT09	1	Client certificate verified using anchor certificate (Client Root CA certificate)	TRUE	When during TLS handshake server requests a client certificate, then the terminal sends client's certificate chain, which can be verified using appropriate Client Root CA certificate.
org.hbbtv_OPAPP_CERT10	1	Client certificate verified using anchor certificate (Intermediate CA certificate)	TRUE	When during TLS handshake server requests a client certificate, then the terminal sends client's certificate chain, which can be verified using appropriate Client Intermediate CA certificate.
org.hbbtv_OPAPP_CERT11	1	Client CA trust anchor certificate	TRUE	A Client CA anchor certificate delivered by a manufacturer is a standard X.509 v3 certificate with public RSA key of length at least 2 048 bits. In the certificate following fields are correctly set: signatureAlgorithm, signature, subjectKeyIdentifier, keyUsage with keyCertSign and cRLSign, basicConstraints with cA field equal to true, and cRLDistributionPoints. The signatureAlgorithm and signature are both equal and set to either sha256WithRSAEncryption or sha384WithRSAEncryption. The cRLDistributionPoints refers to working Certificate Revocation List (CRL) service. The anchor certificate Invalidity Date is at least 25 years after the point of inclusion of the client certificate. Issuer attribute identifies the organization acting as the certification authority. If the anchor certificate is an intermediate certificate, the authorityKeyIdentifier is present.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CHCONF01	1	createChannelList in ChannelConfig	TRUE	An operator application calls to the createChannelList(channels), where 'channels' call argument is an array with length > 1. When all elements in that array except one are channel objects, then the return value implements ChannelList API, where the element from array which is not of the channel type is discarded.
org.hbbtv_OPAPP_CHCONF02	1	setChannelList in ChannelConfig	TRUE	An operator application creates the channel list using createChannelList. The channel list includes channels: from original terminal channel list and channels not available on the original terminal channel list. When the operator application calls to the setChannelList(channelList), the terminal sets the channel list. The new channel list is available to: the calling operator application, terminal UI, a regular HbbTV application and operator application started by the calling operator application. The original terminal channel list is no longer accessible.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CHCONF03	1	Restoring original terminal channel list, after restarting operator application	TRUE	An operator application calls to the setChannelList(channelList) method, and the terminal replaces the original, non empty channel list by the application channel list. The application channel list contains some (not all) channels from the original channel list and channels not present in the original channel list. When the operator application is destroyed, the original terminal channel list is restored, and is available to: the running operator application, terminal UI and a regular HbbTV application. The application channel list is no longer accessible.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CHCONF04	1	Scanning TV terrestrial channels	FALSE	An operator application: creates DVBTChannelScanParameters object matching to network parameters, creates ChannelScanOptions object with parameters: channelType equal TYPE_TV and replaceExisting equal true, adds onChannelScan callback and adds onChannelListUpdate callback. When the operator application calls to the startScan then: onChannelScan event is dispatched with appropriate arguments: Integer scanEvent=0, Integer progress, Integer frequency, Integer signalStrength, Integer channelNumber, Integer channelType, Integer channelCount, Integer transponderCount, Channel newChannel. At least one ChannelListUpdate event is dispatched. After dispatching onChannelScan event with call argument scanEvent equal 4, all TV channels available on given frequency are added by terminal to channel list. Channel list shall not contain any radio or other channels.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CHCONF05	1	Scanning all terrestrial channels	TRUE	An operator application: creates DVBTChannelScanParameters object matching to network parameters, creates ChannelScanOptions object with the following parameters: channelType set to TYPE_ALL and replaceExisting set to false, adds ChannelScan event listener and adds ChannelListUpdate event listener. When the operator application calls the startScan method, then: A ChannelScan event is dispatched with the appropriate context info: Integer scanEvent = 0, Integer progress, Integer frequency, Integer signalStrength, Integer channelNumber, Integer channelType, Integer channelCount, Integer transponderCount, Channel newChannel. At least one ChannelListUpdate event is dispatched. After dispatching another ChannelScan event with its scanEvent call argument set to '4', all TV channels available on given frequency are added to the channel list by the terminal. The new channel list shall contain TV, radio and data channels.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CHCONF06	1	Scanning TV satellite channels	TRUE	An operator application: creates DVBSChannelScanParameters object matching to transponder and antenna parameters, creates ChannelScanOptions object with parameters: channelType equal TYPE_TV and replaceExisting equal true, adds onChannelScan callback and adds onChannelListUpdate callback. When the operator application calls the startScan method then: an onChannelScan event is dispatched with appropriate arguments: Integer scanEvent=0, Integer progress, Integer frequency, Integer signalStrength, Integer channelNumber, Integer channelType, Integer channelCount, Integer transponderCount, Channel newChannel. At least one onChannelListUpdate event is dispatched. After dispatching another ChannelScan event with call argument scanEvent equal to 4, all TV channels available on the transponder are added to the channel list by the terminal. The channel list contains channels with the channelType equal to TYPE_TV.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CHCONF07	1	Scanning all satellite channels	FALSE	An operator application: creates DVBSChannelScanParameters object matching to transponder and antenna parameters, creates ChannelScanOptions object with parameters: channelType equal TYPE_ALL and replaceExisting equal false, adds onChannelScan callback and adds onChannelListUpdate callback. When the operator application calls to the startScan then: onChannelScan event is dispatched with appropriate arguments: Integer scanEvent=0, Integer progress, Integer frequency, Integer signalStrength, Integer channelNumber, Integer channelType, Integer channelCount, Integer transponderCount, Channel newChannel. At least one onChannelListUpdate event is dispatched. After dispatching another ChannelScan event with call argument scanEvent equal to 4, all channels available on the transponder are added by the terminal to the channel list.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CHCONF08	1	Scanning TV cable channels	TRUE	An operator application: creates DVBCChannelScanParameters object matching to frequency parameters, creates ChannelScanOptions object with parameters: channelType equal TYPE_TV and replaceExisting equal true, adds ChannelScan event listener and adds ChannelListUpdate event listener. When the operator application calls to the startScan(ChannelScanOptions, DVBCChannelScanParameters) then: ChannelScan event is dispatched with appropriate context info: Integer scanEvent=0, Integer progress, Integer frequency, Integer signalStrength, Integer channelNumber, Integer channelType, Integer channelCount, Integer transponderCount, Channel newChannel. At least one ChannelListUpdate event is dispatched. After dispatching another ChannelScan event with call argument scanEvent equal to 4 (scan finished), the channel list created by the terminal contains the channels found during the scan only; the 'channelType' property of each channel is TYPE_TV.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CHCONF09	1	Scanning all cable channels	FALSE	An operator application: creates DVBCChannelScanParameters object matching to frequency parameters, creates ChannelScanOptions object with parameters: channelType equal TYPE_ALL and replaceExisting equal false, adds onChannelScan callback and adds onChannelListUpdate callback. When the operator application calls to the startScan then: onChannelScan event is dispatched with appropriate arguments: Integer scanEvent=0, Integer progress, Integer frequency, Integer signalStrength, Integer channelNumber, Integer channelType, Integer channelCount, Integer transponderCount, Channel newChannel. At least one onChannelListUpdate event is dispatched. After dispatching another ChannelScan event with call argument scanEvent equal to 4 (scan finished), the channel list created by terminal contains both channels available before scan and channels found during the scan.
org.hbbtv_OPAPP_CHCONF10	1	Stopping terrestrial scanning	FALSE	An operator application starts scanning terrestrial network. When the application calls to the stopScan method before scan finishes, then: scanning is stopped, channel line-ups are not changed.
org.hbbtv_OPAPP_CHCONF11	1	Stopping satellite scanning	TRUE	An operator application starts scanning satellite transponder. When the application calls to the stopScan method before scan finishes, then: scanning is stopped, channel line-ups are not changed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CHCONF12	1	Stopping cable scanning	FALSE	An operator application starts scanning cable transponder. When the application calls to the stopScan method before scan finishes, then: scanning is stopped and channel line-ups are not changed.
org.hbbtv_OPAPP_CONF02	1	preferredAudioLanguage change triggers switch of rendered audio component in media being played under regular HbbTV application control	FALSE	A regular HbbTV application presents valid MPEG DASH content using A/V Control object. The presented content contains two audio adaptation sets, each adaptation set has the @lang property with value being a valid ISO 639-2 language code. The first audio adaptation set @lang attribute value is present in the preferredAudioLanguage property. Value of the @lang attribute of the second adaptation set is not present in the preferredAudioLanguage property. All other properties of the both adaptation sets are the same. The terminal initially renders first adaptation set. When an operator application modifies the 'preferredAudioLanguage' property as below: the preferredAudioLanguage property does not contain the value of the first adaptation set @lang attribute, the preferredAudioLanguage property contains the value of the second adaptation set @lang attribute, then the terminal start to render the second adaptation set. The onSelectedComponentChanged callback in the A/V control object is called with call argument equal to 1. The value of the 'preferredAudioLanguage' property is the same in both regular and operator HbbTV applications.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF04	1	preferredSubtitleLanguage change triggers switch of rendered subtitle component in media being under regular HbbTV application control	FALSE	A regular HbbTV application presents valid MPEG DASH content using HTML5 video element. The presented content contains two subtitle adaptation sets, each adaptation set has the @lang property with value being a valid ISO 639-2 language code. The first adaptation set @lang attribute value is present in the preferredSubtitleLanguage property. Value of the @lang attribute of the second adaptation set is not present in the preferredSubtitleLanguage property. All other properties of the both adaptation sets are the same. The terminal initially renders first adaptation set. Operator application modifies the 'preferredSubtitleLanguage' property as below: the preferredSubtitleLanguage property does not contain the language code of the first track, the preferredSubtitleLanguage property contains the language code of the second track After change of preferredSubtitleLanguage, the terminal renders second subtitle track. When an operator application modifies the 'preferredSubtitleLanguage' property of the Configuration type object, the terminal re-evaluates default subtitle component of media presented by HbbTV application. The value of the 'preferredSubtitleLanguage' is the same in both regular and operator HbbTV applications.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF05	1	audioDescriptionEnabled change	TRUE	A regular application is running. When an operator application modifies the 'audioDescriptionEnabled' property of the Configuration object, then the value of the 'audioDescriptionEnabled' is changed in both the regular and the operator HbbTV applications.
org.hbbtv_OPAPP_CONF07	1	subtitlesEnabled set to true, media presentation under HbbTV application control	FALSE	The value of 'subtitlesEnabled' property of the Configuration type object is 'false' (disabled). A regular HbbTV application plays streaming content with available subtitle component. When an operator application sets the 'subtitlesEnabled' value to 'true' (enabled), the subtitles are rendered.
org.hbbtv_OPAPP_CONF09	1	subtitlesEnabled set to false, media presentation under HbbTV application control	FALSE	The value of the 'subtitlesEnabled' property of the Configuration object is 'true' (enabled). A regular HbbTV application plays streaming content with available subtitle component. The subtitles are rendered. When an operator application sets the 'subtitlesEnabled' value to 'false' (disabled): the subtitles are not rendered, the regular HbbTV application cannot enable the subtitles.
org.hbbtv_OPAPP_CONF10	1	Child, regular HbbTV application fails to set preferredAudioLanguage	TRUE	If a regular HbbTV application created by an operator application tries to modify the 'preferredAudioLanguage' property of the Configuration object, the 'preferredAudioLanguage' value will not change.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF14	1	Permission granted to query runningOperatorApplication	TRUE	An operator application calls the setQueryOrganisations(ids) method of the Configuration object, organisation_id of running regular HbbTV application is inserted to the 'ids' call argument. When the regular HbbTV application reads the runningOperatorApplication property of the Configuration object, it gets an array, where: index 0 in the array contains the organisation_id and index 1 in the array contains the application_id of the running operator application.
org.hbbtv_OPAPP_CONF17	1	Permission not granted to query runningOperatorApplication, no organisation_id	TRUE	An operator application calls the setQueryOrganisations(ids) method of the Configuration object. The organisation_id of a running operator HbbTV application is inserted to the 'ids' call argument. The operator application creates a child regular HbbTV application using createApplication(uri, true, false), where uri call argument refers to HTML page directly. When the regular HbbTV application reads the runningOperatorApplication property of the Configuration object, the obtained value is null.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF18	1	setQueryOrganisations run by regular HbbTV application	TRUE	An operator HbbTV application is running. A regular HbbTV application calls the setQueryOrganisations(ids) method of the Configuration object, organisation_id of the regular HbbTV application is inserted to the 'ids' call argument. When the application reads the runningOperatorApplication property of the Configuration object, it gets null.
org.hbbtv_OPAPP_CONF20	1	Pressing UI_TVMODE related keys after call to the replaceUIElements([UI_TVMODE])	TRUE	An operator HbbTV application is in background state. The application is requesting: VK_CHANNEL_UP VK_CHANNEL_DOWN VK_INFO VK_CHANNELS VK_AUDIO_TRACK VK_AUDIO_DESC VK_SUBTITLE key events and is calling to replaceUIElements(elements) where the 'elements' argument is an array with one element with the value 0. The replaceUIElements returns an array with one element with value 0. After the button generating the requested key event is pressed: the default terminal UI is not displayed and the application receives requested key events.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF21	1	replaceUIElements, UI_TVMODE, selection corresponds to the pressing key	TRUE	An operator HbbTV application is in background state. The application is requesting: VK_CHANNEL_UP VK_CHANNEL_DOWN VK_INFO VK_CHANNELS VK_AUDIO_TRACK VK_AUDIO_DESC VK_SUBTITLE key events and is calling to replaceUIElements(elements), where the 'elements' call argument is an array with one element equal to 0. When a UI element that has been replaced by the operator application is selected: the default terminal UI is not displayed and a simulated key event is generated to the operator application. The UI selection corresponds to the requested key.
org.hbbtv_OPAPP_CONF22	1	Call to the replaceUIElements([UI_TVMODE]), next selection of UI element replaced by the operator application	TRUE	An operator HbbTV application is in background state. The application is calling the replaceUIElements(elements), where 'elements' call argument is an array with one element equal 0. When an UI element that has been replaced by the operator application is selected: the default terminal UI is not displayed and the new state is as defined in bilateral agreement. The selection either: does not correspond to pressing the keys related to UI_TVMODE or corresponds to an operator application reserved key that the operator application does not have.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF24	1	Call to the replaceUIElements([UI_VOLUME]), next pressing related keys volume up, volume down, mute	TRUE	An operator HbbTV application is requesting: VK_VOLUME_UP, VK_VOLUME_DOWN, VK_MUTE key events and calling replaceUIElements(elements) where 'elements' call argument is an array with one element equal with the value 1. The replaceUIElements returns an array with one element with value 1. After that, when any button generating requested key event is pressed: the default terminal UI is not displayed and the operator application receives the key event.
org.hbbtv_OPAPP_CONF25	1	replaceUIElements, UI_VOLUME, selection corresponds to the pressing key	TRUE	An operator HbbTV application is in background state. The application is requesting: VK_VOLUME_UP VK_VOLUME_DOWN VK_MUTE and is calling the replaceUIElements(elements), where the 'elements' call argument is an array with one element equal to 1. When an UI element that has been replaced by the operator application is selected: the default terminal UI is not displayed and simulated key event is generated to the operator application. The UI selection corresponds to the requested key.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF27	1	replaceUIElements([UI_EPG]), related key events	TRUE	An operator HbbTV application: is in background state and is requesting VK_GUIDE key event via KeySet API. When the application calls to replaceUIElements(elements) where the 'elements' call argument is an array with one element equal 64, the function returns an array with one element equal 64. When after that the button generating the requested key event is pressed: the default terminal UI is not displayed and the application receives the key event.
org.hbbtv_OPAPP_CONF31	1	replaceUIElements, UI_TIMESHIFT, related key events	TRUE	An operator HbbTV application is requesting: VK_STOP VK_PLAY VK_PAUSE VK_PLAY_PAUSE VK_FAST_FWD VK_REWIND key events via KeySet API and calling the replaceUIElements(elements) where the 'elements' call argument is an array with one element equal to the integer value 3. The replaceUIElements returns an array with one element equal to 3. When after that any button generating the requested key events is pressed: the default terminal UI is not displayed and the application receives the key event. The regular HbbTV application is not active.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF33	1	replaceUIElements, UI_RECORD, related key event	TRUE	An operator HbbTV application is requesting VK_RECORD key event and calling to replaceUIElements(elements) where the 'elements' call argument is an array with one element equal to the integer value 4. The replaceUIElements returns an array with one element equal to 4. When after that the button generating the VK_RECORD key event is pressed: the default terminal UI is not displayed the terminal does not start a recording and the application receives the VK_RECORD key event. A regular HbbTV application is not active.
org.hbbtv_OPAPP_CONF35	1	replaceUIElements fails when run by regular HbbTV application	TRUE	When a regular HbbTV application calls the replaceUIElements(elements) method of the Configuration object, where the 'elements' call argument is an array equal [0, 1, 2, 3, 4, 64, 67], then the call has no effect, an UI suppression is not successful.
org.hbbtv_OPAPP_CONF36	1	replaceUIElements failure, no UI_VOLUME bilateral agreement	TRUE	When an operator is calling to replaceUIElements(elements) where 'elements' call argument is an array with one element with the value equal to 1 then the return value is an empty array. After that, when a button generating the UI_VOLUME related key event is pressed the default terminal UI is displayed.
org.hbbtv_OPAPP_CONF40	1	Persistence of setting volume via LocalSystem	TRUE	When an operator application sets the 'volume' property of the LocalSystem class object, the value is persistent and does not change after power off.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF41	1	LocalSystem muting/unmuting	FALSE	When an operator application sets the 'mute' property of the LocalSystem class object, the physical audio is adjusted.
org.hbbtv_OPAPP_CONF42	1	Modifying preferredUILanguage	TRUE	When an operator-specific operator application sets the preferredUILanguage property value of the Configuration object, the set value is included to the HTTP Accept-language header. After that, when a regular HbbTV application reads 'preferredUILanguage' property it obtains the value set by the operator application.
org.hbbtv_OPAPP_CONF45	1	readonly preferredUILanguage in regular and privileged operator HbbTV applications	TRUE	Modifying the preferredUILanguage property of the Configuration class object has no effect, when it is done by privileged operator HbbTV application.
org.hbbtv_OPAPP_CONF47	1	LocalSystem vendorName	TRUE	When an operator-specific operator application reads the 'vendorName' property of the LocalSystem object, then it receives a string matching to: the name included in the bilateral agreement, the navigator.userAgent property.
org.hbbtv_OPAPP_CONF50	1	LocalSystem softwareVersion	TRUE	When an operator-specific operator application reads the 'softwareVersion' property of the LocalSystem object, then it receives a string matching to the navigator.userAgent property.
org.hbbtv_OPAPP_CONF51	1	LocalSystem hardwareVersion	TRUE	When an operator-specific operator application reads the 'hardwareVersion' property of the LocalSystem object, then it receives a string. If the navigator.userAgent property contains the hardwareVersion then it is the same.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF52	1	LocalSystem tuners	TRUE	When an operator-specific operator application reads the 'tuners' property of the LocalSystem object, then it receives a collection of Tuner objects. The collection length is equal to the number of tuners in the device. Each tuner object have the following properties: Integer id, String name, IntegerCollection idTypes, SignalInfo signalInfo and Integer frontEndPosition.
org.hbbtv_OPAPP_CONF53	1	LocalSystem serialNumber	TRUE	When an operator application reads the 'serialNumber' property of the LocalSystem object, then it receives a string.
org.hbbtv_OPAPP_CONF56	1	setPowerState(OFF)	FALSE	An operator-specific operator application is in the ON power state. When the operator application calls to setPowerState(newState) method of the LocalSystem class, with the newState call argument equal to OFF, then the terminal is switched to the off state and made the application inactive.
org.hbbtv_OPAPP_CONF57	1	setPowerState(RESTART)	FALSE	An operator application is in the ACTIVE_STANDBY power state. When the operator application calls the setPowerState(newState) method of the LocalSystem class, with the newState call argument equal to RESTART, then the terminal is restarted.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONF59	1	SignalInfo	TRUE	When an operator-specific operator application reads the 'signalInfo' property of a given tuner object, then it receives: readonly Number strength - with value matching to strength of signal delivered to tuner input, readonly Integer quality - with value matching to strength and error rate of signal delivered to tuner input. When the signal strength of the broadcast multiplex is reduced, then the 'strength' property shall reduce. Attempt to modify 'signalInfo', 'strength' or 'quality' property fails.
org.hbbtv_OPAPP_CONF64	1	Restore terminal UI elements when operator application terminates	TRUE	An operator application suppresses the UI by calling replaceUIElements(elements) with elements containing all possible functionalities. After that, when the application is terminated, the support of UI elements and related functionalities returns to terminal.
org.hbbtv_OPAPP_CONTEXT01	1	Immediate launching application with updateFailed context	FALSE	An operator application calls to opAppRequestUpdate(immediate = true) to initiate an update. Next the application is killed. When the update fails, the terminal immediately launches the application which requested the update with the 'status' query parameter equal to "updateFailed"

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONTEXT02	1	updateFailed launch context	FALSE	An operator application calls to the opAppRequestUpdate(immediate = false) to initiate an update. Next, the application is killed. Next, the update fails. After that, when the terminal launches the application for the first time after update, the launch context contains the "status" parameter equal to "updateFailed". After that, when the terminal launches the application second time after update, the launch context does not contain the "status" parameter equal to "updateFailed".
org.hbbtv_OPAPP_CONTEXT03	1	updateSuccessful launch context	TRUE	An operator application calls to the opAppRequestUpdate(immediate = false) to initiate an update. Next the application is killed. Next the update successfully finishes. After that, when the terminal launches the application first time, the launch context contains the "status" parameter equal to "updateSuccessful". After that, when the terminal launches the application for the second time, the launch context does not contain the "status" parameter equal to "updateSuccessful".
org.hbbtv_OPAPP_CONTEXT04	1	'install' launch context	TRUE	When the terminal launches an operator application from an installation screen, then the application is launched with a query component which contains "lloc=install" string.
org.hbbtv_OPAPP_CONTEXT05	1	'settings' launch context	TRUE	When the terminal launches an operator application from a part of settings screen, then the application is launched with a query component which contains the "lloc=settings" string.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONTEXT06	1	'source' launch context	TRUE	When the terminal launches an operator application from a part of source selection menu, then the application is launched with a query component which contains the "lloc=source" string.
org.hbbtv_OPAPP_CONTEXT07	1	'opapp-epg' launch context	TRUE	When terminal launch an operator application as an EPG replacement, then the application is launched with query component set to "sloc=opapp-epg" string.
org.hbbtv_OPAPP_CONTEXT08	1	'opapp-pvr' launch context	TRUE	When terminal launches an operator application as an PVR replacement, then the application is launched with a query component which contains the "sloc=opapp-pvr" string.
org.hbbtv_OPAPP_CONTEXT09	1	'opapp-settings' launch context	TRUE	When the terminal launches an operator application to change the application settings, then the application is launched with a query component which contains the "sloc=opapp-settings" string.
org.hbbtv_OPAPP_CONTEXT10	1	launch context 'standby'	FALSE	The terminal resumes from standby power state. If an operator application was hibernated (not killed) during the standby, the onOperatorApplicationContextChange is generated with launchLocation call argument equal to 'standby'. If the operator application is killed during the standby, it is re-launched with a query component which contains "lloc=standby" string.
org.hbbtv_OPAPP_CONTEXT11	1	launch context 'powerup'	FALSE	After the terminal is turned on, an operator application is launched with a query component which contains "lloc=powerup" string.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_CONTEXT12	1	OperatorApplicationContextChange, 'opapp-epg'	TRUE	When an already running operator application is displayed as an EPG replacement, then the OperatorApplicationContextChange event is generated with context info startupLocation equal to ["opapp-epg"].
org.hbbtv_OPAPP_CONTEXT13	1	OperatorApplicationContextChange, 'opapp-pvr'	TRUE	When an already running operator application is displayed as a PVR replacement, then the OperatorApplicationContextChange event is generated with context info startupLocation equal to ["opapp-pvr"].
org.hbbtv_OPAPP_CONTEXT14	1	OperatorApplicationContextChange, 'opapp-settings'	TRUE	When an already running operator application is displayed as a settings replacement, then the onOperatorApplicationContextChange callback function is called with call argument equal to ["opapp-settings"].
org.hbbtv_OPAPP_INSTALL01	1	Factory reset triggers application discovery via BAT with URI_linkage_descriptor with 'dns' scheme	TRUE	Terminal is re-installed or a factory reset is applied. BAT contains an URI_linkage_descriptor with URI with a 'dns' scheme. When the BAT is broadcasted, the terminal parses the first loop of the BAT to extract the URI from the URI_linkage_descriptor. Next, the URI is used to perform a request (DNS SRV lookup) to the following address: URI prefixed by "_hbbtv-ait._tcp.". When the discovery is successful the terminal uses the received host name and port number to create the following URL: “https://” + host name +":" + port number + "/opapp.aitx". Next, a HTTPS request to the constructed URL is performed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL02	1	Factory reset triggers application discovery via NIT with URI_linkage_descriptor with 'dns' scheme	TRUE	Terminal is re-installed or a factory reset is applied. NIT contains an URI_linkage_descriptor with URI with a 'dns' scheme. When the NIT is part of broadcast Service Information, the terminal parses the first loop of the NIT to extract the URI from the URI_linkage_descriptor. Next, the URI used to perform a request (DNS SRV lookup) to the following address: URI prefixed by "_hbbtv-ait._tcp.". When the discovery is successful the terminal uses the received host name and port number to create the following URL: “https://” + host name +":" + port number + "/opapp.aitx". Next, a HTTPS request to constructed URL is performed.
org.hbbtv_OPAPP_INSTALL03	1	Factory reset triggers application discovery via NIT with URI_linkage_descriptor with 'dvb' scheme	TRUE	Terminal is re-installed or a factory reset is applied. NIT contains an URI_linkage_descriptor with URI with a 'dvb' scheme. URI refers to an AIT with an address to DSMCC carousel containing an operator application package. When the NIT is broadcast, the terminal installs the application.
org.hbbtv_OPAPP_INSTALL04	1	Factory reset triggers application discovery via BAT with URI_linkage_descriptor with 'dvb' scheme	TRUE	Terminal is re-installed or a factory reset is applied. BAT contains an URI_linkage_descriptor with URI with a 'dvb' scheme. URI refers to an AIT with an address to DSMCC carousel containing an operator application package. When the BAT is broadcast, the terminal installs the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL05	1	Factory reset triggers application discovery via hardwired FQDN	TRUE	Terminal is re-installed or a factory reset is applied. When an operator FQDN is hardwired in the terminal, the terminal performs a request (DNS SRV lookup) to the following address: FQDN prefixed by "_hbbtv-ait._tcp." When the discovery is successful the terminal uses the received host name and port number to create the follwoing URL: “https://” + host name +":" + port number + "/opapp.aitx". Next, a HTTPS request to the constructed URL is performed.
org.hbbtv_OPAPP_INSTALL06	1	Factory reset triggers application discovery via hardwired location of the XML AIT	TRUE	Terminal is re-installed or a factory reset is applied. When the location of a valid XML AIT is hardwired in a terminal, the terminal performs XML AIT acquisition.
org.hbbtv_OPAPP_INSTALL07	1	Factory reset triggers application discovery via hbbtvopapps.org	TRUE	When a terminal is re-installed or a factory reset is applied, the terminal performs a request (DNS SRV lookup) to an "_hbbtv-ait._tcp.hbbtvopapps.org" address. The terminal uses the received host name and port number to construct the following URL: “https://” + host name +":" + port number + "/opapp.aitx". Next, a HTTPS request to the constructed URL is performed.
org.hbbtv_OPAPP_INSTALL08_1	1	Multiple URI_linkage_descriptors (NIT with FQDN only)	TRUE	When the NIT carries multiple URI_linkage_descriptor with uri_linkage_type equal 0x60 and hbbtv_linkage_type equal to 0, the terminal performs discovery of XML AIT locations extracted from the uri_char of each URI_linkage_descriptor with operator FQDN from NIT.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL08_2	1	Multiple URI_linkage_descriptors (BAT with FQDN only)	TRUE	When the BAT carries multiple URI_linkage_descriptor with uri_linkage_type equal 0x60 and hbbtv_linkage_type equal to 0, the terminal performs discovery of XML AIT locations extracted from the uri_char of each URI_linkage_descriptor with operator FQDN from BAT.
org.hbbtv_OPAPP_INSTALL08_3	1	Multiple URI_linkage_descriptors (NIT with URI of AIT only)	TRUE	When the NIT carries multiple URI_linkage_descriptor with uri_linkage_type equal 0x60 and hbbtv_linkage_type equal to 0, the terminal performs discovery of AIT locations extracted from the uri_char of each URI_linkage_descriptor of AIT.
org.hbbtv_OPAPP_INSTALL08_4	1	Multiple URI_linkage_descriptors (BAT with URI of AIT only)	TRUE	When the BAT carries multiple URI_linkage_descriptor with uri_linkage_type equal 0x60 and hbbtv_linkage_type equal to 0, the terminal performs discovery of AIT locations extracted from the uri_char of each URI_linkage_descriptor of AIT.
org.hbbtv_OPAPP_INSTALL08_5	1	Multiple URI_linkage_descriptors (NIT with one FQDN and one URI of AIT)	TRUE	When the NIT carries multiple URI_linkage_descriptor with uri_linkage_type equal 0x60 and hbbtv_linkage_type equal to 0, the terminal performs discovery of (XML) AIT locations extracted from the uri_char of each URI_linkage_descriptor with operator FQDN and AIT from NIT.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL08_6	1	Multiple URI_linkage_descriptors (BAT with one FQDN and one URI of AIT)	TRUE	When the BAT carries multiple URI_linkage_descriptor with uri_linkage_type equal 0x60 and hbbtv_linkage_type equal to 0, the terminal performs discovery of (XML) AIT locations extracted from the uri_char of each URI_linkage_descriptor with operator FQDN and AIT from BAT.
org.hbbtv_OPAPP_INSTALL09	1	Factory reset triggers application discovery via NIT generated by CICAM uri_linkage_descriptor with XML AIT	TRUE	A CICAM reports a profile_type of 1, the NIT from the CICAM contains a URI_linkage_descriptor with a URI to the XML AIT of an applicable operator application. The terminal is re-installed or a factory reset is applied. After detecting the NIT from the CICAM, the terminal parses the first loop of the NIT and gets the URI_linkage_descriptor to extract the URI and performs a HTTPS request to the URI.
org.hbbtv_OPAPP_INSTALL10	1	AIT with more than one application	FALSE	The terminal supports more than one applicable operator application. The applications are signalled in the same AIT. When installation of the applications is triggered: the terminal performs AIT discovery, the terminal acquires AIT, the terminal installs the applications.
org.hbbtv_OPAPP_INSTALL11	1	No re-fetch of XML AIT if Cache-Control header is valid	FALSE	When a received request to XML AIT has the Cache-Control header with expire date, the terminal does not re-fetch the XML AIT as long as the request is valid.
org.hbbtv_OPAPP_INSTALL12	1	Terminal installation triggers discovery of all applicable operator applications	TRUE	The internet connection is enabled. When the terminal is being installed, it performs discovery of all applicable operator applications and installs all of them except preinstalled.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL13	1	CICAM installation triggers operator application discovery via NIT from CICAM	TRUE	The operator application is discovered via NIT from CICAM. CICAM reports a profile_type of 1, NIT from CICAM carries correct URI_linkage_descriptor. The terminal after installation of the CICAM: parses the first loop of the NIT from CICAM and gets an URI_linkage_descriptor to extract the URI and performs a HTTPS request to the extracted URI.
org.hbbtv_OPAPP_INSTALL14	1	Application update failure, opapp.ait in application package not matching AIT	TRUE	A running operator application adds onOpAppUpdate callback to Application object and calls to the opAppRequestUpdate(immediate = true). After that both AIT and application package are acquired. When AIT does not match to opapp.ait file from the package the terminal: does not copy the operator application files into the terminal's persistent storage area, generates onOpAppUpdate callback with 'SOFTWARE_INSTALLATION_FAILED' call argument.
org.hbbtv_OPAPP_INSTALL15	1	Application installation failure, opapp.ait in application package not matching AIT	TRUE	An applicable operator application is not installed. The operator application discovery is triggered, both AIT and application package are acquired. When the AIT does not match with the opapp.ait file from the package, the terminal does not copy the operator application files into the terminal's persistent storage area.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL16	1	Application update failure, opapp.aitx in application package not matching XML AIT	TRUE	An operator application adds the onOpAppUpdate callback to an Application object, and calls to the opAppRequestUpdate(immediate = true). After that both XML AIT and application package are acquired. When XML AIT does not match with the opapp.aitx file from the package then the terminal: does not copy the operator application files into the terminal's persistent storage area and generates an onOpAppUpdate callback with 'SOFTWARE_INSTALLATION_FAILED' as call argument.
org.hbbtv_OPAPP_INSTALL17	1	Application installation failure, opapp.aitx in application package not matching XML AIT	TRUE	The operator application discovery is triggered, both XML AIT and application package are acquired. When XML AIT does not match with the opapp.aitx file from the package, the terminal does not copy the operator application files into the terminal's persistent storage area.
org.hbbtv_OPAPP_INSTALL22	1	AIT discovery triggered by appearing URI_linkage_descriptor in NIT	TRUE	An applicable operator application: uses the NIT to discover an URI_linkage_descriptor with an AIT and is not installed. The broadcast NIT specified in the bilateral agreement does not contain a URI_linkage_descriptor. When a new NIT version carries an URI_linkage_descriptor with an URI referring to the applicable operator application AIT, the terminal installs the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL23	1	AIT discovery triggered by adding to BAT URI_linkage_descriptor with 'dns' scheme	TRUE	An applicable operator application is not discovered via BAT due to no URI_linkage_descriptor and FQDN. When a URI_linkage_descriptor with a URI and FQDN is added in a new BAT version, the terminal: extracts the URI from the URI_linkage_descriptor, performs a request (DNS SRV lookup) to the address: URI prefixed by "_hbbtv-ait._tcp.", uses the received host names and port numbers to create the URLs: "https://" + host name +":" + port number + "/opapp.aitx" and performs request to one of the constructed URLs.
org.hbbtv_OPAPP_INSTALL24	1	AIT discovery, URI_linkage_descriptor in "NIT other"	TRUE	An applicable operator application is discovered via "NIT other" with URI_linkage_descriptor with FQDN. When a "NIT other" with correct URI_linkage_descriptor is broadcast, then the terminal extracts the URI from the URI_linkage_descriptor, performs a request (DNS SRV lookup) to the address: URI prefixed by "_hbbtv-ait._tcp.", uses the received host names and port numbers to create the URLs: "https://" + host name +":" + port number + "/opapp.aitx" and performs requests to the constructed URLs.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL25	1	DVB URI of AIT without transport_stream_id	TRUE	The terminal is re-installed or a factory reset is applied. NIT contains an URI_linkage_descriptor with an uri_linkage_type equal 0x60. An uri_char in the URI_linkage_descriptor refers to an AIT with location of DSM-CC with application ZIP package. When the uri_char string has form "dvb://<original_network_id>..<service_id>" (no transport_stream_id), the terminal copies the operator application files from application ZIP package into the terminal's persistent storage area.
org.hbbtv_OPAPP_INSTALL26	1	Priority in SRV lookup response	TRUE	The terminal discovers the location of an XML AIT using the DNS SRV lookup and, as a result, receives 2 XML AIT locations. The locations have different priorities. When a request to the location with the lower value of priority fails, the terminal performs a request to the location with the higher priority value.
org.hbbtv_OPAPP_INSTALL27	1	Weight in DNS SRV lookup response	TRUE	The terminal discovers a location of an XML AIT using the DNS SRV lookup and, as a result, receives 2 XML AIT locations. Both locations have the same priority values. The weights of the locations are different: the first one is 2, the second one is 1. After the terminal made requests to both locations, the number of requests to the first location is statistically twice the number of requests to the second location.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL28	1	Ignoring XML AIT with not matching applicationUsageDescriptor, privileged application	TRUE	The terminal performs a discovery of a location of an applicable operator application XML AIT. When the received XML AIT does not contain an applicationUsageDescriptor/applicationUsage equal to “urn:hbbtv:opapp:privileged:2017”, then the XML AIT is ignored and the terminal does not make a request to the application package location.
org.hbbtv_OPAPP_INSTALL29	1	Ignoring XML AIT with applicationUsageDescriptor urn:hbbtv:opapp:opspecific:2017 when only privileged application is supported	TRUE	The terminal performs a discovery of a location of an applicable operator application XML AIT. When the received XML AIT contains only one applicationUsageDescriptor/applicationUsage equal to “urn:hbbtv:opapp:opspecific:2017”, the terminal ignores XML AIT and does not make request to an application package location.
org.hbbtv_OPAPP_INSTALL30	1	Ignoring XML AIT with applicationUsageDescriptor matching urn:hbbtv:opapp:privileged:2017 when only operator specific application is supported	TRUE	The terminal performs a discovery of a location of an applicable operator application XML AIT. When the received XML AIT does not contain an applicationUsageDescriptor/applicationUsage equal to “urn:hbbtv:opapp:opspecific:2017”, the terminal ignores the XML AIT and does not make a request to the application package location.
org.hbbtv_OPAPP_INSTALL31	1	Ignoring XML AIT with no version	TRUE	The terminal performs a discovery of a location of an applicable operator application XML AIT. When the received XML AIT does not contain a valid applicationDescriptor/version element, the XML AIT is ignored.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL32	1	Ignoring XML AIT with incorrect applicationDescriptor/type	TRUE	The terminal performs a discovery of a location of an applicable operator application XML AIT. When the received XML AIT contains an applicationDescriptor/type element equal to "application/vnd.hbbtv.xhtml+xml", the terminal ignores XML AIT and does not make a request to the application package location.
org.hbbtv_OPAPP_INSTALL33	1	Ignoring XML AIT with no matching orgId	TRUE	The terminal performs a discovery of a location of an applicable operator application XML AIT. When the received XML AIT contains an ApplicationIdentifier/orgId which belongs to an operator who does not have a bilateral agreement in place, the terminal ignores XML AIT and does not make a request to the application package location.
org.hbbtv_OPAPP_INSTALL34	1	Ignoring AIT with no matching orgId	TRUE	Terminal performs discovery of location and acquisition of an applicable operator application AIT. When the received AIT contains orgId which belongs to the operator who does not have bilateral agreement in place, then the AIT is ignored and the terminal does not copy the operator application files into the terminal’s persistent storage area.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL35	1	Ignoring AIT with transport_protocol_descriptor in common descriptors loop	TRUE	Terminal performs discovery of location and acquisition of an applicable operator application AIT. The AIT in common descriptors loop contains a transport_protocol_descriptor with a transport_protocol_label. The transport_protocol_label has value VAL. When the application_descriptor referring the applicable application contains transport_protocol_label with value VAL, then the AIT is ignored and the terminal does not copy the operator application files into the terminal's persistent storage area.
org.hbbtv_OPAPP_INSTALL36	1	Ignoring AIT with two applications with the same organisation_id and application_id	TRUE	Terminal performs: discovery of location and acquisition of an applicable operator application AIT. When the AIT contains entries in the application loop with the same values of both organisation_id and application_id, then the AIT is ignored and the terminal does not copy the operator application files into the terminal's persistent storage area.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL37	1	Installation of applicable operator application discovered via NIT from CICAM.	TRUE	An applicable operator application is not installed. CICAM is installed and reports a profile_type of 1, NIT from CICAM contains URI_linkage_descriptor with URI to XML AIT of the applicable operator application. When the operator application discovery is triggered, the terminal: - parses the NIT and get URI_linkage_descriptor to extract the URI, - performs https request to URI to receive XML AIT, - parses the XML AIT to get an application entry point, - makes request to the application entry point, downloads an application package and copies operator application files into the terminal’s persistent storage area.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL38	1	Installation of applicable operator application discovered via URI_linkage_descriptor with FQDN from BAT.	TRUE	An applicable operator application is discovered via broadcasted BAT with URI_linkage_descriptor with operator FQDN. The application is not installed. When the operator application discovery is triggered, the terminal: parses first loop of the BAT to extract the URI from the URI_linkage_descriptor, uses URI to perform request (DNS SRV lookup) to address: URI prefixed by "_hbbtv-ait._tcp.", from received host name and port number creates URL: “https://” + host name +":" + port number + "/opapp.aitx"., performs https request to constructed URL to receive XML AIT, parses the XML AIT of added application to obtain an application entry point and makes request to the application entry point, downloads an application package and copies operator application files into the terminal’s persistent storage area.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL39	1	Installation of applicable operator application discovered via URI_linkage_descriptor with FQDN from NIT	TRUE	An applicable operator application is discovered via broadcasted NIT with URI_linkage_descriptor with operator FQDN. The application is not installed. When the operator application discovery is triggered, the terminal: parses first loop of the NIT to extract the URI from the URI_linkage_descriptor, uses URI to perform request (DNS SRV lookup) to address: URI prefixed by "_hbbtv-ait._tcp.", from received host name and port number creates URL: “https://” + host name +":" + port number + "/opapp.aitx", performs https request to constructed URL to receive XML AIT, parses the XML AIT to obtain an application entry point and makes request to the application entry point, downloads an application package and copies operator application files into the terminal’s persistent storage area.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL40	1	Installation of applicable operator application discovered via hardwired FQDN	TRUE	An applicable operator application is discovered via hardwired FQDN. The application is not installed. When the operator application discovery is triggered, the terminal: uses URI to perform request (DNS SRV lookup) to address: hardwired FQDN prefixed by "_hbbtv-ait._tcp.", from received host names and port number create URL: “https://” + host name +":" + port number + "/opapp.aitx", performs https request to the constructed URL to receive XML AIT, parses the XML AIT to obtain an application entry point and makes request to the application entry point, downloads an application package and copies operator application files into the terminal’s persistent storage area.
org.hbbtv_OPAPP_INSTALL41	1	Installation of applicable operator application discovered via hardwired location of the XML AIT	TRUE	An applicable operator application is discovered via hardwired location of the XML AIT. The application is not installed. When the operator application discovery is triggered, the terminal: performs https to the hardwired location to receive XML AIT, parses the XML AIT to obtain an application entry point and makes request to the application entry point, downloads an application package and copies operator application files into the terminal’s persistent storage area.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL42	1	Installation of applicable operator application discovered via hbbtvopapps.org	TRUE	An applicable operator application is discovered via hbbtvopapps.org FQDN. The application is not installed. When the operator application discovery is triggered, the terminal: uses URI to perform request (DNS SRV lookup) to address "_hbbtv-ait._tcp.hbbtvopapps.org", from received host name and port number creates URL: “https://” + host name +":" + port number + "/opapp.aitx", performs https request to constructed URL to receive XML AIT, parses the XML AIT to obtain an application entry point and makes request to the application entry point, downloads an application package and copies operator application files into the terminal’s persistent storage area.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL43	1	Update of operator application discovered via NIT from CICAM.	TRUE	An applicable operator application is discovered via NIT generated by CICAM, NIT contains uri_linkage_descriptor with URI of XML AIT. CICAM is installed and reports a profile_type of 1, NIT carries correct URI_linkage_descriptor. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal: parses the NIT and get URI_linkage_descriptor to extract the URI, performs https request to URI to receive XML AIT, parses the XML AIT to get an application entry point, makes request to the application entry point, downloads an application package and deletes previously stored application files and copies operator application files into the terminal's persistent storage area. Sequence of onOpAppUpdate callbacks is run in following order: at least one with call arguments "SOFTWARE_DOWNLOADING", with call argument "SOFTWARE_DOWNLOADED", with call argument "SOFTWARE_UNPACKING". 'version' element of the ApplicationDescriptor in the AIT has bigger value than the version of the installed application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL44	1	Update of operator application discovered via NIT with URI_linkage_descriptor with URI of AIT	TRUE	An applicable operator application is discovered via NIT with URI_linkage_descriptor with URI of AIT. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal: parses the NIT and get URI_linkage_descriptor to extract the URI, tunes to the DVB service referred by URI, gets the AIT parses the AIT to get an application entry point (DSMCC), downloads an application package and deletes previously stored application files and copies operator application files into the terminal’s persistent storage area. Sequence of onOpAppUpdate callbacks is run in following order: at least one with call arguments "SOFTWARE_DOWNLOADING", with call argument "SOFTWARE_DOWNLOADED", with call argument "SOFTWARE_UNPACKING". 'version' element of the ApplicationDescriptor in the AIT has bigger value than the version of the installed application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL45	1	Update of operator application discovered via BAT with URI_linkage_descriptor with URI of AIT	TRUE	An applicable operator application is discovered via BAT with URI_linkage_descriptor with URI of AIT. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal: parses the BAT and get URI_linkage_descriptor to extract the URI, tunes to the DVB service referred by URI, gets the AIT parses the AIT to get an application entry point (DSMCC), downloads an application package and deletes previously stored application files and copies operator application files into the terminal’s persistent storage area. Sequence of onOpAppUpdate callbacks is run in following order: at least one with call arguments "SOFTWARE_DOWNLOADING", with call argument "SOFTWARE_DOWNLOADED", with call argument "SOFTWARE_UNPACKING". 'version' element of the ApplicationDescriptor in the AIT has bigger value than the version of the installed application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL46	1	Update of applicable operator application discovered via BAT with URI_linkage_descriptor with FQDN	TRUE	An applicable operator application is discovered via broadcasted URI_linkage_descriptor with operator FQDN from BAT. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal: parses first loop of the BAT to extract the URI from the URI_linkage_descriptor, uses URI to perform request (DNS SRV lookup) to address: URI prefixed by "_hbbtv-ait._tcp.", from received host name and port number creates URL: “https://” + host name +":" + port number + "/opapp.aitx", performs https request to constructed URL to receive XML AIT, parses the XML AIT to obtain an application entry point, makes request to the application entry point, downloads an application package and deletes previously stored application files and copies operator application files into the terminal’s persistent storage area. Sequence of onOpAppUpdate callbacks is run in following order: at least one with call arguments "SOFTWARE_DOWNLOADING", with call argument "SOFTWARE_DOWNLOADED", with call argument "SOFTWARE_UNPACKING". 'version' element of the ApplicationDescriptor in the XML AIT has bigger value than the version of the installed application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL47	1	Update of applicable operator application discovered via NIT with URI_linkage_descriptor with FQDN	TRUE	An applicable operator application is discovered via broadcasted URI_linkage_descriptor with operator FQDN from NIT. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal: parses first loop of the NIT to extract the URI from the URI_linkage_descriptor, uses URI to perform request (DNS SRV lookup) to address: URI prefixed by "_hbbtv-ait._tcp.";, from received host name and port number creates URL: "https://" + host name +":"; + port number + "opapp.aitx", performs https request to constructed URL to receive XML AIT, parses the XML AIT to obtain an application entry point, makes request to the application entry point, downloads an application package and deletes previously stored application files and copies operator application files into the terminal's persistent storage area. Sequence of onOpAppUpdate callbacks is run in following order: at least one with call arguments "SOFTWARE_DOWNLOADING", with call argument "SOFTWARE_DOWNLOADED", with call argument "SOFTWARE_UNPACKING". 'version' element of the ApplicationDescriptor in the XML AIT has bigger value than the version of the installed application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL48	1	Update of applicable operator application discovered via hardwired FQDN	TRUE	An operator application is discovered via hardwired FQDN. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal: performs request (DNS SRV lookup) to address: hardwired FQDN prefixed by "_hbbtv-ait._tcp.", from received host name and port number creates URL: "https://" + host name +":" + port number + "/opapp.aitx", performs https request to constructed URL to receive XML AIT, parses the XML AIT to obtain an application entry point, makes request to the application entry point, downloads an application package and deletes previously stored application files and copies operator application files into the terminal's persistent storage area. Sequence of onOpAppUpdate callbacks is run in following order: at least one with call arguments "SOFTWARE_DOWNLOADING", with call argument "SOFTWARE_DOWNLOADED", with call argument "SOFTWARE_UNPACKING". 'version' element of the ApplicationDescriptor in the XML AIT has bigger value than the version of the installed application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL49	1	Update of applicable operator application discovered via hardwired location of the XML AIT	TRUE	An applicable operator application is discovered via hardwired location of XML AIT. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal: performs https request to the hardwired location of the XML AIT, parses the XML AIT to obtain an application entry point, makes request to the application entry point, downloads an application package and deletes previously stored application files and copies operator application files into the terminal’s persistent storage area. Sequence of onOpAppUpdate callbacks is run in following order: at least one with call arguments "SOFTWARE_DOWNLOADING", with call argument "SOFTWARE_DOWNLOADED", with call argument "SOFTWARE_UNPACKING". 'version' element of the ApplicationDescriptor in the XML AIT has bigger value than the version of the installed application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL50	1	Update of applicable operator application discovered via hbbtvopapps.org	TRUE	An operator application is discovered via standardised address hbbtvopapps.org. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal: performs request (DNS SRV lookup) to address: "_hbbtv-ait._tcp.hbbtvopapps.org", from received host name and port number creates URL: "https://" + host name +":" + port number + "/opapp.aitx", performs https request to constructed URL to receive XML AIT, parses the XML AIT to obtain an application entry point, makes request to the application entry point, downloads an application package and deletes previously stored application files and copies operator application files into the terminal's persistent storage area. Sequence of onOpAppUpdate callbacks is run in following order: at least one with call arguments "SOFTWARE_DOWNLOADING", with call argument "SOFTWARE_DOWNLOADED", with call argument "SOFTWARE_UNPACKING". 'version' element of the ApplicationDescriptor in the XML AIT has bigger value than the version of the installed application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL51	1	Not immediate update of operator application, opAppRequestUpdate(immediate = false)	TRUE	When the operator application calls to the opAppRequestUpdate(immediate = false), the terminal performs: discovery of (XML) AIT location, acquisition of the (XML) AIT, download and installation an application package at the convenient for the user time. 'version' element of the ApplicationDescriptor in the (XML) AIT has bigger value than the version of the installed application.
org.hbbtv_OPAPP_INSTALL52	1	opAppUpdateStatus - no software update is in progress	TRUE	When no software update is performed, call to the opAppUpdateStatus() returns -2.
org.hbbtv_OPAPP_INSTALL53	1	Update failure, the same version of (XML) AIT	TRUE	'version' element of the ApplicationDescriptor in the (XML) AIT has the same value as the version of the installed application. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal performs: discovery of (XML) AIT location and acquisition of the (XML) AIT. Next, an OpAppUpdate event is received with 'updateEvent' equal to 'SOFTWARE_DISCOVERING', and a call to opAppUpdateStatus returns -3 ('Discovery of updates is in progress') Subsequently an OpAppUpdate event is received with 'updateEvent' equal to 'SOFTWARE_CURRENT', and a call to opAppUpdateStatus returns -2 ('No update is in progress')
org.hbbtv_OPAPP_INSTALL54	1	Failure of user-initiated installation process	TRUE	When user triggers installation of operator application and the download of package fails, the terminal allows to determine that the installation has failed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL55	1	Failure of application update, no application/vnd.hbbtv.opapp.pkg header	TRUE	An operator application is downloading installation package via IP. When the operator application calls to the opAppRequestUpdate(immediate = true) and as a response the server sends back package with a content type header other than "application/vnd.hbbtv.opapp.pkg" the terminal does not copy files into persistent storage area, onOpAppUpdate callback is run with call argument 'SOFTWARE_DOWNLOAD_FAILED', terminal does not re-send request for package. When after installation failure the application calls to the 'opAppUpdateStatus', then the return value is either:'-2' or in the range 1001 ... 1999.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL56	1	Downloading application package, first request failed, second request succeed	TRUE	An operator application is in background state. The application adds OpAppUpdate event listener to Application object, and calls to the opAppRequestUpdate(immediate = true). The terminal attempts to download installation package via IP. When server returns response with error code then the terminal retries request. The interval time between first and second request is random in range 60-600s. The second request returns correct application package. OpAppUpdate events are generated after opAppRequestUpdate call. The OpAppUpdate context info would go from SOFWARE_DOWNLOADING to SOFTWARE_UNPACKING. OpAppUpdate event cannot be generated with updateEvent context info equal to SOFTWARE_INSTALLATION_FAILED. When after installation the application calls to the 'opAppUpdateStatus', then the return value is '-2'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL57	1	Downloading application package via IP failure, max 3 requests with random delay between them	TRUE	The operator application calls to the opAppRequestUpdate(immediate = true), installation package is downloaded via IP. When server returns response with error code the terminal retries request, maximum 3 times. The onOpAppUpdate is called with updateEvent argument equal 'SOFTWARE_DOWNLOAD_FAILED'. When after installation failure the application calls to the 'opAppUpdateStatus', then the return value is either:'-2' or in the range 1001 ... 1999. When terminal retries request, the interval time between requests is random in range 60-600s.
org.hbbtv_OPAPP_INSTALL58	1	Failure of downloading application package via DSM-CC	TRUE	The operator application calls to the opAppRequestUpdate(immediate = true), installation package is downloaded via DSM-CC. When the DSM-CC object cannot be accessed, the onOpAppUpdate is called with updateEvent argument equal 'SOFTWARE_DOWNLOAD_FAILED'. When after installation failure the application calls to the 'opAppUpdateStatus', then the return value is either:'-2' or in the range 1001 ... 1999.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL59	1	Downloading application package via IP, progress report	TRUE	Operator application is in foreground state. The operator application calls to the opAppRequestUpdate(immediate = true), installation package is downloaded via IP. When during application package download the operator application calls to the 'opAppUpdateStatus' it receives an approximated value of the amount already downloaded.
org.hbbtv_OPAPP_INSTALL60	1	Delayed update of applicable operator application	TRUE	An operator application calls to the opAppRequestUpdate(immediate = false), (XML) AIT is acquiesced. When application package download is not started, call to the OpAppUpdateStatus returns -1. After the application download start, call to the opAppUpdateStatus returns value in the range 0...100.
org.hbbtv_OPAPP_INSTALL61	1	onOpAppUpdate called twice	TRUE	An operator application calls to the opAppRequestUpdate(immediate = false), and an update is delayed. After that when the application calls to the opAppRequestUpdate(immediate = true), the terminal performs immediately the update of the application package.
org.hbbtv_OPAPP_INSTALL62	1	XML AIT request failure, certificate host name mismatch	TRUE	During an applicable application discovery the terminal sends request to XML AIT location. The host in location address is specified by host name. When the response certificate contains host name which does not match to the host name requested, then the XML AIT is not acquired.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL63	1	XML AIT request failure, server certificate is self signed	TRUE	During an applicable application discovery the terminal sends request to XML AIT location. When response from the location has a certificate chain containing a single self-signed certificate valid for a location domain name, then the XML AIT is not acquired. Terminal does not provide to the user UI to bypass the failure. The self-signed certificate is not included to support due to bilateral agreement.
org.hbbtv_OPAPP_INSTALL64	1	XML AIT request failure, IP address mismatch	TRUE	During an applicable application discovery the terminal sends request to XML AIT location. The host in location address is specified by IP address. When the response certificate contains IP address which does not match to the IP address requested, then the XML AIT is not acquired.
org.hbbtv_OPAPP_INSTALL65	1	XML AIT request failure, server certificate expired	TRUE	During an applicable application discovery the terminal sends request to XML AIT location. When response from the location has an expired certificate, then the XML AIT is not acquired. Terminal does not provide to the user UI to bypass the failure.
org.hbbtv_OPAPP_INSTALL66	1	XML AIT request failure, Revoked Certificate	TRUE	During an applicable application discovery the terminal sends request to XML AIT location. When response from the location has certificate being on revoked list (CRL), then the XML AIT is not acquired. Terminal does not provide to the user UI to bypass the failure.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL67	1	Installation failure, size of the operator application files exceeds maximum size defined in bilateral agreement	TRUE	An operator application calls to the opAppRequestUpdate(immediate = true), the terminal obtain and decrypt an application package. When the total size of the application files extracted from application package exceeds maximum size defined in bilateral agreement, then the terminal: does not copy the operator application files into the terminal's persistent storage area, generate onOpAppUpdate callback with 'SOFTWARE_INSTALLATION_FAILED' call argument.
org.hbbtv_OPAPP_INSTALL68	1	User removes privileged application	TRUE	Terminal supports mechanism to remove an installed privileged operator application.
org.hbbtv_OPAPP_INSTALL69	1	Minimum version of (XML) AIT	TRUE	An installed operator application has in opapp.ait (or opapp.aitx) the 'minimum application version' element. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal performs: discovery of (XML) AIT location, acquisition of the (XML) AIT. When application 'version' from new (XML) AIT element has value: bigger than 'minimum application version' and lower than the application version of installed application, then the terminal performs download and installation of the new application package.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_INSTALL70	1	opAppUpdateStatus - installation error indication	TRUE	An operator application calls to opAppRequestUpdate(immediate = true). When installation fails, the onOpAppUpdate is called with updateEvent argument equal 'SOFTWARE_INSTALLATION_FAILED'. When after installation failure, the application calls to the 'opAppUpdateStatus', then the return value is in the range 2000 - 2999 and matches to the failure reason, as specified in bilateral agreement.
org.hbbtv_OPAPP_INSTALL71	1	Minimum version of (XML) AIT, installation failure	TRUE	An installed operator application has in opapp.ait (or opapp.aitx) the 'minimum application version' element. When the operator application calls to the opAppRequestUpdate(immediate = true), the terminal performs: discovery of (XML) AIT location, acquisition of the (XML) AIT. When application 'version' from new (XML) AIT element has value: lower than 'minimum application version' and bigger than the application version of installed application, then the terminal does not install the new application package.
org.hbbtv_OPAPP_LIFECYCLE01	1	Operator application is switched from overlaid foreground to foreground state due to removing of terminal UI which was overlaying the operator application	TRUE	The operator application is in overlaid foreground state. When UI which was overlaying the operator application is removed, the onOperatorApplicationStateChange callback is run with the arguments oldState="overlaid-foreground" and newState="foreground". The opAppState, when read by the operator application is set to 'foreground'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_LIFECYCLE02	1	Access to UI in foreground state allows operator application graphics to be shown by default	TRUE	When the operator application is in foreground state, then its graphical elements are visible.
org.hbbtv_OPAPP_LIFECYCLE03	1	Operator application key events in foreground state	FALSE	An operator application is in the foreground state. When the operator application requests keys via the KeySet API the request is granted and operator application will receive these key events when buttons generating VK_CHANNEL_UP, VK_CHANNEL_DOWN or VK_INFO are pressed.
org.hbbtv_OPAPP_LIFECYCLE04	1	Application graphics not shown when in background state	TRUE	When the operator application is in background state, then its graphical elements are not visible.
org.hbbtv_OPAPP_LIFECYCLE05	1	Operator application key events request in background state	FALSE	An operator application is in the background state. When the operator application requests keys via the KeySet API the request is granted and operator application will receive these key events when buttons generating VK_CHANNEL_UP, VK_CHANNEL_DOWN or VK_INFO are pressed.
org.hbbtv_OPAPP_LIFECYCLE06	1	Both regular and operator HbbTV applications request key events, the operator application is in background state, regular HbbTV application has focus	FALSE	An operator application is in the background state and requests terminal to receive VK_RED, VK_BLUE and arrow key events. A regular HbbTV application requests the terminal to receive the VK_GREEN, VK_BLUE and all arrow key events. When the regular HbbTV application has input focus then the operator application receives only VK_RED key event, the regular HbbTV application receives VK_GREEN, VK_BLUE and arrow key events and the regular HbbTV application does not receive VK_RED key event.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_LIFECYCLE08	1	Pressing exit button moves application from foreground to background state	TRUE	An operator application is in the foreground state. When the EXIT or comparable button is pressed: the terminal moves the operator application into background state, onOperatorApplicationStateChange callback is run with call arguments oldState="foreground" and newState="background", opAppState is set to 'background', application UI disappears.
org.hbbtv_OPAPP_LIFECYCLE09	1	Exit button pressing moves application from transient to background state	TRUE	An operator application is in the transient state. When the EXIT or comparable button is pressed: the terminal moves the operator application into background state, onOperatorApplicationStateChange callback is run with call arguments oldState="transient" and newState="background", opAppState is set to 'background', application UI disappears.
org.hbbtv_OPAPP_LIFECYCLE10	1	Operator application is switched from overlaid transient to transient state due to removing of terminal UI which was overlaying the operator application	TRUE	The operator application is in overlaid transient state. When UI which was overlaying the operator application is removed then: onOperatorApplicationStateChange callback is run with call arguments oldState="overlaid transient", newState="transient" and opAppState is set to 'transient'.
org.hbbtv_OPAPP_LIFECYCLE11	1	Application visibility in transient state	TRUE	When the operator application is in transient state, then its graphical elements are visible.
org.hbbtv_OPAPP_LIFECYCLE12	1	Starting in background state	TRUE	When an operator application is launched by terminal then it is in the background state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_LIFECYCLE13	1	Restarting operator application due to error condition	FALSE	When an operator application attempts to create and initialise an unbounded number of JavaScript arrays, each containing 2 000 000 integers then the terminal continues to respond to channel change requests. If the terminal kills the operator application due to running out of memory, the application is successfully restarted with query parameters: lloc=restart and status=error.
org.hbbtv_OPAPP_LIFECYCLE14	1	Pressing EXIT button in background state has no effect	TRUE	When operator application is in background state then triggering "EXIT or comparable button" mechanism has no effect to operator application.
org.hbbtv_OPAPP_LIFECYCLE15	1	Start to display terminal UI overlaying application in foreground state	TRUE	When an operator application is in foreground state and the terminal start to display some UI on the top of the operator application then: OperatorApplicationStateChange event is generated with context info: oldState="foreground", newState="overlaid-foreground", opAppState property in Application object is "overlaid-foreground".
org.hbbtv_OPAPP_LIFECYCLE16	1	Start to display terminal UI overlaying application in transient state	TRUE	When an operator application is in transient state and the terminal display some UI on the top of the operator application then: OperatorApplicationStateChange event is generated with context info: oldState="transient", newState="overlaid-transient" and opAppState property in Application object is "overlaid-transient".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_LIFECYCLE17	1	Overlaid foreground state, access to keys	TRUE	When an operator application is in the overlaid foreground state then the application does not have access to either the regular, or the operator application keys taken by the terminal. The application does have access to keys not taken by the terminal.
org.hbbtv_OPAPP_LIFECYCLE18	1	Stop to display UI overlaying application, moving to transient state	TRUE	When an operator application is in overlaid transient state and the terminal stops to display some UI on top of the operator application, the OperatorApplicationStateChange event is generated with context info: oldState="overlaid-transient", newState="transient". The opAppState, when read by the operator application is set to "transient".
org.hbbtv_OPAPP_LIFECYCLE19	1	Overlaid transient state, access to keys	FALSE	When an operator application is in the overlaid transient state then the application does not have access to either regular or operator application keys taken by the terminal. The application does have access to keys not taken by the terminal.
org.hbbtv_OPAPP_LIFECYCLE20	1	Pressing EXIT button in overlaid foreground state has no effect	TRUE	When an operator application is in the overlaid foreground state then triggering "EXIT or comparable button" mechanism does not move the operator application to background state.
org.hbbtv_OPAPP_LIFECYCLE21	1	Pressing EXIT button in overlaid transient state has no effect	TRUE	When an operator application is in the overlaid transient state then triggering "EXIT or comparable button" mechanism does not move the operator application to background state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_LIFECYCLE22	1	Access to graphic plane in overlaid foreground state	TRUE	When an operator application is in "overlaid-foreground" and attempts to show a full screen image, the parts of the screen which are not currently overlaid by the terminal UI show the op-app graphics. When the application changes image colour, the change is visible on the part not currently overlaid by the terminal UI.
org.hbbtv_OPAPP_LIFECYCLE23	1	Access to UI in overlaid transient state	TRUE	A regular HbbTV application and an operator HbbTV application are running, the terminal is displaying some UI. The regular application presents broadband stream covering whole screen. The operator application presents a full screen image which uses transparency to allow visibility of both the image and what is behind it. When the operator application is in the "overlaid-transient" state, then the parts of the screen which are not currently overlaid by the terminal UI presents the broadband stream covered by the semitransparent image.
org.hbbtv_OPAPP_REGULAR01	1	Killing regular application - resource conflict - broadcast content	TRUE	A regular HbbTV application has video/broadcast object in the 'presenting' state. An operator application is in the foreground state. When an operator application is calling to the bindToCurrentChannel then: the regular application is killed, the video/broadcast object of the operator application presents video, no onSelectedComponentChanged / SelectedComponentChange event is generated by the BroadcastSupervisor object and the autostart application signalling in the AIT is not started.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_REGULAR02	1	Killing regular application - resource conflict - HTML5 video element	TRUE	A regular HbbTV application is presenting broadband content. An operator application is moved to the foreground. When the operator application attempt to present broadband content using HTML5 video object then: the regular application is killed, access to resource is granted to operator application, HTML5 is finally presenting video content, the autostart application signalling in the AIT is ignored.
org.hbbtv_OPAPP_REGULAR03	1	Killing regular application - resource conflict - A/V control object	TRUE	A regular HbbTV application is presenting broadband content. An operator application is moved to the foreground. When the operator application attempt to present broadband content using A/V Control object then: the regular application is killed, access to resource is granted to operator application, A/V Control object is finally presenting video content and the autostart application signalling is ignored.
org.hbbtv_OPAPP_REGULAR04	1	Regular application looses focus when operator application is moved to foreground state	FALSE	A regular, broadcast independent HbbTV application and an operator application is running. Both the regular and the operator applications include all regular application key events to their keysets. When the operator application is moved to the foreground state then: the regular HbbTV application Window object receives blur event, the regular HbbTV does not receive any requested key event, the operator application receives key events for all regular application keys, the operator application overlays the regular application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_REGULAR05	1	Regular application gain focus when operator application is moved from foreground state to background state	TRUE	A regular HbbTV application is activated and is running at the same time as an operator application in foreground state. Both the regular and the operator applications include all regular application key events to their keyset. When the operator application is moved from foreground to background state then: the regular HbbTV application Window object receives focus event, the regular HbbTV receives all requested key events, the operator application does not receive requested key events.
org.hbbtv_OPAPP_REGULAR06	1	Hiding of regular application, operator application in foreground state	TRUE	When a regular HbbTV application is running at the same time as an operator application in foreground state then the regular HbbTV application is hidden. The broadcast video is presented.
org.hbbtv_OPAPP_REGULAR07	1	Operator application move from foreground state to transient state, showing of regular application,	TRUE	A Regular, broadcast related application is running, and an Operator application is moved to foreground state what makes broadcast related application hidden. When the Operator application is moved from foreground to transient state then the regular application is shown.
org.hbbtv_OPAPP_REGULAR08	1	Regular application killed due to resource conflict, operator application leaves foreground state, re-starting regular application	TRUE	A regular HbbTV application is killed due to resource conflict when an operator application is in the foreground state. When the operator application is moved from foreground to background state, then the regular, broadcast related, autostart application is launched.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_REGULAR09	1	Operator application move from foreground state to background state, starting regular application	TRUE	A regular HbbTV application is killed when an operator application enters foreground state. When the operator application is moved from foreground to background state, then the regular, broadcast related, autostart application is launched.
org.hbbtv_OPAPP_REGULAR10	1	Operator application in foreground state, AIT monitoring	FALSE	A regular, broadcast related HbbTV application is running at the same time as an operator application in foreground state. When AIT is updated and in the new version of AIT currently running regular application is signalled with code KILL, and another application is running with code AUTOSTART, then running regular HbbTV application is killed. When the operator application enters the background state, a regular HbbTV application signalled as AUTOSTART is launched.
org.hbbtv_OPAPP_REGULAR11	1	Regular application have no access to installed operator applications resources	TRUE	A regular, broadcast independent HbbTV application has the same organization_id as installed operator application. When a regular application tries to access installed operator application resources using "hbbtv-package" scheme, the access to resources is not granted.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_OPAPP_REGULAR12	1	Following AIT signalling, channel change using BroadcastSupervisor class	TRUE	A regular HbbTV application signalled with PRESENT control code in AIT is running. AIT on a second channel does not signal the running application, and signal a second application with AUTOSTART control code. An operator application is in the transient state. When the operator application set the second channel using the BroadcastSupervisor class then: - currently running regular application is killed, - the second regular application is launched. The operator application is not in the (overlaid) foreground state.
org.hbbtv_OPAPP_REGULAR13	1	Following AIT signalling, channel change using BroadcastSupervisor class, killing child regular application	TRUE	An operator application is not in (overlaid) foreground state and launches a child, regular application, without organization_id. When the operator application changes channel using the BroadcastSupervisor class then: - the running regular application is killed, - a regular, broadcast-related application signalled in AIT with AUTOSTART control code is launched.
org.hbbtv_OPAPP_REGULAR14	1	Regular application and operator application moved to transient state	TRUE	A regular application is displaying some UI. An operator application is in the background state. When an operator application is moved to the transient then: the regular application is not killed, the 'blur' event is generated in regular application window object, the operator application overlays the regular application, the operator application has access to both regular and operator keys

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PMT0001	4	PMT - response to AIT PID change with same AIT data	TRUE	When a service contains an AIT that lists a single AUTOSTART application and the PMT changes so that the AIT PID is different and the new AIT is the same as the old AIT except that the version number is different, the application continues to run.
org.hbbtv_PMT0002	4	PMT - response to AIT PID change with different AIT data and different version	TRUE	When a service contains an AIT that lists a single AUTOSTART application (app 1) and the PMT changes so that the AIT PID is different and the AIT changes simultaneously so that it lists only a single AUTOSTART application (app 2) which is different to app 1 and the AIT version number changes, app 1 is killed and app 2 is launched.
org.hbbtv_PMT0003	3	PMT - response to AIT PID change with different AIT data and same version	TRUE	When a service contains an AIT that lists a single AUTOSTART application (app 1) and the PMT changes so that the AIT PID is different and the AIT changes simultaneously so that it lists only a single AUTOSTART application (app 2) which is different to app 1 and the AIT version number does not change, app 1 is killed and app 2 is launched.
org.hbbtv_PMT0004	3	Notification of change of components - video removed from video/broadcast object	TRUE	When an application is running on a service containing 1 video component and any number of audio and subtitle components and a function is assigned to the onComponentChanged event and the video component is removed, the onComponentChanged function is called and componentType is 0.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PMT0005	3	Notification of change of components - audio removed from video/broadcast object (1 component to 0 components)	TRUE	When an application is running on a service containing 1 audio component and any number of video and subtitle components and a function is assigned to the onComponentChanged event and the audio component is removed, the onComponentChanged function is called and componentType is 1.
org.hbbtv_PMT0006	3	Notification of change of components - subtitles removed from video/broadcast object (1 component to 0 components)	TRUE	When an application is running on a service containing 1 subtitle component and any number of video and audio components and a function is assigned to the onComponentChanged event and the subtitle component is removed, the onComponentChanged function is called and componentType is 2.
org.hbbtv_PMT0007	3	Notification of change of components - video added to video/broadcast object	TRUE	When an application is running on a service containing 0 video components and any number of audio and subtitle components and a function is assigned to the onComponentChanged event and a video component is introduced, the onComponentChanged function is called and componentType is 0.
org.hbbtv_PMT0008	3	Notification of change of components - audio added to video/broadcast object (0 components to 1 component)	TRUE	When an application is running on a service containing 0 audio components and any number of video and subtitle components and a function is assigned to the onComponentChanged event and an audio component is introduced, the onComponentChanged function is called and componentType is 1.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PMT0009	3	Notification of change of components - subtitles added to video/broadcast object (0 components to 1 component)	TRUE	When an application is running on a service containing 0 subtitle components and any number of video and audio components and a function is assigned to the onComponentChanged event and a subtitle component is introduced, the onComponentChanged function is called and componentType is 2.
org.hbbtv_PMT0010	3	Notification of change of components - multiple components changed in video/broadcast object	TRUE	When an application is running on a service containing 1 video component, 1 audio component and 1 subtitle component and a function is assigned to the onComponentChanged event and each of the components is simultaneously replaced by different components of the same type but with different properties, the onComponentChanged function is called and componentType is undefined.
org.hbbtv_PMT0011	3	getComponents - response to PMT change - video removed	TRUE	When an application is running on a service containing 1 video component and any number of audio and subtitle components and the video component is removed, the getComponents(0) method returns 1 component before the video component is removed and returns 0 components after the video component is removed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PMT0012	3	getComponents - response to PMT change - audio removed (1 component to 0 components)	TRUE	When an application is running on a service containing 1 audio component and any number of video and subtitle components and the audio component is removed, the getComponents(1) method returns 1 component before the audio component is removed and returns 0 components after the audio component is removed.
org.hbbtv_PMT0013	3	getComponents - response to PMT change - subtitles removed (1 component to 0 components)	TRUE	When an application is running on a service containing 1 subtitle component and any number of video and audio components and the subtitle component is removed, the getComponents(2) method returns 1 component before the subtitle component is removed and returns 0 components after the subtitle component is removed.
org.hbbtv_PMT0014	3	getComponents - response to PMT change - video added	TRUE	When an application is running on a service containing 0 video components and any number of audio and subtitle components and a video component is introduced, the getComponents(0) method returns 0 components before the video component is introduced and returns 1 component after the video component is introduced.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PMT0015	3	getComponents - response to PMT change - audio added (0 components to 1 component)	TRUE	When an application is running on a service containing 0 audio components and any number of video and subtitle components and an audio component is introduced, the getComponents(1) method returns 0 components before the audio component is introduced and returns 1 component after the audio component is introduced.
org.hbbtv_PMT0016	3	getComponents - response to PMT change - subtitles added (0 components to 1 component)	TRUE	When an application is running on a service containing 0 subtitle components and any number of video and audio components and a subtitle component is introduced, the getComponents(2) method returns 0 components before the subtitle component is introduced and returns 1 component after the subtitle component is introduced.
org.hbbtv_PMT0017	3	getComponents - response to PMT change - multiple components changed	TRUE	When an application is running on a service containing 1 video component, 1 audio component and 1 subtitle component and each of the components is simultaneously replaced by different components of the same type but with different properties, the getComponents(null) method returns 3 components before and after the stream changes and each AVComponent correctly reflects the properties of the corresponding component in the stream before and after the stream changes.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PMT0030	1	Notification of change of components - audio removed from video/broadcast object (2 components to 1 component)	TRUE	When an application is running on a service containing 2 audio components and any number of video and subtitle components and a function is assigned to the onComponentChanged event and one of the audio components is removed, the onComponentChanged function is called and componentType is 1.
org.hbbtv_PMT0040	1	Notification of change of components - subtitles removed from video/broadcast object (2 components to 1 component)	TRUE	When an application is running on a service containing 2 subtitle components and any number of video and audio components and a function is assigned to the onComponentChanged event and one of the subtitle components is removed, the onComponentChanged function is called and componentType is 2.
org.hbbtv_PMT0050	1	Notification of change of components - audio added to video/broadcast object (1 component to 2 components)	TRUE	When an application is running on a service containing 1 audio component and any number of video and subtitle components and a function is assigned to the onComponentChanged event and a second audio component is introduced, the onComponentChanged function is called and componentType is 1.
org.hbbtv_PMT0060	1	Notification of change of components - subtitles added to video/broadcast object (1 component to 2 components)	TRUE	When an application is running on a service containing 1 subtitle component and any number of video and audio components and a function is assigned to the onComponentChanged event and a second subtitle component is introduced, the onComponentChanged function is called and componentType is 2.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PMT0070	1	getComponents - response to PMT change - audio removed (2 components to 1 component)	TRUE	When an application is running on a service containing 2 audio components and any number of video and subtitle components and one of the audio components is removed, the getComponents(1) method returns 2 components before the audio component is removed and returns 1 component after the audio component is removed.
org.hbbtv_PMT0080	1	getComponents - response to PMT change - subtitles removed (2 components to 1 component)	TRUE	When an application is running on a service containing 2 subtitle components and any number of video and audio components and one of the subtitle components is removed, the getComponents(2) method returns 2 components before the subtitle component is removed and returns 1 component after the subtitle component is removed.
org.hbbtv_PMT0090	1	getComponents - response to PMT change - audio added (1 component to 2 components)	TRUE	When an application is running on a service containing 1 audio component and any number of video and subtitle components and a second audio component is introduced, the getComponents(1) method returns 1 component before the audio component is introduced and returns 2 components after the audio component is introduced.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PMT0100	1	getComponents - response to PMT change - subtitles added (1 component to 2 components)	TRUE	When an application is running on a service containing 1 subtitle component and any number of video and audio components and a second subtitle component is introduced, the getComponents(2) method returns 1 component before the subtitle component is introduced and returns 2 components after the subtitle component is introduced.
org.hbbtv_PMT0110	1	Notification of change of components - A/V and subtitles removed from video/broadcast object and added back	TRUE	An application is running on a service containing 1 video component, 1 audio component and 1 subtitle component and a function is assigned to the onComponentChanged event. The video, audio and subtitle components are all removed at the same time and then all added back at the same time. The onComponentChanged function is called twice, once when the components are removed and again when they are added back, and componentType is undefined each time.
org.hbbtv_PMT0120	1	getComponents - response to PMT change - A/V and subtitles removed from video/broadcast object and added back	TRUE	An application is running on a service containing 1 video component, 1 audio component and 1 subtitle component. The video, audio and subtitle components are all removed at the same time and then all added back at the same time. Before the components are removed and after the components are added back, getComponents(0), getComponents(1) and getComponents(2) each return 1 component; during the time the components are removed, getComponents(0), getComponents(1) and getComponents(2) each return 0 components.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PRIV0001	1	Do Not Track factory default behaviour (no setup)	TRUE	With the terminal in the factory default state, with no legal or regulatory requirements for DNT default behaviour in effect, and with no setup steps required by the terminal before an application can be launched, no DNT header will be included in HTTP requests from an application.
org.hbbtv_PRIV0002	1	Do Not Track factory default behaviour (setup)	TRUE	With the terminal in the factory default state, with no legal or regulatory requirements for DNT default behaviour in effect, and the terminal requiring setup steps before an application can be launched, during which the user is asked for his tracking preference and the user has opted to not express a preference, no DNT header will be included in HTTP requests from an application.
org.hbbtv_PRIV0004	1	Do Not Track HTTP header	TRUE	Depending on the user preferences, zero or one DNT headers may be present in any HTTP request made on behalf of an Hybrid Broadcast Broadband TV application, but never more than one.
org.hbbtv_PRIV0005	1	Do Not Track - unset	TRUE	If the DNT user preference is in the unset state (i.e. no preference stated), no DNT header must be sent in any HTTP request made on behalf of an Hybrid Broadcast Broadband TV application.
org.hbbtv_PRIV0006	1	Do Not Track - no tracking	TRUE	If the DNT user preference is in the enabled-disallow state, a DNT:1 header must be sent in any HTTP request made on behalf of an Hybrid Broadcast Broadband TV application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PRIV0007	1	Do Not Track - tracking allowed	TRUE	If the terminal provides the third DNT state in its user preferences (enabled-allow), and it is selected in the preferences, a DNT:0 header must be sent in any HTTP request made on behalf of an Hybrid Broadcast Broadband TV application.
org.hbbtv_PRIV0008	1	Third party cookies blocked by default	TRUE	The terminal shall not accept third party cookies.
org.hbbtv_PRIV0009	1	Blocking tracking websites	TRUE	The terminal shall provide a setting in user preferences to turn blocking of tracking websites on and off.
org.hbbtv_PRIV0010	1	Cookies and Web Storage enabled by default	TRUE	In factory default state, it must be possible to set a cookie as defined in section 10.2.1, and it must be possible to use Web Storage according to http://www.w3.org/TR/2013/REC-webstorage-20130730/.
org.hbbtv_PRIV0011	1	Third party cookies disallowed	TRUE	The terminal shall provide a setting in user preferences to disallow third party cookies.
org.hbbtv_PTR00001	1	To check the pointer capability from HbbTV app when terminal do not support it.	TRUE	When terminal does not support pointer-based input then the "pointer" element of the XMLCapability shall either not be present or shall have the value "false".
org.hbbtv_PTR00002	1	To check the pointer capability from HbbTV app when terminal set supports.	TRUE	When terminal supports pointer-based input then the pointer element of the XMLCapability shall be present and have the value "true".
org.hbbtv_PTR00003	1	Testing the "mousemove" event when terminal set supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is moved over element, then DOM Level 3 Mouse event handler will be invoked successfully for "mousemove" event.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PTR00004	1	Testing the "dblclick" event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is clicked over the element twice then DOM Level 3 Mouse event handler will be invoked successfully for "dblclick" event.
org.hbbtv_PTR00005	1	Testing the "mousedown" event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is pressed over the element then DOM Level 3 Mouse event handler will be invoked successfully for "mousedown" event.
org.hbbtv_PTR00006	1	Testing the "mouseup" event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device button is released over the element then DOM Level 3 Mouse event handler will be invoked successfully for "mouseup" event.
org.hbbtv_PTR00007	1	Testing the "mouseenter" event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is entered over element then DOM Level 3 Mouse event handler will be invoked successfully for "mouseenter" event.
org.hbbtv_PTR00008	1	Testing the "mouseleave" event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, pointing device is on an element which has descendent elements and pointing device is moved off the boundaries of an element and all of its descendent elements, then DOM Level 3 Mouse event handler will be invoked successfully for "mouseleave" event.
org.hbbtv_PTR00009	1	Testing the "mouseout" event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, pointing device is on an element which has descendent elements and pointing device is moved off the boundaries of the element and moved to one of its descendent elements, then DOM Level 3 Mouse event handler will be invoked successfully for "mouseout" event.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PTR00010	1	Testing the "mouseover" event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is moved onto the boundaries of an element then DOM Level 3 Mouse event handler will be invoked successfully for "mouseover" event.
org.hbbtv_PTR00011	1	Testing the "mousemove" event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, then DOM Level 3 Mouse event handler will be invoked successfully for "mousemove" event, if pointing device is moved over the element A, then it leaves element A and enter into element B, it will fire "mousemove" events for elements A and B.
org.hbbtv_PTR00012	1	Testing the "mousemove" event when terminal supports pointer and we call removeEventListener().	TRUE	When terminal supports pointer-based input, and application calls addEventListener() followed by removeEventListener(), and then the pointer device is moved over an element, terminal will not invoke a DOM 3 "mousemove" event.
org.hbbtv_PTR00013	1	Testing the "click" event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is clicked over the element then DOM Level 3 Mouse event handler will be invoked successfully for "click" event.
org.hbbtv_PTR00014	1	Testing the "onclick" DOM 2 event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is clicked over the element then DOM 2 Level event handler will be invoked on the registered element with onclick event.
org.hbbtv_PTR00016	1	Testing the "onmousedown" DOM 2 event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is pressed over the element then DOM Level 2 event handler will be invoked on the registered element with "onmousedown" event.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PTR00017	1	Testing the "onmouseup" DOM 2 event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is pressed and released over the element then DOM Level 2 event handler will be invoked on the registered element with "onmouseup" event.
org.hbbtv_PTR00018	1	Testing the "onmouseover" DOM 2 event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is moved over the element then DOM Level 2 event handler will invoked on the registered element with "onmouseover" event.
org.hbbtv_PTR00019	1	Testing the "onmouseout" DOM 2 event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device is moved over the element, then DOM Level 2 event handler will be invoked on the registered element with "onmouseout" event.
org.hbbtv_PTR00020	1	Testing the "wheel" event when terminal supports pointer.	TRUE	When terminal supports pointer-based input, and pointing device wheel is moved over element, then the DOM Level 3 Mouse wheel event handler will be invoked successfully for "wheel" event.
org.hbbtv_PTR00021	1	Testing the "wheel" event when terminal supports pointer and we unregistered the event by using removeEventListener().	TRUE	When terminal supports pointer-based input, and application calls addEventListener() followed by removeEventListener(), and then the pointer device wheel is moved over an element, terminal will not invoke a DOM 3 pointer device wheel event.
org.hbbtv_PTR00022	1	Testing the "deltamode" attribute when terminal supports pointer it should return one of these values.	TRUE	When terminal supports pointer-based input, and pointing device wheel is moved over element. Then DOM Level 3 wheel event handler will be invoked for "wheel" event, and generate the "deltamode" attribute.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PTR00023	1	Testing the "deltaX" event when terminal supports pointer and "deltamode" attribute should be set.	TRUE	When terminal supports pointer-based input, and pointing device wheel is moved over element in the horizontal direction, then DOM Level 3 Mouse wheel event handler will be invoked successfully for "wheel" event and "deltaX" will be modified accordingly.
org.hbbtv_PTR00024	1	Testing the "deltaY" event when terminal supports pointer and "deltamode" attribute should be set.	TRUE	When terminal supports pointer-based input, and pointing device wheel is moved over element in vertical direction, then DOM Level 3 Mouse wheel event handler will be invoked successfully for "wheel" event and "deltaY" will be modified accordingly.
org.hbbtv_PTR00025	1	Testing the "deltaZ" event when terminal supports pointer and "deltamode" attribute should be set.	TRUE	When terminal supports pointer-based input, and pointing device wheel is moved over element to ZOOM IN or ZOOM OUT. Then DOM Level 3 Mouse wheel event handler will be invoked successfully for "wheel" event and "deltaZ" will be modified accordingly.
org.hbbtv_PTR00026	1	Testing the "mouseleave" event when pointing device is moved off the boundaries of an element but not outside the boundaries of all of its descendent elements.	TRUE	When terminal supports pointer-based input, pointing device is on an element which has descendent elements and pointing device is moved off the boundaries of an element but not outside the boundaries of all of its descendent elements, then DOM Level 3 Mouse event handler will be not be invoked for "mouseleave" event.
org.hbbtv_PVR002	1	PVR, application/oipfRecordingScheduler embedded object	FALSE	The Terminal shall support embedded object with type "application/oipfRecordingScheduler" and all associated methods.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR003	1	PVR, createRecordingSchedulerObject embedded object	FALSE	The Terminal shall support the instance of the application/oipfRecordingScheduler embedded object through the oipfObjectFactory class
org.hbbtv_PVR004	1	PVR, isObjectSupported("application/oipfRecordingScheduler")	FALSE	The Terminal shall indicate support of the application/oipfRecordingScheduler embedded object through the isObjectSupported method.
org.hbbtv_PVR005	1	Same domain policy for PVR	FALSE	If the Recordings initiated by applications from the same fully-qualified domain are managed by application/oipfRecordingScheduler, then call of 'getScheduledRecordings' and 'remove' functions shall affect on recordings scheduled by application from the same domain only. 'recordings' property shall contain scheduled recordings done by application from the same domain only.
org.hbbtv_PVR007	1	PVR, Schedule recording, record(), EIT present/following	FALSE	Call of ScheduledRecording record(program) shall return correct "ScheduledRecording", and add program to scheduled collection. Properties of Scheduled recording shall be set accordingly to call parameter. Program is taken from 'present/following' EIT table.
org.hbbtv_PVR008	1	PVR, Schedule recording, record(), EIT scheduled	FALSE	Call of ScheduledRecording record(programme) shall return correct "ScheduledRecording" object and add it to scheduled collection. Properties of scheduled recording shall be set accordingly to call 'programme' parameter. programme is taken from 'scheduled' EIT table.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR009	1	PVR, Schedule recording, recordAt()	FALSE	Call of ScheduledRecording recordAt(startTime, duration, ... , channelID) shall return correct "ScheduledRecording" and add program to scheduled collection. Properties of Scheduled recording shall be set accordingly to call parameters.
org.hbbtv_PVR010	1	PVR,recording collection, getScheduledRecordings()	FALSE	Call of ScheduledRecordingCollection getScheduledRecordings() shall return all the recordings that are scheduled but which have not yet started and are scheduled using the same FQDN as the domain that calles the method. ScheduledRecordingCollection shall support array notation, Integer length and ScheduledRecording item(index).
org.hbbtv_PVR011	1	PVR, schedule recording, remove(), scheduled recording	FALSE	When remove method is used the terminal shall remove a scheduled recording.
org.hbbtv_PVR012	1	PVR, schedule recording, remove(), in-progress recording	FALSE	When remove method is used the terminal shall remove an in-progress recording.
org.hbbtv_PVR013	1	PVR, schedule recording, remove(), completed recording	FALSE	When remove method is used the terminal shall remove a scheduled recording.
org.hbbtv_PVR014	1	PVR, "recordings"	FALSE	The 'recordings' property of application/oipfRecordingScheduler embedded object shall provide a list of scheduled, in-progress and recorded programmes. If the terminal indicated support for extended PVR management functionality then 'recordings' property shall implement ScheduledRecordingCollection API: support array notation, Integer 'length' and method 'ScheduledRecording item(index)'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR015	1	PVR, record(), startPadding	FALSE	When startPadding is defined then the Terminal shall start recoding of the programme before or after the scheduled recording start time adhering to the value provided.
org.hbbtv_PVR016	1	PVR, record(), endPadding	FALSE	When endPadding is defined then the Terminal shall end recoding of the programme before or after the scheduled recording end time adhering to the value provided.
org.hbbtv_PVR017	1	PVR,record(), change state	FALSE	The terminal shall correctly report state of the recording. The states shall be assigned to unique values.
org.hbbtv_PVR018	1	PVR, getChannelConfig() method of application/oipfRecordingScheduler	FALSE	The ChannelConfig object returned from getChannelConfig() function SHALL be identical to the ChannelConfig object returned from the getChannelConfig() method on the video/broadcast object.
org.hbbtv_PVR019	1	Not trusted application	FALSE	Access to "application/oipfRecordingScheduler" trusted API shall throw SecurityError exception when application ID is in the unsigned range.
org.hbbtv_PVR101	1	PVR, recordNow(), recording state.	FALSE	After call of recordNow() method of video/broadcast object onRecordingEvent(state) shall be generated. The 'state' shall be switched as follow: "Unrealized" (0) -> "Recording has been newly scheduled" (1) -> "Recording is about to start"(2) -> "Acquiring recording resources" (3) -> "Recording has started" (4) -> "Recording has successfully completed" (6). If the 'state' is stable (equal "Recording has started" (4) or "Recording has successfully completed" (6)), 'recordingState' property of v/b object is equal to 'state'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR102	1	PVR, stopRecording().	FALSE	After call of stopRecording() method, the recording shall be stopped. The onRecordingEvent event is generated and the recordingState property is switched to "Unrealized" (0). The "duration" property of recording matches to the actual time of recording.
org.hbbtv_PVR103	1	PVR, recordNow(), video presenting.	FALSE	The call of 'recordNow()' method shall not affect on the rendering of video in video/broadcast object.
org.hbbtv_PVR104	1	PVR, recordNow(), recording in progress.	FALSE	Call 'recordNow()' method of video/broadcast object shall have no effect and return null, if recording is already in progress.
org.hbbtv_PVR105	1	PVR, recordNow(), returned value.	FALSE	Call recordNow() shall return ID of recording. Recording object obtained using 'application/oipfRecordingScheduler' object has the same 'id' property and matching state of recording.
org.hbbtv_PVR106	1	PVR, recordNow(), duration = -1.	FALSE	If no additional method are called and no other errors occured and "duration" call argument value is set to "-1" then the terminal shall not stop recording content until the space is exhausted.
org.hbbtv_PVR107	1	PVR, recordNow(), duration.	FALSE	The terminal shall record content with minimum duration of the value of "duration" call argument of 'recordNow()' method of 'video/broadcast' object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR108	1	PVR, addEventListener(), RecordingEvent.	FALSE	If event listener for the RecordingEvent is registered using addEventListener() method, then the event is dispatched and received correctly by the Terminal. The listener function is executed with correct set of parameters
org.hbbtv_PVR109	1	PVR, removeEventListener(), RecordingEvent.	FALSE	RecordingEvent DOM event listener registered using addEventListener() method shall not be triggered after removing by removeEventListener() method.
org.hbbtv_PVR110	1	PVR, addEventListener(), PlaySpeedChanged.	FALSE	If event listener for the PlaySpeedChanged is registered using addEventListener() method, then the event is dispatched and received correctly by the Terminal. The listener function is executed with correct set of parameters.
org.hbbtv_PVR111	1	PVR, removeEventListener(), PlaySpeedChanged.	FALSE	PlaySpeedChanged DOM event listener registered using addEventListener() method shall not be triggered after removing by removeEventListener() method.
org.hbbtv_PVR112	1	PVR, addEventListener(), PlayPositionChanged	FALSE	If event listener for the PlayPositionChanged is registered using addEventListener() method, then the event is dispatched and received correctly by the Terminal. The listener function is run with correct set of parameters
org.hbbtv_PVR113	1	PVR, removeEventListener(), PlayPositionChanged	FALSE	PlayPositionChanged DOM event listener registered using addEventListener() shall not be triggered after removing using removeEventListener() method.
org.hbbtv_PVR114	1	PVR, setSpeed	FALSE	Execution of the setSpeed() method sets the playback speed value to best approximation of speed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR115	1	PVR, playSpeeds[ ]	FALSE	The video/broadcast object shall support playSpeeds[ ] array with minimal included value set of 1.0 and 0.0
org.hbbtv_PVR116	1	Timeshift indicated by terminal, "Timeshift mode has started"	FALSE	Call of recordNow() when V/B object is in timeshift mode shall switch state to "1: Recording has been newly scheduled" and start recording. The recording starts from the current playback position in the buffer.
org.hbbtv_PVR117	1	Video broadcast object, trusted API	FALSE	Access to video/broadcast recording API shall throw SecurityError exception when application is broadcast independent.
org.hbbtv_PVR201	1	Timeshift indicated by terminal, "Acquiring timeshift resources"	FALSE	After timeshift has started, the video/broadcast object shall generate onRecordingEvent event and the recordingState property shall be switched from "Unrealized" (0) to "Acquiring timeshift resources" (10).
org.hbbtv_PVR202	1	Timeshift indicated by terminal, "Timeshift mode has started"	FALSE	After timeshift has started, the ideo/broadcast object shall generate onRecordingEvent event and the recordingState property shall be switched from "Acquiring timeshift resources" (10) to "Timeshift mode has started" (11).
org.hbbtv_PVR203	1	Timeshift indicated by terminal, exit timeshift mode.	FALSE	If stopTimeshift() or recordNow() method have been called after timeshift has started, the timeshift mode shall exit. When terminal exits the time shift mode, the video/broadcast object shall generate onRecordingEvent event and the recordingState property shall be switched from "Timeshift mode has started" (11) to "Unrealized" (0).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR204	1	Timeshift indicated by terminal, playPosition.	FALSE	When the timeshift has started, the "playPosition" property of "video/broadcast" element is calculated from the start of the timeshift buffer, measured in milliseconds.
org.hbbtv_PVR206	1	Timeshift indicated by terminal, onPlaySpeedChanged, playSpeed equal 0	FALSE	In timeshift mode, when playback goes to paused state, video/broadcast object generates onPlaySpeedChanged event. playSpeed is equal 0.
org.hbbtv_PVR207	1	Timeshift indicated by terminal, playSpeed equal 1	FALSE	In timeshift mode, when playback is resumed, video/broadcast object generates onPlaySpeedChanged event. playSpeed is equal 1.
org.hbbtv_PVR214	1	Timeshift, playbackOffset	FALSE	When the currentTimeShiftMode property has the value 1, set by the pause() call, the playbackOffset shall be equal to positive offset of the live broadcast in seconds.
org.hbbtv_PVR215	1	playbackOffset, no timeShift mode	FALSE	When currentTimeShiftMode is equal to 0 the playbackOffset shall be undefined.
org.hbbtv_PVR216	1	timeshift, resume, playPosition	FALSE	If playback is paused using pause() method, call of resume() resumes playback of time-shifted broadcast, play speed shall be equal to 1.0. onPlaySpeedChanged event is dispatched, playbackOffset is not changed and playPosition has changed.
org.hbbtv_PVR218	1	Change play speed while paused	FALSE	If the playback is in paused state, the speed change via setSpeed() shall not affect the paused state.
org.hbbtv_PVR219	1	Get list of playback speeds for timeshift mode	FALSE	Get list of playback speeds for video/broadcast object in timeshift mode. The list shall at least include 1.0 and 0.0 values.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR220	1	Get list of playback speeds for no timeshift mode	FALSE	When playSpeeds is requested for video/broadcast object not in timeshift mode, the returned value shall be undefined.
org.hbbtv_PVR221	1	Check currentTimeShiftMode value	FALSE	currentTimeShiftMode shall be 0 when there is no timeshift, and 1 if the timeshift is active, e.g. after "pause()" call.
org.hbbtv_PVR225	1	Check stopTimeshift during buffered content is paused	FALSE	After pause(), stopTimeshift() shall return true, video shall present currently broadcasted media, currentTimeShiftMode shall be 0.
org.hbbtv_PVR226	1	Check stopTimeshift during buffered content is playing	FALSE	After pause() and resume(), stopTimeshift() shall return true, video shall present currently broadcasted media, currentTimeShiftMode shall be 0.
org.hbbtv_PVR227	1	Timeshift, seek, outside buffer	FALSE	If seek(position) is called with position pointing outside timeshift buffer, the OITF shall ignore the request to seek and shall return the value false.
org.hbbtv_PVR228	1	Timeshift, seek, inside buffer, paused state	FALSE	When seek(offset, reference) is called the playback position shall be set to the value specified by offset and reference point.
org.hbbtv_PVR229	1	Timeshift, seek, incorrect argument	FALSE	If seek(offset , reference) is called with incorrect reference value the OITF shall ignore the request to seek and shall return false as a result of method call.
org.hbbtv_PVR230	1	Timeshift, seek, inside buffer, playing state	FALSE	When seek(offset, reference) is called, the playback position shall be set to the value specified by offset and reference point. The video shall remain in playing state after the seek.
org.hbbtv_PVR231	1	Timeshift, resize V/B object	FALSE	When changing the size of V/B object, this shall not affect on timeshift state and the video shall be displayed correctly with no decoding artifacts

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR232	1	Timeshift, full screen mode	FALSE	When V/B object fullscreen mode is switched, it shall not affect the timeshift state and the video shall be displayed correctly with no decoding artifacts.
org.hbbtv_PVR309	1	PVR, setSource, recordAt()	FALSE	The terminal shall correctly play and pause recording scheduled using 'recordAt' method of 'application/oipfRecordingScheduler' object. The playback is indicated by setting content item of A/V Control using method 'setSource(id)'. The method returns true.
org.hbbtv_PVR310	1	PVR, setSource, recordNow()	FALSE	The terminal shall correctly play and pause content recorded using 'recordNow()' method of 'video/broadcast' object. The playback is indicated by setting content item of A/V Control using method 'setSource(id)'. The method returns true.
org.hbbtv_PVR311	1	PVR, setSource, recordAt()	FALSE	The terminal shall correctly play and pause completed recording scheduled using 'record()' method of 'application/oipfRecordingScheduler' object. The playback is indicated by setting content item of A/V Control using method 'setSource(id)'. The method returns true.
org.hbbtv_PVR312	1	PVR, HTML5, recordAt()	FALSE	The terminal shall correctly play and pause recording scheduled using 'recordAt()'. The playback is indicated by setting 'src' attribute of the HTML5 video object to the value returned by 'uri' property of 'Recording' object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR313	1	PVR, HTML5, recordNow()	FALSE	The terminal shall correctly play and pause recording scheduled using recordNow. The playback is indicated by setting 'src' attribute of the HTML5 video object to the value returned by 'uri' property of 'Recording' object.
org.hbbtv_PVR314	1	PVR, HTML5, record()	FALSE	The terminal shall correctly play and pause recording scheduled using record(). The playback is indicated by setting 'src' attribute of the HTML5 video object to the value returned by 'uri' property of 'Recording' object.
org.hbbtv_PVR315	1	PVR, "data" property of A/V Control, recordAt()	FALSE	The terminal shall correctly play and pause recording scheduled using 'recordAt()'. The playback is indicated by setting 'data' attribute of the A/V Control object to the value returned by 'uri' property of 'Recording' object.
org.hbbtv_PVR401	1	PVR, record(), parental rating.	FALSE	When recording is indicated by record() method, the parentalRating property of the recording shall be equal to parental rating of recorded programme. Parental rating value is equal to "rating" field in "parental_rating_descriptor" signalled in EIT table for given programme.
org.hbbtv_PVR402	1	PVR, recordAt(), parental rating.	FALSE	When recording is indicated by recordAt(), the parentalRating property of the recording shall be equal to highest parental rating of all recorded programmes. Parental rating value is equal to "rating" field in "Parental rating descriptor" signalled in EIT table for given programme.
org.hbbtv_PVR403	1	Timeshift, parental rating.	FALSE	The parental rating during time-shift shall be set accordingly to actual time-shifted program.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR404	1	Exit timeshift, parental rating.	FALSE	After call 'stopTimeshift()', the video/broadcast object shall change state to "connecting" due to parental rating lock.
org.hbbtv_PVR405	1	Timeshift, parental rating change	FALSE	Terminal shall notify the change of parental rating while time-shift. The onParentalRatingChange event shall be dispatched.
org.hbbtv_PVR406	1	Timeshift, parental rating error.	FALSE	Terminal shall notify the change of parental rating while time-shift. If current parental rating value is above threshold, and the new is below threshold, PlayStateChange event shall be dispatched with its context arguments 'state' = 2 (presenting), and video shall be resumed.
org.hbbtv_PVR506	1	PVR on different channel	FALSE	Application is running on given channel. If the recording was scheduled on different channel broadcasted on the same mux, the terminal shall correctly record it.
org.hbbtv_PVR513	1	PVR, recording in progress, removing mass storage.	FALSE	When recording is in-progress and removable mass storage is disconnected, the 'Recording' type object representing current recording, if available, shall have 'state' property equal to 'RECORDING_ERROR'.
org.hbbtv_PVR514	1	PVR, temporary removing mass storage.	FALSE	When mass storage is removed then inserted back, the scheduled and recorded recordings shall be available.
org.hbbtv_PVR516	1	PVR, broadcast independent application, recording in background.	FALSE	After scheduling recording, different Broadcast-Independent (B-I) application is run. The terminal shall record the programme when there is no need to suspend access to broadcast resources.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_PVR517	1	PVR, broadcast related application, recording in background.	FALSE	Recording is scheduled by one application, when different, broadcast related application is currently running and do not use A/V control object, the terminal shall record the programme.
org.hbbtv_PVR518	1	PVR, removing signal cable before recording and keep it until end of scheduled recording.	FALSE	The TV signal is not available during recording, recording should not be present or should be set as invalid.
org.hbbtv_PVR601	1	PVR, "User-Agent" header.	FALSE	When PVR is supported "User-Agent" header shall match to: HbbTV\.* (.*\+PVR.*;.*
org.hbbtv_PVR602	1	PVR, xmlCapabilities, <recording manageRecording="samedomain">true</recordin g>.	FALSE	xmlCapabilities property of 'application/oipfCapabilities' type object shall contain tag 'recording' with: value='true' 'manageRecordings' attribute equal to 'samedomain'.
org.hbbtv_PVR603	1	PVR, VK_RECORD	FALSE	If terminal supports PVR option, it shall support remote with VK_RECORD button.
org.hbbtv_PVR604	1	Inserted device, PVR indicating.	FALSE	When mass storage suitable for recording has been inserted, the HbbTV engine shall indicate it.
org.hbbtv_PVR605	1	Removed mass-storage device, lack of PVR indicating.	FALSE	When mass storage has being removed and device does not have possibility to support PVR, it shall not indicate support of PVR.
org.hbbtv_PVR606	1	PVR, platform profile 0x2 in AIT table.	FALSE	When PVR is supported, the application signalled with platform profile equal 0x2 shall be run.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_QUIET0010	2	setChannel with quiet value 0	TRUE	A broadcast-related application creates a video/broadcast object and binds it to the current channel. When it calls the setChannel method on that video/broadcast object with the quiet argument set to zero, the HbbTV terminal changes to the specified channel. Any channel change banner displays the new channel and any front panel display displays the new channel.
org.hbbtv_QUIET0020	2	setChannel with quiet value 1	TRUE	A broadcast-related application creates a video/broadcast object and binds it to the current channel. When it calls the setChannel method on that video/broadcast object with the quiet argument set to one, the HbbTV terminal changes to the specified channel. No channel change banner or equivalent is drawn by the HbbTV terminal. Any front panel display or channel info UI shows the new channel.
org.hbbtv_QUIET0030	2	setChannel with quiet value 2	TRUE	A broadcast-related application creates a video/broadcast object and binds it to the current channel. When it calls the setChannel method on that video/broadcast object with the quiet argument set to two, the HbbTV terminal changes to the specified channel. No channel change banner or equivalent is drawn by the HbbTV terminal. Any front panel display or channel info UI shows the original channel.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_QUIET0040	2	setChannel with quiet value 2 - next	TRUE	A broadcast-related application creates a video/broadcast object and binds it to the current channel (channel 'A'). The application calls the setChannel method on that video/broadcast object to change to channel 'B' with the quiet argument set to two. Once the HbbTV terminal has successfully changed to channel 'B', the HbbTV application calls nextChannel and the channel changes to the next channel relative to channel 'A' and not to the next channel relative to channel 'B'.
org.hbbtv_QUIET0050	2	setChannel with quiet value 2 - prev	TRUE	A broadcast-related application creates a video/broadcast object and binds it to the current channel (channel 'A'). The application calls the setChannel method on that video/broadcast object to change to channel 'B' with the quiet argument set to two. Once the HbbTV terminal has successfully changed to channel 'B', the HbbTV application calls prevChannel and the channel changes to the previous channel relative to channel 'A' and not to the previous channel relative to channel 'B'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_RELIABILITY01	1	Broadband broadcast content switch, A/V control playout to the end	TRUE	A broadcast-related HbbTV application does not include video broadcast object and is presenting MPEG-2 SD video + MPEG-1 layer 2 audio + broadcast subtitles. An A/V control object size is 1/2 x 1/2 of screen size. The application starts playback (and presentation) of to MPEG2 TS file AVC_25_HD_HEAAC without subtitles using the A/V Control object. When the playout is finished, the terminal automatically resumes presentation of broadcast video, audio and subtitles.
org.hbbtv_RELIABILITY02	1	Broadband broadcast content switch, A/V control playout stopped in the middle	TRUE	A broadcast-related HbbTV application includes an video/broadcast object presenting AVC HD 25 + HEAAC + broadcast subtitles and an A/V Control object with data referring to static DASH MPD with AVC_HD_25 + HEAAC. The video/broadcast object is in the fullscreen mode. The application moves video/broadcast object to the stopped state, then starts playout of the broadband video. When the playout of the A/V Control object is stopped before reaching end of media and the application moves video/broadcast object to presenting state then presentation of broadcast content by video/broadcast object is resumed and the terminal presents video, audio and subtitles.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_RELIABILITY03	1	Broadband broadcast content switch, HTML5 video playout to the end, Audio Description resume	TRUE	A broadcast service includes: AVC HD 25 video, HEAAC (primary audio), HEAAC (Audio Description), broadcast subtitles, an autostart broadcast-related HbbTV application. The application includes a video broadcast object and an HTML5 video element with src referring to ISOBMFF mp4 file AVC_HD_25 + HEAAC (no audio description). The application moves the video/broadcast object to the stopped state, then starts playout of the video element. When playout is finished due to reaching end of media, application releases the video element resource and moves video/broadcast object to the presenting state, then the presentation of broadcast is resumed and the terminal presents the broadcast video and the AD audio.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_RELIABILITY04	1	Broadband broadcast content switch, subtitles disabled	TRUE	A broadcast service includes: AVC HD 25 video, HEAAC, primary audio broadcast subtitles, an autostart broadcast-related HbbTV application. The subtitles are disabled. The application includes a video broadcast object and moves it to stopped state. After that in the same event loop spin, the application creates an HTML5 video element, adds to it source element referring to broadband ISOBMFF MP4 file AVC_HD_25 + HEAAC encoded and track elements referring to EBU-TT-D out-of-band subtitles, calls to 'play' of the video element. No 'load' method is called. After the broadband video playout is finished, the video element is removed from the DOM tree. After that, when the video/broadcast object is released then: presentation of broadcast video returns to the terminal, the presentation of broadcast both video and the audio is resumed, the subtitles are not displayed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_RELIABILITY05	1	Broadband broadcast content switch, preloaded content	TRUE	A broadcast service includes: AVC HD 25 video, HEAAC, primary audio broadcast subtitles (default language), broadcast subtitles (for hard of hearing), an autostart broadcast-related HbbTV application. The subtitles are enabled, the default language subtitles are displayed with video. The application includes a video broadcast object and moves it to fullscreen mode and stopped state. After that all the steps are performed in the same event loop spin: the application creates an HTML5 video element, adds to it source element referring to broadband ISOBMFF MP4 file AVC_HD_25 + HEAAC encoded and track element referring to EBU-TT-D out-of-band subtitles. sets the 'mode' attribute of TextTrack to 'Showing by default', sets the 'kind' attribute of TextTrack to 'captions'. calls to 'load' of the video element. When the video element reach the 'HAVE_ENOUGH_DATA' ready state, then the application moves the video element to 'playing' state. After that, when the playout is finished, the video element is removed from DOM tree and video/broadcast object is moved to 'presenting' play state. After that, the terminal resumes presentation of broadcast video, audio and the default language subtitles.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_RELIABILITY06	1	Broadband broadcast content switch, HTML5 video playout stopped in the middle	TRUE	A broadcast-related HbbTV application includes a video broadcast object presenting AVC HD 25 + HEAAC + broadcast subtitles and an HTML5 video element with src referring to static DASH MPD with AVC_HD_25 + HEAAC + TTML subtitles, language of subtitles is different than the language of subtitles present in broadcast. The application moves video/broadcast object to the stopped state, then starts playout of the video element. Next, the application attempts to present broadband subtitles by setting mode attribute to 'showing' of the text track element. After that, when the playout is stopped before reaching end of media and the application releases both the video element resource and the video/broadcast resource (call to release) then the presentation of broadcast is resumed and the terminal automatically resumes presentation of broadcast video, audio and subtitles.
org.hbbtv_RLNCH0040	1	REMOTE LAUNCH: Successful launching HbbTV app with user approval	TRUE	When the companion screen app requests the launch of an HbbTV Application using a proper HTTP POST message and the launch of the HbbTV application is approved by the user, the terminal shall successfully launch the HbbTV application and respond with HTTP status code 201.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_RLNCH0041	1	REMOTE LAUNCH: Successful launching HbbTV app with pre-approval	TRUE	When the companion screen app requests the launch of an HbbTV Application using a proper HTTP POST message and the HbbTV application is pre-approved, the terminal shall successfully launch the HbbTV application and respond with HTTP status code 201.
org.hbbtv_RLNCH0050	1	REMOTE LAUNCH: App not found - user approval	TRUE	When a companion screen app requests the launch of an HbbTV Application, that has been approved by the user, using a proper HTTP POST message but the URL of the HbbTV application is temporarily unavailable, the terminal shall respond with HTTP status code 404.
org.hbbtv_RLNCH0051	1	REMOTE LAUNCH: App not found - pre-approval	TRUE	When a companion screen app requests the launch of an HbbTV Application, that has been pre-approved, using a proper HTTP POST message but the URL of the HbbTV application is temporarily unavailable, the terminal shall respond with HTTP status code 404.
org.hbbtv_RLNCH0060	1	REMOTE LAUNCH: Response Code SERVICE UNAVAILABLE	TRUE	When the companion screen app requests the launch of the HbbTV application using a proper HTTP POST message in a state where the terminal feature is temporarily unavailable, the terminal shall repond with the HTTP status code 503.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_RLNCH0070	1	REMOTE LAUNCH: Launch denied by user	TRUE	When a companion screen application has sent a request to launch an application that was not approved or pre-approved yet, the terminal shall request the user's approval which shall not be given, i.e. the request shall be denied by the user, and then the terminal shall respond to the request with a status code 403, a Content-Type header set to "text/plain" and the response body containing only the 4 character string "USER".
org.hbbtv_RLNCH0071	1	REMOTE LAUNCH: Launch denied by terminal	TRUE	When a companion screen app requests the launch of an HbbTV Application using a proper HTTP POST message and the HbbTV application is not pre-approved, the terminal responds with the HTTP status code 403 and an empty response body.
org.hbbtv_RLNCH0090	1	REMOTE LAUNCH: URL check fails - user re-approval	TRUE	When a companion screen application first requests to launch an application that is either pre-approved by the user or the user approves the launch, the terminal shall launch this application and respond with the status 201. When the companion screen app then requests to launch an application using an XMLAIT that is identical to the first request except for the applicationLocation part and this combination of applicationTransport and applicationLocation, i.e. the HTTP URL, have not been pre-approved yet, the terminal shall ask the user for approval.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_RLNCH0091	1	REMOTE LAUNCH: URL check fails - request denied	TRUE	When a companion screen application first requests to launch an application that is pre-approved, the terminal shall launch this application and respond with the status 201. When the companion screen app then requests to launch an application using an XMLAIT that is identical to the first request except for the applicationLocation part and this combination of applicationTransport and applicationLocation, i.e. the HTTP URL, have not been pre-approved yet, the terminal shall deny the request and respond with the status code 403.
org.hbbtv_RLNCH0120	1	REMOTE LAUNCH: Options method	TRUE	When the terminal receives an HTTP cross-origin request using the OPTIONS method, which is targeting the Application Launch service end-point, then it shall process the request as preflight including the following headers in the HTTP response: Access-Control-Allow-Origin, Access-Control-Max-Age, Access-Control-Allow-Methods and Access-Control-Allow-Headers. The value of the response headers shall confirm that the terminal permits a subsequent POST request to come from any origin.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_RLNCH0130	1	REMOTE LAUNCH: Cross-origin-response - user approved	TRUE	When the terminal receives an HTTP request targeting the Application Launch service endpoint containing an Origin header and the user approves the app launch, the terminal shall launch the application and respond with an HTTP status code 201 including an Access-Control-Allow-Origin header. The value of this response header shall either be the asterisk character "*" or a case-sensitive match for the value of the Origin header from the HTTP request.
org.hbbtv_RLNCH0131	1	REMOTE LAUNCH: Cross-origin-response - pre-approved	TRUE	When the terminal receives an HTTP request targeting the Application Launch service endpoint containing an Origin header and the requested app is pre-approved for launching, the terminal shall launch that application and respond with an HTTP status code 201 including an Access-Control-Allow-Origin header. The value of this response header shall either be the asterisk character "*" or a case-sensitive match for the value of the Origin header from the HTTP request.
org.hbbtv_RLNCH0140	1	REMOTE LAUNCH: successful transitioning HbbTV app launched with user approval from broadcast-independent to broadcast-related	TRUE	Following the companion screen app requesting the launch of an HbbTV Application using a proper HTTP POST message and the launch of the HbbTV application being approved by the user, when a new service is selected which allows the launched HbbTV Application to be broadcast-related, the application shall transition to a broadcast-related application and shall allow access to the broadcast resources.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SMALL_INC0020	1	terminalChannel property	TRUE	When an HbbTV application obtains a Channel object and reads the terminalChannel property, the value is the channel number used by the terminal's native UI.
org.hbbtv_SMALL_INC0030	1	DVB-SI descriptors with private data specifier	TRUE	When an HbbTV application reads the SI descriptors from a Programme object where the DVB-SI includes descriptors scoped by a private data specifier and the HbbTV application passes that private data specifier as the privateDataSpecifier argument to the getSIDescriptors method as well as the descriptor tag values, the descriptors concerned are returned.
org.hbbtv_SMALL_INC0035	1	DVB-SI descriptors with incorrect private data specifier	TRUE	When an HbbTV application reads the SI descriptors from a Programme object where the DVB-SI includes descriptors scoped by a private data specifier and the HbbTV application passes an incorrect private data specifier as the privateDataSpecifier argument to the getSIDescriptors method but with the correct descriptor tag values, the method returns null.
org.hbbtv_SMALL_INC0060	1	Broadcast-related application not affected when broadcast video is stopped	TRUE	When a broadcast-related application stops playback of broadcast video by calling the stop method on a video/broadcast object in the presenting state, the application remains broadcast-related.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SMALL_INC0065	1	Broadcast-related application not affected when broadcast video is restarted	TRUE	When a broadcast-related application stops playback of broadcast video by calling the stop method on a video/broadcast object in the presenting state and then resumes presenting the video using bindToCurrentChannel(), the application is still broadcast-related.
org.hbbtv_SMALL_INC0070	1	EXIT key destroys AUTOSTART application and second AUTOSTART application launches	TRUE	When the user presses the EXIT button (or equivalent) while a broadcast service with an autostart application is selected and a broadcast-related HbbTV application is running, the running application is terminated, the broadcast signalling is processed and the autostart application started.
org.hbbtv_SMALL_INC0100	1	parental rating for b-i apps - granted	TRUE	When an application attempts to launch a broadcast-independent application whose XML AIT includes a <parentalRating> element identifying the application as applicable to the widest possible audience according to a supported parental rating scheme and the terminal is configured to permit access to media identified as applicable to that audience then the application is launched.
org.hbbtv_SMALL_INC0110	1	parental rating for b-i apps - denied	TRUE	When an application attempts to launch a broadcast-independent application whose XML AIT includes a <parentalRating> element identifying the application as applicable to the narrowest possible audience according to a supported parental rating scheme and the terminal is configured to deny access to media identified as applicable to that audience then the application is not launched.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SMALL_INC0120	1	parental rating for autostart b-r apps - granted	TRUE	When a terminal attempts to launch an autostart broadcast-related application whose AIT includes a parental_rating_descriptor identifying the application as having a minimum recommended age of 4 and the terminal is configured not to restrict access for that age then the application is launched.
org.hbbtv_SMALL_INC0130	1	parental rating for present b-r apps - granted	TRUE	When an application attempts to launch a present broadcast-related application whose AIT includes a parental_rating_descriptor identifying the application as having a minimum recommended age of 4 and the terminal is configured not to restrict access for that age then the application is launched.
org.hbbtv_SMALL_INC0140	1	parental rating for autostart b-r apps - refused	TRUE	When a terminal attempts to launch an autostart broadcast-related application whose AIT includes a parental_rating_descriptor identifying the application as having a minimum recommended age of 18 and the terminal is configured to restrict access for that age then the application is not launched and the terminal tries the next highest priority application signalled as autostart.
org.hbbtv_SMALL_INC0150	1	parental rating for present b-r apps - refused	TRUE	When an application attempts to launch a present broadcast-related application whose AIT includes a parental_rating_descriptor identifying the application as having a minimum recommended age of 18 and the terminal is configured to restrict access for that age then the application is not launched and the launching application receives an onApplicationLoadError.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SMALL_INC0160	1	parental rating for b-r apps - changes ignored	TRUE	A terminal that is configured not to restrict access for age 4 but to restrict access for age 18 launches an autostart broadcast-related application whose AIT includes a parental_rating_descriptor identifying the application as having a minimum recommended age of 4. The AIT is then updated to change the parental_rating_descriptor to indicate a minimum recommended age of 18. The application continues to run uninterrupted.
org.hbbtv_STABILITY0010	1	Stability - service selection - carousel transport	TRUE	There are two services carrying broadcast-related autostart applications delivered in different carousels. The selected service is repeatedly changed from one service to the other (as if by user interaction), no faster than at 50 ms intervals and no slower than at 1 second intervals (or the time required for the application to start fully, if greater than 1 second). After 20 service changes at varying intervals, the correct application starts successfully and presents the correct audio and video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_STABILITY0020	1	Stability - service selection - broadband transport	TRUE	There are two services carrying broadcast-related autostart applications delivered over broadband. The selected service is repeatedly changed from one service to the other (as if by user interaction), no faster than at 50 ms intervals and no slower than at 1 second intervals (or the time required for the application to start fully, if greater than 1 second). After 20 service changes at varying intervals, the correct application starts successfully and presents the correct audio and video.
org.hbbtv_STABILITY0030	1	Stability - service selection - mixed transport	TRUE	There are two services carrying broadcast-related autostart applications, one delivered in a carousel and the other delivered over broadband. The selected service is repeatedly changed from one service to the other (as if by user interaction), no faster than at 50 ms intervals and no slower than at 1 second intervals (or the time required for the application to start fully, if greater than 1 second). After 20 service changes at varying intervals, the correct application starts successfully and presents the correct audio and video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_STABILITY0040	1	Stability - repeated termination - broadcast-related	TRUE	A broadcast-related autostart application is repeatedly terminated using the "EXIT or comparable button" mechanism at varying intervals, no faster than at 50 ms intervals and no slower than at 1 second intervals (or the time required for the application to start fully, if greater than 1 second). After 20 activations of the mechanism, the application starts successfully and presents broadcast audio and video.
org.hbbtv_STABILITY0050	1	Stability - repeated termination - Internet TV Portal	TRUE	A broadcast-independent application is repeatedly started from the Internet TV Portal and then terminated manually by the user. This happens 20 times. When the application is started one further time, the application starts successfully.
org.hbbtv_STABILITY0060	1	Stability - no A/V glitches when application launches - autostart/IP	TRUE	When a terminal is presenting broadcast audio and video and a broadcast-related autostart application delivered over broadband launches, and the application does not try to control video playback, there are no artifacts or glitches in the presented broadcast audio or video.
org.hbbtv_STABILITY0070	1	Stability - no A/V glitches when application launches - present/DSM-CC	TRUE	When a terminal is presenting broadcast audio and video and a broadcast-related non-autostart application delivered by DSM-CC object carousel launches, and the application does not try to control video playback, there are no artifacts or glitches in the presented broadcast audio or video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_STABILITY0080	1	Stability - no A/V glitches when application exits - destroyApplication()	TRUE	When a terminal is presenting broadcast audio and video and a broadcast-related application is running that does not try to control video playback and the application calls destroyApplication(), there are no artifacts or glitches in the presented broadcast audio or video.
org.hbbtv_STABILITY0085	1	Stability - no A/V glitches when application exits - signalling	TRUE	When a terminal is presenting broadcast audio and video and a broadcast-related application is running that does not try to control video playback and the broadcast signalling changes so that the application is terminated, there are no artifacts or glitches in the presented broadcast audio or video.
org.hbbtv_STABILITY0090	1	Stability - no A/V glitches when application exits - manual termination	TRUE	When a terminal is presenting broadcast audio and video and a broadcast-related application is running that does not try to control video playback and the application is terminated manually by the user, there are no artifacts or glitches in the presented broadcast audio or video.
org.hbbtv_STABILITY0100	1	Stability - truncated content	TRUE	When an application requests content from an XML, HTML or media file and download of the content is interrupted because the file is truncated, the terminal continues to respond to channel change and application termination requests.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_STABILITY0110	1	Stability - packet loss	TRUE	When an application is loading over an IP connection and download of the application is interrupted by a TCP connection reset or sustained packet loss, the terminal continues to respond to channel change and application termination requests.
org.hbbtv_STABILITY0120	1	Stability - carousel removed	TRUE	When an application is loading from an object carousel and download of the application is interrupted by removal of the carousel from the broadcast stream, the terminal continues to respond to channel change and application termination requests.
org.hbbtv_STABILITY0130	1	Stability - very large asset	TRUE	When the initial HTML page of an application has a file size of 100MB and the application is loaded, the terminal continues to respond to channel change and application termination requests, regardless of whether the application is loaded successfully.
org.hbbtv_STABILITY0140	1	Stability - unbounded memory usage	TRUE	When an application attempts to create and initialise an unbounded number of arrays, each containing 2 000 000 integers, until resource allocation fails, the terminal continues to respond to channel change and application termination requests.
org.hbbtv_STABILITY0150	1	Stability - uncaught exception	TRUE	When an application raises an exception that is not caught, the terminal continues to respond to channel change and application termination requests.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_STABILITY0160	1	Stability - application enters an infinite loop	TRUE	When an application enters an infinite recursive loop, the terminal continues to respond to channel change and application termination requests.
org.hbbtv_SUB0010	1	EBUTTD: 8 concurrent regions	TRUE	The terminal successfully renders, in correct synchronisation with associated video, an EBU-TT-D document in which the subtitles change over time but always use 8 concurrent active regions.
org.hbbtv_SUB0020	1	EBUTTD: UTF-8 encoding	TRUE	The terminal successfully renders an EBU-TT-D document that includes a representative selection of UTF-8 characters using the embedded Tiresias font. The selection of characters shall contain at least a subset of characters in the unicode range of 00A0-017E (excluding 0149) and all characters listed individually in table C.1 of ETSI TS 102 809.
org.hbbtv_SUB0024	1	EBUTTD: in-band within live DASH stream	TRUE	When an application is using an HTML5 media element object to present a live DASH stream containing at least one video, one audio and one EBU-TT-D subtitle component, and the application selects for presentation one of the in-band subtitle components via the HTML5 API (by setting the mode attribute of the corresponding TextTrack object to "showing"), the terminal successfully renders the selected EBU-TT-D subtitles in correct synchronisation with the presented video component.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB0026	1	EBUTTD: Compressed DASH delivery	TRUE	The terminal successfully renders, in correct synchronisation with their associated video, EBU-TT-D subtitles that are encapsulated in ISOBMFF and delivered with HTTP compression enabled in an MPEG DASH stream conforming to the DVB DASH profile and annex E of the HbbTV specification.
org.hbbtv_SUB0028	1	EBUTTD: DASH delivery - timing not aligned with samples 1	TRUE	When EBU-TT-D subtitles are delivered in an MPEG DASH stream conforming to the DVB DASH profile and annex E of the HbbTV specification, where each subtitle segment contains a single sample, each sample contains an EBU-TT-D document whose start time is before the sample start time and whose end time is after the sample end time, and the terminal has downloaded each subtitle segment in its entirety before the video frames visible during the same period on the media timeline are presented, the terminal successfully renders the subtitles in correct synchronisation with their associated video, with the subtitles rendered over each video frame coming only from the subtitle sample located at the same position on the media timeline.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB0029	1	EBUTTD: DASH delivery - timing not aligned with samples 2	TRUE	When EBU-TT-D subtitles are delivered in an MPEG DASH stream conforming to the DVB DASH profile and annex E of the HbbTV specification, where each subtitle segment contains a single sample, and each sample contains an EBU-TT-D document whose start time is after the sample start time and whose end time is before the sample end time, the terminal successfully renders the subtitles in correct synchronisation with their associated video.
org.hbbtv_SUB0080	1	EBUTTD: out-of-band with A/V content over progressive ISOBMFF	TRUE	The terminal successfully renders subtitles from an EBU-TT-D document delivered out-of-band via HTTP as a single XML file, in correct synchronisation with associated video encapsulated in an ISOBMFF file that is being progressively streamed via HTTP.
org.hbbtv_SUB0110	1	EBUTTD: out-of-band with non-live DASH.	FALSE	The terminal successfully renders subtitles from an EBU-TT-D document delivered out-of-band via HTTP as a single XML file, in correct synchronisation with associated video that is being delivered in a non-live DASH stream.
org.hbbtv_SUB0120	1	EBUTTD: single document with 512 kByte.	TRUE	The terminal successfully renders subtitles from an EBU-TT-D document delivered out-of-band via HTTP as a single XML file of size 512kBytes, in correct synchronisation with associated video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB0130	1	EBUTTD: Select out-of-band ST with HTML5	TRUE	When AV content that has two associated out-of-band EBU-TT-D subtitle components is being presented by an HTML5 media object, and the application then selects for presentation one of the out-of-band subtitle components by setting the mode attribute of the corresponding TextTrack object to "showing", the terminal thereafter successfully renders the correct EBU-TT-D subtitle component over the video.
org.hbbtv_SUB0140	1	EBUTTD: Unselect out-of-band ST with HTML5	TRUE	When AV content is being presented by an HTML5 media object, with an associated out-of-band EBU-TT-D subtitle component being rendered over the video, and the application then deselects the subtitle component that is being presented by setting the mode attribute of the corresponding TextTrack object to "disabled", the terminal stops rendering the corresponding subtitle component.
org.hbbtv_SUB0150	1	EBUTTD: Select in-band DASH ST with HTML5	TRUE	When an audio and a video component from an MPEG DASH stream that also contains two EBU-TT-D subtitle components (i.e., two subtitle Adaptation Sets) are being presented by an HTML5 media object, and the application then selects for presentation one of the in-band subtitle components by setting the mode attribute of the corresponding TextTrack object to "showing", the terminal thereafter successfully renders the correct EBU-TT-D subtitle component over the video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB0160	1	EBUTTD: Unselect in-band DASH ST with HTML5	TRUE	When an audio, a video and an EBU-TT-D subtitle component from the same MPEG DASH stream are being presented by an HTML5 media object, and the application then deselects the subtitle component that is being presented by setting the mode attribute of the corresponding TextTrack object to "disabled", the terminal stops rendering the corresponding subtitle component.
org.hbbtv_SUB0190	1	EBUTTD: Select out-of-band ST with AV Control object	TRUE	When AV content that has two associated out-of-band EBU-TT-D subtitle components is being presented by an AV Control object, and the application then selects for presentation one of the out-of-band subtitle components by passing the corresponding AVSubtitleComponent to the AV Control object's selectComponent method, the terminal thereafter successfully renders the correct EBU-TT-D subtitle component over the video.
org.hbbtv_SUB0210	1	EBUTTD: Select inband DASH ST with AV Control object	TRUE	When an audio and a video component from an MPEG DASH stream that also contains two EBU-TT-D subtitle components (i.e., two subtitle Adaptation Sets) are being presented by an AV Control object, and the application then selects for presentation one of the subtitle components by passing the corresponding AVSubitleComponent to the AV Control object's selectComponent method, the terminal thereafter successfully renders the correct EBU-TT-D subtitle component over the video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB0220	1	EBUTTD: Unselect inband DASH ST with AV Control object	TRUE	When an audio, a video and an EBU-TT-D subtitle component from the same MPEG DASH stream are being presented by an AV Control object, and the application then deselects the subtitle component that is being presented by passing the corresponding AVSubtitleComponent to the AV Control object's unselectComponent method, the terminal stops rendering the corresponding subtitle component.
org.hbbtv_SUB0280	1	EBUTTD: Font matching "default"	TRUE	When an EBU-TT-D document refers to the generic font-family "default" in a tt:style element that is used from the tt:body element of the subtitle document, the terminal renders the subtitle with the embedded Tiresias font.
org.hbbtv_SUB0290	1	EBUTTD: Font matching "sansSerif"	TRUE	When an EBU-TT-D document refers to the generic font-family "sansSerif" from a tt:style element that is used in a tt:region element that itself is used from a tt:div element in the subtitle document, and the application references a downloadable font (whose name is not "sansSerif") in an MPEG DASH MPD, the terminal renders the subtitle of that tt:div element with the embedded Tiresias font. All other subtitles of the document uses a font-family that matches that of the downloadable font and are correctly rendered by the terminal using the downloadable font.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB0350	1	EBUTTD: MPD SupplementalProperty	TRUE	When an application is presenting an MPEG DASH stream that contains an in-band EBU-TT-D subtitle component whose subtitles use a downloadable font that is signalled by a SupplementalProperty element in the DASH MPD, and the application selects for presentation this in-band subtitle component, the terminal correctly renders the subtitles using the downloadable font.
org.hbbtv_SUB0370	1	EBUTTD: MPD SupplementalProperty download failure	TRUE	When an application is presenting an MPEG DASH stream that contains an in-band EBU-TT-D subtitle component whose subtitles use a downloadable font that is signalled by a SupplementalProperty element in the DASH MPD, and the application selects for presentation this in-band subtitle component, but the downloadable font is not available at its download location, the terminal ignores the downloadable font and renders the subtitles with a suitable embedded font.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB0390	1	EBUTTD: CASD download font	TRUE	When an application is using an AV Control object to present AV content that is signalled by a Content Access Streaming Descriptor and which is being progressively streamed via HTTP, and the application selects for presentation an associated out-of-band EBU-TT-D subtitle component that references a downloadable font which is signalled in the same Content Access Streaming Descriptor and whose essential attribute is set to false, the terminal correctly renders the subtitles using the downloadable font.
org.hbbtv_SUB0420	1	EBUTTD: CASD download failure for non-essential font	TRUE	When an application is using an AV Control object to present AV content that is signalled by a Content Access Streaming Descriptor and which is being progressively streamed via HTTP, and the application selects for presentation an associated out-of-band EBU-TT-D subtitle component that references a downloadable font with the generic font-family name "sansSerif" which is signalled in the same Content Access Streaming Descriptor and whose essential attribute is set to false, but the downloadable font is not available at its download location, the terminal correctly renders the subtitles using the embedded Tiresias font.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB0600	1	EBUTTD: DASH with single subtitle segment	TRUE	When an application is presenting an MPEG DASH stream whose length is at least two minutes, and which contains an EBU-TT-D subtitle Adaptation Set consisting of a single ISOBMFF segment that contains a single sample, the content of which is an EBU-TT-D document that contains multiple subtitles whose presentation times are distributed throughout the duration of the DASH stream, the terminal successfully renders the EBU-TT-D subtitle component in correct synchronisation with the presented video component.
org.hbbtv_SUB0610	1	EBUTTD: DASH with larger subtitle segments	TRUE	When an application is presenting an MPEG DASH stream whose length is at least five minutes, and which contains an EBU-TT-D subtitle Adaptation Set containing at least five segments, whose segment duration is greater than that of the segments of the presented video and audio components, but which is not an integer multiple of the duration of either the video or audio segments, the terminal successfully renders the EBU-TT-D subtitle component in correct synchronisation with the presented video component.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB0620	1	EBUTTD: Enable subtitles via UI for DASH stream presented by HTML5 media object (enabled while application running)	TRUE	For a terminal that supports enabling the subtitles while an application is running, when an application is using an HTML5 media object to present video and audio components from an MPEG DASH stream that also contains an EBU-TT-D subtitle component, and subtitles are then enabled on the terminal using the terminal UI, the terminal thereafter successfully renders the in-band EBU-TT-D subtitle component in correct synchronisation with the presented video component.
org.hbbtv_SUB0620_2	1	EBUTTD: Enable subtitles via UI for DASH stream presented by HTML5 media object	TRUE	When an application is using an HTML5 media object to present video and audio components from an MPEG DASH stream that also contains an EBU-TT-D subtitle component, and subtitles are then enabled on the terminal using the terminal UI, the terminal thereafter successfully renders the in-band EBU-TT-D subtitle component in correct synchronisation with the presented video component.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB0630	1	EBUTTD: Enable subtitles via UI for ISOBMFF stream presented by AV Control object (enabled while application running)	FALSE	For a terminal that supports enabling the subtitles while an application is running, when an application, which declares an out-of-band EBU-TT-D subtitle component using a param element, is using an AV Control object to present video and audio components from an ISOBMFF file that is being progressively streamed via HTTP, and subtitles are then enabled on the terminal using the terminal UI, the terminal thereafter successfully renders the out-of-band EBU-TT-D subtitle component in correct synchronisation with the presented video component.
org.hbbtv_SUB0630_2	1	EBUTTD: Enable subtitles via UI for ISOBMFF stream presented by AV Control object	TRUE	When an application, which declares an out-of-band EBU-TT-D subtitle component using a param element, is using an AV Control object to present video and audio components from an ISOBMFF file that is being progressively streamed via HTTP, and subtitles are then enabled on the terminal using the terminal UI, the terminal thereafter successfully renders the out-of-band EBU-TT-D subtitle component in correct synchronisation with the presented video component.
org.hbbtv_SUB1001	1	tt:br in tt:p	TRUE	Each time a tt:br element is encountered in a tt:p element the presentation processor shall start a new line.
org.hbbtv_SUB1002	1	Multiple Div	TRUE	When content elements that are descendants of different tt:div elements are simultaneously active all of those content elements shall be rendered by a presentation processor.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1004	1	tt:br in tt:span	TRUE	Each time a tt:br element is encountered in a tt:span element the presentation processor shall start a new line.
org.hbbtv_SUB1005	1	cellResolution and fontSize	TRUE	The font size of text content shall be rendered by a presentation processor according to the inherited font size. The percentage value of the calculated font-size shall be translated to absolute values based on the cellResolution attribute that is specified on the tt:tt element.
org.hbbtv_SUB1006	1	tts:backgroundColor applied to a tt:span	TRUE	When tts:backgroundColor is applied to a span element a presentation processor shall render the background colour for the content in the inline-area generated by the span element.
org.hbbtv_SUB1007	1	tts:color using a RGB color triple	TRUE	When a color is applied using a tts:color attribute whose value is an RGB color triple as hash color expression (#rrggbb) the content shall be rendered by the presentation processor as an opaque foreground color in the defined SRGB color space.
org.hbbtv_SUB1008	1	Styling Test - Color - 003	TRUE	When a color is applied using a tts:color attribute whose value is an RGBA color tuple as hash color expression (#rrggbbaa) the content shall be rendered by the presentation processor as a foreground color in the defined SRGB color space where the opacity is set according to the value of the alpha component in that color expression.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1009	1	Styling Test - Color - 008	TRUE	When a tts:color style attribute is applied to a tt:span element the textual content that is enclosed by that tt:span element shall be rendered by a presentation processor in the foreground color specified by that tts:color attributes value.
org.hbbtv_SUB1010	1	tts:unicodeBidi with "bidiOverride" and tts:direction with "ltr" applied to a tt:span.	TRUE	If tts:unicodeBidi with value "bidiOverride" and tts:direction with the value "ltr" is applied to a tt:p or tt:span the presentation processor shall render the enclosed textual content so that the Unicode algorithm is overridden and the reordering is strictly in left-to-right sequence.
org.hbbtv_SUB1011	1	tts:unicodeBidi with "bidiOverride" and tts:direction with "rtl" applied to a tt:span.	TRUE	If tts:unicodeBidi with value "bidiOverride" and tts:direction with the value "rtl" is applied to a tt:p or tt:span the presentation processor shall render the enclosed textual content so that the Unicode algorithm is overridden and the reordering is strictly in right-to-left sequence.
org.hbbtv_SUB1012	1	tts:unicodeBidi with "embed" and tts:direction with "ltr" applied to a tt:span.	TRUE	If tts:unicodeBidi with value "embed" and tts:direction with the value "ltr" is applied to a tt:p or tt:span the presentation processor shall render the enclosed textual content as if a new embedding level was opened with the direction left-to-right.
org.hbbtv_SUB1013	1	tts:unicodeBidi with "embed" and tts:direction with "rtl" applied to a tt:span.	TRUE	If tts:unicodeBidi with value "embed" and tts:direction with the value "rtl" is applied to a tt:p or tt:span the presentation processor shall render the enclosed textual content as if a new embedding level was opened with the direction right-to-left.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1014	1	tts:displayAlign set to "before"	TRUE	If the tts:displayAlign attribute of a region is set to "before" the presentation processor shall align block elements in the block progression direction with the first block element aligned to the before edge of the region (e.g. if the block progression direction is top-to-bottom all block elements generated by a p element have to be aligned to the top of the region). Alignment shall be calculated after padding space (specified by tts:padding) has been subtracted from the region.
org.hbbtv_SUB1015	1	tts:displayAlign set to "after"	TRUE	If the tts:displayAlign attribute of a region is set to "after" the presentation processor shall align block elements in the block progression direction with the last block element aligned to the after edge of the region (e.g. if the block progression direction is top-to-bottom all block elements generated by a p element have to be aligned to the bottom of the region). Alignment shall be calculated after padding space (specified by tts:padding) has been subtracted from the region.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1016	1	tts:displayAlign set to "center"	TRUE	If the tts:displayAlign attribute of a region is set to "center" the presentation processor shall place all block elements in the block progression direction so that the distance between the before-edge of the first block element and the before-edge of the region plus specified padding space to the before edge of the region is the same as the distance between the after-edge of the last block element and the after-edge of the region minus specified padding space to the after edge of the region.
org.hbbtv_SUB1017	1	tts:extent	TRUE	The width and height of each region are proportional to the width and height of the video rendering plane and the proportions are those specified in percentage values by the region's tts:extent attribute for width and height respectively.
org.hbbtv_SUB1018	1	tts:fontStyle with the value "normal"	TRUE	When a tts:fontStyle attribute with the value of "normal" is applied to a tt:span the presentation processor shall render the enclosed content with a font that is classified as "normal".
org.hbbtv_SUB1019	1	tts:fontStyle with the value "italic"	TRUE	When a tts:fontStyle attribute with the value of "italic" is applied to a tt:span the presentation processor shall render the enclosed content with a font that is classified as "italic". Fonts with Italic, Cursive, or Kursiv in their names will typically be labeled "italic".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1020	1	tts:fontWeight with the value "normal"	TRUE	When a tts:fontWeight attribute with the value of "normal" is applied to a tt:span the presentation processor shall render the enclosed content with a font with the weight value of "400".
org.hbbtv_SUB1021	1	tts:fontWeight with the value "bold"	TRUE	When a tts:fontWeight attribute with the value of "bold" is applied to a tt:span the presentation processor shall render the enclosed content with a font with the weight value of "700".
org.hbbtv_SUB1022	1	tts:origin	TRUE	The presentation processor shall render each region so that its top left corner is at the x and y coordinates specified by the tts:origin attribute of the region. Example: With tts:origin="20% 80%" the top left corner of the region is shifted 20% of the video rendering plane width to the right and 80% of the video rendering plane height to the bottom.
org.hbbtv_SUB1023	1	tts:padding with one value	TRUE	If the tts:padding of a region is set to a single value the presentation processor shall apply the specified value as padding to all sides of the region's area.
org.hbbtv_SUB1024	1	tts:padding with two values	TRUE	If the tts:padding of a region is set to two values the presentation processor shall apply the first value as padding space to the before and after edges and the second value as padding space to the start and end edges of the region's area.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1025	1	tts:padding with three values	TRUE	If the tts:padding of a region is set to three values the presentation processor shall apply the first value as padding space to the before edge, the second value to the start and end edges and the third value as padding space to the after edge of the region's area.
org.hbbtv_SUB1026	1	tts:padding with four values	TRUE	If the tts:padding of a region is set to four values the presentation processor shall apply the first value to the before edge, the second value to the end edge, the third value to the after edge and the fourth value to the start edge of the region's area.
org.hbbtv_SUB1028	1	tts:showBackground with the value whenActive	TRUE	When the tts:showBackground attribute of the region has the value whenActive a presentation processor shall render the background color of the region only when some content is flowed into the region.
org.hbbtv_SUB1029	1	Style Inheritance	TRUE	If an inheritable style attribute is specified on more than one ancestor element of a given text (e.g. tts:color set to the value white on tt:body and to yellow on tt:p) then the presentation processor renders the text content according to the value specified by the closest ancestor on which that value is specified (e.g. yellow).
org.hbbtv_SUB1030	1	tts:textAlign set to right	TRUE	If a tts:textAlign attribute with the value "right" is applied to a tt:p element (by direct reference of a style or inheritance) all inline areas in this tt:p are aligned to the right in the inline progression direction.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1031	1	tts:textAlign set to left	TRUE	If a tts:textAlign attribute with the value "left" is applied to a tt:p element (by direct reference of a style or inheritance) all inline areas in this tt:p are aligned to the left in the inline progression direction.
org.hbbtv_SUB1032	1	tts:textAlign set to center	TRUE	If a tts:textAlign attribute with the value "center" is applied to a tt:p element (by direct reference of a style or inheritance) all inline areas in this tt:p are centered in the inline progression direction.
org.hbbtv_SUB1033	1	tts:textAlign set to start	TRUE	If a tts:textAlign attribute with the value "start" is applied to a tt:p element (by direct reference of a style or inheritance) all inline areas in this tt:p are aligned to the start edge in the inline progression direction.
org.hbbtv_SUB1034	1	tts:textAlign set to end	TRUE	If a tts:textAlign attribute with the value "end" is applied to a tt:p element (by direct reference of a style or inheritance) all inline areas in this tt:p are aligned to the end edge in the inline progression direction.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1036	1	tts:wrapOption set to wrap	TRUE	If the attribute tts:wrapOption with the value "wrap" is applied to a content element automatic line wrapping shall be performed. The presentation processor shall attempt to draw all text within the element's content rectangle, calculated as the inner area of the region after padding has been applied, drawing no foreground pixels beyond the edge at either end of any line. New lines should be created where an overflow would otherwise occur and text that could not be drawn at the end of one line must flow in to the beginning of the following line. If tts:overflow is set to "visible" then the new lines may extend all the way to the edge of the root container extent.
org.hbbtv_SUB1037	1	tts:wrapOption set to noWrap	TRUE	If the attribute tts:wrapOption with the value "noWrap" is applied to a content element no automatic line wrapping shall apply within the context of the affected element.
org.hbbtv_SUB1038	1	tts:writingMode set to lrtb	TRUE	When the tts:writingMode attribute of a region is set to "lrtb" the presentation processor shall render the text in this region so that inline components and text within a line are written left-to-right. Lines and blocks shall be placed top-to-bottom.
org.hbbtv_SUB1039	1	tts:writingMode set to rltb	TRUE	When the tts:writingMode attribute of a region is set to "rltb" the presentation processor shall render the text in this region so that inline components and text within a line are written right-to-left. Lines and blocks shall be placed top-to-bottom.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1041	1	tts:writingMode set to tblr	TRUE	When the tts:writingMode attribute of a region is set to "tblr" the presentation processor shall render the text in this region so that inline components and text within a line are written top-to-bottom. Lines and blocks shall be placed left-to-right.
org.hbbtv_SUB1045	1	begin and end attribute on a tt:p	TRUE	If begin and end attribute are present on tt:p element the enclosed content shall be rendered according to the time expressions of those attributes.
org.hbbtv_SUB1046	1	begin and end attribute on a tt:span	TRUE	If 'begin' and 'end' attributes are present on tt:span element the enclosed content shall be rendered according to the time expressions of those attributes.
org.hbbtv_SUB1047	1	Initial value Test - cellResolution	TRUE	If the ttp:cellResolution attribute is not specified on the root element a presentation processor shall apply the initial value of "32 15". The initial value should be checked as follows: Vertically: a document that omits the cellResolution attribute and specifies a style with a 100% font size must be presented with a font that is 1/15 of the height of the root container extent, or equivalently, the rendering plane of the video area. Horizontally: a document that omits the cellResolution attribute and specifies a style with an opaque background colour and a linePadding value of "1c" should result in text being rendered with additional background on either side of the text whose width is 1/32 of the width of the root container extent.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1048	1	Initial value Test - direction	TRUE	If tts:direction does not apply to a tt:span or tt:p through reference or inheritance a presentation processor shall render the enclosed content as if "ltr" was specified.
org.hbbtv_SUB1049	1	Initial value test - tts:fontFamily	TRUE	If tts:fontFamily does not apply to text content through reference or inheritance a presentation processor shall render text as if "default" was specified.
org.hbbtv_SUB1050	1	Initial value Test - fontSize	TRUE	If tts:fontSize does not apply to text content through reference or inheritance a presentation processor shall render the text as if "100%" was specified.
org.hbbtv_SUB1051	1	Initial value Test - lineHeight	TRUE	If tts:lineHeight does not apply to a tt:p through reference or inheritance a presentation processor shall render enclosed content as if the value "normal" was specified.
org.hbbtv_SUB1057	1	Initial value Test - wrapOption	TRUE	If tts:wrapOption does not apply to text content a presentation processor shall render the text as if the value "wrap" was specified.
org.hbbtv_SUB1058	1	Initial value Test - displayAlign	TRUE	If tts:displayAlign was not specified for a region a presentation processor shall render content in that region as if the value "before" was specified.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1071	1	Test textAlign center, multiRowAlign start	TRUE	When requested to present an EBU-TT-D document that includes a 3-line subtitle in which the top line is longest and if the lines are marked up with tts:textAlign="center" and ebutts:multiRowAlign="start" that are applied to the tt:p element by inheritance the presentation processor/terminal shall align the top line to the center and the shorter lines to the start alignment point of the top line.
org.hbbtv_SUB1072	1	Test textAlign center, multiRowAlign end	TRUE	When requested to present an EBU-TT-D document that includes a 3-line subtitle in which the second line is longest and if the lines are marked up with tts:textAlign="center" and ebutts:multiRowAlign="end" that are applied to the tt:p element by direct reference the presentation processor/terminal shall align the second line to the center and the shorter lines to the end alignment point of the second line.
org.hbbtv_SUB1078	1	Test linePadding and cellResolution	TRUE	When a tts:linePadding attribute applies to tt:p by direct reference of a style or by inheritance the specified padding space shall be rendered to each line area that is generated by the content inside the p element taking into account the specified cell resolution of the document.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1080	1	EBUTTD: No gaps between adjacent line backgrounds for lineHeight="125%"	TRUE	An EBU-TT-D file contains a single tt:p element that contains multiple tt:span elements, each of which contains a single word of text. Within the tt:p element there are also two tt:br elements, each positioned between a pair of tt:span elements such that there is more than one tt:span element on either side of each tt:br. The tt:p element references a single tt:style element, which includes one tts:lineHeight attribute whose value is "125%"; all tt:span elements reference a single tt:style element, which includes one tts:backgroundColor attribute whose value represents an opaque color. When the terminal presents this file over a video stream, there are no gaps between the backgrounds of adjacent lines.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1081	1	EBUTTD: No gaps between adjacent line backgrounds for lineHeight="normal"	TRUE	An EBU-TT-D file contains a single tt:p element that contains multiple tt:span elements, each of which contains a single word of text. Within the tt:p element there are also two tt:br elements, each positioned between a pair of tt:span elements such that there is more than one tt:span element on either side of each tt:br. The tt:p element references a single tt:style element, which includes one tts:lineHeight attribute whose value is "normal"; all tt:span elements reference a single tt:style element, which includes one tts:backgroundColor attribute whose value represents an opaque color. When the terminal presents this file over a video stream, there are no gaps between the backgrounds of adjacent lines.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1082	1	EBUTTD: No gaps between adjacent line backgrounds when itts:fillLineGap is true	TRUE	An EBU-TT-D file contains a single tt:p element that contains multiple tt:span elements, each of which contains a single word of text. Within the tt:p element there are also two tt:br elements, each positioned between a pair of tt:span elements such that there is more than one tt:span element on either side of each tt:br. The tt:p element references a single tt:style element, which includes one tts:lineHeight attribute whose value is "130%" and which includes one itts:fillLineGap attribute whose value is "true"; all tt:span elements reference a single tt:style element, which includes one tts:backgroundColor attribute whose value represents an opaque color. When the terminal presents this file over a video stream, there are no gaps between the backgrounds of adjacent lines.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1083	1	EBUTTD: Gaps between adjacent line backgrounds when itts:fillLineGap is false	FALSE	An EBU-TT-D file contains a single tt:p element that contains multiple tt:span elements, each of which contains a single word of text. Within the tt:p element there are also two tt:br elements, each positioned between a pair of tt:span elements such that there is more than one tt:span element on either side of each tt:br. The tt:p element references a single tt:style element, which includes one tts:lineHeight attribute whose value is "124%" and which includes one itts:fillLineGap attribute whose value is "false"; all tt:span elements reference a single tt:style element, which includes one tts:backgroundColor attribute whose value represents an opaque color. When the terminal presents this file over a video stream, there are gaps between the backgrounds of adjacent lines through which the underlying video can be seen.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB1090	1	EBUTTD: Timing on multiple tt:spans within a tt:p	TRUE	An EBU-TT-D file contains a single tt:p element with no begin or end time. This tt:p contains multiple tt:span elements, each of which contains a single word of text. All the tt:span elements have declared begin and end times: the begin time of each tt:span (other than the first) is one second greater than the begin time of the immediately preceding tt:span; the end time of all tt:spans is three seconds greater than the begin time of the last tt:span in the tt:p element. When the terminal presents this file over a video stream, the content of each tt:span becomes visible at its begin time (with the effect that a new word is added to the end of the rendered paragraph every second), and the rendered content of all tt:spans in the tt:p is removed from display immediately before the common end time shared by all the tt:spans and is not visible at that end time.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SUB2017	1	Subtitle timing is synchronised relative to correct syncbase	TRUE	When presenting timed EBU-TT-D format subtitle content, delivered as standalone file or in an ISOBMFF wrapper as part of a DASH presentation, including a representative set of subtitles and a subtitle A whose begin attribute is "00:00:00" and whose end is "00:00:05" and a subtitle B whose begin attribute is "00:31:00.20" and whose end attribute is "00:31:07.80", all subtitles appear and disappear at the correct time, and subtitle A appears at time zero on the media timeline and disappears at 5 seconds, and subtitle B appears at 31 minutes and 0.2 seconds and disappears before 31 minutes and 7.8 seconds where all times are on the media timeline, and are relative to the subtitle track. The appear and disappear time accuracy is +0.5s -0.9s.
org.hbbtv_SYNCAPI0002	1	initMediaSynchroniser() with MPEG-2 TS (TEMI) video/broadcast object	TRUE	Calling initMediaSynchroniser() with a 'mediaObject' argument equal to a video/broadcast object associated with an MPEG-2 TS containing a service with AVC video component and TEMI timeline and a valid TEMI 'timelineSpecification' argument shall not cause any errors to be raised
org.hbbtv_SYNCAPI0003	1	MediaSynchroniser - Error event 4 raised when addMediaObject called with previously added mediaObject	TRUE	When a MediaSynchroniser has already been initialised via a call to initMediaSynchroniser(), calling addMediaObject() with the same 'mediaObject' parameter, an Error event shall be dispatched with an 'error' property of 4

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI0004	1	MediaSynchroniser - Error event 7 - addMediaObject called on uninitialised MediaSynchroniser	TRUE	When calling addMediaObject() on a MediaSynchroniser when initMediaSynchroniser() has not been called, an Error event shall be dispatched with an 'error' property of 7
org.hbbtv_SYNCAPI0005	1	MediaSynchroniser - Error event 16 - initMediaSynchroniser called with video/broadcast in UNREALIZED state	TRUE	When initMediaSynchroniser() is called with its 'mediaObject' parameter set to a video/broadcast object in the UNREALIZED state, an Error event shall be dispatched with an 'error' property of 16
org.hbbtv_SYNCAPI0006	1	MediaSynchroniser - Error event 5 - addMediaObject called with null CorrelationTimestamp	TRUE	When addMediaObject() is called with broadband DASH audio, a valid DASH-PR 'timelineSpecification' string (that requests a timeline relative to an identified period that is present in the DASH MPD) and a 'correlationTimestamp' of null on a MediaSynchroniser initialised with broadcast MPEG-2 TS / TEMI video, an Error event shall be dispatched with an 'error' property of 5
org.hbbtv_SYNCAPI0007	1	MediaSynchroniser - Error event 7 - updateCorrelationTimestamp called on uninitialised MediaSynchroniser	TRUE	When a MediaSynchroniser is not initialised and updateCorrelationTimestamp() is called with an HTML5 HEAAC audio 'mediaObject' and a valid 'correlationTimestamp' string, an Error event shall be dispatched with an 'error' value of 7
org.hbbtv_SYNCAPI001	1	MediaSynchroniser 'minSyncBufferSize' property - implemented	FALSE	The 'minSyncBufferSize' property value of the MediaSynchroniser is equal to an integer greater than or equal to 31457280.
org.hbbtv_SYNCAPI008	1	MediaSynchroniser 'minSyncBufferSize' property - not implemented	TRUE	The 'minSyncBufferSize' property value of the MediaSynchroniser is equal to 0.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI0270	1	sync API: check nrOfSlaves property for 0 connected slaves	TRUE	When a HbbTV application has initialised a MediaSynchroniser, enabled inter-device synchronisation causing the terminal to become a master terminal, no websocket connections to the CSS-CII end point have been succesfully established and the application interrogates the nrOfSlaves property, the value '0' will be returned.
org.hbbtv_SYNCAPI0280	1	sync API: check nrOfSlaves property for a terminal that has not yet enabled inter-device sync	TRUE	When a HbbTV application has initialised a MediaSynchroniser, but not yet enabled inter-device synchronisation causing the terminal to become a master terminal, and the application interrogates the nrOfSlaves property, the value 'null' will be returned.
org.hbbtv_SYNCAPI0520	1	sync API: a call to enableInterDeviceSync for a MediaSynchroniser not yet initialised causes an error to be thrown	TRUE	When a HbbTV application has created a MediaSynchroniser object but not yet initialised it, and the method "enableInterDeviceSync" is called on that MediaSynchroniser object, the terminal will throw the error event with code '7' and the lastErrorSource will be null.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI0521	1	sync API: a call to enableInterDeviceSync for a MediaSynchroniser in permanent error state causes an error to be thrown	TRUE	When a HbbTV application has created and initialised a MediaSynchroniser with a presenting video/broadcast object as the master media that was passed to the initMediaSynchroniser method and then the video/broadcast object undergoes a permanent error and transitions to the UNREALIZED state caused by an attempt to change to a channel that cannot be found, and then the method "enableInterDeviceSync" is called on that MediaSynchroniser object, the terminal will throw the error event with code '13' and the lastErrorSource will be null.
org.hbbtv_SYNCAPI0541	1	sync API: check that, after the terminal has ceased being a master due to a call to disableInterDeviceSync, both its CSS-TS and CSS-CII endpoints have been disabled	TRUE	A HbbTV application has initialised a MediaSynchroniser, using the initMediaSynchroniser method, and enabled inter-device synchronisation causing the terminal to become a master terminal. 60 seconds after the application has called disableInterDeviceSync(), the application checks the value of the interDeviceSyncEnabled property, which results to be 'false'. A CSA attempts to connect to the previously available CSS-TS and CSS-CII endpoints of the terminal sending a websocket client handshake to each of them, then the terminal will respond to each attempt to connect with a HTTP message with code 403 "Forbidden" to the CSA.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI0590	1	sync API: a call to disableInterDeviceSync for a MediaSynchroniser not yet initialised causes an error to be thrown	TRUE	When a HbbTV application has created a MediaSynchroniser object, but not yet initialised it, and then the application calls the method "disableInterDeviceSync" on that MediaSynchroniser object, the terminal will throw an error event with code '7' and the lastErrorSource will be null.
org.hbbtv_SYNCAPI0591	1	sync API: a call to disableInterDeviceSync for a MediaSynchroniser that has since being replaced causes an error to be thrown	TRUE	A HbbTV application has initialised a MediaSynchroniser object (using the method initMediaSynchroniser), and then initialised another Media Synchroniser object (using the method initMediaSynchroniser again), thus causing the first MediaSynchroniser object being replaced by the second. When the application calls the method "disableInterDeviceSync" on the first MediaSynchroniser object, the terminal will throw an error event with code 13 and the lastErrorSource will be null.
org.hbbtv_SYNCAPI1400	1	MediaSynchroniser - Error event 14 - Parental Rating block for video/broadcast object (master media)	TRUE	When the application has created and initialised a MediaSynchroniser with a presenting video/broadcast object as the master media that was passed to the initMediaSynchroniser method and then later the media presentation is blocked due to parental access control then the MediaSynchroniser is expected to dispatch an error event with error code 14.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1410	1	MediaSynchroniser - Error event 14 - Parental Rating block for HTML5 media element (master media)	TRUE	The application has created and initialised a MediaSynchroniser with a playing HTML5 media element as the master media that was passed to the initMediaSynchroniser method and enabled inter-device synchronisation causing it to become a master terminal, and a connection has been made to the CSS-CII and CSS-TS endpoints provided by the terminal. When later the media presentation is blocked due to parental access control then the MediaSynchroniser is expected to dispatch an error event with error code 14 and to cease inter-device synchronisation by closing the connection to the CSS-TS endpoint and reporting a presentationStatus of "fault" via the connection to the CSS-CII endpoint.
org.hbbtv_SYNCAPI1411	1	MediaSynchroniser - Error event 2 - Parental Rating block for HTML5 media element object (other media)	TRUE	When the application has created a MediaSynchroniser object and has initialised it by passing it a playing video/broadcast object and then called the addMediaObject method, passing it an HTML5 media element, causing the HTML5 media element to be successfully added and later the HTML5 media element is blocked due to parental access control then the MediaSynchroniser object dispatches an error event with error code 2.
org.hbbtv_SYNCAPI1500	1	MediaSynchroniser - Error event 16 - initMediaSynchroniser called with video/broadcast object in STOPPED state	TRUE	When the application creates a MediaSynchroniser object and the application calls the initMediaSynchroniser method passing a video/broadcast object that is in the "STOPPED" then the MediaSynchroniser object dispatches an error event with error code 16.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1520	1	MediaSynchroniser - Error event 14 - video/broadcast object (master media) has permanent error	TRUE	When the application has created and initialised a MediaSynchroniser with a presenting video/broadcast object as the master media that was passed to the initMediaSynchroniser method and then the video/broadcast object undergoes a permanent error and transitions to the UNREALIZED state caused by an attempt to change to a channel that cannot be found then the MediaSynchroniser is expected to dispatch an error event with error code 14.
org.hbbtv_SYNCAPI1540	1	MediaSynchroniser - Error event 16 - video/broadcast object (master media) transitions to UNREALIZED state	TRUE	When the application has created and successfully initialised a MediaSynchroniser with a video/broadcast object as the master media that was passed to the initMediaSynchroniser method and then the application calls the video/broadcast object's release() method causing it to transition to the UNREALIZED state then the MediaSynchroniser object dispatches an error event with error code 16.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1560	1	MediaSynchroniser - synchronisation resumes after video/broadcast object (master media) was in CONNECTING state	FALSE	When the application has created and successfully initialised a MediaSynchroniser with a video/broadcast object with a TEMI timeline (that ticks at a minimum of 50 ticks per second) using the initMediaSynchroniser method and synchronised it (to within 10ms) to another media object that was added using the addMediaObject method with a timeline that ticks at a minimum of 100 ticks per second but with no synchronisation tolerance specified and then the application causes a channel change of the video/broadcast object resulting in a transition from the presenting state to the connecting state (which can be inferred by checking the property playState of the video/broadcast object) then it is expected that the video/broadcast object will be synchronised to the other media object to within plus 50ms to minus 35ms when observed over a period of at least 15 seconds after the video/broadcast object returns to the presenting state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1565	1	MediaSynchroniser - synchronisation resumes after video/broadcast object (other media) experiences temporary signal loss	TRUE	When the application creates a MediaSynchroniser object and initialises it by passing it a paused (having not yet played) A/V control object or HTML5 media element (with a timeline that ticks at a minimum of 100 ticks per second) and then calls the addMediaObject method, passing it a video/broadcast object and specifying a TEMI timeline (that ticks at a minimum of 50 ticks per second) but with no synchronisation tolerance, causing the video/broadcast object to be successfully added, and then there is a temporary 2 second loss of broadcast signal, then 5 seconds after the latest of either loss ending or the video/broadcast object returning from the connecting state to the presenting state, then it is expected that the video/broadcast object will be synchronised to the other media object to within plus 50ms to minus 35ms when observed over a period of at least 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1570	1	MediaSynchroniser - video/broadcast (master media) - setChannel	FALSE	When the application has created and successfully initialised a MediaSynchroniser with a video/broadcast object with a TEMI timeline (that ticks at a minimum of 50 ticks per second) using the initMediaSynchroniser method and synchronised it (to within 10ms) to another another media object that was added using the addMediaObject method with a timeline that ticks at a minimum of 100 ticks per second but with no synchronisation tolerance specified and then the application calls the setChannel method (to change to another channel which has the same TEMI timeline timeline_id, timescale and timestamps values carried in a component with the same component tag number and the same video/audio content as the current channel), then it is expected that once the video/broadcast object returns to the presenting state (because the channel change is complete) and the other media object is back in a playing state, then the video/broadcast object will be synchronised to the other media object to within plus 50ms to minus 35ms when observed over a period of at least 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1571	1	MediaSynchroniser - video/broadcast (master media) - prevChannel	TRUE	When the application has created and successfully initialised a MediaSynchroniser with a video/broadcast object with a TEMI timeline (that ticks at a minimum of 50 ticks per second) using the initMediaSynchroniser method and synchronised it (to within 10ms) to another media object that was added using the addMediaObject method with a timeline that ticks at a minimum of 100 ticks per second but with no synchronisation tolerance specified and then the application calls the prevChannel method (to change to another channel which has the same TEMI timeline timeline_id, timescale and timestamps values carried in a component with the same component tag number and the same video/audio content as the current channel), then it was expected that once the video/broadcast object returns to the presenting state (because the channel change is complete) and the other media object is back in a playing state, then the video/broadcast object will be synchronised with the other media object to within plus 50ms to minus 35ms when observed over a period of at least 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1600	1	MediaSynchroniser - Error event 16 - initMediaSynchroniser called with HTML5 video element object when readyState < HAVE_CURRENT_DATA	TRUE	When the application creates a MediaSynchroniser object and the application calls the initMediaSynchroniser method passing an HTML5 media element for which no source has yet been set (causing it to be in readyState < HAVE_CURRENT_DATA) then the MediaSynchroniser object dispatches an error event with error code 16.
org.hbbtv_SYNCAPI1601	1	MediaSynchroniser - Error event 16 - initMediaSynchroniser called with HTML5 video element playback already ended	TRUE	When the application has created a MediaSynchroniser object and initialised it by passing it an HTML5 media element that has already played to the end of the resource (and whose readyState attribute therefore has value HAVE_METADATA or greater) then the MediaSynchroniser object dispatches an error event with error code 16.
org.hbbtv_SYNCAPI1602	1	MediaSynchroniser - Error event 16 - initMediaSynchroniser called with HTML5 video element stopped due to non fatal errors	TRUE	When the application has created a MediaSynchroniser object and initialised it by passing it an HTML5 media element that has encountered a non-fatal error that caused it to stop (due to use of an unsupported codec) then the MediaSynchroniser object dispatches an error event with error code 16.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1610	1	MediaSynchroniser - Error event 9 - addMediaObject called with HTML5 video element object when readyState < HAVE_CURRENT_DATA	TRUE	When the application has created a MediaSynchroniser object and initialised it by passing it a presenting video/broadcast object and then calls the addMediaObject method passing an HTML5 media element for which no source has yet been set (causing it to be in readyState < HAVE_CURRENT_DATA) then the MediaSynchroniser object dispatches an error event with error code 9.
org.hbbtv_SYNCAPI1611	1	MediaSynchroniser - Error event 9 - addMediaObject called with HTML5 video element playback already ended	TRUE	When the application has created a MediaSynchroniser object and initialised it by passing it a presenting video/broadcast object and then calls the addMediaObject method passing an HTML5 media element that has already played to the end of the resource then the MediaSynchroniser object dispatches an error event with error code 9.
org.hbbtv_SYNCAPI1612	1	MediaSynchroniser - Error event 9 - addMediaObject called with HTML5 video element stopped due to non fatal errors	TRUE	When the application has created a MediaSynchroniser object and initialised it by passing it a presenting video/broadcast object and then calls the addMediaObject method passing an HTML5 media element that has encountered a non-fatal error that caused it to stop (due to use of an unsupported codec) then the MediaSynchroniser object dispatches an error event with error code 9.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1620	1	MediaSynchroniser - Error event 14 - HTML5 video element (master media) has error while fetching data	FALSE	When the application has created and initialised a MediaSynchroniser with a playing HTML5 media element as the master media that was passed to the initMediaSynchroniser method and then the HTML5 media element fires a MediaError with error code MEDIA_ERR_NETWORK then the MediaSynchroniser is expected to dispatch an error event with error code 14.
org.hbbtv_SYNCAPI1630	1	MediaSynchroniser - Error event 2 - HTML5 video element (other media) has error while fetching data	TRUE	When the application has created a MediaSynchroniser object and has initialised it by passing it a presenting video/broadcast object and then called the addMediaObject method, passing it an HTML5 media element that is paused (having not yet played), causing the HTML5 media element to be successfully added, and then the HTML5 media element fires a MediaError with error code MEDIA_ERR_NETWORK then the MediaSynchroniser object dispatches an error event with error code 2.
org.hbbtv_SYNCAPI1640	1	MediaSynchroniser - Error event 16 - HTML5 video element (master media) source reloaded	TRUE	When the application has created and successfully initialised a MediaSynchroniser with an HTML5 media element as the master media that was passed to the initMediaSynchroniser method and then the application causes the media source to be reloaded then the MediaSynchroniser object dispatches an error event with error code 16.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1650	1	MediaSynchroniser - Error event 9 - HTML5 video element (other media) source reloaded	TRUE	When the application creates a MediaSynchroniser object and initialises it by passing it a presenting video/broadcast object and then calls the addMediaObject method, passing it an HTML5 media element that is paused (having not yet played), causing the HTML5 media element to be successfully added, and then application causes the media source to be reloaded then the MediaSynchroniser object generates an error with code 9.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1660	1	MediaSynchroniser - synchronisation resumes after HTML5 video element (master media) was stalled	TRUE	The application has created and successfully initialised a MediaSynchroniser with an HTML5 media element using initMediaSynchroniser and enabled inter-device synchronisation causing the terminal to become a master terminal and a connection has been established to the CSS-TS endpoint of the terminal (requesting a timeline that ticks at a minimum of 100 ticks per second in the initial setup-data message) and at least one Control Timestamp has been received providing the timeline position. When the streaming of media data to the terminal is temporarily stalled causing the HTML5 media element to stall and then resume then it is expected that, after resumption, when the timing of presentation indicated by the value of the latest Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light emitted then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol) when measured over a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1661	1	MediaSynchroniser - synchronisation resumes after HTML5 video element (master media) was at effectivePlayspeed X that is not 0 (paused) or 1 (normal)	TRUE	The application has created and successfully initialised a MediaSynchroniser with an HTML5 media element and enabled inter-device synchronisation causing the terminal to become a master terminal and a connection has been established to the CSS-TS endpoint of the terminal (requesting a timeline that ticks at a minimum of 100 ticks per second in the initial setup-data message) and at least one Control Timestamp has been received providing the timeline position. When the application temporarily sets the playbackRate property to X (where X is neither 0 nor 1) for 5 seconds before returning it to a value of 1 then it is expected that, after normal rate resumes, when the timing of presentation indicated by the value of the latest Control Timestamp is compared to the timing of presentation of the master media as observed by monitoring the light emitted, then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol) when measured over a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1670	1	MediaSynchroniser - synchronisation resumes after HTML5 video element (other media) was stalled	TRUE	When the application creates a MediaSynchroniser object and initialises it by passing it a presenting video/broadcast object (with a timeline that ticks at a minimum of 100 ticks per second) and then calls the addMediaObject method, passing it an HTML5 media element that is paused (having not yet played) and specifying a timeline that ticks at a minimum of 100 ticks per second but with no synchronisation tolerance specified, causing the HTML5 media element to be successfully added, and then streaming of media data is temporarily stalled causing the HTML5 media element to stall and then resume then it is expected that the HTML5 media element will be synchronised with the video/broadcast object to within plus 50ms to minus 35ms when observed over a period of at least 15 seconds after the HTML5 media element resumes because it has enough media data.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1680	1	MediaSynchroniser - HTML5 video element (master media) set currentTime	TRUE	The application has created and successfully initialised a MediaSynchroniser with an HTML5 media element and enabled inter-device synchronisation causing the terminal to become a master terminal and a connection has been established to the CSS-TS endpoint of the terminal (requesting a timeline that ticks at a minimum of 100 ticks per second in the initial setup-data message) and at least one Control Timestamp has been received providing the timeline position. When the application sets the currentTime property of the HTML5 media element to a new value (for which the terminal will be required to seek to and for which it will be able to seek to the corresponding position in the stream for the media object), then it is expected that once the HTML5 media element fires the seeked event and then the timing of presentation indicated by the value of the latest Control Timestamps is compared to the timing of presentation of the master media as observed by monitoring the light emitted, then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol) when measured over a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1681	1	MediaSynchroniser - HTML5 video element (master media) set playbackRate is reflected in timestamps sent via CSS-TS	TRUE	The application has created and successfully initialised a MediaSynchroniser with an HTML5 media element and enabled inter-device synchronisation causing the terminal to become a master terminal and a connection has been established to the CSS-TS endpoint of the terminal (requesting a timeline that ticks at a minimum of 100 ticks per second in the initial setup-data message) and at least one Control Timestamp has been received providing the timeline position. When the application sets the playbackRate property to 0 then it is expected that, after this takes effect, the Control Timestamps sent by the master terminal via the CSS-TS protocol shall indicate that the timeline has paused by reporting a timelineSpeedMutiplier property value equal to zero.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1682	1	MediaSynchroniser - HTML5 video element (master media) - play() is reflected in timestamps sent via CSS-TS	TRUE	The application has created and successfully initialised a MediaSynchroniser with an HTML5 media element and enabled inter-device synchronisation causing the terminal to become a master terminal and a connection has been established to the CSS-TS endpoint of the terminal (requesting a timeline that ticks at a minimum of 100 ticks per second in the initial setup-data message) and at least one Control Timestamp has been received providing the timeline position. When the application calls the pause method followed 2 seconds later by the play method to resume then it is expected that, after the playing event fires from the media object, when then the timing of presentation indicated by the value of the latest Control Timestamps is compared to the timing of presentation of the master media as observed by monitoring the light emitted, then it is found to be accurate to within plus or minus the sum of 10ms and the current error bounds in estimating the Wall Clock of the master terminal (using the CSS-WC protocol) when measured over a period of 15 seconds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1683	1	MediaSynchroniser - HTML5 video element (master media) - pause()	TRUE	The application has created and successfully initialised a MediaSynchroniser with an HTML5 media element and enabled inter-device synchronisation causing the terminal to become a master terminal and a connection has been established to the CSS-TS endpoint of the terminal (requesting a timeline that ticks at a minimum of 100 ticks per second in the initial setup-data message) and at least one Control Timestamp has been received providing the timeline position. When the application calls the pause method of the HTML5 media element then it is expected that, after the pause takes effect, the Control Timestamps sent by the master terminal via the CSS-TS protocol shall indicate that the timeline has paused by reporting a timelineSpeedMultiplier property value equal to zero.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1690	1	MediaSynchroniser - HTML5 video element (other media) set currentTime	TRUE	When the application creates a MediaSynchroniser object and initialises it by passing it a presenting video/broadcast object that is playing (using a TEMI timeline (that ticks at a minimum of 50 ticks per second) and then calls the addMediaObject method, passing it an HTML5 media element that is paused (having not yet played) and specifying a timeline that with a minimum tick rate of 100 ticks per second, causing the HTML5 media element to be successfully added, and then application sets the currentTime property of the HTML5 media element to a new value, then it is expected that the MediaSynchroniser generates an error event with error code 9 and a subsequent call to removeMediaObject method passing the HTML5 media element will generate an error with error code 8 because it has already been removed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1691	1	MediaSynchroniser - HTML5 video element (other media) set playbackRate	TRUE	When the application creates a MediaSynchroniser object and initialises it by passing it a presenting video/broadcast object that is playing (using a TEMI timeline (that ticks at a minimum of 50 ticks per second)) and then calls the addMediaObject method, passing it an HTML5 media element that is paused (having not yet played) and specifying a timeline that with a minimum tick rate of 100 ticks per second, causing the HTML5 media element to be successfully added, and then application sets the playbackRate property of the HTML5 media element to a new value, then it is expected that the MediaSynchroniser generates an error event with error code 9 and a subsequent call to removeMediaObject method passing the HTML5 media element will generate an error with error code 8 because it has already been removed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1692	1	MediaSynchroniser - HTML5 video element (other media) - play()	FALSE	When the application creates a MediaSynchroniser object and initialises it by passing it a presenting video/broadcast object that is playing (using a TEMI timeline (that ticks at a minimum of 50 ticks per second)) and then calls the addMediaObject method, passing it an HTML5 media element that is paused (having not yet played) and specifying a timeline that with a minimum tick rate of 100 ticks per second, causing the HTML5 media element to be successfully added, and then application calls the play method of the HTML5 media element, then it is expected that the MediaSynchroniser generates an error event with error code 9 and a subsequent call to removeMediaObject method passing the HTML5 media element will generate an error with error code 8 because it has already been removed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1693	1	MediaSynchroniser - HTML5 video element (other media) - pause()	TRUE	When the application creates a MediaSynchroniser object and initialises it by passing it a presenting video/broadcast object that is playing (using a TEMI timeline (that ticks at a minimum of 50 ticks per second)) and then calls the addMediaObject method, passing it an HTML5 media element that is paused (having not yet played) and specifying a timeline that with a minimum tick rate of 100 ticks per second, causing the HTML5 media element to be successfully added, and then application calls the pause method of the HTML5 media element, then it is expected that the MediaSynchroniser generates an error event with error code 9 and a subsequent call to removeMediaObject method passing the HTML5 media element will generate an error with error code 8 because it has already been removed.
org.hbbtv_SYNCAPI1712	1	MediaSynchroniser - Error event 9 - addMediaObject called with HTML5 video element (other media) - pause()	TRUE	When the application creates a MediaSynchroniser object and initialises it by passing it a presenting video/broadcast object and then calls the addMediaObject method, passing it HTML5 media object that is paused (having not yet played), causing HTML5 media object to be successfully added, and application calls the pause method on html5 media object and then the MediaSynchroniser object generates an error with code 9.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1730	1	MediaSynchroniser - Error event 9 - HTML5 video element (other media) set currentTime	TRUE	When the application has created a MediaSynchroniser object and has initialised it by passing it a presenting video/broadcast object(using a TEMI timeline that ticks at 100 ticks per second) and then calls the addMediaObject method, passing HTML5 media object that is paused (having not yet played), causing the HTML5 media object to be successfully added and then the application sets the currentTime property of the HTML5 media element to a new value, then the MediaSynchroniser object dispatches an error event with error code 9.
org.hbbtv_SYNCAPI1740	1	MediaSynchroniser - Error event 16 - video/broadcast (master media) enters STOPPED state	TRUE	When the application has created and successfully initialised a MediaSynchroniser with a presenting video/broadcast object as master media and was passed to initMediaSynchroniser method and then video/broadcast object moved to "STOPPED" by calling stop() and then the MediaSynchroniser object dispatches an error event with error code 16.
org.hbbtv_SYNCAPI1750	1	MediaSynchroniser - Error event 9 - HTML5 media object (other media) - play()	TRUE	When the application creates a MediaSynchroniser object and initialises it by passing it a presenting video/broadcast object and then calls the addMediaObject method, passing it HTML5 media object that is paused (having not yet played), causing HTML5 media object to be successfully added, and application calls play() method on html5 media object and then the MediaSynchroniser object generates an error with code 9

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI1771	1	MediaSynchroniser - synchronisation resumes after HTML5 media object (other media) was passed to the addMediaObject()	TRUE	When the application creates a MediaSynchroniser object and initialises it by passing it a presenting video/broadcast object (with a timeline that ticks at a minimum of 100 ticks per second) and then calls the addMediaObject method, passing it an HTML5 media object that is paused (having not yet played) and specifying a timeline that ticks at a minimum of 100 ticks per second but with no synchronisation tolerance specified, causing the HTML5 media object to be successfully added, then it is expected that the HTML5 media object will be synchronised with the other media object to within plus 50ms to minus 35ms when observed over a period of at least 15 seconds after the HTML5 media object returns to the PLAYING state.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI2001	1	removeMediaObject: remove synced audio stream and then continue playing with broadcast audio	TRUE	While a synchronised single presentation of broadcast video using TEMI as timeline and broadband DASH audio presented by an HTML5 audio element is being performed, the application removes the HTML5 audio element from the MediaSynchroniser and stops it. After the application has removed the HTML5 audio element the terminal selects an audio component from the broadcast service for presentation to the user, it calls any registered event listener for the onSelectedComponentChanged event with the value COMPONENT_TYPE_AUDIO and the application retrieves a non-empty list of AVAudioComponent's when calling the getCurrentActiveComponents(vbo.COMPONENT_TYPE_AUDIO) method on the video/broadcast object (vbo) presenting the master media.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI2002	1	removeMediaObject: remove synched subtitles and continue with broadcast subtitles.	FALSE	While a synchronised single presentation of a broadcast service using TEMI as timeline and DASH EBU-TT-D subtitles presented by HTML5 media element is being performed, the application removes the HTML5 media object from the MediaSynchroniser and stops it. After the application has removed the HTML5 media object the terminal selects a subtitle component from the broadcast service for presentation to the user, it calls any registered event listener for the SelectedComponentChange event with the value COMPONENT_TYPE_SUBTITLE and the application retrieves a non-empty list of AVSubtitleComponent's when calling the getCurrentActiveComponents(vbo.COMPONENT_TYPE_SUBTITLE) method on the video/broadcast object (vbo) presenting the master media.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI2021	1	errorHandling 15: 1: No TEMI timeline found on selected component	TRUE	A broadcast service contains a TEMI timeline with timeline ID equal to 150 and a component tag (signalled in the stream_identifier descriptor) equal to 1. The application initializes a MediaSynchroniser object with the video/broadcast object presenting the service and selecting a timeline with ID 150 and component tag 2. The terminal shall call the onError function registered on the onError property of the MediaSynchroniser with the first parameter equal to 15 the second parameter passing the video/broadcast object. When the onError function was called the lastError property of the MediaSynchroniser object shall return 15 and the lastErrorSource shall return the video/broadcast object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI2022	1	errorHandling 15: 2: No TEMI timeline found with selected ID	TRUE	A broadcast service contains a TEMI timeline with timeline ID equal to 1 and a component tag (signalled in the stream_identifier descriptor) equal to 2. The application initializes a MediaSynchroniser object with the video/broadcast object presenting the service and selecting a timeline with ID 2 and component tag 2. The terminal shall call the onError function registered on the onError property of the MediaSynchroniser with the first parameter equal to 15 the second parameter passing the video/broadcast object. When the onError function was called the lastError property of the MediaSynchroniser object shall return 15 and the lastErrorSource shall return the video/broadcast object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI2023	1	errorHandling 11: TEMI with DASH, where the terminal does not support buffering and the DASH is not available in time	TRUE	A MediaSynchroniser is successfully initialised with a video/broadcast object, then a dynamic DASH media presentation is added using an HTML5 media element. While the terminal is presenting the broadcast service, the corresponding segment of the DASH presentation shall be not yet available, i.e. shall have an availability start time in the future, i.e. the terminal would have to buffer the broadcast service for presenting both streams in sync. The terminal shall call the onError function registered on the onError property of the MediaSynchroniser with the first parameter equal to 11 the second parameter passing the HTML5 media element. When the onError function was called the lastError property of the MediaSynchroniser object shall return 11 and the lastErrorSource shall return the HTML5 media element. After the error event occured a DASH stream where the segments are available is added to the same MediaSynchroniser and the DASH audio component is selected afterwards. As the previous error was transient, the MediaSynchroniser is still functional and the terminal shall successful present the broadcast service with the DASH audio.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI260	1	sync API: check nrOfSlaves property for 3 connected slaves	TRUE	When a HbbTV application has initialised a MediaSynchroniser, enabled inter-device synchronisation causing the terminal to become a master terminal, 3 websocket connections to the CSS-CII end point have been successfully established and the application interrogates the nrOfSlaves property, the value '3' will be returned.
org.hbbtv_SYNCAPI300	1	sync API: check interDeviceSyncEnabled for a master terminal	TRUE	A HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser API method, and called enable inter-device synchronisation specifying a callback function. When the HbbTV application is notified that the callback function has returned and then the application checks the value of the interDeviceSyncEnabled property, this value will be equal to 'true'.
org.hbbtv_SYNCAPI310	1	sync API: check interDeviceSyncEnabled for a terminal that has not yet enabled inter-device sync	TRUE	A HbbTV application has initialised a MediaSynchroniser using the initMediaSynchroniser API method, but not yet enabled inter-device synchronisation and the application checks the value of the interDeviceSyncEnabled property, this value will be equal to 'false'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_SYNCAPI320	1	sync API: check interDeviceSyncEnabled for a a terminal that is in permanent error	TRUE	When a HbbTV application has created and initialised a MediaSynchroniser with a presenting video/broadcast object as the master media that was passed to the initMediaSynchroniser method, and has enabled inter-device synchronisation, and then the video/broadcast object undergoes a permanent error and transitions to the UNREALIZED state caused by an attempt to change to a channel that cannot be found, and then the application checks the value of the interDeviceSyncEnabled property, this value will be equal to 'false'.
org.hbbtv_SYNCAPI440	1	sync API: call to initSlaveMediaSynchroniser for a terminal without slave capability results in error	TRUE	When a HbbTV application has initialised a MediaSynchroniser and tries to initiate it as a slave Media Synchroniser, a Javascript TypeError will be thrown.
org.hbbtv_SYNCAPI540	1	sync API: check that, after the terminal has ceased being a master due to a call to disableInterDeviceSync, its CSS-TS endpoint has been disabled	TRUE	A HbbTV application has initialised a MediaSynchroniser, using the initMediaSynchroniser method, and enabled inter-device synchronisation causing the terminal to become a master terminal. 60 seconds after the application has called disableInterDeviceSync(), the application checks the value of the interDeviceSyncEnabled property, which results to be 'false'. A CSA attempts to connect to the previously available CSS-TS endpoint of the terminal sending a websocket client handshake, then the terminal returns a HTTP message with code 403 "Forbidden" to the CSA.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES01	1	extraSDVideoDecodes, expected values	TRUE	An HbbTV application have a video/broadcast object in 'stopped' state and an HTML5 video element. When the application plays AVC_SD_25_HEAAC content in the HTML5 video element and reads extraSDVideoDecodes then the returned value reflects the expected number of additional SD streams possible to decode simultaneously with SD stream. Next the HTML5 object is presenting AVC_HD_25_HEAAC. When the application reads extraSDVideoDecodes then the returned value reflects the expected number of additional SD streams possible to decode simultaneously with HD stream.
org.hbbtv_TA_CAPABILITIES02	1	extraHDVideoDecodes, expected values	TRUE	An HbbTV application have a video/broadcast object in 'stopped' state and an HTML5 video element. When the application plays AVC_SD_25_HEAAC content in the HTML5 video element and reads extraHDVideoDecodes then the returned value reflects the expected number of additional HD streams possible to decode simultaneously with SD stream. Next the HTML5 object is presenting AVC_HD_25_HEAAC. When the application reads extraHDVideoDecodes then the returned value reflects the expected number of additional HD streams possible to decode simultaneously with HD stream.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES03	1	extraUHDVideoDecodes, expected values	TRUE	An HbbTV application have a video/broadcast object in 'stopped' state and an HTML5 video element. When the application plays AVC_SD_25_HEAAC content in the HTML5 video element and reads extraUHDVideoDecodes then the returned value reflects the expected number of additional UHD streams possible to decode simultaneously with SD stream. Next the video element is presenting AVC_HD_25_HEAAC. When the application reads extraUHDVideoDecodes then the returned value reflects the expected number of additional UHD streams possible to decode simultaneously with AVC_HD stream. Next the video element is presenting HEVC_HD_SDR_10_HEAAC. When the application reads extraUHDVideoDecodes then the returned value reflects the expected number of additional UHD streams possible to decode simultaneously with HEVC_HD_SDR_10 stream. Next the video element is presenting HEVC_HD_HDR_PQ10_HEAAC. When the application reads extraUHDVideoDecodes then the returned value reflects the expected number of additional UHD streams possible to decode simultaneously with HEVC_HD_HDR_PQ10 stream. Next the video element is presenting HEVC_HD_HDR_HLG10_HEAAC. When the application reads extraUHDVideoDecodes then the returned value reflects the expected number of additional UHD streams possible to decode simultaneously with HEVC_HD_HDR_HLG10 stream

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES04	1	extraSDVideoDecodes, decoding 2 SD streams	TRUE	The current channel has MPEG-2 SD video + MPEG-1 layer 2 audio + broadcast subtitles. An HbbTV application has a video/broadcast object in 'stopped' state with width 640px, height 360px, located in display corner and an HTML5 video element with width 640px and height 360px located in another display corner. The application plays AVC_SD_25_HEAAC content in the HTML5 video element. Then the application reads extraSDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to 'bindToCurrentChannel'. When PlayStateChange event with state 2 is received, then both video and audio are presented by both the HTML5 video element and the video/broadcast object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES05	1	extraSDVideoDecodes, decoding HD and SD streams	TRUE	The current channel has MPEG-2 SD video + MPEG-1 layer 2 audio + broadcast subtitles. An HbbTV application has a video/broadcast object in 'stopped' state with width 640px, height 360px, located in a corner and an HTML5 video element with width 640px and height 360px located in another corner. The application plays AVC_HD_25_EAC3 content in the HTML5 video element. Then the application reads extraSDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to 'bindToCurrentChannel'. When PlayStateChange event with state 2 is received, then both video and audio are presented by both the HTML5 video element and the video/broadcast object.
org.hbbtv_TA_CAPABILITIES06	1	extraSDVideoDecodes, decoding HEVC HD SDR and SD streams	TRUE	The current channel has AVC SD video + AC-3 + broadcast subtitles. An HbbTV application has a video/broadcast object in 'stopped' state with width 640px, height 360px, located in a corner and an HTML5 video element with width 640px and height 360px located in another corner. The application plays HEVC_HD_SDR_HEAAC (8bit) content in the HTML5 video element. Then the application reads extraSDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to 'bindToCurrentChannel'. When PlayStateChange event with state 2 is received, then both video and audio are presented by both the HTML5 video element and the video/broadcast object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES07	1	extraSDVideoDecodes, decoding both HEVC HD HDR HLG10 and SD streams	TRUE	The current channel presents MPEG-2 SD video + AC-3 audio. An HbbTV application has a video/broadcast object in 'stopped' state with width 640px, height 360px, located in a corner and an HTML5 video element with width 640px and height 360px located in another corner. The application plays HEVC_HD_HDR_HEAAC (HLG10) content in the HTML5 video element. Then the application reads extraSDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to 'bindToCurrentChannel'. When PlayStateChange event with state 2 is received, then both video and audio are presented by both the HTML5 video element and the video/broadcast object.
org.hbbtv_TA_CAPABILITIES08	1	extraSDVideoDecodes, decoding both HEVC HD HDR(PQ10) and SD streams	TRUE	The current channel has MPEG-2 SD video + MPEG-1 layer 2 audio. An HbbTV application has a video/broadcast object in 'stopped' state with width 640px, height 360px, located in a corner and an HTML5 video element with width 640px and height 360px located in another corner. The application plays HEVC_HD_HDR_HEAAC (PQ10) content in the HTML5 video element. Then the application reads extraSDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to 'bindToCurrentChannel'. When PlayStateChange event with state 2 is received, then both video and audio are presented by both the HTML5 video element and the video/broadcast object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES09	1	extraHDVideoDecodes, decoding both AVC HD and AVC SD streams	TRUE	The current channel presents AVC SD video + HEAAC audio. An HbbTV application has a video/broadcast object in 'presenting' state with full screen mode and an HTML5 video element with width 640px, height 360px displayed over the video/broadcast object. The src of the HTML5 video element refers to AVC_HD_25_HEAAC content, the readyState is equal to or bigger than HAVE_FUTURE_DATA, playing is false. The application reads extraHDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to play of HTML5 video element. When playing event is received, then both video and audio are presented by both the HTML5 video element and the video/broadcast object.
org.hbbtv_TA_CAPABILITIES10	1	extraHDVideoDecodes, decoding two AVC HD streams	TRUE	The current channel has HD AVC video + HEAAC. An HbbTV application has a video/broadcast object in 'stopped' state with width 640px, height 360px, located in the corner and an HTML5 video element with width 640px and height 360px located in another corner. The application plays AVC_HD_HEAAC content in the HTML5 video element. Then the application reads extraHDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to 'bindToCurrentChannel'. When PlayStateChange event with state 2 is received, then both video and audio are presented by both the HTML5 video element and the video/broadcast object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES11	1	extraHDVideoDecodes, decoding two HD streams, one AVC and another HEVC HD SDR	TRUE	The current channel has HD AVC video + HEAAC audio. An HbbTV application has a video/broadcast object in 'stopped' state with width 640px, height 360px, located in the corner and an HTML5 video element with width 640px and height 360px located in another display corner. The application plays HEVC_HD_SDR_EAC3 (8 bit) content in the HTML5 video element. Then the application reads extraHDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to 'bindToCurrentChannel'. When PlayStateChange event with state 2 is received, then both video and audio are presented by both the HTML5 video element and the video/broadcast object.
org.hbbtv_TA_CAPABILITIES12	1	extraHDVideoDecodes, decoding both HEVC HD streams and HEVC UHD	TRUE	The current channel has HEVC HD SDR video + E-AC-3 audio. An HbbTV application has a video/broadcast object in 'stopped' state with width 640px, height 360px, located in the corner and an HTML5 video element with width 640px and height 360px located in another corner. The application plays HEVC_UHD_EAC3 content in the HTML5 video element. Then the application reads extraHDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to 'bindToCurrentChannel'. When PlayStateChange event with state 2 is received, then both video and audio are presented by both the HTML5 video element and the video/broadcast object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES13	1	extraUHDVideoDecodes, decoding HEVC UHD streams and AVC SD	TRUE	The current channel presents AVC SD video + HEAAC audio. An HbbTV application has a video/broadcast object in 'presenting' state with full screen mode and an HTML5 video element with width 640px, height 360px displayed over the video/broadcast object. The src of the HTML5 video element refers to HEVC UHD E-AC3 content, the readyState is equal to or bigger than HAVE_FUTURE_DATA, playing is false. The application reads extraUHDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to play of HTML5 video element. When playing event is received, then both videos are presented by both the HTML5 video element and the video/broadcast object.
org.hbbtv_TA_CAPABILITIES14	1	extraUHDVideoDecodes, decoding HEVC UHD streams and HEVC HD SDR	TRUE	The current channel presents HEVC HD SDR video + HEAAC audio. An HbbTV application has a video/broadcast object in 'presenting' state with full screen mode and an HTML5 video element with width 640px, height 360px displayed over the video/broadcast object. The src of the HTML5 video element refers to HEVC UHD E-AC3 content, the readyState is equal to or bigger than HAVE_FUTURE_DATA, playing is false. The application reads extraUHDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to play of HTML5 video element. When playing event is received, then both videos are presented by both the HTML5 video element and the video/broadcast object.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES15	1	extraUHDVideoDecodes, decoding HEVC UHD streams and AVC HD	TRUE	The current channel presents AVC HD video + HEAAC audio. An HbbTV application has a video/broadcast object in 'presenting' state with full screen mode and an HTML5 video element with width 640px, height 360px displayed over the video/broadcast object. src of the HTML5 video element refers to HEVC UHD E-AC3 content, the readyState is equal to or bigger than HAVE_FUTURE_DATA, playing is false. The application reads extraUHDVideoDecodes and it receives value 1 or higher, in the same event loop application calls to play of HTML5 video element. When playing event is received, then both videos are presented by both the HTML5 video element and the video/broadcast object.
org.hbbtv_TA_CAPABILITIES16	1	broadbandCapabilities for the expected number of decoders	TRUE	The application calls to broadbandCapabilities(index), where index is from 1 to 100. Then returned values are stringCollection type from index=1 to N, and null for all indexes > N. The N reflects the expected number of decoders.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES17	1	broadbandCapabilities returned collections are valid and ordered correctly	TRUE	When an application calls to broadbandCapabilities(index), where index is from 1 to N and N is the maximum number of decoders, then returned collections: contain strings where each string is one of the <video_profile> elements returned by the xmlCapabilities property, represent decoders ordered in decreasing capabilities, i.e. capabilities for index 1 are the highest, and for N the lowest available, reflect the expected capabilities of all available decoders.
org.hbbtv_TA_CAPABILITIES18	1	Decoding media accordingly to broadbandCapabilities	TRUE	An broadcast independent application calls to broadbandCapabilities(index), where index is from 1 to N - maximum number of decoders, and as a result N string collections each representing a decoders' capability are returned. From the returned string collections the application selects a pair of video_profiles with highest performance supported. The application creates two HTML5 video elements, each video element loads content encoded using video_profile from the selected pair. Both video elements enter HAVE_ENOUGH_DATA state. Next, set the first video to playing state and second to paused state. After that when 'currentTime' of the second video element is set to position inside buffer, but not corresponding to key frame then the seeked event is dispatched on the second video element and second video element presents frame at currentTime.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES19	1	broadcastCapabilities for the expected number of decoders	TRUE	The application calls the broadcastCapabilities(index), where index is from 1 to 100. Then returned values C[index] are stringCollection type from index=1 to N, and null for all indexes > N. When after that the application calls the broadbandCapabilities(index), where index is from 1 to N, then each returned collection is consistent with the collections C[index] returned by broadcastCapabilities.
org.hbbtv_TA_CAPABILITIES20	1	extraSDVideoDecodes, expected values for HEVC	TRUE	An HbbTV application have a video/broadcast object in 'stopped' state and an HTML5 video element. The HTML5 object is presenting HEVC_HD_SDR_10_HEAAC. When the application reads extraSDVideoDecodes then the returned value reflects the expected number of additional SD streams possible to decode simultaneously with HEVC_HD stream.
org.hbbtv_TA_CAPABILITIES21	1	XMLCapabilities - 'ta' element	TRUE	The XMLCapabilities property of the application/oipfCapabilities embedded object contains a single 'ta' element with @version attribute equal to '1.1.1'. The 'ta' element position in the xmlCapabilities tree is from the root: profilelist/ui_profile/ext.
org.hbbtv_TA_CAPABILITIES22	1	XMLCapabilities - urn:hbbtv:ta:profile:2019:1 profile signalling	TRUE	The XMLCapabilities property of the application/oipfCapabilities embedded object contains a 'ta' element with child element 'profile' including "urn:hbbtv:ta:profile:2019:1".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES23	1	XMLCapabilities - urn:hbbtv:ta:profile:2019:2 profile signalling	TRUE	The XMLCapabilities property of the application/oipfCapabilities embedded object contains the 'ta' element. The 'ta' element contains: a child element 'profile' containing "urn:hbbtv:ta:profile:2019:1" and another child element 'profile' containing "urn:hbbtv:ta:profile:2019:2".
org.hbbtv_TA_CAPABILITIES24	1	XMLCapabilities - profile signalling, "urn:hbbtv:ta:profile:2019:1" not supported	TRUE	The XMLCapabilities property of the application/oipfCapabilities embedded object contains the 'ta' element, the 'ta' does not have child element 'profile' containing neither "urn:hbbtv:ta:profile:2019:1" nor "urn:hbbtv:ta:profile:2019:2".
org.hbbtv_TA_CAPABILITIES25	1	XMLCapabilities - profile signalling, broadcastTimelineMonitoring supported	TRUE	The XMLCapabilities property of the application/oipfCapabilities embedded object contains a 'ta' element with @broadcastTimelineMonitoring attribute equal to 'true'.
org.hbbtv_TA_CAPABILITIES26	1	XMLCapabilities - profile signalling, broadcastTimelineMonitoring not supported	TRUE	The XMLCapabilities property of the application/oipfCapabilities embedded object contains a 'ta' element with @broadcastTimelineMonitoring attribute equal to 'false'.
org.hbbtv_TA_CAPABILITIES27	1	XMLCapabilities - profile signalling, GOPIndependentSwitchToBroadcast not supported	TRUE	The XMLCapabilities property of the application/oipfCapabilities embedded object contains a 'ta' element with @GOPIndependentSwitchToBroadcast attribute equal to 'false'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_CAPABILITIES28	1	XMLCapabilities - profile signalling, GOPIndependentSwitchToBroadcast supported	TRUE	The XMLCapabilities property of the application/oipfCapabilities embedded object contains a 'ta' element with @GOPIndependentSwitchToBroadcast attribute equal to 'true'.
org.hbbtv_TA_CAPABILITIES30	1	extraHDVideoDecodes, expected values for HEVC	TRUE	An HbbTV application have a video/broadcast object in 'stopped' state and an HTML5 video element. The HTML5 object is presenting HEVC_HD_SDR_10_HEAAC. When the application reads extraHDVideoDecodes then the returned value reflects the expected number of additional HD streams possible to decode simultaneously with HEVC_HD stream.
org.hbbtv_TA_ERRORS01	1	"CallInProgress" after switchMediaPresentation while another call is not yet completed	TRUE	An application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, switchTime referring to 60s to future, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to an HTML5 video element, timelineSelector referring to timeline from originalMediaObject. Call is successful, there is no exception and no rejected promise. When 10s after that the application calls to switchMediaPresentation again, with exactly the same call arguments then the returned promise is resolved with "CallInProgress".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_ERRORS02	1	SwitchPreparationDeadlinePassed when switchMediaPresentation called after switch preparation deadline	TRUE	When an application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, switchTime referring to the future, but after the switch preparation deadline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to an HTML5 video element, timelineSelector referring to timeline from originalMediaObject. then the returned promise is resolved with 'SwitchPreparationDeadlinePassed'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_ERRORS03	1	switchMediaPresentation and channel change, application keeps running	TRUE	An HbbTV application is signalled as AUTOSTART on two channels Ch1 and Ch2, both on the same multiplex, the serviceBound flag is not set, Channel Ch1 is selected, and the application is running. The application calls to switchMediaPresentation with call arguments: originalMediaObject referring to a video/broadcast object, switchTime referring to 60s into future accordingly to PTS timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to an HTML5 video element, timelineSelector referring to PTS timeline, and as a result promise is returned. When after 30s application calls to setChannel(newChannel, false, null, quiet=2) with newChannel referring to Ch2, then: the promise is resolved with "ChannelChanged", after resolving promise, the ChannelChangeSucceededEvent is dispatched, the switch to HTML5 video element is not performed in next 60s.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_ERRORS04	1	switchMediaPresentation and channel change, application killed	TRUE	An HbbTV application is signalled as AUTOSTART only on channel Ch1, the channel has a TEMI timeline. The channel Ch1 is selected, and the HbbTV application is running. The application requests switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to a video/broadcast object, switchTime referring to 30s into future accordingly to TEMI timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to an HTML5 video element, timelineSelector referring to TEMI timeline. When 5s before the switch time the channel is changed to Ch2 using remote control, then the channel is changed and broadcast content from channel Ch2 is presented without artefacts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_ERRORS05	1	Promise resolved with "VideoBroadcastPresentingFailed" as channel is blocked due to parental rating	TRUE	Programme on current channel has parental rating below threshold. Both an HTML5 video element with src referring to an ISOBMFF file and a video/broadcast object follows all preconditions required to successfully switch media presentation. The application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the HTML5 video element, switchTime equal to NaN, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to a video/broadcast object, timelineSelector equal to null, and as a result promise is returned. When before the switch time the new programme with parental rating above threshold is on current channel, then at the switch time: the promise is resolved with a "VideoBroadcastPresentingFailed".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_ERRORS06	1	Promise resolved with "MediaElementError" as newMediaObject is an HTML5 media element with error	TRUE	Both an HTML5 video element with src referring to a content access streaming descriptor and a video/broadcast object follow all preconditions required to successfully switch media presentation. The content access streaming descriptor has ParentalRating element indicating that content is only suitable for age 18 and older. The terminal is configured to not block content for age 18 and older. The application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, timelineSelector referring to PTS timeline, timelineSource equal to true, switchTime referring to the future accordingly to the broadcast timeline, newMediaObject referring to an HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, and as a result promise is returned. Before switch time, the parental rating threshold is set using terminal UI to prevent access to content that is only suitable for age 18 and older. At the switch time the promise is resolved with a "MediaElementError".

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_ERRORS07	1	Media decoder locked at switch time, NoSuitableMediaDecoderAvailable	TRUE	Both an HTML5 video element and a video/broadcast object follows all preconditions required to successfully switch media presentation. The application requests a switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, timelineSelector referring to PTS timeline, timelineSource equal to true, switchTime referring to the future accordingly to the broadcast timeline, newMediaObject referring to an HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, and as a result promise is returned. Before the switch time, action to lock media resources is taken. At the switch time the promise is resolved with a "NoSuitableMediaDecoderAvailable", and the presentation of the broadcast video is not disturbed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_HTML501	1	originalMediaObject HTML5 src attribute change resolves promise with SourceChanged	TRUE	An HTML5 video element has a src attribute referring to a DASH MPD. An application requests a switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to the HTML5 video element , switchTime referring to 60s into future accordingly to DASH-PR timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to a video/broadcast object, timelineSelector referring to DASH-PR timeline, and as a result a promise is returned. When 10s after that the src attribute of the HTML5 video element is changed to different MPD then: the promise is resolved with "SourceChanged", content is presented by HTML5 element without artefacts, the switch is aborted.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_HTML502	1	newMediaObject HTML5 currentTime attribute change resolves promise with NewObjectChanged	TRUE	An HTML5 video element has a src attribute referring to an ISOBMFF file. An application requests a switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to a video/broadcast object, switchTime referring to 60s into future accordingly to PTS timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to to HTML5 video element, timelineSelector referring to PTS timeline, and as a result promise is returned. When 20s before the switch the currentTime attribute of the HTML5 video element is set to 20s to the future then: the promise is resolved with "NewObjectChanged", content is presented by the video/broadcast element without artefacts, the switch is aborted.
org.hbbtv_TA_INTHEPAST01	1	Promise resolves with "InThePast" if switchTime in the past	TRUE	When an application requests a switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, switchTime referring to 30s in the past accordingly to timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to an HTML5 video element, timelineSelector referring to timeline from originalMediaObject, then returned promise is resolved with "InThePast", the presentation of video by the video/broadcast object is not disturbed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_INTHEPAST02	1	Promise resolves with "InThePast" if switchTime is more than 10 minutes into the future	TRUE	When an application requests a switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to an HTML5 video element, switchTime referring to 11 minutes into the future accordingly to HTML5 video timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to a video/broadcast object , timelineSelector referring to timeline from originalMediaObject, then returned promise is resolved with "InThePast", the presentation of video by the HTML5 video element is not disturbed.
org.hbbtv_TA_INVALIDSTATEERR01	1	InvalidStateError if PTS discontinuity indicates switch time to past	TRUE	An application requests switch by a call to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, switchTime referring to 60s into future accordingly to PTS timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to an HTML5 video element, timelineSelector referring to PTS timeline, and as a result a promise is returned. When after 30s the broadcast transport stream has a discontinuity for the PTS timeline and after the discontinuity the currentTime on the PTS timeline indicates the switch time is in the past, then the requested switch is aborted and the promise is rejected with an InvalidStateError.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_INVALIDSTATEERR02	1	InvalidStateError if TEMI discontinuity indicates switch time after the switch preparation deadline	TRUE	Broadcast signal carries TEMI timeline. An application requests switch by a call to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, switchTime referring into future accordingly to TEMI timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to an HTML5 video element, timelineSelector referring to TEMI timeline, and as a result a promise is returned. After that, when the broadcast transport stream have TEMI timeline discontinuity and the discontinuity indicates the switch time is in 600ms in the future, then the requested switch is either: aborted and the promise is rejected with an InvalidStateError, or successfully executed applying the constraints of the selected profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_INVALIDSTATEERR03	1	InvalidStateError if TEMI discontinuity indicates switch time more than 10 minutes into future	TRUE	Broadcast signal carries TEMI timeline. An application requests switch by a call to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, switchTime referring into future accordingly to TEMI timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to an HTML5 video element, timelineSelector referring to TEMI timeline, and as a result a promise is returned. After that, when the broadcast transport stream have TEMI timeline discontinuity and the discontinuity indicates the switch time is 11 minutes in the future, then the requested switch is aborted and the promise is rejected with an InvalidStateError.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_INVALIDSTATEERR04	1	Promise rejected with "InvalidStateError" as video/broadcast in connecting state(not presenting state) at switch time	TRUE	Both an HTML5 video element and a video/broadcast object follows all preconditions required to successfully switch media presentation. An application requests a switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, timelineSelector referring to PTS timeline, timelineSource equal to true, switchTime referring to 60s to future accordingly to the broadcast timeline, newMediaObject referring to an HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, and as a result promise is returned. When at the switch time the video/broadcast object is in the connecting state due to parental rating change, then: the promise is reject with 'InvalidStateError' and the switch is aborted.
org.hbbtv_TA_MSE1001	1	MSE and out-of-band subtitles	TRUE	An application presents video and audio via MSE SourceBuffer using an HTML5 video element. The application adds two track elements as children of the video element, and as a result the TextTrack objects are created with properties representing tracks attributes. When the application sets 'mode' attribute of one TextTrack to SHOWING and OFF to the other one, then the enabled subtitles are displayed synchronously with video.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR01	1	NotSupportedError if originalMediaObject is A/V Control Object	TRUE	A broadcast independent HbbTV application have an A/V control object presenting a live (dynamic MPD) MPEG DASH content encoded using AVC_HD_25 HEAAC. The application creates an HTML5 video element with the src referring to a DASH static MPD with content encoded using AVC_HD_25 and HE-AAC. Both the A/V control object and the HTML5 video have the same parent element. When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the A/V control object, timelineSelector referring to DASH-PR timeline from the A/V control object, timelineSource equal to true, switchTime referring to 10s to future accordingly to the A/V control object timeline, newMediaObject referring to the HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError. Presentation of video by A/V Control object is not disturbed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR02	1	NotSupportedError if originalMediaObject is Video/Broadcast in 'Unrealized' play state	TRUE	A broadcast related HbbTV application has a video/broadcast object in 'unrealized' (0) playState, presentation of broadcast video is under terminal control. When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, timelineSelector referring to PTS timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the broadcast timeline, newMediaObject referring to an HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError and presentation of broadcast video is not disturbed.
org.hbbtv_TA_NOTSUPPERR03	1	NotSupportedError if originalMediaObject is Video/Broadcast in 'stopped' play state	TRUE	A broadcast related HbbTV application has a video/broadcast object in 'stopped' (3) playState. When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, timelineSelector referring to PTS timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the broadcast timeline, newMediaObject referring to an HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR04	1	NotSupportedError if newMediaObject is neither HTML5 nor V/B object	TRUE	A broadcast related HbbTV application have an HTML5 video presenting a live (dynamic MPD) MPEG DASH content encoded using AVC_HD_25 HEAAC. When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the HTML5 video element, timelineSelector referring to the DASH-PR timeline from the HTML5 video element, timelineSource equal to true, switchTime referring to 10s to future accordingly to the HTML5 video timeline, newMediaObject equal to null, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError. Presentation of video by the HTML5 video object is not disturbed.
org.hbbtv_TA_NOTSUPPERR05	1	NotSupportedError if originalMediaObject is HTML5 with readyState HAVE_CURRENT_DATA	TRUE	The readyState of an HTML5 video element is HAVE_CURRENT_DATA. When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the HTML5 video element, timelineSelector referring to DASH-PR timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the HTML5 video timeline, newMediaObject referring to a video/broadcast object, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR06	1	NotSupportedError if newMediaObject is video/broadcast with visibility set to "visible"	TRUE	A video/broadcast object has visibility set to 'visible'. When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to an HTML5 video element, timelineSelector referring to DASH-PR timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the HTML5 video timeline, newMediaObject referring to the video/broadcast object, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError and presentation of HTML5 video is not disturbed.
org.hbbtv_TA_NOTSUPPERR07	1	NotSupportedError if newMediaObject is Video/Broadcast in 'unrealized' play state	TRUE	A video/broadcast object is in the 'unrealized' (0) playState. When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the HTML5 video element, timelineSelector referring to DASH-PR timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the HTML5 video timeline, newMediaObject referring to the V/B object, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR08	1	NotSupportedError if newMediaObject is HTML5 video element with readyState not HAVE_ENOUGH_DATA	TRUE	An HTML5 video element readyState is HAVE_CURRENT_DATA. When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to a video/broadcast object, timelineSelector referring to PTS timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the video/broadcast object timeline, newMediaObject referring to the HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError and presentation of broadcast video is not disturbed.
org.hbbtv_TA_NOTSUPPERR09	1	NotSupportedError if timelineSelector indicates timeline not supported for originalMediaObject	TRUE	When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to video/broadcast object, timelineSelector referring to DASH-PR timeline of HTML5 video element, timelineSource equal to true, switchTime referring to 10s to future accordingly to the v/b object timeline, newMediaObject referring to the HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError and presentation of broadcast video is not disturbed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR10	1	NotSupportedError if timelineSelector indicates timeline not supported for newMediaObject	TRUE	When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to video/broadcast object, timelineSelector referring to PTS timeline, timelineSource equal to false, switchTime referring to 10s to future accordingly to the v/b object timeline, newMediaObject referring to the HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError and presentation of broadcast content is not disturbed.
org.hbbtv_TA_NOTSUPPERR11	1	NotSupportedError if timelineSelector is null and originalMediaObject is not an HTML5 video element	TRUE	When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to a video/broadcast object, timelineSelector equal to null, timelineSource equal to true, switchTime referring to 10s to future accordingly to the v/b object timeline, newMediaObject referring to an HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError and presentation of broadcast content is not disturbed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR12	1	NotSupportedError if originalMediaObject and newMediaObject have different parent element	TRUE	An HTML5 video element and a video/broadcast object have different parent elements. When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to a video/broadcast object, timelineSelector equal to PTS timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the v/b object timeline, newMediaObject referring to an HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError and presentation of broadcast content is not disturbed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR13	1	NotSupportedError if originalMediaObject is not immediately behind newMediaObject on the CSS z-axis	TRUE	A div element contains children in following order first a video/broadcast object with CSS z-index equal to N1, next an HTML5 video element with CSS z-index equal to N2, and another div with CSS z-index equal to N3. When the N1 < N3 < N2 and an application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, timelineSelector equal to PTS timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the v/b object timeline, newMediaObject referring to the HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError and presentation of broadcast video is not disturbed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR14	1	NotSupportedError if originalMediaObject is immediately behind newMediaObject on the CSS z-axis, but visibility is not 'hidden'	TRUE	A div element contains children in following order first a video/broadcast object with CSS z-index equal to N1, next an HTML5 video element with CSS z-index equal to N2 > N1 and with visibility set to 'visible'. When an application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, timelineSelector equal to PTS timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the v/b object timeline, newMediaObject referring to the HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError and presentation of broadcast content is not disturbed.
org.hbbtv_TA_NOTSUPPERR15	1	NotSupportedError if minimumSwitchPerformance is neither an empty string nor profile URN	TRUE	When an application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, timelineSelector equal to PTS timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the v/b object timeline, newMediaObject referring to the HTML5 video element, minimumSwitchPerformanceRequired set to "undefinedProfile", then the returned promise is rejected with a NotSupportedError and presentation of broadcast video is not disturbed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR16	1	NotSupportedError if DASH PR time is not known	TRUE	An HbbTV application have an HTML5 video element playing an MPEG DASH dynamic MPD. The MPD is composed of two periods, second one being an Early Available Period. When the application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the HTML5 video element, timelineSelector referring to DASH-PR timeline of the Early Available Period, timelineSource equal to true, switchTime referring to 60s after the start of the Early Available Period, newMediaObject referring to the v/b object, minimumSwitchPerformanceRequired set to the highest supported, then the returned promise is rejected with a NotSupportedError and presentation of video by the HTML5 video element is not disturbed.
org.hbbtv_TA_NOTSUPPERR17	1	NotSupportedError if TEMI timeline is not yet known	TRUE	Initially broadcast signal does not carry TEMI timeline. When an application calls to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, switchTime referring to 60s into future accordingly to TEMI timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to an HTML5 video element, timelineSelector referring to TEMI timeline. then after 2.5s the promise is rejected with NotSupportedError. When after 30s the correct TEMI timeline appears, then the switch is not performed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR18	1	NotSupportedError if TEMI timeline becomes unavailable	TRUE	Broadcast carries a TEMI timeline. An application requests switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, switchTime referring to 60s into future accordingly to TEMI timeline, minimumSwitchPerformanceRequired set to the highest supported profile, timelineSource equal to true, newMediaObject referring to an HTML5 video element, timelineSelector referring to TEMI timeline, and as a result a promise is returned. When TEMI timeline becomes unavailable 20 seconds after the call, then either: the promise is rejected with a NotSupportedError and no switch is performed, or the switch successfully executed applying the constraints of the selected profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_NOTSUPPERR19	1	NotSupportedError if newMediaObject is an HTML5 with seek in progress	TRUE	A video/broadcast object presents broadcast content, an HTML5 video element has src referring to an MPEG-2 TS file, the readyState is HAVE_ENOUGH_DATA. An application sets currentTime attribute of the HTML5 video element 1s to the future and in the same event loop calls to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, timelineSelector equal to PTS timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the v/b object timeline, newMediaObject referring to the HTML5 video element, minimumSwitchPerformanceRequired set to highest supported, then the returned promise is rejected and presentation of broadcast video is not disturbed.
org.hbbtv_TA_RELIABILITY01	1	Application substitutes broadcast video and audio 20 times, with different delivery	TRUE	An application substitutes broadcast video and audio 20 times, returning to broadcast each time, where: the substituted video and audio are delivered by MSE (6 times), by DASH (4 times static and 4 times dynamic MPDs) and by nonadaptive HTTP streaming (6 times ISOMBFF). When after that the presentation returns to video/broadcast object, then: the video, audio and subtitles are presented by the video/broadcast object, stream event reception is functional, call to switchMediaPresentation triggers switch with supported accuracy, after switch, broadband video, audio and subtitles are presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_RELIABILITY02	1	20 remote-control triggered changes of service, each after call to switchMediaPresentation	TRUE	A broadcast contains two channels, first: MPEG-2 SD video + MPEG-1 layer 2 audio + single (autostart) application, second: AVC HD video + HE-AAC audio + single (autostart) application. Both applications have different IDs and are run from different origins. Both applications have the same logic as follow: just after start the application requests first switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to the video/broadcast object, timelineSelector equal to TEMI timeline, timelineSource equal to true, switchTime referring to 10s to future accordingly to the v/b object timeline, newMediaObject referring to the HTML5 video element, minimumSwitchPerformanceRequired set to the highest supported; at time equal to 10s after the first switch, the application requests second switch by call to switchMediaPresentation, with call arguments: originalMediaObject referring to the the HTML5 video element, timelineSelector equal to DASH-PR, timelineSource equal to true, switchTime referring to 10s to future accordingly to the originalMediaObject timeline, newMediaObject referring to video/broadcast object, minimumSwitchPerformanceRequired set to the highest supported. There are 20 channel changes indicated using remote control: 4 triggered 5s after the first call to switchMediaPresentation (substitution has been scheduled but has not yet started), 4 triggered exactly at the time of the first switch, 4 triggered 5s after

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_SELECTLANGUAGE01	1	Change audio language, newMediaObject has single audio track	TRUE	An HTML5 video element has a src attribute referring to an ISOBMFF file with single video track and single audio track with language exactly the same as set on the terminal. An application requests a switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to a video/broadcast object, switchTime referring to 30s into future accordingly to PTS timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to to the HTML5 video element, timelineSelector referring to PTS timeline, and as a result promise is returned. When 20s before the switch the preferred audio language is changed using dedicated device UI, then: the switch is performed with timing requirements (the promise resolved with undefined), both video and audio are correctly presented by the HTML5 video element.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_SELECTLANGUAGE02	1	Change audio language, promise resolved with AudioTrackChanged	TRUE	An HTML5 video element has src attribute referring to a DASH MPD file with single video adaptationSet and two audio adaptationSets. An application requests a switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to a video/broadcast object, switchTime referring to 60s into future accordingly to PTS timeline, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to to the HTML5 video element, timelineSelector referring to PTS timeline, and as a result promise is returned. When 40s before the switch the preferred audio language is changed using dedicated device UI, then: the promise is resolved with "AudioTrackChanged", the switch is aborted.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_SELECTLANGUAGE03	1	Change audio track when both originalMediaObject and newMediaObject are HTML5 video	TRUE	A broadcast independent application has two HTML5 video elements. First video element has src attribute referring to DASH MPD file with single video adaptationSet and two audio adaptationSets: one with language exactly the same as set on the terminal, another with language L2. Second HTML5 video element have src attribute referring to an ISOBMFF file with language exactly the same as set on the terminal. An application requests a switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to the first HTML5 video element, switchTime referring to 60s into future accordingly to DASH-PR, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to to the second HTML5 video element, timelineSelector referring to the DASH-PR, and as a result promise is returned. When 40s before the switch the preferred audio language is changed to the L2 using dedicated device UI, then: the terminal start to presenting audio from adaptationSet with language equal to L2, the promise is neither resolved nor rejected till switch, the switch is performed at the switch time, but without timing requirements (Promise resolved with undefined), after the switch, the audio from the ISOBMFF file is presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA_SELECTLANGUAGE04	1	Change audio track when originalMediaObject is HTML5 video, newMediaObject is video/broadcast object	TRUE	An application has an HTML5 video element with src attribute referring to DASH MPD file with single video adaptationSet and three audio adaptationSets. One audio adaptationSet is audio description type. The terminal has audio description disabled. An application requests a switch by call to switchMediaPresentation with call arguments: originalMediaObject referring to the first HTML5 video element, switchTime referring to 60s into future accordingly to DASH-PR, minimumSwitchPerformanceRequired equal to the highest supported, timelineSource equal to true, newMediaObject referring to to a video/broadcast object, timelineSelector referring to the DASH-PR, and as a result promise is returned. When 40s before the switch time the preferred audio description is enabled using dedicated device UI, then: the terminal starts presenting audio from adaptationSet with audioDescription, the promise is neither resolved nor rejected till switch time, the switch is performed at switch time, without timing requirements (promise resolved with undefined). After switch the broadcast video and audio is presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA7001	1	Switching between an HDR-PQ10 broadcast and an SDR advert	TRUE	A broadcast content is HEVC HDR PQ10 + HEAAC. A broadband content is HEVC SDR + HEAAC. When an HbbTV application request switch from the broadcast to the broadband with minimumSwitchPerformanceRequired equal to the highest supported, then the switch is performed and the broadband content (both audio and video) is played without artifacts and glitches. When after that the application requests switch back from the broadband to the broadcast, then the switch is performed and the broadcast content (both video and audio) is played without artifacts and glitches.
org.hbbtv_TA7002	1	Switching between an HDR-HLG10 broadcast and an SDR advert	TRUE	A broadcast content is HEVC HDR HLG10 + HEAAC. A broadband content is HEVC SDR + HEAAC. When an HbbTV application request switch from the broadcast to the broadband with minimumSwitchPerformanceRequired equal to the highest supported, then the switch is performed and the broadband content (both audio and video) is played without artifacts and glitches. When after that the application requests switch back from the broadband to the broadcast, then the switch is performed and the broadcast content (both video and audio) is played without artifacts and glitches.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA7003	1	Switching between HEVC_UHD broadcast/broadband	TRUE	Both broadcast and broadband contents are UHD + HEAAC. When an HbbTV application request switch from the broadcast to the broadband with minimumSwitchPerformanceRequired equal to the highest supported, then the switch is performed and the broadband content (both audio and video) is played without artifacts and glitches. When after that the application requests switch back from the broadband to the broadcast, then the switch is performed and the broadcast content (both video and audio) is played without artifacts and glitches.
org.hbbtv_TA8010	1	Switch from broadcast just after PTS wrap - Small timestamp	TRUE	Approximately 20 seconds before the broadcast PTS timeline wraps, the HbbTV application calls switchMediaPresentation() to schedule a switch from broadcast to broadband. It specifies the use of the broadcast PTS timeline, and the specified switch timestamp is 1 second. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be the empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. (Note that "the correct time" is 1 second after the timeline wraps).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8020	1	Switch from broadcast just after PTS wrap - Large timestamp	TRUE	Approximately 20 seconds before the broadcast PTS timeline wraps, the HbbTV application calls switchMediaPresentation() to schedule a switch from broadcast to broadband. It specifies the use of the broadcast PTS timeline, and the specified switch timestamp is 95444.7176888889 seconds. (Note: This is 1 second larger than the PTS timeline's wrap period in seconds; 1+((2^33)/90000) = 95444.7176888889 seconds). If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be the empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. (Note that "the correct time" is 1 second after the timeline wraps).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8030	1	Switch from broadcast at PTS wrap	TRUE	Approximately 20 seconds before the broadcast PTS timeline wraps, the HbbTV application calls switchMediaPresentation() to schedule a switch from broadcast to broadband. It specifies the use of the broadcast PTS timeline, and the specified switch timestamp is zero seconds. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be the empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. (Note that "the correct time" is at the point the timeline wraps).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8040	1	Switch from broadcast just after TEMI 32-bit wrap - Small timestamp	TRUE	Approximately 20 seconds before the broadcast TEMI 32-bit timeline wraps, the HbbTV application calls switchMediaPresentation() to schedule a switch from broadcast to broadband. It specifies the use of the broadcast TEMI 32-bit timeline, and the specified switch timestamp is 1 second. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be the empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. (Note that "the correct time" is 1 second after the timeline wraps).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8050	1	Switch from broadcast just after TEMI 32-bit wrap - Large timestamp	TRUE	Approximately 20 seconds before the broadcast TEMI 32-bit timeline wraps, the HbbTV application calls switchMediaPresentation() to schedule a switch from broadcast to broadband. It specifies the use of the broadcast TEMI 32-bit timeline, and the specified switch timestamp (in seconds) is 1 second larger than the TEMI 32-bit timeline's wrap period in seconds. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be the empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. (Note that "the correct time" is 1 second after the timeline wraps).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8060	1	Switch to broadcast just after TEMI 32-bit wrap - Small timestamp	TRUE	Approximately 20 seconds before the broadcast TEMI 32-bit timeline wraps, the HbbTV application calls switchMediaPresentation() to schedule a switch from broadband to broadcast. It specifies the use of the broadcast TEMI 32-bit timeline, and the specified switch timestamp is 1 second. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be the empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. (Note that "the correct time" is 1 second after the timeline wraps).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8070	1	Switch to broadcast just after TEMI 32-bit wrap - Large timestamp	TRUE	Approximately 20 seconds before the broadcast TEMI 32-bit timeline wraps, the HbbTV application calls switchMediaPresentation() to schedule a switch from broadband to broadcast. It specifies the use of the broadcast TEMI 32-bit timeline, and the specified switch timestamp (in seconds) is 1 second larger than the TEMI 32-bit timeline's wrap period in seconds. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be the empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. (Note that "the correct time" is 1 second after the timeline wraps).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8080	1	Switch from broadcast just after TEMI 64-bit wrap - Small timestamp	TRUE	Approximately 20 seconds before the broadcast TEMI 64-bit timeline wraps, the HbbTV application calls switchMediaPresentation() to schedule a switch from broadcast to broadband. It specifies the use of the broadcast TEMI 64-bit timeline, and the specified switch timestamp is 1 second. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be the empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. (Note that "the correct time" is 1 second after the timeline wraps).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8090	1	Switch from broadcast just after TEMI 64-bit wrap - Large timestamp	TRUE	Approximately 20 seconds before the broadcast TEMI 64-bit timeline wraps, the HbbTV application calls switchMediaPresentation() to schedule a switch from broadcast to broadband. It specifies the use of the broadcast TEMI 64-bit timeline, and the specified switch timestamp (in seconds) is 1 second larger than the TEMI 64-bit timeline's wrap period in seconds. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be the empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens and broadband video is presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8095	1	Switch from broadcast fails: 64 bit TEMI timeline, timestamp 2^32 TEMI units too big	TRUE	The HbbTV application calls switchMediaPresentation() to schedule a switch from broadcast to broadband. It specifies the use of the broadcast TEMI 64-bit timeline, which has a tick rate of 1000 Hz. The specified switch timestamp (in seconds) is the current time plus 4294977.296 seconds. (Note: 4294977.296 seconds == 2^32 TEMI units / 1000 ticks/sec + 10 seconds). Due to the specified time being more than 10 minutes into the future, the API call EITHER returns a Promise that has already been resolved with "InThePast", OR returns a Promise that gets rejected with an InvalidStateError within 3 seconds of the call to switchMediaPresentation() returning. The switch does NOT happen. (The test shall check for the switch not happening during the next 20 seconds, since checking "does not happen ever" is not practical).

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8100	1	switchMediaPresentation() called just before the deadline	TRUE	An HbbTV application is presenting DASH video (25 frames per second) from broadband in an HTML5 media element. The HbbTV application monitors the currentTime property of a HTML5 media element. When HTML5 currentTime property returns a value within the range 12.76 to 12.9 seconds, then the HbbTV application calls switchMediaPresentation() to schedule a switch from broadband to broadcast. It specifies the use of the broadband timeline, and the switch timestamp is 15 seconds. (Note: terminal may require up to 2 seconds advance notice, plus we allow an extra 100 ms to allow for Javascript execution time, so the call should be made before the timeline reaches 15 - 2 - 0.1 = 12.9 seconds. However, the currentTime property does not always return the current time, it returns the time that the currently-displayed video frame started being displayed, and video frames are displayed for 1 / 25fps = 40ms, and the currentTime property may only be updated every 100ms, so the current timeline time may be up to 40 + 100 = 140ms = 0.14 seconds later than currentTime returns. So we should make the API call if currentTime returns 12.9 - 0.14 = 12.76 seconds). If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be the empty string. The switch happens. If

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8110	1	Application performing multi-stream sync just before the switch time	TRUE	When the terminal is configured to do multi-stream synchronization, with the master media being MPEG-2 SD video (TEMI timeline) from broadcast, and presentation is started, and then later a HE-AAC MSE audio slave media is added, then the video and audio shall be presented in sync. Right after the MSE audio is added, the switchMediaPresentation() API is called to switch to broadband. If the terminal supports +TA_PROFILE_2019_2 then the "minimumSwitchPerformanceRequired" shall be "urn:hbbtv:ta:profile:2019:2", otherwise it shall be "urn:hbbtv:ta:profile:2019:1". If the terminal knows it will not meet the performance requirements due to the application still performing multi-stream synchronization, the API call returns a Promise that has already been resolved with "NoPerformanceProfileMet" and the switch does NOT happen and the broadband video is NOT displayed. Otherwise, the API call is successful and the switch happens successfully and the broadband video is displayed. The switch may or may not actually meet the performance requirements.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8120	1	Application rendering complex subtitles at the switch time	TRUE	The terminal is presenting static DASH broadband media containing audio, video and EBU-TT-D format subtitles. The switchMediaPresentation() API is called to switch to broadcast. The switch time shall be 15 seconds measured on the DASH period-relative timeline. If the terminal supports +TA_PROFILE_2019_2 then the "minimumSwitchPerformanceRequired" shall be "urn:hbbtv:ta:profile:2019:2", if the terminal supports +TA_PROFILE_2019_1 then the "minimumSwitchPerformanceRequired" shall be "urn:hbbtv:ta:profile:2019:1". The EBU-TT-D subtitles in the DASH media shall consist of a single line of text, until 14 seconds into the DASH media when they shall become extremely large and complex subtitles that change rapidly (but within the limits of the HbbTV specification). The complex subtitles shall continue until 16 seconds into the DASH media. The API call is successful and the switch happens successfully and the broadcast video is displayed. The switch may or may not actually meet the performance requirements.
org.hbbtv_TA8130	1	Sufficient memory for MSE playback and switch	TRUE	The terminal shall be able to successfully run a broadcast-related application that carries out the steps listed in section 10.1.3 of the HbbTV Targetted Advertising specification.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA8140	1	Third party cookies - Check Harness Configurations	TRUE	When testing a HbbTV Targeted Advertising terminal, you MUST NOT enable the +PRIV_DEFAULT_BLOCK_3RD_PARTY_COOKIES optional feature. This test only runs if your test harness configuration is wrong, and this test always fails. If you set up your optional features correctly, then the third party cookies test that is part of the core HbbTV specification test suite will be included in your test plan, instead of this one.
org.hbbtv_TA8150	1	LocalSystem - reading mute property when audio is unmuted	TRUE	Broadcast audio is playing. When the application reads the 'mute' property of the LocalSystem object, the property returns false. When the application attempts to set the 'mute' property to true of the LocalSystem object, the terminal might or might not throw an exception. The audio continues playing. When the application reads the 'mute' property of the LocalSystem object again, the property still returns false.
org.hbbtv_TA8155	1	LocalSystem - reading mute property when audio is muted	TRUE	Broadcast audio is not playing. When the application reads the 'mute' property of the LocalSystem object, the property returns true. When the application attempts to set the 'mute' property to false of the LocalSystem object, the terminal might or might not throw an exception. The audio is still not playing. When the application reads the 'mute' property of the LocalSystem object again, the property still returns true.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900101	1	Advert insertion: MPEG-2 + MPEG-1 L2 broadcast, PTS timeline, AVC + HE-AAC over Basic HTTP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing MPEG-2 576i50 SD video, MPEG-1 L2 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900109	1	Advert insertion: HEVC + MPEG-H broadcast, PTS timeline, AVC + HE-AAC over Basic HTTP, play to end of media	FALSE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900111	1	Advert insertion: HEVC + HE-AAC broadcast, PTS timeline, HEVC + HE-AAC over Basic HTTP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900113	1	Advert insertion: HEVC + AC-4 broadcast, PTS timeline, HEVC + AC-4 over Basic HTTP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and AC-4 audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900208	1	Advert insertion: HEVC + AC-4 broadcast, PTS timeline, AVC + HE-AAC over DASH static, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900303	1	Advert insertion: AVC + HE-AAC broadcast, PTS timeline, AVC + HE-AAC over DASH dynamic, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 576p25 SD video, HE-AAC audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900305	1	Advert insertion: AVC + AC-3 broadcast, PTS timeline, AVC + HE-AAC over DASH dynamic, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 720p25 HD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900309	1	Advert insertion: HEVC + MPEG-H broadcast, PTS timeline, AVC + HE-AAC over DASH dynamic, play to end of media	FALSE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900402	1	Advert insertion: MPEG-2 + AC-3 broadcast, PTS timeline, AVC + HE-AAC over MSE, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing MPEG-2 576i50 SD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900406	1	Advert insertion: HEVC + E-AC-3 broadcast, PTS timeline, AVC + HE-AAC over MSE, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900410	1	Advert insertion: HEVC + E-AC-3 broadcast, PTS timeline, HEVC + E-AC-3 over MSE, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and E-AC-3 audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900504	1	Advert insertion: AVC + E-AC-3 + TEMI-32 broadcast, AVC + HE-AAC over Basic HTTP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 50 ticks per second, AVC 720p25 HD video, E-AC-3 audio and DVB subtitles. The TEMI timeline starts at 1212456715 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900607	1	Advert insertion: HEVC + HE-AAC + TEMI-32 broadcast, AVC + HE-AAC over DASH static, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 50 ticks per second on the video PID, HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The TEMI timeline starts at 1212456715 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900702	1	Advert insertion: MPEG-2 + AC-3 + TEMI-32 broadcast, AVC + HE-AAC over DASH dynamic, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second, MPEG-2 576i50 SD video, AC-3 audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900801	1	Advert insertion: MPEG-2 + MPEG-1 L2 + TEMI-32 broadcast, AVC + HE-AAC over MSE, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second on a separate component, MPEG-2 576i50 SD video, MPEG-1 L2 audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900809	1	Advert insertion: HEVC + MPEG-H + TEMI-32 broadcast, AVC + HE-AAC over MSE, play to end of media	FALSE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900811	1	Advert insertion: HEVC + HE-AAC + TEMI-32 broadcast, HEVC + HE-AAC over MSE, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900908	1	Advert insertion: HEVC + AC-4 + TEMI-64 broadcast, AVC + HE-AAC over Basic HTTP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The TEMI timeline starts at 1800000000000 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900910	1	Advert insertion: HEVC + E-AC-3 + TEMI-64 broadcast, HEVC + E-AC-3 over Basic HTTP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The TEMI timeline starts at 1800000000000 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and E-AC-3 audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA900912	1	Advert insertion: HEVC + MPEG-H + TEMI-64 broadcast, HEVC + MPEG-H over Basic HTTP, play to end of media	FALSE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The TEMI timeline starts at 1800000000000 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and MPEG-H audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901001	1	Advert insertion: MPEG-2 + MPEG-1 L2 + TEMI-64 broadcast, AVC + HE-AAC over DASH static, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000 ticks per second on the video PID, MPEG-2 576i50 SD video, MPEG-1 L2 audio and DVB subtitles. The TEMI timeline starts at 1800000000000 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901104	1	Advert insertion: AVC + E-AC-3 + TEMI-64 broadcast, AVC + HE-AAC over DASH dynamic, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second, AVC 720p25 HD video, E-AC-3 audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901203	1	Advert insertion: AVC + HE-AAC + TEMI-64 broadcast, AVC + HE-AAC over MSE, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second on a separate component, AVC 576p25 SD video, HE-AAC audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901213	1	Advert insertion: HEVC + AC-4 + TEMI-64 broadcast, HEVC + AC-4 over MSE, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second, HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and AC-4 audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901302	1	Advert insertion: MPEG-2 + AC-3 broadcast, PTS timeline, AVC + HE-AAC over Basic HTTP, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing MPEG-2 576i50 SD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901304	1	Advert insertion: AVC + E-AC-3 broadcast, PTS timeline, AVC + HE-AAC over Basic HTTP, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 720p25 HD video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901308	1	Advert insertion: HEVC + AC-4 broadcast, PTS timeline, AVC + HE-AAC over Basic HTTP, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901310	1	Advert insertion: HEVC + E-AC-3 broadcast, PTS timeline, HEVC + E-AC-3 over Basic HTTP, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and E-AC-3 audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901312	1	Advert insertion: HEVC + MPEG-H broadcast, PTS timeline, HEVC + MPEG-H over Basic HTTP, play to broadband timestamp	FALSE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and MPEG-H audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901401	1	Advert insertion: MPEG-2 + MPEG-1 L2 broadcast, PTS timeline, AVC + HE-AAC over DASH static, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing MPEG-2 576i50 SD video, MPEG-1 L2 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901405	1	Advert insertion: AVC + AC-3 broadcast, PTS timeline, AVC + HE-AAC over DASH static, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 720p25 HD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901407	1	Advert insertion: HEVC + HE-AAC broadcast, PTS timeline, AVC + HE-AAC over DASH static, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901409	1	Advert insertion: HEVC + MPEG-H broadcast, PTS timeline, AVC + HE-AAC over DASH static, play to broadband timestamp	FALSE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901506	1	Advert insertion: HEVC + E-AC-3 broadcast, PTS timeline, AVC + HE-AAC over DASH dynamic, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901508	1	Advert insertion: HEVC + AC-4 broadcast, PTS timeline, AVC + HE-AAC over DASH dynamic, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901510	1	Advert insertion: HEVC + E-AC-3 broadcast, PTS timeline, HEVC + E-AC-3 over DASH dynamic, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and E-AC-3 audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901512	1	Advert insertion: HEVC + MPEG-H broadcast, PTS timeline, HEVC + MPEG-H over DASH dynamic, play to broadband timestamp	FALSE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and MPEG-H audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901601	1	Advert insertion: MPEG-2 + MPEG-1 L2 broadcast, PTS timeline, AVC + HE-AAC over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing MPEG-2 576i50 SD video, MPEG-1 L2 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901603	1	Advert insertion: AVC + HE-AAC broadcast, PTS timeline, AVC + HE-AAC over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 576p25 SD video, HE-AAC audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901605	1	Advert insertion: AVC + AC-3 broadcast, PTS timeline, AVC + HE-AAC over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 720p25 HD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901607	1	Advert insertion: HEVC + HE-AAC broadcast, PTS timeline, AVC + HE-AAC over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901609	1	Advert insertion: HEVC + MPEG-H broadcast, PTS timeline, AVC + HE-AAC over MSE, play to broadband timestamp	FALSE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901611	1	Advert insertion: HEVC + HE-AAC broadcast, PTS timeline, HEVC + HE-AAC over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901613	1	Advert insertion: HEVC + AC-4 broadcast, PTS timeline, HEVC + AC-4 over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and AC-4 audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901701	1	Advert insertion: MPEG-2 + MPEG-1 L2 + TEMI-32 broadcast, AVC + HE-AAC over Basic HTTP, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 50 ticks per second, MPEG-2 576i50 SD video, MPEG-1 L2 audio and DVB subtitles. The TEMI timeline starts at 1212456715 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901709	1	Advert insertion: HEVC + MPEG-H + TEMI-32 broadcast, AVC + HE-AAC over Basic HTTP, play to broadband timestamp	FALSE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 50 ticks per second, HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The TEMI timeline starts at 1212456715 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901713	1	Advert insertion: HEVC + AC-4 + TEMI-32 broadcast, HEVC + AC-4 over Basic HTTP, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 50 ticks per second, HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The TEMI timeline starts at 1212456715 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and AC-4 audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901802	1	Advert insertion: MPEG-2 + AC-3 + TEMI-32 broadcast, AVC + HE-AAC over DASH static, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 50 ticks per second, MPEG-2 576i50 SD video, AC-3 audio and DVB subtitles. The TEMI timeline starts at 1212456715 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901806	1	Advert insertion: HEVC + E-AC-3 + TEMI-32 broadcast, AVC + HE-AAC over DASH static, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 50 ticks per second, HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The TEMI timeline starts at 1212456715 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901903	1	Advert insertion: AVC + HE-AAC + TEMI-32 broadcast, AVC + HE-AAC over DASH dynamic, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second, AVC 576p25 SD video, HE-AAC audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901909	1	Advert insertion: HEVC + MPEG-H + TEMI-32 broadcast, AVC + HE-AAC over DASH dynamic, play to broadband timestamp	FALSE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA901911	1	Advert insertion: HEVC + HE-AAC + TEMI-32 broadcast, HEVC + HE-AAC over DASH dynamic, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902002	1	Advert insertion: MPEG-2 + AC-3 + TEMI-32 broadcast, AVC + HE-AAC over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second, MPEG-2 576i50 SD video, AC-3 audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902008	1	Advert insertion: HEVC + AC-4 + TEMI-32 broadcast, AVC + HE-AAC over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902010	1	Advert insertion: HEVC + E-AC-3 + TEMI-32 broadcast, HEVC + E-AC-3 over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and E-AC-3 audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902103	1	Advert insertion: AVC + HE-AAC + TEMI-64 broadcast, AVC + HE-AAC over Basic HTTP, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000 ticks per second, AVC 576p25 SD video, HE-AAC audio and DVB subtitles. The TEMI timeline starts at 1800000000000 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902105	1	Advert insertion: AVC + AC-3 + TEMI-64 broadcast, AVC + HE-AAC over Basic HTTP, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000 ticks per second, AVC 720p25 HD video, AC-3 audio and DVB subtitles. The TEMI timeline starts at 1800000000000 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902111	1	Advert insertion: HEVC + HE-AAC + TEMI-64 broadcast, HEVC + HE-AAC over Basic HTTP, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The TEMI timeline starts at 1800000000000 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the ISOBMFF composition time from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902208	1	Advert insertion: HEVC + AC-4 + TEMI-64 broadcast, AVC + HE-AAC over DASH static, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The TEMI timeline starts at 1800000000000 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902301	1	Advert insertion: MPEG-2 + MPEG-1 L2 + TEMI-64 broadcast, AVC + HE-AAC over DASH dynamic, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second, MPEG-2 576i50 SD video, MPEG-1 L2 audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902313	1	Advert insertion: HEVC + AC-4 + TEMI-64 broadcast, HEVC + AC-4 over DASH dynamic, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second, HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and AC-4 audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the DASH Period Relative timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902404	1	Advert insertion: AVC + E-AC-3 + TEMI-64 broadcast, AVC + HE-AAC over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second, AVC 720p25 HD video, E-AC-3 audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902406	1	Advert insertion: HEVC + E-AC-3 + TEMI-64 broadcast, AVC + HE-AAC over MSE, play to broadband timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second, HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902412	1	Advert insertion: HEVC + MPEG-H + TEMI-64 broadcast, HEVC + MPEG-H over MSE, play to broadband timestamp	FALSE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second, HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and MPEG-H audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast after the broadband content has played for 30 seconds, using the HTML5 media timeline from the broadband content. The same minimumSwitchPerformanceRequired value is used. The

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902606	1	Advert insertion: HEVC + E-AC-3 broadcast, PTS timeline, AVC + HE-AAC over DASH static, play to broadcast timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast 30s after the first switch time, using the same broadcast PTS timeline. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902610	1	Advert insertion: HEVC + E-AC-3 broadcast, PTS timeline, HEVC + E-AC-3 over DASH static, play to broadcast timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and E-AC-3 audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast 30s after the first switch time, using the same broadcast PTS timeline. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902701	1	Advert insertion: MPEG-2 + MPEG-1 L2 broadcast, PTS timeline, AVC + HE-AAC over DASH dynamic, play to broadcast timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing MPEG-2 576i50 SD video, MPEG-1 L2 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast 30s after the first switch time, using the same broadcast PTS timeline. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA902812	1	Advert insertion: HEVC + MPEG-H broadcast, PTS timeline, HEVC + MPEG-H over MSE, play to broadcast timestamp	FALSE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and MPEG-H audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast 30s after the first switch time, using the same broadcast PTS timeline. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903013	1	Advert insertion: HEVC + AC-4 + TEMI-32 broadcast, HEVC + AC-4 over DASH static, play to broadcast timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 50 ticks per second, HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The TEMI timeline starts at 1212456715 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and AC-4 audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast 30s after the first switch time, using the same broadcast TEMI timeline. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903108	1	Advert insertion: HEVC + AC-4 + TEMI-32 broadcast, AVC + HE-AAC over DASH dynamic, play to broadcast timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second on the video PID, HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast 30s after the first switch time, using the same broadcast TEMI timeline. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903205	1	Advert insertion: AVC + AC-3 + TEMI-32 broadcast, AVC + HE-AAC over MSE, play to broadcast timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 32-bit TEMI timeline that ticks with 1000 ticks per second on a separate component, AVC 720p25 HD video, AC-3 audio and DVB subtitles. The TEMI timeline starts at 2713945262 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast 30s after the first switch time, using the same broadcast TEMI timeline. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903302	1	Advert insertion: MPEG-2 + AC-3 + TEMI-64 broadcast, AVC + HE-AAC over Basic HTTP, play to broadcast timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000 ticks per second on a separate component, MPEG-2 576i50 SD video, AC-3 audio and DVB subtitles. The TEMI timeline starts at 1800000000000 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast 30s after the first switch time, using the same broadcast TEMI timeline. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903411	1	Advert insertion: HEVC + HE-AAC + TEMI-64 broadcast, HEVC + HE-AAC over DASH static, play to broadcast timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000 ticks per second, HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The TEMI timeline starts at 1800000000000 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast 30s after the first switch time, using the same broadcast TEMI timeline. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903607	1	Advert insertion: HEVC + HE-AAC + TEMI-64 broadcast, AVC + HE-AAC over MSE, play to broadcast timestamp	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second on the video PID, HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start at the beginning. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast 30s after the first switch time, using the same broadcast TEMI timeline. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903705	1	Advert insertion: AVC + AC-3 broadcast, PTS timeline, AVC + HE-AAC over Basic HTTP, start at RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 720p25 HD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start 20 seconds in, which is a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903707	1	Advert insertion: HEVC + HE-AAC broadcast, PTS timeline, AVC + HE-AAC over Basic HTTP, start at RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start 20 seconds in, which is a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903802	1	Advert insertion: MPEG-2 + AC-3 broadcast, PTS timeline, AVC + HE-AAC over DASH static, start at RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing MPEG-2 576i50 SD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start 20 seconds in, which is a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903803	1	Advert insertion: AVC + HE-AAC broadcast, PTS timeline, AVC + HE-AAC over DASH static, start at RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 576p25 SD video, HE-AAC audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start 20 seconds in, which is a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903812	1	Advert insertion: HEVC + MPEG-H broadcast, PTS timeline, HEVC + MPEG-H over DASH static, start at RAP, play to end of media	FALSE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and MPEG-H audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start 20 seconds in, which is a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA903901	1	Advert insertion: MPEG-2 + MPEG-1 L2 broadcast, PTS timeline, AVC + HE-AAC over DASH dynamic, start at RAP, play to end of media	FALSE	A broadcast-related HbbTV application starts in a service containing MPEG-2 576i50 SD video, MPEG-1 L2 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start 20 seconds in, which is a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904004	1	Advert insertion: AVC + E-AC-3 broadcast, PTS timeline, AVC + HE-AAC over MSE, start at RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 720p25 HD video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start 20 seconds in, which is a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904008	1	Advert insertion: HEVC + AC-4 broadcast, PTS timeline, AVC + HE-AAC over MSE, start at RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start 20 seconds in, which is a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904109	1	Advert insertion: HEVC + MPEG-H + TEMI-64 broadcast, AVC + HE-AAC over DASH static, start at RAP, play to end of media	FALSE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second, HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start 20 seconds in, which is a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904111	1	Advert insertion: HEVC + HE-AAC + TEMI-64 broadcast, HEVC + HE-AAC over DASH static, start at RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing a 64-bit TEMI timeline that ticks with 1000000000 ticks per second, HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The TEMI timeline starts at 362790672222874354 timeline ticks at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the TEMI timeline. The broadband content is HEVC 720p25 HD SDR video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start 20 seconds in, which is a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904205	1	Advert insertion: AVC + AC-3 broadcast, PTS timeline, AVC + HE-AAC over Basic HTTP, start at non-RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 720p25 HD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered by non-adaptive HTTP streaming. The broadband content is 60 seconds long and is requested to start 15.7 seconds in, which is not a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904305	1	Advert insertion: AVC + AC-3 broadcast, PTS timeline, AVC + HE-AAC over DASH static, start at non-RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 720p25 HD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start 15.7 seconds in, which is not a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904310	1	Advert insertion: HEVC + E-AC-3 broadcast, PTS timeline, HEVC + E-AC-3 over DASH static, start at non-RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and E-AC-3 audio, delivered static DASH streaming. The broadband content is 60 seconds long and is requested to start 15.7 seconds in, which is not a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904505	1	Advert insertion: AVC + AC-3 broadcast, PTS timeline, AVC + HE-AAC over MSE, start at non-RAP, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 720p25 HD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered using the HTML5 video element, Media Source Extensions and XMLHttpRequest. The broadband content is 60 seconds long and is requested to start 15.7 seconds in, which is not a RAP. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904605	1	Advert insertion: AVC + AC-3 broadcast, PTS timeline, AVC + HE-AAC over DASH dynamic, start at live edge, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing AVC 720p25 HD video, AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is AVC 720p25 HD video and HE-AAC audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the live edge. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904610	1	Advert insertion: HEVC + E-AC-3 broadcast, PTS timeline, HEVC + E-AC-3 over DASH dynamic, start at live edge, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, E-AC-3 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and E-AC-3 audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the live edge. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904611	1	Advert insertion: HEVC + HE-AAC broadcast, PTS timeline, HEVC + HE-AAC over DASH dynamic, start at live edge, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, HE-AAC audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and HE-AAC audio, delivered dynamic DASH streaming. During the switch time at least 60 seconds of the broadband content is available and at least 40 seconds is not available. The broadband content is requested to start at the live edge. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904612	1	Advert insertion: HEVC + MPEG-H broadcast, PTS timeline, HEVC + MPEG-H over DASH dynamic, start at live edge, play to end of media	FALSE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, MPEG-H audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and MPEG-H audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the live edge. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TA904613	1	Advert insertion: HEVC + AC-4 broadcast, PTS timeline, HEVC + AC-4 over DASH dynamic, start at live edge, play to end of media	TRUE	A broadcast-related HbbTV application starts in a service containing HEVC 720p25 HD SDR video, AC-4 audio and DVB subtitles. The PTS starts at 4958860037 at the start of the broadcast stream. The application requests a broadcast to broadband switch 20s into the future using the PTS timeline. The broadband content is HEVC 720p25 HD SDR video and AC-4 audio, delivered dynamic DASH streaming. The broadband content is 60 seconds long and is requested to start at the live edge. If the terminal supports +TA_PROFILE_2019_2 then the minimumSwitchPerformanceRequired shall be "urn:hbbtv:ta:profile:2019:2", otherwise if the terminal supports +TA_PROFILE_2019_1 then it shall be "urn:hbbtv:ta:profile:2019:1", otherwise it shall be an empty string. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. When the switch has completed, the application requests a switch from broadband back to broadcast when the end of the broadband content is reached. The same minimumSwitchPerformanceRequired value is used. The switch happens. If minimumSwitchPerformanceRequired is non-empty, then the switch happens at the specified time (within the accuracy for the requested profile) and within the duration for the requested profile. Presentation of the broadcast video and audio and (if

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TEMPORAL-LAYERS0010	1	HEVC temporal layers - non-HFR terminal can play standard frame rate base layer	FALSE	When the terminal loads an HbbTV Application including an HTML5 media object whose media source is initialized with a static DVB DASH 2017-profile MPD containing a single AdaptationSet containing a single HEVC UHD 50Hz video representation formed by taking the base temporal layer from a dual-layer 100Hz video encoding, and the Representation element has a urn:dvb:dash:highest_temporal_id:2017 SupplementalProperty descriptor containing the value of the base temporal layer, and the @codecs attribute correctly indicates the profile and level required to decode the base layer, either the HTML5 video element contains no video tracks, or 50Hz video is played back without artifacts or glitches.
org.hbbtv_TEMPORAL-LAYERS0020	1	HEVC temporal layers - HFR terminal can play high frame rate representation consisting of two temporal layers	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object whose media source is initialized with a static 2017-profile DVB DASH MPD defining a stream containing a single HEVC UHD 100Hz video representation consisting of two temporal layers, and the Representation element has a urn:dvb:dash:highest_temporal_id:2017 SupplementalProperty descriptor containing the value of the higher temporal layer, and the @codecs attribute correctly indicates the profile and level required to decode the higher layer, 100Hz video is played back without artifacts or glitches.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TLS2000	1	TLS handshake - version 1.3 and mandatory cipher suite	TRUE	When an application requests a resource using an https URL, the terminal sends a TLS 1.3 ClientHello handshake message that has (i) a legacy_version with major=3 and minor=3, (ii) a supported_versions extension that contains at least versions 0x0303 and 0x0304, and (iii) at least the cipher suite value {0x13,0x01}.
org.hbbtv_TLS2010	1	TLS handshake - version 1.3 mandatory extensions, signature algorithms and groups	TRUE	When an application requests a resource using an https URL, the terminal sends a TLS 1.3 ClientHello handshake message that includes (i) the server_name extension and the ServerNameList includes one entry of type host_name in which the name field contains the host name from the https URL used, (ii) the supported_groups extension in which the NamedGroupList includes identifiers 0x0017 and 0x0018 and (iii) the signature_algorithms extension in which the SignatureSchemeList includes identifiers 0x0401, 0x0501, 0x0403, 0x0503, 0x0804, 0x0805 and (iv) a key_share extension. If a signature_algorithms_certificate extension is present then it includes at least the algorithms 0x0401, 0x0501, 0x0403, 0x0503, 0x0804, 0x0805.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TLS2020	1	TLS server authentication success - TLS 1.3 server, valid cert, CA in trust list, ECDSA cert SHA-256, exact match on subjectAltName, no match on CN	TRUE	When an application requests a resource using an https URL, and the server supports TLS 1.3 and not any other version, and the server presents a valid certificate chain issued by a CA that is in the HbbTV root certificate list and the root certificate has an ECDSA key and the intermediate and end entity certificates use the ecdsa_secp256r1_sha256 or ecdsa_secp384r1_sha384 signature algorithms and the server certificate contains a subjectAltName extension containing a dNSName value equal to the domain name used in the https URL, and the subject CN is not equal to the domain name used in the https URL, then the request succeeds.
org.hbbtv_TLS2030	1	TLS handshake - application layer protocol support for HTTP 1.1 and HTTP 2	TRUE	When an application requests a resource using an https URL, the terminal sends a TLS ClientHello handshake message that includes the application_layer_protocol_negotiation extension and the protocol list includes both "http/1.1" and "h2" with "h2" listed before "http/1.1".
org.hbbtv_TLS2100	1	TLS and HTTP/2 - successful request - page load	TRUE	When an application loads an HTML page from an https URL referencing a server that supports HTTP/2 but not HTTP/1.1, the page load succeeds.
org.hbbtv_TLS2110	1	TLS and HTTP/2 - successful request - XHR	TRUE	When an application loads content using the XMLHttpRequest API from an https URL referencing a server that supports HTTP/2 but not HTTP/1.1, the request succeeds and the correct content is returned to the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TLS2120	1	TLS and HTTP/2 - successful request - first page load	TRUE	When the terminal starts an application whose first page is obtained using an https URL referencing a server that supports HTTP/2 but not HTTP/1.1, the page load succeeds and the application starts.
org.hbbtv_TTS0010	1	Focus of non-interactive element using tabindex	TRUE	When the current page contains three div elements with the first having tabindex="0" and the second and third having tabindex="-1", then when the application calls focus() on the second element, a focus event fires for the second element.
org.hbbtv_TTS0020	1	TTS description for newly focussed element	TRUE	When the current page contains three div elements with tabindex="0" and the second of which has the autofocus attribute, then when the application sets the focus to the third element, a description of the third element is heard.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TTS0030	1	TTS navigation of structural mark-up using ARIA landmark roles	FALSE	The body element of the page contains a sequence of div elements in which every other element has a role attribute and the div elements with role attributes have the following roles in sequence: banner, navigation, main, region, complementary, contentinfo. Within the div with role navigation and the div with role complementary, there are three divs of which the second has the role list and contains two divs with role listitem each containing two divs with no role. Within the div with role main, there is a sequence of div elements in which every other element has role heading. Each div contains unique text. When the user uses the terminal's structural navigation functions, they can navigate to each element that has a role element. Following each navigation movement, a description of an appropriate element with a role attribute is heard first and if a description of any element without a role attribute is heard, this only occurs afterwards.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TTS0040	1	TTS navigation of structural mark-up using elements	FALSE	The body element of the page contains a sequence of elements in which every other element is a div element and the intervening elements comprise the following: header, nav, main, section, aside, footer. The nav element contains a ul element with two li elements within it each containing two div elements each. The aside element contains an ol element with two li elements within it containing two div elements each. The main element contains a sequence of elements in which every other element is a div element and the intervening elements comprise the following: h1, h2, h2, h3, h4, h5, h6, h2. Each element contains unique text. The section element has a title attribute containing unique text. When the user uses the terminal's structural navigation functions, they can navigate to each element that is not a div. Following each navigation movement, a description of an appropriate element that is not a div is heard first and if a description of a div element is heard, this only occurs afterwards.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TTS0050	1	TTS description for ARIA roles	TRUE	The body element of the page contains a sequence of div elements with roles button, dialog, grid, link, list, tablist, tabpanel. The element with role grid contains a div element with role row containing a div element with role gridcell. The element with role list contains a div element with role listitem. The element with role tablist contains a div element with role tab. Each div has an aria-label attribute and all of the aria-label attributes apply identical label text. When focus moves to each div element in turn, the spoken description of each element is different.
org.hbbtv_TTS0060	1	TTS description for HTML elements	TRUE	The body element of the page contains a sequence of the following elements: button, table, a, ul. The table element has a role attribute with value grid and contains a tr element containing a td element. The ul element contains an li element. The a element has an href attribute containing a valid URL. Each element contains the same text. When focus moves to each element in turn, the spoken description of each element is different.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TTS0080	1	TTS description of button reflects properties and states	TRUE	The body element of the page contains four div elements, A, B, C and D, with role="button" and tabindex="0". All four div elements contain the same text string. Element A has aria-disabled="true"; B has aria-pressed="true"; C has aria-pressed="false" and D has no other ARIA properties or states. When each element is focussed in turn, the spoken description of each one is different from all of the others.
org.hbbtv_TTS0090	1	TTS description of div reflects properties	TRUE	The body element of the page contains four div elements, A, B, C and D, with role="link" and a div element E with no role. B, C and D have tabindex="0". E has style="visibility:hidden". Elements A-D contain the same text string; element E contains different text. Element A has aria-hidden="true"; B has aria-label set to a string that is different from the element's text; C has aria-labelledby set to the id of E, D has aria-label set to a string that is different from the element's text and aria-describedby set to the id of E. When the page loads and subsequently during the test, none of the text contained within elements A, B, C or D is heard. When element B is focussed, the spoken description includes the label of B. When element C is focussed, the spoken description includes the text within E. When element D is focussed, the spoken description includes the label of D and the text within E.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_TTS0100	1	TTS description of tab reflects state	TRUE	The body element of the page contains two div elements A and B with role="tablist". A contains two div elements A1 and A2. B contains two div elements B1 and B2. A1, A2, B1 and B2 have role="tab". A1 and B1 have tabindex="0". A2 and B2 have tabindex="-1". A1 and B2 have aria-selected="false". A2 and B1 have aria-selected="true". A1 and B1 contain the same text. When elements A1 and B1 are focussed in turn, the spoken descriptions of the two are different.
org.hbbtv_TTS0110	1	TTS description for aria-live	TRUE	The body element of a page contains two div elements A and B each with role="region". A has aria-live="polite" and contains a further div A1 containing initial text. B has aria-live="assertive" and contains a further div B1 containing initial text. After any initial spoken description of the page has finished, when the text contents of A1 is changed, a description of the new A1 text is heard and when the text contents of B1 is changed, a description of the new B1 text is heard.
org.hbbtv_UHD-DRM-HDCP-0010	1	DASH PQ10 (without Optional Supplemental Enhancement Information) HEVC, Main 10, Level 5.1, 50 FPS Clearkey protected content is protected by HDCP when passed through HDMI output	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object which media source is initialized with a static MPD defining a stream containing AAC audio and HEVC-encoded 3840x2160p 50fps PQ10 HDR format video content protected with the "Clear Key" System the media shall be passed through the HDMI output of the device with HDCP 2.2 enabled.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-DRM-HDCP-0020	1	DASH HLG10 HEVC, Main 10, Level 5.1, 50 FPS Clearkey protected content is protected by HDCP 2.2 when passed through HDMI output	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object which media source is initialized with a static MPD defining a stream containing AAC audio and HEVC-encoded 3840x2160p 50fps HLG10 HDR format video content protected with the "Clear Key" System the media shall be passed through the HDMI output of the device with HDCP 2.2 enabled.
org.hbbtv_UHD-HFR-AC4-0010	2	HTML5 static video element displaying DASH HEVC PQ10 with Temporal Layers with a higher frame rate (HFR) 100fps at Main 10, Level 5.1 and AC-4 audio content at matching framerate	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object which references a static MPD defining a stream containing AC-4 audio and DASH HEVC PQ10 with Temporal Layers with a higher frame rate (HFR) 100fps format video content with BT.2020 colour space and framerate matching audio content, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
org.hbbtv_UHD-HFR-ADINS0010	1	HTML5 mid-roll advert insertion, DASH HFR HEVC, Main 10, Level 5.2 and AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH HFR HEVC, Main 10, Level 5.2 media is paused, and a second HTML5 media element with pre-buffered DASH HE-AAC/AVC_HD_25 media is played in its entirety, and then the playing of the previous DASH media is resumed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HFR-BROADBAND0010	1	UHD HFR broadband capability is not present when not supported	TRUE	When an HbbTV application queries the xmlCapabilities, no video_profile element with name="MP4_HEVC_UHD_HFR_25_HEAAC_EBUTTD", type="video/mp4" and transport="dash" is present in the document returned, with or without a sync_tl or hdr attribute.
org.hbbtv_UHD-HFR-BROADBAND0020	1	HFR terminal plays 100Hz representations from DASH MPD when HFR HLG10 broadband capability is supported	TRUE	When an HbbTV application queries the xmlCapabilities, a <video_profile name="MP4_HEVC_UHD_HFR_25_HEAAC_EBUTTD" type="video/mp4" transport="dash" sync_tl="dash_pr" hdr="urn:dvb:dash:bitstream:video:hdr_hlg10"/> element is present in the document returned, and when the terminal loads an HbbTV Application including an HTML5 media object whose media source is initialized with a static 2017-profile DVB DASH MPD defining a stream containing an HEVC UHD HLG10 100Hz video representation (using only a single temporal layer), given sufficient network bandwidth, the 100Hz video is played back without artifacts or glitches and the video is presented or output in HDR mode.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HFR-BROADBAND0030	1	HFR terminal plays 100Hz representations from DASH MPD when HFR PQ10 broadband capability is supported	TRUE	When an HbbTV application queries the xmlCapabilities, a <video_profile name="MP4_HEVC_UHD_HFR_25_HEAAC_EBUTTD" type="video/mp4" transport="dash" sync_tl="dash_pr" hdr="urn:dvb:dash:bitstream:video:hdr_pq10"/> element is present in the document returned, and when the terminal loads an HbbTV Application including an HTML5 media object whose media source is initialized with a static 2017-profile DVB DASH MPD defining a stream containing an HEVC UHD PQ10 100Hz video representation (using only a single temporal layer), given sufficient network bandwidth, the 100Hz video is played back without artifacts or glitches and the video is presented or output in HDR mode.
org.hbbtv_UHD-HFR-BROADBAND0040	1	Non-HFR terminal ignores 100Hz representations from DASH MPD	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object whose media source is initialized with a static DVB DASH 2017-profile MPD containing a single AdaptationSet containing an HEVC UHD 50Hz video representation (with a single temporal layer) and an HEVC UHD 100Hz video representation (with a single temporal layer), either the HTML5 video element contains no video tracks, or despite sufficient network bandwidth for the 100Hz representation to be downloaded, only the 50Hz video is played back, and without artifacts or glitches.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HFR-BROADBAND0050	1	Terminal supporting broadcast HFR supports DASH HFR	TRUE	When an HbbTV application queries the xmlCapabilities, a video_profile element with name="MP4_HEVC_UHD_HFR_25_HEAAC_EBUTTD", type="video/mp4" and transport="dash" is present in the document returned.
org.hbbtv_UHD-HFR-CLEARKEY0010	1	UHD HFR playback with EME ClearKey decryption	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object whose media source is initialized with a static DASH MPD defining a stream containing "cenc"-encrypted HEVC-encoded 3840x2160p 100fps HFR video encoded at 50 Mbps, "cenc"-encrypted AAC audio, and the application provides decryption keys via the EME Clear Key mechanism when required, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
org.hbbtv_UHD-HFR-HTML5-ACTIONS0010	1	Pause HFR UHD HEVC video HTML5 MPEG DASH media element	TRUE	Pausing the playback of a HTML5 MPEG DASH media element referencing HFR UHD HEVC that is currently playing, shall cause the video to freeze and the audio to suspend.
org.hbbtv_UHD-HFR-HTML5-ACTIONS0020	1	Playback of paused HFR UHD HEVC video HTML5 MPEG DASH media element from next IDR	TRUE	When resuming the playback of a HTML5 MPEG DASH media element referencing HFR UHD HEVC that has previously been paused, the terminal shall start playback at or before the IDR following the pause position, preferably from the next frame following the pause position.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HFR-PERIOD-TRANS0010	1	Period boundary transitions: HEVC UHD HFR to HEVC UHD SFR period continuous	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing two Periods, each containing an HEVC UHD video AdaptationSet with the same AdaptationSet@id value, each containing an AAC audio AdaptationSet with a second AdaptationSet@id value, and each of the AdaptationSets in the second Period carrying a SupplementalProperty descriptor with @schemeIdUri set to urn:dvb:dash:period_continuity:2014 and @value matching the Period@id attribute of the first Period, and the Periods meeting the signalling and content constraints for period continuity. The first period has 100Hz video and the second period has 50Hz video. Video and audio is played back seamlessly through the period boundary without artifacts or glitches.
org.hbbtv_UHD-HFR-PERIOD-TRANS0020	1	Period boundary transitions: HEVC UHD HFR to AVC/AAC	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing a period containing HEVC UHD HFR media followed by a period containing AVC_HD_25 media, both with AAC audio. Video and audio from both periods is played back in its entirety without artifacts or glitches and the transition is successful.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HFR-PERIOD-TRANS0030	1	Period boundary transitions: AVC/AAC to HEVC UHD HFR	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing a period containing AVC_HD_25 media followed by a period containing HEVC UHD HFR media, both with AAC audio. Video and audio from both periods is played back in its entirety without artifacts or glitches and the transition is successful.
org.hbbtv_UHD-HFR-SEEKACCURACY0010	1	Seek to start of HFR media segment in live period	TRUE	An application starts HFR UHD DASH content playing and then seeks to a location that is in a live period and is identifiable from the MPD as being the start of a video media segment. The seek is frame accurate. The position reported by the media player API reports the true media position after the seek.
org.hbbtv_UHD-HFR-SEEKACCURACY0030	1	Seek to other positions in HFR DASH content - live period - nearest position before target	FALSE	An application starts HFR DASH content playback and then seeks to a position that is in a live Period but not identifiable from the MPD as being the start of a HFR media segment and where the nearest position that is identifiable is before the target position but after the current position. Either the seek shall be frame accurate or the seek shall navigate the media position to that nearest position. The position reported by the media player API reports the true media position after the seek.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HLG10-AC4-0010	2	HTML5 static video element displaying DASH HLG10 HEVC, Main 10, Level 5.1, 50 FPS video and AC-4 audio content at matching framerate	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object which references a static MPD defining a stream containing AC-4 audio and HEVC-encoded 3840x2160p HLG10 HDR format video content with BT.2020 colour space, both @50fps, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
org.hbbtv_UHD-HLG10-ADINS0010	1	HTML5 mid-roll advert insertion, DASH HLG10 HEVC, Main 10, Level 5.1 and AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH HLG10 HEVC, Main 10, Level 5.1 media is paused, and a second HTML5 media element with pre-buffered DASH HE-AAC/AVC_HD_25 media is played in its entirety, and then the playing of the previous DASH media is resumed.
org.hbbtv_UHD-HLG10-ADINS0020	1	HTML5 mid-roll advert insertion, DASH HLG10 HEVC, Main 10, Level 5.1 and HEVC_UHD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH HLG10 HEVC, Main 10, Level 5.1 media is paused, and a second HTML5 media element with pre-buffered DASH HE-AAC/HEVC_UHD_25 media is played in its entirety, and then the playing of the previous DASH media is resumed.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HLG10-BROADBAND0010	1	UHD HLG10 broadband capability is not present when not supported	TRUE	When an HbbTV application queries the xmlCapabilities, no <video_profile name="MP4_HEVC_UHD_25_HEAAC_EBUTTD" type="video/mp4" transport="dash" sync_tl="dash_pr" hdr="urn:dvb:dash:bitstream:video:hdr_hlg10"/> element is present in the document returned.
org.hbbtv_UHD-HLG10-BROADBAND0020	1	UHD HLG10 is indicated and plays in HDR mode when HLG10 broadband capability is supported	TRUE	When an HbbTV application queries the xmlCapabilities, a <video_profile name="MP4_HEVC_UHD_25_HEAAC_EBUTTD" type="video/mp4" transport="dash" sync_tl="dash_pr" hdr="urn:dvb:dash:bitstream:video:hdr_hlg10"/> element is present in the document returned, and when a stream defined by a static DASH MPD containing HLG10 UHD HEVC media with AAC audio is played using an HTML5 video element, video and audio is played back without artifacts or glitches and the video is presented or output in HDR mode.
org.hbbtv_UHD-HLG10-BROADBAND0030	1	UHD is indicated and UHD HLG10 plays when UHD (SDR) broadband capability is supported	TRUE	When an HbbTV application queries the xmlCapabilities, a <video_profile name="MP4_HEVC_UHD_25_HEAAC_EBUTTD" type="video/mp4" transport="dash" sync_tl="dash_pr"/> element is present in the document returned, and when a stream defined by a static DASH MPD containing HLG10 UHD HEVC media with AAC audio is played using an HTML5 video element, video and audio is played back without artifacts or glitches.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HLG10-BROADCAST0010	1	UHD (SDR) broadcast capability is not present when not supported	TRUE	When an HbbTV application queries the xmlCapabilities, no <broadcast>urn:dvb:broadcast:ird:video:HEVC_UHDTV_IRD</broadcast> element is present in the document returned.
org.hbbtv_UHD-HLG10-BROADCAST0020	1	UHD HLG10 broadcast capability is not present when not supported	TRUE	When an HbbTV application queries the xmlCapabilities, no <broadcast>urn:dvb:broadcast:ird:video:HEVC_HDR_UHDTV_IRD_using_HLG10</broadcast> element is present in the document returned.
org.hbbtv_UHD-HLG10-BROADCAST0030	1	UHD is indicated and UHD HLG10 plays when UHD (SDR) broadcast capability is supported	TRUE	When an HbbTV application queries the xmlCapabilities, a <broadcast>urn:dvb:broadcast:ird:video:HEVC_UHDTV_IRD</broadcast> element is present in the document returned, and when a broadcast service using HLG10 UHD HEVC video and AAC audio is selected, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
org.hbbtv_UHD-HLG10-BROADCAST0040	1	UHD HLG10 is indicated and plays in HDR mode when HLG10 broadcast capability is supported	TRUE	When an HbbTV application queries the xmlCapabilities, a <broadcast>urn:dvb:broadcast:ird:video:HEVC_HDR_UHDTV_IRD_using_HLG10</broadcast> element is present in the document returned, and when a broadcast service using HLG10 UHD HEVC video and AAC audio is selected, the media shall be correctly presented or output by the terminal in HDR mode and the playback shall be smooth and contain no decoding artifacts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HLG10-CLEARKEY0010	1	UHD HLG10 playback with EME ClearKey decryption	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object whose media source is initialized with a static DASH MPD defining a stream containing "cenc"-encrypted HEVC-encoded 3840x2160p 50fps HLG10 HDR format video encoded at 38 Mbps, "cenc"-encrypted AAC audio, and the appplication provides decryption keys via the EME Clear Key mechanism when required, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
org.hbbtv_UHD-HLG10-HTML5-ACTIONS0010	1	Pause HLG10 UHD HEVC video HTML5 MPEG DASH media element	TRUE	Pausing the playback of a HTML5 MPEG DASH media element referencing HLG10 UHD HEVC that is currently playing, shall cause the video to freeze and the audio to suspend.
org.hbbtv_UHD-HLG10-HTML5-ACTIONS0020	1	Playback of paused HLG10 UHD HEVC video HTML5 MPEG DASH media element from next IDR	FALSE	When resuming the video playback of a HTML5 MPEG DASH media element referencing HLG10 UHD HEVC that has previously been paused, the terminal shall start video playback at or before the IDR following the pause position, preferably from the next frame following the pause position.
org.hbbtv_UHD-HLG10-OVERLAY0010	1	UHD HLG10 overlaid by opaque graphics	TRUE	When an HbbTV application presents HLG10 UHD HEVC DASH content using an HTML5 video element and the video element is overlaid with text and graphics in pure white rgb(255, 255, 255) colour on an opaque black rgb(0, 0, 0) background, the text and graphics are visible and readable and the video cannot be seen through the black background of the graphics.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HLG10-OVERLAY0020	1	UHD HLG10 overlaid by semi-transparent graphics	TRUE	When an HbbTV application presents HLG10 UHD HEVC DASH content using an HTML5 video element and the video element is overlaid with graphics in 50% transparent white rgba(255, 255, 255, 0.5) and 50% transparent black rgba(0, 0, 0, 0.5), the graphics are visible and the video can be seen beneath.
org.hbbtv_UHD-HLG10-OVERLAY0030	1	UHD HLG10 with subtitles	TRUE	When an HbbTV application presents HLG10 UHD HEVC DASH content with EBU-TT-D subtitles using an HTML5 video element and the subtitles include the colours "#ffffff", "#ffff00", "#00ffff", "#00ff00" on a black background "#000000", the subtitles are visible and readable and the video cannot be seen beneath the black background.
org.hbbtv_UHD-HLG10-PERIOD-TRANS0010	1	Period boundary transitions: UHD HLG10 to AVC/AAC	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing a period containing HLG10 UHD HEVC media followed by a period containing AVC_HD_25 media, both with AAC audio. Video from both periods is played back in its entirety without artifacts or glitches and the transition is successful.
org.hbbtv_UHD-HLG10-PERIOD-TRANS0020	1	Period boundary transitions: AVC/AAC to UHD HLG10	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing a period containing AVC_HD_25 media followed by a period containing HLG10 UHD HEVC media, both with AAC audio. Video and audio from both periods is played back in its entirety without artifacts or glitches and the transition is successful.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HLG10-PERIOD-TRANS0030	1	Period boundary transitions: UHD HLG10 continuous	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing two Periods, each containing an HLG10 HEVC video AdaptationSet with the same AdaptationSet@id value, each containing an AAC audio AdaptationSet with a second AdaptationSet@id value, and each of the AdaptationSets in the second Period carrying a SupplementalProperty descriptor with @schemeIdUri set to urn:dvb:dash:period_continuity:2014 and @value matching the Period@id attribute of the first Period, and the Periods meeting the signalling and content constraints for period continuity. Video and audio is played back seamlessly through the period boundary without artifacts or glitches.
org.hbbtv_UHD-HLG10-PERIOD-TRANS0040	1	Period boundary transitions: UHD HLG10 to HEVC SDR/AAC	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing a period containing HLG10 UHD HEVC media followed by a period containing SDR UHD HEVC media, both with AAC audio. Video and audio from both periods is played back in its entirety without artifacts or glitches and the transition is successful.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HLG10-PERIOD-TRANS0050	1	Period boundary transitions: HEVC SDR/AAC to UHD HLG10	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing a period containing SDR UHD HEVC media followed by a period containing HLG10 UHD HEVC media, both with AAC audio. Video and audio from both periods is played back in its entirety without artifacts or glitches and the transition is successful
org.hbbtv_UHD-HLG10-SEEKACCURACY0010	1	Seek to start of HLG10 media segment in live period	TRUE	An application starts HLG10 UHD DASH content playing and then seeks to a location that is in a live period and is identifiable from the MPD as being the start of a video media segment. The seek is frame accurate. The position reported by the media player API reports the true media position after the seek.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-HLG10-SEEKACCURACY0030	1	Seek to other positions in HLG10 DASH content - live period - nearest position before target	FALSE	An application starts HLG10 DASH content playback and then seeks to a target position. The target position is in a live Period. The target position is the start of a video frame but not the start of an audio frame. The target position is not identifiable from the MPD as being the start of a HLG10 media segment. The nearest position that is identifiable is before the target position but after the current position. One of the following shall occur: i) the seek shall be frame accurate ii) the seek shall navigate the media position to that nearest position iii) the seek shall navigate to the start of the audio frame at the target position, or iv) the seek shall navigate to the start of the audio frame following the one at the target position. The position reported by the media player API reports the true media position after the seek.
org.hbbtv_UHD-PQ10-AC4-0010	2	HTML5 static video element displaying DASH PQ10 HEVC, Main 10, Level 5.1, 50 FPS video and AC-4 audio content at matching framerate	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object which references a static MPD defining a stream containing AC-4 audio and HEVC-encoded 3840x2160p PQ10 HDR format video content with BT.2020 colour space, both @50fps, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-PQ10-ADINS0001	3	HTML5 mid-roll advert insertion, DASH PQ10 HEVC, Main 10, Level 5.1 and AVC_HD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH PQ10 HEVC, Main 10, Level 5.1 media is paused, and a second HTML5 media element with DASH with HE-AAC/AVC_HD_25 media is played in its entirety, and then the playing of the previous DASH media is resumed.
org.hbbtv_UHD-PQ10-ADINS0002	3	HTML5 mid-roll advert insertion, DASH PQ10 HEVC, Main 10, Level 5.1 and HEVC_UHD_25	TRUE	Content is presented without artefacts or glitches when a currently playing HTML5 media element referencing DASH PQ10 HEVC, Main 10, Level 5.1 media is paused, and a second media element with DASH HE-AAC/HEVC_UHD_25 media is played in its entirety, and then the playing of the previous DASH media is resumed.
org.hbbtv_UHD-PQ10-BROADBAND0010	1	UHD PQ10 broadband capability reported correctly and UHD PQ10 media presented	TRUE	When an HbbTV application queries the xmlCapabilities a <video_profile name="MP4_HEVC_UHD_25_HEAAC_EBUTTD" type="video/mp4" transport="dash" sync_tl="dash_pr" hdr="urn:dvb:dash:bitstream:video:hdr_pq10"/> element is present in the document returned. When play() is called on an HTMLVideoElement referencing an MPD containing UHD PQ10 video, the video is presented correctly.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-PQ10-BROADBAND0020	1	UHD PQ10 broadband capability reported correctly	TRUE	When an HbbTV application queries the xmlCapabilities a <video_profile name="MP4_HEVC_UHD_25_HEAAC_EBUTTD" type="video/mp4" transport="dash" sync_tl="dash_pr" hdr="urn:dvb:dash:bitstream:video:hdr_pq10"/> element is not present in the document returned.
org.hbbtv_UHD-PQ10-BROADCAST0020	1	UHD PQ10 broadcast capability reported correctly and UHD PQ10 media presented	TRUE	"When an HbbTV application queries the xmlCapabilities a <broadcast>urn:dvb:broadcast:ird:video:HEVC_HDR_UHDTV_IRD_using_PQ10</broadcast> element is present in the document returned, and when a broadcast service using PQ10 UHD HEVC video is selected, the video is presented correctly."
org.hbbtv_UHD-PQ10-BROADCAST0040	1	UHD PQ10 broadcast capability reported correctly	TRUE	When an HbbTV application queries the xmlCapabilities a <broadcast>urn:dvb:broadcast:ird:video:HEVC_HDR_UHDTV_IRD_using_PQ10</broadcast> element is not present in the document returned.
org.hbbtv_UHD-PQ10-HTML5-ACTIONS0010	1	Pause PQ10 UHD HEVC video HTML5 MPEG DASH media element	TRUE	Pausing the playback of a HTML5 MPEG DASH media element referencing PQ10 UHD HEVC that is currently playing, shall cause the video to freeze and the audio to suspend.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-PQ10-HTML5-ACTIONS0020	1	Playback of paused PQ10 UHD HEVC video HTML5 MPEG DASH media element from next IDR	FALSE	When resuming the video playback of a HTML5 MPEG DASH media element referencing PQ10 UHD HEVC that has previously been paused, the terminal shall start video playback at or before the IDR following the pause position, preferably from the next frame following the pause position.
org.hbbtv_UHD-PQ10-NOT-SUPPORTED	1	Play an alternative video Representation if PQ10 is not supported.	TRUE	The DASH MPD contains in the same Period an Adaptation Set with PQ10 UHD HEVC media and Role@value set to "main", and a second Adaptation Set with AVC_HD_25 media and Role@value not set to "main". A terminal that doesn´t support PQ10 shall playback the AVC_HD_25 media Representation.
org.hbbtv_UHD-PQ10-OVERLAY0010	1	UHD PQ10 overlaid by opaque graphics	TRUE	When an HbbTV application presents PQ10 UHD HEVC DASH content using an HTML5 video element and the video element is overlaid with text and graphics in pure white rgb(255, 255, 255) colour on an opaque black rgb(0, 0, 0) background, the text and graphics are visible and readable and the video cannot be seen through the black background of the graphics.
org.hbbtv_UHD-PQ10-OVERLAY0020	1	UHD PQ10 overlaid by semi-transparent graphics	TRUE	When an HbbTV application presents PQ10 UHD HEVC DASH content using an HTML5 video element and the video element is overlaid with graphics in 50% transparent white rgba(255, 255, 255, 0.5) and 50% transparent black rgba(0, 0, 0, 0.5), the graphics are visible and the video can be seen beneath.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-PQ10-OVERLAY0030	1	UHD PQ10 with subtitles	TRUE	When an HbbTV application presents PQ10 UHD HEVC DASH content with EBU-TT-D subtitles using an HTML5 video element and the subtitles include the colours "#ffffff", "#ffff00", "#00ffff", "#00ff00" on a black background "#000000", the subtitles are visible and readable and the video cannot be seen beneath the black background.
org.hbbtv_UHD-PQ10-PERIOD-TRANS0010	1	Period boundary transitions: UHD PQ10 to AVC/AAC	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing a period containing PQ10 UHD HEVC media followed by a period containing AVC_HD_25 media, both with AAC audio. Video and audio from both periods is played back in its entirety without artifacts or glitches and the transition is successful.
org.hbbtv_UHD-PQ10-PERIOD-TRANS0020	1	Period boundary transitions: AVC/AAC to UHD PQ10	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing a period containing AVC_HD_25 media followed by a period containing PQ10 UHD HEVC media, both with AAC audio. Video and audio from both periods is played back in its entirety without artifacts or glitches and the transition is successful.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-PQ10-PERIOD-TRANS0030	1	Period boundary transitions: UHD PQ10 continuous	TRUE	The terminal shall correctly decode and display video content from a stream defined by a static DASH MPD containing two Periods, each containing an PQ10 HEVC video AdaptationSet with the same AdaptationSet@id value, each containing an AAC audio AdaptationSet with a second AdaptationSet@id value, and each of the AdaptationSets in the second Period carrying a SupplementalProperty descriptor with @schemeIdUri set to urn:dvb:dash:period_continuity:2014 and @value matching the Period@id attribute of the first Period, and the Periods meeting the signalling and content constraints for period continuity. Video and audio is played back seamlessly through the period boundary without artifacts or glitches.
org.hbbtv_UHD-PQ10-SEEKACCURACY0010	2	seek to start of PQ10 media segment in live period	TRUE	An application starts PQ10 DASH content playback and then seeks to a position that is in a live period and is identifiable from the MPD as being the start of a PQ10 video media segment. The seek shall be frame accurate. The position reported by the media player API reports the true media position after the seek.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_UHD-PQ10-SEEKACCURACY0030	1	seek to other positions in PQ10 DASH content - live period - nearest position before target	TRUE	An application starts PQ10 DASH content playback and then seeks to a position that is in a live Period but not identifiable from the MPD as being the start of a PQ10 media segment and where the nearest position that is identifiable is before the target position but after the current position. Either the seek shall be frame accurate or the seek shall navigate the media position to that nearest position. The position reported by the media player API reports the true media position after the seek.
org.hbbtv_UHD-STATIC-0070	1	HTML5 static video element displaying DASH HLG10 HEVC, Main 10, Level 5.1, 50 FPS content	TRUE	When the terminal loads an HbbTV Application including an HTML5 media object which references a static MPD defining a stream containing HEAAC audio and HEVC-encoded 3840x2160p 50fps HLG10 HDR format video content with BT.2020 colour space, the media shall be correctly presented by the terminal and the playback shall be smooth and contain no decoding artifacts.
org.hbbtv_V15E20010	1	descriptorTagExtension	TRUE	When the DVB-SI information corresponding to a Programme includes an extended descriptor, an application can read that descriptor using the getSIDescriptors method with the descriptorTag argument being 0x7f and passing the "Tag extension value" in the descriptorTagExtension argument.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_V15E20020	1	channel.nid	TRUE	When an HbbTV application obtains a Channel object for a channel where there is exactly one NIT actual subtable in the transport stream carrying the channel then the value of the nid property shall be either the network_id in that subtable or the network_id of a NIT subtable used to discover the channel during the configuration process.
org.hbbtv_V15E20030	1	change of app transport protocol from broadband to broadcast	TRUE	When a running broadcast-related, non-service-bound application delivered via broadband changes to a service where the same application is allowed to run but is delivered via broadcast, the application is killed and the application signalling processed from the start to find an application to start.
org.hbbtv_V15E20040	1	change of app transport protocol from broadcast to broadband	TRUE	When a running broadcast-related, non-service-bound application delivered via broadcast changes to a service where the same application is allowed to run but is delivered via broadband, the application is killed and the application signalling processed from the start to find an application to start.
org.hbbtv_V15E20050	1	XHR and DSMCC Carousel Apps - Basic	TRUE	Code in an HTML page loaded from an object carousel attempts to make an XMLHttpRequest call to an HTTP server. The origin header of the XHR request is set to the origin of the HTML page in the form of a DVB URI (with hex digits in lower case) according to the CORS specification.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_V15E20055	1	XHR and DSMCC Carousel Apps - Carousel on Multiple Components	TRUE	Code in an HTML page loaded from an object carousel spread across 3 elementary streams attempts to make an XMLHttpRequest call to an HTTP server. The HTML page is on an elementary stream that is not the stream carrying the root of the carousel. The origin header of the XHR request is set to the origin of the HTML page in the form of a DVB URI (with hex digits in lower case, referring to the elementary stream carrying the root of the carousel) according to the CORS specification.
org.hbbtv_V15E20060	1	XHR and DSMCC Carousel Apps - Extended Boundary - Page From Carousel - Success	TRUE	Code in an HTML page loaded from an object carousel attempts to make an XMLHttpRequest call to an HTTP server. The page is part of an HbbTV application delivered by broadcast whose boundary is extended with an HTTP URL. The origin header of the XHR request is set to the origin of the HTML page in the form of a DVB URI (with hex digits in lower case) according to the CORS specification and not the HTTP URL used to extend the boundary. The server returns a response with the Access-Control-Allow-Origin header set to the origin of the HTML page. The XHR request succeeds.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_V15E20062	1	XHR and DSMCC Carousel Apps - Extended Boundary - Page From Carousel - Failure	TRUE	Code in an HTML page loaded from an object carousel attempts to make an XMLHttpRequest call to an HTTP server. The page is part of an HbbTV application delivered by broadcast whose boundary is extended with an HTTP URL. The HTTP server addressed is inside the extended boundary. The origin header of the XHR request is set to the origin of the HTML page in the form of a DVB URI (with hex digits in lower case) according to the CORS specification and not the HTTP URL used to extend the boundary. The server returns a response with the Access-Control-Allow-Origin header set to something other than the origin of the HTML page or "*". The XHR request fails and an error event is dispatched.
org.hbbtv_V15E20065	1	XHR and DSMCC Carousel Apps - Extended Boundary - Page From Broadband	TRUE	Code in an HTML page loaded from HTTP attempts to make an XMLHttpRequest call to an HTTP server. The page is part of an HbbTV application deliverd by broadcast whose boundary is extended with an HTTP URL. The origin header of the XHR request is set to the origin of the HTML page in the form of an HTTP URL according to the CORS specification and not to a DVB URI.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_V15E20070	1	XHR and HTTP Delivered Apps	TRUE	Code in an HTML page loaded from HTTP attempts to make an XMLHttpRequest call to another HTTP server than the one it is delivered from. The HTML page is part of an HbbTV application delivered via broadband. The origin header of the XHR request is set to the origin of the HTML page in the form of an HTTP URL according to the CORS specification.
org.hbbtv_V15E20080	3	XHR and HTTPS Delivered Apps	TRUE	Code in an HTML page loaded from HTTPS attempts to make an XMLHttpRequest call to an HTTPS server. The HTML page is part of an HbbTV application delivered via broadband. The origin header of the XHR request is set to the origin of the HTML page in the form of an HTTPS URL according to the CORS specification.
org.hbbtv_V15E20090	1	PlaySpeedChanged	TRUE	An application calls the play method on an A/V control object twice with the same speed. An onPlaySpeedChanged event is generated in response to the second call even though the speed has not changed. The argument of the event is the previous play speed.
org.hbbtv_VIDEO_COMMUTING0010	1	AV Components: Selecting video components from an HTTP MP4 stream with two video components	TRUE	Using the AV Control object functions getComponents and selectComponent, the terminal shall correctly switch to presenting the unplayed video component from a HTTP MP4 stream containing 2 video components that is currently being presented.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VIDEO_COMMUTING0020	1	AV Components: Selecting video components from an HbbTV ISOBMFF DASH Live stream with 2 video adaptation sets	TRUE	Using the A/V Control object functions getComponents and selectComponent, the terminal shall correctly switch to presenting the unplayed video component from a HbbTV ISOBMFF DASH Live stream containing 2 video adaptation sets.
org.hbbtv_VIDEO-DISPLAY0010	1	Video display format element(s) are present in XML capabilities for UHD terminals	TRUE	When an HbbTV application reads the XML capabilities document, it contains at least one video_display_format element and all of the video_display_format elements are schema compliant.
org.hbbtv_VIDEO-DISPLAY0020	1	Video display format elements have non-empty @colorimetry attributes for UHD terminals with integrated display	TRUE	When an HbbTV application reads the XML capabilities document, it contains at least one video_display_format element and all of the video_display_format elements have @colorimetry attributes whose values are not the empty string.
org.hbbtv_VIDEO-DISPLAY0030	1	10-bit BT.2020 display capability for terminals with integrated displays and support for UHD HEVC	TRUE	When an HbbTV application reads the XML capabilities document, it contains at least one video_display_format element whose @width attribute is greater than 1920, @height is greater than 1080, @frame_rate is 50 or a multiple thereof, @bit_depth is 10 or greater and @colorimetry includes the string "bt2020"

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VIDEO-DISPLAY0040	1	Display capability reporting and content playback when a terminal with integrated display claims support for 3840x2160 UHD 10-bit	TRUE	When an HbbTV application reads the XML capabilities document and it contains at least one video_display_format element whose @width attribute is 3840 or greater, @height is 2160 or greater, @frame_rate is 50 or a multiple thereof, @bit_depth is 10 or greater, then when a stream defined by a static DASH MPD containing 3840x2160p50 Main10 10-bit HEVC media with AAC audio is played using an HTML5 video element, video and audio is played back and displayed without loss of resolution or dropped frames and with either (a) no visible banding, or (b) banding that is finer than a reference grey scale that has luminance values whose bottom two bits are zero.
org.hbbtv_VIDEO-DISPLAY0050	1	Display capability reporting and content playback when a terminal with integrated display claims support for 3200x1800 UHD 10-bit	TRUE	When an HbbTV application reads the XML capabilities document and it contains at least one video_display_format element whose @width attribute is 3200 or greater, @height is 1800 or greater, @frame_rate is 50 or a multiple thereof, @bit_depth is 10 or greater, then when a stream defined by a static DASH MPD containing 3200x1800p50 Main10 10-bit HEVC media with AAC audio is played using an HTML5 video element, video and audio is played back and displayed without loss of resolution or dropped frames and with either (a) no visible banding, or (b) banding that is finer than a reference grey scale that has luminance values whose bottom two bits are zero.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VIDEO-DISPLAY0100	1	Display capability reporting and content playback when a connected display supports 3840x2160 UHD 10-bit	TRUE	When an HbbTV application reads the XML capabilities document, it contains at least one video_display_format element whose @width attribute is 3840 or greater, @height is 2160 or greater, @frame_rate is 50 or a multiple thereof, @bit_depth is 10 or greater, and then when a stream defined by a static DASH MPD containing 3840x2160p50 Main10 10-bit HEVC media with AAC audio is played using an HTML5 video element, video and audio is played back and displayed without loss of resolution or dropped frames and with either (a) no visible banding, or (b) banding that is finer than a reference grey scale that has luminance values whose bottom two bits are zero.
org.hbbtv_VIDEO-DISPLAY0110	1	Display capability reporting when a connected display supports a maximum resolution of 1920x1080	TRUE	When an HbbTV application reads the XML capabilities document, it contains at least one video_display_format element whose @width attribute is 1920, @height is 1080, @frame_rate is 50 or a multiple thereof, @bit_depth is 10 or greater, and contains no video_display_format element with a value of @width that is higher than 1920 or a value of @height that is higher than 1080 in combination with a @bit_depth attribute with value 10.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VIDEO-DISPLAY0120	1	Display capability reporting and content playback when a connected display supports BT.2020	TRUE	When an HbbTV application reads the XML capabilities document, it contains at least one video_display_format element whose @width attribute is 1920 or greater, @height is 1080 or greater, @frame_rate is 50 or a multiple thereof, @bit_depth is 10 or greater and @colorimetry includes the string "bt2020", and when a stream defined by a static DASH MPD containing 1920x1080p50 Main10 10-bit HEVC BT.2020 video containing coloured areas that fall within the BT.2020 colour gamut but which do not fall within the BT.709 colour gamut is played using an HTML5 video element, then the HDMI colorimetry signalling indicates BT.2020.
org.hbbtv_VIDEO-DISPLAY0130	1	Display capability reporting when a connected display does not support BT.2020	TRUE	When an HbbTV application reads the XML capabilities document, it does not contain any video_display_format element whose @colorimetry attribute includes the string "bt2020".
org.hbbtv_VIS0010	1	visibilitychange events on hiding - basic	TRUE	The user invokes a terminal user interface or application that either (i) fully covers the running HbbTV application such that no part of it is visible or (ii) removes the running HbbTV application from the screen. If the application continues to run then: The application is sent a visibilitychange event with document.visibilityState='hidden' and when the terminal user interface or application is dismissed or terminated it is sent a visibilitychange event with document.visibilityState='visible'.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VIS0020	1	visibilitychange events on hiding - video playing	TRUE	An HbbTV application is running and playing video and audio using a video element. When the user invokes a terminal user interface or application that either (i) fully covers the running HbbTV application such that no part of it is visible or (ii) removes the running HbbTV application from the screen, then either (a) the HbbTV application gets terminated or (b) the video and audio stop and the video element receives a pause event or (c) the audio continues seamlessly. When the terminal user interface or application is subsequently dismissed or terminated, then there is no change in the playback of the HbbTV application's audio.
org.hbbtv_VIS0030	1	visibilitychange events when application survives standby	TRUE	An application is arranged to receive periodic events. The terminal is placed in a standby mode. If the application continues to run then: A visibilitychange event with document.visibilityState='hidden' is sent to the application and when the terminal is brought out of standby approximately 15 seconds later either (i) all expected periodic events and a visibilitychange event with document.visibilityState='visible' have been sent to the application or (ii) a 'freeze' event, a 'resume' event and a visibilitychange event with document.visibilityState='visible' have been sent to the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1001	1	Voice interaction does not trigger intent if method not negotiated, whether voice ready or not	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" but does NOT support receiving method "org.hbbtv.app.intent.media.pause" and has received a response from the terminal confirming support for at least the minimum set of methods described and NOT including the omitted "org.hbbtv.app.intent.media.pause" method. The application then also sent a message with method "org.hbbtv.app.state.media" to the terminal indicating that media is currently playing and that "org.hbbtv.app.intent.media.pause" is NOT an "availableAction". The application has NOT yet sent a message with method "org.hbbtv.app.voice.ready". When, through a voice interaction, the terminal is then instructed to pause media playback, the terminal does NOT send the application a message with method "org.hbbtv.app.intent.media.pause". Later, the application sends a message with method "org.hbbtv.app.voice.ready" (with the "ready" parameter set to true to indicate it is voice ready). When subsequently, through a voice interaction, the terminal is instructed to pause media playback, the terminal does NOT send the application a message with method

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1002	1	Voice interaction does not trigger intent if method negotiated but app not voice ready, whether it is availableAction or not	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.media.pause" and sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.state.media" indicating that media is currently playing and that "org.hbbtv.app.intent.media.pause" is NOT an "availableAction"; and then also sent a message with method "org.hbbtv.app.voice.ready" but with "ready" parameter set to false. When, through a voice interaction, the terminal is instructed to pause media playback, the terminal does NOT send the application a message with method "org.hbbtv.app.intent.media.pause". Later, the application subsequently sends a message with method "org.hbbtv.app.state.media" to the terminal indicating that it is now playing a different item of media and that "org.hbbtv.app.intent.media.pause" is an "availableAction". Subsequently when, through a voice interaction, the terminal is instructed to pause media playback, the terminal does NOT send the application a

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1010	1	Voice interaction can query current media state	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports sending methods "org.hbbtv.app.voice.ready" and "org.hbbtv.app.state.media" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has subsequently sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready; and then also sent a message with method "org.hbbtv.app.state.media" to the terminal with the following properties defined in the "params" object: "state" is "paused"; "kind" is "audio-video"; "type" is "on-demand"; "currentTime" is 0, "start" property of "range" is 0; "end" property of "range" is 600; and "metadata" has properties "title", "secondaryTitle" and "synopsis" have known text values. The "accessibility" property is not present. When, through a voice interaction, the terminal is instructed to describe what media is currently being presented, the terminal gives a spoken response that matches a known script. Anything referred to in the script (and therefore also the spoken response) that describes the media being played and the state of playback is consistent with the media state conveyed to the terminal by the application.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1020	1	Voice interaction method negotiation method and availableActions : insensitive to ordering and unrecognised/supported values	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving the following methods listed in the order given here: "org.hbbtv.app.intent.media.fast-forward", "xxx.yyy.zzz", "org.hbbtv.app.intent.media.seek-relative", "xxx.yyy.zzz.2", "org.hbbtv.app.intent.media.fast-reverse", "org.hbbtv.app.intent.playback", "org.hbbtv.app.intent.media.stop", "org.hbbtv.app.intent.media.seek-content", "org.hbbtv.app.intent.search", "org.hbbtv.app.intent.media.pause", "org.hbbtv.app.intent.media.seek-live", "org.hbbtv.app.intent.media.play", "org.hbbtv.app.intent.display" and sending methods listed in the order given here: "org.hbbtv.app.state.media" "org.hbbtv.app.voice.ready" and has received a response from the terminal that confirms support for at least the minimum set of methods described, but not including "xxx.yyy.zzz", "xxx.yyy.zzz.2" and optionally including "org.hbbtv.app.intent.display", "org.hbbtv.app.intent.playback". The application has, subsequently, sent a message with method "org.hbbtv.app.state.media" to the terminal indicating

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1100	1	Voice interaction triggers org.hbbtv.app.intent.media.pause but only when it is an availableAction	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.media.pause" and sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready; and then also sent a message with method "org.hbbtv.app.state.media" to the terminal indicating that media is currently playing and that "org.hbbtv.app.intent.media.pause" is an "availableAction". When, through a voice interaction, the terminal is requested to pause media playback, the terminal sends the application a message with method "org.hbbtv.app.intent.media.pause" and "origin" set to "voice". Later, the application subsequently sends a message with method "org.hbbtv.app.state.media" to the terminal indicating that it is now playing a different item of media and that "org.hbbtv.app.intent.media.pause" is NOT an "availableAction". Subsequently when, through a voice interaction, the terminal is instructed to pause media playback, the terminal does not send the application a

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1110	1	Voice interaction triggers org.hbbtv.app.intent.media.play but only when it is an availableAction	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.media.play" and sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready; and then also sent a message with method "org.hbbtv.app.state.media" to the terminal indicating that media is currently paused and that "org.hbbtv.app.intent.media.play" is an "availableAction". When, through a voice interaction, the terminal is requested to resume media playback, the terminal sends the application a message with method "org.hbbtv.app.intent.media.play" and "origin" set to "voice". Later, the application subsequently sends a message with method "org.hbbtv.app.state.media" to the terminal indicating that it is now paused on a different item of media and that "org.hbbtv.app.intent.media.play is NOT an "availableAction". Subsequently when, through a voice interaction, the terminal is instructed to resume media playback, the terminal does not send the application a

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1120	1	Voice interaction triggers org.hbbtv.app.intent.media.fast-forward but only when it is an availableAction	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.media.fast-forward" and "org.hbbtv.app.intent.media.play" and sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready; and then also sent a message with method "org.hbbtv.app.state.media" to the terminal indicating that media is currently playing and that "org.hbbtv.app.intent.media.fast-forward" is an "availableAction". When, through a voice interaction, the terminal is requested to fast-forward media, the terminal sends the application a message with method "org.hbbtv.app.intent.media.fast-forward" and "origin" set to "voice". For this message only, the application responds with a "Temporarily unable" error response. The terminal either gives no response or gives an audio response that matches a known script. Any words in the script (and therefore also the audio response) are understood to convey the idea that the action requested by the user is temporarily not possible. Subsequently

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1130	1	Voice interaction triggers org.hbbtv.app.intent.media.fast-reverse but only when it is an availableAction	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.media.fast-reverse" and "org.hbbtv.app.intent.media.play" and sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready; and then also sent a message with method "org.hbbtv.app.state.media" to the terminal indicating that media is currently playing and that "org.hbbtv.app.intent.media.fast-reverse is an "availableAction". When, through a voice interaction, the terminal is requested to rewind media playback, the terminal sends the application a message with method "org.hbbtv.app.intent.media.fast-reverse and "origin" set to "voice". Subsequently when, through a voice interaction, the terminal is requested to cease rewinding and to resume normal media playback, the terminal sends the application a message with method "org.hbbtv.app.intent.media.play" and "origin" set to "voice". Later, the application subsequently sends a message with method "org.hbbtv.app.state.media" to

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1140	1	Voice interaction triggers org.hbbtv.app.intent.media.stop but only when it is an availableAction	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.media.stop" and sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready; and then also sent a message with method "org.hbbtv.app.state.media" to the terminal indicating that media is currently playing and that "org.hbbtv.app.intent.media.stop" is an "availableAction". When, through a voice interaction, the terminal is requested to stop media playback, the terminal sends the application a message with method "org.hbbtv.app.intent.media.stop" and "origin" set to "voice". Later, the application subsequently sends a message with method "org.hbbtv.app.state.media" to the terminal indicating that it is now playing a different item of media and that "org.hbbtv.app.intent.media.stop" is NOT an "availableAction". Subsequently when, through a voice interaction, the terminal is instructed to stop media playback, the terminal does not send the application a

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1150	1	Voice interaction triggers org.hbbtv.app.intent.media.seek-content but only when it is an availableAction	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.media.seek-content" and sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready; and then also sent a message with method "org.hbbtv.app.state.media" to the terminal indicating that media is currently playing and that "org.hbbtv.app.intent.media.seek-content" is an "availableAction". When, through a voice interaction, the terminal is requested to seek to either the start or end, or to a time offset relative to the start or end (e.g. "1 minute after the start" or "30 seconds before the end"), the terminal sends the application a message with method "org.hbbtv.app.intent.media.seek-content" and "origin" set to "voice". The "anchor" property is either "start" or "end" depending on whether the request was to seek to a position relative to the start or end. The "offset" property correctly indicates the number of seconds either after the start (a positive number) or before the end (a negative number) or is zero if no offset

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1160	1	Voice interaction triggers org.hbbtv.app.intent.media.seek-relative but only when it is an availableAction	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.media.seek-relative" and sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready; and then also sent a message with method "org.hbbtv.app.state.media" to the terminal indicating that media is currently playing and that "org.hbbtv.app.intent.media.seek-relative" is an "availableAction". When, through a voice interaction, the terminal is requested to seek ahead by 5 minutes in the currently playing media, the terminal sends the application a message with method "org.hbbtv.app.intent.media.seek-relative and "origin" set to "voice" and "offset" set to 300. Later, the application subsequently sends a message with method "org.hbbtv.app.state.media" to the terminal indicating that it is now playing a different item of media and that "org.hbbtv.app.intent.media.seek-relative" is NOT an "availableAction". Subsequently when, through a voice interaction, the terminal is instructed to seek ahead by 5

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1170	1	Voice interaction triggers org.hbbtv.app.intent.media.seek-live but only when it is an availableAction	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.media.seek-live" and sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready; and then also sent a message with method "org.hbbtv.app.state.media" to the terminal indicating that media is currently playing and that "org.hbbtv.app.intent.media.seek-live" is an "availableAction" and that the "type" of the media is "live". When, through a voice interaction, the terminal is requested to seek back to viewing at the live edge in the currently playing media, the terminal sends the application a message with method "org.hbbtv.app.intent.media.seek-live" and "origin" set to "voice" and "offset" set to 0. Later, the application subsequently sends a message with method "org.hbbtv.app.state.media" to the terminal indicating that it is now playing a different item of media and that "org.hbbtv.app.intent.media.seek-live" is NOT an "availableAction". Subsequently when, through a voice

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1180	1	Voice interaction triggers org.hbbtv.app.intent.media.seek-wallclock but only when it is an availableAction, and only if supported	TRUE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.media.seek-wallclock" and sending methods: "org.hbbtv.app.voice.ready", "org.hbbtv.app.state.media" and has received a response from the terminal that either confirms support for at least the minimum set of methods described or confirms support for all of the minimum set described but not including the method "org.hbbtv.app.intent.media.seek-wallclock". If, and only if, receiving the "org.hbbtv.app.intent.media.seek-wallclock" method is confirmed supported by the terminal, then the remainder of this sequence of events applies: The application, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready; and then also sent a message with method "org.hbbtv.app.state.media" to the terminal indicating that media is currently playing and that "org.hbbtv.app.intent.media.seek-wallclock" is an "availableAction" and including a "currentTime" and "range" properties specifying as dates and times in internet date/time format. The range covers a period on a given date starting two hours before midday and ending two hours after midday. The current time should

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1190	1	Voice interaction triggers org.hbbtv.app.intent.search	TRUE	"An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.search" and sending methods: "org.hbbtv.app.voice.ready" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready. When, through a voice interaction, the terminal is requested to search within the current application for a specific term, the terminal sends the application a message with method "org.hbbtv.app.intent.search" and "origin" set to "voice" and "query" set to that term as a textual string.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE1191	1	Voice interaction triggers org.hbbtv.app.intent.search and app reports Not Found	TRUE	"An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports receiving methods: "org.hbbtv.app.intent.search" and sending methods: "org.hbbtv.app.voice.ready" and has received a response from the terminal that confirms support for at least the minimum set of methods described. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready. When, through a voice interaction, the terminal is requested to search within the current application for a specific term, the terminal sends the application a message with method "org.hbbtv.app.intent.search" and "origin" set to "voice" and "query" set to that term as a textual string. The application responds with error code -3 ("Not Found"). The terminal either gives no response or gives an audio response that matches a known script. Any words in the script (and therefore also the audio response) are understood to convey the idea that nothing was found as a result of the spoken search request.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE2000	1	Voice interaction simulates key presses (not voice-ready)	FALSE	An AUTOSTART broadcast-related application has requested access to the following key codes via a KeySet object: VK_RED, VK_GREEN, VK_YELLOW, VK_BLUE, VK_UP, VK_DOWN, VK_LEFT, VK_RIGHT, VK_ENTER, VK_BACK and has ensured that an element with a key event handler is focused. When, through voice interaction, the terminal is instructed to generate a key event for one of the keys for which access has been requested, the application receives the respective key press event. Subsequently, the application re-requests access via the KeySet Object to additionally request access to key codes for the number keys: VK_0 to VK_9. Subsequently when, through voice interaction, the terminal is instructed to generate a key event for each of the keys for which access has been requested (not including the one for which an event has already been generated), the application receives the respective key press event. Each key event is triggered by a separate distinct voice interaction. The order in which the events are received matches the order in which the voice interactions have taken place.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE2001	1	Voice interaction simulates key presses (voice-ready)	FALSE	An application has established a WebSocket connection with the terminal for the purposes of exchanging JSON-RPC messages and has sent to the terminal a JSON-RPC message with method "org.hbbtv.negotiateMethods" indicating it (at minimum) supports sending method: "org.hbbtv.app.voice.ready" and has received a response from the terminal confirming support for this method. The application has, subsequently, sent a message with method "org.hbbtv.app.voice.ready" to the terminal to indicate that it is voice-ready. The application has requested access to the following key codes via a KeySet object: VK_RED, VK_GREEN, VK_YELLOW, VK_BLUE, VK_UP, VK_DOWN, VK_LEFT, VK_RIGHT, VK_ENTER, VK_BACK and has ensured that an element with a key event handler is focused. When, through voice interaction, the terminal is instructed to generate a key event for one of the keys for which access has been requested, the application receives the respective key press event. Subsequently, the application re-requests access via the KeySet Object to additionally request access to key codes for the number keys: VK_0 to VK_9. Subsequently when, through voice interaction, the terminal is instructed to generate a key event for each of the keys for which access has been requested (not including the one for which an event has already been generated), the application receives the respective key press event. Each key event is triggered by a separate distinct voice interaction. The order in

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VOICE2010	1	Voice interaction fills in text input field	TRUE	An application has an HTML input element with "type" of "text" or "Search" and it is currently focused. When, through voice interaction, the terminal is instructed to fill in a word into the currently focused input field, the value property of the input element is set to the word and element fires "input" and "change" events.
org.hbbtv_VOICE2011	1	Voice interaction simulates transport control key presses (not voice-ready)	TRUE	An AUTOSTART broadcast-related app starts a broadcast-independent app. The broadcast independent app requests access to the following key codes via a KeySet object: VK_STOP, VK_PLAY, VK_PAUSE, VK_PLAY_PAUSE, VK_FAST_FWD, VK_REWIND and has ensured that an element with a key event handler is focused. When, through voice interaction, the terminal is instructed to generate key events for each of the keys for which access was previously granted, the application receives the respective key press events in the order expected. Each key event is triggered by a separate distinct voice interaction.
org.hbbtv_VTRANSFORM0020	1	Video CSS transform - 2D downscale and translate	TRUE	An application is playing video using an HTML5 video element that is positioned at (0,0) with width 1280px and height 720px. CSS "transform: matrix(0.5, 0, 0, 0.5, 320, 180);" is then applied to the video element. The video plays normally, scaled to a quarter of the screen area and positioned in the bottom right hand corner of the screen.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_VTTCUE0010	1	VTTCue: Basic usage	TRUE	An application that is playing video from a simple HTTP ISOBMFF file uses the addTextTrack API to add a new text track, creates two new VTTCue objects and sets all their properties (including the properties inherited from TextTrackCue) to values that (apart from "region") are different for each cue, and adds them to the text track using the addCue method. As the video plays, check that the onenter and onexit methods are called at the correct time, and those methods read all the VTTCue object properties and get the correct values. Check that each onenter and each onexit method are called exactly once.
org.hbbtv_VTTCUE0020	1	VTTCue: removeCue()	TRUE	An application that is playing video from a simple HTTP MP4 file uses the addTextTrack API to add a new text track, creates three new VTTCue objects and sets their properties, and adds them to the text track using the addCue method. The middle VTTCue object is then removed from the text track using the removeCue method. As the video plays, check that the onenter and onexit methods of the first and last VTTCue objects are called exactly once each, at the correct time, and those methods are passed the correct VTTCue objects. Check that the onenter and onexit methods of the removed VTTCue are not called.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_WEBAUDIO0010	1	Audio from memory mixed with broadcast video - PCM	TRUE	A broadcast-related HbbTV application that is connected to the broadcast of the current channel loads some 16-bit PCM audio via XMLHttpRequest and then plays that through the Web Audio API. The PCM audio is heard and the broadcast video playback is not interrupted. The audio is either mixed with the broadcast audio or temporarily replaces it.
org.hbbtv_WEBAUDIO0020	1	Audio from memory mixed with broadcast video - MP3	TRUE	A broadcast-related HbbTV application that is connected to the broadcast of the current channel loads some MP3 audio via XMLHttpRequest, decodes it via AudioContext.decodeAudioData and then plays that through the Web Audio API. The MP3 audio is heard and the broadcast video playback is not interrupted. The audio is either mixed with the broadcast audio or temporarily replaces it.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_WEBCRYPTO0010	1	WebCrypto: AES-128 and AES-256 encrypt and decrypt	TRUE	From a HbbTV application that is loaded over HTTPS: Using the CBC-AES128 encryption test vector specified in NIST SP800-38A F.2.1: Use the window.crypto.subtle.importKey() API to import the test AES-128 key, and then use a single call to window.crypto.subtle.encrypt() API to encrypt all 4 blocks of plaintext test data using AES-128 CBC using the test IV. Check that the encrypted data matches the expected ciphertext values specified in NIST SP800-38A. Using the CBC-AES128 decryption test vector specified in NIST SP800-38A F.2.2: Use the window.crypto.subtle.importKey() API to import the test AES-128 key, and then use a single call to window.crypto.subtle.decrypt() API to decrypt all 4 blocks of ciphertext test data using AES-128 CBC using the test IV. Check that the encrypted data matches the expected plaintext values specified in NIST SP800-38A. Repeat the above two tests using the CBC-AES256 test vectors from sections F.2.5 and F.2.6. (Note that the "Input Block" and "Output Block" values in the NIST specification should be ignored, they specify the values of certain internal implementation details to assist terminal manufacturers in debugging any problems. Also note that all the values in the NIST specification are in hex; you need to convert them to a byte array to pass to the crypto APIs. Also note that for each test vector, you need to concatenate all four plaintext blocks together to get a single long byte array to use. Similarly, concatenate

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_WEBCRYPTO0020	1	WebCrypto: HMAC with SHA-256	TRUE	From a HbbTV application that is loaded over HTTPS: Using the test vector specified in RFC4231 section 4.2: Use the window.crypto.subtle.importKey() API to import the test HMAC-SHA-256 key, and then call the window.crypto.subtle.sign() API to sign the test data using HMAC-SHA-256. Check that the returned signature matches the expected value specified in RFC4231 section 4.2. Using the test vector specified in RFC4231 section 4.3: Use the window.crypto.subtle.importKey() API to import the test HMAC-SHA-256 key, and then call the window.crypto.subtle.verify() API to try to verify the HMAC-SHA-256 signature given in RFC4231 section 4.3. Check that the API reports that the signature is correct. Using the test vector specified in RFC4231 section 4.3: Use the window.crypto.subtle.importKey() API to import the test HMAC-SHA-256 key, and then call the window.crypto.subtle.verify() API to try to verify the HMAC-SHA-256 signature given in RFC4231 section 4.3, but with the 3rd byte of the signature changed to 1c (hex). Check that the API reports that the signature is incorrect.
org.hbbtv_WEBSTORAGE1000	1	Access to cookies and web storage with navigator.cookieEnabled set to true (Web)	FALSE	An application loaded via broadband reads navigator.cookieEnabled and confirms it is equal to true. Then it stores information in cookies as well as in local storage persistently. After a power cycle the app restores the information from both storage locations successfully.

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Test Id	Vers	Title	Approved	Assertion
org.hbbtv_WEBSTORAGE1010	1	Access to web storage with navigator.cookieEnabled set to true (DSMCC)	FALSE	An application loaded via DSMCC oc reads navigator.cookieEnabled and confirms it is equal to true. Then it stores information in local storage persistently. After a power cycle the app restores that information from local storage successfully.
org.hbbtv_WEBSTORAGE1020	1	Access to cookies and web storage with navigator.cookieEnabled set to false	FALSE	An application loaded via broadband reads navigator.cookieEnabled and confirms it is equal to false. After that it writes information in cookies as well as in local storage. The applications catches either a SecurityError or a QuotaExceededError as a result of writing to localStorage. After a power cycle the app cannot read the information from both storage locations.
org.nordig_00000010	1	Current time, TDT/TOT available, NTP available	FALSE (Nordig)	A DVB service with TDT and TOT tables is tuned and terminal has access to (S)NTP server via DHCP discovery. Javascript Date object shall prefer TDT/TOT and return time and timezone offset that matches the stream tables.
org.nordig_00000020	1	Current time, no TDT/TOT tables, NTP available	FALSE (Nordig)	A DVB service without TDT and TOT tables is tuned and terminal has access to NTP server via DHCP discovery. Javascript Date object will return time and timezone offset that match the time from NTP server.
org.nordig_00000030	1	Current time, no TDT/TOT tables, no NTP, but SNTP is available	FALSE (Nordig)	A DVB service without TDT and TOT tables is tuned and terminal has access to SNTP server via DHCP discovery. Javascript Date object will return time and timezone offset that match the time from SNTP server.

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Test Id	Vers	Title	Approved	Assertion
org.nordig_00000100	1	Parental rating blocks application	FALSE (Nordig)	terminal shall block HbbTV application if parental PIN Code entry is activated.
org.nordig_00000300	1	EBU teletext, no HbbTV teletext	FALSE (Nordig)	The terminal shall display EBU standard teletext when TEXT button is pressed and there is no HbbTV digital teletext signalled.
org.nordig_00000310	1	HbbTV teletext, no EBU teletext	FALSE (Nordig)	The terminal shall display HbbTV digital teletext when TEXT button is pressed and there is no EBU standard teletext signalled. Second press of TEXT button will terminate HbbTV digital teletext and restart autostart application.
org.nordig_00000320	1	EBU teletext and HbbTV teletext	FALSE (Nordig)	The terminal shall display HbbTV digital teletext when TEXT button is pressed the first time. Second press shall terminate HbbTV digital teletext and display EBU standard teletext. Third press shall terminate EBU standard teletext and restart autostart application.
org.nordig_00000330	1	EBU Teletext, HbbTV teletext signalled but not available	FALSE (Nordig)	The terminal shall display EBU standard teletext when TEXT button is pressed if HbbTV digital teletext is signalled but not available.
org.nordig_00000340	1	No EBU Teletext, no HbbTV teletext	FALSE (Nordig)	The terminal shall continue presenting current audio and video without interruptions when TEXT button is pressed if EBU standard teletext is not available and HbbTV digital teletext is not signalled.
org.nordig_00000350	1	No EBU teletext, HbbTV teletext signalled but not available	FALSE (Nordig)	The terminal shall display an informative message when TEXT button is pressed if EBU standard teletext is not available and HbbTV digital teletext is signalled but not available.

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Test Id	Vers	Title	Approved	Assertion
org.nordig_00000400	1	EBU subtitles over broadband TS, A/V object, no scaling	FALSE (Nordig)	EBU subtitles over broadband TS placed behind application shall NOT be visible. A/V control is presenting video in original dimensions (no scaling).
org.nordig_00000410	1	EBU subtitles over broadband TS, A/V object scaled down	FALSE (Nordig)	EBU subtitles over broadband TS placed behind application shall NOT be visible. A/V control object is scaled down to 1/4 x 1/4 of logical video plane.
org.nordig_00000420	1	EBU subtitles over broadband TS, A/V object scaled up	FALSE (Nordig)	EBU subtitles over broadband TS placed behind application shall NOT be visible. A/V control object is 2 x 2 of the width and height of the logical video plane.
org.nordig_00000430	1	DSM-CC stream events and DVB subtitles	FALSE (Nordig)	Terminal shall be capable to receive DSM-CC stream events and render subtitles simultaneously.
org.nordig_00000440	1	DSM-CC stream events and EBU subtitles	FALSE (Nordig)	Terminal shall be capable to receive DSM-CC stream events and render subtitles simultaneously.
org.nordig_00000500	1	Broadcast video scaling, 1x1	FALSE (Nordig)	Terminal shall be able to display broadcast video at 1280x720 resolution with no scaling. The aspect ratio of decoded video shall be preserved such that all of the decoded video is visible within the area of the video/broadcast or AV Control object.
org.nordig_00000510	1	Broadband TS video scaling, 1 x 1	FALSE (Nordig)	Terminal shall be able to display TS video over broadband at 1280x720 resolution with no scaling. The aspect ratio of decoded video shall be preserved such that all of the decoded video is visible within the area of the video/broadcast or AV Control object.

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Test Id	Vers	Title	Approved	Assertion
org.nordig_00000520	1	Broadband MP4 video scaling, 1 x 1	FALSE (Nordig)	Terminal shall be able to display MP4 video over broadband at 1280x720 resolution with no scaling. The aspect ratio of decoded video shall be preserved such that all of the decoded video is visible within the area of the video/broadcast or AV Control object.
org.nordig_00000600	1	org.nordig_00000600: EIT P/F, characters	FALSE (Nordig)	EIT P/F - video/broadcast object can decode all required Nordig UTF-8 characters
org.nordig_00000610	1	EIT MetadataSearch, characters	FALSE (Nordig)	EIT Schedule - MetadataSearch object can decode all required NorDig UTF-8 characters
org.nordig_00001010	1	Exit button on broadcast independent application: restore broadcast video.	FALSE (Nordig)	Broadcast video shall be restored if EXIT key is pressed when Broadcast Independent (B-I) application is running.
org.nordig_00001020	1	Exit button: restore broadcast video from PIP mode.	FALSE (Nordig)	Terminal shall restore broadcast video when application is destroyed due to EXIT key pressing. Application presents broadcasted video scaled down to 1/4 x 1/4 of its logical video plane.
org.nordig_00001050	1	Setting of preferredUILanguage	FALSE (Nordig)	preferredUILanguage shall match to language of Navigator.
org.nordig_00001060	1	Updating preferredUILanguage after language change in Navigator	FALSE (Nordig)	preferredUILanguage shall be updated, if user change the language of Navigator.
org.nordig_00001070	1	Switch subtitles: DVB to EBU teletext.	FALSE (Nordig)	Terminal shall be able to switch subtitles from DVB to EBU teletext with no artifact.
org.nordig_00001080	1	Switch subtitles: EBU teletext to DVB.	FALSE (Nordig)	Terminal shall be able to switch subtitles from EBU teletext to DVB with no artifact.
org.nordig_00001081	1	Switch subtitles over broadband TS: EBU teletext to DVB.	FALSE (Nordig)	Terminal shall be able to switch subtitles from EBU teletext to DVB with no artifact.
org.nordig_00001082	1	Switch subtitles over broadband TS: DVB teletext to EBU.	FALSE (Nordig)	Terminal shall be able to switch subtitles from DVB teletext to EBU with no artifact.
org.nordig_00001100	1	Disabling subtitles.	FALSE (Nordig)	The user shall be able to enable and disable displaying of subtitles.

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Test Id	Vers	Title	Approved	Assertion
org.nordig_00001101	1	Disabling subtitles over broadband TS.	FALSE (Nordig)	The user shall be able to enable and disable displaying of subtitles.
org.nordig_00001200	1	DVB subtitles - V/B Object not bound to current channel.	FALSE (Nordig)	DVB subtitles shall be rendered correctly, when application did not bind Video/Broadcast Object to current channel.
org.nordig_00001210	1	DVB subtitles - V/B Object bound to current channel.	FALSE (Nordig)	DVB subtitles shall be rendered correctly, when application binds Video/Broadcast Object to current channel. No scaling.
org.nordig_00001220	1	EBU Teletext subtitles: Video/Broadcast Object not bound to current channel.	FALSE (Nordig)	EBU Teletext subtitles shall be rendered correctly, when application did not bind Video/Broadcast Object to current channel
org.nordig_00001230	1	EBU Teletext subtitles: Video/Broadcast Object bound to current channel.	FALSE (Nordig)	EBU Teletext subtitles shall be rendered correctly, when application binds Video/Broadcast Object to current channel. No scaling.
org.nordig_00001240	1	DVB subtitles placed behind application, V/B Object not bound to current channel.	FALSE (Nordig)	DVB subtitles shall be placed behind application. Application did not bind Video/Broadcast Object to current channel.
org.nordig_00001250	1	DVB subtitles placed behind application, V/B Object bound to current channel.	FALSE (Nordig)	DVB subtitles shall be rendered correctly for application which binds Video/Broadcast Object to current channel. No scaling.
org.nordig_00001260	1	EBU Teletext subtitles behind application, V/B Object not bound to current channel.	FALSE (Nordig)	EBU Teletext subtitles shall be placed behind application. Application did not bind Video/Broadcast Object to current channel.
org.nordig_00001270	1	EBU Teletext subtitles behind application, V/B Object bound to current channel.	FALSE (Nordig)	EBU Teletext subtitles shall be placed behind application. Application bound Video/Broadcast Object to current channel. No scaling.
org.nordig_00001280	1	DVB subtitles, V/B object scaled down (1/4 x 1/4).	FALSE (Nordig)	DVB subtitles shall be rendered correctly or not displayed, when Video/Broadcast Object is scaled down to 1/4 x 1/4 of logical video plane.

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Test Id	Vers	Title	Approved	Assertion
org.nordig_00001290	1	DVB subtitles, V/B object scaled up (2 x 2).	FALSE (Nordig)	DVB subtitles shall be rendered correctly or not displayed, when Video/Broadcast Object is scaled up to 2 x 2 of it logical video plane.
org.nordig_00001300	1	DVB subtitles behind application, V/B object scaled down (1/4 x 1/4).	FALSE (Nordig)	DVB subtitles shall be placed behind application, if Video/Broadcast Object is scaled down to 1/4 x 1/4 of it logical video plane.
org.nordig_00001310	1	DVB subtitles behind application V/B object scaled up (2 x 2).	FALSE (Nordig)	DVB subtitles shall be placed behind application, if Video/Broadcast Object is scaled up to 2 x 2 of it logical video plane.
org.nordig_00001320	1	EBU Teletext subtitles, V/B object scaled down (1/4 x 1/4).	FALSE (Nordig)	EBU Teletext subtitles shall be rendered correctly or not displayed, when Video/Broadcast Object is scaled down to 1/4 x 1/4 of logical video plane.
org.nordig_00001330	1	EBU Teletext subtitles, V/B object scaled up (2 x 2).	FALSE (Nordig)	EBU Teletext subtitles shall be rendered correctly or not displayed, when Video/Broadcast Object is scaled up to 2 x 2 of it logical video plane.
org.nordig_00001340	1	EBU Teletext subtitles behind application, V/B object scaled down (1/4 x 1/4).	FALSE (Nordig)	EBU Teletext subtitles shall be placed behind application, if Video/Broadcast Object is scaled down to 1/4 x 1/4 of it logical video plane.
org.nordig_00001341	1	EBU Teletext subtitles over broadband TS behind application, A/V object scaled down (1/4 x 1/4).	FALSE (Nordig)	EBU Teletext subtitles over broadband TS shall be placed behind application, if A/V control object is scaled down to 1/4 x 1/4 of it logical video plane.
org.nordig_00001350	1	EBU Teletext subtitles behind application, V/B object scaled up (2 x 2).	FALSE (Nordig)	EBU Teletext subtitles shall be placed behind application, if Video/Broadcast Object is scaled up to 2 x 2 of it logical video plane.
org.nordig_00001400	1	DVB subtitles, A/V object - no scaling.	FALSE (Nordig)	DVB subtitles over broadband TS placed behind application shall NOT be visible. A/V control is presenting video in original dimensions (no scaling).

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Test Id	Vers	Title	Approved	Assertion
org.nordig_00001410	1	DVB subtitles, A/V object scaled down.	FALSE (Nordig)	DVB subtitles over broadband TS placed behind application shall NOT be visible. A/V control object is scaled down to 1/4 x 1/4 of logical video plane.
org.nordig_00001420	1	DVB subtitles, A/V object scaled up (2 x 2).	FALSE (Nordig)	DVB subtitles over broadband TS placed behind application shall NOT be visible. A/V control object is 2 x 2 of the width and height of the logical video plane.
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0010	1	Sequential Track Playback - baseline stream (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, with picture timing SEI message, without VUI timing information, avc1, 2s fragment duration, single initialization not applied, fragment is 1 chunk) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0020	1	Regular Playback of Chunked Content - alternate content options 1 including chunked content. (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, without picture timing SEI message, with VUI timing information, avc3 without parameter sets within the CMAF header, 5s fragment duration, single initialization applied, fragment contains multiple chunks) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0030	1	Sequential Track Playback - alternate content options 2 (25Hz)	FALSE (DPCTF)	A CMAF video track is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0100	1	Random Access to Fragment (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC) is played from the start of a fragment (not the first) to the end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The currentTime attribute is set to the value corresponding to the start of the first fragment to be played. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed starting from t+I10he first frame of the first fragment to be displayed until the last frame of the last fragment in the video track. The playback duration matches the duration of the CMAF track from the first fragment played, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0110	1	Random Access to Time (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz) is played starting from a time corresponding to the middle of a fragment (not the first) to the end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The currentTime attribute is set to the value corresponding to the starting time. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed starting with the frame corresponding to the starting time and finishing with the last frame in the CMAF track. The playback duration matches the duration of the CMAF track from the starting time, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0120	1	Switching Set Playback (25Hz and 50Hz) - AVC profiles 4.0 and 4.2	FALSE (DPCTF)	A CMAF video switching set (AVC 4.0 and 4.2, 25Hz and 50Hz CMAF tracks) is played from beginning to end, first appending the CMAF header to the source buffer followed by CMAF fragments in order until enough have been appended for playback to start. The CMAF fragments are taken from different CMAF tracks within the switching set. The play method is called to start playback after which CMAF fragments are appended in order as space permits until the last fragment has been appended. The CMAF fragments are again taken from different CMAF tracks within the switching set. Every video frame is displayed. The playback duration matches the duration of the CMAF switching set, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0125	1	Switching Set Playback (25Hz and 50Hz) - AVC profile 4.0 only	FALSE (DPCTF)	A CMAF video switching set (AVC 4.0, 25Hz and 50Hz CMAF tracks) is played from beginning to end, first appending the CMAF header to the source buffer followed by CMAF fragments in order until enough have been appended for playback to start. The CMAF fragments are taken from different CMAF tracks within the switching set. The play method is called to start playback after which CMAF fragments are appended in order as space permits until the last fragment has been appended. The CMAF fragments are again taken from different CMAF tracks within the switching set. Every video frame is displayed. The playback duration matches the duration of the CMAF switching set, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0140	1	Regular Playback of Chunked Content, non-aligned append (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, fragment contains multiple chunks) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The CMAF fragments are appended as multiple byte ranges that are not aligned with the boundaries of the CMAF chunks. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. The CMAF fragments are appended as multiple byte ranges that are not aligned with the boundaries of the CMAF chunks. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0150	1	Playback over WAVE Baseline Splice Constraints (25Hz)	FALSE (DPCTF)	Two CMAF Switching Sets use the same media profile, can be described by a common CMAF header and have the same fragment duration, "splice-main" and "splice-ad". Fragments are selected from the beginning of splice-main until a pre-defined splice point and appended to the MSE source buffer. Playback is started once sufficient fragments have been appended. Once the splice point is reached, timestampOffset is set to avoid any discontinuities and the fragments from splice-ad are appended from the beginning to the end. Once the last fragment of splice-ad has been appended, timestampOffset is set again to avoid any discontinuities and the remaining fragments from splice-main are appended. At the start of the test and and when changing from one Switching Set to the other, the CMAF header for the new Switching Set is appended before any of the fragments Every video frame is displayed. The playback duration matches the duration of the CMAF Switching Sets, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0160	1	Out-Of-Order Loading (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended as space permits until the last fragment has been appended. Fragments are appended at the correct time in the source buffer but in a different order than their order on the media timeline. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0170	1	Overlapping Fragments (25Hz)	FALSE (DPCTF)	A CMAF Switching Set (with more than one CMAF Track encoded as AVC, 25Hz) is played from beginning to end, first appending the CMAF header to the source buffer followed by CMAF fragments in order until enough have been appended for playback to start. In each operation, two fragments are selected from one of the CMAF tracks in the Switching Set and appended to the source buffer, the first overlapping the last previously appended fragment (if any) and the second to be overlapped by the next append operation (if any). Every video frame is displayed. When switching between fragments from one Track and fragements from the other track, the CMAF header for the new track is appended. The play method is called to start playback after which CMAF fragments continue to be selected and appended as space permits until the end of the Switching Set is reached. The playback duration matches the duration of the CMAF Switching Set, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0180	1	Full Screen Playback of Switching Sets (25Hz and 50Hz)	FALSE (DPCTF)	A CMAF video switching set (AVC, 25Hz and 50Hz CMAF tracks) is played from beginning to end, first appending the CMAF header to the source buffer followed by CMAF fragments in order until enough have been appended for playback to start. The CMAF fragments are taken from different CMAF tracks within the switching set. The requestFullscreen method is called to put the video element into fullscreen mode and then the play method is called to start playback after which CMAF fragments are appended in order as space permits until the last fragment has been appended. The CMAF fragments are again taken from different CMAF tracks within the switching set. Every video frame is displayed. The playback duration matches the duration of the CMAF switching set, the presented video frame matches currentTime within the tolerance and the video fills the screen.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0185	1	Full Screen Playback of Switching Sets (25Hz and 50Hz) (profile and level 4.0 only)	FALSE (DPCTF)	A CMAF video switching set (AVC, 25Hz and 50Hz CMAF tracks) is played from beginning to end, first appending the CMAF header to the source buffer followed by CMAF fragments in order until enough have been appended for playback to start. The CMAF fragments are taken from different CMAF tracks within the switching set. The requestFullscreen method is called to put the video element into fullscreen mode and then the play method is called to start playback after which CMAF fragments are appended in order as space permits until the last fragment has been appended. The CMAF fragments are again taken from different CMAF tracks within the switching set. Every video frame is displayed. The playback duration matches the duration of the CMAF switching set, the presented video frame matches currentTime within the tolerance and the video fills the screen.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0190	1	Playback of Encrypted Content (25Hz)	FALSE (DPCTF)	An encrypted CMAF video track (AVC, 25Hz) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. A MediaKeySystemAccess object is obtained for the "org.w3.clearkey" key system. MediaKeys are created and then assigned to the video element. A MediaKeySession are created and updated with keys that will decrypt the CMAF video track. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0200	1	Restricted Splicing of Encrypted Content (25Hz)	FALSE (DPCTF)	Three encrypted CMAF video tracks (AVC, 25Hz) are played one after the other, each from beginning to end. A MediaKeySystemAccess object is obtained for the "org.w3.clearkey" key system. MediaKeys are created and then assigned to the video element. A MediaKeySession are created and updated with keys that will decrypt the encrypted tracks. The CMAF header for the first track is appended to the source buffer followed by the CMAF fragments of that track in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments from the first track are appended in order as space permits until the last fragment has been appended. This is repeated for the second track and the third track. For each of the three tracks, every video frame is displayed, the playback duration matches the duration of the track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0210	1	Sequential Playback of Encrypted and Non-Encrypted Baseline Content (25Hz)	FALSE (DPCTF)	Three CMAF video tracks (AVC, 25Hz) are played one after the other, each from beginning to end. The first and last tracks are encrypted using the same keys, the second is unencrypted. A MediaKeySystemAccess object is obtained for the "org.w3.clearkey" key system. MediaKeys are created and then assigned to the video element. A MediaKeySession are created and updated with keys that will decrypt the encrypted tracks. The CMAF header for the first track is appended to the source buffer followed by the CMAF fragments of that track in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments from the first track are appended in order as space permits until the last fragment has been appended. This is repeated for the second track and the third track. For each of the three tracks, every video frame is displayed, the playback duration matches the duration of the track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0300	1	Regular Playback of a CMAF Presentation - AVC AAC (25Hz)	FALSE (DPCTF)	A CMAF Presentation with an AVC video track (25Hz) and an AAC audio track is played from beginning to end, first appending the CMAF header to the respective source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. The presentation starts with the earliest video frame and the audio sample that corresponds to the same presentation time. Every video frame is displayed and the audio sample for the same presentation time is audible. The playback duration matches the duration of the CMAF Presentation, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0310	1	Random Access of a WAVE Presentation - AVC - HE-AAC (25Hz)	FALSE (DPCTF)	A CMAF Presentation with an AVC video track , (25Hz) and an HE-AAC audio track is played from the start of a video fragment (not the first) to end, first appending the CMAF header to the respective source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The currentTime attribute is set to the value corresponding to the start of the first video fragment to be played. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. The presentation starts with the earliest video frame and the audio sample that corresponds to the same presentation time. Every video frame is displayed starting from the first frame of the first fragment to be displayed until the last frame of the last fragment in the video track. For every video frame displayed, the audio sample for the same presentation time is audible. The playback duration matches the duration of the CMAF track from the first fragment played, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_0320	1	Splicing of WAVE Program with Baseline Constraints - AVC - HEAAC (25Hz)	FALSE (DPCTF)	Two CMAF Switching Sets use the same media profile for each , can be described by a common CMAF header and have the same fragment duration, "splice-main" and "splice-ad". Fragments are selected from the beginning of splice-main until a pre-defined splice point and appended to the MSE source buffer. Playback is started once sufficient fragments have been appended. Once the splice point is reached, timestampOffset is set to avoid any discontinuities and the fragments from splice-ad are appended from the beginning to the end. Once the last fragment of splice-ad has been appended, timestampOffset is set again to avoid any discontinuities and the remaining fragments from splice-main are appended. At the start of the test and and when changing from one Switching Set to the other, the CMAF header for the new Switching Set is appended before any of the fragments Every video frame is displayed. The playback duration matches the duration of the CMAF Switching Sets, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_1000	1	Sequential Track Playback - same as baseline stream except without picture timing SEI message (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, without picture timing SEI message, without VUI timing information, avc1, 2s fragment duration, single initialization not applied, fragment is 1 chunk) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_1010	1	Sequential Track Playback - same as baseline stream except with VUI timing. (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, with timing SEI message, with VUI timing information, avc1, 2s fragment duration, single initialization not applied, fragment is 1 chunk) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_1020	1	Sequential Track Playback - same as baseline stream except sample entry type is avc3 sample entry type (in-band parameter sets) without parameter sets within the CMAF header (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, with picture timing SEI message, without VUI timing information, avc3 without parameter sets in the CMAF header, 2s fragment duration, single intialization not applied, fragment is 1 chunk) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_1030	1	Sequential Track Playback - same as baseline stream except sample entry type is avc3 sample entry type (in-band parameter sets) with parameter sets within the CMAF header (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, with picture timing SEI message, without VUI timing information, avc3 with parameter sets within the CMAF header, 2s fragment duration, single initialization not applied, fragment is 1 chunk) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_1040	1	Sequential Track Playback - same as baseline stream except CMAF fragment duration is 5s (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, with picture timing SEI message, without VUI timing information, avc1, 5s fragment duration, single initialization not applied, fragment is 1 chunk) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_1050	1	Sequential Track Playback - same as baseline stream except initialization constraints are single initialization constraints, see CMAF clause 7.3.4.2 and 9.2.11.4 (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, with picture timing SEI message, without VUI timing information, avc1, 2s fragment duration, single initialization applied, fragment is 1 chunk) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_1060	1	Regular Playback of Chunked Content - same as baseline stream except fragment contains multiple chunks (p-frame to p-frame with b-frames) (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, with picture timing SEI message, without VUI timing information, avc1, 2s fragment duration, single initialization not applied, fragment contains multiple chunks (p-frame to p-frame with b-frames)) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_AVC-25-50-PLAYBACK_1070	1	Regular Playback of Chunked Content - same as baseline stream except each sample constitutes a chunk (p-frame only) (25Hz)	FALSE (DPCTF)	A CMAF video track (AVC, 25Hz, with picture timing SEI message, without VUI timing information, avc1, 2s fragment duration, single initialization not applied, each sample constitutes a chunk (p-frame only)) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every video frame is displayed. The playback duration matches the duration of the CMAF track, the presented video frame matches currentTime within the tolerance and the video fills the video output window.
tech.cta.wave.dpctf_CA4S-PLAYBACK_0100	1	Sequential Track Playback - baseline stream (AC-4)	FALSE (DPCTF)	A CMAF audio track (AC-4) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio frame matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CA4S-PLAYBACK_0200	1	Random Access to Fragment (AC-4)	FALSE (DPCTF)	A CMAF audio track (AC-4) is played from the start of a fragment (not the first) to the end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The currentTime attribute is set to the value corresponding to the start of the first fragment to be played. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is output starting from the first frame of the first fragment to be displayed until the last frame of the last fragment in the audio track. The playback duration matches the duration of the CMAF track from the first fragment played, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CA4S-PLAYBACK_0210	1	Random Access to Time (AC-4)	FALSE (DPCTF)	A CMAF audio track (AC-4) is played starting from a time corresponding to the middle of a fragment (not the first) to the end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The currentTime attribute is set to the value corresponding to the starting time. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is displayed starting with the frame corresponding to the starting time and finishing with the last frame in the CMAF track. The playback duration matches the duration of the CMAF track from the starting time, the presented audio matches currentTime within the tolerance.
tech.cta.wave.dpctf_CA4S-PLAYBACK_0220	1	Regular Playback of Chunked Content. (AC-4)	FALSE (DPCTF)	A CMAF audio track (AC-4) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CA4S-PLAYBACK_0230	1	Regular Playback of Chunked Content, non-aligned append (AC-4)	FALSE (DPCTF)	A CMAF audio track (AC-4) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The CMAF fragments are appended as multiple byte ranges that are not aligned with the boundaries of the CMAF chunks. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. The CMAF fragments are appended as multiple byte ranges that are not aligned with the boundaries of the CMAF chunks. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CA4S-PLAYBACK_0240	1	Out-Of-Order Loading (AC-4)	FALSE (DPCTF)	A CMAF audio track (AC-4) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended as space permits until the last fragment has been appended. Fragments are appended at the correct time in the source buffer but in a different order than their order on the media timeline. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CA4S-PLAYBACK_0250	1	Overlapping Fragments (AC-4)	FALSE (DPCTF)	A CMAF Switching Set (with more than one CMAF Track encoded as AC-4) is played from beginning to end, first appending the CMAF header to the source buffer followed by CMAF fragments in order until enough have been appended for playback to start. In each operation, two fragments are selected from one of the CMAF tracks in the Switching Set and appended to the source buffer, the first overlapping the last previously appended fragment (if any) and the second to be overlapped by the next append operation (if any). Every video frame is displayed. When switching between fragments from one Track and fragements from the other track, the CMAF header for the new track is appended. The play method is called to start playback after which CMAF fragments continue to be selected and appended as space permits until the end of the Switching Set is reached. The playback duration matches the duration of the CMAF Switching Set, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAAA-PLAYBACK_0100	1	Sequential Track Playback - baseline stream (Adaptive AAC Core - caaa, mp4a.40.2)	FALSE (DPCTF)	A CMAF audio track (Adaptive AAC core - 'caaa', mp4a.40.2) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.
tech.cta.wave.dpctf_CAAA-PLAYBACK_0110	1	Sequential Track Playback - baseline stream (Adaptive AAC Core - 'caaa', mp4a.40.5)	FALSE (DPCTF)	A CMAF audio track (adaptive AAC core -'caaa', mp4a.40.5) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAAC-PLAYBACK_0100	1	Sequential Track Playback - baseline stream (AAC Core)	FALSE (DPCTF)	A CMAF audio track (mp4a.40.2, AAC-LC, Stereo, 128 kbit/sec, 48 khz, 1 chunk per fragment, trun v0, with edit lists) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio frame matches currentTime within the tolerance.
tech.cta.wave.dpctf_CAAC-PLAYBACK_0110	1	Sequential Track Playback - baseline stream (AAC Core), trun box v1	FALSE (DPCTF)	A CMAF audio track (AAC core, trun box v1) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAAC-PLAYBACK_0120	1	Sequential Track Playback - baseline stream (AAC Core, trun box v1, without edit lists)	FALSE (DPCTF)	A CMAF audio track (AAC core, trun box v1, without edit lists) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.
tech.cta.wave.dpctf_CAAC-PLAYBACK_0130	1	Sequential Track Playback - baseline stream (AAC Core - mp4a.40.5)	FALSE (DPCTF)	A CMAF audio track (AAC core, mp4a.40.5) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAAC-PLAYBACK_0200	1	Random Access to Fragment (AAC Core)	FALSE (DPCTF)	A CMAF audio track (mp4a.40.2, AAC-LC, Stereo, 128 kbit/sec, 48 khz, 1 chunk per fragment, trun v0, with edit lists) is played from the start of a fragment (not the first) to the end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The currentTime attribute is set to the value corresponding to the start of the first fragment to be played. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is displayed starting from the first frame of the first fragment to be displayed until the last frame of the last fragment in the audio track. The playback duration matches the duration of the CMAF track from the first fragment played, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAAC-PLAYBACK_0210	1	Random Access to Time (AAC Core)	FALSE (DPCTF)	A CMAF audio track (mp4a.40.2, AAC-LC, Stereo, 128 kbit/sec, 48 khz, 1 chunk per fragment, trun v0, with edit lists) is played starting from a time corresponding to the middle of a fragment (not the first) to the end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The currentTime attribute is set to the value corresponding to the starting time. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is displayed starting with the frame corresponding to the starting time and finishing with the last frame in the CMAF track. The playback duration matches the duration of the CMAF track from the starting time, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAAC-PLAYBACK_0220	1	Regular Playback of Chunked Content (AAC Core)	FALSE (DPCTF)	A CMAF audio track (mp4a.40.2, Stereo, 128 kbit/sec, 48 khz, 4 chunks per fragment, trun v0, with edit lists) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAAC-PLAYBACK_0230	1	Regular Playback of Chunked Content, non-aligned append (AAC Core)	FALSE (DPCTF)	A CMAF audio track (mp4a.40.2, Stereo, 128 kbit/sec, 48 khz, 4 chunks per fragment, trun v0, with edit lists) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The CMAF fragments are appended as multiple byte ranges that are not aligned with the boundaries of the CMAF chunks. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. The CMAF fragments are appended as multiple byte ranges that are not aligned with the boundaries of the CMAF chunks. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAAC-PLAYBACK_0240	1	Out-Of-Order Loading (AAC Core)	FALSE (DPCTF)	A CMAF audio track (mp4a.40.2, AAC-LC, Stereo, 128 kbit/sec, 48 khz, 1 chunk per fragment, trun v0, with edit lists) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended as space permits until the last fragment has been appended. Fragments are appended at the correct time in the source buffer but in a different order than their order on the media timeline. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio frame matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAAC-PLAYBACK_0250	1	Overlapping Fragments (AAC Core)	FALSE (DPCTF)	A CMAF Switching Set (AAC-LC, Stereo, 128 kbit/sec, 48 khz, 1 chunk per fragment, trun v0, with edit lists) is played from beginning to end, first appending the CMAF header to the source buffer followed by CMAF fragments in order until enough have been appended for playback to start. In each operation, two fragments are selected from one of the CMAF tracks in the Switching Set and appended to the source buffer, the first overlapping the last previously appended fragment (if any) and the second to be overlapped by the next append operation (if any). Every video frame is displayed. When switching between fragments from one Track and fragements from the other track, the CMAF header for the new track is appended. The play method is called to start playback after which CMAF fragments continue to be selected and appended as space permits until the end of the Switching Set is reached. The playback duration matches the duration of the CMAF Switching Set, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAAC-PLAYBACK_0260	1	Playback over WAVE Baseline Splice Constraints (AAC Core)	FALSE (DPCTF)	Two CMAF Switching Sets use the same media profile, can be described by a common CMAF header and have the same fragment duration, "splice-main" and "splice-ad". Fragments are selected from the beginning of splice-main until a pre-defined splice point and appended to the MSE source buffer. Playback is started once sufficient fragments have been appended. Once the splice point is reached, timestampOffset is set to avoid any discontinuities and the fragments from splice-ad are appended from the beginning to the end. Once the last fragment of splice-ad has been appended, timestampOffset is set again to avoid any discontinuities and the remaining fragments from splice-main are appended. At the start of the test and and when changing from one Switching Set to the other, the CMAF header for the new Switching Set is appended before any of the fragments Every audio frame is audible. The playback duration matches the duration of the CMAF Switching Sets, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CAMC-PLAYBACK_0100	1	Sequential Track Playback - baseline stream (AAC Multichannel - 'camc', mp4a.40.2)	FALSE (DPCTF)	A CMAF audio track (AAC Multichannel - 'camc', mp4a.40.2, 5.1) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.
tech.cta.wave.dpctf_CAMC-PLAYBACK_0110	1	Sequential Track Playback - baseline stream (AAC Multichannel - 'camc', mp4a.40.5)	FALSE (DPCTF)	A CMAF audio track (AAC Multichannel - 'camc', mp4a.40.5, 5.1) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio frame matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CEAC-PLAYBACK_0100	1	Sequential Track Playback - baseline stream (E-AC-3)	FALSE (DPCTF)	A CMAF audio track containing E-AC-3 is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.
tech.cta.wave.dpctf_CEAC-PLAYBACK_0200	1	Random Access to Fragment (E-AC-3)	FALSE (DPCTF)	A CMAF audio track (E-AC-3) is played from the start of a fragment (not the first) to the end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The currentTime attribute is set to the value corresponding to the start of the first fragment to be played. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is displayed starting from the first frame of the first fragment to be displayed until the last frame of the last fragment in the audio track. The playback duration matches the duration of the CMAF track from the first fragment played, the presented audio currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CEAC-PLAYBACK_0210	1	Random Access to Time (E-AC-3)	FALSE (DPCTF)	A CMAF audio track (E-AC-3) is played starting from a time corresponding to the middle of a fragment (not the first) to the end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The currentTime attribute is set to the value corresponding to the starting time. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is displayed starting with the frame corresponding to the starting time and finishing with the last frame in the CMAF track. The playback duration matches the duration of the CMAF track from the starting time, the presented audio matches currentTime within the tolerance.
tech.cta.wave.dpctf_CEAC-PLAYBACK_0220	1	Regular Playback of Chunked Content (E-AC-3)	FALSE (DPCTF)	A CMAF audio track (E-AC-3) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CEAC-PLAYBACK_0230	1	Regular Playback of Chunked Content, non-aligned append (E-AC-3)	FALSE (DPCTF)	A CMAF audio track (E-AC-3) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments in order until enough have been appended for playback to start. The CMAF fragments are appended as multiple byte ranges that are not aligned with the boundaries of the CMAF chunks. The play method is called to start playback after which the remaining CMAF fragments are appended in order as space permits until the last fragment has been appended. The CMAF fragments are appended as multiple byte ranges that are not aligned with the boundaries of the CMAF chunks. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CEAC-PLAYBACK_0240	1	Out-Of-Order Loading (E-AC-3)	FALSE (DPCTF)	A CMAF audio track (E-AC-3) is played from beginning to end, first appending the CMAF header to the source buffer followed by the CMAF fragments until enough have been appended for playback to start. The play method is called to start playback after which the remaining CMAF fragments are appended as space permits until the last fragment has been appended. Fragments are appended at the correct time in the source buffer but in a different order than their order on the media timeline. Every audio frame is audible. The playback duration matches the duration of the CMAF track, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CEAC-PLAYBACK_0250	1	Overlapping Fragments (E-AC-3)	FALSE (DPCTF)	A CMAF Switching Set (with more than one CMAF Track encoded as E-AC-3) is played from beginning to end, first appending the CMAF header to the source buffer followed by CMAF fragments in order until enough have been appended for playback to start. In each operation, two fragments are selected from one of the CMAF tracks in the Switching Set and appended to the source buffer, the first overlapping the last previously appended fragment (if any) and the second to be overlapped by the next append operation (if any). Every video frame is displayed. When switching between fragments from one Track and fragements from the other track, the CMAF header for the new track is appended. The play method is called to start playback after which CMAF fragments continue to be selected and appended as space permits until the end of the Switching Set is reached. The playback duration matches the duration of the CMAF Switching Set, the presented audio matches currentTime within the tolerance.

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Test Id	Vers	Title	Approved	Assertion
tech.cta.wave.dpctf_CEAC-PLAYBACK_0260	1	Playback over WAVE Baseline Splice Constraints (E-AC-3)	FALSE (DPCTF)	Two CMAF Switching Sets use the same media profile, can be described by a common CMAF header and have the same fragment duration, "splice-main" and "splice-ad". Fragments are selected from the beginning of splice-main until a pre-defined splice point and appended to the MSE source buffer. Playback is started once sufficient fragments have been appended. Once the splice point is reached, timestampOffset is set to avoid any discontinuities and the fragments from splice-ad are appended from the beginning to the end. Once the last fragment of splice-ad has been appended, timestampOffset is set again to avoid any discontinuities and the remaining fragments from splice-main are appended. At the start of the test and and when changing from one Switching Set to the other, the CMAF header for the new Switching Set is appended before any of the fragments Every audio frame is audible. The playback duration matches the duration of the CMAF Switching Sets, the presented audio matches currentTime within the tolerance.
tv.oipf_AVC-AAC-003	1	Audio From Memory - HE-AAC	TRUE	The terminal shall correctly decode memory audio encoded according to HE-AAC
tv.oipf_AVC-AAC-004-001	1	5.1 multi-channel audio output on S/PDIF	TRUE	The terminal shall correctly output 5.1 multi-channel HE-AAC audio on an S/PDIF output
tv.oipf_AVC-AAC-004-002	1	5.1 multi-channel audio with DRC parameters output on S/PDIF	TRUE	The terminal shall correctly output 5.1 multi-channel HE-AAC audio (containing Dynamic Range Control parameters and specified prog_ref_level) on an S/PDIF output

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_AVC-AAC-004-003	2	5.1 multi-channel audio with DRC parameters and prog_ref_level unspecified output on S/PDIF	TRUE	The terminal shall correctly output 5.1 multi-channel HE-AAC audio (containing Dynamic Range Control parameters and prog_ref_level not specified) on an S/PDIF output
tv.oipf_AVC-AAC-005-001	2	HE-AAC downmixing - matrix coefficient = 0	TRUE	The terminal shall downmix audio when down-mix parameters are present in the HE-AAC metadata with the matrix coefficient set to 0
tv.oipf_AVC-AAC-005-002	2	HE-AAC downmixing - matrix coefficient = 1	TRUE	The terminal shall downmix audio when down-mix parameters are present in the HE-AAC metadata with the matrix coefficient set to 1
tv.oipf_AVC-AAC-005-003	2	HE-AAC downmixing - matrix coefficient = 2	TRUE	The terminal shall downmix audio when down-mix parameters are present in the HE-AAC metadata with the matrix coefficient set to 2
tv.oipf_AVC-AAC-005-004	2	HE-AAC downmixing - matrix coefficient = 3	TRUE	The terminal shall downmix audio when down-mix parameters are present in the HE-AAC metadata with the matrix coefficient set to 3
tv.oipf_AVC-AAC-005-005	2	HE-AAC downmixing - center_mix_level = 0 dB (000), surround_mix_level = 0 dB (000)	TRUE	The terminal shall downmix audio when down-mix parameters are present in the HE-AAC metadata with center mix and surround mix channels enabled and their corresponding sound levels both set to 0 dB
tv.oipf_AVC-AAC-005-006	2	HE-AAC downmixing - center_mix_level = -3 dB (010), surround_mix_level = -3 dB (010)	TRUE	The terminal shall downmix audio when down-mix parameters are present in the HE-AAC metadata with center mix and surround mix channels enabled and their corresponding sound levels both set to -3 dB
tv.oipf_AVC-AAC-005-007	2	HE-AAC downmixing - center_mix_level = -6 dB (100), surround_mix_level = -6 dB (100)	TRUE	The terminal shall downmix audio when down-mix parameters are present in the HE-AAC metadata with center mix and surround mix channels enabled and their corresponding sound levels both set to -6 dB

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_AVC-AAC-005-008	2	HE-AAC downmixing - center_mix_level = -6 dB (100), surround_mix_level = -4.5 dB (011)	TRUE	The terminal shall downmix audio when down-mix parameters are present in the HE-AAC metadata with center mix and surround mix channels enabled and their corresponding sound levels set to -6 dB and -4.5 dB respectively
tv.oipf_AVC-AAC-005-009	2	HE-AAC downmixing - center_mix_level = -3 dB (010), surround_mix_level = -7.5 dB (101)	TRUE	The terminal shall downmix audio when down-mix parameters are present in the HE-AAC metadata with center mix and surround mix channels enabled and their corresponding sound levels set to -3 dB and -7.5 dB respectively
tv.oipf_AVC-AAC-005-010	2	HE-AAC downmixing - center_mix_level = -infinity dB (111), surround_mix_level -infinity dB (111)	TRUE	The terminal shall downmix audio when down-mix parameters are present in the HE-AAC metadata with center mix and surround mix channels enabled and their corresponding sound levels both set to -infinity dB
tv.oipf_AVC-AC3-001	1	Decode AC-3 audio from an MPEG-2 transport stream	TRUE	Terminal shall decode AC-3 audio from an MPEG-2 transport stream
tv.oipf_AVC-CPT-001-001	1	DVB subtitles	TRUE	Terminal shall correctly present DVB formatted subtitle information encoded in an MPEG-2 transport stream which also contains standard definition video encoded according to H.264/AVC
tv.oipf_AVC-CPT-001-002	1	DVB subtitles (HD)	TRUE	Terminal shall correctly present DVB formatted subtitle information encoded in an MPEG-2 transport stream which also contains high definition video encoded according to H.264/AVC
tv.oipf_AVC-GIF-001-001	2	Image rendering - GIF - 20 x 20 px	TRUE	Terminal shall correctly render a 20 x 20 px GIF image
tv.oipf_AVC-GIF-001-002	2	Image rendering - GIF - 40 x 20 px	TRUE	Terminal shall correctly render a 40 x 20 px GIF image
tv.oipf_AVC-GIF-001-003	2	Image rendering - GIF - 20 x 40 px	TRUE	Terminal shall correctly render a 20 x 40 px GIF image

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_AVC-GIF-001-004	2	Image rendering - GIF - 40 x 40 px	TRUE	Terminal shall correctly render a 40 x 40 px GIF image
tv.oipf_AVC-GIF-001-005	2	Image rendering - GIF - 347 x 131 px	TRUE	Terminal shall correctly render a 347 x 131 px GIF image
tv.oipf_AVC-GIF-001-006	2	Image rendering - GIF - 640 x 50 px	TRUE	Terminal shall correctly render a 640 x 50 px GIF image
tv.oipf_AVC-GIF-001-007	2	Image rendering - GIF - 50 x 480 px	TRUE	Terminal shall correctly render a 50 x 480 px GIF image
tv.oipf_AVC-GIF-001-008	2	Image rendering - GIF - 320 x 240 px	TRUE	Terminal shall correctly render a 320 x 240 px GIF image
tv.oipf_AVC-GIF-001-009	2	Image rendering - GIF - 240 x 320 px	TRUE	Terminal shall correctly render a 240 x 320 px GIF image
tv.oipf_AVC-GIF-001-010	2	Image rendering - GIF - 640 x 480 px	TRUE	Terminal shall correctly render a 640 x 480 px GIF image
tv.oipf_AVC-GIF-001-011	2	Image rendering - GIF (Animated) - 50 x 50 px	TRUE	Terminal shall correctly render an animated 50 x 50 px GIF image
tv.oipf_AVC-GIF-001-012	2	Image rendering - GIF (Transparent) - 50 x 50 px	TRUE	Terminal shall correctly render a 50 x 50 px GIF image that contains transparent pixels
tv.oipf_AVC-GIF-002	2	Image rendering - GIF - 720 x 576 px	TRUE	Terminal shall correctly render a 720 x 576 px GIF image
tv.oipf_AVC-GIF-004-001	2	Image rendering - GIF - 1024 x 768 px	FALSE (OIPF 'B')	Terminal shall correctly render a 1024 x 768 px GIF image
tv.oipf_AVC-GIF-004-002	2	Image rendering - GIF - 1920 x 1080 px	FALSE (OIPF 'B')	Terminal shall correctly render a 1920 x 1080 px GIF image
tv.oipf_AVC-HD-009-009	3	Fragmented MP4 - HD - H.264/AVC - HP 3.1 - 1280 x 720 px @ 25i - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 3.1 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 25i frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_AVC-HD-009-017	3	Fragmented MP4 - HD - H.264/AVC - HP 3.2 - 1920 x 1080 px @ 25i - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 3.2 profile, 16:9 aspect ratio, 1920 x 1080 px resolution, 25i frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-009-025	3	Fragmented MP4 - HD - H.264/AVC - HP 3.2 - 1280 x 720 px @ 50p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 3.2 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 50p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-009-028	2	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1920 x 1080 px @ 25p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 4.0 profile, 16:9 aspect ratio, 1920 x 1080 px resolution, 25p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-009-032	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1280 x 720 px @ 25p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 4.0 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 25p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-009-035	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1920 x 1080 px @ 25i - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 4.0 profile, 16:9 aspect ratio, 1920 x 1080 px resolution, 25i frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_AVC-HD-009-039	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1280 x 720 px @ 25i - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 4.0 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 25i frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-009-043	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1280 x 720 px @ 50p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_25 video format, High 4.0 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 50p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-008	3	Fragmented MP4 - HD - H.264/AVC - HP 3.1 - 1280 x 720 px @ 24p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 3.1 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 24p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-014	3	Fragmented MP4 - HD - H.264/AVC - HP 3.1 - 1280 x 720 px @ 30p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 3.1 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 30p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-026	3	Fragmented MP4 - HD - H.264/AVC - HP 3.1 - 1280 x 720 px @ 30i - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 3.1 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 30i frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_AVC-HD-010-036	3	Fragmented MP4 - HD - H.264/AVC - HP 3.2 - 1280 x 720 px @ 24p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 3.2 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 24p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-044	3	Fragmented MP4 - HD - H.264/AVC - HP 3.2 - 1280 x 720 px @ 30p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 3.2 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 30p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-054	3	Fragmented MP4 - HD - H.264/AVC - HP 3.2 - 1920 x 1080 px @ 30i - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 3.2 profile, 16:9 aspect ratio, 1920 x 1080 px resolution, 30i frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-058	3	Fragmented MP4 - HD - H.264/AVC - HP 3.2 - 1280 x 720 px @ 30i - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 3.2 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 30i frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-064	3	Fragmented MP4 - HD - H.264/AVC - HP 3.2 - 1280 x 720 px @ 60p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 3.2 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 60p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_AVC-HD-010-074	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1920 x 1080 px @ 24p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 4.0 profile, 16:9 aspect ratio, 1920 x 1080 px resolution, 24p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-078	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1280 x 720 px @ 24p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 4.0 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 24p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-088	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1920 x 1080 px @ 30p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 4.0 profile, 16:9 aspect ratio, 1920 x 1080 px resolution, 30p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-092	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1280 x 720 px @ 30p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 4.0 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 30p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-102	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1920 x 1080 px @ 30i - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 4.0 profile, 16:9 aspect ratio, 1920 x 1080 px resolution, 30i frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_AVC-HD-010-106	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1280 x 720 px @ 30i - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 4.0 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 30i frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-HD-010-114	3	Fragmented MP4 - HD - H.264/AVC - HP 4.0 - 1280 x 720 px @ 60p - 16:9 - 24 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_HD_30 video format, High 4.0 profile, 16:9 aspect ratio, 1280 x 720 px resolution, 60p frame rate, 24 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-JPG-001-001	2	Image rendering - JPEG - 20 x 20 px	TRUE	Terminal shall correctly render a 20 x 20 px JPEG image
tv.oipf_AVC-JPG-001-002	2	Image rendering - JPEG - 40 x 20 px	TRUE	Terminal shall correctly render a 40 x 20 px JPEG image
tv.oipf_AVC-JPG-001-003	2	Image rendering - JPEG - 20 x 40 px	TRUE	Terminal shall correctly render a 20 x 40 px JPEG image
tv.oipf_AVC-JPG-001-004	2	Image rendering - JPEG - 40 x 40 px	TRUE	Terminal shall correctly render a 40 x 40 px JPEG image
tv.oipf_AVC-JPG-001-005	2	Image rendering - JPEG - 347 x 131 px	TRUE	Terminal shall correctly render a 347 x 131 px JPEG image
tv.oipf_AVC-JPG-001-006	2	Image rendering - JPEG - 640 x 50 px	TRUE	Terminal shall correctly render a 640 x 50 px JPEG image
tv.oipf_AVC-JPG-001-007	2	Image rendering - JPEG - 50 x 480 px	TRUE	Terminal shall correctly render a 50 x 480 px JPEG image
tv.oipf_AVC-JPG-001-008	2	Image rendering - JPEG - 320 x 240 px	TRUE	Terminal shall correctly render a 320 x 240 px JPEG image
tv.oipf_AVC-JPG-001-009	2	Image rendering - JPEG - 240 x 320 px	TRUE	Terminal shall correctly render a 240 x 320 px JPEG image

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_AVC-JPG-001-010	2	Image rendering - JPEG - 640 x 480 px	TRUE	Terminal shall correctly render a 640 x 480 px JPEG image
tv.oipf_AVC-JPG-002	2	Image rendering - JPEG - 720 x 576 px	TRUE	Terminal shall correctly render a 720 x 576 px JPEG image
tv.oipf_AVC-JPG-004-001	2	Image rendering - JPEG - 1024 x 768 px	FALSE (OIPF 'B')	Terminal shall correctly render a 1024 x 768 px JPEG image
tv.oipf_AVC-JPG-004-002	2	Image rendering - JPEG - 1920 x 1080 px	FALSE (OIPF 'B')	Terminal shall correctly render a 1920 x 1080 px JPEG image
tv.oipf_AVC-PNG-001-001	2	Image rendering - PNG - 20 x 20 px	TRUE	Terminal shall correctly render a 20 x 20 px PNG image
tv.oipf_AVC-PNG-001-002	2	Image rendering - PNG - 40 x 20 px	TRUE	Terminal shall correctly render a 40 x 20 px PNG image
tv.oipf_AVC-PNG-001-003	2	Image rendering - PNG - 20 x 40 px	TRUE	Terminal shall correctly render a 20 x 40 px PNG image
tv.oipf_AVC-PNG-001-004	2	Image rendering - PNG - 40 x 40 px	TRUE	Terminal shall correctly render a 40 x 40 px PNG image
tv.oipf_AVC-PNG-001-005	2	Image rendering - PNG - 347 x 131 px	TRUE	Terminal shall correctly render a 347 x 131 px PNG image
tv.oipf_AVC-PNG-001-006	2	Image rendering - PNG - 640 x 50 px	TRUE	Terminal shall correctly render a 640 x 50 px PNG image
tv.oipf_AVC-PNG-001-007	2	Image rendering - PNG - 50 x 480 px	TRUE	Terminal shall correctly render a 50 x 480 px PNG image
tv.oipf_AVC-PNG-001-008	2	Image rendering - PNG - 320 x 240 px	TRUE	Terminal shall correctly render a 320 x 240 px PNG image
tv.oipf_AVC-PNG-001-009	2	Image rendering - PNG - 240 x 320 px	TRUE	Terminal shall correctly render a 240 x 320 px PNG image
tv.oipf_AVC-PNG-001-010	2	Image rendering - PNG - 640 x 480 px	TRUE	Terminal shall correctly render a 640 x 480 px PNG image
tv.oipf_AVC-PNG-002	2	Image rendering - PNG - 720 x 576 px	TRUE	Terminal shall correctly render a 720 x 576 px PNG image

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_AVC-PNG-004-001	2	Image rendering - PNG - 1024 x 768 px	FALSE (OIPF 'B')	Terminal shall correctly render a 1024 x 768 px PNG image
tv.oipf_AVC-PNG-004-002	2	Image rendering - PNG - 1920 x 1080 px	FALSE (OIPF 'B')	Terminal shall correctly render a 1920 x 1080 px PNG image
tv.oipf_AVC-SD-009-001	4	Fragmented MP4 - SD - H.264/AVC - MP 3.0 - 720 x 576 px @ 25p - 4:3 - 8 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_SD_25 video format, Main 3.0 profile, 4:3 aspect ratio, 720 x 576 px resolution, 25p frame rate, 8 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-SD-009-006	4	Fragmented MP4 - SD - H.264/AVC - MP 3.0 - 720 x 576 px @ 25i - 4:3 - 8 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_SD_25 video format, Main 3.0 profile, 4:3 aspect ratio, 720 x 576 px resolution, 25i frame rate, 8 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-SD-009-011	4	Fragmented MP4 - SD - H.264/AVC - MP 3.0 - 720 x 576 px @ 25p - 16:9 - 8 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_SD_25 video format, Main 3.0 profile, 16:9 aspect ratio, 720 x 576 px resolution, 25p frame rate, 8 Mbps bandwidth and 4 seconds of video in each mdat box
tv.oipf_AVC-SD-009-016	4	Fragmented MP4 - SD - H.264/AVC - MP 3.0 - 720 x 576 px @ 25i - 16:9 - 8 Mbps	FALSE (OIPF 'B')	The terminal shall correctly decode and present video from a fragmented MP4 file encoded with the AVC_SD_25 video format, Main 3.0 profile, 16:9 aspect ratio, 720 x 576 px resolution, 25i frame rate, 8 Mbps bandwidth and 4 seconds of video in each mdat box

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-001-001	2	DAE Gateway Discovery and Control APIs with no CI+ CAM inserted	FALSE (OIPF 'B')	With no CI+ CAM inserted in the terminal, the isCSPGCIPlusSupported property shall be true and the isCSPGCIPlusDiscovered property shall be false.
tv.oipf_CSP-CSPG-CIPLUS-001-002	2	Successful CSPG-CI+ discovery using DAE Gateway Discovery and Control APIs	FALSE (OIPF 'B')	Following successful CSPG-CI+ discovery, the isCSPGCIPlusDiscovered property shall be true and a DiscoverCSPGCIPlus event shall be dispatched.
tv.oipf_CSP-CSPG-CIPLUS-001-003	2	Unsuccessful CSPG-CI+ discovery using DAE Gateway Discovery and Control APIs	FALSE (OIPF 'B')	Following unsuccessful CSPG-CI+ discovery due to the connection being refused, the isCSPGCIPlusDiscovered property shall be false and the DiscoverCSPGCIPlus event shall not be dispatched.
tv.oipf_CSP-CSPG-CIPLUS-001-004	2	Loss of CSPG-CI+ gateway using DAE Gateway Discovery and Control APIs	FALSE (OIPF 'B')	Following loss of a CSPG-CI+ gateway, the isCSPGCIPlusDiscovered property shall be false and a DiscoverCSPGCIPlus event shall be dispatched.
tv.oipf_CSP-CSPG-CIPLUS-002-001	1	Signalling of CSPG-CI+ support using CEA-2014 capability negotiation and extensions with no CI+ CAM inserted	TRUE	With no CI+ CAM inserted in the terminal, the CEA-2014 capabilities shall not contain a 'drm' element with 'ci+' in the 'protectionGateways' attribute in the 'ext' element of the 'ui_profile' element and the video_profile element for MPEG2-TS shall not contain any CSPG-CI+ DRMSystemID attribute values.

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-002-002	1	Signalling of CSPG-CI+ support using CEA-2014 capability negotiation and extensions following successful CSPG-CI+ discovery	TRUE	Following successful CSPG-CI+ discovery, the CEA-2014 capabilities shall contain three 'drm' elements each with 'ci+' in the 'protectionGateways' attribute in the 'ext' element of the 'ui_profile' element and a unique 'DRMSystemID' attribute corresponding to the CAM supported ca_system_id values (4096, 4097, 4098). The media profile capability indication video_profile for MPEG2-TS shall include a DRMSystemID attribute with value 'urn:dvb:casystemid:4096'.
tv.oipf_CSP-CSPG-CIPLUS-002-003	2	Signalling of CSPG-CI+ support using CEA-2014 capability negotiation and extensions following unsuccessful CSPG-CI+ discovery	TRUE	Following unsuccessful CSPG-CI+ discovery (CAM inserted without CI+ support), the CEA-2014 capabilities shall not contain a 'drm' element with 'ci+' in the 'protectionGateways' attribute in the 'ext' element of the 'ui_profile' element.
tv.oipf_CSP-CSPG-CIPLUS-007-001	2	Correct DRMMessageResult event sent (0x00) when a 'reply_msg' with an oipf_status of 0x00 "Successful" is received from the CICAM	TRUE	When the CICAM sends a 'reply_msg' with an oipf_status of 0x00 "Successful" and an empty oipf_ca_vendor_specific_information string, a 'DRMMessageResult' event shall be dispatched with the 'resultCode' property set to 0x00 "Successful", the 'resultMsg' property set to an empty string and the 'msgID' property matching the value returned by the call to sendDRMMessage.

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-007-002	2	Correct DRMMessageResult event sent (0x00) when a 'reply_msg' with an oipf_status of 0x00 "Successful" and oipf_ca_vendor_specific_information present is received from the CICAM	TRUE	When the CICAM sends a 'reply_msg' with an oipf_status of 0x00 "Successful" and oipf_ca_vendor_specific_information "TEST_RESPONSE", a 'DRMMessageResult' event shall be dispatched with the 'resultCode' property set to 0x00 "Successful", the 'resultMsg' property set to "TEST_RESPONSE" and the 'msgID' property matching the value returned by the call to sendDRMMessage.
tv.oipf_CSP-CSPG-CIPLUS-007-003	2	Correct DRMMessageResult event sent (0x01) when a 'reply_msg' with an oipf_status of 0x01 "Unspecified error" and oipf_ca_vendor_specific_information present is received from the CICAM	TRUE	When the CICAM sends a 'reply_msg' with an oipf_status of 0x01 "Unspecified error" and oipf_ca_vendor_specific_information "TEST_RESPONSE", a 'DRMMessageResult' event shall be dispatched with the 'resultCode' property set to 0x01 "Unknown error", the 'resultMsg' property set to "TEST_RESPONSE" and the 'msgID' property matching the value returned by the call to sendDRMMessage.
tv.oipf_CSP-CSPG-CIPLUS-007-004	2	Correct DRMMessageResult event sent (0x02) when a 'reply_msg' with an oipf_status of 0x02 "Out of time" is received from the CICAM	TRUE	When the CICAM sends a 'reply_msg' with an oipf_status of 0x02 "Out of time" and an empty oipf_ca_vendor_specific_information string, a 'DRMMessageResult' event shall be dispatched with the 'resultCode' property set to 0x02 "Cannot process request", the 'resultMsg' property set to an empty string and the 'msgID' property matching the value returned by the call to sendDRMMessage.

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-007-005	2	Correct DRMMessageResult event sent (0x03) and send_msg not sent when a sendDRMMessage is attempted with an unknown MIME type	TRUE	When a sendDRMMessage is attempted with an unknown MIME type, a 'DRMMessageResult' event shall be dispatched with the 'resultCode' property set to 0x03 "Unknown MIME type" and the 'msgID' property matching the value returned by the call to sendDRMMessage, and a send_msg message shall not be sent by the terminal.
tv.oipf_CSP-CSPG-CIPLUS-007-006	2	Correct DRMMessageResult event sent (0x04) when a 'reply_msg' with an oipf_status of 0x04 "User consent needed" is received from the CICAM	TRUE	When the CICAM sends a 'reply_msg' with an oipf_status of 0x04 "User consent needed" and an empty oipf_ca_vendor_specific_information string, a 'DRMMessageResult' event shall be dispatched with the 'resultCode' property set to 0x04 "User consent needed" and the 'resultMsg' property set to an empty string, and the 'msgID' property matching the value returned by the call to sendDRMMessage.
tv.oipf_CSP-CSPG-CIPLUS-007-007	2	Correct DRMMessageResult event sent (0x05) when a 'reply_msg' with an oipf_status of 0x05 "Unknown DRM system" is received from the CICAM	TRUE	When the CICAM sends a 'reply_msg' with an oipf_status of 0x05 "Unknown DRM system" and an empty oipf_ca_vendor_specific_information string, a 'DRMMessageResult' event shall be dispatched with the 'resultCode' property set to 0x05 "Unknown DRM system", the 'resultMsg' property set to an empty string, and the 'msgID' property matching the value returned by the call to sendDRMMessage.

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-007-008	2	Correct DRMMessageResult event sent (0x05) and send_msg not sent when a sendDRMMessage is attempted with a non matching DRMSystemId	TRUE	When a sendDRMMessage is attempted with a non matching ca_system_id, a 'DRMMessageResult' event shall be dispatched with the 'resultCode' property set to 0x05 "Unknown DRM system", 'msgID' property matching the value returned by the call to sendDRMMessage, and a send_msg message shall not be sent by the terminal.
tv.oipf_CSP-CSPG-CIPLUS-007-009	2	Correct DRMMessageResult event sent (0x06) when a 'reply_msg' with an oipf_status of 0x03 "Wrong format" is received from the CICAM	TRUE	When the CICAM sends a 'reply_msg' with an oipf_status of 0x03 "Wrong format" and an empty oipf_ca_vendor_specific_information string, a 'DRMMessageResult' event shall be dispatched with the 'resultCode' property set to 0x06 "Wrong format", the 'resultMsg' property set to an empty string, and the 'msgID' property matching the value returned by the call to sendDRMMessage.
tv.oipf_CSP-CSPG-CIPLUS-007-010	2	'send_msg' is sent to CICAM when sendDRMMessage is called with an empty 'msg'	TRUE	When sendDRMMessage is called with msgType set to application/vnd.oipf.cspg-hexbinary, an empty 'msg' and DRMSystemId set to "urn:dvb:casystemid:4096", a 'send_msg' shall be sent to the CICAM with a ca_system_id of 4096 and an empty oipf_ca_vendor_specific_information string.
tv.oipf_CSP-CSPG-CIPLUS-007-011	2	'send_msg' is sent to CICAM when sendDRMMessage is called with 'msg' data present	TRUE	When sendDRMMessage is called with msgType set to application/vnd.oipf.cspg-hexbinary, 'msg' set to "TEST_REQUEST" and DRMSystemId set to "urn:dvb:casystemid:4096", a 'send_msg' shall be sent to the CICAM with a ca_system_id of 4096 and an oipf_ca_vendor_specific_information string "TEST_REQUEST".

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-009-001	2	DRMRightsError handling following a CICAM rights_info message with a null 'oipf-rights_issuer_url', where descrambling is stopped	TRUE	When the CICAM sends a 'rights_info' message with 'oipf_access_status' 0 ('program not descrambled'), a 'ca_system_id' of 4096 and a null 'oipf_rights_issuer_url', a 'DRMRightsError' event shall be dispatched with errorState 0 ('No license'), 'DRMSystemID' set to 'urn:dvb:casystemid:4096' and undefined 'rightsIssuerURL'.
tv.oipf_CSP-CSPG-CIPLUS-009-003	2	DRMRightsError handling following a CICAM rights_info message with a null 'oipf-rights_issuer_url', where descrambling is stopped and then re-enabled	TRUE	When the CICAM sends a 'rights_info' message with 'oipf_access_status' 0 ('program not descrambled') and a null 'oipf-rights_issuer_url'. When the CICAM sends a 'rights_info' with 'oipf_access_status' 1 ('program descrambled'), a 'ca_system_id' of 4096 and an empty 'oipf_rights_issuer_url', a 'DRMRightsError' event shall be dispatched with errorState 2 ('valid license'), 'DRMSystemID' set to 'urn:dvb:casystemid:4096' and an empty 'rightsIssuerURL'.
tv.oipf_CSP-CSPG-CIPLUS-009-004	2	DRMRightsError handling following a CICAM rights_info message with a valid 'oipf-rights_issuer_url' HTTP URL where descrambling is stopped	TRUE	When the CICAM sends a 'rights_info' message with 'oipf_access_status' 0 ('program not descrambled'), a 'ca_system_id' of 4096 and 'oipf_rights_issuer_url' set to a valid HTTP URL, a 'DRMRightsError' event shall be dispatched with errorState 0 ('no license'), DRMSystemID set to 'urn:dvb:casystemid:4096' and 'rightsIssuerURL' set to the same valid HTTP URL.

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-011-001	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x00 (mandatory DVB parental rating type) and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x00 (mandatory DVB parental rating type), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-003	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x00 (mandatory DVB parental rating type) and a null 'oipf_parental_control_url' where descrambling is stopped and then re-enabled	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x00 (mandatory DVB parental rating type), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent. When the CICAM then sends a 'parental_control_info' message with 'oipf_access_status' 1 (program descrambled), shall send a 'ParentalRatingChange' event with parameters matching the 'parental_control_info' message and shall not send a 'ParentalRatingError' event.
tv.oipf_CSP-CSPG-CIPLUS-011-004	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x01 (Japanese Motion Picture Parental Rating) and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x01 (Japanese Motion Picture Parental Rating), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent.

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-011-005	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x02 (Internet Content Rating Association Parental Rating) and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x02 (Internet Content Rating Association Parental Rating), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-006	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x03 (MPAA Parental Rating) and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x03 (MPAA Parental Rating), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-007	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x04 (Internet Content Rating Association Parental Rating for Nudity) and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x04 (Internet Content Rating Association Parental Rating for Nudity), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent.

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-011-008	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x05 (RIAA Parental Rating) and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x05 (RIAA Parental Rating), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-009	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x06 (Internet Content Rating Association Parental Rating for Sex) and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x06 (Internet Content Rating Association Parental Rating for Sex), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-010	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x07 (MPAA Parental Rating for TV) and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x07 (MPAA Parental Rating for TV), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent.

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-011-011	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x08 (Internet Content Rating Association Parental Rating for Violence) and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x08 (Internet Content Rating Association Parental Rating for Violence), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-012	3	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x09 (German Freiwillige Selbstkontrolle der Filmwirtschaft Rating System) and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x09 (German Freiwillige Selbstkontrolle der Filmwirtschaft Rating System), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingChange' event shall be sent with matching parameters and a 'ParentalRatingError' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-013	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x01 (Japanese Motion Picture Parental Rating) that is unsupported by the terminal and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x01 (Japanese Motion Picture Parental Rating), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingError' event shall be sent with matching parameters and a 'ParentalRatingChange' event shall not be sent.

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-011-014	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x02 (Internet Content Rating Association Parental Rating) that is unsupported by the terminal and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x02 (Internet Content Rating Association Parental Rating), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingError' event shall be sent with matching parameters and a 'ParentalRatingChange' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-015	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x03 (MPAA Parental Rating) that is unsupported by the terminal and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x03 (MPAA Parental Rating), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingError' event shall be sent with matching parameters and a 'ParentalRatingChange' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-016	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x04 (Internet Content Rating Association Parental Rating for Nudity) that is unsupported by the terminal and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x04 (Internet Content Rating Association Parental Rating for Nudity), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingError' event shall be sent with matching parameters and a 'ParentalRatingChange' event shall not be sent.

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tv.oipf_CSP-CSPG-CIPLUS-011-017	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x05 (RIAA Parental Rating) that is unsupported by the terminal and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x05 (RIAA Parental Rating), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingError' event shall be sent with matching parameters and a 'ParentalRatingChange' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-018	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x06 (Internet Content Rating Association Parental Rating for Sex) that is unsupported by the terminal and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x06 (Internet Content Rating Association Parental Rating for Sex), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingError' event shall be sent with matching parameters and a 'ParentalRatingChange' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-019	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x07 (MPAA Parental Rating for TV) that is unsupported by the terminal and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x07 (MPAA Parental Rating for TV), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingError' event shall be sent with matching parameters and a 'ParentalRatingChange' event shall not be sent.

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_CSP-CSPG-CIPLUS-011-020	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x08 (Internet Content Rating Association Parental Rating for Violence) that is unsupported by the terminal and a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x08 (Internet Content Rating Association Parental Rating for Violence), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingError' event shall be sent with matching parameters and a 'ParentalRatingChange' event shall not be sent.
tv.oipf_CSP-CSPG-CIPLUS-011-021	2	Management of parental_control_info message sent by the CICAM with oipf_rating_type 0x09 (German Freiwillige Selbstkontrolle der Filmwirtschaft Rating System) that is unsupported by the terminal with a null 'oipf_parental_control_url' where descrambling is stopped	TRUE	When the CICAM sends a 'parental_control_info' message with 'oipf_rating_type' 0x09 (German Freiwillige Selbstkontrolle der Filmwirtschaft Rating System), 'oipf_access_status' 0 (program not descrambled) and a null 'oipf_parental_control_url', a 'ParentalRatingError' event shall be sent with matching parameters and a 'ParentalRatingChange' event shall not be sent.
tv.oipf_DAE-APP_MGMT-002	1	getOwnerApplication() method of application/oipfApplicationManager	TRUE	The getOwnerApplication() method shall be available on the application/oipfApplicationManager object
tv.oipf_DAE-APP_MGMT-010	1	A/V Control object audio is silenced when destroyApplication() is called	FALSE	An A/V Control object's associated audio shall no longer be audible after destroyApplication() has been called on the owner Application object
tv.oipf_DAE-APP_MGMT-013	2	Application only receives registered key set events	TRUE	When a keyset is registered to the application using the setValue() method of the Keyset object, only key events for registered keys shall be sent to the currently focused DOM Window object

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-APP_MGMT-014	2	Applications with different key sets receive a union of all key events	FALSE (OIPF 'B')	When different keysets have been registered to multiple applications using the setValue() method of the Keyset object, all applications will receive a union of all registered keys' events
tv.oipf_DAE-CAPABILITY-003-001	1	HD output supports HD graphics with HD video	TRUE	Terminal shall support 1280x720 graphics on its HD output while a HD video is being decoded
tv.oipf_DAE-CAPABILITY-003-002	1	HD output supports HD graphics with no video (OIPF)	FALSE (OIPF 'B')	Terminal shall support 1280x720 graphics on its HD output while no video is being decoded
tv.oipf_DAE-CAPABILITY-005	3	PNG / A/V Control object - Per-pixel alpha	TRUE	The terminal shall correctly apply alpha compositing, when a PNG image with fully-transparent pixels is positioned on top of a playing video
tv.oipf_DAE-CE_HTML_DEV-040-001	2	A/V Control object - play() - Unsupported A/V Format	TRUE	When calling play() on the A/V Control object, if all of the tracks in the MP4 file are unsupported, the A/V Control object shall dispatch a PlayStateChange event, its 'playState' property shall be set to 6 (ERROR) and its 'error' property shall be equal to 0 (A/V format not supported), 2 (unidentified error) or 4 (content corrupt or invalid).
tv.oipf_DAE-CE_HTML_DEV-040-002	2	A/V Control object - play() - Content Corrupt or Invalid	TRUE	When calling play() on the A/V Control object, if the file specified by the 'data' attribute of the A/V Control object does not have a valid MP4 header, the A/V Control object shall dispatch a PlayStateChange event with its 'state' context equal to 6 (ERROR) and its 'error' context equal to 0 (A/V format not supported), 2 (unidentified error) or 4 (content corrupt or invalid).

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-CE_HTML_DEV-042	2	Seek to play position greater than duration (MP4)	TRUE	When calling the seek() method on the A/V Control object to seek to a play position greater than the duration of an MP4 video, the A/V Control object shall dispatch a 'PlayPositionChanged' event and the 'playPosition' property of the A/V Control object shall be set to the play position at the moment the seek() method was called (with a tolerance of +/-10 seconds)
tv.oipf_DAE-CHANNEL_SCAN-001-001	1	createChannelScanParametersObject() - ID_DVB_T	FALSE (OIPF 'B')	When createChannelScanParametersObject() is called on the ChannelConfig object with its 'idType' argument set to 12 (ID_DVB_T), the method shall return an object and the values of the following properties shall be undefined: startFrequency, endFrequency, raster, ofdm, modulationModes, bandwidth
tv.oipf_DAE-CHANNEL_SCAN-001-002	1	createChannelScanParametersObject() - ID_DVB_T2	FALSE (OIPF 'B')	When createChannelScanParametersObject() is called on the ChannelConfig object with its 'idType' argument set to 16 (ID_DVB_T2), the method shall return an object and the values of the following properties shall be undefined: startFrequency, endFrequency, raster, ofdm, modulationModes, bandwidth
tv.oipf_DAE-CHANNEL_SCAN-001-003	1	createChannelScanParametersObject() - ID_DVB_C	FALSE (OIPF 'B')	When createChannelScanParametersObject() is called on the ChannelConfig object with its 'idType' argument set to 10 (ID_DVB_C), the method shall return an object and the values of the following properties shall be undefined: startFrequency, endFrequency, raster, startNetworkScanOnNIT, modulationModes, symbolRate, networkId

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tv.oipf_DAE-CHANNEL_SCAN-001-004	1	createChannelScanParametersObject() - ID_DVB_C2	FALSE (OIPF 'B')	When createChannelScanParametersObject() is called on the ChannelConfig object with its 'idType' argument set to 14 (ID_DVB_C2), the method shall return an object and the values of the following properties shall be undefined: startFrequency, endFrequency, raster, startNetworkScanOnNIT, modulationModes, symbolRate, networkId
tv.oipf_DAE-CHANNEL_SCAN-001-005	1	createChannelScanParametersObject() - ID_DVB_S	FALSE (OIPF 'B')	When createChannelScanParametersObject() is called on the ChannelConfig object with its 'idType' argument set to 11 (ID_DVB_S), the method shall return an object and the values of the following properties shall be undefined: startFrequency, endFrequency, modulationModes, symbolRate, polarisation, codeRate, orbitalPosition, networkId
tv.oipf_DAE-CHANNEL_SCAN-001-006	1	createChannelScanParametersObject() - ID_DVB_S2	FALSE (OIPF 'B')	When createChannelScanParametersObject() is called on the ChannelConfig object with its 'idType' argument set to 15 (ID_DVB_S2), the method shall return an object and the values of the following properties shall be undefined: startFrequency, endFrequency, modulationModes, symbolRate, polarisation, codeRate, orbitalPosition, networkId
tv.oipf_DAE-CHANNEL_SCAN-001-007	1	createChannelScanParametersObject() - ID_ATSC_T	FALSE (OIPF 'B')	When createChannelScanParametersObject() is called on the ChannelConfig object with its 'idType' argument set to 30 (ID_ATSC_T), the method shall return an object and the values of the following properties shall be undefined: startFrequency, endFrequency, raster, modulationModes

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-CHANNEL_SCAN-001-008	1	createChannelScanParametersObject() - Argument Set To Invalid Integer	FALSE (OIPF 'B')	When createChannelScanParametersObject() is called on the ChannelConfig object with its 'idType' argument set to an invalid integer, the method shall return null
tv.oipf_DAE-CHANNEL_SCAN-002	1	createChannelScanOptionsObject()	FALSE (OIPF 'B')	When createChannelScanOptionsObject() is called on the ChannelConfig object, the method shall return an object and the values of the following properties shall be undefined: channelType, replaceExisting
tv.oipf_DAE-CHANNEL_SCAN-003-001	1	startScan() - DVB-C/C2 - No Channels In Range	FALSE (OIPF 'B')	When startScan() is used on a DVB-C/DVB-C2 terminal to scan a frequency range that is empty (i.e. white noise), a 'ChannelScan' event with its 'scanEvent' context equal to 2, 3 or 5 shall not be dispatched
tv.oipf_DAE-CHANNEL_SCAN-004-001	1	stopScan() - DVB-C/C2 - Previous Scan Not In Progress	FALSE (OIPF 'B')	When a previous scan is not in progress, calling stopScan() on the ChannelConfig object shall not cause an exception to be thrown and no onChannelScan events (including corresponding DOM events) shall be dispatched
tv.oipf_DAE-CHANNEL_SCAN-004-002	1	stopScan() - DVB-C/C2 - Previous Scan In Progress	FALSE (OIPF 'B')	When a previous scan is in progress and stopScan() is called on the ChannelConfig object, a 'ChannelScan' event shall be dispatched with its 'scanEvent' context equal to 5
tv.oipf_DAE-CHANNEL_SCAN-005-001	1	startScan() - DVB-C/C2 - In Progress Events	FALSE (OIPF 'B')	When a scan is in progress: at least 1 onChannelScan event shall be dispatched with its 'scanEvent' context equal to 1 and its 'progress' context equal to an integer in the range -1 to 100; the value of the 'progress' context shall never decrease between subsequent events

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-CHANNEL_SCAN-006-001	1	startScan() - DVB-C/C2 - Channels In Range	FALSE (OIPF 'B')	When startScan() is used on a DVB-C/DVB-C2 terminal to scan a frequency range that contains a DVB multiplex, the status shall be correctly reported via 'ChannelScan' events
tv.oipf_DAE-CONFIGURATION_SETTING-011-001	1	NetworkInterfaceCollection - Access Items Using item()	FALSE (OIPF 'B')	The item() method of the NetworkInterfaceCollection object shall return a NetworkInterface object at each valid index
tv.oipf_DAE-CONFIGURATION_SETTING-011-002	1	NetworkInterfaceCollection - Access Items Using Array Notation	FALSE (OIPF 'B')	When using array notation, the NetworkInterfaceCollection object shall return a NetworkInterface object at each valid index
tv.oipf_DAE-CONFIGURATION_SETTING-011-003	1	NetworkInterface - 'ipAddress' Property	FALSE (OIPF 'B')	The value of the 'ipAddress' property on each NetworkInterface object in the NetworkInterfaceCollection object shall be either in dotted-quad notation for IPv4, colon-hexadecimal notation for IPv6 or undefined
tv.oipf_DAE-CONFIGURATION_SETTING-011-004	1	NetworkInterface - 'macAddress' Property	FALSE (OIPF 'B')	The value of the 'macAddress' property on each NetworkInterface object in the NetworkInterfaceCollection shall be a colon-separated MAC address
tv.oipf_DAE-CONFIGURATION_SETTING-011-005	1	NetworkInterface - 'connected' Property	FALSE (OIPF 'B')	The value of the 'connected' property on each NetworkInterface object in the NetworkInterfaceCollection object shall be a boolean
tv.oipf_DAE-CONFIGURATION_SETTING-011-006	1	NetworkInterface - 'enabled' Property	FALSE (OIPF 'B')	The value of the 'enabled' property on each NetworkInterface object in the NetworkInterfaceCollection shall be a boolean
tv.oipf_DAE-CONFIGURATION_SETTING-011-007	1	NetworkInterface - At Least 1 Connected	FALSE (OIPF 'B')	At least 1 NetworkInterface object in the NetworkInterfaceCollection shall have a 'connected' property with a value equal to true
tv.oipf_DAE-CONFIGURATION_SETTING-011-008	1	NetworkInterface - Only Enabled Network Interfaces Are Connected	FALSE (OIPF 'B')	All network interfaces with 'connected' property of true shall have 'enabled' property of true

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-CONFIGURATION_SETTING-011-009	1	NetworkInterface - Disconnect Cable or Wireless Access Point	FALSE (OIPF 'B')	When disconnecting a network connection, the 'connected' state of the associated NetworkInterface object shall change from true to false
tv.oipf_DAE-CONFIGURATION_SETTING-011-010	1	NetworkInterface - Disabling a Connected Interface	FALSE (OIPF 'B')	Changing a NetworkInterface object's 'enabled' property from true to false shall cause it's 'connected' property to change from true to false
tv.oipf_DAE-CONFIGURATION_SETTING-012	1	AVOutputCollection - Access Using item() Method	FALSE (OIPF 'B')	The item() method of the AVOutputCollection object shall return an AVOutput object at each valid index
tv.oipf_DAE-CONFIGURATION_SETTING-014	2	LocalSystem - volume	FALSE (OIPF 'B')	When the 'volume' property of the LocalSystem object is set, the audio output level of the terminal shall be adjusted accordingly
tv.oipf_DAE-CONFIGURATION_SETTING-015	3	LocalSystem - mute	FALSE (OIPF 'B')	When the 'mute' property of the LocalSystem object is set, the default audio output(s) of the terminal shall be muted
tv.oipf_DAE-CONFIGURATION_SETTING-020-001	2	LocalSystem - outputs (OIPF 1)	FALSE (OIPF 'B')	The 'outputs' property of the LocalSystem object shall contain an AVOutputCollection containing one or more AVOutput objects; there shall be an AVOutput object for each audio, video or A/V output; the properties of each AVOutput object shall contain valid values; each property shall correctly describe the output that they represent (OIPF 1)

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-CONFIGURATION_SETTING-020-002	2	LocalSystem - outputs (OIPF 2)	FALSE (OIPF 'B')	The 'outputs' property of the LocalSystem object shall contain an AVOutputCollection containing one or more AVOutput objects; there shall be an AVOutput object for each audio, video or A/V output; the properties of each AVOutput object shall contain valid values; each property shall correctly describe the output that they represent (OIPF 2)
tv.oipf_DAE-CONFIGURATION_SETTING-021	2	Configuration - preferredAudioLanguage	TRUE	The 'preferredAudioLanguage' property of the Configuration object shall contain a comma separated set of valid language codes, as defined in ISO 639.2
tv.oipf_DAE-CONFIGURATION_SETTING-022-001	2	Configuration - preferredSubtitleLanguage (OIPF 1)	TRUE	The 'preferredSubtitleLanguage' property of the Configuration object shall contain a comma separated set of valid language codes, as defined in ISO 639.2 (OIPF 1)
tv.oipf_DAE-CONFIGURATION_SETTING-022-002	1	Configuration - preferredSubtitleLanguage (OIPF 2)	FALSE (OIPF 'B')	The 'preferredSubtitleLanguage' property of the Configuration object shall contain a comma separated set of valid language codes as defined in ISO 639.2, and/or a wildcard specifier as the last item in the set (OIPF 2)
tv.oipf_DAE-CONFIGURATION_SETTING-023	2	Configuration - preferredUILanguage	TRUE	The 'preferredUILanguage' property of the Configuration object shall contain a comma separated set of valid language codes, as defined in ISO 639.2
tv.oipf_DAE-CONFIGURATION_SETTING-024-001	1	Tuner - Object Validation	FALSE (OIPF 'B')	The item() method of the TunerCollection object shall return a Tuner object at each valid index
tv.oipf_DAE-CONFIGURATION_SETTING-024-002	1	Tuner - Unique 'id' Property	FALSE (OIPF 'B')	The 'id' property of each of the Tuner objects shall be a unique integer

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tv.oipf_DAE-CONFIGURATION_SETTING-024-003	1	Tuner - Valid 'idTypes' Property	FALSE (OIPF 'B')	For each Tuner object in the TunerCollection object, the IntegerCollection object of its 'idTypes' property shall only contain values that are equal to the values of the Channel class constants prepended with 'ID_'
tv.oipf_DAE-MEDIA_PLAYBACK-006-001	2	Audio plays if A/V object is positioned outside of viewport	TRUE	When an A/V Control object is positioned outside of the DOM viewport and the play() method is called on it with a playSpeed of 1, the associated audio shall still be outputted by the terminal
tv.oipf_DAE-MEDIA_PLAYBACK-006-002	2	Audio still plays if an A/V Control object's 'visibility' style attribute is set to 'hidden'	TRUE	When the 'visibility' style attribute of the A/V Control object is set to 'hidden' and the play() method is called on it with a playSpeed of 1, the associated audio shall still be outputted by the terminal
tv.oipf_DAE-MEDIA_PLAYBACK-006-003	2	Audio plays if A/V object's CSS opacity property is set to 0 (fully transparent)	TRUE	When an A/V Control object CSS opacity property is set to 0 and the play() method is called on it with a playSpeed of 1, the associated audio shall still be outputted by the terminal
tv.oipf_DAE-MEDIA_PLAYBACK-006-006	2	A/V Control object obscured by an HTML element does not release its resources	TRUE	When the A/V Control object is in play state 'playing' and is completely obscured by another fully opaque HTML element with a higher Z-index, it shall continue to present the associated audio
tv.oipf_DAE-MEDIA_PLAYBACK-007-001	2	Calling play(0) on A/V Control object in 'buffering' state puts the object into 'paused' state	TRUE	When a A/V Control object has a playState of 4 (buffering) and the play() method is called on it with its 'speed' argument set to 0, its playState shall change to 2 (paused)

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tv.oipf_DAE-MEDIA_PLAYBACK-007-002	2	Calling play(0) on A/V Control object in 'connecting' state puts the object into 'paused' state	TRUE	When an A/V Control object has a playState of 3 (connecting) and the play() method is called on it with its 'speed' argument set to 0, its playState shall change to 2 (paused)
tv.oipf_DAE-MEDIA_PLAYBACK-007-003	2	Calling play(0) on A/V Control object in 'stopped' state puts the object into 'paused' state	TRUE	When an A/V Control object has a playState of 0 ('stopped') and the play() method is called on it with its playSpeed parameter set to 0, its playState shall change to 2 ('paused')
tv.oipf_DAE-MEDIA_PLAYBACK-008	2	play() method of A/V Control called before sufficient data is available for 'playable_download' acquisition	TRUE	When a download is initiated using a Content Access Download descriptor with its <TransferType> element set to 'playable_download'; setting the A/V Control object's source to the download and calling play() before sufficient data has been downloaded to initiate playback - shall cause the A/V Control object to go to play state 6 (error) with an error code of 5 (content not available)
tv.oipf_DAE-MEDIA_PLAYBACK-009	2	play() method of A/V Control called before sufficient data is available for 'full_download' acquisition	TRUE	When a download is initiated using a Content Access Download descriptor with its <TransferType> element set to 'full_download'; setting the A/V Control object's source to the download and calling play() before sufficient data has been downloaded to initiate playback - shall cause the A/V Control object to go to play state 6 (error) with an error code of 5 (content not available)
tv.oipf_DAE-MEDIA_PLAYBACK-023	1	HE-AAC memory audio loop parameter	TRUE	When an A/V Control object plays HE-AAC memory audio, it shall loop the audio as many times as specified in the 'loop' parameter
tv.oipf_DAE-MEDIA_PLAYBACK-025-001	1	Stopping playing memory audio	TRUE	Terminal shall be able to stop memory audio before it finishes playing

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tv.oipf_DAE-MEDIA_PLAYBACK-025-002	1	<param> element is accessible through the A/V control object	TRUE	<param> element of the A/V Control object shall be accessible after memory audio has been played, then stopped
tv.oipf_DAE-MEDIA_PLAYBACK-026	1	Audio from memory - Playing after previously stopped (HE-AAC)	TRUE	Terminal shall play HE-AAC after it was previously played, then stopped
tv.oipf_DAE-MEDIA_PLAYBACK-027	2	AV Object Seeking (MP4 Forward 5s) correctly reports its position via onPlayPositionChanged	TRUE	When the seek() method is called on the A/V Control object specifying the position as the current position plus 5 seconds, and an AVC_SD_25 MP4 is currently being streamed over HTTP; an 'onPlayPositionChanged' event shall be dispatched and its 'position' parameter shall report the expected position
tv.oipf_DAE-MEDIA_PLAYBACK-028	2	AV Object Seeking (MP4 Forward 180s) correctly reports its position via onPlayPositionChanged	TRUE	When the seek() method is called on the A/V Control object specifying the position as the current position plus 180 seconds, and an AVC_SD_25 MP4 is currently being streamed over HTTP; an 'onPlayPositionChanged' event shall be dispatched and its 'position' parameter shall report the expected position
tv.oipf_DAE-MEDIA_PLAYBACK-029	2	AV Object Seeking (MP4 Backward 180s) correctly reports its position via onPlayPositionChanged	TRUE	When the seek() method is called on the A/V Control object specifying the position as the current position minus 180 seconds, and an AVC_SD_25 MP4 is currently being streamed over HTTP; an 'onPlayPositionChanged' event shall be dispatched and its 'position' parameter shall report the expected position

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tv.oipf_DAE-MEDIA_PLAYBACK-030	2	AV Object Seeking (MP4 Backward 5s) correctly reports its position via onPlayPositionChanged	TRUE	When the seek() method is called on the A/V Control object specifying the position as the current position minus 5 seconds, and an AVC_SD_25 MP4 is currently being streamed over HTTP; an 'onPlayPositionChanged' event shall be dispatched and its 'position' parameter shall report the expected position
tv.oipf_DAE-MISCELLANEOUS-010-002-001	3	hasCapability() - +PVR - Supported	TRUE	If the terminal supports the +PVR capability, the hasCapability() method of the application/oipfCapabilities object shall return true when called with its 'profileName' argument set to '+PVR'
tv.oipf_DAE-MISCELLANEOUS-010-002-002	1	hasCapability() - +PVR - Not Supported	TRUE	If the terminal does not support the +PVR capability, the hasCapability() method of the application/oipfCapabilities object shall return false when called with its 'profileName' argument set to '+PVR'
tv.oipf_DAE-MISCELLANEOUS-010-003-001	2	hasCapability() - +TRICKMODE - Supported	FALSE (OIPF 'B')	If the terminal supports the +TRICKMODE capability, the hasCapability() method of the application/oipfCapabilities object shall return true when called with its 'profileName' argument set to '+TRICKMODE'
tv.oipf_DAE-MISCELLANEOUS-010-003-002	1	hasCapability() - +TRICKMODE - Not Supported	FALSE (OIPF 'B')	If the terminal does not support the +TRICKMODE capability, the hasCapability() method of the application/oipfCapabilities object shall return false when called with its 'profileName' argument set to '+TRICKMODE'

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tv.oipf_DAE-MISCELLANEOUS-010-004-001	2	hasCapability() - +DVB_C - Supported	FALSE (OIPF 'B')	If the terminal supports the +DVB_C capability, the hasCapability() method of the application/oipfCapabilities object shall return true when called with its 'profileName' argument set to '+DVB_C'
tv.oipf_DAE-MISCELLANEOUS-010-004-002	1	hasCapability() - +DVB_C - Not Supported	FALSE (OIPF 'B')	If the terminal does not support the +DVB_C capability, the hasCapability() method of the application/oipfCapabilities object shall return false when called with its 'profileName' argument set to '+DVB_C'
tv.oipf_DAE-MISCELLANEOUS-010-005-001	2	hasCapability() - +DVB_C2 - Supported	FALSE (OIPF 'B')	If the terminal supports the +DVB_C2 capability, the hasCapability() method of the application/oipfCapabilities object shall return true when called with its 'profileName' argument set to '+DVB_C2'
tv.oipf_DAE-MISCELLANEOUS-010-005-002	1	hasCapability() - +DVB_C2 - Not Supported	FALSE (OIPF 'B')	If the terminal does not support the +DVB_C2 capability, the hasCapability() method of the application/oipfCapabilities object shall return false when called with its 'profileName' argument set to '+DVB_C2'
tv.oipf_DAE-OBJECT_FACTORY-001-001	1	isObjectSupported() (true) - application/oipfApplicationManager	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfApplicationManager, it shall return true and the createApplicationManagerObject() method of the OipfObjectFactory object shall not return null or undefined

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tv.oipf_DAE-OBJECT_FACTORY-001-002	1	isObjectSupported() (true) - application/oipfCapabilities	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfCapabilities, it shall return true and the createCapabilitiesObject() method of the OipfObjectFactory object shall not return null or undefined
tv.oipf_DAE-OBJECT_FACTORY-001-003	1	isObjectSupported() (true) - application/oipfConfiguration	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfConfiguration, it shall return true and the createConfigurationObject() method of the OipfObjectFactory object shall not return null or undefined
tv.oipf_DAE-OBJECT_FACTORY-001-004	2	isObjectSupported() (true) - application/oipfDownloadManager	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfDownloadManager, it shall return true and the createDownloadManagerObject() method of the OipfObjectFactory object shall not return null or undefined
tv.oipf_DAE-OBJECT_FACTORY-001-005	2	isObjectSupported() (true) - application/oipfDownloadTrigger	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfDownloadTrigger, it shall return true and the createDownloadTriggerObject() method of the OipfObjectFactory object shall not return null or undefined

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tv.oipf_DAE-OBJECT_FACTORY-001-006	2	isObjectSupported() (true) - application/oipfDrmAgent	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfDrmAgent, it shall return true and the createDrmAgentObject() method of the OipfObjectFactory object shall not return null or undefined
tv.oipf_DAE-OBJECT_FACTORY-001-007	1	isObjectSupported() (true) - application/oipfParentalControlManager	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfParentalControlManager, it shall return true and the createParentalControlManagerObject() method of the OipfObjectFactory object shall not return null or undefined
tv.oipf_DAE-OBJECT_FACTORY-001-008	2	isObjectSupported() (true) - application/oipfRecordingScheduler	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfRecordingScheduler, it shall return true and the createRecordingSchedulerObject() method of the OipfObjectFactory object shall not return null or undefined
tv.oipf_DAE-OBJECT_FACTORY-001-009	1	isObjectSupported() (true) - application/oipfSearchManager	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfSearchManager, it shall return true and the createSearchManagerObject() method of the OipfObjectFactory object shall not return null or undefined

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tv.oipf_DAE-OBJECT_FACTORY-001-010	1	isObjectSupported() (true) - video/broadcast	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to video/broadcast, it shall return true and the createVideoBroadcastObject() method of the OipfObjectFactory object shall not return null or undefined
tv.oipf_DAE-OBJECT_FACTORY-001-011	1	isObjectSupported() (true) - video/mpeg	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to video/mpeg, it shall return true and the createVideoMpegObject() method of the OipfObjectFactory object shall not return null or undefined
tv.oipf_DAE-OBJECT_FACTORY-001-012	1	isObjectSupported() (true) - video/mp4	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to video/mp4, it shall return true and the createVideoMpegObject() method of the OipfObjectFactory object shall not return null or undefined
tv.oipf_DAE-OBJECT_FACTORY-001-013	1	isObjectSupported() (true) - audio/mpeg	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to audio/mpeg, it shall return true
tv.oipf_DAE-OBJECT_FACTORY-001-014	1	isObjectSupported() (true) - audio/mp4	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to audio/mp4, it shall return true

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-OBJECT_FACTORY-001-018	1	isObjectSupported() (false) - application/oipfDownloadManager	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfDownloadManager, it shall return false and the createDownloadManagerObject() method of the OipfObjectFactory object shall throw an error with its name property set to the value 'TypeError'
tv.oipf_DAE-OBJECT_FACTORY-001-019	1	isObjectSupported() (false) - application/oipfDownloadTrigger	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfDownloadTrigger, it shall return false and the createDownloadTriggerObject() method of the OipfObjectFactory object shall throw an error with its name property set to the value 'TypeError'
tv.oipf_DAE-OBJECT_FACTORY-001-020	2	isObjectSupported() (false) - application/oipfDrmAgent	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfDrmAgent, it shall return false and the createDrmAgentObject() method of the OipfObjectFactory object shall throw an error with its name property set to the value 'TypeError'

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-OBJECT_FACTORY-001-021	1	isObjectSupported() (false) - application/oipfParentalControlManager	FALSE (OIPF 'B')	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfParentalControlManager, it shall return false and the createParentalControlManagerObject() method of the OipfObjectFactory object shall throw an error with its name property set to the value 'TypeError'
tv.oipf_DAE-OBJECT_FACTORY-001-022	1	isObjectSupported() (false) - application/oipfRecordingScheduler	TRUE	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfRecordingScheduler, it shall return false and the createRecordingSchedulerObject() method of the OipfObjectFactory object shall throw an error with its name property set to the value 'TypeError'
tv.oipf_DAE-OBJECT_FACTORY-001-023	1	isObjectSupported() (false) - application/oipfSearchManager	FALSE (OIPF 'B')	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to application/oipfSearchManager, it shall return false and the createSearchManagerObject() method of the OipfObjectFactory object shall throw an error with its name property set to the value 'TypeError'

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tv.oipf_DAE-OBJECT_FACTORY-001-024	1	isObjectSupported() (false) - video/broadcast	FALSE (OIPF 'B')	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to video/broadcast, it shall return false and the createVideoBroadcastObject() method of the OipfObjectFactory object shall throw an error with its name property set to the value 'TypeError'
tv.oipf_DAE-OBJECT_FACTORY-001-025	1	isObjectSupported() (false) - audio/mpeg	FALSE (OIPF 'B')	When the isObjectSupported() method of the OipfObjectFactory object is called with the mimeType parameter set to audio/mpeg, it shall return false and the createVideoMpegObject() method of the OipfObjectFactory object shall throw an error with its name property set to the value 'TypeError'
tv.oipf_DAE-OBJECT_FACTORY-002-001	3	OipfObjectFactory - createVideoBroadcastObject()	TRUE	When calling the createVideoBroadcastObject() method of the OipfObjectFactory object, the terminal shall return an object which has a 'type' attribute equal to 'video/broadcast' and a 'playState' property equal to 0
tv.oipf_DAE-OBJECT_FACTORY-002-002	1	OipfObjectFactory - createVideoBroadcastObject() - TypeError	FALSE (OIPF 'B')	When the 'video/broadcast' object is not supported and the createVideoBroadcastObject() method of the OipfObjectFactory object is called, the terminal shall throw an exception. The error object's 'name' property shall be equal to 'TypeError'
tv.oipf_DAE-OBJECT_FACTORY-003	3	OipfObjectFactory - createVideoMpegObject()	TRUE	When calling the createVideoMpegObject() method of the OipfObjectFactory object, the terminal shall return an object which has a 'type' attribute equal to 'video/mpeg' and a 'playState' property equal to 0

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tv.oipf_DAE-OBJECT_FACTORY-007-001	3	OipfObjectFactory - createConfigurationObject()	TRUE	When calling the createConfigurationObject() method of the OipfObjectFactory object, the terminal shall return an object with a 'configuration' property; the 'configuration' property shall contain an object with a 'countryId' property; the 'countryId' property shall contain a string
tv.oipf_DAE-OBJECT_FACTORY-007-002	1	OipfObjectFactory - createConfigurationObject() - TypeError	FALSE (OIPF 'B')	When the 'application/oipfConfiguration' object is not supported and the createConfigurationObject() method of the OipfObjectFactory is called, the terminal shall throw an exception. The error object's 'name' property shall be equal to 'TypeError'
tv.oipf_DAE-OBJECT_FACTORY-009	2	createDownloadTriggerObject() API method	TRUE	The terminal shall return a DownloadTrigger object when using the createDownloadTriggerObject() method on the globally accessible OipfObjectFactory object and calling registerDownloadURL() with valid parameters shall return a string
tv.oipf_DAE-OBJECT_FACTORY-015-001	3	OipfObjectFactory - createRecordingSchedulerObject()	TRUE	When calling the createRecordingSchedulerObject() method of the OipfObjectFactory object, the terminal shall return an object with a record() method
tv.oipf_DAE-OBJECT_FACTORY-015-002	2	OipfObjectFactory - createRecordingSchedulerObject() - TypeError	TRUE	When the 'application/oipfRecordingScheduler' object is not supported and the createRecordingSchedulerObject() method of the OipfObjectFactory object is called, the terminal shall throw an exception. The error object's 'name' property shall be equal to 'TypeError'

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tv.oipf_DAE-OBJECT_FACTORY-017-001	3	OipfObjectFactory - createSearchManagerObject()	TRUE	When calling the createSearchManagerObject() method of the OipfObjectFactory object, the terminal shall return an object with a createSearch() method; the createSearch() method shall return an object with a 'searchTarget' property equal to 1
tv.oipf_DAE-OBJECT_FACTORY-017-002	2	OipfObjectFactory - createSearchManagerObject() - TypeError	FALSE (OIPF 'B')	When the 'application/oipfSearchManager' object is not supported and the createSearchManagerObject() method of the OipfObjectFactory object is called, the terminal shall throw an exception. The error object's 'name' property shall be equal to 'TypeError'
tv.oipf_DAE-OBJECT_FACTORY-018	3	OipfObjectFactory - createCapabilitiesObject()	TRUE	When calling the createCapabilitiesObject() method of the OipfObjectFactory object, the terminal shall return an object with a hasCapability() method; the hasCapability() method shall return a boolean
tv.oipf_DAE-OVERVIEW-016	2	Terminal restores interrupted presentations automatically when interrupted by memory audio	FALSE (OIPF 'B')	The terminal shall restore an A/V Control object's audio after it is interrupted by memory audio from a second A/V Control object
tv.oipf_DAE-OVERVIEW-018	2	Download resumes after a power cycle	TRUE	When a download is in progress and the terminal is powered off, the terminal shall resume the download after the terminal is powered on again
tv.oipf_DAE-SCHED_CONTENT_HYBRID_TUNER-005-002	1	createChannelObject() (RTP)	FALSE (OIPF 'B')	Calling createChannelObject() with an 'idType' of ID_IPTV_URI (delivered via RTP), valid 'onid', 'tsid', 'sid' and 'ipBroadcastID' properties and a 'sourceID' of undefined shall return a Channel object with all of its properties correctly initialised

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHED_CONTENT_HYBRID_TUNER-005-003	1	createChannelObject() (UDP)	FALSE (OIPF 'B')	Calling createChannelObject() with an 'idType' of ID_IPTV_URI (delivered via UDP), valid 'onid', 'tsid', 'sid' and 'ipBroadcastID' properties and a 'sourceID' of undefined shall return a Channel object with all of its properties correctly initialised
tv.oipf_DAE-SCHED_CONTENT_HYBRID_TUNER-006-002	1	setChannel() - IP Multicast (UDP)	FALSE (OIPF 'B')	When setChannel() on the video/broadcast object is called with a Channel object with an 'idType' property of 41 (ID_IPTV_URI), valid 'onid', 'tsid', 'sid' and 'ipBroadcastID' properties and a 'sourceID' of undefined, a 'ChannelChangeSucceeded' event shall be dispatched with a 'channel' context equal to the Channel object and the IP-delivered stream (UDP) shall be presented
tv.oipf_DAE-SCHED_CONTENT_HYBRID_TUNER-006-003	1	setChannel() - IP Multicast (RTP)	FALSE (OIPF 'B')	When setChannel() on the video/broadcast object is called with a Channel object with an 'idType' property of 41 (ID_IPTV_URI), valid 'onid', 'tsid', 'sid' and 'ipBroadcastID' properties and a 'sourceID' of undefined, a 'ChannelChangeSucceeded' event shall be dispatched with a 'channel' context equal to the Channel object and the IP-delivered stream (RTP) shall be presented
tv.oipf_DAE-SCHEDULED_RECORDING-002-DVB	1	ScheduledRecording - recordAt() - Schedule a Recording	TRUE	The recordAt() method of the application/oipfRecordingScheduler object shall return a ScheduledRecording object, when used to schedule a recording of a future period on the current DVB broadcast channel

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-002-RTP	1	ScheduledRecording - recordAt() - Schedule a Recording (RTP)	FALSE (OIPF 'B')	The recordAt() method of the application/oipfRecordingScheduler object shall return a ScheduledRecording object, when used to schedule a recording of a future period on the selected IP (RTP) broadcast channel
tv.oipf_DAE-SCHEDULED_RECORDING-002-UDP	1	ScheduledRecording - recordAt() - Schedule a Recording (UDP)	FALSE (OIPF 'B')	The recordAt() method of the application/oipfRecordingScheduler object shall return a ScheduledRecording object, when used to schedule a recording of a future period on the selected IP (UDP) broadcast channel
tv.oipf_DAE-SCHEDULED_RECORDING-005-DVB	1	ScheduledRecording - remove() - Remove a Newly Scheduled Recording	TRUE	If a recording is newly scheduled on the current DVB channel and then deleted using the remove() method of the application/oipfRecordingScheduler object, the associated ScheduleRecording object shall not be present in the ScheduledRecordingCollection object returned by getScheduledRecordings()
tv.oipf_DAE-SCHEDULED_RECORDING-005-RTP	1	ScheduledRecording - remove() - Remove a Newly Scheduled Recording (RTP)	FALSE (OIPF 'B')	If a recording is newly scheduled on a selected IP (RTP) channel and then deleted using the remove() method of the application/oipfRecordingScheduler object, the associated ScheduleRecording object shall not be present in the ScheduledRecordingCollection object returned by getScheduledRecordings()
tv.oipf_DAE-SCHEDULED_RECORDING-005-UDP	1	ScheduledRecording - remove() - Remove a Newly Scheduled Recording (UDP)	FALSE (OIPF 'B')	If a recording is newly scheduled on a selected IP (UDP) channel and then deleted using the remove() method of the application/oipfRecordingScheduler object, the associated ScheduleRecording object shall not be present in the ScheduledRecordingCollection object returned by getScheduledRecordings()

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-008-DVB	1	ScheduledRecording - getRecording() - Get an in-progress Recording	FALSE (OIPF 'B')	The getRecording() method of the application/oipfRecordingScheduler object shall return the expected Recording object when there is an in-progress recording on the current DVB channel
tv.oipf_DAE-SCHEDULED_RECORDING-008-RTP	1	ScheduledRecording - getRecording() - Get an in-progress Recording (RTP)	FALSE (OIPF 'B')	The getRecording() method of the application/oipfRecordingScheduler object shall return the expected Recording object when there is an in-progress recording on the selected IP (RTP) channel
tv.oipf_DAE-SCHEDULED_RECORDING-008-UDP	1	ScheduledRecording - getRecording() - Get an in-progress Recording (UDP)	FALSE (OIPF 'B')	The getRecording() method of the application/oipfRecordingScheduler object shall return the expected Recording object when there is an in-progress recording on the selected IP (UDP) channel
tv.oipf_DAE-SCHEDULED_RECORDING-011-DVB	1	ScheduledRecording - stop() - Stop Recording	FALSE (OIPF 'B')	If an in-progress recording on the current DVB channel is stopped using the stop() method on the application/oipfRecordingScheduler object, when the Recording object is subsequently retrieved using the getRecording() method, the value of its 'state' property shall be equal to its 'RECORDING_REC_COMPLETED' constant property
tv.oipf_DAE-SCHEDULED_RECORDING-011-RTP	1	ScheduledRecording - stop() - Stop Recording (RTP)	FALSE (OIPF 'B')	If an in-progress recording on the selected IP (RTP) channel is stopped using the stop() method on the application/oipfRecordingScheduler object, when the Recording object is subsequently retrieved using the getRecording() method, the value of its 'state' property shall be equal to its 'RECORDING_REC_COMPLETED' constant property

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-011-UDP	1	ScheduledRecording - stop() - Stop Recording (UDP)	FALSE (OIPF 'B')	If an in-progress recording on the selected IP (UDP) channel is stopped using the stop() method on the application/oipfRecordingScheduler object, when the Recording object is subsequently retrieved using the getRecording() method, the value of its 'state' property shall be equal to its 'RECORDING_REC_COMPLETED' constant property
tv.oipf_DAE-SCHEDULED_RECORDING-020-DVB	1	ScheduledRecording - recordAt() - Schedule a Multiple Day Recording	FALSE (OIPF 'B')	The recordAt() method of the application/oipfRecordingScheduler object shall return a ScheduledRecording object, when used to schedule a recording of a future period and repeated on specific days on the current DVB broadcast channel
tv.oipf_DAE-SCHEDULED_RECORDING-020-RTP	1	ScheduledRecording - recordAt() - Schedule a Multiple Day Recording (RTP)	FALSE (OIPF 'B')	The recordAt() method of the application/oipfRecordingScheduler object shall return a ScheduledRecording object, when used to schedule a recording of a future period and repeated on specific days on the selected IP (RTP) broadcast channel
tv.oipf_DAE-SCHEDULED_RECORDING-020-UDP	1	ScheduledRecording - recordAt() - Schedule a Multiple Day Recording (UDP)	FALSE (OIPF 'B')	The recordAt() method of the application/oipfRecordingScheduler object shall return a ScheduledRecording object, when used to schedule a recording of a future period and repeated on specific days on the selected IP (UDP) broadcast channel
tv.oipf_DAE-SCHEDULED_RECORDING-021-001	1	application/oipfRecordingScheduler - 'recordings' Property - ScheduledRecordingCollection	TRUE	The 'recordings' property of the application/oipfRecordingScheduler object shall contain a ScheduledRecordingCollection object

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-021-002-DVB-OIPF	1	application/oipfRecordingScheduler - 'recordings' Property - Scheduled Recordings (OIPF)	FALSE (OIPF 'B')	If a recording is newly scheduled on the current DVB channel using the recordAt() method of application/oipfRecordingScheduler, the associated ScheduledRecording object shall then be present in the ScheduledRecordingCollection object of the 'recordings' property and the value of its 'state' property shall be equal to ScheduledRecording.RECORDING_SCHEDULED (OIPF)
tv.oipf_DAE-SCHEDULED_RECORDING-021-002-RTP	1	application/oipfRecordingScheduler - 'recordings' property - Scheduled Recordings (RTP)	FALSE (OIPF 'B')	If a recording is newly scheduled on the selected IP (RTP) channel using the recordAt() method of application/oipfRecordingScheduler, the associated ScheduledRecording object shall then be present in the ScheduledRecordingCollection object of the 'recordings' property and the value of its 'state' property shall be equal to ScheduledRecording.RECORDING_SCHEDULED
tv.oipf_DAE-SCHEDULED_RECORDING-021-002-UDP	1	application/oipfRecordingScheduler - 'recordings' property - Scheduled Recordings (UDP)	FALSE (OIPF 'B')	If a recording is newly scheduled on the selected IP (UDP) channel using the recordAt() method of application/oipfRecordingScheduler, the associated ScheduledRecording object shall then be present in the ScheduledRecordingCollection object of the 'recordings' property and the value of its 'state' property shall be equal to ScheduledRecording.RECORDING_SCHEDULED

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-021-003-DVB-OIPF	1	application/oipfRecordingScheduler - 'recordings' Property - In-progress Recordings (OIPF)	FALSE (OIPF 'B')	If a recording is started on the current DVB channel using the recordAt() method of application/oipfRecordingScheduler, the associated Recording object shall then be present in the ScheduledRecordingCollection object of the 'recordings' property and the value of its 'state' property shall be equal to ScheduledRecording.RECORDING_REC_STARTED (OIPF)
tv.oipf_DAE-SCHEDULED_RECORDING-021-003-RTP	1	application/oipfRecordingScheduler - 'recordings' property - In-progress Recordings (RTP)	FALSE (OIPF 'B')	If a recording is started on the selected IP (RTP) channel using the recordAt() method of application/oipfRecordingScheduler, the associated Recording object shall then be present in the ScheduledRecordingCollection object of the 'recordings' property and the value of its 'state' property shall be equal to ScheduledRecording.RECORDING_REC_STARTED
tv.oipf_DAE-SCHEDULED_RECORDING-021-003-UDP	1	application/oipfRecordingScheduler - 'recordings' property - In-progress Recordings (UDP)	FALSE (OIPF 'B')	If a recording is started on the selected IP (UDP) channel using the recordAt() method of application/oipfRecordingScheduler, the associated Recording object shall then be present in the ScheduledRecordingCollection object of the 'recordings' property and the value of its 'state' property shall be equal to ScheduledRecording.RECORDING_REC_STARTED

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-021-004-DVB-OIPF	1	application/oipfRecordingScheduler - 'recordings' property - Completed Recordings (OIPF)	FALSE (OIPF 'B')	If a recording is started on the current DVB channel using the recordAt() method of application/oipfRecordingScheduler, and is allowed to run to its scheduled end time, the associated Recording object shall then be present in the ScheduledRecordingCollection object of the 'recordings' property and the value of its 'state' property shall be equal to ScheduledRecording.RECORDING_REC_COMPLETED (OIPF)
tv.oipf_DAE-SCHEDULED_RECORDING-021-004-RTP	1	application/oipfRecordingScheduler - 'recordings' property - Completed Recordings (RTP)	FALSE (OIPF 'B')	If a recording is started on the selected IP (RTP) channel using the recordAt() method of application/oipfRecordingScheduler, and is allowed to run to its scheduled end time, the associated Recording object shall then be present in the ScheduledRecordingCollection object of the 'recordings' property and the value of its 'state' property shall be equal to ScheduledRecording.RECORDING_REC_COMPLETED
tv.oipf_DAE-SCHEDULED_RECORDING-021-004-UDP	1	application/oipfRecordingScheduler - 'recordings' property - Completed Recordings (UDP)	FALSE (OIPF 'B')	If a recording is started on the selected IP (UDP) channel using the recordAt() method of application/oipfRecordingScheduler, and is allowed to run to its scheduled end time, the associated Recording object shall then be present in the ScheduledRecordingCollection object of the 'recordings' property and the value of its 'state' property shall be equal to ScheduledRecording.RECORDING_REC_COMPLETED

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-023-001-DVB	1	onPVREvent - State 7 - Newly Scheduled Recording	FALSE (OIPF 'B')	When a recording is newly scheduled on the current DVB channel using the recordAt() method of application/oipfRecordingScheduler, an onPVREvent shall be dispatched with its 'state' context equal to 7 and its 'recording' context equal to the expected ScheduledRecording object
tv.oipf_DAE-SCHEDULED_RECORDING-023-001-RTP	1	onPVREvent - State 7 - Newly Scheduled Recording (RTP)	FALSE (OIPF 'B')	When a recording is scheduled on an RTP channel using recordAt(), a PVREvent with a 'state' context of 7 and a 'recording' context equal to the scheduled recording is dispatched
tv.oipf_DAE-SCHEDULED_RECORDING-023-001-UDP	1	onPVREvent - State 7 - Newly Scheduled Recording (UDP)	FALSE (OIPF 'B')	When a recording is scheduled on a UDP channel using recordAt(), a PVREvent with a 'state' context of 7 and a 'recording' context equal to the scheduled recording is dispatched
tv.oipf_DAE-SCHEDULED_RECORDING-023-002-DVB	1	onPVREvent - State 9 - Recording Due To Start	FALSE (OIPF 'B')	When a recording is newly scheduled on the current DVB channel using the recordAt() method of application/oipfRecordingScheduler, prior to the recording starting the terminal shall dispatch an onPVREvent event with its 'state' context equal to 9
tv.oipf_DAE-SCHEDULED_RECORDING-023-002-RTP	1	onPVREvent - State 9 - Recording Due to Start (RTP)	FALSE (OIPF 'B')	When a recording is newly scheduled on an RTP channel using the recordAt() method of application/oipfRecordingScheduler, prior to the recording starting the terminal shall dispatch an onPVREvent event with its 'state' context equal to 9

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-023-002-UDP	1	onPVREvent - State 9 - Recording Due to Start (UDP)	FALSE (OIPF 'B')	When a recording is newly scheduled on a UDP channel using the recordAt() method of application/oipfRecordingScheduler, prior to the recording starting the terminal shall dispatch an onPVREvent event with its 'state' context equal to 9
tv.oipf_DAE-SCHEDULED_RECORDING-023-003-DVB	1	onPVREvent - State 8 - Newly Scheduled Recording Deleted	FALSE (OIPF 'B')	When a recording is newly scheduled on the current DVB channel and then deleted using the remove() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 8 and its 'recording' context equal to the expected ScheduledRecording object
tv.oipf_DAE-SCHEDULED_RECORDING-023-003-RTP	1	onPVREvent - State 8 - Newly Scheduled Recording Deleted (RTP)	FALSE (OIPF 'B')	When a recording is newly scheduled on an RTP channel and then deleted using the remove() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 8 and its 'recording' context equal to the expected ScheduledRecording object
tv.oipf_DAE-SCHEDULED_RECORDING-023-003-UDP	1	onPVREvent - State 8 - Newly Scheduled Recording Deleted (UDP)	FALSE (OIPF 'B')	When a recording is newly scheduled on a UDP channel and then deleted using the remove() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 8 and its 'recording' context equal to the expected ScheduledRecording object

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-023-004-DVB	1	onPVREvent - State 8 - In-progress Recording Deleted	FALSE (OIPF 'B')	When a recording is started on the current DVB channel using the recordAt() method of application/oipfRecordingScheduler and then deleted using the remove() method, the terminal shall dispatch an onPVREvent with its 'state' context equal to 8
tv.oipf_DAE-SCHEDULED_RECORDING-023-004-RTP	1	onPVREvent - State 8 - In-progress Recording Deleted (RTP)	FALSE (OIPF 'B')	When a recording is started on an RTP channel using the recordAt() method of application/oipfRecordingScheduler and then deleted using the remove() method, the terminal shall dispatch an onPVREvent with its 'state' context equal to 8
tv.oipf_DAE-SCHEDULED_RECORDING-023-004-UDP	1	onPVREvent - State 8 - In-progress Recording Deleted (UDP)	FALSE (OIPF 'B')	When a recording is started on a UDP channel using the recordAt() method of application/oipfRecordingScheduler and then deleted using the remove() method, the terminal shall dispatch an onPVREvent with its 'state' context equal to 8
tv.oipf_DAE-SCHEDULED_RECORDING-023-005-DVB	1	onPVREvent - State 8 - Completed Recording Deleted	FALSE (OIPF 'B')	When a recording is started on the current DVB channel using the recordAt() method of application/oipfRecordingScheduler, and is allowed to run to its scheduled end time. When the recording is subsequently deleted using the remove() method, the terminal shall dispatch an onPVREvent event with its 'state' context equal to 8

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-023-005-RTP	1	onPVREvent - State 8 - Completed Recording Deleted (RTP)	FALSE (OIPF 'B')	When a recording is started an RTP channel using the recordAt() method of application/oipfRecordingScheduler, and is allowed to run to its scheduled end time. When the recording is subsequently deleted using the remove() method, the terminal shall dispatch an onPVREvent event with its 'state' context equal to 8
tv.oipf_DAE-SCHEDULED_RECORDING-023-005-UDP	1	onPVREvent - State 8 - Completed Recording Deleted (UDP)	FALSE (OIPF 'B')	When a recording is started a UDP channel using the recordAt() method of application/oipfRecordingScheduler, and is allowed to run to its scheduled end time. When the recording is subsequently deleted using the remove() method, the terminal shall dispatch an onPVREvent event with its 'state' context equal to 8
tv.oipf_DAE-SCHEDULED_RECORDING-023-006-DVB	1	onPVREvent - State 1 - Recording Started	FALSE (OIPF 'B')	When a recording starts on the current DVB channel using the recordAt() method of application/oipfRecordingScheduler, the terminal shall dispatch an onPVREvent event with its 'state' context equal to 1
tv.oipf_DAE-SCHEDULED_RECORDING-023-006-RTP	1	onPVREvent - State 1 - Recording Started (RTP)	FALSE (OIPF 'B')	When a recording starts on a RTP channel using the recordAt() method of application/oipfRecordingScheduler, the terminal shall dispatch an onPVREvent event with its 'state' context equal to 1
tv.oipf_DAE-SCHEDULED_RECORDING-023-006-UDP	1	onPVREvent - State 1 - Recording Started (UDP)	FALSE (OIPF 'B')	When a recording starts on a UDP channel using the recordAt() method of application/oipfRecordingScheduler, the terminal shall dispatch an onPVREvent event with its 'state' context equal to 1

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-023-007-DVB	1	onPVREvent - State 2 - Recording Completed	FALSE (OIPF 'B')	When a recording is started on the current DVB channel using the recordAt() method of application/oipfRecordingScheduler and is allowed to run to its scheduled end time, the terminal shall dispatch an onPVREvent event with its 'state' context equal to 2
tv.oipf_DAE-SCHEDULED_RECORDING-023-007-RTP	1	onPVREvent - State 2 - Recording Completed (RTP)	FALSE (OIPF 'B')	When a recording is started on an RTP channel using the recordAt() method of application/oipfRecordingScheduler and is allowed to run to its scheduled end time, the terminal shall dispatch an onPVREvent event with its 'state' context equal to 2
tv.oipf_DAE-SCHEDULED_RECORDING-023-007-UDP	1	onPVREvent - State 2 - Recording Completed (UDP)	FALSE (OIPF 'B')	When a recording is started on a UDP channel using the recordAt() method of application/oipfRecordingScheduler and is allowed to run to its scheduled end time, the terminal shall dispatch an onPVREvent event with its 'state' context equal to 2
tv.oipf_DAE-SCHEDULED_RECORDING-023-008-DVB	1	onPVREvent - State 10 - Update Scheduled Recording Duration	FALSE (OIPF 'B')	If a recording is newly scheduled on the current DVB channel and then its 'duration' is increased using the update() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 10 and its 'recording' context equal to the expected ScheduledRecording object

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-023-008-RTP	1	onPVREvent - State 10 - Update Scheduled Recording Duration (RTP)	FALSE (OIPF 'B')	If a recording is newly scheduled on an RTP channel and then its 'duration' is increased using the update() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 10 and its 'recording' context equal to the expected ScheduledRecording object
tv.oipf_DAE-SCHEDULED_RECORDING-023-008-UDP	1	onPVREvent - State 10 - Update Scheduled Recording Duration (UDP)	FALSE (OIPF 'B')	If a recording is newly scheduled on a UDP channel and then its 'duration' is increased using the update() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 10 and its 'recording' context equal to the expected ScheduledRecording object
tv.oipf_DAE-SCHEDULED_RECORDING-023-009-DVB	1	onPVREvent - State 10 - Update Scheduled Recording Start Time	FALSE (OIPF 'B')	If a recording is newly scheduled on the current DVB channel and then its 'startTime' is increased using the update() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 10 and its 'recording' context equal to the expected ScheduledRecording object

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-023-009-RTP	1	onPVREvent - State 10 - Update Scheduled Recording Start Time (RTP)	FALSE (OIPF 'B')	If a recording is newly scheduled on an RTP channel and then its 'startTime' is increased using the update() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 10 and its 'recording' context equal to the expected ScheduledRecording object
tv.oipf_DAE-SCHEDULED_RECORDING-023-009-UDP	1	onPVREvent - State 10 - Update Scheduled Recording Start Time (UDP)	FALSE (OIPF 'B')	If a recording is newly scheduled on a UDP channel and then its 'startTime' is increased using the update() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 10 and its 'recording' context equal to the expected ScheduledRecording object
tv.oipf_DAE-SCHEDULED_RECORDING-023-010-DVB	1	onPVREvent - State 10 - Update Scheduled Recording Repeat Days	FALSE (OIPF 'B')	If a non-repeating recording is newly scheduled on the current DVB channel and then 'repeatDays' is set to repeat the recording using the update() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 10 and its 'recording' context equal to the expected ScheduledRecording object

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SCHEDULED_RECORDING-023-010-RTP	1	onPVREvent - State 10 - Update Scheduled Recording Repeat Days (RTP)	FALSE (OIPF 'B')	If a recording is newly scheduled on an RTP channel and then its 'repeatDays' is altered using the update() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 10 and its 'recording' context equal to the expected ScheduledRecording object
tv.oipf_DAE-SCHEDULED_RECORDING-023-010-UDP	1	onPVREvent - State 10 - Update Scheduled Recording Repeat Days (UDP)	FALSE (OIPF 'B')	If a recording is newly scheduled on a UDP channel and then its 'repeatDays' is altered using the update() method of the application/oipfRecordingScheduler object, an onPVREvent shall be dispatched with its 'state' context equal to 10 and its 'recording' context equal to the expected ScheduledRecording object
tv.oipf_DAE-SHARED_UTILITY-003-001	2	EIT - getSIDescriptors() - Descriptor Not Found	TRUE	The current programme in the EIT only contains a Short Event Descriptor (0x4d). When the getSIDescriptors() method is called on the respective Programme object and its 'descriptorTag' argument is specified as 0x4e (Extended Event Descriptor), the method shall return null

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Test Id	Vers	Title	Approved	Assertion
tv.oipf_DAE-SHARED_UTILITY-003-002	2	EIT - getSIDescriptors() - Descriptor Found	TRUE	The current programme in the EIT contains a Short Event Descriptor (0x4d) and an Extended Event Descriptor (0x4e). When the getSIDescriptors() method is called on the respective Programme object and its 'descriptorTag' argument is specified as 0x4e (Extended Event Descriptor), the method shall return a string representation of the descriptor's content bytes, as defined in OIPF DAE section 7.16.2.4
tv.oipf_DAE-SHARED_UTILITY-003-003	2	EIT - getSIDescriptors() - Descriptor Added to Stream	FALSE (OIPF 'B')	The current programme in the EIT contains a Short Event Descriptor (0x4d). When the EIT is updated to also add an Extended Event Descriptor (0x4e) for the current programme, the terminal shall dispatch a MetadataUpdate event with its 'action' event context equal to 1; following this, when the getSIDescriptors() method is called on the respective Programme object and its 'descriptorTag' argument is specified as 0x4e (Extended Event Descriptor), the method shall return a string representation of the descriptor's content bytes, as defined in OIPF DAE section 7.16.2.4