id	title	assertionText
org.hbbtv_OPAPP_APP01	opAppRequestForeground call from background state in onkeydown event	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	opAppRequestForeground call from background state in keyup event	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'.
org.hbbtv_OPAPP_APP03	opAppRequestForeground call from background state in keypress event	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:
org.hbbtv_OPAPP_APP04	opAppRequestForeground call from background state in 'Notification' click event	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.

org.hbbtv_OPAPP_APP05	opAppRequestForeground call from background state in load event	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="foreground", opAppState is set to 'foreground'.
org.hbbtv_OPAPP_APP06	Failure of opAppRequestForeground call from background state - general conditions	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.
org.hbbtv_OPAPP_APP07	Failure of opAppRequestForeground call in background state - load event	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	opAppRequestForeground call in transient state, onkeypress event	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
org.hbbtv_OPAPP_APP09	opAppRequestForeground call in transient state, load event	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: oldState="transient", newState="foreground", opAppState is set to "foreground", countdown timer is disabled.
org.hbbtv_OPAPP_APP10	Failure of opAppRequestForeground call in transient state - general conditions	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
org.hbbtv_OPAPP_APP11	Terminal displaying UI over application, opAppRequestForeground call in background state in keydown event	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

org.hbbtv_OPAPP_APP12	Terminal displaying UI over application, opAppRequestForeground call in background state in keypress event	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
org.hbbtv_OPAPP_APP13	Terminal displaying UI over application, opAppRequestForeground call in background state in keyup event	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	opAppRequestTransient call from foreground state in keyup event	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,
org.hbbtv_OPAPP_APP15	opAppRequestTransient call in background state in onkeypress event	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

org.hbbtv_OPAPP_APP16	opAppRequestTransient call from 'background' state in BroadcastSupervisor ChannelChangeSucceeded event initiated by regular HbbTV application	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'.
org.hbbtv_OPAPP_APP17	opAppRequestTransient call from 'foreground' state in 'video/broadcast' ChannelChangeSucceeded event	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, onOperatorApplicationStateChange callback is run with with call arguments: oldState="foreground", newState="transient", opAppState is set to 'transient',
org.hbbtv_OPAPP_APP18	opAppRequestTransient call in 'overlaid foreground' state in BroadcastSupervisor ChannelChangeSucceeded event, channel change initiated by terminal	The operator application is in 'overlaid foreground' state, the BroadcastSupervisor has registered event listener ChannelChangeSucceeded. Event listener makes a call to the 'opAppRequestTransient' method. When terminal initiates channel change: opAppRequestTransient returns true, OperatorApplicationStateChange event is generated with context info: oldState="overlaid-foreground", newState="transient", opAppState is set to 'transient'.
org.hbbtv_OPAPP_APP19	opAppRequestTransient call in 'Notification' click event	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:

org.hbbtv_OPAPP_APP20	Failure of opAppRequestTransient call from foreground state, no condition allowing successful call happen	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
org.hbbtv_OPAPP_APP21	Failure of opAppRequestTransient call in ChannelChangeSucceeded event initiated by setChannel with quiet argument equal '1'	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'.
org.hbbtv_OPAPP_APP22	Failure of opAppRequestTransient call in ChannelChangeSucceeded event initiated by setChannel with quiet argument equal '2'	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,
org.hbbtv_OPAPP_APP23	opAppRequestTransient call from onChannelChangeSucceeded, switch from 'background' to 'overlaid transient' state	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:

org.hbbtv_OPAPP_APP24	opAppRequestTransient call from keypress event handler, switch from 'overlaid foreground' to 'overlaid transient' state	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	opAppRequestBackground call from foreground state	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
org.hbbtv_OPAPP_APP26	opAppRequestBackground call from transient state	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'.
org.hbbtv_OPAPP_APP27	opAppRequestBackground call from overlaid-foreground state	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",
org.hbbtv_OPAPP_APP28	createApplication with a URL to a HTTP web page and parameters: createChild=false, runAsOpApp=false	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

org.hbbtv_OPAPP_APP29	createApplication, URL to HTTPS web page, createChild=true, runAsOpApp=false	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
org.hbbtv_OPAPP_APP30	createApplication with an URL to an HTTP XML-AIT and parameters: createChild=true, runAsOpApp=false	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	Transition to HbbTV application created using createApplication(uri, createChild=true, runAsOpApp=false)	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
org.hbbtv_OPAPP_APP33	Application in background state, createApplication(uri, false, runAsOpApp=true), uri refers to HTML page	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
org.hbbtv_OPAPP_APP34	Application in transient state, createApplication(uri, false, runAsOpApp=true) uri refers to "hbbtv-package://appid.orgid"	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	createApplication in foreground state, HTTPS to XML-AIT runAsOpApp=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	Application in overlaid-foreground state, createApplication(uri, false, runAsOpApp=true), uri refers to "hbbtv-package://appid.orgid/index.html"	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.
org.hbbtv_OPAPP_APP37	Application in overlaid-transient state, createApplication(uri, false, runAsOpApp=true), uri refers to "hbbtv-package://appid.orgid/applications/my-other-application.html" scheme	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
org.hbbtv_OPAPP_APP38	createApplication that replaces a regular broadcast-related HbbTV application	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	createApplication, HTTP URL, createChild=true, runAsOpApp=false, new application replaces teletext application	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
org.hbbtv_OPAPP_APP40	Regular HbbTV application creates next regular HbbTV application	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
org.hbbtv_OPAPP_APP41	createApplication does not create broadcast-related child application	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	createApplication failure, 'hbbtv-package' - not installed application	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	createApplication failure, URL is HTTP instead of HTTPS	When an operator HbbTV application calls createApplication(URL, createChild=false, runAsOpApp=true), where the URL schema specifies the HTTP protocol, createApplication returns null.

org.hbbtv_OPAPP_APP44	createApplication failure, HTTPS, not available initial web page	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	Failure when regular application calls to the createApplication(uri, createChild=true, false)	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	Failure when regular application calls to the createApplication(uri, false, runAsOpApp=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	createApplication failure, broken XML AIT	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	Call to the opAppUninstall removes privileged application	When a privileged application calls to the opAppUninstall method, the method returns true and application is removed.
org.hbbtv_OPAPP_APP49	opAppUninstall failure, HbbTV regular application	When a regular HbbTV application calls to the opAppUninstall method, the method returns false.
org.hbbtv_OPAPP_APP50	opAppUninstall failure, broadband operator application	When operator application running over broadband calls opAppUninstall method, the method returns false.
org.hbbtv_OPAPP_APP51	opAppRequestForeground failure in 'Notification' show event	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:

org.hbbtv_OPAPP_APP52	opAppRequestTransient call restarts countdown timer in transient state	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	opAppRequestTransient call restarts countdown timer in overlaid transient state	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	opAppRequestTransient failure does not restart countdown timer	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	opAppState read by regular HbbTV application	When a regular HbbTV application reads the opAppState property of the Application object then it receives "undefined".
org.hbbtv_OPAPP_APP56	ApplicationLoaded event generated after call to createApplication(..., true, false)	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	ApplicationLoaded event not generated after failure of call to createApplication(..., true, false)	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	opAppRequestTransient in load event	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'.
org.hbbtv_OPAPP_APP59	opAppRequestTransient in OperatorApplicationContextChange event	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,
org.hbbtv_OPAPP_APP60	opAppRequestForeground in OperatorApplicationContextChange event	An operator application is in the background state and adds an OperatorApplicationContextChange event listener. The operator application is displayed due to request of user from the terminal UI. As a result, an OperatorApplicationContextChange event is generated. When call to opAppRequestForeground is made within the OperatorApplicationContextChange event listener then: opAppRequestForeground returns true, opAppState is set to either "foreground" or "overlaid foreground".
org.hbbtv_OPAPP_BROWSER01	Terminal launches operator application, URL	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
org.hbbtv_OPAPP_BROWSER02	Operator application calls to the destroyApplication	When an operator application calls to the destroyApplication, then the terminal performs an action determined by the bilateral agreement.

org.hbbtv_OPAPP_BROWSER03	Application with "hbbtv-package:/" scheme, XHR success	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	Application with "hbbtv-package:/" scheme, XHR fail due to Cross-Origin Resource Sharing	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-
org.hbbtv_OPAPP_BROWSER05	getTVProprietaryFunctions	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
org.hbbtv_OPAPP_BROWSER06	queryTVProprietaryFunction	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	invokeTVProprietaryFunction	When an operator-specific operator application calls to the invokeTVProprietaryFunction(String namespace, String name, Object[] arguments) with 'namespace' and 'name' and 'arguments' call parameters
org.hbbtv_OPAPP_BROWSER08	Failure of running getTVProprietaryFunctions function by regular HbbTV application	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
org.hbbtv_OPAPP_BROWSER09	Failure of running queryTVProprietaryFunction function by regular HbbTV application	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	invokeTVProprietaryFunction(namespace, name) failure, 'namespace' and 'name' refers to not existing function	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

org.hbbtv_OPAPP_BROWSER11	Default access to Web Notifications	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	click event in Web Notifications	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	icons in Web Notifications	When an operator application creates the Notification object and sets the 'icon' property then the terminal displays the notification with an image referenced
org.hbbtv_OPAPP_BROWSER15	application overlay descriptor blocks Notifications	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
org.hbbtv_OPAPP_BROWSER16	Discarding notification after application exit	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	Blocking notification created by hidden regular application	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	top level browsing context	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	hbbtv-package origin potentially trustworthy	When an installed operator applications reads the isSecureContext property then the value of property is 'true'.
org.hbbtv_OPAPP_BROWSER20	Change the numbering of channel	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	Conflicting channel number	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.
org.hbbtv_OPAPP_BROWSER22	queryTVProprietaryFunction, proprietary function not available	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
org.hbbtv_OPAPP_BROWSER23	invokeTVProprietaryFunction, proprietary function not available	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

org.hbbtv_OPAPP_BS02	BroadcastSupervisor, ChannelChangeError event initiated by operator HbbTV application	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'.
org.hbbtv_OPAPP_BS04	BroadcastSupervisor, ChannelChangeSucceeded event initiated by regular HbbTV application	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	BroadcastSupervisor, onChannelChangeSucceeded event initiated by operator HbbTV application	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	BroadcastSupervisor, onChannelChangeSucceeded event initiated by terminal	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.

org.hbbtv_OPAPP_BS10	BroadcastSupervisor, not presenting playState	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	BroadcastSupervisor, PlayStateChange initiated by createApplication(URL, false, false)	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	BroadcastSupervisor, ChannelChangeSucceeded initiated by operator application setChannel(,,, quiet=2)	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
org.hbbtv_OPAPP_BS20	BroadcastSupervisor, programmes, video/broadcast object of operator application.	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
org.hbbtv_OPAPP_BS21	BroadcastSupervisor, programmes.	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
org.hbbtv_OPAPP_BS22	BroadcastSupervisor, programmes, change of channel.	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.
org.hbbtv_OPAPP_BS27	BroadcastSupervisor, ParentalRatingChange when switching to previous/next channel, new rating above threshold.	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
org.hbbtv_OPAPP_BS28	BroadcastSupervisor, ParentalRatingChange when call setChannel(,,,quiet=2) with moving to transient state.	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

org.hbbtv_OPAPP_BS33	BroadcastSupervisor, currentChannel change	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.
org.hbbtv_OPAPP_BS36	BroadcastSupervisor, onSelectedComponentChanged, audio change triggered by operator application	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	BroadcastSupervisor, SelectedComponentChanged, subtitle change triggered by operator application	When terminal changes subtitle component, SelectedComponentChanged event is generated with contextInfo componentType=2.
org.hbbtv_OPAPP_BS38	BroadcastSupervisor.getChannelConfig	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
org.hbbtv_OPAPP_BS39	BroadcastSupervisor.createChannelObject(Integer idType, String dsd, Integer sid), channel listed in SDT	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
org.hbbtv_OPAPP_BS41	BroadcastSupervisor.createChannelObject(idType, onid, tsid, sid)	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)
org.hbbtv_OPAPP_BS42	BroadcastSupervisor.setChannel regular HbbTV application has active video broadcast object	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

org.hbbtv_OPAPP_BS43	BroadcastSupervisor.prevChannel, operator HbbTV application has active video broadcast object	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
org.hbbtv_OPAPP_BS46	BroadcastSupervisor.getComponents(1), operator HbbTV application has active video broadcast object	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
org.hbbtv_OPAPP_BS47	BroadcastSupervisor.getComponents(2)	When an operator application calls the BroadcastSupervisor.getComponents(2) method, the terminal returns a collection with available subtitle components.
org.hbbtv_OPAPP_BS48	BroadcastSupervisor.getCurrentActiveComponents(0)	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	BroadcastSupervisor.getCurrentActiveComponents(2)	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	BroadcastSupervisor.getComponents(2), the set of available components decreases	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.
org.hbbtv_OPAPP_BS53	BroadcastSupervisor, pause()	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
org.hbbtv_OPAPP_BS54	BroadcastSupervisor and playSpeeds	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.

org.hbbtv_OPAPP_BS56	BroadcastSupervisor, resume()	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,
org.hbbtv_OPAPP_BS57	BroadcastSupervisor, stopTimeshift()	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 currentTimeShiftMode property of the BroadcastSupervisor object is equal to 0, the timeShiftMode property of the BroadcastSupervisor object is equal to 0
org.hbbtv_OPAPP_BS58	BroadcastSupervisor, seek()	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
org.hbbtv_OPAPP_BS60	BroadcastSupervisor, recordNow and stopRecording	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
org.hbbtv_OPAPP_CERT01	Request to XML AIT with client certificate	The terminal performs request to download XML AIT. When during TLS handshake server requests a certificate, the terminal sends valid client's certificate chain.

org.hbbtv_OPAPP_CERT02	Request to application package URL with client certificate	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	createApplication, request with client certificate	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	HTTPS request by operator application, request with client certificate	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	Client certificate, Invalidity Date is 25 years from inclusion	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	Request XML AIT with client certificate containing Intermediate CA in trust chain.	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	Request to application package URL with client certificate containing Intermediate CA in trust chain	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	createApplication, request with client certificate containing Intermediate CA in trust chain	When operator application calls to the 'createApplication', and during TLS handshake server requests a client certificate, the terminal sends valid client's certificate chain.
org.hbbtv_OPAPP_CERT09	Client certificate verified using anchor certificate (Client Root CA certificate)	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	Client certificate verified using anchor certificate (Intermediate CA certificate)	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_CHCONF01	createChannelList in ChannelConfig	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	setChannelList in ChannelConfig	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.
org.hbbtv_OPAPP_CHCONF03	Restoring original terminal channel list, after restarting operator application	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
org.hbbtv_OPAPP_CHCONF04	Scanning TV terrestrial channels	An operator application: creates DVBTChannelScanParameters object matching to network parameters, creates ChannelScanOptions object with parameters: channelType equal TYPE_TV and replaceExisting equal true, adds
org.hbbtv_OPAPP_CHCONF05	Scanning all terrestrial channels	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
org.hbbtv_OPAPP_CHCONF06	Scanning TV satellite channels	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

org.hbbtv_OPAPP_CHCONF07	Scanning all satellite channels	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
org.hbbtv_OPAPP_CHCONF08	Scanning TV cable channels	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
org.hbbtv_OPAPP_CHCONF09	Scanning all cable channels	An operator application: creates DVBCChannelScanParameters object matching to frequency parameters, creates ChannelScanOptions object with parameters: channelType equal TYPE_ALL and replaceExisting equal false, adds
org.hbbtv_OPAPP_CHCONF10	Stopping terrestrial scanning	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	Stopping satellite scanning	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.
org.hbbtv_OPAPP_CHCONF12	Stopping cable scanning	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	preferredAudioLanguage change triggers switch of rendered audio component in media being	A regular HbbTV application presents valid MPEG DASH content using A/V Control object. The presented content contains two audio adaptation sets,
org.hbbtv_OPAPP_CONF04	preferredSubtitleLanguage change triggers switch of rendered subtitle component in media being	A regular HbbTV application presents valid MPEG DASH content using HTML5 video element. The presented content contains two subtitle adaptation sets,
org.hbbtv_OPAPP_CONF05	audioDescriptionEnabled change	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	subtitlesEnabled set to true, media presentation under HbbTV application control	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	subtitlesEnabled set to false, media presentation under HbbTV application control	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	Child, regular HbbTV application fails to set preferredAudioLanguage	If a regular HbbTV application created by an operator application tries to modify the 'preferredAudioLanguage' property of the Configuration object, the
org.hbbtv_OPAPP_CONF14	Permission granted to query runningOperatorApplication	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
org.hbbtv_OPAPP_CONF17	Permission not granted to query runningOperatorApplication, no organisation_id	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

org.hbbtv_OPAPP_CONF18	setQueryOrganisations run by regular HbbTV application	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
org.hbbtv_OPAPP_CONF20	Pressing UI_TVMODE related keys after call to the replaceUIElements([UI_TVMODE])	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
org.hbbtv_OPAPP_CONF21	replaceUIElements, UI_TVMODE, selection corresponds to the pressing key	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
org.hbbtv_OPAPP_CONF22	Call to the replaceUIElements([UI_TVMODE]), next selection of UI element replaced by the operator application	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
org.hbbtv_OPAPP_CONF24	Call to the replaceUIElements([UI_VOLUME]), next pressing related keys volume up, volume down, mute	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
org.hbbtv_OPAPP_CONF25	replaceUIElements, UI_VOLUME, selection corresponds to the pressing key	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

org.hbbtv_OPAPP_CONF27	replaceUIElements([UI_EPG]), related key events	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
org.hbbtv_OPAPP_CONF31	replaceUIElements, UI_TIMESHIFT, related key events	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
org.hbbtv_OPAPP_CONF33	replaceUIElements, UI_RECORD, related key event	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
org.hbbtv_OPAPP_CONF35	replaceUIElements fails when run by regular HbbTV application	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	replaceUIElements failure, no UI_VOLUME bilateral agreement	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	Persistence of setting volume via LocalSystem	When an operator application sets the 'volume' property of the LocalSystem class object, the value is persistent and does not change after power off.

org.hbbtv_OPAPP_CONF41	LocalSystem muting/unmuting	When an operator application sets the 'mute' property of the LocalSystem class object, the physical audio is adjusted.
org.hbbtv_OPAPP_CONF42	Modifying preferredUILanguage	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
org.hbbtv_OPAPP_CONF45	readonly preferredUILanguage in regular and privileged operator HbbTV applications	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	LocalSystem vendorName	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	LocalSystem softwareVersion	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	LocalSystem hardwareVersion	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
org.hbbtv_OPAPP_CONF52	LocalSystem tuners	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
org.hbbtv_OPAPP_CONF53	LocalSystem serialNumber	When an operator application reads the 'serialNumber' property of the LocalSystem object, then it receives a string.
org.hbbtv_OPAPP_CONF56	setPowerState(OFF)	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
org.hbbtv_OPAPP_CONF57	setPowerState(RESTART)	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

org.hbbtv_OPAPP_CONF59	SignalInfo	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
org.hbbtv_OPAPP_CONF64	Restore terminal UI elements when operator application terminates	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	Immediate launching application with updateFailed context	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"
org.hbbtv_OPAPP_CONTEXT02	updateFailed launch context	An operator application calls to the opAppRequestUpdate(immediate = false) to initiate an update. Next, the application is killed. Next, the update fails. After
org.hbbtv_OPAPP_CONTEXT03	updateSuccessful launch context	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

org.hbbtv_OPAPP_CONTEXT04	'install' launch context	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	'settings' launch context	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.

org.hbbtv_OPAPP_CONTEXT06	'source' launch context	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	'opapp-epg' launch context	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	'opapp-pvr' launch context	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	'opapp-settings' launch context	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	launch context 'standby'	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	launch context 'powerup'	After the terminal is turned on, an operator application is launched with a query component which contains "lloc=powerup" string.
org.hbbtv_OPAPP_CONTEXT12	OperatorApplicationContextChange, 'opapp-epg'	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	OperatorApplicationContextChange, 'opapp-pvr'	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	OperatorApplicationContextChange, 'opapp-settings'	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	Factory reset triggers application discovery via BAT with URI_linkage_descriptor with 'dns' scheme	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
org.hbbtv_OPAPP_INSTALL02	Factory reset triggers application discovery via NIT with URI_linkage_descriptor with 'dns' scheme	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-
org.hbbtv_OPAPP_INSTALL03	Factory reset triggers application discovery via NIT with URI_linkage_descriptor with 'dvb' scheme	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	Factory reset triggers application discovery via BAT with URI_linkage_descriptor with 'dvb' scheme	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.
org.hbbtv_OPAPP_INSTALL05	Factory reset triggers application discovery via hardwired FQDN	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 +

org.hbbtv_OPAPP_INSTALL06	Factory reset triggers application discovery via hardwired location of the XML AIT	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	Factory reset triggers application discovery via hbbtvopapps.org	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	Multiple URI_linkage_descriptors (NIT with FQDN only)	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.
org.hbbtv_OPAPP_INSTALL08_2	Multiple URI_linkage_descriptors (BAT with FQDN only)	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	Multiple URI_linkage_descriptors (NIT with URI of AIT only)	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	Multiple URI_linkage_descriptors (BAT with URI of AIT only)	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	Multiple URI_linkage_descriptors (NIT with one FQDN and one URI of AIT)	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.
org.hbbtv_OPAPP_INSTALL08_6	Multiple URI_linkage_descriptors (BAT with one FQDN and one URI of AIT)	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	Factory reset triggers application discovery via NIT generated by CICAM uri_linkage_descriptor with XML AIT	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	AIT with more than one application	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	No re-fetch of XML AIT if Cache-Control header is valid	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	Terminal installation triggers discovery of all applicable operator applications	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.
org.hbbtv_OPAPP_INSTALL13	CICAM installation triggers operator application discovery via NIT from CICAM	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	Application update failure, opapp.ait in application package not matching AIT	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	Application installation failure, opapp.ait in application package not matching AIT	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.

org.hbbtv_OPAPP_INSTALL16	Application update failure, opapp.aitx in application package not matching XML AIT	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	Application installation failure, opapp.aitx in application package not matching XML AIT	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	AIT discovery triggered by appearing URI_linkage_descriptor in NIT	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.
org.hbbtv_OPAPP_INSTALL23	AIT discovery triggered by adding to BAT URI_linkage_descriptor with 'dns' scheme	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	AIT discovery, URI_linkage_descriptor in "NIT other"	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
org.hbbtv_OPAPP_INSTALL25	DVB URI of AIT without transport_stream_id	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
org.hbbtv_OPAPP_INSTALL26	Priority in SRV lookup response	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	Weight in DNS SRV lookup response	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.
org.hbbtv_OPAPP_INSTALL28	Ignoring XML AIT with not matching applicationUsageDescriptor, privileged application	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	Ignoring XML AIT with applicationUsageDescriptor urn:hbbtv:opapp:opspecific:2017 when only privileged application is supported	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	Ignoring XML AIT with applicationUsageDescriptor matching urn:hbbtv:opapp:privileged:2017 when only operator specific application is supported	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	Ignoring XML AIT with no version	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. Otherwise, the terminal makes a request to the application package location.
org.hbbtv_OPAPP_INSTALL32	Ignoring XML AIT with incorrect applicationDescriptor/type	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	Ignoring XML AIT with no matching orgId	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

org.hbbtv_OPAPP_INSTALL34	Ignoring AIT with no matching orgId	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.
org.hbbtv_OPAPP_INSTALL35	Ignoring AIT with transport_protocol_descriptor in common descriptors loop	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
org.hbbtv_OPAPP_INSTALL36	Ignoring AIT with two applications with the same organisation_id and application_id	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.
org.hbbtv_OPAPP_INSTALL37	Installation of applicable operator application discovered via NIT from CICAM.	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
org.hbbtv_OPAPP_INSTALL38	Installation of applicable operator application discovered via URI_linkage_descriptor with FQDN	An applicable operator application is discovered via broadcasted BAT with URI_linkage_descriptor with operator FQDN. The application is not installed.

org.hbbtv_OPAPP_INSTALL39	Installation of applicable operator application discovered via URI_linkage_descriptor with FQDN from NIT	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.
org.hbbtv_OPAPP_INSTALL40	Installation of applicable operator application discovered via hardwired FQDN	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
org.hbbtv_OPAPP_INSTALL41	Installation of applicable operator application discovered via hardwired location of the XML AIT	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

org.hbbtv_OPAPP_INSTALL42	Installation of applicable operator application discovered via hbbtvopapps.org	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
org.hbbtv_OPAPP_INSTALL43	Update of operator application discovered via NIT from CICAM.	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,
org.hbbtv_OPAPP_INSTALL44	Update of operator application discovered via NIT with URI_linkage_descriptor with URI of AIT	An applicable operator application is discovered via NIT with URI_linkage_descriptor with URI of AIT. When the operator application calls to
org.hbbtv_OPAPP_INSTALL45	Update of operator application discovered via BAT with URI_linkage_descriptor with URI of AIT	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
org.hbbtv_OPAPP_INSTALL46	Update of applicable operator application discovered via BAT with URI_linkage_descriptor with FQDN	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:
org.hbbtv_OPAPP_INSTALL47	Update of applicable operator application discovered via NIT with URI_linkage_descriptor with FQDN	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:

org.hbbtv_OPAPP_INSTALL48	Update of applicable operator application discovered via hardwired FQDN	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
org.hbbtv_OPAPP_INSTALL49	Update of applicable operator application discovered via hardwired location of the XML AIT	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
org.hbbtv_OPAPP_INSTALL50	Update of applicable operator application discovered via hbbtvopapps.org	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
org.hbbtv_OPAPP_INSTALL51	Not immediate update of operator application, opAppRequestUpdate(immediate = false)	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)
org.hbbtv_OPAPP_INSTALL52	opAppUpdateStatus - no software update is in progress	When no software update is performed, call to the opAppUpdateStatus() returns -2.

org.hbbtv_OPAPP_INSTALL53	Update failure, the same version of (XML) AIT	'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. When an OpAppUpdate event is received with 'updateEvent' equal to
org.hbbtv_OPAPP_INSTALL54	Failure of user-initiated installation process	When user triggers installation of operator application and the download of package fails, the terminal allows to determine that the installation has failed.
org.hbbtv_OPAPP_INSTALL55	Failure of application update, no application/vnd.hbbtv.opapp.pkg header	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 ...
org.hbbtv_OPAPP_INSTALL56	Downloading application package, first request failed, second request succeed	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
org.hbbtv_OPAPP_INSTALL57	Downloading application package via IP failure, max 3 requests with random delay between them	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	Failure of downloading application package via DSM-CC	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.
org.hbbtv_OPAPP_INSTALL59	Downloading application package via IP, progress report	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	Delayed update of applicable operator application	An operator application calls to the opAppRequestUpdate(immediate = false), (XML) AIT is acquiesced. When application package download is not started,
org.hbbtv_OPAPP_INSTALL61	onOpAppUpdate called twice	An operator application calls to the opAppRequestUpdate(immediate = false), and an update is delayed. After that when the application calls to the
org.hbbtv_OPAPP_INSTALL62	XML AIT request failure, certificate host name mismatch	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.
org.hbbtv_OPAPP_INSTALL63	XML AIT request failure, server certificate is self signed	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

org.hbbtv_OPAPP_INSTALL64	XML AIT request failure, IP address mismatch	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	XML AIT request failure, server certificate expired	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	XML AIT request failure, Revoked Certificate	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.
org.hbbtv_OPAPP_INSTALL67	Installation failure, size of the operator application files exceeds maximum size defined in bilateral agreement	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	User removes privileged application	Terminal supports mechanism to remove an installed privileged operator application.
org.hbbtv_OPAPP_INSTALL69	Minimum version of (XML) AIT	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.
org.hbbtv_OPAPP_INSTALL70	opAppUpdateStatus - installation error indication	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	Minimum version of (XML) AIT, installation failure	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

org.hbbtv_OPAPP_LIFECYCLE01	Operator application is switched from overlaid foreground to foreground state due to removing of terminal UI which was overlaying the operator application	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'.
org.hbbtv_OPAPP_LIFECYCLE02	Access to UI in foreground state allows operator application graphics to be shown by default	When the operator application is in foreground state, then its graphical elements are visible.
org.hbbtv_OPAPP_LIFECYCLE03	Operator application key events in foreground state	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	Application graphics not shown when in background state	When the operator application is in background state, then its graphical elements are not visible.

org.hbbtv_OPAPP_LIFECYCLE05	Operator application key events request in background state	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	Both regular and operator HbbTV applications request key events, the operator application is in background state, regular HbbTV application has focus	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.
org.hbbtv_OPAPP_LIFECYCLE08	Pressing exit button moves application from foreground to background state	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
org.hbbtv_OPAPP_LIFECYCLE09	Exit button pressing moves application from transient to background state	An operator application is in the transient state. When the EXIT or comparable button is pressed: the terminal moves the operator application into
org.hbbtv_OPAPP_LIFECYCLE10	Operator application is switched from overlaid transient to transient state due to removing of terminal UI which was overlaying the operator application	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	Application visibility in transient state	When the operator application is in transient state, then its graphical elements are visible.
org.hbbtv_OPAPP_LIFECYCLE12	Starting in background state	When an operator application is launched by terminal then it is in the background state.
org.hbbtv_OPAPP_LIFECYCLE13	Restarting operator application due to error condition	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	Pressing EXIT button in background state has no effect	When operator application is in background state then triggering "EXIT or comparable button" mechanism has no effect to operator application.
org.hbbtv_OPAPP_LIFECYCLE15	Start to display terminal UI overlaying application in foreground state	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	Start to display terminal UI overlaying application in transient state	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",
org.hbbtv_OPAPP_LIFECYCLE17	Overlaid foreground state, access to keys	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	Stop to display UI overlaying application, moving to transient state	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	Overlaid transient state, access to keys	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	Pressing EXIT button in overlaid foreground state has no effect	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	Pressing EXIT button in overlaid transient state has no effect	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.
org.hbbtv_OPAPP_LIFECYCLE22	Access to graphic plane in overlaid foreground state	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
org.hbbtv_OPAPP_LIFECYCLE23	Access to UI in overlaid transient state	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,
org.hbbtv_OPAPP_OTHER01	Triggering software update	New software is available to download for the terminal. When an operator application calls to the softwareUpdateStatus then the function returns -1. When the application calls to the triggerSoftwareUpdate(token) with correct token value then the software update is triggered.
org.hbbtv_OPAPP_OTHER02	Call to the softwareUpdateStatus, when no software update available	New software is not available to download for the terminal. When an operator application calls to the softwareUpdateStatus then the function returns -2.

org.hbbtv_OPAPP_OTHER03	triggerSoftwareUpdate(token), invalid token	New software is available to download for the terminal. When the application calls to the triggerSoftwareUpdate(token) with incorrect token value then: the software update is not triggered and the function returns 2.
org.hbbtv_OPAPP_OTHER04	Regular and operator application pairing with companion screen	A regular and an operator applications attempt to open websocket connection using different app-endpoints. When a companion device opens two connections using remote endpoints matching to the HbbTV applications app-
org.hbbtv_OPAPP_OTHER05	Regular and operator application have 10 pairings each	A regular HbbTV application has 10 paired connections, an operator HbbTV application has 10 paired connections. When one unfragmented binary message with size of 131 072 bytes is sent every 2 seconds from remote service endpoint to each single connection over a period of 60s then the terminal relay messages to the corresponding HbbTV application.
org.hbbtv_OPAPP_OTHER06	getScheduledRecordings returns recordings from all origins	A regular application is launched from origin different than origin of an operator application. Both the regular application and the operator application schedule recordings. When the operator application calls to the getScheduledRecordings then it receives all scheduled, not yet started recordings.

org.hbbtv_OPAPP_OTHER07	getInProgressRecordings returns recordings from all origins	A regular HbbTV application starts recording of currently presented programme. When an operator application calls to the getInProgressRecordings then it receives the collection containing started recording only. The operator application is launched from different origin than the regular application.
org.hbbtv_OPAPP_OTHER08	removing all recordings	Terminal keeps recordings scheduled from origin different than the origin of an operator application. When the operator application calls to the remove(recording) three times, with 'recording' call argument referring to scheduled, in-progress and completed recording then the terminal each time removes the recording.
org.hbbtv_OPAPP_OTHER09	removing recordings from the same origin	Terminal keeps recordings scheduled from the same origin as the origin of an operator application. When the operator application calls to the remove(recording) three times, with 'recording' call argument referring to scheduled, in-progress and completed recording then the terminal each time removes the recording.

org.hbbtv_OPAPP_OTHER10	removing recordings from different origin	Terminal keeps recordings scheduled from origin different than the origin of an operator application. When the operator application calls to the remove(recording) three times, with 'recording' call argument referring to scheduled, in-progress and completed recording then the terminal each time does not remove the recording.
org.hbbtv_OPAPP_OTHER11	Broadband video presentation via A/V Control object failure in transient state	When an operator application is in the transient state and attempts to present broadband delivered media via A/V Control object then the presentation fails and the A/V Control object is in error state with 'error' value 3.
org.hbbtv_OPAPP_OTHER12	Broadband video presentation via HTML5 video failure after transition from foreground to background state	An operator application is in the foreground state and is presenting broadband delivered media using HTML5 video object. When transition from foreground to background state occurs then: HTML5 video object stops to present video, audio and subtitle components, an error attribute of HTML5 video object is set.
org.hbbtv_OPAPP_REGULAR01	Killing regular application - resource conflict - broadcast content	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 onSelectedComponentChange / SelectedComponentChange event is

org.hbbtv_OPAPP_REGULAR02	Killing regular application - resource conflict - HTML5 video element	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	Killing regular application - resource conflict - A/V control object	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
org.hbbtv_OPAPP_REGULAR04	Regular application looses focus when operator application is moved to foreground state	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
org.hbbtv_OPAPP_REGULAR05	Regular application gain focus when operator application is moved from foreground state to background state	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

org.hbbtv_OPAPP_REGULAR06	Hiding of regular application, operator application in foreground state	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	Operator application move from foreground state to transient state, showing of regular application,	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
org.hbbtv_OPAPP_REGULAR08	Regular application killed due to resource conflict, operator application leaves foreground state, re-starting regular application	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.
org.hbbtv_OPAPP_REGULAR09	Operator application move from foreground state to background state, starting regular application	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	Operator application in foreground state, AIT monitoring	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

org.hbbtv_OPAPP_REGULAR11	Regular application have no access to installed operator applications resources	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.
org.hbbtv_OPAPP_REGULAR12	Following AIT signalling, channel change using BroadcastSupervisor class	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	Following AIT signalling, channel change using BroadcastSupervisor class, killing child regular application	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	Regular application and operator application moved to transient state	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