Interoperability Certification & Compliance
Program for

ALLSEEN ALLIANCE

Interoperability Test Procedures

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VERSION CONTROL

Version	Date	Comment
1.0	2014-11-21	First release
1.1	2014-12-01	Corrections to Audio Sink test cases
1.2	2014-12-12	Renaming of some Test Bed AllJoyn devices categories. Test case 'IOP_Onboarding-v1-01' corrected
1.3	2015-02-25	Added references to ICS and IXIT in test cases in section 5. Some clarifications and corrections added in several sections.
1.4	2015-03-12	Minor corrections along the document
1.5	2015-09-29	Minor edits
1.6	2015-10-06	Added new core test cases. Added new Lamp Service and Lighting Controller test cases Test cases modified to clarify testing procedure. Audio test cases removed AllSeen Certified changed to AllJoyn Certified
1.7	2015-10-16	Test cases IOP_Onboarding-v1-04 and IOP_Onboarding-v1-07 removed. Test case IOP_ControlPanel-v1-02 applicability updated. Some corrections across the document
1.8	2015-10-21	Section 5.4 and 5.8 titles added (They had been incorrectly removed) AT4 references removed
1.9	2016-02-03	Most test cases update to use three TBADs. Some fixes across the document
2.0	2016-02-09	Number of TBADs to be used in the test cases reworked. New device categories defined in section 3.1.
2.1	2016-04-06	Added Onboarder, Configuration Controller and Control Panel Controller test cases.

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1 INTRODUCTION

1.1 Scope

The scope of this document is to provide the Interoperability Test procedures for manual testing of AllJoyn devices.

The objective of this test specification is to provide a high probability of interoperability between different devices by running through normal behaviors expected for the device type with previously certified devices.

This document contains the Interoperability Test Suite developed to be used for the Interoperability Testing portion of the AllSeen Alliance Compliance & Certification program for the certification of AllJoyn devices.

The document is organized by functionality within a device to test the different service Interfaces.

- About feature.
- Configuration Service.
- Onboarding Service.
- Control Panel Service.
- Notification Service.
- LSF Lighting Controller Service.
- LSF Lamp Service.

1.2 Definition of Terms and Acronyms

1.2.1 Definition of Terms

AllSeen Alliance	Open source nonprofit consortium providing open source software for widespread adoption of products, systems and services for the Internet of Things.
AllSeen Alliance Authorized Laboratory	ISO 17025 accredited entity authorized by AllSeen Alliance to perform official testing according to the AllSeen Alliance Compliance & Certification program accepted as technical evidence of compliance to certify products.
Certification	Process through which AllSeen Alliance grants recognition to a product that meets certain AllJoyn specified requirements. This activity results in issuance of a “Certificate of Conformity”.
Compliance & Certification	Refers to the fact that a product is in accordance with the AllJoyn Framework and Interface Definitions and the formal process intended to determine if such product meets these specifications.
Golden Unit	An AllJoyn Certified device that meets some specific requirements and it is approved by AllSeen Alliance to be used within a Certification Test Bed to test interoperability with other

	AllJoyn devices.
Interoperability testing	Testing performed according to AllSeen Alliance Interoperability test cases to verify that an applicant AllJoyn device can interoperate with other AllJoyn devices AllJoyn compliant.
Test Bed	A Test Bed is a group of one or more AllJoyn Certified devices with a specific hardware/software configuration used to interoperate with the device under test (DUT) during the Interoperability Testing portion of the device certification process.

1.2.2 Acronyms

AP	Access Point
C&C	Compliance & Certification
DUT	Device Under Test
GUI	Graphical User Interface
ICS	Implementation Conformance Statement
IXIT	Implementation eXtra Information for Testing
OEM	Original Equipment Manufacturer
TBAD	Test Bed AllJoyn Device
TBADn	Device ‘n’ of the Test Bed AllJoyn devices group.
UE	User Equipment
UI	User Interface

1.3 References

[1] Core Test Case Specification 14.12 Update 1

[2] Control Panel Test Case Specification 14.12 Update 2

[3] Configuration Test Case Specification 14.12 Update 2

[4] Onboarding Test Case Specification 14.12 Update 2

[5] Notification Test Case Specification 14.12 Update 1

[6] Lamp Service Test Case Specification 14.12 Update 1

[7] Lighting Controller Test Case Specification 14.12 Update 1

[8] AllJoyn Gateway Test Case Specification 14.12

2 TEST PROCEDURES EXECUTION

The Interoperability test cases are performed in a defined test environment.

The test environment includes following elements:

- The DUT (Device Under Test): An AllJoyn-enabled device that implements a certain number of interfaces according to the Interface Definitions established by AllSeen Alliance.
- A Wi-Fi Access Point (referred to as the personal AP).
- A Test Bed: a group of AllJoyn devices that will interoperate with the DUT.

Section 3.1 defines Test Beds that are required to perform different Interoperability test cases.

Every single interoperability test case is performed using a specific Test Bed.

If a device included in a Test Bed for interoperating with the DUT does not fulfill all the requirements for that Test Bed, i.e., the Test Bed device does not support any of the functionalities required according to section 3.1, the test operator will perform only the test cases' steps that do not require that functionality in the Test Bed device.

Depending on the nature of the devices included in a Test Bed executing the interoperability test procedures, some test case steps may be very difficult or impossible to be performed. In this case, a best effort will be made to execute as much of the procedures as possible and the rest will be skipped.

Before starting a test case, the steps defined in Section 2.1 Preconditions and test case Initial Conditions will be followed.

A test case is performed following the steps defined in the Test Procedure.

2.1 Preconditions

Following default configuration steps will be performed before starting any interoperability test case unless otherwise specified in the test cases.

- The SSID of the soft access point (Soft AP) advertised by the DUT follows the proper format (it starts with AJ_ or finishes with _AJ).
- All devices are configured with their AllJoyn functionality enabled.
- Unless otherwise stated, DUT and TBADs have been connected to the AP before the test cases execution so they store AP access password. This includes the case when a device needs to be onboarded to the AP, so the device will be directly connected to the AP during the test case execution without needing and onboarding device intervention
- To send/receive an audio stream in Audio Service Test Procedures, American English Speech sample M1 from ITU T-Test Signal for Telecommunication Systems, Test Vectors Associated to Rec. ITU-T P.50 Appendix I (http://www.itu.int/net/itu-t/sigdb/genaudio/AudioForm-g.aspx?val=1000050) will be used. This speech file should be continually played as required by the Test procedure duration.

3 CRITERIA FOR TEST BED DEVICES SELECTION

AllSeen Alliance lists the AllJoyn devices that can be used for each of the Test Beds specified.

The requirements for an AllJoyn device to be included in a Test Bed are the following ones:

- It is preferable that the device is AllJoyn Certified.
- The AllJoyn device meets all requirements specified for a specific AllJoyn device category as defined in section 3.1. The devices can be different for each category. It is not mandatory that devices support more than one category.
- In one or more PlugFest events, device Interoperability has been tested against no less than four devices which included at least following characteristics:
    - Two different OS.
    - Two different form factors (e.g. Tablet and mobile phone).
    - Two different OEMs.

AllSeen Alliance may decide to include AllJoyn devices that do not meet requirements detailed above in the Test Beds at its own discretion.

List of AllJoyn devices in the Test Beds that can be used for interoperability testing will be published by AllSeen Alliance.

3.1 AllJoyn Device Categories

Golden Units are AllJoyn devices that are required for the different Test Beds and need to include different functionalities in order to test DUT interoperability in the different AllJoyn services.

Accordingly, different AllJoyn device categories are defined to cover each group of requirements for testing the associated service.

Following device categories and group of requirements are identified:

3.1.1 Category 1 AllJoyn Device (Core)

Category 1 devices are defined to test DUT AllJoyn core features.

A Category 1 AllJoyn-enabled device must fulfil following requirements:

- General requirements:
    - ✓ It is preferable that the device is AllJoyn Certified.
    - ✓ It implements, at least, the mandatory AllJoyn core functionality (About feature, it can join a session with other AllJoyn devices, etc.).

- ✓ It includes a display with a GUI (such as a mobile phone, tablet or similar) to present About Interface information.

- About interface:
  - ✓ It implements About interface and it is able to discover all services provided by other AllJoyn devices connected to the same personal AP.
  - ✓ It is able to display the contents of other devices' About Announce signal:
    - version.
    - port.
    - objectDescription: Array of object paths and the list of supported interfaces provided by each object.
    - metaData: List of About announcement fields with their value.
  - ✓ It can call About 'GetAboutData' method and display the data received from other AllJoyn devices.
  - ✓ It is able to display the 'DeviceIcon' object received through the About Interface from other devices.

3.1.2 Category 2.1 AllJoyn Device (Configuration Controller)

Category 2.1 devices are defined to test interoperability of devices offering Configuration Service to other AllJoyn devices.

A Category 2.1 AllJoyn-enabled device must fulfill following requirements:

- It is preferable that the device is AllJoyn Certified.
- It includes a display with a GUI (such as a mobile phone, tablet or similar).
- The functionality may be provided by an external App installed in the device.
- The device is able to perform following actions as requested by the user:
  - ✓ It can obtain and display other AllJoyn devices' Configuration data (by invoking AllJoyn Config interface 'GetConfigurations' method). It is desirable that the test operator is also able to select the language to be included as parameter in the 'GetConfigurations' method.
  - ✓ It can modify other AllJoyn devices' Configuration data (by calling the Config interface 'UpdateConfigurations' method). It is desirable that the test operator is also able to select the language to be included as parameter in the 'UpdateConfigurations' method.
  - ✓ It can modify other AllJoyn devices' configuration to Factory configuration (by invoking AllJoyn Config interface 'FactoryReset' method to clear DUT configuration data).
  - ✓ It can reset other AllJoyn devices (by invoking AllJoyn Config interface 'Restart' method).
  - ✓ It can modify other AllJoyn devices' password (by invoking AllJoyn Config interface 'SetPassCode' method).

3.1.3 Category 2.2 AllJoyn Device (Configuration)

Category 2.2 devices are defined to test interoperability of devices which implement a Controller Application for other AllJoyn devices supporting Configuration Service.

A Category 2.2 AllJoyn-enabled device must fulfill following requirements:

- It is preferable that the device is AllJoyn Certified.
- The device supports Configuration Service.
- The device supports the following interface:
  - ✓ org.alljoyn.Config

3.1.4 Category 3.1 AllJoyn Device (Onboarder)

Category 3.1 devices are defined to test interoperability of devices offering Onboarding Service to other AllJoyn devices.

A Category 3.1 AllJoyn-enabled device must fulfill following requirements:

- It is preferable that the device is AllJoyn Certified.
- It includes a display with a GUI (such as a mobile phone, tablet or similar).
- The functionality may be provided by an external App installed in the device.
- The device using the Onboarding interface is able to perform following actions as requested by the user:
  - ✓ Offboard AllJoyn devices connected to a personal AP calling 'Offboard' method of the Onboarding Service.
  - ✓ Send the personal AP information to an onboardee AllJoyn device calling 'ConfigWi-Fi' method of the Onboarding Service.
  - ✓ Tell an onboardee AllJoyn device to connect to a personal AP calling 'Connect' method of the Onboarding Service.
  - ✓ Display the contents of the 'ConnectionResult' Signal that is sent by Onboardee AllJoyn devices when the connection attempt against the personal AP is completed (only for DUTs supporting channel switching feature).

3.1.5 Category 3.2 AllJoyn Device (Onboardee)

Category 3.2 devices are defined to test interoperability of devices which implement a Onboarder Application for other AllJoyn devices supporting Onboarding Service.

A Category 3.2 AllJoyn-enabled device must fulfil following requirements:

- It is preferable that the device is AllJoyn Certified.
- The device supports Onboarding Service and can behave as an Onboardee.
- The device supports the following interface:
  - ✓ org.alljoyn.Onboarding.

3.1.6 Category 4.1 AllJoyn Device (Control Panel Controller)

Category 4.1 devices are defined to test interoperability of devices offering Control Panel Service to other AllJoyn devices.

A Category 4.1 AllJoyn-enabled device must fulfil following requirements:

- It is preferable that the device is AllJoyn Certified.
- It includes a display with a GUI (such as a mobile phone, tablet or similar).
- The functionality may be provided by an external App installed in the device.
- The device using the Control Panel interface is able to perform following actions as requested by the user:
  - ✓ Display to the user the different menus included in connected AllJoyn devices Control Panel interface (virtual Control Panel).
  - ✓ Display the values of the menu parameters of the 'Control Panel' interfaces of the connected AllJoyn devices.
  - ✓ Modify the values of the editable parameters in the Control Panel interfaces of the connected AllJoyn devices.
  - ✓ Call the Control Panel Service methods ('Exec', 'Action1', 'Action2', 'Action3', 'Add', 'Delete', 'View', 'Update', 'Confirm', 'Cancel' and 'GetRootUrl') as required by the user actions on the virtual control panel menu.
  - ✓ Display to the user the contents of the Signals ('MetadataChanged', 'ValueChanged' and 'Dismiss') sent by the supported Control Panel Interfaces of connected AllJoyn devices.

3.1.7 Category 4.2 AllJoyn Device (Control Panel)

Category 4.2 devices are defined to test interoperability of devices which implement a Controller Application for other AllJoyn devices supporting Control Panel Service.

A Category 4.2 AllJoyn-enabled device must fulfil following requirements:

- It is preferable that the device is AllJoyn Certified.
- The device supports Control Panel Service.
- The device supports as many as possible of the following interfaces:
  - ✓ org.alljoyn.ControlPanel.ControlPanel.
  - ✓ org.alljoyn.ControlPanel.Container.
  - ✓ org.alljoyn.ControlPanel.LabelProperty.
  - ✓ org.alljoyn.ControlPanel.Property.
  - ✓ org.alljoyn.ControlPanel.Dialog.
  - ✓ org.alljoyn.ControlPanel.NotificationAction.
  - ✓ org.alljoyn.ControlPanel.ListProperty.
  - ✓ org.alljoyn.ControlPanel.HTTPControl.

3.1.8 Category 5.1 AllJoyn Device (Notification Consumer)

Category 5.1 devices are defined to test interoperability of devices offering Notification Producer Service to other AllJoyn devices.

A Category 5.1 AllJoyn-enabled device must fulfil following requirements:

- It is preferable that the device is AllJoyn Certified.
- The device displays other AllJoyn devices Notification messages including:
  - ✓ Type of message (information, warning or emergency).
  - ✓ TTL (Time To Life) of the message.
  - ✓ Notification message fields values.

3.1.9 Category 5.2 AllJoyn Device (Notification Producer)

Category 5.2 devices are defined to test interoperability of devices offering Notification Consumer Service.

A Category 5.2 AllJoyn-enabled device must fulfil following requirements:

- It is preferable that the device is AllJoyn Certified.
- The device supports Notification Producer interface.
  - ✓ org.alljoyn.Notification.Producer
- The device produces information, warning and emergence Notification messages.
- A user can operate the device to produce all type of Notification messages easily.
- It is desired that the device supports as many type of attributes in the message as possible (richIconUrl, richAudioUrl, richIconObjectPath, richAudioObjectPath and/ or respObjectPath fields).
- It is recommended that TTL (Time To Life) parameter value can be modified by the test operator.

3.1.10 Category 6.1 AllJoyn Device (Audio Source)

Category 6.1 devices are defined to test interoperability of devices offering Audio Service (sink port) to other AllJoyn devices.

A Category 6.1 AllJoyn-enabled device must fulfil following requirements:

- It is preferable that the device is AllJoyn Certified.
- The device supports following interfaces:
  - ✓ org.alljoyn.Stream.Port.AudioSource.
  - ✓ org.alljoyn.Stream.Port.ImageSource.
  - ✓ org.alljoyn.Stream.Port.Application.MetadataSource.

3.1.11 Category 6.2 AllJoyn Device (Audio Sink)

Category 6.2 devices are defined to test interoperability of devices offering Audio Service (source port) to other AllJoyn devices.

A Category 6.2 AllJoyn-enabled device must fulfil following requirements:

- It is preferable that the device is AllJoyn Certified.
- The device supports following interfaces:
  - ✓ org.alljoyn.Stream.Port.AudioSink.
  - ✓ org.alljoyn.Stream.Port.ImageSink.
  - ✓ org.alljoyn.Stream.Port.Application.MetadataSink.

3.1.12 Category 7.1 AllJoyn Device (Lighting Controller)

Category 7.1 devices are defined to test interoperability of devices offering AllJoyn Lamp Service to other AllJoyn devices.

A Category 7.1 AllJoyn-enabled device must fulfil following requirements:

- It is preferable that the device is AllJoyn Certified.
- It includes a display with a GUI (such as a mobile phone, tablet or similar).
- The functionality may be provided by an external App installed in the device.
- The device supports Lighting Controller Service.
- The device provides the user an interface to perform each of following actions on a DUT supporting AllJoyn Lamp Service:
  - o Display the faulty lamps by getting LampFaults property.
  - o Clear faulty lamps by calling ClearLampFault method.
  - o Display Lamp current energy usage (if supported by the DUT).
  - o Display current brightness in lumens (if supported by the DUT).
  - o Display Lamp information provided by LampDetails interface
  - o Switch on and off a lamp and display current status.
  - o Display and modify lamp Color (according to ICSL_Color).
  - o Display and modify lamp color temperature (according to ICSL_ColorTemperature).
  - o Display and modify lamp saturation (according to ICSL_Dimmable)..
  - o Display and modify lamp brightness (according to ICSL_Dimmable).
  - o Apply transitions and pulse effects calling to ‘TransitionLampState’ and ‘ApplyPulseEffect’ methods respectively.
  - o Display the contents of the ‘LampStateChanged’ Signal sent by other AllJoyn devices by means of their supported LampState Interface.

3.1.13 Category 7.2 AllJoyn device (Lamp service)

Category 7.2 devices are defined to test interoperability of devices offering AllJoyn Lamp Service and/or Lighting Services to other AllJoyn devices.

A Category 7.2 AllJoyn-enabled device must fulfil following requirements:

- It is preferable that the device is AllJoyn Certified.
- It supports Lamp Service including LampService, LampParameters, LampDetails and LampState interfaces.
- It supports 'dimmable', 'variable color', 'variable color temperature' and 'HasEffects' features, as defined in ICS.

4 TEST BEDS

A Test Bed is a group of one or more AllJoyn commercial devices including their configurations and the applications used by these devices. A Test Bed provides the AllJoyn commercial devices plus all necessary accessories and fixtures to perform Interoperability Testing with the DUT according to one or more test cases. In order to complete all interoperability test cases, a set of Test Beds is necessary.

A Test Bed AllJoyn Device, TBAD, is any of the devices belonging to a Test Bed that will be used within a test case to verify DUT interoperability.

Every individual test case will use a number of Test Bed devices (e.g. 1, 2, 3 devices, etc.). When a test case uses several AllJoyn devices they are referred as TBAD1, TBAD2, etc., being TBAD1 the first Test Bed AllJoyn device referred in the test case, TBAD2 the second, etc. The test case is completed when the DUT is tested successively against TBAD1 to TBADx (up to x equal to 3; three devices is the general case).

In addition, test cases may require other additional AllJoyn devices (as specified in the test cases themselves) to perform specific actions that are not part of the main objective of the test case but are helpful to monitor the execution of the test. Following AllJoyn devices are required for some test cases:

- TBAD_A: One specific Category 1 AllJoyn device to display contents of DUT 'About' announcement.
- TBAD_O: One specific Category 3 AllJoyn device (if the DUT requires being onboarded to the personal AP (DUT ICS 'ICSON_OnboardingInterface' set to True and DUT does not store AP required credentials)).

Alternatively, 'About' announcement displaying and/or onboarding actions may be performed by any of the TBAD's of the Test Bed if they support these additional functionalities.

When a test case uses more than one AllJoyn device in a Test Bed (excluding TBAD's required for onboarding and displaying 'About' announcement contents), following requirements will be observed as much as possible for the TBAD selection:

- At least 2 devices from different OEMs.
- At least 2 devices with different OSs, any among Android, Windows, Linux and IOS.

- At least 1 device with different programming languages implementations (C++, Java).
- At least 2 devices with different supporting languages one of which must be English.

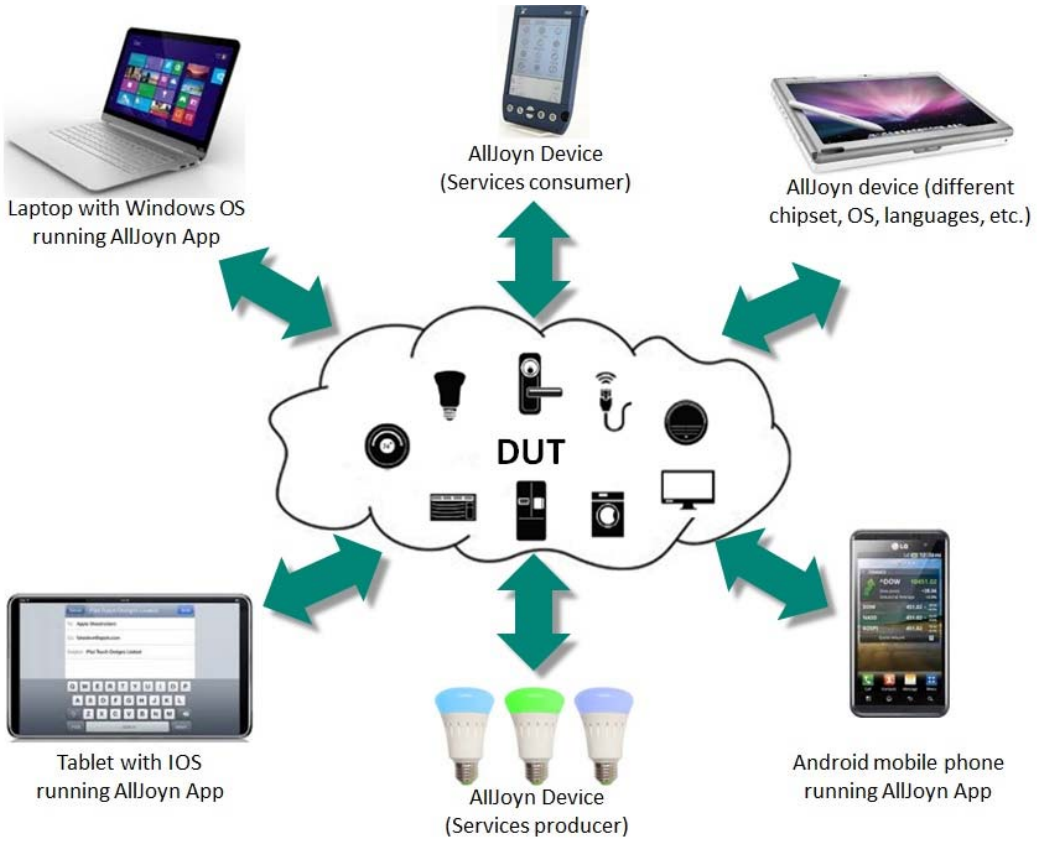

Figure 3.1 Example of Test Bed

Figure 3.1 shows a Test Bed example with several DUT options and 6 TBADs with different configurations.

5 TEST SUITES

This section includes the Interoperability test cases defined for the different Services.

Individual test case applicability is defined based in DUT ICS as specified in section 1.3.

5.1 Core Interoperability Test Suite

This section is applicable to all AllJoyn products.

5.1.1 IOP_Core-v1-02. Reception of About Announcement

Test procedure id	**IOP_Core-v1-02**
Test case Title	Reception of About Announcement.
Test purpose	Verify that the DUT provide a valid About Announcement.
Applicability	All AllJoyn devices.
Test Bed	Three Category 1 AllJoyn devices: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and all TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs. 3. Wait until the DUT and all TBADs are connected and DUT device is shown in TBAD1, TBAD2 and TBAD3 displays.
Pass Fail Criteria	Step 3: DUT device is displayed in the display of all TBADs. DUT name is correctly displayed and shown.

5.1.2 IOP_Core-v1-03. Device information Reception

Test procedure id	**IOP_Core-v1-03**
Test case Title	Device information reception
Test purpose	Verify Field information provided by 'GetAboutData' method
Applicability	All AllJoyn devices
Test Bed	Three Category 1 AllJoyn devices: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and all TBADs are switched off.
Test Procedure	1. Switch on DUT. **2.** Switch on all TBADs. 3. Wait until the DUT and all TBADs are connected and DUT device is shown in TBAD1, TBAD2 and TBAD3 displays. 4. Command TBAD1 to display the contents of DUT information 5. Repeat step 4 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 4: Following parameters are obtained (as applicable by DUT ICS): AppId, DefaultLanguage, DeviceName, DeviceId, AppName, Manufacturer and ModelNumber. The information of these parameters information included in ICS/IXIT declaration. - Step 5: Verify that the results obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.1.3 IOP_Core-v1-04. Support of DeviceIcon Object

Test procedure id	**IOP_Core-v1-04**
Test case Title	Support of DeviceIcon Object
Test purpose	Verify DUT DeviceIcon retrieval
Applicability	AllJoyn devices supporting ICSCO_IconInterface.
Test Bed	Three Category 1 AllJoyn devices: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and all TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Wait until the DUT and TBAD1 are connected and DUT device is shown in TBAD1 display. 4. Operate TBAD1 to display DUT DeviceIcon. 5. Repeat step 4 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 4: Verify that DeviceIcon Object is correctly displayed at TBAD1. - Step 5: Verify that the results obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.1.4 IOP_Core-v1-05. Unexpected disconnection

Test procedure id	**IOP_Core-v1-05**
Test case Title	Unexpected disconnection.
Test purpose	Verify that the DUT can gracefully recover from a physical loss of the transport link (WI-FI or Ethernet) and send data properly after re-establishment.
Applicability	All AllJoyn devices
Test Bed	Three Category 1 AllJoyn devices: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and all TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Wait until the DUT and TBAD1 are connected and DUT device is shown in TBAD1 display. 4. Verify that TBAD1 can access DUT. 5. Disrupt the WI-FI or Ethernet link (for example take the DUT out of the network coverage area). 6. Switch TBAD1 off and on. 7. Verify that TBAD1 cannot access DUT. 8. Reestablish the transport link connection (WI-FI or Ethernet) back. 9. Verify that TBAD1 can access DUT. 10. Repeat steps 2 to 9 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 9: Verify that DUT is visible in TBAD1 interface and DUT can be accessed using TBAD1 interface. - Step 10: Verify that the results obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.1.5 IOP_Core-v1-06. Unexpected Power off

Test procedure id	**IOP_Core-v1-06**
Test case Title	Unexpected Power off
Test purpose	Verify that the DUT can gracefully recover from a sudden power loss.
Applicability	All AllJoyn devices
Test Bed	Three Category 1 AllJoyn devices: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and all TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Wait until the DUT and TBAD1 are connected and DUT device is shown in TBAD1 display. 4. Verify that TBAD1 can access DUT (e.g. command TBAD1 to display DUT information). 5. Abruptly Power off the DUT Note: This may require physically unplugging the device or removing the battery without properly powering down. The purpose is to cause the DUT to disappear without initiating any shutdown procedure. 6. Verify that TBAD1 cannot access DUT 7. Switch on DUT. 8. Wait until the DUT and TBAD1 are connected and DUT device is shown in TBAD1 display. 9. Verify that TBAD1 can access DUT (e.g. command TBAD1 to display DUT information). 10. Abruptly Power off TBAD1 Note: This may require physically unplugging the device power supply or removing the battery without properly powering down. The purpose is to cause TBAD1 to disappear without initiating any shutdown procedure. 11. Switch on TBAD1. 12. Wait until the DUT and TBAD1 are connected and DUT device is shown in TBAD1 display. 13. Verify that TBAD1 can access DUT (e.g. command TBAD1 to display DUT information). 14. Repeat steps 2 to 13 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 8: Verify that DUT is visible in TBAD1 interface

	- Step 9: Verify that TBAD1 can retrieve DUT information. - Step 10: After Powering off TBAD1, DUT cannot access TBAD1 but DUT can operate normally - Step 13: Verify that TBAD1 can retrieve DUT information. - Step 14: Verify that the results obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.1.6 IOP_Core-v1-07. Multiple devices environment

Test procedure id	**IOP_Core-v1-07**
Test case Title	Multiple devices environment
Test purpose	Verify that the DUT can interoperate in a multiple devices environment
Applicability	All AllJoyn devices
Test Bed	- TBAD1: Category 1 AllJoyn device - One device (TBAD2) supporting any services (such as Lamp service or Gateway Agent service) not supported by the DUT (only if available). - Three devices (TBAD3, TBAD4 and TBAD5) supporting at least one of the services supported by the DUT.
Initial Conditions	DUT and TBAD1 are switched off.
Test Procedure	1. Switch on all TBADs. 2. Switch on DUT. 3. Wait until the DUT and all TBADs (TBAD2 to TBAD5) are connected and DUT and other TBADs devices are shown in TBAD1 display. 4. Command TBAD1 to display the contents of DUT information.
Pass Fail Criteria	- Step 3: DUT device is displayed in TBAD1 display. - Step 4: DUT information is displayed in TBAD1 display.

5.1.7 IOP_Core-v1-08. Use of Wi-Fi Protected Access (WPA)

Test procedure id	**IOP_Core-v1-08**
Test case Title	Use of Wi-Fi Protected Access (WPA)
Test purpose	Verify that the DUT can interoperate with other AllJoyn devices connected to a WPA network
Applicability	All AllJoyn devices
Test Bed	Three Category 1 AllJoyn devices: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and all TBADs are switched off. The personal AP Access Point Mode is configured as WPA.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Wait until the DUT and TBAD1 are connected and DUT device is shown in TBAD1 display. 4. Command TBAD1 to display the contents of DUT information. 5. Repeat steps 2 to 4 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 3: DUT device is displayed in TBAD1 display. - Step 4: DUT information is displayed at TBAD1 display. - Step 5: Verify that the results obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.1.8 IOP_Core-v1-09. Use of Wi-Fi Protected Access (WPA2)

Test procedure id	**IOP_Core-v1-09**
Test case Title	Use of Wi-Fi Protected Access (WPA2).
Test purpose	Verify that the DUT can interoperate with other AllJoyn devices connected to a WPA2 network.
Applicability	All AllJoyn devices.
Test Bed	Three Category 1 AllJoyn devices: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and all TBADs are switched off. The personal AP Access Point Mode is configured as WPA2.
Test Procedure	1. Switch on DUT 2. Switch on TBAD1.. 3. Wait until the DUT and TBAD1 are connected and DUT device is shown in TBAD1 display. 4. Command TBAD1 to display the contents of DUT information. 5. Repeat steps 2 to 4 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 3: DUT device is displayed in TBAD1 display. - Step 4: DUT information is displayed at TBAD1 display. - Step 5: Verify that the results obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.1.9 IOP_Core-v1-10. Detection of AllJoyn devices

Test procedure id	**IOP_Core-v1-10**
Test case Title	Detection of AllJoyn devices
Test purpose	Verify that the DUT can detect other AllJoyn devices in the same network
Applicability	AllJoyn devices that have any means to provide AllJoyn information about other AllJoyn devices in the same network (i.e. display the information or logging capability with AllJoyn information)
Test Bed	Three TBADs: Any category TBADs. It is preferred that the TBADs used for the tests are TBADs supporting different AllJoyn services
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Wait until the DUT and TBAD1 are connected and verify that DUT device detects TBAD1. 4. Repeat step 3 with the rest of the TBADs in the test case Test Bed.
Pass Fail Criteria	- Step 3: DUT displays TBAD1 as an AllJoyn present device or TBAD1 information is available in DUT logging information. - Step 4: DUT displays all TBADs as AllJoyn present devices or TBADs information is available in DUT logging information.

5.2 Configuration Service Interoperability Test Suite

This section is applicable to AllJoyn products supporting Configuration Service, i.e. Configuration …. (ICSCF_ConfigurationServiceFramework)

5.2.1 IOP_Config-v1-01. Config interface announcement

Test procedure id	**IOP_Config-v1-01**
Test case Title	Config interface announcement
Test purpose	Verify that the DUT provides a Configuration Service included in the About Announcement
Applicability	AllJoyn devices supporting ICSCF_ConfigurationServiceFramework.
Test Bed	TBAD1: One Category 1 AllJoyn device
Initial Conditions	DUT and TBAD1 are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Wait until the DUT and TBAD1 are connected and DUT device is shown in TBAD1 display. 4. Command TBAD1 to display the DUT About Announcement list of object paths and service interfaces supported.
Pass Fail Criteria	- Step 4: Verify that Config interface (‘org.alljoyn.Config’) is present in DUT About Announcement.

5.2.2 IOP_Config-v1-02. Get Configuration

Test procedure id	**IOP_Config-v1-02**
Test case Title	Get Configuration
Test purpose	Verify that the DUT provides Configuration parameters 'DeviceName' and 'DefaultConfiguration' through the Config interface with same values provided in ICS/IXIT declaration
Applicability	AllJoyn devices supporting ICSCF_ConfigurationServiceFramework.
Test Bed	Three 'Category 2.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command TBAD1 to obtain the DUT configuration data ('DeviceName' and 'DefaultLanguage' parameters) on the Config bus object using 'GetConfigurations' method. 5. Repeat step 4 using the rest of the 'Category 2.1' TBADs instead of TBAD1.
Pass Fail Criteria	- Step 4: The values of the parameters 'DeviceName' and 'DefaultLanguage' are the same values provided in ICS/IXIT declaration. Note 'DeviceName' will only be available when ICSCO_DeviceName is supported. - Step 5: The values of the parameters 'DeviceName' and 'DefaultLanguage' obtained with every TBAD are the same than the values obtained in step 4.

5.2.3 IOP_Config-v1-03. Update DUT DeviceName

Test procedure id	**IOP_Config-v1-03**
Test case Title	Update DUT DeviceName
Test purpose	Verify that the DUT DeviceName parameter can be modified using the Config Interface
Applicability	AllJoyn devices supporting ICSCF_ConfigurationServiceFramework and ICSCO_DeviceName.
Test Bed	- Three 'Category 2.1' TBADs: TBAD1, TBAD2 and TBAD3. - TBAD_A: One 'Category 1' AllJoyn device.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on all TBADs of the Test Bed. 2. Switch on DUT. 3. Wait until the DUT and all the TBADs are connected. 4. Command TBAD1 to obtain the DUT configuration 'DeviceName' parameter value. 5. Command TBAD1 to update 'DeviceName' parameter (change DeviceName to '*DeviceName1*' value). 6. Command TBAD1 to get the value of 'DeviceName' parameter. 7. Command TBAD_A to display the value of the 'DeviceName' parameter of the DUT. 8. Switch off the DUT. 9. Switch on DUT. 10. Wait until the DUT and all the TBADs are connected. 11. Command TBAD1 to obtain the DUT configuration 'DeviceName' parameter value on the Config bus object (using GetConfigurations method). 12. Command TBAD_A to display the value of the 'DeviceName' parameter included in the DUT About Announcement. 13. Repeat steps 3 to 10 using the rest of the 'Category 2.1' TBADs instead of TBAD1, but modifying values '*DeviceName1*' to '*DeviceNameX*' (being *X* the TBAD number: (e.g. DeviceName2 for TBAD2)
Pass Fail Criteria	- Step 6: 'DeviceName' parameter value obtained is '*DeviceName1*'.

	- Step 7: DeviceName' parameter value displayed by TBAD_A is '*DeviceName1*'. - Step 11: 'DeviceName' parameter value is '*DeviceName1*'. - Step 12: 'DeviceName' parameter value displayed in the About Announcement is '*DeviceName1*'. - Step 13: The value of the 'DeviceName' parameter read at the end of the step is '*DeviceNameX*'.

5.2.4 IOP_Config-v1-04. Update DUT DefaultLanguage

Test procedure id	**IOP_Config-v1-04**
Test case Title	Update DUT DefaultLanguage
Test purpose	Verify that the DUT DefaultLanguage parameter can be modified using the Config Interface
Applicability	AllJoyn devices supporting ICSCF_ConfigurationServiceFramework and with number of supported languages> 1 (according to IXITCO_SupportedLanguages)
Test Bed	- Three 'Category 2.1' TBADs: TBAD1, TBAD2 and TBAD3. - TBAD_A: One specific 'Category 1' AllJoyn device.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on all TBADs of the Test Bed. 2. Switch on DUT. 3. Wait until the DUT and all the TBADs are connected. 4. Command TBAD1 to obtain the DUT configuration 'DefaultLanguage' parameter value on the Config bus object (using GetConfigurations method.) 5. Command TBAD1 to obtain the DUT configuration 'SupportedLanguages' parameter value on the Config bus object (using GetConfigurations method.) 6. Command TBAD1 to modify 'DefaultLanguage' parameter (change DefaultLanguage to any of the DUT supported languages obtained in step 5 which is not the current value obtained in step 4). 7. Command TBAD1 to get the value of 'DefaultLanguage' parameter using 'GetConfigurations' method of the Config interface. 8. Command TBAD_A to display the value of the ' 'DefaultLanguage' parameter in the DUT About Announcement. 9. Switch off the DUT. 10. Switch on DUT. 11. Wait until the DUT and all the TBADs are connected. 12. Command TBAD1 to obtain the DUT configuration 'DefaultLanguage' parameter value on the Config bus object using GetConfigurations method. 13. Command TBAD_A to display the value of the

	‘DefaultLanguage’ parameter included in the DUT About Announcement. 14. Repeat steps 4 to 13 using the rest of the ‘Category 2.1’ TBADs instead of TBAD1.Be sure that in sub-step 6 a value different from current one is assigned to the DUT.
Pass Fail Criteria	- Step 5: Obtained supported languages are according to IXITCO_SupportedLanguages - Step 7: ‘DefaultLanguage’ parameter value is the DefaultLanguage value updated in step 6. - Step 8: ‘DefaultLanguage’ parameter value displayed in the About Announcement is the value updated in step 6. - Step 12: ‘DefaultLanguage’ parameter value is the DefaultLanguage value updated in step 6. - Step 13: ‘DefaultLanguage’ parameter value displayed in the About Announcement is the value updated in step 6. - Step 14: ‘DefaultLanguage’ parameter value read in the Config interface is and in About Announcement at the end of the step is the value updated in the sub-step 6 for the corresponding TBADx.

5.2.5 IOP_Config-v1-05. Perform DUT Factory Reset

Test procedure id	**IOP_Config-v1-05**
Test case Title	Perform DUT Factory Reset
Test purpose	Verify that the AllJoyn Configuration 'FactoryReset' method sets DUT configuration to its factory configuration
Applicability	AllJoyn devices supporting *ICSCF_FactoryResetMethod*
Test Bed	Three 'Category 2.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command TBAD1 to obtain the DUT configuration data ('DeviceName' (only if *ICSCO*_DeviceName is supported) and 'DefaultLanguage' parameters). 5. If possible, modify DUT configuration to be different from default factory configuration. For example modify 'DeviceName' to 'InteropTestDeviceName' value (if *ICSCO_DeviceName* is supported) 6. Command TBAD1 to perform a 'FactoryReset' in the DUT using the Config interface. 7. Command TBAD1 to obtain the DUT configuration data ('DeviceName' (only is *ICSCO_DeviceName is supported*) and 'DefaultLanguage' parameters) on the Config bus object using 'GetConfigurations' method and verify that the DUT configuration has been set to the factory default values. 8. Repeat steps 4 to 7 using the rest of the TBADs instead of using TBAD1.
Pass Fail Criteria	- Step 7: Configuration data ('DeviceName' and 'DefaultLanguage') read with every TBAD after invoking 'FactoryReset' Configuration method is the DUT factory default configuration data (as defined by ICS/IXIT declaration). - Step 14: Apply to each TBAD same Pass/Fail criteria used for TBAD1.

5.2.6 IOP_Config-v1-06. Perform DUT Restart

Test procedure id	**IOP_Config-v1-06**
Test case Title	Perform DUT Restart
Test purpose	Verify that the calling the 'Restart' method on the Config bus object will restart the device and that configuration changes will be retained
Applicability	AllJoyn devices supporting ICSCF_ConfigurationServiceFramework
Test Bed	Three 'Category 2.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. If *ICSCO*_DeviceName is supported, command TBAD1 to modify the DUT DeviceName parameter with 'MyTestDeviceName' value. 5. If IXITCO_SupportedLanguages>1, command TBAD1 to modify the Default Language of the DUT to a different supported language. 6. Command TBAD1 to Restart the DUT. 7. TBAD1 will lose the connection. Perform the required steps to re-establish AllJoyn connection between the DUT and TBAD1. 8. Command TBAD1 to obtain the DUT configuration data ('DeviceName' and 'DefaultConfiguration' parameters) using the Config interface. 9. If *ICSCO*_DeviceName is supported, command TBAD1 to modify the DUT 'DeviceName' parameter with the original 'DeviceName' value using the Config interface. 10. If IXITCO_SupportedLanguages>1, command TBAD1 to modify the DUT the Default Language of the DUT with the original value. 11. If *ICSCO*_DeviceName is supported, command TBAD1 to get DUT 'DeviceName'. 12. If IXITCO_SupportedLanguages>1, command TBAD1 to get DUT Default Language. 13. Repeat steps 4 to 12 with the rest of the Test Bed AllJoyn devices.
Pass Fail Criteria	- Step 6: DUT is restarted.

	- Step 8: If *ICSCO*_DeviceName is supported, value of 'DeviceName' parameter has changed to 'MyTestDeviceName'. If IXITCO_SupportedLanguages>1, the Default Language of the DUT has been changed to the value set in step 5. - Step 11: If *ICSCO*_DeviceName is supported, Value of 'DeviceName' parameter has changed to its original value. - Step 12: If IXITCO_SupportedLanguages>1, the Default Language of the DUT has been changed to its default value. - Step 13: Apply to each TBAD same Pass/Fail criteria used for TBAD1.

5.2.7 IOP_Config-v1-08. Reset Configuration

Test procedure id	**IOP_Config-v1-08**
Test case Title	Reset Configuration
Test purpose	Verify that the AllJoyn Configuration 'ResetConfigurations' method sets the DUT configuration of the selected parameter(s) to its factory configuration values
Applicability	AllJoyn devices supporting ICSCF_ConfigurationServiceFramework
Test Bed	Three 'Category 2.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. If *ICSCO*_DeviceName is supported, c*omm*and TBAD1 to modify the DUT DeviceName parameter with 'MyTestDeviceName' value using the Config interface. 5. If IXITCO_SupportedLanguages>1, command TBAD1 to modify the Default Language of the DUT to other supported language. 6. If *ICSCO*_DeviceName is supported, command all TBADs to obtain the DUT 'DeviceName' parameter value. 7. If IXITCO_SupportedLanguages>1, command all TBADs to obtain the DUT 'DefaultLanguage' parameter value. 8. Command TBAD1 to call the Config interface 'ResetConfigurations' method to reset the values of the DUT parameters. 9. If *ICSCO*_DeviceName is supported, Command all TBADs to obtain the DUT 'DeviceName' parameter value. 10. If IXITCO_SupportedLanguages>1, command all TBADs to obtain the DUT 'DefaultLanguage' parameter value. 11. Repeat steps 4 to 10 with the rest of the TBADs.
Pass Fail Criteria	- Step 6: If *ICSCO*_DeviceName is supported, value of 'DeviceName' parameter has changed to 'MyTestDeviceName' value in all TBADs. - Step 7 If IXITCO_SupportedLanguages>1, in all TBADs, Default Language has changed to the

	language set in step 5. - Step 9: If *ICSCO*_DeviceName is supported, Value of 'DeviceName' parameter has changed to its factory value. - Step 10: If IXITCO_SupportedLanguages>1, value of 'DefaultLanguage' parameter has changed to its factory value - Step 11: Apply to each TBAD same Pass/Fail criteria used for TBAD1.

5.2.8 IOP_Config-v1-09. Modify Passcode

Test procedure id	**IOP_Config-v1-09**
Test case Title	Modify Passcode
Test purpose	Verify that calling 'SetPasscode' method on the Config bus object with a 'newPasscode' parameter set to a new passcode value will change the passcode to the new value.
Applicability	AllJoyn devices supporting ICSCF_ConfigurationServiceFramework
Test Bed	Three 'Category 2.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs. 3. Wait until the DUT and all the TBADs are connected. 4. Command TBAD1 to modify DUT passcode (calling the SetPasscode method on the Config bus object with the newPasscode parameter) to "111111". 5. Command TBAD1 to leave the session. 6. Clear TBAD1 key store of authentication keys. 7. Operate TBAD1 to join a session with the DUT application using the new passcode ("111111") when authentication is requested. 8. Command TBAD1 to modify the passcode (calling the 'SetPasscode' method on the Config bus object) with the newPasscode parameter set to default value "000000". 9. Command TBAD1 to leave the session. 10. Clear TBAD1 key store of authentication keys. 11. Operate TBAD1 to join a session with the DUT application after receiving an About Announcement using the new passcode ("000000") when authentication is requested. 12. Repeat steps 2 to 12 with the rest of the Test Bed AllJoyn devices (TBADs).
Pass Fail Criteria	- Step 4: No error message is displayed when modifying passcode - Step 7: TBAD1 connects with the DUT using the passcode "111111". - Step 11: TBAD1 connects with the DUT using the passcode "000000". - Step 12: Apply to each TBAD same Pass/Fail

	criteria used for TBAD1.

5.3 Configuration Controller Service Interoperability Test Suite

This section is applicable to AllJoyn products (including Apps) that can act as Configuration Controllers (ICSCP_CTConfigurationController).

5.3.1 IOP_Config-v1-01. Config interface announcement

Test procedure id	**IOP_Config-v1-01**
Test case Title	Display Controlee info
Test purpose	Verify that the DUT displays correctly Controlee information
Applicability	AllJoyn devices supporting ICSCF_CTDisplayControleeInfo
Test Bed	Three 'Category 2.2' TBADs: TBAD1, TBAD2 and TBAD3
Initial Conditions	DUT and TBAD1 are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs. 3. Wait until the DUT and all TBADs are connected and TBADs device are shown in DUT display. 4. Command DUT to display TBAD1's following information: DeviceId, AppId, DeviceName, Description 5. Command DUT to display TBAD1's following information: Model, Hw version and Software version. 6. Command DUT to display TBAD1's AllJoyn Software Version 7. Command DUT to display TBAD1's supported languages and default language. 8. Command DUT to display TBAD1's Manufacturer, date of manufacture and support url. 9. Repeat steps 4 to 8 using the rest of the TBADs instead of using TBAD1.
Pass Fail Criteria	- Step 4: Verify that TBAD1's parameter values DeviceId, AppId, DeviceName and Description are according to ICS/IXIT declaration. - Step 5: Verify that TBAD1's parameter values Model, Hw version and Software version are

	according to ICS/IXIT declaration. - Step 6: Verify that TBAD1's AllJoyn Software Version is according to ICS/IXIT declaration. - Step 7: Verify that TBAD1's supported languages and default language are according to ICS/IXIT declaration. - Step 8: Verify that TBAD1's parameter values manufacturer, date of manufacture and support url are according to ICS/IXIT declaration. - Step 9: Apply to each TBAD same Pass/Fail criteria used for TBAD1.

5.3.2 IOP_ConfigController-v1-02. Update DeviceName

Test procedure id	**IOP_ConfigController-v1-02**
Test case Title	Update DeviceName
Test purpose	Verify that the DUT can update the value of the DeviceName parameter of AllJoyn devices supporting Configuration service.
Applicability	AllJoyn devices supporting ICSCF_CTConfigurationController
Test Bed	- Two 'Category 2.2' TBADs supporting ICSCO_DeviceName: TBAD1 and TBAD2 - One 'Category 2.2' TBAD not supporting ICSCO_DeviceName: TBAD3. - TBAD_A: One 'Category 1' AllJoyn device.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on all TBADs of the Test Bed. 2. Switch on DUT. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to obtain TBAD1 'DeviceName' parameter value. 5. Command DUT to obtain TBAD3 'DeviceName' parameter value. 6. Command DUT to obtain TBAD2 'DeviceName' parameter value. 7. Command DUT to update TBAD1 'DeviceName' parameter value (change DeviceName to '*DeviceName1*' value). 8. Try to Command DUT to update TBAD3 'DeviceName' parameter value (change DeviceName to '*DeviceName3*' value). 9. Command DUT to update TBAD2 'DeviceName' parameter value (change DeviceName to '*DeviceName2*' value). 10. Command TBAD_A to display the value of the 'DeviceName' parameter of TBAD1 and TBAD2. 11. Switch off and on DUT. 12. Wait until the DUT and all the TBADs are connected. 13. Command DUT to obtain TBAD1 'DeviceName' parameter value. 14. Command DUT to obtain TBAD3 'DeviceName'

	parameter value. 15. Command DUT to obtain TBAD2 ‘DeviceName’ parameter value.
Pass Fail Criteria	- Step 4: DUT displays TBAD1 ‘DeviceName’ parameter properly. - Step 5: DUT does not display any value as TBAD3 ‘DeviceName’ or indicates that TBAD3 has no DeviceName. - Step 6: DUT displays TBAD2 ‘DeviceName’ parameter properly. - Step 8: DUT indicates that TBAD3 ‘DeviceName’ cannot be updated or at least DUT keeps working seamlessly after trying to change the parameter value. - Step 10: TBAD_A displays TBAD1 ‘DeviceName’ parameter value as ‘*DeviceName1*’ and TBAD2 ‘DeviceName’ parameter value as ‘*DeviceName2*’. - Step 13: DUT displays TBAD1 ‘DeviceName’ parameter value as ‘*DeviceName1*’’. - Step 14: DUT does not display any value as TBAD3 ‘DeviceName’ or indicates that TBAD3 has no DeviceName. - Step 15: DUT displays TBAD2 ‘DeviceName’ parameter value as ‘*DeviceName2*’’.

5.3.3 IOP_ConfigController-v1-03. Update DUT DefaultLanguage

Test procedure id	**IOP_ConfigController-v1-03**
Test case Title	Update DUT DefaultLanguage
Test purpose	Verify that DUT can update the value of the DefaultLanguage parameter of AllJoyn devices supporting Configuration service.
Applicability	AllJoyn devices supporting ICSCF_CTConfigurationController
Test Bed	- Two 'Category 2.2' TBADs: with IXITCO_SupportedLanguages>1: TBAD1 and TBAD2 - One 'Category 2.2' TBAD supporting only one language (e.g. 'en'): TBAD3. - TBAD_A: One specific 'Category 1' AllJoyn device.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on all TBADs of the Test Bed. 2. Switch on DUT. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to obtain TBAD1 'DefaultLanguage' parameter value. 5. Command DUT to obtain TBAD2 'DefaultLanguage' parameter value. 6. Command DUT to obtain TBAD3 'DefaultLanguage' parameter value. 7. Command DUT to update TBAD1 'DefaultLanguage' parameter value to other of the TBAD1 supported languages. 8. Try to Command DUT to update TBAD3 'DefaultLanguage' parameter value to any other value. 9. Command DUT to update TBAD2 'DefaultLanguage' parameter value to other of the TBAD2 supported languages. 10. Command TBAD_A to display the value of the 'DefaultLanguage' parameter of TBAD1 and TBAD2. 11. Switch off and on DUT. 12. Wait until the DUT and all the TBADs are connected. 13. Command DUT to obtain TBAD1 'DefaultLanguage'

	parameter value. 14. Command DUT to obtain TBAD3 ‘DefaultLanguage’ parameter value. 15. Command DUT to obtain TBAD2 ‘DefaultLanguage’ parameter value.
Pass Fail Criteria	- Step 4: DUT displays ‘DefaultLanguage’ parameter according to TBAD1 IXITCO_DefaultLanguage. - Step 5: DUT displays ‘DefaultLanguage’ parameter according to TBAD2 IXITCO_DefaultLanguage. - Step 6: DUT displays ‘DefaultLanguage’ parameter according to TBAD3 IXITCO_DefaultLanguage. - Step 8: DUT indicates that TBAD3 ‘DefaultLanguage’ cannot be updated or at least DUT keeps working seamlessly after trying to change the parameter value. - Step 10: TBAD_A displays TBAD1 ‘DefaultLanguage’ parameter and TBAD2 ‘DefaultLanguage’ according to the new values configured by DUT. - Step 13: DUT displays TBAD1 ‘DefaultLanguage’ parameter according to the new value configured by DUT. - Step 14: DUT displays original ‘DefaultLanguage’ value. - Step 15: DUT displays TBAD2 ‘DefaultLanguage’ according to the new value configured by DUT.

5.3.4 IOP_ConfigController-v1-04. Perform DUT Factory Reset

Test procedure id	**IOP_ConfigController-v1-04**
Test case Title	Perform Factory Reset
Test purpose	Verify that the AllJoyn Configuration 'FactoryReset' method sets DUT configuration to its factory configuration Verify that DUT can command to perform 'FactoryReset' method to AllJoyn devices supporting ICSCF_FactoryResetMethod.
Applicability	AllJoyn devices supporting ICSCF_CTFactoryReset
Test Bed	- One 'Category 2.2' TBAD supporting ICSCF_FactoryResetMethod and ICSCO_DeviceName: TBAD1 - One 'Category 2.2' TBAD supporting ICSCF_FactoryResetMethod and with IXITCO_SupportedLanguages>1: TBAD2 - One 'Category 2.2' TBAD supporting ICSCO_DeviceName and not supporting ICSCF_FactoryResetMethod: TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to obtain following TBAD1 parameters: 'DeviceName', 'DefaultLanguage' and Supported Languages. 5. Command DUT to obtain following TBAD2 parameters: 'DeviceName', 'DefaultLanguage' and Supported Languages. 6. Command DUT to obtain following TBAD3 parameters: 'DeviceName', 'DefaultLanguage' and Supported Languages. 7. Command DUT to modify TBAD1 'DeviceName' parameter value to 'DeviceName1' and if TBAD1 IXITCO_SupportedLanguages>1 command DUT to modify TBAD1 'DefaultLanguage' parameter value to a different value to the original Default Language (as specified by its IXITCO_DefaultLanguage parameter). 8. Command DUT to modify TBAD2 'DefaultLanguage' parameter value to a language different from its IXITCO_DefaultLanguage parameter value. If TBAD2 supports 'DeviceName',

	command DUT to modify TBAD2 current 'DeviceName' parameter value to 'DeviceName2'. 9. Command DUT to modify TBAD3 'DeviceName' parameter value to 'DeviceName3'. 10. Command DUT to perform a 'FactoryReset' in TBAD1 and TBAD2. 11. Try to command DUT to perform a 'FactoryReset' in TBAD3. 12. Switch DUT off and on. 13. Wait until the DUT and all the TBADs are connected. 14. Command DUT to obtain following TBAD1 parameters: 'DeviceName', 'DefaultLanguage' and Supported Languages. 15. Command DUT to obtain following TBAD2 parameters: 'DeviceName', 'DefaultLanguage' and Supported Languages. 16. Command DUT to obtain following TBAD3 parameters: 'DeviceName', 'DefaultLanguage' and Supported Languages.
Pass Fail Criteria	- Step 7: DUT displays correctly new TBAD1 configuration data after the modification. - Step 8: DUT displays correctly new TBAD2 configuration data after the modification. - Step 9: DUT displays correctly new TBAD3 configuration data after the modification. - Step 10: Option to execute FactoryReset method is available and can be executed without errors. - Step 11: Option to execute FactoryReset method is not available or disabled; else.if the option to perform FactoryReset is enabled it can be executed and the DUT keeps working seamlessly. - Step 14: DUT displays TBAD1 configuration data which is according with TBAD1 IXIT parameters IXITCO_DeviceName and IXITCO_DefaultLanguage. - Step 15: DUT displays TBAD2 configuration data which is according with TBAD2 IXIT parameters IXITCO_DeviceName and IXITCO_DefaultLanguage. - Step 16: TBAD3 value of 'DeviceName' parameter is 'DeviceName3'.

5.4 Onboarding Service Interoperability Test Suite

This section is applicable to AllJoyn products supporting Onboarding Service (ICSON_OnboardingServiceFramework)

5.4.1 IOP_Onboarding-v1-01. Onboarding Service announcement

Test procedure id	**IOP_Onboarding-v1-01**
Test case Title	Onboarding Service announcement
Test purpose	Verify that the DUT provides a Onboarding Service included in the About announcement
Applicability	AllJoyn devices supporting ICSON_OnboardingInterface
Test Bed	- TBAD_A: One 'Category 1' AllJoyn device. - One 'Category 3.1' TBAD: TBAD1.
Initial Conditions	DUT and TBAD1 are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD_A and TBAD1. 3. Connect the TBAD_A to the AP network if it is not connected yet. 4. Verify if the DUT is found in the personal AP. 5. If the DUT is not automatically connected to the AP (it is offboarded) , command TBAD1 to scan for Wi-Fi networks looking for the Soft AP of the DUT and command TBAD1 to connect to the soft AP and to connect the DUT to the personal AP. 6. Command TBAD_A to display the DUT About Announcement list of object paths and service interfaces supported.
Pass Fail Criteria	- Step 6: Verify that Onboarding interface ('org.alljoyn.Onboarding') is present in DUT about announcement.

5.4.2 IOP_Onboarding-v1-02. DUT Offboarding

Test procedure id	**IOP_Onboarding-v1-02**
Test case Title	DUT Offboarding
Test purpose	Verify that the DUT can be offboarded by other AllJoyn device
Applicability	AllJoyn devices supporting ICSON_OnboardingInterface
Test Bed	One ‘Category 3.1’ TBAD: TBAD1.
Initial Conditions	TBAD1 is switched off. DUT has already been onboarded and connected to the personal AP.
Test Procedure	1. Switch on TBAD1 and DUT. 2. Connect TBAD1 to the AP network if it is not connected yet. 3. Establish an AllJoyn connection between the DUT and TBAD1 if is not established automatically. 4. Command TBAD1 to offboard the DUT.
Pass Fail Criteria	Step 4: DUT is offboarded

5.4.3 IOP_Onboarding-v1-03. DUT Onboarding

Test procedure id	**IOP_Onboarding-v1-03**
Test case Title	DUT Onboarding
Test purpose	Verify that the DUT can be onboarded by other AllJoyn devices to a personal AP
Applicability	AllJoyn devices supporting ICSON_OnboardingInterface
Test Bed	Three 'Category 3.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Connect TBAD1 to the AP network if it is not connected yet. 4. After DUT has been switched on, verify if it is found in the personal AP. If so, offboard the DUT. 5. Command TBAD1 to onboard DUT (steps below may be required if they are not performed automatically by TBAD1): a. Command TBAD1 to scan for Wi-Fi networks looking for the Soft AP of the DUT. b. Once the soft AP is found, command TBAD1 to connect to the soft AP. c. Command TBAD1 to join a session with the DUT. d. Command TBAD1 to Configure DUT Wi-Fi parameters (by calling the 'ConfigWi-Fi' method on the Onboarding bus object with the SSID, passphrase, and authType for the personal AP). e. Command TBAD1 to onboard the DUT by calling the 'Connect' method on the DUT Onboarding bus object. 6. Command TBAD1 to offboard the DUT. 7. Repeat steps 2 to 6 using the rest of the Test Bed TBADs instead of TBAD1.
Pass Fail Criteria	- Step 5:DUT is onboarded - Step 6: DUT is offboarded. - Step 7: Apply to each TBAD same Pass/Fail criteria used for TBAD1.

5.4.4 IOP_Onboarding-v1-05. DUT Onboarding with incorrect WI-FI configuration data.

Test procedure id	**IOP_Onboarding-v1-05**
Test case Title	DUT Onboarding with incorrect WI-FI configuration data.
Test purpose	Verify that the DUT cannot be onboarded by other AllJoyn devices to a personal AP when providing incorrect Wi-Fi configuration data, but it can be onboarded with the proper configuration data afterwards
Applicability	AllJoyn devices supporting ICSON_OnboardingInterface
Test Bed	Three 'Category 3.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Connect TBAD1 to the AP network if it is not connected yet. 4. After DUT has been switched on, verify if it is found in the personal AP. If so, offboard the DUT. 5. Command TBAD1 to onboard DUT with an incorrect Wi-Fi network password (steps below may be required if they are not performed automatically by TBAD1): a. Command TBAD1 to scan for Wi-Fi networks looking for the Soft AP of the DUT. b. Once the soft AP is found command TBAD1 to connect to the soft AP. c. Operate TBAD1 to join a session with the DUT. d. Command TBAD1 to Configure DUT Wi-Fi parameters (by calling the 'ConfigWi-Fi' method on the Onboarding bus object) with an incorrect Wi-Fi network password . e. Command TBAD1 to onboard the DUT calling the Connect method on the DUT Onboarding bus object. 6. Command TBAD1 to onboard DUT using the right WI-FI network password (steps below may be required if they are not performed automatically by TBAD1): a. Command TBAD1 to scan for Wi-Fi networks looking for the Soft AP of the DUT. b. Once the soft AP is found, command TBAD1 to connect to the soft AP.

	c. Command TBAD1 to join a session with the DUT. d. Command TBAD1 to Configure DUT Wi-Fi parameters (by calling the 'ConfigWi-Fi' method on the Onboarding bus object with the SSID, passphrase, and authType for the personal AP). e. Command TBAD1 to onboard the DUT by calling the 'Connect' method on the DUT Onboarding bus object. 7. Command TBAD1 to offboard the DUT. 8. Repeat steps 2 to 6 using the rest of the Test Bed TBADs instead of TBAD1.
Pass Fail Criteria	- Step 5: TBAD1 receives an error when trying to onboard the DUT. - Step 6: AllJoyn Connection is established between TBAD1 and the DUT and the DUT is onboarded to the personal AP. - Step 7: DUT is offboarded. - Step 8: Apply to each TBAD same Pass/Fail criteria used for TBAD1.

5.4.5 IOP_Onboarding-v1-06. DUT Onboarding, getting list of available Wi-Fi networks

Test procedure id	**IOP_Onboarding-v1-06**
Test case Title	DUT Onboarding, getting list of available WI-FI networks
Test purpose	Verify that the DUT can provide a list of available Wi-Fi networks to be onboarded (by using GetScanInfo method)
Applicability	AllJoyn devices supporting ICSON_GetScanInfoMethod
Test Bed	Three 'Category 3.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Connect TBAD1 to the AP network if it is not connected yet. 4. After DUT has been switched on, verify if it is found in the personal AP. If so, offboard the DUT. 5. Command TBAD1 to scan for Wi-Fi networks looking for the Soft AP of the DUT. 6. Once the soft AP is found command TBAD1 to connect to the soft AP. 7. Operate TBAD1 to join a session with the DUT application after receiving an About Announcement. 8. Command TBAD1 to scan all the Wi-Fi access points in the DUT's proximity (by calling 'GetScanInfo' method). 9. Repeat steps 2 to 8 using the rest of the Test Bed TBADs instead of TBAD1.
Pass Fail Criteria	- Step 8: DUT provides a valid list of scanned networks. - Step 9: Apply to each TBAD same Pass/Fail criteria used for TBAD1.

5.5 Onboarder Service Interoperability Test Suite

This section is applicable to AllJoyn products supporting Onboarding Service (ICSON_OnboardingServiceFramework)

5.5.1 IOP_Onboarder-v1-01. Detect Onboardee devices

Test procedure id	**IOP_Onboarder-v1-01**
Test case Title	Detect Onboardee devices
Test purpose	Verify that the DUT is able to detect Onboardee devices providing soft-AP to be orboarded in the same network
Applicability	AllJoyn devices supporting ICSON_CTOnboarder
Test Bed	- Three 'Category 3.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and all TBADs are switched off. TBADs are offboarded.
Test Procedure	1. Switch on TBAD1 and TBAD2 and wait until they are connected to the AP 2. Switch DUT on. 3. Command DUT to scan for Wi-Fi networks looking for existing Soft APs. 4. Switch TBAD3 on. 5. Command DUT to scan for Wi-Fi networks looking for existing Soft APs.
Pass Fail Criteria	- Step 3: DUT displays a valid list of scanned networks including TBAD1 and TBAD2 soft-APs. - Step 5: DUT displays a valid list of scanned networks including TBAD1, TBAD2 and TBAD3 soft-APs.

5.5.2 IOP_Onboarder-v1-02. Onboarding

Test procedure id	**IOP_Onboarding-v1-02**
Test case Title	Onboarding
Test purpose	Verify that the DUT can onboard other AllJoyn devices (Onboardees) to a personal AP
Applicability	AllJoyn devices supporting ICSON_CTOnboarder.
Test Bed	Three 'Category 3.2' TBADs: TBAD1, TBAD2 and TBAD3. One of the TBADs supports concurrence (ICSON_ChannelSwitching).
Initial Conditions	DUT and TBADs are switched off. TBADs are offboarded.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1 and TBA2. 3. Operate DUT to onboard TBAD1 (steps below may be required if they are not performed automatically): a. Command DUT to scan for Wi-Fi networks looking for the Soft AP of TBAD1. b. Once the soft AP is found command DUT to connect to the soft AP. c. Operate DUT to join a session with TBAD1. d. Command DUT to configure TBAD1 Wi-Fi parameters as prompted. e. Command DUT to onboard TBAD1. 4. Operate DUT to onboard TBAD2 (same sub-steps used in step 3, but with TBAD2, may apply). 5. Switch on TBAD3 6. Operate DUT to onboard TBAD3 (same sub-steps used in step 3, but with TBAD3, may apply).
Pass Fail Criteria	- Step 3:TBAD1 is onboarded. - Step 4:TBAD2 is onboarded. - Step 6:TBAD3 is onboarded.

5.5.3 IOP_Onboarder-v1-03. DUT Offboarding

Test procedure id	**IOP_Onboarder-v1-03**
Test case Title	DUT Offboarding
Test purpose	Verify that the DUT can offboard other AllJoyn devices
Applicability	AllJoyn devices supporting ICSON_CTOnboarder
Test Bed	Three 'Category 3.2' TBADs: TBAD1, TBAD2 and TBAD3. One of the TBADs supports concurrence (ICSON_ChannelSwitching).
Initial Conditions	DUT and TBADs are switched off. TBADs are initially onboarded.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1 and TBA2. 3. Wait until the DUT and TBAD1 and TBAD2 are connected. 4. Operate DUT to offboard TBAD1. 5. Operate DUT to offboard TBAD2. 6. Switch on TBAD3. 7. Wait until the DUT and TBAD3 are connected. 8. Operate DUT to offboard TBAD3.
Pass Fail Criteria	- Step 4:TBAD1 is found and offnboarded. - Step 5:TBAD2 is found and offnboarded. - Step 8:TBAD3 is found and offnboarded.

5.5.4 IOP_Onboarder-v1-04. DUT Onboarding with incorrect WI-FI configuration data.

Test procedure id	**IOP_Onboarder-v1-04**
Test case Title	DUT Onboarding with incorrect WI-FI configuration data.
Test purpose	Verify that the DUT cannot onboard other AllJoyn devices to a personal AP when providing incorrect Wi-Fi configuration data, but it can onboard with the proper configuration data afterwards
Applicability	AllJoyn devices supporting ICSON_CTOnboarder
Test Bed	Three 'Category 3.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off. TBADs are initially offboarded.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Connect DUT to the AP network if it is not connected yet. 4. After TBAD1 has been switched on, verify if it is found in the personal AP. If so, command DUT to offboard TBAD1. 5. Command DUT to onboard TBAD1 with an incorrect Wi-Fi network password (steps below may be required if they are not performed automatically by DUT): a. Command DUT to scan for Wi-Fi networks looking for the Soft AP of the DUT. b. Once the soft AP is found command DUT to connect to the soft AP. c. Operate DUT to join a session with TBAD1. d. Command DUT to Configure TBAD1 Wi-Fi parameters with an incorrect Wi-Fi network password. e. Command DUT to onboard TBAD1. 6. Command DUT to onboard TBAD1using the right WI-FI network password (same sub-steps used in step 5 may be required if they are not performed automatically): 7. Command DUT to offboard TBAD1. 8. Repeat steps 2 to 7 using the rest of the Test Bed TBADs instead of TBAD1.
Pass Fail Criteria	- Step 5: DUT receives an error when trying to onboard the DUT.

	- Step 6: TBAD1 is onboarded to the personal AP. - Step 7: TBAD1 is offboarded. - Step 8: Apply to each TBAD same Pass/Fail criteria used for TBAD1.

5.6 Control Panel Service Interoperability Test Suite

This section is applicable to AllJoyn products supporting Control Panel Service with Control Panel Controllee role (ICSCP_ControlPanelServiceFramework)

5.6.1 IOP_ControlPanel-v1-01. Control panel interface announcement

Test procedure id	**IOP_ControlPanel-v1-01**
Test case Title	Control panel interface announcement
Test purpose	Verify that the DUT announces properly its panel object tree.
Applicability	AllJoyn devices supporting ICSCP_ControlPanelInterface
Test Bed	Three 'Category 4.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command TBAD1 (using its virtual control panel Controller functionality) to get DUT Control Panel elements on a graphical interface. 5. Using TBAD1 navigate through the different menus available. 6. Repeat steps 4 to 5 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 5: TBAD1 virtual control panel allows navigation through all menus specified by DUT User Manual). - Step 6: Verify that the windows menus obtained with the rest of the TBADs are the same than the results obtained with TBAD1..

5.6.2 IOP_ControlPanel-v1-02. Retrieving widgets parameters values

Test procedure id	**IOP_ControlPanel-v1-02**
Test case Title	Retrieving widgets parameters values
Test purpose	Verify that the DUT widgets parameters values are retrieved correctly using Control Panel service
Applicability	AllJoyn devices supporting ICSCP_ControlPanelInterface and ICSCP_PropertyInterface
Test Bed	Three 'Category 4.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Wait until the DUT and TBAD1 are connected. 4. Command TBAD1 to navigate across the different DUT menu windows available in the virtual control panel and note the values of the parameters displayed in the menu windows. 5. Repeat steps 2 to 5 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 4: Verify that the values of the different parameters shown in the virtual control panel menu windows are the same that the real DUT device parameter values. - Step 5: Verify that the values of the parameters obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.6.3 IOP_ControlPanel-v1-03. Control Panel Interface use of widgets

Test procedure id	**IOP_ControlPanel-v1-03**
Test case Title	Control Panel Interface use of widgets
Test purpose	Verify that the DUT Control Panel Interface is accessible to other AllJoyn Certified devices and that Control Panel widgets may be used.
Applicability	AllJoyn devices supporting ICSCP_ControlPanelInterface
Test Bed	Three 'Category 4.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on all TBADs. 2. Switch on DUT. 3. Wait until the DUT and all TBADs are connected. 4. Use TBAD1 control application to display DUT Control Panel elements. 5. If DUT supports ICSCP_PropertyInterface , command TBAD1 to navigate through the menu windows in the virtual DUT control panel and perform following steps for every element: a. Command TBAD1 to modify the element value. b. Verify that the element value is modified in the virtual control panel of TBAD1 and the other TBADs. c. Verify at DUT that the value of the element is modified (by means provided by DUT user interface). 6. If DUT supports ICSCP_ActionInterface, command TBAD1 to perform an action supported by the DUT (e.g. switch off the device) 7. Repeat steps 2 to 6 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 4: Verify that for every Control Panel DUT element, the parameters modified in DUT using virtual Control Panel interface at TBAD1 are updated in DUT and in the Control Panel Interface at all TBADs. - Step 5: Verify that the results obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.7 Control Panel Controller Interoperability Test Suite

This section is applicable to AllJoyn products (including Apps) that can act as Control Panel Controllers (ICSCPCT_ControlPanelController)

5.7.1 IOP_ControlPanelController-v1-01. Control panel Controller introspection

Test procedure id	**IOP_ControlPanelController-v1-01**
Test case Title	Control panel interface introspection
Test purpose	Verify that the DUT displays properly panel object tree of AllJoyn Control Panel Controlee devices.
Applicability	AllJoyn devices supporting ICSCPCT_ControlPanelController
Test Bed	Three 'Category 4.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to display TBAD1 Control Panel elements on a graphical interface (if ICSCPCT_GUI) or by other means (if NOT ICSCPCT_GUI). 5. Command DUT to navigate through the different menus available at TBAD1 Control Panel interface. 6. Repeat steps 4 to 5 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 3: DUT connects to all TBADs. - Step 5: DUT control panel controller allows navigation through all menus specified by TBAD1 User Manual). - Step 6: Apply to each TBAD same Pass/Fail criteria used for TBAD1.

5.7.2 IOP_ControlPanelController-v1-02. Retrieve widgets parameters values

Test procedure id	**IOP_ControlPanelController-v1-02**
Test case Title	Retrieve widgets' parameters values
Test purpose	Verify that the DUT is able to retrieve correctly the widgets parameters values of the Control Panel controlee devices in the AllJoyn network
Applicability	AllJoyn devices supporting ICSCPCT_ControlPanelController
Test Bed	Three 'Category 4.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Wait until the DUT and TBAD1 is connected. 4. Command DUT to navigate across the different menu windows available of TBAD1 in the virtual control panel and note the values of the parameters displayed in the menu windows. 5. Repeat steps 2 to 5 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 3: DUT connects to TBAD1. - Step 4: Verify that the values of the different parameters shown in the virtual control panel menu windows are the same that the real TBAD1 device parameter values. - Step 5: Verify that the values of the parameters obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.7.3 IOP_ControlPanelController-v1-03. Control Panel Interface use of widgets

Test procedure id	**IOP_ControlPanelController-v1-03**
Test case Title	Control Panel Interface use of widgets
Test purpose	Verify that the DUT can access to AllJoyn Control Panel Controlee certified devices and that Control Panel widgets can be used.
Applicability	AllJoyn devices supporting ICSCP_ControlPanelInterface
Test Bed	Three 'Category 4.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on all TBADs. 2. Switch on DUT. 3. Wait until the DUT and all TBADs are connected. 4. Use DUT to display TBAD1 Control Panel elements. 5. If TBAD1 supports ICSCPCT_PropertyInterface , command DUT to navigate through the menu windows in the virtual DUT control panel and perform following steps for every element: a. Command DUT to modify the TBAD1 element value. b. Verify that the TBAD1 element value is modified in the DUT control panel display. c. Verify at TBAD1 that the value of the element is effectively modified (by means provided by TBAD1 user interface). 6. If TBAD1 supports ICSCP_ActionInterface and DUT supports ICSCPCT_ActionInterface, operate DUT to command TBAD1 to perform an action supported by the DUT (e.g. switch off the device) 7. Repeat steps 2 to 6 using the rest of the TBADs instead of TBAD1.
Pass Fail Criteria	- Step 4: Verify that for every Control Panel DUT element, the parameters modified in DUT using virtual Control Panel interface at TBAD1 are updated in DUT and in the Control Panel Interface at all TBADs. - Step 5: Verify that the results obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.8 Notification Producer Service Interoperability Test Suite

This section is applicable to AllJoyn products supporting Notification Service (ICSN_NotificationServiceFramework) and Notification Producer interface (ICSN_NotificationProducerInterface).

5.8.1 IOP_Notification-v1-01. Sending Notifications

Test procedure id	**IOP_Notification-Producer-v1-01**
Test case Title	Sending Notifications
Test purpose	Verify that DUT is able to send different types of Notification messages
Applicability	AllJoyn devices supporting ICSN_NotificationProducerInterface.
Test Bed	Three 'Category 5.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Wait until the DUT and TBAD1 are connected. 4. Configure TBAD1 to display Notifications received from DUT, indicating type of Notification. 5. If supported by DUT and feasible, handle DUT to generate a Notification of information type. 6. If supported by DUT and feasible, handle DUT to generate a Notification of warning type. 7. If supported by DUT and feasible, handle DUT to generate a Notification of emergency type. 8. If supported by DUT (support of ICS ICSN_RichIconUrl) and feasible, handle DUT to generate a 'Notification' message with 'richIconUrl' field. 9. If supported by DUT (support of ICS ICSN_RichAudioUrl) and feasible, handle DUT to generate a 'Notification' message with 'richAudioUrl' field. 10. Repeat steps 4 to 10 using the rest of the TBADs instead of using TBAD1.
Pass Fail Criteria	- Step 5: TBAD1 receives an information Notification from the DUT. - Step 6: TBAD1 receives a warning Notification from the DUT. - Step 7: TBAD1 receives an emergency Notification from the DUT. - Step 8: TBAD1 receives a Notification where

	richIconUrl attribute (attrName = 0) is present and a valid URL is included in the iconUrl in the attrValue. - Step 9: TBAD1 receives a Notification where richAudioUrl attribute (attrName = 1) is present and a valid URL is included in the audioUrl in the attrValue. - Step 10: Verify that the results obtained with the rest of the TBADs are the same than the results obtained with TBAD1.

5.9 Notification Consumer Service Interoperability Test Suite

This section is applicable to AllJoyn products supporting Notification Service (ICSN_NotificationServiceFramework) and Notification Consumer (ICSN_NotificationConsumer).

5.9.1 IOP_Notification-Consumer-v1-01. Receiving Notifications inside and outside the TTL period.

Test procedure id	**IOP_Notification-Consumer-v1-01**
Test case Title	Receiving Notifications inside and outside the TTL period.
Test purpose	Verify that DUT displays Notifications received inside the TTL period and Notifications received outside the TTL are not displayed
Applicability	AllJoyn devices supporting ICSN_NotificationConsumer
Test Bed	Three 'Category 5.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on all TBADs of the Test Bed. 2. Command TBAD1 to send an information Notification message. If TTL parameter can be configured, configure it to 2 minutes. 3. Command TBAD2 to send an information Notification message. If TTL parameter can be configured, configure it to 15 minutes. 4. Command TBAD3 to send an information Notification message. If TTL parameter can be configured, configure it to 2 minutes. 5. Wait for 3 minutes. If TTL parameters cannot be configured wait for a time, so that some of the default TBADs' TTL times have expired and some of them have not expired. 6. Switch on the DUT 7. Wait until the DUT and all TBADs are connected.
Pass Fail Criteria	- Step 7: Only notification message from TBAD2 is displayed in the DUT. If TBADs' TTL parameters cannot be configured verify that only the applicable messages (whose value is higher than the time waited until the DUT has been switched on) are displayed.

5.9.2 IOP_Notification-Consumer-v1-02. Handling different types of Notification messages

Test procedure id	**IOP_Notification-Consumer-v1-02**
Test case Title	Handling different types of Notification messages
Test purpose	Verify that DUT displays different types of Notifications messages correctly
Applicability	AllJoyn devices supporting ICSN_NotificationConsumer
Test Bed	- TBAD1: One Category 5.1 AllJoyn device. - TBAD2: One Category 5.2 AllJoyn device. - TBAD3: One Category 5.1 AllJoyn device.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on TBAD1 and TBAD2. 2. Wait until the DUT and TBAD1 and TBAD2 are connected. 3. Command TBAD1 to send a warning 'Notification' message (Notification 1) with TTL configured for 10 minutes. 4. Wait for 1 minute. 5. Command TBAD1 to send an emergency 'Notification' message (Notification 2) with TTL configured for 10 minutes. 6. Wait for 1 minute. 7. Command TBAD2 to send a warning Notification message (Notification 3) with TTL configured for 10 minutes. 8. Switch on DUT. 9. Switch on TBAD3. 10. Wait until the DUT and all TBADs are connected. 11. Command TBAD3 to send a warning Notification message (Notification 4) with TTL configured for 10 minutes. 12. Wait for 1 minute. 13. Command TBAD1 to send an emergency Notification message (Notification 5) with TTL configured for 10 minutes. 14. Wait for 1 minute. 15. Command TBAD2 to send a warning Notification message (Notification 6) with TTL configured for 10 minutes.

Pass Fail Criteria	- Step 10: DUT receives an emergency Notification message (Notification 2) from TBAD1 and a warning Notification message (Notification 3) from TBAD2. - Step 11: DUT receives a warning Notification message (Notification 4) from TBAD3. - Step 13: DUT receives an emergency Notification message (Notification 5) from TBAD1. - Step 15: DUT receives a warning Notification message (Notification 6) from TBAD2. Notification 4 is no longer displayed.

5.9.3 IOP_Notification-Consumer-v1-03. Display different languages messages

Test procedure id	IOP_Notification-Consumer-v1-03
Test case Title	Display different languages messages
Test purpose	Verify that DUT displays correctly Notifications received using different languages
Applicability	AllJoyn devices supporting ICSN_NotificationConsumer and with number of supported languages> 1 (according to IXITCO_SupportedLanguages)
Test Bed	- TBAD1: A Category 5.2 AllJoyn device configured to send notification messages in a language supported by the DUT, e.g.: English (”en”). - TBAD2: A Category 5.2 AllJoyn device configured to send notification messages in a different language supported by the DUT, e.g.: Spanish (”es”). - TBAD3: A Category 5.2 AllJoyn device configured to send notification messages in another different language supported by the DUT, e.g.: French (”fr”).
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all TBADs are connected.. 4. Command TBAD1 to send an emergency ‘Notification’ message. 5. Wait for 1 minute. 6. Command TBAD2 to send an information ‘Notification’ message. 7. Wait for 1 minute. 8. Command TBAD3 to send a warning ‘Notification’ message.
Pass Fail Criteria	- Step 4: DUT receives Notification message from TBAD1 with the correct language. - Step 6: DUT receives Notification message from TBAD2 with the correct language. - Step 8 DUT receives Notification message from TBAD3 with the correct language.

5.10 Lighting Service Interoperability Test Suite

This section is applicable to AllJoyn products supporting LSF Lighting Controller Service (ICSLC_LightingControllerServiceFramework).

5.10.1 IOP_LSF_Controller-v1-01. Switching on/off lamps

Test procedure id	**IOP_LSF_Controller-v1-01**
Test case Title	Switching on/off lamps
Test purpose	Verify that the DUT can switch on and off Lamps supporting AllJoyn Lamp service
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	- One 'Category 7.1' TBADs: TBAD1 - Three 'Category 7.2' TBADs: TBAD2, TBAD3 and TBAD4.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 1. Wait until the DUT and all Category 7.2 TBADs are connected and TBAD1 and all Category 7.2 TBADs are also connected. 3. Command DUT to display Category 7.2 TBADs lamps switching on/off status. 4. Command TBAD1 to display Category 7.2 TBADs lamps switching on/off status. 5. Command DUT to switch all the Category 7.2 TBADs lamps on (switching them off previously if the lamp were already on). 6. Command DUT to switch TBAD2 lamp off. 7. Command DUT to switch TBAD3 lamp off. 8. Command DUT to switch TBAD2 lamp on. 9. Command TBAD1 to switch TBAD4 lamp off. 10. Command DUT to switch all TBADs lamps off.
Pass Fail Criteria	- Step 3: DUT displays correctly all Category 7.2 TBADs lamps status. - Step 4: TBAD1 displays the same Category 7.2 TBADs lamps status displayed by DUT. - Step 5: all Category 7.2 TBADs lamps are switched on. - Step 6: TBAD2 is switched off.

	- Step 7: TBAD3 is switched off. - Step 8: TBAD2 is switched on. - Step 9: TBAD4 is switched off. - Step 10: all Category 7.2 TBADs lamps are switched off.

5.10.2 IOP_LSF_Controller-v1-02. Providing Lamp details

Test procedure id	**IOP_LSF_Controller-v1-02**
Test case Title	Providing Lamp details
Test purpose	Verify that the DUT can obtain lamp details from AllJoyn lamp devices using the Lamp service
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	Three 'Category 7.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to display TBADs Lamp details.
Pass Fail Criteria	- Step 3: DUT is connected to all TBADs. - Step 4: ▪ All TBADs lamp detail properties Dimmable, Color, VariableColorTemp and HasEffects are displayed and the values obtained are according TBADs lamps expected values. ▪ The values of the next LampDetails Interface fields are displayed according to TBADs specs: Make, Model, Type, LampType, LampBaseType, LampBeamAngle, MinVoltage, MaxVoltage, Wattage, IncandescentEquivalent, MaxLumens, MinTemperature, MaxTermperature and LampID.

5.10.3 IOP_LSF_Controller-v1-03. Modifying Lamp Color

Test procedure id	**IOP_LSF_Controller-v1-03**
Test case Title	Modifying Lamp Color
Test purpose	Verify that the DUT modifies the color of AllJoyn lamps. through their Lamp service
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	Three 'Category 7.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to switch all TBADs lamps on. 5. Operate DUT to display current value of all TBADs Lamp color. 6. Command DUT to turn all TBADs lamp brightness to its highest value. 7. Command DUT to turn all TBADs lamp Color Temperature to its highest value. 8. Command DUT to turn all TBADs lamp saturation to its highest value. 9. Operate DUT to modify all TBADs Color value to a red color. 10. Operate DUT to modify all TBADs Color value to a blue color. 11. Operate DUT to modify all TBADs Color value to a yellow color.
Pass Fail Criteria	- Step 3: DUT is connected to all TBADs. - Step 9: TBADs lamps color is changed according to the value set and the DUT displays properly the TBADs lamp Color (red). - Step 10: TBADs lamps color is changed according to the value set and the DUT displays properly the TBADs lamp Color (blue). - Step 11: TBADs lamps color is changed according to the value set and the DUT displays properly the TBADs lamp Color (yellow). Note: It is not relevant that the colors are exactly set. It is relevant that the lamps change their color as commanded by the DUT.

5.10.4 IOP_LSF_Controller-v1-04. Modifying Lamp Saturation

Test procedure id	**IOP_LSF_Controler-v1-04**
Test case Title	Modifying Lamp Saturation
Test purpose	Verify that the DUT modifies the saturation of AllJoyn Lamps.
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	Three 'Category 7.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to switch all TBADs lamps on. 5. Operate DUT to display all TBADs Lamps saturation value. 6. Command DUT to turn all TBADs lamps brightness to its highest value. 7. Operate DUT to change all TBADs lamps saturation to its highest value. 8. Operate DUT to modify all TBADs lamps saturation value to a medium value. 9. Operate DUT to modify all TBADs lamps saturation value to a low value.
Pass Fail Criteria	- Step 3: DUT is connected to all TBADs. - Step 5: DUT displays correct lamp saturation value for all TBADs lamps. - Step 7: TBADs Lamps saturation changes to their maximum value and DUT displays current lamp saturation correctly. - Step 8: TBADs Lamps saturation changes to a medium value and DUT displays current lamp saturation correctly. - Step 9: TBADs Lamps saturation changes to a low value and DUT displays current lamp saturation correctly.

5.10.5 IOP_LSF_Controller-v1-05. Modifying color temperature of a Lamp

Test procedure id	**IOP_LSF_Controller-v1-05**
Test case Title	Modifying color temperature of a Lamp
Test purpose	Verify that the DUT modifies AllJoyn Lamps color temperature.
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	Three 'Category 7.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to switch all TBADs lamps on. 5. Operate DUT to display all TBADs Lamp color temperature value. 6. Command DUT to turn all TBADs lamp brightness to its highest value. 7. Operate DUT to change all TBADs lamp color temperature to its highest value. 8. Operate DUT to modify all TBADs lamp color temperature value to a medium value. 9. Operate DUT to modify all TBADs color temperature value to a low value.
Pass Fail Criteria	- Step 5: DUT displays all TBADs lamp color temperature properly. - Step 7: TBADs lamp color temperature is modified to the new highest value set by the DUT. DUT displays all TBADs lamp color temperature properly - Step 8: TBADs lamp color temperature is modified to the new medium value set by the DUT. DUT displays all TBADs lamp color temperature properly - Step 9: TBADs lamp color temperature is modified to the new low value set by the DUT. DUT displays all TBADs lamp color temperature properly

5.10.6 IOP_LSF_Controller-v1-06. Modifying Lamp brightness

Test procedure id	**IOP_LSF_Controller-v1-06**
Test case Title	Modifying Lamp brightness
Test purpose	Verify that the DUT can modify the brightness of AllJoyn lamps through its Lamp service
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	Three 'Category 7.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to switch all TBADs lamps on. 5. Operate DUT to display all TBADs Lamp brightness value. 6. Operate DUT to change all TBADs lamp brightness to its highest value. 7. Operate DUT to modify all TBADs lamp brightness value to a medium value. 8. Operate DUT to modify all TBADs brightness value to a low value.
Pass Fail Criteria	- Step 5: DUT displays correct lamp brightness value. - Step 7: TBADs lamp brightness is modified to the new value set by the DUT. DUT displays current highest brightness value properly. - Step 8: TBADs lamp brightness is modified to the new value set by the DUT. DUT displays current medium brightness value properly. - Step 9: TBADs lamp brightness is modified to the new value set by the DUT. DUT displays current low brightness value properly.

5.10.7 IOP_LSF_Controller-v1-07. Switching on and off the controller

Test procedure id	**IOP_LSF_Controller-v1-07**
Test case Title	Switching on and off the controller
Test purpose	Verify that the DUT can control AllJoyn lamps after being switched off and on.
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	Three 'Category 7.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs 3. Wait until the DUT and all TBADs are connected. 4. Command DUT to switch all TBADs lamps on. 5. Operate DUT to switch all TBADs on. 6. Switch off and on DUT. 7. Wait until the DUT and TBAD1 are connected. 8. Operate DUT to switch all TBADs off and on. 9. Command DUT to obtain all TBADs Lamp details.
Pass Fail Criteria	- Step 8: All TBADs lamps are switched off and on. - Step 9: All TBADs lamps details are obtained and displayed in the DUT.

5.10.8 IOP_LSF_Controller-v1-08. Pulse Effects

Test procedure id	**IOP_LSF_Controller-v1-08**
Test case Title	Pulse Effects
Test purpose	Verify that DUT can command AllJoyn lamps to perform pulse effects as specified in LampState interface
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	Three 'Category 7.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to switch all TBADs lamps on. 5. Operate DUT to command TBADs lamps to perform pulse sequence as defined (if specified values are not supported by the TBADs lamps use TBADs lamps supported values): a. FromState: Red color, maximum brightness. b. ToState: Green color, maximum brightness. c. period: 500 ms. d. duration: 1000 ms. e. numPulses: 10. f. timeStamp: 100 ms. 6. Operate DUT to command TBADs lamps to perform pulse sequence as defined (if specified values are not supported by the TBADs lamps use TBADs lamps supported values): a. FromState: Red color, medium brightness. b. ToState: Blue color, maximum brightness. c. period: 200 ms. d. duration: 3000 ms. e. numPulses: 20. f. timeStamp: 2000 ms.
Pass Fail Criteria	- Step 5: All TBADs lamps perform the pulse effect according to the parameters defined in this step. - Step 6: All TBADs lamps perform the pulse effect according to the parameters defined in this step.

5.10.9 IOP_LSF_Controller-v1-09. Transition Effects

Test procedure id	**IOP_LSF_Controller-v1-09**
Test case Title	Transition Effects
Test purpose	Verify that DUT can command AllJoyn lamps to perform transition effects as specified in LampState interface
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	Three 'Category 7.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs. 3. Wait until the DUT and all the TBADs are connected. 4. Command DUT to switch all TBADs lamps on. 5. Operate DUT to set medium brightness and red color. 6. Operate DUT to command TBADs lamps to perform a lamp transition sequence as defined below (if specified values are not supported by the DUT use DUT supported values): a. timeStamp: 100 ms. b. NewState: Blue color, maximum brightness. c. Transition period: 2000 ms. 7. Operate DUT to command TBADs lamps to perform a lamp transition sequence as defined below (if specified values are not supported by the devices use device supported values): a. timeStamp: 500 ms. b. NewState: Yellow color, maximum brightness. c. Transition period: 4000 ms.
Pass Fail Criteria	- Step 6: DUT lamp displays a transition effect according to the parameters defined in this step. - Step 7: DUT lamp displays a transition effect according to the parameters defined in this step.

5.10.10 IOP_LSF_Controller-v1-10. Simultaneous Effects

Test procedure id	**IOP_LSF_Controller-v1-10**
Test case Title	Simultaneous Effects
Test purpose	Verify that DUT commands AllJoyn lamps to perform different effects, dismissing any previously existing effect
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	Three 'Category 7.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs. 3. Wait until the DUT and all the TBADs are connected. 4. Operate DUT to switch all TBADs lamps on. 5. Operate DUT to set medium brightness and yellow color for all of them. 6. Operate DUT to command all TBADs lamps to perform lamp transition sequence as defined (if specified values are not supported by the DUT use DUT supported values): a. timeStamp: 100 ms. b. NewState: Blue color, maximum brightness. c. Transition period: 30000 ms. 7. Ten seconds after starting step 6, operate TBAD2 to perform a DUT lamp pulse sequence as defined (if specified values are not supported by the devices use device supported values): a. FromState: Red color, medium brightness. b. ToState: Blue color, maximum brightness. c. period: 1000 ms. d. duration: 1000 ms. e. numPulses: 20. f. timeStamp: 100 ms.
Pass Fail Criteria	- Step 7: All TBADs lamps start performing the pulse effect specified in this step without waiting to complete the transition effect defined in step 6.

5.10.11 IOP_LSF_Controller-v1-11. Handling lighting scenes

Test procedure id	**IOP_LSF_Controller-v1-11**
Test case Title	Handling lighting scenes
Test purpose	Verify that DUT can command AllJoyn lamps to perform lighting scenes.
Applicability	AllJoyn devices supporting ICSLC_ControllerServiceInterface.
Test Bed	Three 'Category 7.2' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs. 3. Wait until the DUT and all the TBADs are connected. 7. Command DUT to switch all TBADs lamps on. 4. Operate DUT to store following scenes. a. Scene 1: No transition; Blue color, maximum brightness. b. Scene 2: Transition effect. c. timeStamp: 100 ms. d. NewState: Purple color, low brightness. e. Transition period: 2000 ms. f. Scene 3: Pulse effect. g. FromState: Yellow color, medium brightness. h. ToState: Blue color, maximum brightness. i. period: 1000 ms. j. duration: 1000 ms. k. numPulses: 20. 5. Operate DUT to command all TBADs lamps perform scene 1. 6. Operate DUT to command all TBADs lamps perform scene 2. 7. Operate DUT to command all TBADs lamps perform scene 3.
Pass Fail Criteria	- Step 5: TBADs lamps change to state defined in scene 1. - Step 6: TBADs lamps change to state defined in

	scene 2. - Step 7: TBADs lamps change to state defined in scene 3.

5.11 Lamp Service Interoperability Test Suite

This section is applicable to AllJoyn products supporting LSF Lamp Service (ICSL_LightingServiceFramework).

5.11.1 IOP_LSF_Lamp-v1-01. Switch on/off lamp

Test procedure id	**IOP_LSF_Lamp-v1-01**
Test case Title	Switch on/off Lamp
Test purpose	Verify that the DUT lamp can be switched on and off
Applicability	AllJoyn devices supporting ICSL_LampServiceInterface
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command all TBADs to display current DUT lamp switching on/off status. 5. Command TBAD1 to switch the DUT lamp on (switching it off previously if the lamp was already on). 6. Verify that DUT lamp is on and that correct DUT status is shown in all TBADs. 7. Command TBAD1 to switch the DUT lamp off. 8. Verify that DUT lamp is switched off and that correct DUT status is shown in all TBADs. 9. Repeat steps 5 to 8 with all TBADs. 10. Switch TBAD1 off. 11. Command TBAD2 to switch the DUT lamp on and off.
Pass Fail Criteria	- Step 4: DUT lamp status is correctly displayed in all TBADs. - Step 5: DUT is switched on. - Step 7: DUT is switched off. - Step 9: Apply to each TBAD same Pass/Fail criteria used for TBAD1. - Step 11: DUT lamp is switched on and off as commanded by TBAD2.

5.11.2 IOP_LSF_Lamp-v1-02. Provide Lamp details

Test procedure id	**IOP_LSF_Lamp-v1-02**
Test case Title	Provide Lamp details
Test purpose	Verify that the DUT lamp details can be obtained through the Lamp service
Applicability	AllJoyn devices supporting ICSL_LampDetailsInterface
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Command TBAD1 to display DUT Lamp details. 5. Repeat steps 4 with all TBADs
Pass Fail Criteria	- Step 3: DUT is connected to all TBADs. - Step 4: ▪ DUT lamp detail properties Dimmable, Color, VariableColorTemp and HasEffects are displayed and the values obtained are according DUT ICS. The following field values are also displayed. ▪ The values of the next LampDetails Interface fields are displayed according to Manufacturer specs: Make, Model, Type, LampType, LampBaseType, LampBeamAngle, MinVoltage, MaxVoltage, Wattage, IncandescentEquivalent, MaxLumens, MinTemperature, MaxTermperature and LampID. - Step 5: Apply to each TBAD same Pass/Fail criteria.

5.11.3 IOP_LSF_Lamp-v1-03. Modify Lamp Color

Test procedure id	**IOP_LSF_Lamp-v1-03**
Test case Title	Modify Lamp Color
Test purpose	Verify that the DUT Color of the lamp can be modified through its Lamp service
Applicability	AllJoyn devices supporting ICSL_Color
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Operate TBAD1 to switch DUT lamp on. 5. Operate all TBADs to display current value of Lamp color. 6. If DUT supports ICSL_Dimmable, command TBAD1 to turn DUT lamp brightness to its highest value. 7. If DUT supports ICSL_ColorTemperature, command TBAD1 to turn DUT lamp Color Temperature to its highest value. 8. Operate TBAD1 to turn DUT lamp saturation to its highest value. 9. Operate TBAD1 to modify lamp color to a reddish one. 10. Operate TBAD3 to modify lamp color to a greenish one. 11. Operate TBAD2 to modify lamp color to a bluish one. 12. Repeat step 9 several times with all TBADs setting lamp color to a different value each time. 13. Note current lamp color. 14. Switch DUT off and on, and wait until the DUT and all the TBADs are connected. 15. Switch off TBAD2. 16. Operate TBAD1 to modify lamp colorto a different color. 17. Switch TBAD2 on. 18. Wait until the DUT and TBAD2 are connected.
Pass Fail Criteria	- Step 3: DUT is connected to all TBADs.

	- Step 9: DUT lamp Color is as expected by its color setting. Current color settingis displayed in all TBADs. - Step 10: DUT lamp Color is modified to a new color as expected by its color setting. Current color settingis displayed in all TBADs. - Step 11: DUT lamp Color is modified to a new color as expected by its color setting. Current color settingis displayed in all TBADs. - Step 12: DUT lamp Color is modified each time to a new color as expected by its color setting. Current color settingis displayed in all TBADs. - Step 16: DUT lamp color is the same color it was before being switched off and on and the value is properly displayed in all TBADs (except TBAD2 that is off). - Step 18: DUT lamp Color is correctly updated in TBAD2.

5.11.4 IOP_LSF_Lamp-v1-04. Modify Lamp Saturation

Test procedure id	**IOP_LSF_Lamp-v1-04**
Test case Title	Modify Lamp Saturation
Test purpose	Verify that the DUT Saturation of the lamp can be modified through its Lamp service
Applicability	AllJoyn devices supporting ICSL_Color
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Operate TBAD1 to switch DUT lamp on. 5. Operate all TBADs to display current Lamp saturation value. 6. Command TBAD3 to turn DUT lamp brightness to its highest value. 7. Operate TBAD1 to change DUT lamp saturation to its highest value. 8. Operate TBAD3 to modify lamp saturation value to a medium value. 9. Operate TBAD2 to modify saturation value to a low value. 10. Repeat step 7 with all TBADs setting saturation value to a different value each time. 11. Note current Lamp saturation value. 12. Switch DUT off and on, and wait until the DUT and TBADs are connected. 13. Switch off TBAD1. 14. Operate TBAD2 to modify saturation value to a different value. 15. Switch TBAD1 on. 16. Wait until the DUT and TBAD1 are connected.
Pass Fail Criteria	- Step 3: DUT is connected to all TBADs. - Step 5: Correct lamp saturation value is displayed in all TBADs (same value in all of them). - Step 7: DUT lamp saturation is modified to the new value set by TBAD1. Current saturation value is displayed in all TBADs.

	- Step 8: DUT lamp saturation is modified to the new value set by TBAD3. Current saturation value is displayed in all TBADs. - Step 9: DUT lamp saturation is modified to the new value set by TBAD2. Current saturation value is displayed in all TBADs. - Step 10: DUT lamp saturation is each time modified to the new value set by the corresponding TBAD. Current saturation value is displayed in all TBADs. - Step 13: DUT lamp saturation has the same value it had before being switched off and on and the value is properly displayed in all TBADs (except TBAD1 that is off). - Step 14: DUT lamp saturation is modified to the new value set by TBAD2. Current saturation value is displayed in all TBADs (except TBAD1 that is off). - Step :16: DUT lamp saturation is correctly updated in TBAD1.

5.11.5 IOP_LSF_Lamp-v1-05. Modify color temperature of a Lamp

Test procedure id	**IOP_LSF_Lamp-v1-05**
Test case Title	Modify color temperature of a Lamp
Test purpose	Verify that the DUT color temperature of the lamp can be modified through its Lamp service
Applicability	AllJoyn devices supporting ICSL_ColorTemperature
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Operate TBAD1 to switch DUT lamp on. 5. Operate all TBADs to display current Lamp color temperature value. 6. If DUT supports ICSL_Dimmable, command TBAD1 to turn DUT lamp brightness to its highest value. 7. Operate TBAD1 to change DUT lamp color temperature to its highest value. 8. Operate TBAD2 to modify lamp color temperature value to a medium value. 9. Operate TBAD3 to modify color temperature value to a low value. 10. Repeat step 8 with all TBADs setting color temperature value to a different value each time. 11. Note current color temperature value. 12. Switch DUT off and on, and reconnect it if necessary to the AP and to the AllJoyn session. 13. Switch off TBAD1. 14. Operate TBAD3 to modify color temperature value to a different value. 15. Switch TBAD1 on. 16. Wait until the DUT and TBAD1 are connected.
Pass Fail Criteria	- Step 5: Correct lamp color temperature value is displayed in all TBADs (same value in all of them). - Step 7: DUT lamp color temperature is modified to the new value set by TBAD1. Current color temperature value is displayed in all TBADs.

	- Step 8: DUT lamp color temperature is modified to the new value set by TBAD2. Current color temperature value is displayed in all TBADs. - Step 9: DUT lamp color temperature is modified to the new value set by TBAD3. Current color temperature value is displayed in all TBADs. - Step 10: DUT lamp color temperature is each time modified to the new value set by the corresponding TBAD. Current color temperature value is displayed in all TBADs. - Step 13: DUT lamp color temperature has the same value it had before being switched off and on and the value is properly displayed in all TBADs (except TBAD1 that is off). - Step 14: DUT lamp color temperature is modified to the new value set by TBAD3. Current color temperature value is displayed in all TBADs (except TBAD1 that is off). - Step 16: DUT lamp color temperature is correctly updated in TBAD1.

5.11.6 IOP_LSF_Lamp-v1-06. Modify Lamp brightness

Test procedure id	**IOP_LSF_Lamp-v1-06**
Test case Title	Modify Lamp brightness
Test purpose	Verify that the DUT brightness of the lamp can be modified through its Lamp service
Applicability	AllJoyn devices supporting ICSL_Dimmable
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Operate TBAD1 to switch DUT lamp on. 5. Operate all TBADs to display current Lamp brightness value. 6. Operate TBAD2 to change DUT lamp brightness to its highest value. 7. Operate TBAD3 to modify lamp brightness value to a medium value. 8. Operate TBAD2 to modify brightness value to a low value. 9. Repeat step 6 with all additional TBADs setting brightness value to a different value each time. 10. Note current brightness value. 11. Switch DUT off and on, and reconnect it if necessary to the AP and to the AllJoyn session. 12. Switch off TBAD1. 13. Operate TBAD2 to modify brightness value to a different value. 14. Switch TBAD1 on. 15. Wait until the DUT and TBAD1 are connected.
Pass Fail Criteria	- Step 5: Correct lamp brightness value is displayed in all TBADs (same value in all of them). - Step 7: DUT lamp brightness is modified to the new value set by TBAD3. Current brightness value is displayed in all TBADs. - Step 8: DUT lamp brightness is modified to the new value set by TBAD1. Current brightness value is displayed in all TBADs.

	- Step 9: DUT lamp brightness is each time modified to the new value set by the corresponding TBAD. Current brightness value is displayed in all TBADs. - Step 12: DUT lamp brightness has the same value it had before being switched off and on and the value is properly displayed in all TBADs (except TBAD1 that is off). - Step 13: DUT lamp brightness is modified to the new value set by TBAD2. Current brightness value is displayed in all TBADs (except TBAD1 that is off). - Step 15: DUT lamp brightness is correctly updated in TBAD1.

5.11.7 IOP_LSF_Lamp-v1-07. Modify Lamp state in a multi-lamp environment, joining an existing group

Test procedure id	IOP_LSF_Lamp-v1-07
Test case Title	Modify Lamp state in a multi-lamp environment, joining an existing group
Test purpose	Verify that the DUT can be switched on/off and its brightness, color (hue and/or saturation), and color temperature values modified (as supported by DUT ICS) in a multi lamp environment when joining an already existing lamp group
Applicability	AllJoyn devices supporting ICSL_LampServiceInterface
Test Bed	- Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3. - Two 'Category 7.2' TBADs: TBAD4 and TBAD5.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on all TBADs of the Test Bed. 2. Wait until all the TBADs are connected. 3. Command TBAD1 to switch on the lamps of TBAD4 and TBAD5 and to set their brightness to their maximum setting. 4. Switch on DUT. 5. Wait until DUT, TBAD1 and TBAD2 are connected. 6. Operate TBAD1 to switch the DUT lamp on (if it is not already on) and if DUT supports ICSL_Dimmable , change DUT lamp brightness to its highest setting. 7. If DUT supports ICSL_Color, operate TBAD1 to switch off and on the DUT and change DUT lamp color to a greenish color. 8. If DUT supports ICSL_Color, operate TBAD2 to change DUT lamp saturation to a high setting. If TBAD2 is not able to modify the saturation state independently, modify the color setting to a bluish color. 9. Operate TBAD3 to make a group 'Group 1' including DUT, TBAD4 and TBAD5. 10. Operate TBAD2 to make a group 'Group 2' including DUT and TBAD4. 11. Operate TBAD1 to switch off lamps of 'Group 1'. 12. Operate TBAD3 to switch on lamps of Group 2'. 13. If DUT supports ICSL_ColorTemperature, operate

	TBAD2 to change Group2 lamps color temperature significantly. 14. If DUT supports ICSL_Color, operate TBAD3 to change 'Group 2' lamps color to a reddish color. 15. If DUT supports ICSL_Color, operate TBAD1 to change 'Group 2' lamps color to a pinkish color. 16. If DUT supports ICSL_Dimmable, operate TBAD3 to change 'Group 1' lamps brightness to a low value. 17. Switch off TBAD4 and TBAD5 and then switch them on again. 18. If DUT supports ICSL_ColorTemperature, operate TBAD1 to change DUT lamp color temperature to its maximum setting. 19. If DUT supports ICSL_Dimmable, operate TBAD2 to change DUT lamp brightness to a high setting.
Pass Fail Criteria	- Step 6: DUT lamp is switched on and, If DUT supports ICSL_Dimmable, DUT brightness is changed to its maximum setting. - Step 7: If DUT supports ICSL_Color, DUT lamp is switched off and on. After DUT lamp saturation is changed to the value set by TBAD1. - Step 8: If DUT supports ICSL_Color, DUT lamp color is changed to the value set by TBAD2. - Step 11: DUT lamp is switched off. TBAD4 and TBAD5 are also switched off. - Step 12: DUT lamp is switched on. TBAD4 is also switched on. - Step 13: If DUT supports ICSL_ColorTemperature, DUT and TBAD4 lamps color temperature are changed to the value set by TBAD2. - Step 14: If DUT supports ICSL_Dimmable, DUT and TDAD3 lamps saturation are changed to the value set by TBAD2. - Step 15: If DUT supports ICSL_Dimmable, DUT and TDAD4 lamps saturation are changed to the value set by TBAD1. - Step 16: If DUT supports ICSL_Dimmable, DUT, TDAD4 and TDAD5 lamps saturation are changed to the value set by TBAD1. - Step 18: DUT lamp color temperature is changed to the value set by TBAD1. - Step 19: DUT lamp brightness is changed to the value set by TBAD2.

5.11.8 IOP_LSF_Lamp-v1-08. Modify Lamp parameters in a multi-lamp environment, other lamps joining the group

Test procedure id	**IOP_LSF_Lamp-v1-08**
Test case Title	Modify Lamp parameters in a multi-lamp environment, other lamps joining the group
Test purpose	Verify that the DUT can be switched on/off and its brightness, saturation, color and color temperature values modified in a multi lamp environment after other lamps join existing DUT lamp group
Applicability	AllJoyn devices supporting ICSL_Color OR ICSL_Dimmable OR ICSL_ColorTemperature
Test Bed	- Two 'Category 7.1' TBADs: TBAD1 and TBAD2. - Two 'Category 7.2' TBADs: TBAD3 and TBAD4.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1 and TBAD2. 3. Wait until the DUT and all the TBADs are connected. 4. Command TBAD1 to switch the DUT lamp on and, if DUT supports ICSL_Dimmable, set its brightness and saturation to its maximum values. 5. Switch on TBAD3 and TBAD4. 6. Verify that TBAD3 and TBAD4 have joined the AllJoyn connection and if not, establish the required steps to get the AllJoyn connection established. 7. Operate TBAD1 to switch on TBAD3 and TDAB4 lamps and change their lamps brightness to its highest value. 8. Operate TBAD1 to switch off and on the DUT and if DUT supports ICSL_Dimmable, to change DUT lamp saturation to a medium value. 9. If DUT supports ICSL_Color, operate TBAD2 to change DUT lamp color to a different color value. 10. Operate TBAD2 to make a group 'Group 1' including DUT, TBAD3 and TBAD4. 11. Operate TBAD2 to make a group 'Group 2' including DUT and TBAD3. 12. Operate TBAD2 to switch the lamps of 'Group 1' off. 13. Operate TBAD1 to switch the lamps of Group 2' on. 14. If DUT supports ICSL_ColorTemperature, operate TBAD2 to change Group2 lamps color temperature

	significantly. 15. If DUT supports ICSL_Dimmable, operate TBAD2 to change 'Group 2' lamps saturation to its maximum value. 16. If DUT supports ICSL_Dimmable, operate TBAD1 to change 'Group 2' lamps saturation to a low value. 17. If DUT supports ICSL_Dimmable, operate TBAD1 to change 'Group 1' lamps saturation to its maximum value.
Pass Fail Criteria	- Step 4: DUT lamp is switched on and, If DUT supports ICSL_Dimmable, DUT brightness and saturation are changed to its maximum values. - Step 8: DUT lamp is switched off and on. After switching on, If DUT supports ICSL_Dimmable, DUT lamp saturation is changed to the value set by TBAD1. - Step 9: If DUT lamp supports ICSL_Color, DUT lamp color is changed to the value set by TBAD2. - Step 12: DUT lamp is switched off. TBAD3 and TBAD4 are also switched off. - Step 13: DUT lamp is switched on. TBAD3 is also switched on. - Step 14: If DUT lamp supports ICSL_ColorTemperature, DUT and TBAD3 lamps color temperature are changed to the value set by TBAD2. - Step 15: If DUT supports ICSL_Dimmable, DUT and TDAD3 lamps saturation are changed to the value set by TBAD2. - Step 16: If DUT supports ICSL_Dimmable, DUT and TDAD3 lamps saturation are changed to the value set by TBAD1. - Step 17: If DUT supports ICSL_Dimmable, DUT, TDAD3 and TDAD4 lamps saturation are changed to the value set by TBAD1.

5.11.9 IOP_LSF_Lamp-v1-09. Behavior after switching on and off

Test procedure id	**IOP_LSF_Lamp-v1-09**
Test case Title	Behavior after switching on and off
Test purpose	Verify that the DUT can be controlled after switching on/off actions
Applicability	AllJoyn devices supporting ICSL_LampServiceInterface
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on TBAD1. 3. Wait until the DUT and TBAD1 are connected. 4. Operate TBAD1 to switch DUT lamp on and off. 5. Switch off and on TBAD1. 6. Wait until the DUT and TBAD1 are connected. 7. Operate TBAD1 to switch DUT lamp on and off. 8. Switch TBAD2 on. 9. Wait until the DUT and TBAD2 are connected. 10. Switch off TBAD1. 11. Operate TBAD2 to switch DUT lamp on and off. 12. Switch the DUT off and on. 13. Wait until the DUT and TBAD2 are connected. 14. Operate TBAD2 to switch DUT lamp on and off. 15. Switch TBAD1 on. 16. Wait until the DUT and TBAD1 are connected. 17. Operate TBAD3 to switch DUT lamp on and off. 18. Operate TBAD2 to switch DUT lamp on and off. 19. Operate TBAD1 to switch DUT lamp on and off.
Pass Fail Criteria	- Step 4: DUT lamp is switched on and off. - Step 7: DUT lamp is switched on and off. - Step 11: DUT lamp is switched on and off. - Step 14: DUT lamp is switched on and off. - Step 17: DUT lamp is switched on and off. - Step 18: DUT lamp is switched on and off. - Step 19: DUT lamp is switched on and off.

5.11.10 IOP_LSF_Lamp-v1-10. Pulse Effects

Test procedure id	**IOP_LSF_Lamp-v1-10**
Test case Title	Pulse Effects
Test purpose	Verify that a DUT can perform pulse effects as specified in LampState interface
Applicability	AllJoyn devices supporting ICSL_Effects
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Operate TBAD1 to switch DUT lamp on. 5. Operate TBAD1 to perform a DUT lamp pulse sequence as defined (if specified values are not supported by the DUT use DUT supported values): FromState: Red color, maximum brightness. ToState: Green color, maximum brightness. period: 500 ms. duration: 1000 ms. numPulses: 10. timeStamp: 100 ms. 6. Operate TBAD2 to perform a DUT lamp pulse sequence as defined (if specified values are not supported by the DUT use DUT supported values): FromState: Red color, medium brightness. ToState: Blue color, maximum brightness. period: 200 ms. duration: 3000 ms. numPulses: 20. timeStamp: 2000 ms. 7. Operate TBAD3 to perform a DUT lamp pulse sequence as defined (if specified values are not supported by the DUT use DUT supported values): FromState: Green color, low brightness. ToState: Orange color, medium brightness. period: 700 ms.

	duration: 5000 ms. numPulses: 7. timeStamp: 500 ms.
Pass Fail Criteria	- Step 5: DUT lamp performs a pulse effect according to the parameters defined in this step. - Step 6: DUT lamp performs a pulse effect according to the parameters defined in this step. - Step 7: DUT lamp performs a pulse effect according to the parameters defined in this step.

5.11.11 IOP_LSF_Lamp-v1-11. Transition Effects

Test procedure id	**IOP_LSF_Lamp-v1-11**
Test case Title	Transition Effects
Test purpose	Verify that a DUT can perform transition effects as specified in LampState interface
Applicability	AllJoyn devices supporting ICSL_Effects
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Operate TBAD1 to switch DUT lamp on and to set medium brightness and red color. 5. Operate TBAD1 to perform a DUT lamp transition sequence as defined (if specified values are not supported by the DUT use DUT supported values): timeStamp: 100 ms. NewState: Blue color, maximum brightness. Transition period: 2000 ms. 6. Operate TBAD2 to perform a DUT lamp transition sequence as defined (if specified values are not supported by the devices use device supported values): timeStamp: 500 ms. NewState: Yellow color, maximum brightness. Transition period: 4000 ms. 7. Operate TBAD3 to perform a DUT lamp transition sequence as defined (if specified values are not supported by the DUT use DUT supported values): timeStamp: 300 ms. NewState: Red color, low brightness. Transition period: 1000 ms.
Pass Fail Criteria	- Step 5: DUT lamp performs a transition effect according to the parameters defined in this step. - Step 6: DUT lamp performs a transition effect according to the parameters defined in this step. - Step 7: DUT lamp performs a transition effect according to the parameters defined in this step.

5.11.12 IOP_LSF_Lamp-v1-12. Simultaneous Effects

Test procedure id	**IOP_LSF_Lamp-v1-12**
Test case Title	Simultaneous Effects
Test purpose	Verify that a DUT performs a new requested effect as requested and dismiss any previously existing effect
Applicability	AllJoyn devices supporting ICSL_Effects
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Operate TBAD1 to switch DUT lamp on and to set medium brightness and yellow color. 5. Operate TBAD1 to perform a DUT lamp transition sequence as defined (if specified values are not supported by the DUT use DUT supported values): timeStamp: 100 ms. NewState: Blue color, maximum brightness. Transition period: 30000 ms. 6. Ten seconds after starting step 6, operate TBAD2 to perform a DUT lamp pulse sequence as defined (if specified values are not supported by the devices use device supported values): FromState: Red color, medium brightness. ToState: Blue color, maximum brightness. period: 1000 ms. duration: 1000 ms. numPulses: 20. timeStamp: 100 ms. 7. Ten seconds after starting step 6, Operate TBAD3 to perform a DUT lamp transition sequence as defined (if specified values are not supported by the DUT use DUT supported values): timeStamp: 200 ms. NewState: Orange color, low brightness. Transition period: 5000 ms.
Pass Fail Criteria	- Step 6: DUT lamp starts performing the pulse effect specified in step 6 without waiting to complete the

	transition effect defined in step 5. - Step 7: DUT lamp starts performing the transition effect specified in step 7 without waiting to complete the transition effect defined in step 6.

5.11.13 IOP_LSF_Lamp-v1-13. Handling lighting scenes

Test procedure id	**IOP_LSF_Lamp-v1-13**
Test case Title	Handling lighting scenes
Test purpose	Verify that lighting scenes can be applied a DUT
Applicability	AllJoyn devices supporting ICSL_LampServiceInterface
Test Bed	Three 'Category 7.1' TBADs: TBAD1, TBAD2 and TBAD3.
Initial Conditions	DUT and TBADs are switched off.
Test Procedure	1. Switch on DUT. 2. Switch on all TBADs of the Test Bed. 3. Wait until the DUT and all the TBADs are connected. 4. Operate TBAD1 to switch DUT lamp on. 5. Operate TBAD1 to store following scenes. a. Scene 1: No transition; Blue color, maximum brightness. b. Scene 2: Transition effect. timeStamp: 100 ms. NewState: Purple color, low brightness. Transition period: 2000 ms. c. Scene 3: Pulse effect. FromState: Yellow color, medium brightness. ToState: Blue color, maximum brightness. period: 1000 ms. duration: 1000 ms. numPulses: 20. 6. Operate TBAD2 to command DUT perform scene 1. 7. Operate TBAD1 to command DUT perform scene 2. 8. Operate TBAD3 to command DUT perform scene 3.
Pass Fail Criteria	- Step 6: DUT lamp changes to state defined in scene 1. - Step 7: DUT lamp performs transition defined in scene 2. - Step 8: DUT lamp performs pulse effect defined in scene 3.