ZigBee Cluster Library
Color Control Cluster (0x0300)
Test Specification
Version 1.0

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Abstract	This document describes the certification tests for devices which implement the ZCL Color Control cluster.
Keywords	ZCL, Color control, cluster

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Revision	Date	Details	Editor
00	April, 2015	Created from ZHA and ZLL test specifications.	Phil Jamieson
01	August 12th, 2015	Resolved comments received since the Hull test event in June 2015.	Phil Jamieson
02	September 30th, 2015	Added a startup test case, a couple color temperature to level test case, a ChangeIfOff test case and the new mandatory global attributes.	Phil Jamieson
03	October 30th, 2015	Addressed comments from the v0.9 ballot.	Phil Jamieson
04	March 1st, 2016	Addressed comments from the ZigBee 3.0 SVEs.	Phil Jamieson
05	April 18th, 2016	Changed status to “approved” and version to 1.0.	Phil Jamieson

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1 Introduction

This document contains the PICS, test specification and PICS/test case cross reference for the ZCL *color control* cluster.

1.1 Conformance levels

The key words "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED" and "MAY" in this document are to be interpreted as described in [R6].

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2 References

2.1 ZigBee Alliance documents

[R1] ZigBee Cluster Library Specification, ZigBee Alliance document 07-5123.
[R2] ZCL General Test Specification, ZigBee Alliance document 15-0xxx.
[R3] ZCL On/Off Cluster Test Specification, ZigBee Alliance document 15-0310.
[R4] ZCL Color Control Cluster XML PICS, ZigBee Alliance document 15-0xxx.
[R5] ZigBee Lighting & Occupancy Device Specification, ZigBee document 15-0014.

2.2 IETF documents

[R6] S. Bradner, Key words for use in RFCs to Indicate Requirement Levels, IETF RFC 2119, March 1997.

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3 PIXIT items

Item number	Feature	Support
CC.PIXIT01.1	Approximate X coordinate for a red hue?	*0x9C40*
CC.PIXIT01.2	Approximate Y coordinate for a red hue?	*0x4E20*
CC.PIXIT02.1	Approximate X coordinate for a green hue?	*0x2710*
CC.PIXIT02.2	Approximate Y coordinate for a green hue?	*0x9C40*
CC.PIXIT03.1	Approximate X coordinate for a blue hue?	*0x2710*
CC.PIXIT03.2	Approximate Y coordinate for a blue hue?	*0x2710*
CC.PIXIT04	Approximate extended hue value for a red hue?	*0x0000*
CC.PIXIT05	Approximate extended hue value for a green hue?	*0x4E20*
CC.PIXIT06	Approximate extended hue value for a blue hue?	*0xAFC8*

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4 PICS

All references are for the ZigBee Cluster Library specification [R1] unless otherwise indicated. An XML version of these PICS is also available in [R4].

4.1 Usage

Item number	Feature	Reference	Status	ECL Support
CC.S	Does the device support the *color control* cluster as a server?	5.2.2	O	Yes
CC.C	Does the device support the *color control* cluster as a client?	5.2.3	O	No

4.2 Server

4.2.1 Attributes

Item number	Feature	Reference	Status	ECL Support
CC.S.A0000	Does the device implement the *CurrentHue* attribute?	Table 5.3, 5.2.2.2.1.1	CC.S: O	Yes
CC.S.A0000.Report.Tx	Does the device implement receiving and responding to the global report attribute commands for the *CurrentHue* attribute and sending reports?	5.2.2.6	CC.S.A0000: M	Yes
CC.S.A0001	Does the device implement the *CurrentSaturation* attribute?	Table 5.3, 5.2.2.2.1.2	CC.S: O	Yes
CC.S.A0001.Scene	Does the device implement receiving and responding to the scene cluster commands for the *CurrentSaturation* attribute?	5.2.2.5	(CC.S.A0001 & S.S): M	Yes
CC.S.A0001.Report.Tx	Does the device implement receiving and responding to the global report attribute commands for the *CurrentSaturation* attribute and sending reports?	5.2.2.6	CC.S.A0001: M	Yes
CC.S.A0002	Does the device implement the *RemainingTime* attribute?	Table 5.3, 5.2.2.2.1.3	CC.S: O	Yes
CC.S.A0003	Does the device implement the *CurrentX* attribute?	Table 5.3, 5.2.2.2.1.4	CC.S: M	Yes
CC.S.A0003.Scene	Does the device implement receiving and responding to the scene cluster commands for the *CurrentX* attribute?	5.2.2.5	(CC.S.A0003 & S.S): M	Yes
CC.S.A0003.Report.Tx	Does the device implement receiving and responding to the global report attribute commands for the *CurrentX* attribute and sending reports?	5.2.2.6	CC.S.A0003: M	Yes

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Item number	Feature	Reference	Status	ECL Support
CC.S.A0004	Does the device implement the *CurrentY* attribute?	Table 5.3, 5.2.2.2.1.5	CC.S: M	Yes
CC.S.A0004.Scene	Does the device implement receiving and responding to the scene cluster commands for the *CurrentY* attribute?	5.2.2.5	(CC.S.A0004 & S.S): M	Yes
CC.S.A0004.Report.Tx	Does the device implement receiving and responding to the global report attribute commands for the *CurrentY* attribute and sending reports?	5.2.2.6	CC.S.A0004: M	Yes
CC.S.A0005	Does the device implement the *DriftCompensation* attribute?	Table 5.3, 5.2.2.2.1.6	CC.S: O	No
CC.S.A0006	Does the device implement the *CompensationText* attribute?	Table 5.3, 5.2.2.2.1.7	CC.S: O	No
CC.S.A0007	Does the device implement the *ColorTemperatureMireds* attribute?	Table 5.3, 5.2.2.2.1.8	CC.S: O	Yes
CC.S.A0007.Scene	Does the device implement receiving and responding to the scene cluster commands for the *ColorTemperatureMireds* attribute?	[R5] 27.5.1.2	(CC.S.A0007 & S.S): M	Yes
CC.S.A0007.Report.Tx	Does the device implement receiving and responding to the global report attribute commands for the *ColorTemperatureMireds* attribute and sending reports?	5.2.2.6	CC.S.A0007: M	Yes
CC.S.A0008	Does the device implement the *ColorMode* attribute?	Table 5.3, 5.2.2.2.1.9	CC.S: O	Yes
CC.S.A000f	Does the device implement the *Options* attribute?	Table 5.3, 5.2.2.2.1.10	CC.S: M	Yes
CC.S.A0010	Does the device implement the *NumberOfPrimaries* attribute?	Table 5.8, 5.2.2.2.2.1	CC.S: O	Yes
CC.S.A0011	Does the device implement the *Primary1X* attribute?	Table 5.8, 5.2.2.2.2.2	CC.S: O	Yes
CC.S.A0012	Does the device implement the *Primary1Y* attribute?	Table 5.8, 5.2.2.2.2.3	CC.S: O	Yes
CC.S.A0013	Does the device implement the *Primary1Intensity* attribute?	Table 5.8, 5.2.2.2.2.4	CC.S: O	Yes
CC.S.A0015	Does the device implement the *Primary2X* attribute?	Table 5.8, 5.2.2.2.2.5	CC.S: O	Yes
CC.S.A0016	Does the device implement the *Primary2Y* attribute?	Table 5.8, 5.2.2.2.2.5	CC.S: O	Yes
CC.S.A0017	Does the device implement the *Primary2Intensity* attribute?	Table 5.8, 5.2.2.2.2.5	CC.S: O	Yes
CC.S.A0019	Does the device implement the *Primary3X* attribute?	Table 5.8, 5.2.2.2.2.5	CC.S: O	Yes
CC.S.A001a	Does the device implement the *Primary3Y* attribute?	Table 5.8, 5.2.2.2.2.5	CC.S: O	Yes

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Item number	Feature	Reference	Status	ECL Support
CC.S.A001b	Does the device implement the *Primary3Intensity* attribute?	Table 5.8, 5.2.2.2.2.5	CC.S: O	Yes
CC.S.A0020	Does the device implement the *Primary4X* attribute?	Table 5.9, 5.2.2.2.3.1	CC.S: O	Yes
CC.S.A0021	Does the device implement the *Primary4Y* attribute?	Table 5.9, 5.2.2.2.3.1	CC.S: O	Yes
CC.S.A0022	Does the device implement the *Primary4Intensity* attribute?	Table 5.9, 5.2.2.2.3.1	CC.S: O	Yes
CC.S.A0024	Does the device implement the *Primary5X* attribute?	Table 5.9, 5.2.2.2.3.1	CC.S: O	Yes
CC.S.A0025	Does the device implement the *Primary5Y* attribute?	Table 5.9, 5.2.2.2.3.1	CC.S: O	Yes
CC.S.A0026	Does the device implement the *Primary5Intensity* attribute?	Table 5.9, 5.2.2.2.3.1	CC.S: O	Yes
CC.S.A0028	Does the device implement the *Primary6X* attribute?	Table 5.9, 5.2.2.2.3.1	CC.S: O	Yes
CC.S.A0029	Does the device implement the *Primary6Y* attribute?	Table 5.9, 5.2.2.2.3.1	CC.S: O	Yes
CC.S.A002a	Does the device implement the *Primary6Intensity* attribute?	Table 5.9, 5.2.2.2.3.1	CC.S: O	Yes
CC.S.A0030	Does the device implement the *WhitePointX* attribute?	Table 5.10, 5.2.2.2.4.1	CC.S: O	No
CC.S.A0031	Does the device implement the *WhitePointY* attribute?	Table 5.10, 5.2.2.2.4.2	CC.S: O	No
CC.S.A0032	Does the device implement the *ColorPointRX* attribute?	Table 5.10, 5.2.2.2.4.3	CC.S: O	No
CC.S.A0033	Does the device implement the *ColorPointRY* attribute?	Table 5.10, 5.2.2.2.4.4	CC.S: O	No
CC.S.A0034	Does the device implement the *ColorPointRIntensity* attribute?	Table 5.10, 5.2.2.2.4.5	CC.S: O	No
CC.S.A0036	Does the device implement the *ColorPointGX* attribute?	Table 5.10, 5.2.2.2.4.6	CC.S: O	No
CC.S.A0037	Does the device implement the *ColorPointGY* attribute?	Table 5.10, 5.2.2.2.4.6	CC.S: O	No
CC.S.A0038	Does the device implement the *ColorPointGIntensity* attribute?	Table 5.10, 5.2.2.2.4.6	CC.S: O	No
CC.S.A003a	Does the device implement the *ColorPointBX* attribute?	Table 5.10, 5.2.2.2.4.6	CC.S: O	No
CC.S.A003b	Does the device implement the *ColorPointBY* attribute?	Table 5.10, 5.2.2.2.4.6	CC.S: O	No
CC.S.A003c	Does the device implement the *ColorPointBIntensity* attribute?	Table 5.10, 5.2.2.2.4.6	CC.S: O	No
CC.S.A4000	Does the device implement the *EnhancedCurrentHue* attribute?	Table 5.3, 5.2.2.2.1.10	CC.S: O	Yes

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Item number	Feature	Reference	Status	ECL Support
CC.S.A4000.Scene	Does the device implement receiving and responding to the scene cluster commands for the *EnhancedCurrentHue* attribute?	5.2.2.5	(CC.S.A4000 & S.S): M	Yes
CC.S.A4001	Does the device implement the *EnhancedColorMode* attribute?	Table 5.3, 5.2.2.2.1.11	CC.S: O	Yes
CC.S.A4002	Does the device implement the *ColorLoopActive* attribute?	Table 5.3, 5.2.2.2.1.12	CC.S: O	Yes
CC.S.A4002.Scene	Does the device implement receiving and responding to the scene cluster commands for the *ColorLoopActive* attribute?	5.2.2.5	(CC.S.A4002 & S.S): M	Yes
CC.S.A4003	Does the device implement the *ColorLoopDirection* attribute?	Table 5.3, 5.2.2.2.1.13	CC.S: O	Yes
CC.S.A4003.Scene	Does the device implement receiving and responding to the scene cluster commands for the *ColorLoopDirection* attribute?	5.2.2.5	(CC.S.A4003 & S.S): M	Yes
CC.S.A4004	Does the device implement the *ColorLoopTime* attribute?	Table 5.3, 5.2.2.2.1.14	CC.S: O	Yes
CC.S.A4004.Scene	Does the device implement receiving and responding to the scene cluster commands for the *ColorLoopTime* attribute?	5.2.2.5	(CC.S.A4004 & S.S): M	Yes
CC.S.A4005	Does the device implement the *ColorLoopStartEnhancedHue* attribute?	Table 5.3, 5.2.2.2.1.15	CC.S: O	Yes
CC.S.A4006	Does the device implement the *ColorLoopStoredEnhancedHue* attribute?	Table 5.3, 5.2.2.2.1.16	CC.S: O	Yes
CC.S.A400a	Does the device implement the *ColorCapabilities* attribute?	Table 5.3, 5.2.2.2.1.17	CC.S: O	Yes
CC.S.A400b	Does the device implement the *ColorTempPhysicalMinMireds* attribute?	Table 5.3, 5.2.2.2.1.18	CC.S: O	Yes
CC.S.A400c	Does the device implement the *ColorTempPhysicalMaxMireds* attribute?	Table 5.3, 5.2.2.2.1.19	CC.S: O	Yes
CC.S.A400d	Does the device implement the *CoupleColorTempToLevelMinMireds* attribute?	[R5] Table 74, 27.5.1.1.1	CC.S: O	Yes
CC.S.A4010	Does the device implement the *StartUpColorTemperatureMireds* attribute?	[R5] Table 74, 27.5.1.1.4	CC.S: O	Yes
CC.S.Afffd	Does the device implement the *ClusterRevision* global attribute?	Table 2-1, 2.3.5.1.1	CC.S: M	Yes

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Item number	Feature	Reference	Status	ECL Support
CC.S.C00.Rsp	Does the device implement receiving the *Move to hue* command?	Table 5.11, 5.2.2.3.3	CC.S: O	Yes
CC.S.C01.Rsp	Does the device implement receiving the *Move hue* command?	Table 5.11, 5.2.2.3.4	CC.S: O	Yes
CC.S.C02.Rsp	Does the device implement receiving the *Step hue* command?	Table 5.11, 5.2.2.3.5	CC.S: O	Yes
CC.S.C03.Rsp	Does the device implement receiving the *Move to saturation* command?	Table 5.11, 5.2.2.3.6	CC.S: O	Yes
CC.S.C04.Rsp	Does the device implement receiving the *Move saturation* command?	Table 5.11, 5.2.2.3.7	CC.S: O	Yes
CC.S.C05.Rsp	Does the device implement receiving the *Step saturation* command?	Table 5.11, 5.2.2.3.8	CC.S: O	Yes
CC.S.C06.Rsp	Does the device implement receiving the *Move to hue and saturation* command?	Table 5.11, 5.2.2.3.9	CC.S: O	Yes
CC.S.C07.Rsp	Does the device implement receiving the *Move to color* command?	Table 5.11, 5.2.2.3.10	CC.S: M	Yes
CC.S.C08.Rsp	Does the device implement receiving the *Move color* command?	Table 5.11, 5.2.2.3.11	CC.S: M	Yes
CC.S.C09.Rsp	Does the device implement receiving the *Step color* command?	Table 5.11, 5.2.2.3.12	CC.S: M	Yes
CC.S.C0a.Rsp	Does the device implement receiving the *Move to color temperature* command?	Table 5.11, 5.2.2.3.13	CC.S: O	Yes
CC.S.C40.Rsp	Does the device implement receiving the *Enhanced move to hue* command?	Table 5.11, 5.2.2.3.14	CC.S: M	Yes
CC.S.C41.Rsp	Does the device implement receiving the *Enhanced move hue* command?	Table 5.11, 5.2.2.3.15	CC.S: M	Yes
CC.S.C42.Rsp	Does the device implement receiving the *Enhanced step hue* command?	Table 5.11, 5.2.2.3.16	CC.S: M	Yes
CC.S.C43.Rsp	Does the device implement receiving the *Enhanced move to hue and saturation* command?	Table 5.11, 5.2.2.3.17	CC.S: M	Yes
CC.S.C44.Rsp	Does the device implement receiving the *Color loop set* command?	Table 5.11, 5.2.2.3.18	CC.S: M	Yes

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Item number	Feature	Reference	Status	ECL Support
CC.S.C47.Rsp	Does the device implement receiving the *Stop move step* command?	Table 5.11, 5.2.2.3.19	CC.S: M	Yes
CC.S.C4b.Rsp	Does the device implement receiving the *Move color temperature* command?	Table 5.11, 5.2.2.3.20	CC.S: M	Yes
CC.S.C4c.Rsp	Does the device implement receiving the *Step color temperature* command?	Table 5.11, 5.2.2.3.21	CC.S: M	Yes

4.3 Client

4.3.1 Attributes

Item number	Feature	Reference	Status	ECL Support
CC.C.A0000.Report.Rsp	Does the device implement sending global report attribute command request and receiving reports for the *CurrentHue* attribute?	5.2.2.6	CC.C: O	Yes/No
CC.C.A0001.Report.Rsp	Does the device implement sending global report attribute command request and receiving reports for the *CurrentSaturation* attribute?	5.2.2.6	CC.C: O	Yes/No
CC.C.A0003.Report.Rsp	Does the device implement sending global report attribute command request and receiving reports for the *CurrentX* attribute?	5.2.2.6	CC.C: O	Yes/No
CC.C.A0004.Report.Rsp	Does the device implement sending global report attribute command request and receiving reports for the *CurrentY* attribute?	5.2.2.6	CC.C: O	Yes/No
CC.C.A0007.Report.Rsp	Does the device implement sending global report attribute command request and receiving reports for the *ColorTemperatureMireds* attribute?	5.2.2.6	CC.C: O	Yes/No
CC.C.Afffd	Does the device implement the *ClusterRevision* global attribute?	Table 2-1, 2.3.5.1.1	CC.C: M	Yes/No

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Item number	Feature	Reference	Status	ECL Support
CC.C.C00.Tx	Does the device implement sending the *Move to hue* command?	Table 5.11, 5.2.2.3.3	CC.C: O	Yes/No
CC.C.C01.Tx	Does the device implement sending the *Move hue* command?	Table 5.11, 5.2.2.3.4	CC.C: O	Yes/No
CC.C.C02.Tx	Does the device implement sending the *Step hue* command?	Table 5.11, 5.2.2.3.5	CC.C: O	Yes/No
CC.C.C03.Tx	Does the device implement sending the *Move to saturation* command?	Table 5.11, 5.2.2.3.6	CC.C: O	Yes/No
CC.C.C04.Tx	Does the device implement sending the *Move saturation* command?	Table 5.11, 5.2.2.3.7	CC.C: O	Yes/No
CC.C.C05.Tx	Does the device implement sending the *Step saturation* command?	Table 5.11, 5.2.2.3.8	CC.C: O	Yes/No
CC.C.C06.Tx	Does the device implement sending the *Move to hue and saturation* command?	Table 5.11, 5.2.2.3.9	CC.C: O	Yes/No
CC.C.C07.Tx	Does the device implement sending the *Move to color* command?	Table 5.11, 5.2.2.3.10	CC.C: O	Yes/No
CC.C.C08.Tx	Does the device implement sending the *Move color* command?	Table 5.11, 5.2.2.3.11	CC.C: O	Yes/No
CC.C.C09.Tx	Does the device implement sending the *Step color* command?	Table 5.11, 5.2.2.3.12	CC.C: O	Yes/No
CC.C.C0a.Tx	Does the device implement sending the *Move to color temperature* command?	Table 5.11, 5.2.2.3.13	CC.C: O	Yes/No
CC.C.C40.Tx	Does the device implement sending the *Enhanced move to hue* command?	Table 5.11, 5.2.2.3.14	CC.C: O	Yes/No
CC.C.C41.Tx	Does the device implement sending the *Enhanced move hue* command?	Table 5.11, 5.2.2.3.15	CC.C: O	Yes/No
CC.C.C42.Tx	Does the device implement sending the *Enhanced step hue* command?	Table 5.11, 5.2.2.3.16	CC.C: O	Yes/No
CC.C.C43.Tx	Does the device implement sending the *Enhanced move to hue and saturation* command?	Table 5.11, 5.2.2.3.17	CC.C: O	Yes/No
CC.C.C44.Tx	Does the device implement sending the *Color loop set* command?	Table 5.11, 5.2.2.3.18	CC.C: O	Yes/No
CC.C.C47.Tx	Does the device implement sending the *Stop move step* command?	Table 5.11, 5.2.2.3.19	CC.C: O	Yes/No

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Item number	Feature	Reference	Status	ECL Support
CC.C.C4b.Tx	Does the device implement sending the *Move color temperature* command?	Table 5.11, 5.2.2.3.20	CC.C: O	Yes/No
CC.C.C4c.Tx	Does the device implement sending the *Step color temperature* command?	Table 5.11, 5.2.2.3.21	CC.C: O	Yes/No

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5 Test specification

5.1 Introduction

5.1.1 Test case overview

The following test cases are available for the *color control* cluster:

Test ID	Description	Reference
Global tests		
CC-TC-01G	Global attributes	5.2.1
Server side tests		
CC-TC-01S	Attributes with server as DUT	5.3.1
CC-TC-02S	Primary functionality with server as DUT	5.3.2
CC-TC-03S	Color loop functionality with server as DUT	5.3.3
CC-TC-04S	Color temperature functionality with server as DUT	5.3.4
CC-TC-05S	Scenes functionality with server as DUT	5.3.5
CC-TC-06S	Reporting functionality with server as DUT	5.3.6
CC-TC-07S	Startup functionality with server as DUT	5.3.7
CC-TC-08S	Couple color temperature to level functionality with server as DUT	5.3.8
CC-TC-09S	ExecuteIfOff behavior with server as DUT	5.3.9
Client side tests		
CC-TC-01C	Functionality with client as DUT	5.4.1

Unless otherwise specified, whenever color manipulation commands are used, the *OptionsMask* and *OptionsOverride* fields of SHALL NOT be included.

5.1.2 Testing tolerances

In test cases where a change in an attribute value is tested over time, it is permitted for the devices involved in the test to be within a tolerance of ±15% of the expected value. As such, these test cases indicate that the attribute value must be approximately equal to an expected value, to which the ±15% tolerance should then be applied. All other attribute values presented are expected to be exact.

5.1.3 Client DUTs

For client test cases only test steps that pertain to commands that are supported on the DUT are required to be executed. All commands in this cluster for which support is indicated in the PICS SHALL be exercised, using valid, application achievable values.

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Note that for the client attribute test case, it is permissible for the client not to be able to execute any of the test steps.

The client SHALL ensure that an application link, e.g. a binding link, exists between itself and the test harness. This should be configured before starting the test.

5.1.4 Color range

When verifying the physical change in color by observation, deviation from the specified color is permitted. Additionally, implementations are not required to implement the full color range. Where a color indicated in this test specification is not achievable by the DUT, the nearest possible alternative color should be substituted.

Color temperature attributes and command fields are represented as a scaled inverse of the current value of the color temperature known as a mired (micro reciprocal degree) value. Mired is related to the actual color temperature in kelvins as:

$$T = \frac{1000000}{M}$$

Where T is the color temperature in kelvins and M is the mired value.

5.1.5 Test steps manipulating attributes

In test case steps that require more than one attribute to be manipulated (e.g. read), the tester may decide whether it is appropriate or practical to send a single attribute manipulation command, containing multiple attributes, or multiple attribute manipulation commands, each containing a single attribute. The test case is designed to verify the behavior of the device supporting the attribute rather that verifying the attribute manipulation command in question.

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5.2 Generic test cases

5.2.1 CC-TC-01G: Global attributes

This test case verifies the behavior of the global attributes of the *color control* cluster client and server.

In this test, the PICS notation CC.S.A*gm* and CC.C.A*gm* represents the list of global attributes that are specified as being mandatory for either the server or client, respectively. Similarly, the PICS notation CC.S.A*go* and CC.C.A*go* represents the list of global attributes that are specified as being optional for either the server or client, respectively.

5.2.1.1 Scope

General:

- *Read attributes* command (0x00)
- *Read attributes response* command (0x01)
- *Write attributes* command (0x02)
- *Write attributes response* command (0x04)

Color control cluster (0x0300):

- All global attributes

PICS:

- CC.S, CC.C
- CC.S.A*gm*, CC.C.A*gm*, CC.S.A*go*, CC.C.A*go*

5.2.1.2 Required devices

Designation	Symbol	Description
DUT		Device under test implementing: • The *color control* cluster server or client.
TH		Test harness implementing: • The *color control* cluster client or server, i.e. the opposite cluster instantiation as implemented on the DUT.

5.2.1.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

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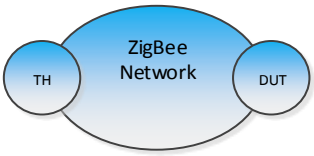
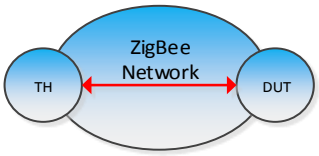
5.2.1.4 Test preparation

Link TH CLIENT with DUT SERVER	
 *Before*	 *After*

CC-TC-01G: Global attributes		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH and DUT.	TH and DUT are powered on.
P3	Join TH and DUT to a ZigBee network.	Observe appropriate communication between TH, DUT and any other relevant node on the ZigBee network.

--- End of test case CC-TC-01G preparation ---

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B-TC-01G: Global attributes			
Item	**PICS**	**Test Harness Step**	**DUT pass Verification**
1	CC.S.A*gm*, CC.C.A*gm*	TH unicasts a ZCL *read attributes* command frame to DUT to read each mandatory global attribute of this cluster one at a time.	DUT unicasts a ZCL *read attributes response* command frame to TH containing each requested attribute. The data type in each command must match the value listed in the specification(s). The data value in each command for the attribute must fall within the valid range described in the specification(s).
2a	CC.S.A*gm*, CC.C.A*gm*	TH unicasts a ZCL *write attributes* command frame to DUT to write the respective default value to each mandatory global attribute of this cluster one at a time.	DUT unicasts a ZCL *write attributes response* command frame to TH for each attribute. If the access control of DUT is set to READ, the DUT response will indicate that the attribute write command was not a SUCCESS. If the access control of DUT is set to READ/WRITE, the DUT response will indicate that the write command was a SUCCESS.
2b	CC.S.A*gm*, CC.C.A*gm*	TH unicasts a ZCL *read attributes* command frame to DUT to read back each attribute written in step 2a.	DUT unicasts a ZCL *read attributes response* command frame to TH containing the requested attribute. If the *Status* field of the *write attributes response* command frame was equal to SUCCESS, the updated value is read back. If the *Status* field of the *write attributes response* command frame was not equal to SUCCESS the value is not updated when read back.

Continued…

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B-TC-01G: Global attributes			
Item	**PICS**	**Test Harness Step**	**DUT pass Verification**
3	CC.S.A*go*, CC.C.A*go*	TH unicasts a ZCL *read attributes* command frame to DUT to read each optional global attribute of this cluster one at a time.	DUT unicasts a ZCL *read attributes response* command frame to TH containing each attribute. If the DUT implements the attribute, the *Status* field will be equal to SUCCESS and the command will contain the requested attribute. If the DUT does not implement the attribute, the *Status* field will not be equal to SUCCESS. The data type in each command must match the value listed in the specification(s). The data value in each command for the attribute must fall within the valid range described in the specification(s).
4a	CC.S.A*go*, CC.C.A*go*	TH unicasts a ZCL *write attributes* command frame to DUT to write the respective default value to each optional global attribute of this cluster one at a time.	DUT unicasts a ZCL *write attributes response* command frame to TH for each attribute. If the attribute is not implemented or the access control of DUT is set to READ, the DUT response will indicate that the attribute write command was not a SUCCESS. If the attribute is implemented and the access control of DUT is set to READ/WRITE, the DUT response will indicate that the write command was a SUCCESS.
4b	CC.S.A*go*, CC.C.A*go*	TH unicasts a ZCL *read attributes* command frame to DUT to read back each attribute written in step 4a.	DUT unicasts a ZCL *read attributes response* command frame to TH containing the requested attribute. If the *Status* field of the *write attributes response* command frame was equal to SUCCESS, the updated value is read back. If the *Status* field of the *write attributes response* command frame was not equal to SUCCESS the value is not updated when read back.

--- End of test case CC-TC-01G ---

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5.3 Server test cases

5.3.1 CC-TC-01S: Attributes with server as DUT

This test case verifies the behavior of the attributes of the *color control* cluster server.

In this test, the PICS notation CC.S.A*m* represents the list of non-global attributes that are specified as being mandatory. Similarly, the PICS notation CC.S.A*o* represents the list of non-global attributes that are specified as being optional.

5.3.1.1 Scope

General:

- *Read attributes* command (0x00)
- *Read attributes response* command (0x01)
- *Write attributes* command (0x02)
- *Write attributes response* command (0x04)

Color control cluster (0x0300):

- All non-global attributes

PICS:

- CC.S
- CC.S.A*m*, CC.S.A*o*

5.3.1.2 Required devices

Designation	Symbol	Description
TH CLIENT		Test harness client implementing: • The *color control* cluster client.
DUT SERVER		Device under test server implementing: • The *color control* cluster server.

5.3.1.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

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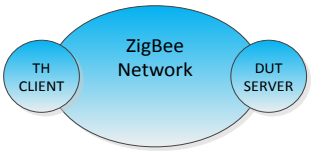
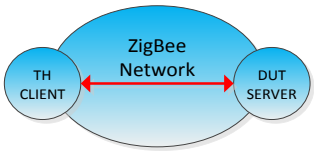
5.3.1.4 Test preparation

Link TH CLIENT with DUT SERVER	
 *Before*	 *After*

CC-TC-01S: Attributes with server as DUT		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH CLIENT and DUT SERVER.	TH CLIENT and DUT SERVER are powered on.
P3	Join TH CLIENT and DUT SERVER to a ZigBee network.	Observe appropriate communication between TH CLIENT, DUT SERVER and any other relevant node on the ZigBee network.

--- End of test case CC-TC-01C preparation ---

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CC-TC-01S: Attributes with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT pass Verification**
1	CC.S.A*m*	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read each mandatory attribute of this cluster one at a time.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT containing each requested attribute. The data type in each command must match the value listed in the specification(s). The data value in each command for the attribute must fall within the valid range described in the specification(s).
2a	CC.S.A*m*	TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to write the respective default value to each mandatory attribute of this cluster one at a time.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT for each attribute. If the access control of DUT SERVER is set to READ, the DUT SERVER response will indicate that the attribute write command was not a SUCCESS. If the access control of DUT SERVER is set to READ/WRITE, the DUT SERVER response will indicate that the write command was a SUCCESS.
2b	CC.S.A*m*	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read back each attribute written in step 2a.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT containing the requested attribute. If the *Status* field of the *write attributes response* command frame was equal to SUCCESS, the updated value is read back. If the *Status* field of the *write attributes response* command frame was not equal to SUCCESS the value is not updated when read back.

Continued…

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CC-TC-01S: Attributes with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT pass Verification**
3	CC.S.A*o*	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read each optional attribute of this cluster one at a time.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT containing each attribute. If the DUT SERVER implements the attribute, the *Status* field will be equal to SUCCESS and the command will contain the requested attribute. If the DUT SERVER does not implement the attribute, the *Status* field will not be equal to SUCCESS. The data type in each command must match the value listed in the specification(s). The data value in each command for the attribute must fall within the valid range described in the specification(s).
4a	CC.S.A*o*	TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to write the respective default value to each optional attribute of this cluster one at a time.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT for each attribute. If the attribute is not implemented or the access control of DUT SERVER is set to READ, the DUT SERVER response will indicate that the attribute write command was not a SUCCESS. If the attribute is implemented and the access control of DUT SERVER is set to READ/WRITE, the DUT response will indicate that the write command was a SUCCESS.

Continued…

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CC-TC-01S: Attributes with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT pass Verification**
4b	CC.S.A*o*	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read back each attribute written in step 4a.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT containing the requested attribute. If the *Status* field of the *write attributes response* command frame was equal to SUCCESS, the updated value is read back. If the *Status* field of the *write attributes response* command frame was not equal to SUCCESS the value is not updated when read back.

--- End of test case CC-TC-01S ---

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5.3.2 CC-TC-02S: Primary functionality with server as DUT

This test case verifies the primary functionality of the *color control* cluster server.

5.3.2.1 Scope

General:

- *Read attributes* command (0x00)
- *Read attributes response* command (0x01)
- *Default response* command (0x0b)

Color control cluster (0x0300):

- *CurrentHue* attribute (0x0000)
- *CurrentSaturation* attribute (0x0001)
- *RemainingTime* attribute (0x0002)
- *CurrentX* attribute (0x0003)
- *CurrentY* attribute (0x0004)
- *ColorMode* attribute (0x0008)
- *EnhancedCurrentHue* attribute (0x4000)
- *EnhancedColorMode* attribute (0x4001)
- *ColorCapabilities* attribute (0x400a)
- *Move to hue* command (0x00)
- *Move hue* command (0x01)
- *Step hue* command (0x02)
- *Move to saturation* command (0x03)
- *Move saturation* command (0x04)
- *Step saturation* command (0x05)
- *Move to hue and saturation* command (0x06)
- *Move to color* command (0x07)
- *Move color* command (0x08)
- *Step color* command (0x09)
- *Enhanced move to hue* command (0x40)
- *Enhanced move hue* command (0x41)
- *Enhanced step hue* command (0x42)
- *Enhanced move to hue and saturation* command (0x43)
- *Stop move step* command (0x47)

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PICS:

- CC.S
- CC.S.A0000-CC.S.A0004, CC.S.A0008, CC.S.A4000, CC.S.A4001, CC.S.A400a
- CC.S.C00.Rsp-CC.S.C09.Rsp, CC.S.C40.Rsp-CC.S.C43.Rsp, CC.S.C47.Rsp

5.3.2.2 Required devices

Designation	Symbol	Description
TH CLIENT		Test harness client implementing: • The *on/off* cluster client and • The *color control* cluster client.
DUT SERVER		Device under test server implementing: • The *on/off* cluster server and • The *color control* cluster server.

5.3.2.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

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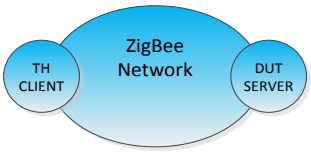
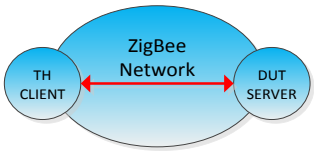
5.3.2.4 Test preparation

Link TH CLIENT with DUT SERVER	
 *Before*	 *After*

CC-TC-02S: Primary functionality with server as DUT		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH CLIENT and DUT SERVER.	TH CLIENT and DUT SERVER are powered on.
P3	Join TH CLIENT and DUT SERVER to a ZigBee network.	Observe appropriate communication between TH CLIENT, DUT SERVER and any other relevant node on the ZigBee network.

--- End of test case CC-TC-02S preparation ---

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CC-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
0	-	TH CLIENT unicasts a ZCL *on* command to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER turns on.
1	CC.S.A400a	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorCapabilities* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorCapabilities* attribute has a value commensurate with the device type.
2	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT01.1 and CC.PIXIT01.2, respectively, (red color) and the *transition time* field set to 0x0032 (5s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a red color.
3a	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT02.1 and CC.PIXIT02.2, respectively, (green color) and the *transition time* field set to 0x00c8 (20s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to changes to a green color.
3b	CC.S.A0002	After 10s, TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *RemainingTime* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *RemainingTime* attribute has a value approximately equal to 0x0064.

Continued…

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CC-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
3c	CC.S.A0002	After 15s, TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *RemainingTime* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *RemainingTime* attribute has the value 0x0000. DUT SERVER has changed to a green color.
4a	CC.S.A0003, CC.S.A0004	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *CurrentX* and *CurrentY* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CurrentX* and *CurrentY* attributes have values equal to CC.PIXIT02.1 and CC.PIXIT02.2, respectively, (green color).
4b	CC.S.A0008	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorMode* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorMode* attribute has the value 0x01 (*CurrentX* and *CurrentY*).
4c	CC.S.A4001	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *EnhancedColorMode* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *EnhancedColorMode* attribute has the value 0x01 (*CurrentX* and *CurrentY*).
5	CC.S.A400a, CC.S.C00.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to hue* command frame to DUT SERVER with the *hue* field set to the upper 8 bits of CC.PIXIT06 (blue hue), the *direction* field set to 0x00 (shortest distance) and the *transition time* field set to 0x0032 (5s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a blue color.

Continued…

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CC-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
6	CC.S.A0008, CC.S.A4001	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorMode* and *EnhancedColorMode* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorMode* and *EnhancedColorMode* attributes both have the value 0x00 (*CurrentHue* and *CurrentSaturation*).
7	CC.S.A400a, CC.S.C01.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move hue* command frame to DUT SERVER with the *move mode* field set to 0x01 (move up) and the *rate* field set to 0x0a (10).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes hue in an upward direction.
8	CC.S.A400a, CC.S.C01.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move hue* command frame to DUT SERVER with the *move mode* field set to 0x03 (move down) and the *rate* field set to 0x14 (20).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes hue in a downward direction.
9	CC.S.A400a, CC.S.C01.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move hue* command frame to DUT SERVER with the *move mode* field set to 0x00 (stop).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops changing hue.
10	CC.S.A400a, CC.S.C02.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *step hue* command frame to DUT SERVER with the *step mode* field set to 0x01 (step up), the *step size* field set to 0x40 (64) and the *transition time* field set to 0x64 (100).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER steps hue in an upward direction.

Continued…

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CC-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
11	CC.S.A400a, CC.S.C03.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to saturation* command frame to DUT SERVER with the *saturation* field set to 0x00 (white) and the *transition time* field set to 0x0032 (5s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER reduces its saturation down to 0 (white).
12	CC.S.A400a, CC.S.C04.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move saturation* command frame to DUT SERVER with the *move mode* field set to 0x01 (move up) and the *rate* field set to 0x0a (10).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes saturation in an upward direction.
13	CC.S.A400a, CC.S.C04.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move saturation* command frame to DUT SERVER with the *move mode* field set to 0x03 (move down) and the *rate* field set to 0x14 (20).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes saturation in a downward direction.
14	CC.S.A400a, CC.S.C04.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move saturation* command frame to DUT SERVER with the *move mode* field set to 0x00 (stop).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops changing saturation.

Continued…

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CC-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
15	CC.S.A400a, CC.S.C05.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *step saturation* command frame to DUT SERVER with the *step mode* field set to 0x01 (step up), the *step size* field set to 0x40 (64) and the *transition time* field set to 0x64 (100).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER steps saturation in an upward direction.
16a	CC.S.A400a, CC.S.C06.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to hue and saturation* command frame to DUT SERVER with the *hue* field set to the upper 8 bits of CC.PIXIT06 (blue hue), the *saturation* field set to 0x7f (50%) and the *transition time* field set to 0x0064 (10s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a blue hue at 50% saturation.
16b	CC.S.A400a, CC.S.A0000	If supported in the *ColorCapabilities* of the DUT SERVER and after 12s, TH CLIENT unicasts a ZCL *read attributes* command frame for the *CurrentHue* attribute to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CurrentHue* attribute has a value equal to the upper 8 bits of CC.PIXIT06 (blue hue).
16c	CC.S.A0001	TH CLIENT unicasts a ZCL *read attributes* command frame for the *CurrentSaturation* attribute to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CurrentSaturation* attribute has the value 0x7f.

Continued…

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CC-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
17	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT02.1 and CC.PIXIT02.2, respectively, (green color) and the *transition time* field set to 0x000a (1s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a green color.
18	CC.S.A400a, CC.S.C08.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER and after 3s, TH CLIENT unicasts a ZCL *move color* command frame to DUT SERVER with the *RateX* field set to 0x03e8 (+1000) and the *RateY* field set to 0xd8f0 (-10000).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to change color.
19	CC.S.A400a, CC.S.C08.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move color* command frame to DUT SERVER with the *RateX* field set to 0xec78 (-5000) and the *RateY* field set to 0xff9c (-100).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to change color.
20	CC.S.A400a, CC.S.C08.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move color* command frame to DUT SERVER with the *RateX* and *RateY* fields both set to 0x0000 (stop).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops changing color.

Continued…

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CC-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
21	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields both set to 0x61a8 (25000) and the *transition time* field set to 0x000a (1s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a white color.
22	CC.S.A400a, CC.S.C09.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *step color* command frame to DUT SERVER with the *StepX* field set to 0x1770 (+6000), the *StepY* field set to 0xf448 (-3000) and the *transition time* field set to 0x0064 (10s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to change color.
23a	CC.S.A400a, CC.S.C40.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *enhanced move to hue* command frame to DUT SERVER with the *enhanced hue* field set to CC.PIXIT06 (blue hue), the *direction* field set to 0x00 (shortest distance) and the *transition time* field set to 0x0032 (5s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a blue hue.
23b	CC.S.A0008, CC.S.A4000, CC.S.A4001, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *EnhancedCurrentHue*, *ColorMode* and *EnhancedColorMode* attributes to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *EnhancedCurrentHue* attribute has a value equal to CC.PIXIT06 (blue hue). *ColorMode* attribute has the value 0x00. *EnhancedColorMode* attribute has the value 0x03.

Continued…

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CC-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
24	CC.S.A400a, CC.S.C40.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER and if an enhanced hue value exists which corresponds to an unobtainable enhanced hue on the DUT SERVER, TH CLIENT unicasts a ZCL *enhanced move to hue* command frame to DUT SERVER with the *enhanced hue* field set to a value for an unobtainable hue, the *direction* field set to 0x00 (shortest distance) and the *transition time* field set to 0x0032 (5s).	DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field set to 0x00 (SUCCESS). DUT SERVER does changes to the closest color possible.
25	CC.S.A400a, CC.S.C41.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *enhanced move hue* command frame to DUT SERVER with the *move mode* field set to 0x01 (move up) and the *rate* field set to 0x01f4 (500).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes hue in an upward direction.
26	CC.S.A400a, CC.S.C41.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *enhanced move hue* command frame to DUT SERVER with the *move mode* field set to 0x03 (move down) and the *rate* field set to 0x03e8 (1000).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes hue in a downward direction.
27	CC.S.A400a, CC.S.C41.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *enhanced move hue* command frame to DUT SERVER with the *move mode* field set to 0x00 (stop).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops changing hue.

Continued…

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CC-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
28	CC.S.A400a, CC.S.C42.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *enhanced step hue* command frame to DUT SERVER with the *step mode* field set to 0x01 (step up), the *step size* field set to 0x4000 (16384) and the *transition time* field set to 0x64 (10s) .	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes hue in an upward direction.
29	CC.S.A400a, CC.S.C43.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *enhanced move to hue and saturation* command frame to DUT SERVER with the *enhanced hue* field set to CC.PIXIT06 (blue hue), the *saturation* field set to 0x7f (50%) and the *transition time* field set to 0x64 (10s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a blue hue with 50% saturation over 10s.
30	CC.S.A400a, CC.S.C43.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER and if an enhanced hue value exists which corresponds to an unobtainable enhanced hue on the DUT SERVER, TH CLIENT unicasts a ZCL *enhanced move to hue and saturation* command frame to DUT SERVER with the *enhanced hue* field set to a value for an unobtainable hue, the *saturation* field set to 0xfe (maximum saturation) and the *transition time* field set to 0x0032 (5s).	DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field set to 0x00 (SUCCESS). DUT SERVER changes to the closest color possible.

Continued…

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CC-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
31a	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to appropriate values for the tester's choice of color and the *transition time* field set to 0x0064 (10s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to change to the color of the tester's choice.
31b	CC.S.C47.Rsp	TH CLIENT unicasts a ZCL *stop move step* command frame to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops changing color.

--- End of test case CC-TC-02S ---

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5.3.3 CC-TC-03S: Color loop functionality with server as DUT

This test case verifies the color loop functionality of the *color control* cluster server.

5.3.3.1 Scope

General:

- *Read attributes* command (0x00)
- *Read attributes response* command (0x01)
- *Default response* command (0x0b)

Color control cluster (0x0300):

- *EnhancedCurrentHue* attribute (0x4000)
- *ColorLoopActive* attribute (0x4002)
- *ColorLoopDirection* attribute (0x4003)
- *ColorLoopTime* attribute (0x4004)
- *ColorLoopStartEnhancedHue* attribute (0x4005)
- *ColorLoopStoredEnhancedHue* attribute (0x4006)
- *Move to color* command (0x07)
- *Enhanced move to hue* command (0x40)
- *Color loop set* command (0x44)

PICS:

- CC.S
- CC.S.A4000, CC.S.A4002-CC.S.A4006
- CC.S.C07.Rsp, CC.S.C40.Rsp, CC.S.C44.Rsp

5.3.3.2 Required devices

Designation	Symbol	Description
TH CLIENT		Test harness client implementing: • The *on/off* cluster client and • The *color control* cluster client.
DUT SERVER		Device under test server implementing: • The *on/off* cluster server and • The *color control* cluster server.

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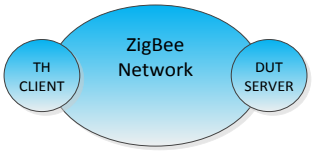
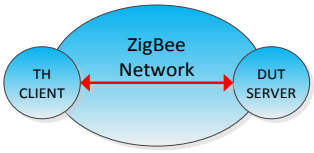
5.3.3.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

5.3.3.4 Test preparation

Link DUT CLIENT with TH SERVER	
 *Before*	 *After*

CC-TC-03S: Color loop functionality with server as DUT		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH CLIENT and DUT SERVER.	TH CLIENT and DUT SERVER are powered on.
P3	Join TH CLIENT and DUT SERVER to a ZigBee network.	Observe appropriate communication between TH CLIENT, DUT SERVER and any other relevant node on the ZigBee network.

--- End of test case CC-TC-03C preparation ---

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294 **5.3.3.5 Test procedure**

CC-TC-03S: Color loop functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
0a	-	TH CLIENT unicasts a ZCL *on* command to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER turns on.
0b	CC.S.C07.Rsp	TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT01.1 and CC.PIXIT01.2, respectively, (red color) and the *transition time* field set to 0x000a (1s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a red color.
1a	CC.S.C44.Rsp	TH client unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x0e (update direction, time and start hue), the *action* field set to 0x00, the *direction* field set to 0x00, the *time* field set to 0x000a (10s) and the *start hue* field set to 0xaa00.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS).
1b	CC.S.A4002, CC.S.A4003, CC.S.A4004, CC.S.A4005	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorLoopActive*, *ColorLoopDirection*, *ColorLoopTime* and *ColorLoopStartEnhancedHue* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorLoopActive* attribute has the value 0x00. *ColorLoopDirection* attribute has the value 0x00. *ColorLoopTime* attribute has the value 0x000a. *ColorLoopStartEnhancedHue* attribute has the value 0xaa00.

Continued…

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CC-TC-03S: Color loop functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
2a	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x02 (update direction), the *action* field set to 0x01, the *direction* field set to 0x01, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS).
2b	CC.S.A4002, CC.S.A4003, CC.S.A4004, CC.S.A4005	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorLoopActive*, *ColorLoopDirection*, *ColorLoopTime* and *ColorLoopStartEnhancedHue* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorLoopActive* attribute has the value 0x00. *ColorLoopDirection* attribute has the value 0x01. *ColorLoopTime* attribute has the value 0x000a. *ColorLoopStartEnhancedHue* attribute has the value 0xaa00.
3a	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x01 (update action), the *action* field set to 0x02 (start from enhanced current hue), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins a color loop cycle (starting from the current enhanced hue) with a color cycle time of 10s.
3b	CC.S.A4002	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorLoopActive* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorLoopActive* attribute has the value 0x01.

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CC-TC-03S: Color loop functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
3c	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x01 (update action), the *action* field set to 0x00 (deactivate), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops the color loop cycle and returns to its previous hue (red).
3d	CC.S.A4002	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorLoopActive* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorLoopActive* attribute has the value 0x00.
4a	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x01 (update action), the *action* field set to 0x01 (start from *ColorLoopStartEnhanced-Hue*), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins a color loop cycle (not starting from the current enhanced hue) with a color cycle time of 10s.
4b	CC.S.A4006	After 12s, TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorLoopStoredEnhancedHue* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorLoopStoredEnhancedHue* attribute has a value equal to CC.PIXIT04 (red hue).
4c	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x01 (update action), the *action* field set to 0x00 (deactivate), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops the color loop cycle and returns to its previous hue (red).

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CC-TC-03S: Color loop functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
5a	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x01 (update action), the *action* field set to 0x02 (start from enhanced current hue), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins a color loop cycle (starting from the current enhanced hue) with a color cycle time of 10s.
5b	CC.S.A4006	After 12s, TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorLoopStoredEnhancedHue* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorLoopStoredEnhancedHue* attribute has a value equal to CC.PIXIT04 (red hue).
5c	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x01 (update action), the *action* field set to 0x00 (deactivate), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops the color loop cycle and returns to its previous hue (red).
6a	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x05 (update action and time), the *action* field set to 0x02 (start from enhanced current hue), the *direction* field set to 0x00, the *time* field set to 0x0064 (100s) and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins a color loop cycle (starting from the current enhanced hue) with a color cycle time of 100s.

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CC-TC-03S: Color loop functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
6b	CC.S.C44.Rsp	After 10s, TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x02 (update direction), the *action* field set to 0x00, the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER reverses the direction of the color loop cycle but retains the color cycle time of 100s.
6c	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x01 (update action), the *action* field set to 0x00 (deactivate), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops the color loop cycle and returns to its previous hue (red).
7a	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x07 (update action, direction and time), the *action* field set to 0x02 (start from enhanced current hue), the *direction* field set to 0x01 (increment), the *time* field set to 0x0064 (100s) and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins a color loop cycle (starting from the current enhanced hue) with a color cycle time of 100s.
7b	CC.S.C44.Rsp	After 10s, TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x04 (update time), the *action* field set to 0x00, the *direction* field set to 0x00, the *time* field set to 0x000a (10s) and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER adapts its color loop cycle time to 10s.

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CC-TC-03S: Color loop functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
7c	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x01 (update action), the *action* field set to 0x00 (deactivate), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops the color loop cycle and returns to its previous hue (red).
8a	CC.S.A4000	TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *EnhancedCurrentHue* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *EnhancedCurrentHue* attribute has a value equal to CC.PIXIT04 (red hue).
8b	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x05 (update action and time), the *action* field set to 0x02 (start from enhanced current hue), the *direction* field set to 0x00, the *time* field set to 0x001e (30s) and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins a color loop cycle (starting from the current enhanced hue) with a color cycle time of 30s.
8c	CC.S.A4006	After 10s, TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorLoopStoredEnhancedHue* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorLoopStoredEnhancedHue* attribute has a value equal to the value of the *EnhancedCurrent-Hue* attribute read in step 8a.
8d	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x01 (update action), the *action* field set to 0x00 (deactivate), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops the color loop cycle and returns to its previous hue (red).

Continued…

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CC-TC-03S: Color loop functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
8e	CC.S.A4000	TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *EnhancedCurrentHue* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *EnhancedCurrentHue* attribute has a value equal to the value of the *ColorLoopStoredEnhanced-Hue* attribute read in step 8c.
9a	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x07 (update action, direction and time), the *action* field set to 0x02 (start from enhanced current hue), the *direction* field set to 0x01 (increment), the *time* field set to 0x000a (10s) and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins a color loop cycle (starting from the current enhanced hue) with a color cycle time of 10s.
9b	CC.S.C40.Rsp	TH CLIENT unicasts a ZCL *enhanced move to hue* command frame to DUT SERVER with the *enhanced hue* field set to CC.PIXIT06 (blue hue), the *direction* field set to 0x00 (shortest distance) and the *transition time* field set to 0x000a (1s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER may change to a blue hue but the color loop continues.
9c	CC.S.C44.Rsp	TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x01 (update action), the *action* field set to 0x00 (deactivate), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops the color loop cycle and returns to its previous hue (red).

--- End of test case CC-TC-03S ---

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5.3.4 CC-TC-04S: Color temperature functionality with server as DUT

This test case verifies the color temperature functionality of the *color control* cluster.

5.3.4.1 Scope

General:

- *Read attributes* command (0x00)
- *Read attributes response* command (0x01)
- *Default response* command (0x0b)

On/off cluster (0x0006):

- *On* command (0x01)

Color control cluster (0x0300):

- *ColorTemperatureMireds* attribute (0x0007)
- *ColorMode* attribute (0x0008)
- *EnhancedColorMode* attribute (0x4001)
- *ColorTempPhysicalMinMireds* attribute (0x400b)
- *ColorTempPhysicalMaxMireds* attribute (0x400c)
- *Move to color temperature* command (0x0a)
- *Stop move step* command (0x47)
- *Move color temperature* command (0x4b)
- *Step color temperature* command (0x4c)

PICS:

- CC.S
- CC.S.A0007, CC.S.A0008, CC.S.A4001, CC.S.A400b, CC.S.A400c
- CC.S.C0a.Rsp, CC.S.C47.Rsp, CC.S.C4b.Rsp, CC.S.C4c.Rsp

5.3.4.2 Required devices

Designation	Symbol	Description
TH CLIENT		Test harness client implementing: • The *on/off* cluster client and • The *color control* cluster client.
DUT SERVER		Device under test server implementing: • The *on/off* cluster server and • The *color control* cluster server.

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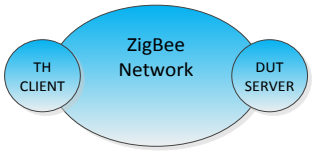
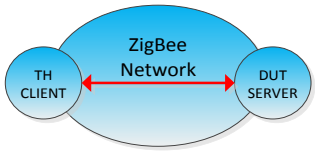
5.3.4.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

5.3.4.4 Test preparation

Link DUT CLIENT with TH SERVER	
 *Before*	 *After*

CC-TC-04S: Color temperature functionality with server as DUT		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH CLIENT and DUT SERVER.	TH CLIENT and DUT SERVER are powered on.
P3	Join TH CLIENT and DUT SERVER to a ZigBee network.	Observe appropriate communication between TH CLIENT, DUT SERVER and any other relevant node on the ZigBee network.

--- End of test case CC-TC-04S preparation ---

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328 **5.3.4.5 Test procedure**

CC-TC-04S: Color temperature functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
0	-	TH CLIENT unicasts a ZCL *on* command to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER turns on.
1a	CC.S.A400b, CC.S.A400c	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTempPhysicalMinMireds* (t_{min}) and *ColorTempPhysical-MaxMireds* (t_{max}) attributes. Note the values of these attributes. Calculate $t_{grad} = \lfloor (t_{max} - t_{min})/40 \rfloor$.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT.
1b	CC.S.C0a.Rsp	TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER with the *color temperature mireds* field set to a random value (t_{rand}) within the range determined at step 1a and the *transition time* field set to 0x000a (10 ≡ 1s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to the appropriate color temperature.
1c	CC.S.A0007	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has the value t_{rand}.
2a	CC.S.C0a.Rsp	TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER with the *color temperature mireds* field set to $(t_{min} + 20 * t_{grad})$ and the *transition time* field set to 0x0064 (100 ≡ 10s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER transitions to a color temperature mireds value of $(t_{min} + 20 * t_{grad})$ over 10s.

Continued…

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CC-TC-04S: Color temperature functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
2b	CC.S.A0007, CC.S.A0008, CC.S.A4001	After 12s, TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds*, *ColorMode* and *EnhancedColorMode* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMired* attribute has a value ~$(t_{min} + 20 * t_{grad})$. *ColorMode* attribute has the value 0x02. *EnhancedColorMode* attribute has the value 0x02.
3a	CC.S.C0a.Rsp	TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER with the *color temperature mireds* field set to a value > t_{max} (determined in step 1) and the *transition time* field set to 0x0064 (100 ≡ 10s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER transitions to the maximum color temperature mireds value t_{max} over ≤10s.
3b	CC.S.A0007, CC.S.A0008, CC.S.A4001	After 12s, TH CLIENT unicast a *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds*, *ColorMode* and *EnhancedColorMode* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value equal to t_{max}. *ColorMode* attribute has the value 0x02. *EnhancedColorMode* attribute has the value 0x02.
4a	CC.S.C0a.Rsp	TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER with the *color temperature mireds* field set to a value < t_{min} (determined in step 1) and the *transition time* field set to 0x0064 (100 ≡ 10s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER transitions to the minimum color temperature mireds value t_{min} over ≤10s.

Continued…

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CC-TC-04S: Color temperature functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
4b	CC.S.A0007, CC.S.A0008, CC.S.A4001	After 12s, TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds*, *ColorMode* and *EnhancedColorMode* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value equal to t_{min}. *ColorMode* attribute has the value 0x02. *EnhancedColorMode* attribute has the value 0x02.
5a	CC.S.C4b.Rsp	TH CLIENT unicasts a ZCL *move color temperature* command frame to DUT SERVER with the *move mode* field set to 0x01 (move up), the *rate* field set to$(3 * t_{grad})$, the *color temperature minimum mireds* field set to 0x0000 (minimum is *ColorTempPhysicalMinMireds*) and the *color temperature maximum mireds* field set to $(t_{max} - t_{grad})$.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to increment its color temperature mireds value.
5b	CC.S.C4b.Rsp	After 10s, TH CLIENT unicasts a ZCL *move color temperature* command frame to DUT SERVER with the *move mode* field set to 0x00 (stop the move), the *rate* field set to 0x0000, the *color temperature minimum mireds* field set to 0x0000 and the *color temperature maximum mireds* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops incrementing its color temperature mireds value.
5c	CC.S.A0007	TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value ~$(t_{min} + 30 * t_{grad})$.

Continued…

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CC-TC-04S: Color temperature functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
6a	CC.S.C4b.Rsp	TH CLIENT unicasts a ZCL *move color temperature* command frame to DUT SERVER with the *move mode* field set to 0x01 (move up), the *rate* field set to t_{grad}, the *color temperature minimum mireds* field set to 0x0000 (minimum is *ColorTempPhysicalMinMireds*) and the *color temperature maximum mireds* field set to $(t_{min} + 34 * t_{grad})$.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to increment its color temperature mireds value. After 4s, DUT SERVER stops incrementing its color temperature mireds value.
6b	CC.S.A0007	After 6s, TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value ~$(t_{min} + 34 * t_{grad})$.
7a	CC.S.C4b.Rsp	TH CLIENT unicasts a ZCL *move color temperature* command frame to DUT SERVER with the *move mode* field set to 0x03 (move down), the *rate* field set to $(2 * t_{grad})$, the *color temperature minimum mireds* field set to $(t_{min} + t_{grad})$ and the *color temperature maximum mireds* field set 0x0000 (maximum is *ColorTempPhysicalMaxMireds*).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to decrement its color temperature mireds value.
7b	CC.S.C4b.Rsp	After 10s, TH CLIENT unicasts a ZCL *move color temperature* command frame to DUT SERVER with the *move mode* field set to 0x00 (stop the move), the *rate* field set to 0x0000, the *color temperature minimum mireds* field set to 0x0000 and the *color temperature maximum mireds* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops decrementing its color temperature mireds value.

Continued…

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CC-TC-04S: Color temperature functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
7c	CC.S.A0007	TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value $\sim(t_{min} + 14 * t_{grad})$.
8a	CC.S.C4b.Rsp	TH CLIENT unicasts a ZCL *move color temperature* command frame to DUT SERVER with the *move mode* field set to 0x03 (move down), the *rate* field set to $(2 * t_{grad})$, the *color temperature minimum mireds* field set to $(t_{min} + 8 * t_{grad})$ and the *color temperature maximum mireds* field set 0x0000 (maximum is *ColorTempPhysicalMaxMireds*).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to decrement its color temperature mireds value. After 3s, DUT SERVER stops decrementing its color temperature mireds value.
8b	CC.S.A0007	After 5s, TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value $\sim(t_{min} + 8 * t_{grad})$.
9a	CC.S.C4c.Rsp	TH CLIENT unicasts a ZCL *step color temperature* command frame to DUT SERVER with the *step mode* field set to 0x01 (step up), the *step size* field set to $(20 * t_{grad})$, the *transition time* field set to 0x00c8 (200 ≡ 20s), the *color temperature minimum mireds* field set to 0x0000 (minimum is *ColorTempPhysicalMinMireds*) and the *color temperature maximum mireds* field set to $(t_{max} - t_{grad})$.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to increment its color temperature mireds value.

Continued…

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CC-TC-04S: Color temperature functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
9b	CC.S.C47.Rsp	After 10s, TH CLIENT unicasts a ZCL *stop move step* command frame to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops incrementing its color temperature mireds value.
9c	CC.S.A0007	TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value ~$(t_{min} + 18 * t_{grad})$.
10a	CC.S.C4c.Rsp	TH CLIENT unicasts a ZCL *step color temperature* command frame to DUT SERVER with the *step mode* field set to 0x01 (step up), the *step size* field set to $(20 * t_{grad})$, the *transition time* field set to 0x0032 (50 ≡ 5s), the *color temperature minimum mireds* field set to 0x0000 (minimum is *ColorTempPhysicalMinMireds*) and the *color temperature maximum mireds* field set to $(t_{min} + 30 * t_{grad})$.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to increment its color temperature mireds value. After 3s, DUT SERVER stops incrementing its color temperature mireds value.
10b	CC.S.A0007	After 6s, TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value ~$(t_{min} + 30 * t_{grad})$.

Continued…

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CC-TC-04S: Color temperature functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
11a	CC.S.C4c.Rsp	TH CLIENT unicasts a ZCL *step color temperature* command frame to DUT SERVER with the *step mode* field set to 0x03 (step down), the *step size* field set to $(10 * t_{grad})$, the *transition time* field set to 0x00c8 (200 ≡ 20s), the *color temperature minimum mireds* field set to $(t_{min} + t_{grad})$ and the *color temperature maximum mireds* field set to 0x0000 (maximum is *ColorTempPhysicalMaxMireds*).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to decrement its color temperature mireds value.
11b	CC.S.C47.Rsp	After 10s, TH CLIENT unicasts a ZCL *stop move step* command frame to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops decrementing its color temperature mireds value.
11c	CC.S.A0007	TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value $\sim(t_{min} + 25 * t_{grad})$.
12a	CC.S.C4c.Rsp	TH CLIENT unicasts a ZCL *step color temperature* command frame to DUT SERVER with the *step mode* field set to 0x03 (step down), the *step size* field set to $(10 * t_{grad})$, the *transition time* field set to 0x0032 (50 ≡ 5s), the *color temperature minimum mireds* field set to $(t_{min} + 19 * t_{grad})$ and the *color temperature maximum mireds* field set to 0x0000 (maximum is *ColorTempPhysicalMaxMireds*).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins to decrement its color temperature mireds value. After 3s, DUT SERVER stops decrementing its color temperature mireds value.

Continued…

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CC-TC-04S: Color temperature functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
12b	CC.S.A0007	After 6s, TH CLIENT unicasts a *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value ~$(t_{min} + 19 * t_{grad})$.

--- End of test case CC-TC-04S ---

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5.3.5 CC-TC-05S: Scenes functionality with server as DUT

This test case verifies the scenes functionality of the *color control* cluster server.

5.3.5.1 Scope

General:

- *Read attributes* command (0x00)
- *Read attributes response* command (0x01)
- *Default response* command (0x0b)

Groups cluster (0x0004):

- *Add group* command (0x00)
- *Add group response* command (0x00)
- *Get group membership* command (0x02)
- *Get group membership response* command (0x02)
- *Remove all groups* command (0x04)

Scenes cluster (0x0005):

- *Remove all scenes* command (0x03)
- *Remove all scenes response* command (0x03)
- *Store scene* command (0x04)
- *Store scene response* command (0x04)
- *Recall scene* command (0x05)

Color control cluster (0x0300):

- *CurrentSaturation* attribute (0x0001)
- *CurrentX* attribute (0x0003)
- *CurrentY* attribute (0x0004)
- *ColorTemperatureMired* attribute (0x0007)
- *EnhancedCurrentHue* attribute (0x4000)
- *ColorLoopActive* attribute (0x4002)
- *ColorLoopDirection* attribute (0x4003)
- *ColorLoopTime* attribute (0x4004)
- *ColorCapabilities* attribute (0x400a)
- *Move to color* command (0x07)
- *Move to color temperature* command (0x0a)
- *Enhanced move to hue and saturation* command (0x43)
- *Color loop set* command (0x44)

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PICS:

- G.S, S.S, CC.S
- G.S.C00.Rsp, G.S.C02.Rsp-G.S.C04.Rsp
- G.S.C00.Tx, G.S.C02.Tx, G.S.C03.Tx
- S.S.C04.Rsp, S.S.C05.Rsp
- S.S.C04.Tx
- OO.S.C01.Rsp
- CC.S.A0001, CC.S.A0003, CC.S.A0004, CC.S.A0007, CC.S.A4000, CC.S.A4002, CC.S.A4003, CC.S.A4004, CC.S.A400a
- CC.S.A0001.Scene, CC.S.A0003.Scene, CC.S.A0004.Scene, CC.S.A0007.Scene, CC.S.A4000.Scene, CC.S.A4002.Scene, CC.S.A4003.Scene, CC.S.A4004.Scene
- CC.S.C07.Rsp, CC.S.C0a.Rsp, CC.S.C43.Rsp, CC.S.C44.Rsp

5.3.5.2 Required devices

Designation	Symbol	Description
TH CLIENT		Test harness client implementing: • The *groups* cluster client, • The *scenes* cluster client and • The *color control* cluster client.
DUT SERVER		Device under test server implementing: • The *groups* cluster server, • The *scenes* cluster server and • The *color control* cluster server.

5.3.5.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

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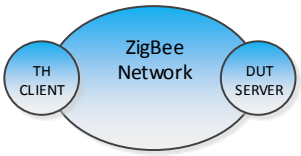
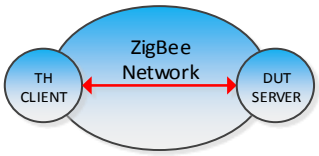
5.3.5.4 Test preparation

Link TH CLIENT with DUT SERVER	
 *Before*	 *After*

CC-TC-05S: Scenes functionality with server as DUT		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH CLIENT and DUT SERVER.	TH CLIENT and DUT SERVER are powered on.
P3	Join TH CLIENT and DUT SERVER to a ZigBee network.	Observe appropriate communication between TH CLIENT, DUT SERVER and any other relevant node on the ZigBee network.

--- End of test case CC-TC-05S preparation ---

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385 #### 5.3.5.5 Test procedure

CC-TC-05S: Scene functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
0	-	TH CLIENT unicasts a ZCL *on* command to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER turns on.
1a	G.S.C04.Rsp	TH CLIENT unicasts a ZCL *remove all groups* command frame to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS).
1b	G.S.C02.Rsp, G.S.C02.Tx	TH CLIENT unicasts a ZCL *get group membership* command frame to DUT SERVER with the *group count* field set to 0x00.	DUT SERVER unicasts a ZCL *get group membership response* command frame with the *group count* field equal to 0x00.
1c	G.S.C00.Rsp, G.S.C00.Tx	TH CLIENT unicasts ZCL *add group* command to DUT SERVER, with the *group ID* field set to 0x0001.	DUT SERVER unicasts a ZCL *add group response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS) and the *group ID* field equal to 0x0001.
2	S.S.C03.Rsp, S.S.C03.Tx	TH CLIENT unicasts a ZCL *remove all scenes* command frame to DUT SERVER with the *group ID* field set to 0x0001.	DUT SERVER unicasts a ZCL *remove all scenes response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS) and the *group ID* field equal to 0x0001.
3a	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT03.1 and CC.PIXIT03.2, respectively, (blue color) and the *transition time* field set to 0x0000 (0s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a blue color.

Continued…

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CC-TC-05S: Scene functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
3b	S.S.C04.Rsp, S.S.C04.Tx	TH CLIENT unicasts a ZCL *store scene* command frame to DUT SERVER with the *group ID* field set to 0x0001 and the *scene ID* field set to 0x01.	DUT SERVER unicasts a ZCL *store scene response* command frame to TH CLIENT with the *status* field set to 0x00 (SUCCESS), the *group ID* field set to 0x0000 and the *scene ID* field set to 0x01.
3c	CC.S.A0003, CC.S.A0004, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *CurrentX* and *CurrentY* attributes to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Store the values of the *CurrentX* and *CurrentY* attributes.
3d	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT01.1 and CC.PIXIT01.2, respectively, (red color) and the *transition time* field set to 0x0000 (0s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a red color.
3e	CC.S.A0003, CC.S.A0004, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *CurrentX* and *CurrentY* attributes to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Verify that the values of the *CurrentX* and *CurrentY* attributes are different to those returned in step 3c.
3f	S.S.C05.Rsp	TH CLIENT unicasts a ZCL *recall scene* command frame to DUT SERVER with the *group ID* field set to 0x0001 and the *scene ID* field set to 0x01.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a blue color.

Continued…

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CC-TC-05S: Scene functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
3g	CC.S.A0001, CC.S.A0003, CC.S.A0004, CC.S.A4000, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *CurrentX* and *CurrentY* attributes to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Verify that the values of the *CurrentX* and *CurrentY* attributes are the same as were returned in step 3c.
4a	CC.S.A400a, CC.S.C43.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *enhanced move to hue and saturation* command frame to DUT SERVER with the *enhanced hue* field set to CC.PIXIT05 (green hue), the *saturation* field set to 0x7f (50%) and the *transition time* field set to 0x0000 (0s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER immediately changes to a green hue with 50% saturation.
4b	S.S.C04.Rsp, S.S.C04.Tx	TH CLIENT unicasts a ZCL *store scene* command frame to DUT SERVER with the *group ID* field set to 0x0001 and the *scene ID* field set to 0x01.	DUT SERVER unicasts a ZCL *store scene response* command frame to TH CLIENT with the *status* field set to 0x00 (SUCCESS), the *group ID* field set to 0x0000 and the *scene ID* field set to 0x01.
4c	CC.S.A0001, CC.S.A4000, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *EnhancedCurrentHue* and *CurrentSaturation* attributes to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Store the values of the *EnhancedCurrentHue* and *CurrentSaturation* attributes.

Continued…

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CC-TC-05S: Scene functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
4d	CC.S.A400a, CC.S.C43.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *enhanced move to hue and saturation* command frame to DUT SERVER with the *enhanced hue* field set to CC.PIXIT04 (red hue), the *saturation* field set to 0x7f (50%) and the *transition time* field set to 0x0000 (0s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER immediately changes to a red hue with 50% saturation.
4e	CC.S.A0001, CC.S.A4000, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *EnhancedCurrentHue* and *CurrentSaturation* attributes to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Verify that the values of the *EnhancedCurrentHue* and *CurrentSaturation* attributes are different to those returned in step 4c.
4f	S.S.C05.Rsp	TH CLIENT unicasts a ZCL *recall scene* command frame to DUT SERVER with the *group ID* field set to 0x0001 and the *scene ID* field set to 0x01.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a green color.
4g	CC.S.A0001, CC.S.A4000, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *EnhancedCurrentHue* and *CurrentSaturation* attributes to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Verify that the values of the *EnhancedCurrentHue* and *CurrentSaturation* attributes are the same as were returned in step 4c.

Continued…

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CC-TC-05S: Scene functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
5a	CC.S.A400a, CC.S.C44.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x07 (update action, direction and time), the *action* field set to 0x02 (start from enhanced current hue), the *direction* field set to 0x01, the *time* field set to 0x000a (10s) and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER begins a color loop cycle (starting from the current enhanced hue) with a color cycle time of 10s.
5b	S.S.C04.Rsp, S.S.C04.Tx	TH CLIENT unicasts a ZCL *store scene* command frame to DUT SERVER with the *group ID* field set to 0x0001 and the *scene ID* field set to 0x01.	DUT SERVER unicasts a ZCL *store scene response* command frame to TH CLIENT with the *status* field set to 0x00 (SUCCESS), the *group ID* field set to 0x0000 and the *scene ID* field set to 0x01.
5c	CC.S.A4002, CC.S.A4003, CC.S.A4004, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *ColorLoopActive*, *ColorLoopDirection* and *ColorLoopTime* attributes to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Store the values of the *ColorLoopActive*, *ColorLoopDirection* and *ColorLoopTime* attributes.
5d	CC.S.A400a, CC.S.C44.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x07 (update action, direction and time), the *action* field set to 0x00 (deactivate), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops the color loop cycle and returns to its previous hue.

Continued…

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CC-TC-05S: Scene functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
5e	CC.S.A4002, CC.S.A4003, CC.S.A4004, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *ColorLoopActive*, *ColorLoopDirection* and *ColorLoopTime* attributes to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Verify that the values of the *ColorLoopActive*, *ColorLoopDirection* and *ColorLoopTime* attributes are different to those returned in step 5c.
5f	S.S.C05.Rsp	TH CLIENT unicasts a ZCL *recall scene* command frame to DUT SERVER with the *group ID* field set to 0x0001 and the *scene ID* field set to 0x01.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a blue color.
5g	CC.S.A4002, CC.S.A4003, CC.S.A4004, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *ColorLoopActive*, *ColorLoopDirection* and *ColorLoopTime* attributes to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Verify that the values of the *ColorLoopActive*, *ColorLoopDirection* and *ColorLoopTime* attributes are the same as were returned in step 3c.
5h	CC.S.A400a, CC.S.C44.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *color loop set* command frame to DUT SERVER with the *update flags* field set to 0x07 (update action, direction and time), the *action* field set to 0x00 (deactivate), the *direction* field set to 0x00, the *time* field set to 0x0000 and the *start hue* field set to 0x0000.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER stops the color loop cycle and returns to its previous hue.

Continued…

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CC-TC-05S: Scene functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
6a	CC.S.A400a, CC.S.C0a.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER with the *color temperature mireds* field set to a value appropriate for the device and the *transition time* field set to 0x0000 (0s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER immediately changes its color temperature.
6b	S.S.C04.Rsp, S.S.C04.Tx	TH CLIENT unicasts a ZCL *store scene* command frame to DUT SERVER with the *group ID* field set to 0x0001 and the *scene ID* field set to 0x01.	DUT SERVER unicasts a ZCL *store scene response* command frame to TH CLIENT with the *status* field set to 0x00 (SUCCESS), the *group ID* field set to 0x0000 and the *scene ID* field set to 0x01.
6c	CC.S.A0007, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *ColorTemperatureMireds* attribute to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Store the value of the *ColorTemperatureMireds* attribute.
6d	CC.S.A400a, CC.S.C0a.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER with the *color temperature mireds* field set to a different value than was used in step 6a but that is appropriate for the device and the *transition time* field set to 0x0000 (0s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER immediately changes its color temperature.
6e	CC.S.A0007, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *ColorTemperatureMireds* attribute to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Verify that the value of the *ColorTemperatureMireds* attribute is different to that returned in step 6c.

Continued…

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CC-TC-05S: Scene functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
6f	S.S.C05.Rsp	TH CLIENT unicasts a ZCL *recall scene* command frame to DUT SERVER with the *group ID* field set to 0x0001 and the *scene ID* field set to 0x01.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes its color temperature.
6g	CC.S.A0007, CC.S.A400a	As supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *read attributes* command frame for the *ColorTemperatureMireds* attribute to DUT SERVER.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Verify that the values of the *ColorTemperatureMireds* attribute is the same as was returned in step 6c.

--- End of test case CC-TC-05S ---

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5.3.6 CC-TC-06S: Reporting functionality with server as DUT

This case test verifies the attribute reporting behavior of the *color control* cluster server.

In this test, the attribute reporting set, *r*, comprises the attributes listed below with an asterisk (*) suffix. The PICS notation CC.S.A*r* represents CC.S.A0000, CC.S.A0001, etc. Similarly, the PICS notation CC.S.A*r*.Report.Tx represents CC.S.A0000.Report.Tx, CC.S.A0001.Report.Tx, etc.

5.3.6.1 Scope

General:

- *Read attributes* command (0x00)
- *Read attributes response* command (0x01)
- *Configure reporting* command (0x06)
- *Configure reporting response* command (0x07)
- *Report attributes* command (0x0a)
- *Default response* command (0x0b)

Color control cluster (0x0300):

- *CurrentHue* attribute (0x0000)*
- *CurrentSaturation* attribute (0x0001)*
- *CurrentX* attribute (0x0003)*
- *CurrentY* attribute (0x0004)*
- *ColorTemperatureMireds* attribute (0x0007)*
- *ColorCapabilities* attribute (0x400a)
- *Move to hue and saturation* command (0x06)
- *Move to color* command (0x07)
- *Move to color temperature* command (0x0a)

PICS:

- CC.S
- CC.S.A*r*, CC.S.A4000a
- CC.S.A*r*.Report.Tx
- CC.S.C06.Rsp, CC.S.C07.Rsp, CC.S.C0a.Rsp

5.3.6.2 Required devices

Designation	Symbol	Description
TH CLIENT		Test harness client implementing: • The *color control* cluster client.
DUT SERVER		Device under test server implementing: • The *color control* cluster server.

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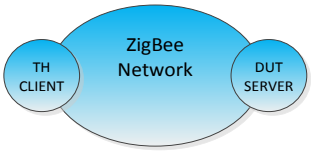
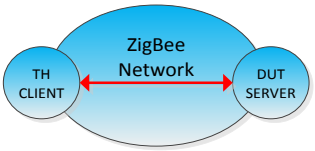
5.3.6.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

5.3.6.4 Test preparation

Link TH CLIENT with DUT SERVER	
 *Before*	 *After*

CC-TC-06S: Reporting functionality with server as DUT		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH CLIENT and DUT SERVER.	TH CLIENT and DUT SERVER are powered on.
P3	Join TH CLIENT and DUT SERVER to a ZigBee network.	Observe appropriate communication between TH CLIENT, DUT SERVER and any other relevant node on the ZigBee network.
P5	Establish a binding link in the reverse direction from an endpoint on DUT SERVER to a corresponding endpoint on TH CLIENT that both support the *color control* cluster.	Observe appropriate communication between DUT SERVER, TH CLIENT and any other relevant node on the ZigBee network.

--- End of test case CC-TC-06S preparation ---

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425 #### 5.3.6.5 Test procedure

CC-TC-06S: Reporting functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
1a	CC.S.A400a	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorCapabilities* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorCapabilities* attribute has a value commensurate with the device type.
1b	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT01.1 and CC.PIXIT01.2, respectively (red color) and the *transition time* field set to 0x0000 (move immediately).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a red color.
2b	CC.S.A*r*, CC.S.A*r*.Report.Tx, CC.S.A400a	None	At a time ≤ 62s after step 2a, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *CurrentX*, *CurrentY*, *CurrentHue*, *CurrentSaturation* and *ColorTemperatureMireds* attributes (as supported in the *ColorCapabilities* attribute).
3a	CC.S.C07.Rsp	TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER to change the color by a value less than that of the reportable change field.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes its color accordingly.

Continued…

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CC-TC-06S: Reporting functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
3b	CC.S.A400a, CC.S.A*r*, CC.S.A*r*.Report.Tx	None	At a time ≤ 32s after sending the report in step 2b, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *CurrentX*, *CurrentY*, *CurrentHue*, *CurrentSaturation* and *ColorTemperatureMireds* attributes (as supported in the *ColorCapabilities* attribute).
3c	CC.S.A400a, CC.S.A*r*, CC.S.A*r*.Report.Tx	None	At a time ≤ 62s after sending the report in step 3b, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *CurrentX*, *CurrentY*, *CurrentHue*, *CurrentSaturation* and *ColorTemperatureMireds* attributes (as supported in the *ColorCapabilities* attribute).
4a	CC.S.C06.Rsp	TH CLIENT unicasts a ZCL *move to hue and saturation* command frame to DUT SERVER to change the hue and saturation by values equal to or greater than that of the reportable change field.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes its hue and saturation accordingly.
4b	CC.S.A*r*, CC.S.A*r*.Report.Tx, CC.S.A400a	None	At a time ≤ 32s after sending the report in step 3c, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *CurrentX*, *CurrentY*, *CurrentHue*, *CurrentSaturation* and *ColorTemperatureMireds* attributes (as supported in the *ColorCapabilities* attribute).

Continued…

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CC-TC-06S: Reporting functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
4c	CC.S.A*r*, CC.S.A*r*.Report.Tx, CC.S.A400a	None	At a time ≤ 62s after sending the report in step 4b, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *CurrentX*, *CurrentY*, *CurrentHue*, *CurrentSaturation* and *ColorTemperatureMireds* attributes (as supported in the *ColorCapabilities* attribute).
5a	CC.S.C0a.Rsp	TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER to change the color temperature by a value equal to or greater than that of the reportable change field.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes its color temperature accordingly.
5b	CC.S.A*r*, CC.S.A*r*.Report.Tx, CC.S.A400a	None	At a time ≤ 32s after sending the report in step 4c, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *CurrentX*, *CurrentY*, *CurrentHue*, *CurrentSaturation* and *ColorTemperatureMireds* attributes (as supported in the *ColorCapabilities* attribute).
5c	CC.S.A*r*, CC.S.A*r*.Report.Tx, CC.S.A400a	None	At a time ≤ 62s after sending the report in step 5b, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *CurrentX*, *CurrentY*, *CurrentHue*, *CurrentSaturation* and *ColorTemperatureMireds* attributes (as supported in the *ColorCapabilities* attribute).

Continued…

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CC-TC-06S: Reporting functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
6a	CC.S.A*r*, CC.S.A*r*.Report.Tx, CC.S.A400a	TH CLIENT unicasts a ZCL *configure reporting* command frame to DUT SERVER for the *CurrentX*, *CurrentY*, *CurrentHue*, *CurrentSaturation* and *ColorTemperatureMireds* attributes (as supported in the *ColorCapabilities* attribute) and the *maximum reporting interval* field set to 0xffff (do not send reports).	DUT SERVER unicasts a ZCL *configure reporting response* command frame to TH CLIENT, confirming the configured attributes and with the *status* field set to SUCCESS.
6b	CC.S.A*r*.Report.Tx	Wait for 62s after the report sent in step 5c.	DUT SERVER does not send any further reports.

--- End of test case CC-TC-06S ---

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5.3.7 CC-TC-07S: Startup functionality with server as DUT

This case test verifies the startup functionality of the *color control* cluster server.

5.3.7.1 Scope

General:

- *Read attributes* command (0x00)
- *Read attributes response* command (0x01)
- *Write attributes* command (0x02)
- *Write attributes response* command (0x04)
- *Default response* command (0x0b)

On/off cluster (0x0006):

- *StartUpOnOff* attribute (0x4003)
- *On* command (0x01)

Color control cluster (0x0300):

- *ColorTemperatureMireds* attribute (0x0007)
- *ColorTempPhysicalMinMireds* attribute (0x400b)
- *ColorTempPhysicalMaxMireds* attribute (0x400c)
- *StartUpColorTemperatureMireds* attribute (0x4010)
- *Move to color temperature* command (0x0a)

PICS:

- CC.S
- CC.S.A0007, CC.S.A400b, CC.S.A400c, CC.S.A4010
- CC.S.C0a.Rsp

5.3.7.2 Required devices

Designation	Symbol	Description
TH CLIENT		Test harness client implementing: • The *on/off* cluster client and • The *color control* cluster client.
DUT SERVER		Device under test server implementing: • The *on/off* cluster server and • The *color control* cluster server.

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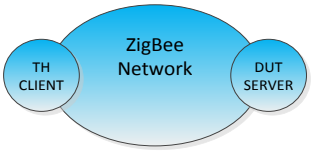
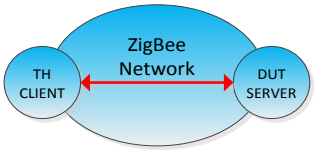
5.3.7.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

5.3.7.4 Test preparation

Link TH CLIENT with DUT SERVER	
 *Before*	 *After*

CC-TC-07S: Startup functionality with server as DUT		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH CLIENT and DUT SERVER.	TH CLIENT and DUT SERVER are powered on.
P3	Join TH CLIENT and DUT SERVER to a ZigBee network.	Observe appropriate communication between TH CLIENT, DUT SERVER and any other relevant node on the ZigBee network.

--- End of test case CC-TC-07S preparation ---

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CC-TC-07S: Startup functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
1a	-	TH CLIENT unicasts a ZCL *on* command to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER turns on.
1b	CC.S.A400b, CC.S.A400c	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTempPhysicalMinMireds* (t_{min}) and *ColorTempPhysical-MaxMireds* (t_{max}) attributes. Note the values of these attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT.
1c	-	TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to write the value 0xff (startup in the previous state) to the *OnOff* cluster, *StartUpOnOff* attribute.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT.
2	CC.S.A0007, CC.S.C0a.Rsp	TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER with the *color temperature mireds* field set to a value $\left(t_{min} + \left(\frac{t_{max} - t_{min}}{2}\right)\right)$ (determined in step 1b) and the *transition time* field set to 0x0000 (0s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER transitions to the mid-point color temperature mireds value.
3a	CC.S.A4010	TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to write the value t_{max} to the *StartUpColorTemperature* attribute.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT.
3b	-	Power off DUT SERVER.	None.
3c	-	Power on DUT SERVER.	DUT SERVER is powered at a color temperature mireds value t_{max}.

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CC-TC-07S: Startup functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
3d	CC.S.A0007	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has the value t_{max}.

Continued…

4a	CC.S.A4010	TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to write the value t_{min} to the *StartUpColorTemperature* attribute.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT.
4b	-	Power off DUT SERVER.	None.
4c	-	Power on DUT SERVER.	DUT SERVER is powered at a color temperature mireds value t_{min}.
4d	CC.S.A0007	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has the value t_{min}.
5a	CC.S.A0007, CC.S.C0a.Rsp	TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER with the *color temperature mireds* field set to a value $\left(t_{min} + \left(\frac{t_{max} - t_{min}}{2}\right)\right)$ (determined in step 1b) and the *transition time* field set to 0x0000 (0s).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER transitions to the mid-point color temperature mireds value.
5b	CC.S.A4010	TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to write the value 0xffff (startup at the previous color temperature) to the *StartUpColorTemperature* attribute.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT.
5c	-	Power off DUT SERVER.	None.

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CC-TC-07S: Startup functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
5d	-	Power on DUT SERVER.	DUT SERVER is powered at the mid-point color temperature mireds value.

Continued…

5e	CC.S.A0007	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has the value $\left(t_{min} + \left(\frac{t_{max} - t_{min}}{2}\right)\right)$.

--- End of test case CC-TC-07S ---

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5.3.8 CC-TC-08S: Couple color temperature to level functionality with server as DUT

This test case verifies the couple color temperature to level functionality of the *color control* cluster.

5.3.8.1 Scope

General:

- *Read attributes* command (0x00)
- *Read attributes response* command (0x01)
- *Write attributes* command (0x02)
- *Write attributes response* command (0x04)
- *Default response* command (0x0b)

Level control cluster (0x0008):

- *Move to level (with on/off)* command (0x04)

Color control cluster (0x0300):

- *ColorTemperatureMireds* attribute (0x0007)
- *Options* attribute (0x000f)
- *CoupleColorTempToLevelMinMireds* attribute (0x400d)
- *Move to color temperature* command (0x0a)

PICS:

- CC.S
- CC.S.A0007, CC.S.A000f, CC.S.A400d

5.3.8.2 Required devices

Designation	Symbol	Description
TH CLIENT		Test harness client implementing: • The *level control* cluster client and • The *color control* cluster client.
DUT SERVER		Device under test server implementing: • The *level control* cluster server and • The *color control* cluster server.

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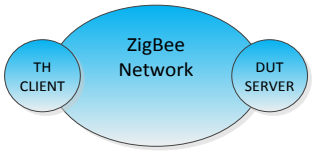
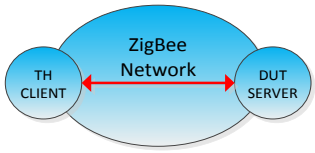
5.3.8.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

5.3.8.4 Test preparation

Link DUT CLIENT with TH SERVER	
 *Before*	 *After*

CC-TC-08S: Couple color temperature to level functionality with server as DUT		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH CLIENT and DUT SERVER.	TH CLIENT and DUT SERVER are powered on.
P3	Join TH CLIENT and DUT SERVER to a ZigBee network.	Observe appropriate communication between TH CLIENT, DUT SERVER and any other relevant node on the ZigBee network.

--- End of test case CC-TC-08S preparation ---

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CC-TC-08S: Couple color temperature to level functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
1a	CC.S.A400d	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *CoupleColorTempToLevel-MinMireds* attribute. Note the value of this attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CoupleColorTempToLevel-MinMireds* attribute has the value $cctl_{min}$.
1b	CC.S.C0a.Rsp	TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER with the *color temperature mireds* field set to $cctl_{min}$ and the *transition time* field set to 0x0000 (move immediately).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes its color temperature.
2	LC.S.A000f	TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *Options* attribute of the *Level Control* cluster to 0x02 (*CoupleColor-TempToLevel* bit set).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT.
3a	-	TH CLIENT unicasts a ZCL *move to level (with on/off)* command frame to DUT SERVER with the *Level* field set to 0x7f and the *OptionsMask* and *OptionsOverride* fields omitted.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER turns on if necessary and changes its level to the mid-point.
3b	CC.S.A0007	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value $cctl_{mid}$ such that ($cctl_{mid} > cctl_{min}$).
4a	-	TH CLIENT unicasts a ZCL *move to level (with on/off)* command frame to DUT SERVER with the *Level* field set to 0xfe and the *OptionsMask* and *OptionsOverride* fields omitted.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to its maximum level.

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CC-TC-08S: Couple color temperature to level functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
4b	CC.S.A0007	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has the value $cctl_{min}$.

Continued…

5a	-	TH CLIENT unicasts a ZCL *move to level (with on/off)* command frame to DUT SERVER with the *Level* field set to 0x01 and the *OptionsMask* and *OptionsOverride* fields omitted.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to its minimum level.
5b	CC.S.A0007	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has a value $cctl_{max}$ such that ($cctl_{max} > cctl_{mid} > cctl_{min}$).
6a	CC.S.C0a.Rsp	TH CLIENT unicasts a ZCL *move to color temperature* command frame to DUT SERVER with the *color temperature mireds* field set to $cctl_{min}$ and the *transition time* field set to 0x0000 (move immediately).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes its color temperature.
6b	-	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *CurrentLevel* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CurrentLevel* attribute has the value 0x01.
7	LC.S.A000f	TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *Options* attribute of the *Level Control* cluster to 0x00 (*CoupleColor-TempToLevel* bit not set).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT.

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CC-TC-08S: Couple color temperature to level functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
8a	-	TH CLIENT unicasts a ZCL *move to level (with on/off)* command frame to DUT SERVER with the *Level* field set to 0x7f and the *OptionsMask* and *OptionsOverride* fields omitted.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes its level to the mid-point.

Continued…

8b	CC.S.A0007	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *ColorTemperatureMireds* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *ColorTemperatureMireds* attribute has the value $cctl_{min}$.

--- End of test case CC-TC-08S ---

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5.3.9 CC-TC-09S: ExecuteIfOff behavior with server as DUT

This test case verifies the behavior *ExecuteIfOff* option of the *color control* cluster server.

Note: this test case only verifies the *ExecuteIfOff* behavior with the *Move to color* command and it is assumed that the other supported color manipulation commands exhibit the same behavior. If preferred, the tester can either repeat the test for each command or substitute a random command in place of the *Move to color* command as written. If the *Move to color* command is not supported according to the *ColorCapabilities* attribute, an alternative, supported color manipulation command can be used instead.

5.3.9.1 Scope

General:

- *Read attributes* command (0x00)
- *Read attributes response* command (0x01)
- *Write attributes* command (0x02)
- *Write attributes response* command (0x04)
- *Default response* command (0x0b)

On/off cluster (0x0006):

- *Off* command (0x00)
- *On* command (0x01)

Color control cluster (0x0300):

- *CurrentX* attribute (0x0003)
- *CurrentY* attribute (0x0004)
- *Options* attribute (0x000f)
- *Move to color* command (0x07)

PICS:

- CC.S
- CC.S.A0003, CC.S.A0004, CC.S.A000f
- CC.S.C07.Rsp
- OO.S.C00.Rsp, OO.S.C01.Rsp

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5.3.9.2 Required devices

Designation	Symbol	Description
TH CLIENT	TH CLIENT	Test harness client implementing: • The *on/off* cluster client and • The *color control* cluster client.
DUT SERVER	DUT SERVER	Device under test server implementing: • The *on/off* cluster server and • The *color control* cluster server.

5.3.9.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

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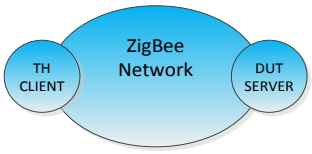
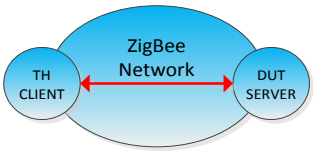
5.3.9.4 Test preparation

Link TH CLIENT with DUT SERVER	
 *Before*	 *After*

CC-TC-09S: ExecuteIfOff behavior with server as DUT		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH CLIENT and DUT SERVER.	TH CLIENT and DUT SERVER are powered on.
P3	Join TH CLIENT and DUT SERVER to a ZigBee network.	Observe appropriate communication between TH CLIENT, DUT SERVER and any other relevant node on the ZigBee network.

--- End of test case CC-TC-09S preparation ---

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CC-TC-09S: ExecuteIfOff behavior with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
1a	OO.S.C01.Rsp	TH CLIENT unicasts a ZCL *on* command to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER turns on.
1b	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT01.1 and CC.PIXIT01.2, respectively, (red color) and the *transition time* field set to 0x0000 (move immediately).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER changes to a red color.
1c	CC.S.A0003, CC.S.A0004	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *CurrentX* and *CurrentY* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. Note the values of the *CurrentX* and *CurrentY* attributes as X_R and Y_R, respectively.
2	OO.S.C00.Rsp	TH CLIENT unicasts a ZCL *off* command to DUT SERVER.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER turns off.
3	OO.S.A0001	TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *Options* attribute to 0x00 (*ExecuteIfOff* bit not set).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT.

Continued…

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CC-TC-09S: ExecuteIfOff behavior with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
4a	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT03.1 and CC.PIXIT03.2, respectively, (blue color), the *transition time* field set to 0x0000 (move immediately) and the *OptionsMask* and *OptionsOverride* fields omitted.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER does nothing.
4b	CC.S.A0003, CC.S.A0004	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *CurrentX* and *CurrentY* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CurrentX* and *CurrentY* attributes have the values X_R and Y_R, respectively.
5a	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT03.1 and CC.PIXIT03.2, respectively, (blue color), the *transition time* field set to 0x0000 (move immediately), the *OptionsMask* field set to 0x01 and the *OptionsOverride* field set to 0x00 (*ExecuteIfOff* bit not set).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER does nothing.
5b	CC.S.A0003, CC.S.A0004	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *CurrentX* and *CurrentY* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CurrentX* and *CurrentY* attributes have the values X_R and Y_R, respectively.

Continued…

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CC-TC-09S: ExecuteIfOff behavior with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
6a	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT03.1 and CC.PIXIT03.2, respectively, (blue color), the *transition time* field set to 0x0000 (move immediately), the *OptionsMask* field set to 0x01 and the *OptionsOverride* field set to 0x01 (*ExecuteIfOff* bit set).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER does nothing.
6b	CC.S.A0003, CC.S.A0004	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *CurrentX* and *CurrentY* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CurrentX* and *CurrentY* attributes have the values X_B and Y_B, respectively, i.e., different from X_R and Y_R.
7	OO.S.A0001	TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *Options* attribute to 0x01 (*ExecuteIfOff* bit set).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT.
8a	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT01.1 and CC.PIXIT01.2, respectively, (red color), the *transition time* field set to 0x0000 (move immediately) and the *OptionsMask* and *OptionsOverride* fields omitted.	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER does nothing.

Continued…

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CC-TC-09S: ExecuteIfOff behavior with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
8b	CC.S.A0003, CC.S.A0004	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *CurrentX* and *CurrentY* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CurrentX* and *CurrentY* attributes have the values X_R and Y_R, respectively.
9a	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT02.1 and CC.PIXIT02.2, respectively, (green color), the *transition time* field set to 0x0000 (move immediately), the *OptionsMask* field set to 0x01 and the *OptionsOverride* field set to 0x00 (*ExecuteIfOff* bit not set).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER does nothing.
9b	CC.S.A0003, CC.S.A0004	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *CurrentX* and *CurrentY* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CurrentX* and *CurrentY* attributes have the values X_R and Y_R, respectively.
10a	CC.S.A400a, CC.S.C07.Rsp	If supported in the *ColorCapabilities* of the DUT SERVER, TH CLIENT unicasts a ZCL *move to color* command frame to DUT SERVER with the *ColorX* and *ColorY* fields set to CC.PIXIT02.1 and CC.PIXIT02.2, respectively, (green color), the *transition time* field set to 0x0000 (move immediately), the *OptionsMask* field set to 0x01 and the *OptionsOverride* field set to 0x01 (*ExecuteIfOff* bit set).	If requested, DUT SERVER unicasts a ZCL *default response* command frame to TH CLIENT with the *status* field equal to 0x00 (SUCCESS). DUT SERVER does nothing.

Continued…

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CC-TC-09S: ExecuteIfOff behavior with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
10b	CC.S.A0003, CC.S.A0004	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *CurrentX* and *CurrentY* attributes.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT. *CurrentX* and *CurrentY* attributes have the values X_G and Y_G, respectively.

--- End of test case CC-TC-09S ---

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5.4 Client test cases

5.4.1 CC-TC-01C: Functionality with client as DUT

This case test verifies the functionality of the *color control* cluster client.

The DUT client SHALL be on the same network as a suitable server, provided by the user, and this device SHALL be used by the client to exercise its functionality. The test case uses the test harness to prompt the user, based on the declared PICS, to exercise the functionality of the *basic* cluster client and to verify the results. A sniffer tool SHALL be used to log the exercised functionality and to determine its validity.

In this test case, the PICS notation CC.C.C*d*Tx represents the list of commands that are declared as being transmitted by the DUT.

5.4.1.1 Scope

Color control cluster (0x0300):

- *Move to hue* command (0x00)
- *Move hue* command (0x01)
- *Step hue* command (0x02)
- *Move to saturation* command (0x03)
- *Move saturation* command (0x04)
- *Step saturation* command (0x05)
- *Move to hue and saturation* command (0x06)
- *Move to color* command (0x07)
- *Move color* command (0x08)
- *Step color* command (0x09)
- *Move to color temperature* command (0x0a)
- *Enhanced move to hue* command (0x40)
- *Enhanced move hue* command (0x41)
- *Enhanced step hue* command (0x42)
- *Enhanced move to hue and saturation* command (0x43)
- *Color loop set* command (0x44)
- *Stop move step* command (0x47)
- *Move color temperature* command (0x4b)
- *Step color temperature* command (0x4c)

PICS:

- CC.C
- CC.C.C00.Tx – CC.C.C0a.Tx, CC.C.C40.Tx – CC.C.C44.Tx, CC.C.C47.Tx, CC.C.C4b.Tx, CC.C.C4c.Tx

5.4.1.2 Required devices

Designation	Symbol	Description

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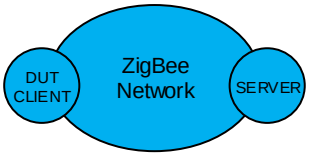
DUT CLIENT		Device under test client implementing: • The *color control* cluster client.
SERVER		Suitable server device implementing: • The *color control* cluster server.

5.4.1.3 Initial conditions

Item	Initial Conditions
1	A packet sniffer shall be observing the communication over the air interface.
2	All devices are factory new and powered off until used.

5.4.1.4 Test preparation

Link DUT CLIENT with SERVER	
 Before	 *After*

CC-TC-01C: Functionality with client as DUT		
Item	**Preparation Step**	**Observation**
P1	Power on the DUT CLIENT device and the SERVER device.	DUT CLIENT and SERVER are powered on.
P2	Ensure the DUT CLIENT device and the SERVER device are on the same ZigBee network.	Observe appropriate communication between DUT CLIENT, SERVER and any other relevant node on the ZigBee network.

--- End of test case CC-TC-01C preparation ---

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5.4.1.5 Test procedure

CC-TC-01C: Functionality with client as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
1	-	Test harness prompts the user with a list of commands, based on the declared PICS, which the DUT CLIENT indicates it can transmit.	None.
2	CC.C.C*d*.Tx	None.	DUT CLIENT transmits correctly formed commands in any order and with application achievable values. This is verified using the sniffer log.
3	-	Prompt the user to verify that the cluster commands listed in step 1 were transmitted during step 2.	During step 2, DUT CLIENT has transmitted every command listed by the test harness in step 1.
4	-	Prompt the user to verify that the cluster commands not listed in step 1 were not transmitted during step 2.	During step 2, DUT CLIENT has not transmitted any commands from this cluster that were not listed by the test harness in step 1.

--- End of test case CC-TC-01C ---

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6 Annex A: PICS to test case cross reference

6.1 Server

	Test case									
PICS	CC-TC-01G	CC-TC-01S	CC-TC-02S	CC-TC-03S	CC-TC-04S	CC-TC-05S	CC-TC-06S	CC-TC-07S	CC-TC-08S	CC-TC-09S
CC.S	X	X	X	X	X	X	X	X	X	X
CC.S.A0000		X	X				X			
CC.S.A0000.Report.Tx							X			
CC.S.A0001		X	X			X	X			
CC.S.A0001.Scene						X				
CC.S.A0001.Report.Tx							X			
CC.S.A0002		X	X							
CC.S.A0003		X	X			X	X			X
CC.S.A0003.Scene						X				
CC.S.A0003.Report.Tx							X			
CC.S.A0004		X	X			X	X			X
CC.S.A0004.Scene						X				
CC.S.A0004.Report.Tx							X			
CC.S.A0005		X								
CC.S.A0006		X								
CC.S.A0007		X			X	X	X	X	X	
CC.S.A0007.Scene						X				
CC.S.A0007.Report.Tx							X			
CC.S.A0008		X	X		X					
CC.S.A000f		X							X	X
CC.S.A0010		X								
CC.S.A0011		X								
CC.S.A0012		X								
CC.S.A0013		X								
CC.S.A0015		X								
CC.S.A0016		X								
CC.S.A0017		X								
CC.S.A0019		X								
CC.S.A001a		X								
CC.S.A001b		X								
CC.S.A0020		X								
CC.S.A0021		X								

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	Test case									
PICS	CC-TC-01G	CC-TC-01S	CC-TC-02S	CC-TC-03S	CC-TC-04S	CC-TC-05S	CC-TC-06S	CC-TC-07S	CC-TC-08S	CC-TC-09S
CC.S.A0022		X								
CC.S.A0024		X								
CC.S.A0025		X								
CC.S.A0026		X								
CC.S.A0028		X								
CC.S.A0029		X								
CC.S.A002a		X								
CC.S.A0030		X								
CC.S.A0031		X								
CC.S.A0032		X								
CC.S.A0033		X								
CC.S.A0034		X								
CC.S.A0036		X								
CC.S.A0037		X								
CC.S.A0038		X								
CC.S.A003a		X								
CC.S.A003b		X								
CC.S.A003c		X								
CC.S.A4000		X	X	X						
CC.S.A4000.Scene						X				
CC.S.A4001		X	X		X					
CC.S.A4002		X		X						
CC.S.A4002.Scene						X				
CC.S.A4003		X		X						
CC.S.A4003.Scene						X				
CC.S.A4004		X		X						
CC.S.A4004.Scene						X				
CC.S.A4005		X		X						
CC.S.A4006		X		X						
CC.S.A400a		X	X			X	X			
CC.S.A400b		X			X			X		
CC.S.A400c		X			X			X		
CC.S.A400d		X							X	
CC.S.A4010		X						X		
CC.S.Afffd	X									

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	Test case									
PICS	CC-TC-01G	CC-TC-01S	CC-TC-02S	CC-TC-03S	CC-TC-04S	CC-TC-05S	CC-TC-06S	CC-TC-07S	CC-TC-08S	CC-TC-09S
CC.S.C00.Rsp			X							
CC.S.C01.Rsp			X							
CC.S.C02.Rsp			X							
CC.S.C03.Rsp			X							
CC.S.C04.Rsp			X							
CC.S.C05.Rsp			X							
CC.S.C06.Rsp			X				X			
CC.S.C07.Rsp			X	X		X	X			X
CC.S.C08.Rsp			X							
CC.S.C09.Rsp			X							
CC.S.C0a.Rsp					X	X	X	X	X	
CC.S.C40.Rsp			X	X						
CC.S.C41.Rsp			X							
CC.S.C42.Rsp			X							
CC.S.C43.Rsp			X			X				
CC.S.C44.Rsp				X		X				
CC.S.C47.Rsp			X		X					
CC.S.C4b.Rsp					X					
CC.S.C4c.Rsp					X					

6.2 Client

	Test case	
PICS	CC-TC-01G	CC-TC-01C
CC.C	X	X
CC.C.A0000.Report.Rsp		X
CC.C.A0001.Report.Rsp		X
CC.C.A0003.Report.Rsp		X
CC.C.A0004.Report.Rsp		X
CC.C.A0007.Report.Rsp		X
CC.C.Afffd	X	
CC.C.C00.Tx		X
CC.C.C01.Tx		X
CC.C.C02.Tx		X
CC.C.C03.Tx		X

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	Test case	
PICS	CC-TC-01G	CC-TC-01C
CC.C.C04.Tx		X
CC.C.C05.Tx		X
CC.C.C06.Tx		X
CC.C.C07.Tx		X
CC.C.C08.Tx		X
CC.C.C09.Tx		X
CC.C.C0a.Tx		X
CC.C.C40.Tx		X
CC.C.C41.Tx		X
CC.C.C42.Tx		X
CC.C.C43.Tx		X
CC.C.C44.Tx		X
CC.C.C47.Tx		X
CC.C.C4b.Tx		X
CC.C.C4c.Tx		X

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