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ZigBee Lighting & Occupancy Device Specification Version 1.0

ZigBee Document 15-0014-05

February 24th, 2016

Sponsored by: ZigBee Alliance

Accepted by This document has been accepted for release by the ZigBee Alliance Board of Directors

Abstract This specification defines the protocol infrastructures and services available to lighting and occupancy applications operating on the ZigBee PRO platform.

Keywords L&O, ZLL, ZHA, consumer, residential, lighting, Light Link.

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Revision history

Revision	Date	Details	Editor
00	January 14 th , 2015	First version originated from 13-0257-03.	Phil Jamieson
01	April 13 th , 2015	Updated as a result of the L&O WG v0.7 ballot comments in document 15-0089.	Phil Jamieson
02	September 30 th , 2015	Updated to match ZCL r06. Added mandatory PICS references for the devices.	Phil Jamieson
03	October 30 th , 2015	Addressed comments from the v0.9 ballot.	Phil Jamieson
04	December 4 th , 2015	Addressed comments from ZigBee 3.0 SVE #1.	Phil Jamieson
05	February 24 th , 2016	Updated the document designation and legal messages.	Phil Jamieson

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1 Introduction

334

335 This document specifies the ZigBee Lighting and Occupancy (ZLO) device behavior for operation on a
336 ZigBee-PRO network.

337 This specification addresses devices and functionality in the lighting application domain. The
338 individual device specifications will become part of the approved device specifications supported by
339 the ZigBee Alliance. It is based on and conforms to ZigBee-PRO, the Base Device Behavior and the
340 ZigBee Cluster Library.

341 This document is based on the work carried out by the ZigBee Light Link working group in the ZLL
342 v1.0 profile specification (see [R3]). In addition it collects together the lighting features of both the
343 ZigBee Home Automation (see [R4]) and ZigBee Building Automation (see [R2]) specifications.

344 *Note: The content of this document is an evolution from the ZLL v1.1 specification (13-0258-03 draft*
345 *and 13-0257-03 editor's copies) wherein the device descriptions of clause 5 have been merged with the*
346 *clusters descriptions of clause 6. Each device description is now presented as a self-contained,*
347 *standalone entity which details not only the mandatory clusters it must support but also the required*
348 *list of attributes and commands from each mandatory cluster. The remaining ZCL enhancements from*
349 *clause 6, required from the ZLL v1.1 TRD (12-0574-06), remain and can serve as input to future errata*
350 *to the ZCL. There has been no additional new information added in this document which was not*
351 *already contained in the old documents.*

1.1 Scope

352

353 The scope of the devices defined in this specification is as follows:

- 354 • It is intended for ZigBee applications in residential, commercial and hospitality lighting.
- 355 • It is intended to be built on the ZigBee-PRO stack.
- 356 • It is intended to be natively interoperable with other ZigBee-PRO devices.
- 357 • It is not initially intended for professional outdoor lighting networks.

358

1.2 Purpose

359

360 The purpose of this specification is as follows:

- 361 • To provide an evolutionary experience for lighting devices in which further purchases enhance
362 the overall system.
- 363 • To develop a simple and sensible ZigBee specification for over-the-counter lamps and
364 luminaries in the consumer market space.
- 365 • To develop a solution, fully in line with consumer market boundary conditions on
366 commissioning, security, ease of use, network scale, cost, etc.
- 367 • To be able to address non-installer consumer lighting related features.

368

1.3 Conformance levels

369

370 The key words “SHALL”, “SHALL NOT” and “MAY” in this document are to be interpreted as
371 described in [R17].

372

1.4 Conventions

373

1.4.1 Number formats

374

375 In this specification hexadecimal numbers are prefixed with the designation “0x” and binary numbers
376 are prefixed with the designation “0b”. All other numbers are assumed to be decimal unless indicated
377 otherwise within the associated text.

378 **1.4.2 Transmission order**

379 The frames in this specification are described as a sequence of fields in a specific order. All frame
380 formats are depicted in the order in which they are transmitted by the PHY, from left to right where the
381 leftmost bit is transmitted first in time or top to bottom where the topmost bit is transmitted first in
382 time. Bits within each field are numbered from 0 (leftmost and least significant) to k-1 (rightmost and
383 most significant), where the length of the field is k bits. Fields that are longer than a single octet are
384 sent to the MAC in the order from the octet containing the lowest numbered bits to the octet containing
385 the highest numbered bits.

386 **1.4.3 Reserved values**

387 Unless otherwise specified, all reserved fields appearing in a frame structure SHALL be set to zero on
388 transmission and ignored upon reception. Reserved values appearing in multi-value fields SHALL not
389 be used.

390 **1.4.4 Clusters**

391 When clusters are listed in connection with required attributes or commands that must be supported,
392 “(S)” indicates the item is related to the *server* side of the cluster and “(C)” indicates the item is related
393 to the *client* side of the cluster.

394 **1.4.5 Attribute lists**

395 Each device description includes a list of required attributes that must be supported. The “Scene table”
396 and “Reportable” columns give extra information as follows.

397 The “Scene table” column indicates whether the attribute must be included in the scene table should the
398 *scenes* cluster be supported on the device. A “✓” symbol indicates that the attribute SHALL be
399 included in the scene table and a “✗” symbol indicates that the attribute SHALL NOT be included in
400 the scene table.

401 The “Reportable” column indicates whether the attribute must be reportable. A “✓” symbol indicates
402 that the attribute SHALL be reportable and a “-” symbol indicates that it is not mandatory for the
403 attribute to be reportable, i.e. an implementation can optionally make the attribute reportable.

404 **1.4.6 Permitted transmissions**

405 Where a device is indicated as generating a command, the permitted transmission modes are indicated
406 as a three character coding representing from left to right whether unicast (“U”), groupcast (“G”) or
407 broadcast (“B”) transmissions are permitted. Where a transmission mode is not permitted, it is replaced
408 with a hyphen “-“. For example, “UGB” indicates that unicast, groupcast and broadcast transmissions
409 are permitted whereas “U--” indicates that only unicast transmissions are permitted.

410 **1.5 Errata**

411 Any errata against this specification can be found in [R16].

412

413 2 References¹

414 2.1 ZigBee Alliance documents

- 415 [R1] ZigBee Cluster Library Specification, ZigBee Alliance document 07-5123.
416 [R2] ZigBee Building Automation Specification, ZigBee Alliance document 07-5449.
417 [R3] ZigBee Light Link Specification, ZigBee Alliance document 11-0037.
418 [R4] ZigBee Home Automation Specification, ZigBee Alliance document 11-5382.
419 [R5] ZigBee Base Device Behavior Specification, ZigBee Alliance document 13-0402.
420 [R6] ZigBee Cluster Library Basic Cluster (0x0000) Test Specification, ZigBee Alliance document
421 15-0302.
422 [R7] ZigBee Cluster Library Identify Cluster (0x0003) Test Specification, ZigBee Alliance document
423 15-0304.
424 [R8] ZigBee Cluster Library Groups Cluster (0x0004) Test Specification, ZigBee Alliance document
425 15-0306.
426 [R9] ZigBee Cluster Library Scenes Cluster (0x0005) Test Specification, ZigBee Alliance document
427 15-0308.
428 [R10] ZigBee Cluster Library On/Off Cluster (0x0006) Test Specification, ZigBee Alliance document
429 15-0310.
430 [R11] ZigBee Cluster Library Level Control Cluster (0x0008) Test Specification, ZigBee Alliance
431 document 15-0312.
432 [R12] ZigBee Cluster Library Color Control Cluster (0x0300) Test Specification, ZigBee Alliance
433 document 15-0314.
434 [R13] ZigBee Cluster Library Illuminance Measurement Cluster (0x0400) Test Specification, ZigBee
435 Alliance document 15-0316.
436 [R14] ZigBee Cluster Library Occupancy Sensing Cluster (0x0406) Test Specification, ZigBee
437 Alliance document 15-0318.
438 [R15] ZigBee Cluster Library Touchlink Commissioning Cluster (0x1000) Test Specification, ZigBee
439 Alliance document 15-0320.
440 [R16] Errata for L&O Device Specification 15-0014, ZigBee Alliance document 15-06003.

441 2.2 IETF documents

- 442 [R17] S. Bradner, Key words for use in RFCs to Indicate Requirement Levels, IETF RFC 2119, March
443 1997.
444

¹ The version and date information in these references was correct at the time this document was released.

445

3 Definitions

Coordinator	The ZigBee node responsible for starting a network and allowing other devices to join this network in a secure way. A coordinator is also a router.
Device	Product implementation of a device description specified in this document.
End-device	A ZigBee node which has no capability of routing messages through the network.
Endpoint	A ZigBee endpoint implements application features that are non-networking related (with the exception of the mandatory endpoint 0 which handles the node's network management functions).
Factory New	The device does not contain any network parameters and is not part of a network. When a device is reset to factory new, its network parameters are erased.
IEEE Address	An 8-byte unique address. Sometimes also referred to as the MAC address.
Network Parameters	Set of extended PAN ID, PAN ID, channel number, network update ID, network address and network key.
Node	A collection of independent device descriptions and applications residing in a single unit and sharing a common IEEE 802.15.4 radio.
Router	A ZigBee node capable of routing messages through the network and acting as a parent for end-devices.
Sub-device	A device may be divided in sub-devices when it has more application endpoints, for example two independent light outputs.
Touchlink	The user operation of holding one device (e.g., a remote controller) physically close to another device (e.g., a light) in order to facilitate a network connection.

446

447

4 Acronyms and abbreviations

CFL	Compact fluorescent
EAN	International article number
GTIN	Global trade item number
ID	Identifier
IEEE	Institute of electrical and electronic engineers
IETF	Internet engineering task force
LED	Light emitting diode
MAC	Medium access control
NIB	Network information base
OTA	Over the air
PAN	Personal area network
PHY	Physical
RFC	Request for comments
SKU	Stock keeping unit
UPC	Universal product code
URL	Universal resource locator
ZCL	ZigBee cluster library
ZHA	ZigBee home automation
ZLL	ZigBee Light Link

448

449 5 Device descriptions

450 Table 1 lists the Lighting & Occupancy device descriptions defined in this specification. Each device
451 is identified by a unique ZigBee-wide device ID and SHALL use the profile identifier 0x0104.

452 Each device listed in Table 1 is described in detail in the following sub-clauses.

453 For details on the use of the various commissioning mechanisms that are available for a device, please
454 see [R5].

455

456

Table 1 – Device descriptions defined in this specification

Device ID	Description	Reference
0x0100	On/off light	6
0x0101	Dimmable light	7
0x0102	Color dimmable light	8
0x0103	On/off light switch	9
0x0104	Dimmer switch	10
0x0105	Color dimmer switch	11
0x0106	Light sensor	12
0x0107	Occupancy sensor	13
0x0108	On/off ballast	14
0x0109	Dimmable ballast	15
0x010a	On/off plug-in unit	16
0x010b	Dimmable plug-in unit	17
0x010c	Color temperature light	18
0x010d	Extended color light	19
0x010e	Light level sensor	20
0x0800	Color controller	21
0x0810	Color scene controller	22
0x0820	Non-color controller	23
0x0830	Non-color scene controller	24
0x0840	Control bridge	25
0x0850	On/off sensor	26

457 All other values in the range 0x0000-0xffff are not used in this specification.

458

459 6 On/off light

460 The on/off light is a lighting device that can be switched on or off via a bound controller device such as
 461 an on/off light switch or a non-color controller. In addition, it may also be switched via a bound
 462 occupancy sensor.

463 6.1 Device configuration

464 When the on/off light device type is implemented on an endpoint, the following configurations apply:

- 465 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 466 0x1.
- 467 • The device class SHALL be *simple*.
- 468 • The device SHALL implement a finding & binding *target*.

469 6.2 Supported clusters

470 The on/off light device SHALL support the mandatory clusters and MAY support the recommended
 471 optional clusters listed in Figure 1.
 472

On/off light [Device ID: 0x0100]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	<i>None</i>
	0x0003: Identify	
	0x0004: Groups	
	0x0005: Scenes	
	0x0006: On/off	
Recommended optional	0x0008: <i>Level control</i>	<i>OTA upgrade: 0x0019</i>
	0x1000: <i>Touchlink commissioning</i>	<i>Occupancy sensing: 0x0406</i>

473 **Figure 1 – Clusters supported by the on/off light device type**

474

475 The inclusion of the *level control* cluster on this device is recommended to provide a consistent user
 476 experience when the device is grouped with additional dimmable lights and the “with on/off” commands
 477 are used. For this device, since its only states are on or off, if the *level control* cluster is implemented, it
 478 SHALL not have any effect on the actual light level except for those commands that cause an on/off state
 479 change, i.e. the “with on/off” commands. In addition, if the *level control* cluster is implemented, the
 480 device SHALL accept and process *level control* cluster commands, adjusting the value of the
 481 *CurrentLevel* attribute accordingly and, where necessary, adjusting the *on/off* cluster *OnOff* attribute as
 482 described in [R1].

483 6.2.1 Required attributes

484 An on/off light device SHALL support the attributes listed in Table 2.
 485

486 **Table 2 – Mandatory attributes for an on/off light**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Groups (S)	0x0000	NameSupport	✘	-
Scenes (S)	0x0000	SceneCount	✘	-
Scenes (S)	0x0001	CurrentScene	✘	-
Scenes (S)	0x0002	CurrentGroup	✘	-
Scenes (S)	0x0003	SceneValid	✘	-
Scenes (S)	0x0004	NameSupport	✘	-
On/off (S)	0x0000	OnOff	✓	✓
On/off (S)	0x4000	GlobalSceneControl	✘	-
On/off (S)	0x4001	OnTime	✘	-
On/off (S)	0x4002	OffWaitTime	✘	-
On/off (S)	0x4003	StartUpOnOff	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

487

488 **6.2.2 Required commands received**

489 An on/off light device SHALL be able to receive and process the commands listed in Table 3.

490

491

Table 3 – Mandatory commands received by an on/off light

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query

Cluster	Identifier	Name
Identify (S)	0x40	Trigger effect
Groups (S)	0x00	Add group
Groups (S)	0x01	View group
Groups (S)	0x02	Get group membership
Groups (S)	0x03	Remove group
Groups (S)	0x04	Remove all groups
Groups (S)	0x05	Add group if identifying
Scenes (S)	0x00	Add scene
Scenes (S)	0x01	View scene
Scenes (S)	0x02	Remove scene
Scenes (S)	0x03	Remove all scenes
Scenes (S)	0x04	Store scene
Scenes (S)	0x05	Recall scene
Scenes (S)	0x06	Get scene membership
Scenes (S)	0x40	Enhanced add scene
Scenes (S)	0x41	Enhanced view scene
Scenes (S)	0x42	Copy scene
On/off (S)	0x00	Off
On/off (S)	0x01	On
On/off (S)	0x02	Toggle
On/off (S)	0x40	Off with effect
On/off (S)	0x41	On with recall global scene
On/off (S)	0x42	On with timed off

492

493 **6.2.3 Required commands generated**

494 An on/off light device SHALL be able to generate the commands listed in Table 4.

495

496

Table 4 – Mandatory commands generated by an on/off light

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response	Identify query	U--
Groups (S)	0x00	Add group response	Add group	U--
Groups (S)	0x01	View group response	View group	U--
Groups (S)	0x02	Get group membership response	Get group membership	U--
Groups (S)	0x03	Remove group response	Remove group	U--

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Scenes (S)	0x00	Add scene response	Add scene	U--
Scenes (S)	0x01	View scene response	View scene	U--
Scenes (S)	0x02	Remove scene response	Remove scene	U--
Scenes (S)	0x03	Remove all scenes response	Remove all scenes	U--
Scenes (S)	0x04	Store scene response	Store scene	U--
Scenes (S)	0x06	Get scene membership response	Get scene membership	U--
Scenes (S)	0x40	Enhanced add scene response	Enhanced add scene	U--
Scenes (S)	0x41	Enhanced view scene response	Enhanced view scene	U--
Scenes (S)	0x42	Copy scene response	Copy scene	U--

497

498

499 **6.3 PICS**

500 The following PICS items SHALL be supported for this device. Note that a device MAY support other
 501 optional PICS items.

Cluster	PICS item
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S I.S.A0000, I.S.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx
Groups [R8]	G.S G.S.A0000, G.S.Afffd G.S.C00.Rsp, G.S.C01.Rsp, G.S.C02.Rsp, G.S.C03.Rsp, G.S.C04.Rsp, G.S.C05.Rsp G.S.C00.Tx, G.S.C01.Tx, G.S.C02.Tx, G.S.C03.Tx
Scenes [R9]	S.S S.S.A0000, S.S.A0001, S.S.A0002, S.S.A0003, S.S.A0004, S.S.Afffd S.S.C00.Rsp, S.S.C01.Rsp, S.S.C02.Rsp, S.S.C03.Rsp, S.S.C04.Rsp, S.S.C05.Rsp, S.S.C06.Rsp, S.S.C40.Rsp, S.S.C41.Rsp, S.S.C42.Rsp S.S.C00.Tx, S.S.C01.Tx, S.S.C02.Tx, S.S.C03.Tx, S.S.C04.Tx, S.S.C06.Tx, S.S.C40.Tx, S.S.C41.Tx, S.S.C42.Tx
On/off [R10]	OO.S OO.S.A0000, OO.S.A4000, OO.S.A4001, OO.S.A4002, OO.S.A4003, OO.S.Afffd OO.S.C00.Rsp, OO.S.C01.Rsp, OO.S.C02.Rsp, OO.S.C40.Rsp, OO.S.C41.Rsp, OO.S.C42.Rsp

502

503

504 **7 Dimmable light**

505 The dimmable light is a lighting device that can be switched on or off and the intensity of its light
 506 adjusted via a bound controller device such as a dimmer switch or a non-color controller. In addition,
 507 it may also be switched via a bound occupancy sensor.

508 **7.1 Device configuration**

509 When the dimmable light device type is implemented on an endpoint, the following configurations
 510 apply:

- 511 • The *application device version* field of the corresponding simple descriptor SHALL be set to
- 512 0x1.
- 513 • The device class SHALL be *simple*.
- 514 • The device SHALL implement a finding & binding *target*.
- 515 • The minimum light level SHALL be 0x01 and the maximum light level SHALL be 0xfe.

516 **7.2 Supported clusters**

517 The dimmable light device SHALL support the mandatory clusters and MAY support the
 518 recommended optional clusters listed in Figure 2.

519

Dimmable light [Device ID: 0x0101]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	<i>None</i>
	0x0003: Identify	
	0x0004: Groups	
	0x0005: Scenes	
	0x0006: On/off	
	0x0008: Level control	
Recommended optional	<i>0x1000: Touchlink commissioning</i>	<i>OTA upgrade: 0x0019</i>
		<i>Occupancy sensing: 0x0406</i>

520 **Figure 2 – Clusters supported by the dimmable light device type**

521

522 **7.2.1 Required attributes**

523 A dimmable light device SHALL support the attributes listed in Table 5.

524

525 **Table 5 – Mandatory attributes for a dimmable light**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Groups (S)	0x0000	NameSupport	✘	-
Scenes (S)	0x0000	SceneCount	✘	-
Scenes (S)	0x0001	CurrentScene	✘	-
Scenes (S)	0x0002	CurrentGroup	✘	-
Scenes (S)	0x0003	SceneValid	✘	-
Scenes (S)	0x0004	NameSupport	✘	-
On/off (S)	0x0000	OnOff	✓	✓
On/off (S)	0x4000	GlobalSceneControl	✘	-
On/off (S)	0x4001	OnTime	✘	-
On/off (S)	0x4002	OffWaitTime	✘	-
On/off (S)	0x4003	StartUpOnOff	✘	-
Level control (S)	0x0000	CurrentLevel	✓	✓
Level control (S)	0x0001	RemainingTime	✘	-
Level control (S)	0x000f	Options	✘	-
Level control (S)	0x4000	StartUpCurrentLevel	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

526

527 7.2.2 Required commands received

528 A dimmable light device SHALL be able to receive and process the commands listed in Table 6.

529

530

Table 6 – Mandatory commands received by a dimmable light

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect
Groups (S)	0x00	Add group
Groups (S)	0x01	View group
Groups (S)	0x02	Get group membership
Groups (S)	0x03	Remove group
Groups (S)	0x04	Remove all groups
Groups (S)	0x05	Add group if identifying
Scenes (S)	0x00	Add scene
Scenes (S)	0x01	View scene
Scenes (S)	0x02	Remove scene
Scenes (S)	0x03	Remove all scenes
Scenes (S)	0x04	Store scene
Scenes (S)	0x05	Recall scene
Scenes (S)	0x06	Get scene membership
Scenes (S)	0x40	Enhanced add scene
Scenes (S)	0x41	Enhanced view scene
Scenes (S)	0x42	Copy scene
On/off (S)	0x00	Off
On/off (S)	0x01	On
On/off (S)	0x02	Toggle
On/off (S)	0x40	Off with effect
On/off (S)	0x41	On with recall global scene
On/off (S)	0x42	On with timed off
Level control (S)	0x00	Move to level
Level control (S)	0x01	Move
Level control (S)	0x02	Step
Level control (S)	0x03	Stop
Level control (S)	0x04	Move to level (with on/off)
Level control (S)	0x05	Move (with on/off)
Level control (S)	0x06	Step (with on/off)
Level control (S)	0x07	Stop (with on/off)

531

532 **7.2.3 Required commands generated**

533 A dimmable light device SHALL be able to generate the commands listed in Table 7.

534

535 **Table 7 – Mandatory commands generated by a dimmable light**

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response	Identify query	U--
Groups (S)	0x00	Add group response	Add group	U--
Groups (S)	0x01	View group response	View group	U--
Groups (S)	0x02	Get group membership response	Get group membership	U--
Groups (S)	0x03	Remove group response	Remove group	U--
Scenes (S)	0x00	Add scene response	Add scene	U--
Scenes (S)	0x01	View scene response	View scene	U--
Scenes (S)	0x02	Remove scene response	Remove scene	U--
Scenes (S)	0x03	Remove all scenes response	Remove all scenes	U--
Scenes (S)	0x04	Store scene response	Store scene	U--
Scenes (S)	0x06	Get scene membership response	Get scene membership	U--
Scenes (S)	0x40	Enhanced add scene response	Enhanced add scene	U--
Scenes (S)	0x41	Enhanced view scene response	Enhanced view scene	U--
Scenes (S)	0x42	Copy scene response	Copy scene	U--

536

537

538 **7.3 PICS**

539 The following PICS SHALL be supported for this device. Note that a device MAY support other
 540 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S I.S.A0000, I.S.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx
Groups [R8]	G.S G.S.A0000, G.S.Afffd G.S.C00.Rsp, G.S.C01.Rsp, G.S.C02.Rsp, G.S.C03.Rsp, G.S.C04.Rsp, G.S.C05.Rsp G.S.C00.Tx, G.S.C01.Tx, G.S.C02.Tx, G.S.C03.Tx
Scenes [R9]	S.S S.S.A0000, S.S.A0001, S.S.A0002, S.S.A0003, S.S.A0004, S.S.Afffd S.S.C00.Rsp, S.S.C01.Rsp, S.S.C02.Rsp, S.S.C03.Rsp, S.S.C04.Rsp, S.S.C05.Rsp, S.S.C06.Rsp, S.S.C40.Rsp, S.S.C41.Rsp, S.S.C42.Rsp S.S.C00.Tx, S.S.C01.Tx, S.S.C02.Tx, S.S.C03.Tx, S.S.C04.Tx, S.S.C06.Tx, S.S.C40.Tx, S.S.C41.Tx, S.S.C42.Tx
On/off [R10]	OO.S OO.S.A0000, OO.S.A4000, OO.S.A4001, OO.S.A4002, OO.S.A4003, OO.S.Afffd OO.S.C00.Rsp, OO.S.C01.Rsp, OO.S.C02.Rsp, OO.S.C40.Rsp, OO.S.C41.Rsp, OO.S.C42.Rsp
Level Control [R11]	LC.S LC.S.A0000, LC.S.A0001, LC.S.A000f, LC.S.A4000, LC.S.Afffd LC.S.C00.Rsp, LC.S.C01.Rsp, LC.S.C02.Rsp, LC.S.C03.Rsp, LC.S.C04.Rsp, LC.S.C05.Rsp, LC.S.C06.Rsp, LC.S.C07.Rsp

541

542

543 8 Color dimmable light

544 The color light is a lighting device that can be switched on or off, the intensity of its light adjusted and
 545 its color adjusted via a bound controller device such as a color controller. The device supports
 546 adjustment of color via hue/saturation, enhanced hue, color looping and XY coordinates. In addition, it
 547 may also be switched via a bound occupancy sensor.

548 8.1 Device configuration

549 When the color dimmable light device type is implemented on an endpoint, the following
 550 configurations apply:

- 551 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 552 0x1.
- 553 • The device class SHALL be *simple*.
- 554 • The device SHALL implement a finding & binding *target*.
- 555 • The minimum light level SHALL be 0x01 and the maximum light level SHALL be 0xfe.

556 8.2 Supported clusters

557 The color dimmable light device SHALL support the mandatory clusters and MAY support the
 558 recommended optional clusters listed in Figure 3.

559

Color dimmable light [Device ID: 0x0102]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	<i>None</i>
	0x0003: Identify	
	0x0004: Groups	
	0x0005: Scenes	
	0x0006: On/off	
	0x0008: Level control	
	0x0300: Color control	
Recommended optional	<i>0x1000: Touchlink commissioning</i>	<i>OTA upgrade: 0x0019</i>
		<i>Occupancy sensing: 0x0406</i>

560 **Figure 3 – Clusters supported by the color dimmable light device type**

561

562 8.2.1 Required attributes

563 A color dimmable light device SHALL support the attributes listed in Table 8.

564

565 **Table 8 – Mandatory attributes for a color dimmable light**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Groups (S)	0x0000	NameSupport	✘	-
Scenes (S)	0x0000	SceneCount	✘	-
Scenes (S)	0x0001	CurrentScene	✘	-
Scenes (S)	0x0002	CurrentGroup	✘	-
Scenes (S)	0x0003	SceneValid	✘	-
Scenes (S)	0x0004	NameSupport	✘	-
On/off (S)	0x0000	OnOff	✓	✓
On/off (S)	0x4000	GlobalSceneControl	✘	-
On/off (S)	0x4001	OnTime	✘	-
On/off (S)	0x4002	OffWaitTime	✘	-
On/off (S)	0x4003	StartUpOnOff	✘	-
Level control (S)	0x0000	CurrentLevel	✓	✓
Level control (S)	0x0001	RemainingTime	✘	-
Level control (S)	0x000f	Options	✘	-
Level control (S)	0x4000	StartUpCurrentLevel	✘	-
Color control (S)	0x0000	CurrentHue	✘ ²	✓
Color control (S)	0x0001	CurrentSaturation	✓	✓
Color control (S)	0x0002	RemainingTime	✘	-
Color control (S)	0x0003	CurrentX	✓	✓
Color control (S)	0x0004	CurrentY	✓	✓

² Note that the *EnhancedCurrentHue* attribute is added to the scene table in favor of the *CurrentHue* attribute.

Cluster	Identifier	Name	Scene table	Reportable
Color control (S)	0x0008	ColorMode	✘	-
Color control (S)	0x000f	Options	✘	-
Color control (S)	0x0010	NumberOfPrimaries ³	✘	-
Color control (S)	0x4000	EnhancedCurrentHue	✓	-
Color control (S)	0x4001	EnhancedColorMode	✘	-
Color control (S)	0x4002	ColorLoopActive	✓	-
Color control (S)	0x4003	ColorLoopDirection	✓	-
Color control (S)	0x4004	ColorLoopTime	✓	-
Color control (S)	0x4005	ColorLoopStartEnhancedHue	✘	-
Color control (S)	0x4006	ColorLoopStoredEnhancedHue	✘	-
Color control (S)	0x400a	ColorCapabilities	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

566

567 **8.2.2 Required commands received**

568 A color dimmable light device SHALL be able to receive and process the commands listed in Table 9.

569

570

Table 9 – Mandatory commands received by a color dimmable light

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect
Groups (S)	0x00	Add group
Groups (S)	0x01	View group
Groups (S)	0x02	Get group membership
Groups (S)	0x03	Remove group
Groups (S)	0x04	Remove all groups
Groups (S)	0x05	Add group if identifying
Scenes (S)	0x00	Add scene
Scenes (S)	0x01	View scene
Scenes (S)	0x02	Remove scene
Scenes (S)	0x03	Remove all scenes

³ A device SHALL also support the attributes Primary*i*X, Primary*i*Y and Primary*i*Intensity, where *i* is in the range from 1 to the value of NumberOfPrimaries.

Cluster	Identifier	Name
Scenes (S)	0x04	Store scene
Scenes (S)	0x05	Recall scene
Scenes (S)	0x06	Get scene membership
Scenes (S)	0x40	Enhanced add scene
Scenes (S)	0x41	Enhanced view scene
Scenes (S)	0x42	Copy scene
On/off (S)	0x00	Off
On/off (S)	0x01	On
On/off (S)	0x02	Toggle
On/off (S)	0x40	Off with effect
On/off (S)	0x41	On with recall global scene
On/off (S)	0x42	On with timed off
Level control (S)	0x00	Move to level
Level control (S)	0x01	Move
Level control (S)	0x02	Step
Level control (S)	0x03	Stop
Level control (S)	0x04	Move to level (with on/off)
Level control (S)	0x05	Move (with on/off)
Level control (S)	0x06	Step (with on/off)
Level control (S)	0x07	Stop (with on/off)
Color control (S)	0x00	Move to hue
Color control (S)	0x01	Move hue
Color control (S)	0x02	Step hue
Color control (S)	0x03	Move to saturation
Color control (S)	0x04	Move saturation
Color control (S)	0x05	Step saturation
Color control (S)	0x06	Move to hue and saturation
Color control (S)	0x07	Move to color
Color control (S)	0x08	Move color
Color control (S)	0x09	Step color
Color control (S)	0x40	Enhanced move to hue
Color control (S)	0x41	Enhanced move hue
Color control (S)	0x42	Enhanced step hue
Color control (S)	0x43	Enhanced move to hue and saturation
Color control (S)	0x44	Color loop set
Color control (S)	0x47	Stop move step

571

572 **8.2.3 Required commands generated**

573 A color dimmable light device SHALL be able to generate the commands listed in Table 10.

574

575 **Table 10 – Mandatory commands generated by a color dimmable light**

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response	Identify query	U--
Groups (S)	0x00	Add group response	Add group	U--
Groups (S)	0x01	View group response	View group	U--
Groups (S)	0x02	Get group membership response	Get group membership	U--
Groups (S)	0x03	Remove group response	Remove group	U--
Scenes (S)	0x00	Add scene response	Add scene	U--
Scenes (S)	0x01	View scene response	View scene	U--
Scenes (S)	0x02	Remove scene response	Remove scene	U--
Scenes (S)	0x03	Remove all scenes response	Remove all scenes	U--
Scenes (S)	0x04	Store scene response	Store scene	U--
Scenes (S)	0x06	Get scene membership response	Get scene membership	U--
Scenes (S)	0x40	Enhanced add scene response	Enhanced add scene	U--
Scenes (S)	0x41	Enhanced view scene response	Enhanced view scene	U--
Scenes (S)	0x42	Copy scene response	Copy scene	U--

576

577 **8.3 Generic usage notes**578 For this device, in the *color control* cluster, the *ColorCapabilities* attribute SHALL be set to 0x000f,
579 indicating support for hue/saturation, enhanced hue, color loop and XY.

580

581

582 **8.4 PICS**

583 The following PICS SHALL be supported for this device. Note that a device MAY support other
 584 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S I.S.A0000, I.S.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx
Groups [R8]	G.S G.S.A0000, G.S.Afffd G.S.C00.Rsp, G.S.C01.Rsp, G.S.C02.Rsp, G.S.C03.Rsp, G.S.C04.Rsp, G.S.C05.Rsp G.S.C00.Tx, G.S.C01.Tx, G.S.C02.Tx, G.S.C03.Tx
Scenes [R9]	S.S S.S.A0000, S.S.A0001, S.S.A0002, S.S.A0003, S.S.A0004, S.S.Afffd S.S.C00.Rsp, S.S.C01.Rsp, S.S.C02.Rsp, S.S.C03.Rsp, S.S.C04.Rsp, S.S.C05.Rsp, S.S.C06.Rsp, S.S.C40.Rsp, S.S.C41.Rsp, S.S.C42.Rsp S.S.C00.Tx, S.S.C01.Tx, S.S.C02.Tx, S.S.C03.Tx, S.S.C04.Tx, S.S.C06.Tx, S.S.C40.Tx, S.S.C41.Tx, S.S.C42.Tx
On/off [R10]	OO.S OO.S.A0000, OO.S.A4000, OO.S.A4001, OO.S.A4002, OO.S.A4003, OO.S.Afffd OO.S.C00.Rsp, OO.S.C01.Rsp, OO.S.C02.Rsp, OO.S.C40.Rsp, OO.S.C41.Rsp, OO.S.C42.Rsp
Level Control [R11]	LC.S LC.S.A0000, LC.S.A0001, LC.S.A000f, LC.S.A4000, LC.S.Afffd LC.S.C00.Rsp, LC.S.C01.Rsp, LC.S.C02.Rsp, LC.S.C03.Rsp, LC.S.C04.Rsp, LC.S.C05.Rsp, LC.S.C06.Rsp, LC.S.C07.Rsp
Color Control [R12]	CC.S CC.S.A0000, CC.S.A0001, CC.S.A0002, CC.S.A0003, CC.S.A0004, C.S.A0008, CC.S.A000f, CC.S.A0010, CC.S.A4000, CC.S.A4001, CC.S.A4002, CC.S.A4003, CC.S.A4004, CC.S.A4005, CC.S.A4006, CC.S.A400a, CC.S.Afffd CC.S.C00.Rsp, CC.S.C01.Rsp, CC.S.C02.Rsp, CC.S.C03.Rsp, CC.S.C04.Rsp, CC.S.C05.Rsp, CC.S.C06.Rsp, CC.S.C07.Rsp, CC.S.C08.Rsp, CC.S.C09.Rsp, CC.S.C40.Rsp, CC.S.C41.Rsp, CC.S.C42.Rsp, CC.S.C43.Rsp, CC.S.C44.Rsp, CC.S.C47.Rsp

585

586

587

588 9 On/off light switch

589 The on/off light switch is a controller device that, when bound to a lighting device such as an on/off
590 light, can be used to switch the device on or off. The on/off light switch may also be configured when
591 bound to a suitable configuration device.

592 9.1 Device configuration

593 When the on/off light switch device type is implemented on an endpoint, the following configurations
594 apply:

- 595 • The *application device version* field of the corresponding simple descriptor SHALL be set to
596 0x1.
- 597 • The device class SHALL be *simple*.
- 598 • The device SHALL implement a finding & binding *initiator*.

599 9.2 Supported clusters

600 The on/off light switch device SHALL support the mandatory clusters and MAY support the
601 recommended optional clusters listed in Figure 4.
602

On/off light switch [Device ID: 0x0103]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	On/off: 0x0006
Recommended optional	0x0007: On/off switch configuration	Groups: 0x0004
		Scenes: 0x0005
		OTA upgrade: 0x0019

603 Figure 4 – Clusters supported by the on/off switch device type

604

605 9.2.1 Required attributes

606 An on/off light switch device SHALL support the attributes listed in Table 11.
607

608

Table 11 – Mandatory attributes for an on/off light switch

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

609

610 9.2.2 Required commands received

611 An on/off light switch device SHALL be able to receive and process the commands listed in Table 12.

612

613

Table 12 – Mandatory commands received by an on/off light switch

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect

614

615 9.2.3 Commands generated

616 An on/off light switch device SHALL generate the commands indicated with an asterisk (*) and MAY
617 generate any of the other commands listed in Table 13.

618

619

Table 13 – Commands generated by an on/off light switch

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB
On/off (C)	0x00	Off	-	UGB
On/off (C)	0x01	On	-	UGB
On/off (C)	0x02	Toggle	-	UGB
On/off (C)	0x40	Off with effect	-	UGB
On/off (C)	0x41	On with recall global scene	-	UGB
On/off (C)	0x42	On with timed off	-	UGB

620

621 **9.3 PICS**

622 The following PICS SHALL be supported for this device. Note that a device MAY support other
 623 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx, I.C.C01.Tx
On/off [R10]	OO.C OO.C.Afffd

624

625 10 Dimmer switch

626 The dimmer switch is a controller device that, when bound to a lighting device such as a dimmable
627 light, can be used to switch the device on or off and adjust the intensity of the light being emitted. The
628 dimmer switch may also be configured when bound to a suitable configuration device.

629 10.1 Device configuration

630 When the dimmer switch device type is implemented on an endpoint, the following configurations
631 apply:

- 632 • The *application device version* field of the corresponding simple descriptor SHALL be set to
633 0x1.
- 634 • The device class SHALL be *simple*.
- 635 • The device SHALL implement a finding & binding *initiator*.

636 10.2 Supported clusters

637 The dimmer switch device SHALL support the mandatory clusters and MAY support the
638 recommended optional clusters listed in Figure 5.

639

Dimmer switch [Device ID: 0x0104]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	On/off: 0x0006
		Level control: 0x0008
Recommended optional	0x0007: On/off switch configuration	Groups: 0x0004
		Scenes: 0x0005
		OTA upgrade: 0x0019

640 **Figure 5 – Clusters supported by the dimmer switch device type**

641 10.2.1 Required attributes

642 A dimmer switch device SHALL support the attributes listed in Table 14.

643

644 **Table 14 – Mandatory attributes for a dimmer switch**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

645

646 **10.2.2 Required commands received**

647 A dimmer switch device SHALL be able to receive and process the commands listed in Table 15.

648

649

Table 15 – Mandatory commands received by a dimmer switch

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect

650

651 **10.2.3 Commands generated**652 A dimmer switch device SHALL generate the commands indicated with an asterisk (*) and MAY
653 generate any of the other commands listed in Table 16.

654

655

Table 16 – Commands generated by a dimmer switch

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB
On/off (C)	0x00	Off	-	UGB
On/off (C)	0x01	On	-	UGB
On/off (C)	0x02	Toggle	-	UGB
On/off (C)	0x40	Off with effect	-	UGB
On/off (C)	0x41	On with recall global scene	-	UGB
On/off (C)	0x42	On with timed off	-	UGB

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Level control (C)	0x00	Move to level	-	UGB
Level control (C)	0x01	Move	-	UGB
Level control (C)	0x02	Step	-	UGB
Level control (C)	0x03	Stop	-	UGB
Level control (C)	0x04	Move to level (with on/off)	-	UGB
Level control (C)	0x05	Move (with on/off)	-	UGB
Level control (C)	0x06	Step (with on/off)	-	UGB
Level control (C)	0x07	Stop (with on/off)	-	UGB

656

657

658 **10.3 PICS**

659 The following PICS SHALL be supported for this device. Note that a device MAY support other
 660 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx, I.C.C01.Tx
On/off [R10]	OO.C OO.C.Afffd
Level Control [R11]	LC.C LC.C.Afffd

661

662 11 Color dimmer switch

663 The color dimmer switch is a controller device that, when bound to a lighting device such as a color
664 light, can be used to adjust the color of the light being emitted. The color dimmer switch may also be
665 configured when bound to a suitable configuration device.

666 11.1 Device configuration

667 When the color dimmer switch device type is implemented on an endpoint, the following
668 configurations apply:

- 669 • The *application device version* field of the corresponding simple descriptor SHALL be set to
670 0x1.
- 671 • The device class SHALL be *simple*.
- 672 • The device SHALL implement a finding & binding *initiator*.

673 11.2 Supported clusters

674 The color dimmer switch device SHALL support the mandatory clusters and MAY support the
675 recommended optional clusters listed in Figure 6.

676

Color dimmer switch [Device ID: 0x0105]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	On/off: 0x0006
		Level control: 0x0008
		Color control: 0x0300
Recommended optional	0x0007: On/off switch configuration	Groups: 0x0004
		Scenes: 0x0005
		OTA upgrade: 0x0019

677

Figure 6 – Clusters supported by the color dimmer switch device type

678 11.2.1 Required attributes

679 A color dimmer switch device SHALL support the attributes listed in Table 17.

680

681

Table 17 – Mandatory attributes for a color dimmer switch

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

682

683 **11.2.2 Required commands received**

684 A color dimmer switch device SHALL be able to receive and process the commands listed in Table 18.

685

686 **Table 18 – Mandatory commands received by a color dimmer switch**

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect

687

688 **11.2.3 Commands generated**689 A color dimmer switch device SHALL generate the commands indicated with an asterisk (*) and MAY
690 generate any of the other commands listed in Table 19.

691

692 **Table 19 – Commands generated by a color dimmer switch**

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB
On/off (C)	0x00	Off	-	UGB
On/off (C)	0x01	On	-	UGB
On/off (C)	0x02	Toggle	-	UGB
On/off (C)	0x40	Off with effect	-	UGB
On/off (C)	0x41	On with recall global scene	-	UGB

Cluster	Identifier	Name	On receipt of	Permitted transmissions
On/off (C)	0x42	On with timed off	-	UGB
Level control (C)	0x00	Move to level	-	UGB
Level control (C)	0x01	Move	-	UGB
Level control (C)	0x02	Step	-	UGB
Level control (C)	0x03	Stop	-	UGB
Level control (C)	0x04	Move to level (with on/off)	-	UGB
Level control (C)	0x05	Move (with on/off)	-	UGB
Level control (C)	0x06	Step (with on/off)	-	UGB
Level control (C)	0x07	Stop (with on/off)	-	UGB
Color control (C)	0x00	Move to hue	-	UGB
Color control (C)	0x01	Move hue	-	UGB
Color control (C)	0x02	Step hue	-	UGB
Color control (C)	0x03	Move to saturation	-	UGB
Color control (C)	0x04	Move saturation	-	UGB
Color control (C)	0x05	Step saturation	-	UGB
Color control (C)	0x06	Move to hue and saturation	-	UGB
Color control (C)	0x07	Move to color	-	UGB
Color control (C)	0x08	Move color	-	UGB
Color control (C)	0x09	Step color	-	UGB
Color control (C)	0x0a	Move to color temperature	-	UGB
Color control (C)	0x40	Enhanced move to hue	-	UGB
Color control (C)	0x41	Enhanced move hue	-	UGB
Color control (C)	0x42	Enhanced step hue	-	UGB
Color control (C)	0x43	Enhanced move to hue and saturation	-	UGB
Color control (C)	0x44	Color loop set	-	UGB
Color control (C)	0x47	Stop move step	-	UGB
Color control (C)	0x4b	Move color temperature	-	UGB
Color control (C)	0x4c	Step color temperature	-	UGB

693

694

695 **11.3 PICS**

696 The following PICS SHALL be supported for this device. Note that a device MAY support other
 697 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx, I.C.C01.Tx
On/off [R10]	OO.C OO.C.Afffd
Level Control [R11]	LC.C LC.C.Afffd
Color Control [R12]	CC.C CC.C.Afffd

698

699

700 12 Light sensor

701 The light sensor is a measurement & sensing device that can measure and report the intensity of light
702 being emitted by a light source.

703 12.1 Device configuration

704 When the light sensor device type is implemented on an endpoint, the following configurations apply:

- 705 • The *application device version* field of the corresponding simple descriptor SHALL be set to
706 0x1.
- 707 • The device class SHALL be *simple*.
- 708 • The device SHALL implement a finding & binding *initiator*.

709 12.2 Supported clusters

710 The light sensor device SHALL support the mandatory clusters and MAY support the recommended
711 optional clusters listed in Figure 7.

712

Light sensor [Device ID: 0x0106]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	
	0x0400: Illuminance measurement	
Recommended optional	<i>None</i>	<i>Groups: 0x0004</i>
		<i>OTA upgrade: 0x0019</i>

713

Figure 7 – Clusters supported by the light sensor device type

714 12.2.1 Required attributes

715 A light sensor device SHALL support the attributes listed in Table 20.

716

717

Table 20 – Mandatory attributes for a light sensor

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Illuminance measurement (S)	0x0000	MeasuredValue	✘	✓
Illuminance measurement (S)	0x0001	MinMeasuredValue	✘	-
Illuminance measurement (S)	0x0002	MaxMeasuredValue	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

718

719 **12.2.2 Required commands received**

720 A light sensor device SHALL be able to receive and process the commands listed in Table 21.

721

722

Table 21 – Mandatory commands received by a light sensor

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect

723

724 **12.2.3 Commands generated**725 A light sensor device SHALL generate the commands indicated with an asterisk (*) and MAY generate
726 any of the other commands listed in Table 22.

727

728

Table 22 – Commands generated by a light sensor

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB

729

730

731 **12.3 PICS**

732 The following PICS SHALL be supported for this device. Note that a device MAY support other
 733 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx, I.C.C01.Tx
Illuminance Measurement [R13]	IM.S IM.S.A0000, IM.S.A0001, IM.S.A0002, IM.S.Afffd

734

735 13 Occupancy sensor

736 The occupancy sensor is a measurement & sensing device that can measure and report the occupancy
737 state within some area.

738 13.1 Device configuration

739 When the occupancy sensor device type is implemented on an endpoint, the following configurations
740 apply:

- 741 • The *application device version* field of the corresponding simple descriptor SHALL be set to
742 0x1.
- 743 • The device class SHALL be *simple*.
- 744 • The device SHALL implement a finding & binding *initiator*.

745 13.2 Supported clusters

746 The occupancy sensor device SHALL support the mandatory clusters and MAY support the
747 recommended optional clusters listed in Figure 8.

748

Occupancy sensor [Device ID: 0x0107]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	
	0x0406: Occupancy sensing	
Recommended optional	None	Groups: 0x0004
		OTA upgrade: 0x0019

749 **Figure 8 – Clusters supported by the occupancy sensor device type**

750 13.2.1 Required attributes

751 An occupancy sensor device SHALL support the attributes listed in Table 23.

752

753 **Table 23 – Mandatory attributes for an occupancy sensor**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Occupancy sensing (S)	0x0000	Occupancy	✘	✓
Occupancy sensing (S)	0x0001	OccupancySensorType	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

754

755 **13.2.2 Required commands received**

756 An occupancy sensor device SHALL be able to receive and process the commands listed in Table 24.

757

758

Table 24 – Mandatory commands received by an occupancy sensor

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect

759

760 **13.2.3 Commands generated**761 An occupancy sensor device SHALL generate the commands indicated with an asterisk (*) and MAY
762 generate any of the other commands listed in Table 25.

763

764

Table 25 – Commands generated by an occupancy sensor

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB

765

766

767 **13.3 PICS**

768 The following PICS SHALL be supported for this device. Note that a device MAY support other
 769 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx, I.C.C01.Tx
Occupancy Sensing [R14]	OS.S OS.S.A0000, OS.S.A0001, OS.S.Afffd

770

771

772 **14 On/off ballast**

773 The on/off ballast is a lighting device that can be switched on or off via a bound controller device such
 774 as an on/off light switch. The device can be fully configured when bound to a suitable configuration
 775 device. In addition, it may also be switched via a bound occupancy sensor.

776 **14.1 Device configuration**

777 When the on/off ballast device type is implemented on an endpoint, the following configurations apply:

- 778 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 779 0x1.
- 780 • The device class SHALL be *simple*.
- 781 • The device SHALL implement a finding & binding *target*.

782 **14.2 Supported clusters**

783 The on/off ballast device SHALL support the mandatory clusters and MAY support the recommended
 784 optional clusters listed in Figure 9.

785

On/off ballast [Device ID: 0x0108]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	<i>None</i>
	0x0001: Power configuration	
	0x0002: Device temperature configuration	
	0x0003: Identify	
	0x0004: Groups	
	0x0005: Scenes	
	0x0006: On/off	
	0x0301: Ballast configuration	
Recommended optional	0x0008: <i>Level control</i>	<i>OTA upgrade: 0x0019</i>
	0x0401: <i>Illuminance level sensing</i>	<i>Illuminance measurement: 0x0400</i>
	0x1000: <i>Touchlink commissioning</i>	<i>Illuminance level sensing: 0x0401</i>
		<i>Occupancy sensing: 0x0406</i>

786

Figure 9 – Clusters supported by the on/off ballast device type

787

788 For this device, since its only states are on or off, if the *level control* cluster is implemented, it SHALL
 789 not have any effect on the actual light level except for those commands that cause an on/off state change,
 790 i.e. the “with on/off” commands. The device SHALL accept and process *level control* cluster commands,
 791 adjusting the value of the *CurrentLevel* attribute accordingly and, where necessary, adjusting the *on/off*
 792 cluster *OnOff* attribute as described in [R1]. The inclusion of the *level control* cluster on this device is
 793 required to provide a consistent user experience when the device is grouped with additional dimmable
 794 lights and the “with on/off” commands are used.

795 **14.2.1 Required attributes**

796 An on/off ballast device SHALL support the attributes listed in Table 26.

797

798

Table 26 – Mandatory attributes for an on/off ballast

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Groups (S)	0x0000	NameSupport	✘	-
Device temperature configuration (S)	0x0000	CurrentTemperature	✘	-
Scenes (S)	0x0000	SceneCount	✘	-
Scenes (S)	0x0001	CurrentScene	✘	-
Scenes (S)	0x0002	CurrentGroup	✘	-
Scenes (S)	0x0003	SceneValid	✘	-
Scenes (S)	0x0004	NameSupport	✘	-
On/off (S)	0x0000	OnOff	✓	✓
On/off (S)	0x4000	GlobalSceneControl	✘	-
On/off (S)	0x4001	OnTime	✘	-
On/off (S)	0x4002	OffWaitTime	✘	-
On/off (S)	0x4003	StartUpOnOff	✘	-
Ballast configuration (S)	0x0002	BallastStatus	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

799

800 In addition, an on/off ballast device SHALL support either or both the *mains information* OR the
801 *battery information* attributes sets of the power configuration cluster.

802 **14.2.2 Required commands received**

803 An on/off ballast device SHALL be able to receive and process the commands listed in Table 27.
804

805 **Table 27 – Mandatory commands received by an on/off ballast**

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect
Groups (S)	0x00	Add group
Groups (S)	0x01	View group
Groups (S)	0x02	Get group membership
Groups (S)	0x03	Remove group
Groups (S)	0x04	Remove all groups
Groups (S)	0x05	Add group if identifying
Scenes (S)	0x00	Add scene
Scenes (S)	0x01	View scene
Scenes (S)	0x02	Remove scene
Scenes (S)	0x03	Remove all scenes
Scenes (S)	0x04	Store scene
Scenes (S)	0x05	Recall scene
Scenes (S)	0x06	Get scene membership
Scenes (S)	0x40	Enhanced add scene
Scenes (S)	0x41	Enhanced view scene
Scenes (S)	0x42	Copy scene
On/off (S)	0x00	Off
On/off (S)	0x01	On
On/off (S)	0x02	Toggle
On/off (S)	0x40	Off with effect
On/off (S)	0x41	On with recall global scene
On/off (S)	0x42	On with timed off

806

807 **14.2.3 Required commands generated**

808 An on/off ballast device SHALL be able to generate the commands listed in Table 28.
809

810

Table 28 – Mandatory commands generated by an on/off ballast

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response	Identify query	U--
Groups (S)	0x00	Add group response	Add group	U--
Groups (S)	0x01	View group response	View group	U--
Groups (S)	0x02	Get group membership response	Get group membership	U--
Groups (S)	0x03	Remove group response	Remove group	U--
Scenes (S)	0x00	Add scene response	Add scene	U--
Scenes (S)	0x01	View scene response	View scene	U--
Scenes (S)	0x02	Remove scene response	Remove scene	U--
Scenes (S)	0x03	Remove all scenes response	Remove all scenes	U--
Scenes (S)	0x04	Store scene response	Store scene	U--
Scenes (S)	0x06	Get scene membership response	Get scene membership	U--
Scenes (S)	0x40	Enhanced add scene response	Enhanced add scene	U--
Scenes (S)	0x41	Enhanced view scene response	Enhanced view scene	U--
Scenes (S)	0x42	Copy scene response	Copy scene	U--

811

812

813 **14.3 PICS**

814 The following PICS items SHALL be supported for this device. Note that a device MAY support other
 815 optional PICS items.

Cluster	PICS item
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Power Configuration	PC.S
Device Temperature Configuration	DTC.S DTC.S.A0000, DTC.S.Afffd
Identify [R7]	I.S I.S.A0000, I.S.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx
Groups [R8]	G.S G.S.A0000, G.S.Afffd G.S.C00.Rsp, G.S.C01.Rsp, G.S.C02.Rsp, G.S.C03.Rsp, G.S.C04.Rsp, G.S.C05.Rsp G.S.C00.Tx, G.S.C01.Tx, G.S.C02.Tx, G.S.C03.Tx
Scenes [R9]	S.S S.S.A0000, S.S.A0001, S.S.A0002, S.S.A0003, S.S.A0004, S.S.Afffd S.S.C00.Rsp, S.S.C01.Rsp, S.S.C02.Rsp, S.S.C03.Rsp, S.S.C04.Rsp, S.S.C05.Rsp, S.S.C06.Rsp, S.S.C40.Rsp, S.S.C41.Rsp, S.S.C42.Rsp S.S.C00.Tx, S.S.C01.Tx, S.S.C02.Tx, S.S.C03.Tx, S.S.C04.Tx, S.S.C06.Tx, S.S.C40.Tx, S.S.C41.Tx, S.S.C42.Tx
On/off [R10]	OO.S OO.S.A0000, OO.S.A4000, OO.S.A4001, OO.S.A4002, OO.S.A4003, OO.S.Afffd OO.S.C00.Rsp, OO.S.C01.Rsp, OO.S.C02.Rsp, OO.S.C40.Rsp, OO.S.C41.Rsp, OO.S.C42.Rsp
Ballast Configuration	BC.S BC.S.A0002, BC.S.Afffd

816

817 **15 Dimmable ballast**

818 The dimmable ballast is a lighting device that can be switched on or off and the intensity of its light
 819 adjusted via a bound controller device such as a dimmer switch. The device can be fully configured
 820 when bound to a suitable configuration device. In addition, it may also be switched via a bound
 821 occupancy sensor.

822 **15.1 Device configuration**

823 When the dimmable ballast device type is implemented on an endpoint, the following configurations
 824 apply:

- 825 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 826 0x1.
- 827 • The device class SHALL be *simple*.
- 828 • The device SHALL implement a finding & binding *target*.
- 829 • The minimum light level SHALL be 0x01 and the maximum light level SHALL be 0xfe.

830 **15.2 Supported clusters**

831 The dimmable ballast device SHALL support the mandatory clusters and MAY support the
 832 recommended optional clusters listed in Figure 10.

833

Dimmable ballast [Device ID: 0x0109]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	<i>None</i>
	0x0001: Power configuration	
	0x0002: Device temperature configuration	
	0x0003: Identify	
	0x0004: Groups	
	0x0005: Scenes	
	0x0006: On/off	
	0x0008: Level control	
	0x0301: Ballast configuration	
Recommended optional	0x0401: Illuminance level sensing	<i>OTA upgrade: 0x0019</i>
	0x1000: Touchlink commissioning	<i>Illuminance measurement: 0x0400</i>
		<i>Illuminance level sensing: 0x0401</i>
		<i>Occupancy sensing: 0x0406</i>

834 **Figure 10 – Clusters supported by the dimmable ballast device type**

835 **15.2.1 Required attributes**

836 A dimmable ballast device SHALL support the attributes listed in Table 29.

837

838

Table 29 – Mandatory attributes for a dimmable ballast

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Groups (S)	0x0000	NameSupport	✘	-
Device temperature configuration (S)	0x0000	CurrentTemperature	✘	-
Scenes (S)	0x0000	SceneCount	✘	-
Scenes (S)	0x0001	CurrentScene	✘	-
Scenes (S)	0x0002	CurrentGroup	✘	-
Scenes (S)	0x0003	SceneValid	✘	-
Scenes (S)	0x0004	NameSupport	✘	-
On/off (S)	0x0000	OnOff	✓	✓
On/off (S)	0x4000	GlobalSceneControl	✘	-
On/off (S)	0x4001	OnTime	✘	-
On/off (S)	0x4002	OffWaitTime	✘	-
On/off (S)	0x4003	StartUpOnOff	✘	-
Level control (S)	0x0000	CurrentLevel	✓	✓
Level control (S)	0x0001	RemainingTime	✘	-
Level control (S)	0x000f	Options	✘	-
Level control (S)	0x4000	StartUpCurrentLevel	✘	-
Ballast configuration (S)	0x0002	BallastStatus	✘	-

Cluster	Identifier	Name	Scene table	Reportable
All supported clusters (S&C)	0xfffd	ClusterRevision	x	-

839

840 In addition, an on/off ballast device SHALL support either or both the *mains information* OR the
841 *battery information* attributes sets of the power configuration cluster.

842 15.2.2 Required commands received

843 A dimmable ballast device SHALL be able to receive and process the commands listed in Table 30.

844

845

Table 30 – Mandatory commands received by a dimmable ballast

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect
Groups (S)	0x00	Add group
Groups (S)	0x01	View group
Groups (S)	0x02	Get group membership
Groups (S)	0x03	Remove group
Groups (S)	0x04	Remove all groups
Groups (S)	0x05	Add group if identifying
Scenes (S)	0x00	Add scene
Scenes (S)	0x01	View scene
Scenes (S)	0x02	Remove scene
Scenes (S)	0x03	Remove all scenes
Scenes (S)	0x04	Store scene
Scenes (S)	0x05	Recall scene
Scenes (S)	0x06	Get scene membership
Scenes (S)	0x40	Enhanced add scene
Scenes (S)	0x41	Enhanced view scene
Scenes (S)	0x42	Copy scene
On/off (S)	0x00	Off
On/off (S)	0x01	On
On/off (S)	0x02	Toggle
On/off (S)	0x40	Off with effect
On/off (S)	0x41	On with recall global scene
On/off (S)	0x42	On with timed off
Level control (S)	0x00	Move to level

Cluster	Identifier	Name
Level control (S)	0x01	Move
Level control (S)	0x02	Step
Level control (S)	0x03	Stop
Level control (S)	0x04	Move to level (with on/off)
Level control (S)	0x05	Move (with on/off)
Level control (S)	0x06	Step (with on/off)
Level control (S)	0x07	Stop (with on/off)

846

847 **15.2.3 Required commands generated**

848 A dimmable ballast device SHALL be able to generate the commands listed in Table 31.

849

850

Table 31 – Mandatory commands generated by a dimmable ballast

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response	Identify query	U--
Groups (S)	0x00	Add group response	Add group	U--
Groups (S)	0x01	View group response	View group	U--
Groups (S)	0x02	Get group membership response	Get group membership	U--
Groups (S)	0x03	Remove group response	Remove group	U--
Scenes (S)	0x00	Add scene response	Add scene	U--
Scenes (S)	0x01	View scene response	View scene	U--
Scenes (S)	0x02	Remove scene response	Remove scene	U--
Scenes (S)	0x03	Remove all scenes response	Remove all scenes	U--
Scenes (S)	0x04	Store scene response	Store scene	U--
Scenes (S)	0x06	Get scene membership response	Get scene membership	U--
Scenes (S)	0x40	Enhanced add scene response	Enhanced add scene	U--
Scenes (S)	0x41	Enhanced view scene response	Enhanced view scene	U--
Scenes (S)	0x42	Copy scene response	Copy scene	U--

851

852

853 **15.3 PICS**

854 The following PICS items SHALL be supported for this device. Note that a device MAY support other
 855 optional PICS items.

Cluster	PICS item
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Power Configuration	PC.S
Device Temperature Configuration	DTC.S DTC.S.A0000, DTC.S.Afffd
Identify [R7]	I.S I.S.A0000, I.S.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx
Groups [R8]	G.S G.S.A0000, G.S.Afffd G.S.C00.Rsp, G.S.C01.Rsp, G.S.C02.Rsp, G.S.C03.Rsp, G.S.C04.Rsp, G.S.C05.Rsp G.S.C00.Tx, G.S.C01.Tx, G.S.C02.Tx, G.S.C03.Tx
Scenes [R9]	S.S S.S.A0000, S.S.A0001, S.S.A0002, S.S.A0003, S.S.A0004, S.S.Afffd S.S.C00.Rsp, S.S.C01.Rsp, S.S.C02.Rsp, S.S.C03.Rsp, S.S.C04.Rsp, S.S.C05.Rsp, S.S.C06.Rsp, S.S.C40.Rsp, S.S.C41.Rsp, S.S.C42.Rsp S.S.C00.Tx, S.S.C01.Tx, S.S.C02.Tx, S.S.C03.Tx, S.S.C04.Tx, S.S.C06.Tx, S.S.C40.Tx, S.S.C41.Tx, S.S.C42.Tx
On/off [R10]	OO.S OO.S.A0000, OO.S.A4000, OO.S.A4001, OO.S.A4002, OO.S.A4003, OO.S.Afffd OO.S.C00.Rsp, OO.S.C01.Rsp, OO.S.C02.Rsp, OO.S.C40.Rsp, OO.S.C41.Rsp, OO.S.C42.Rsp
Level Control [R11]	LC.S LC.S.A0000, LC.S.A0001, LC.S.A000f, LC.S.A4000, LC.S.Afffd LC.S.C00.Rsp, LC.S.C01.Rsp, LC.S.C02.Rsp, LC.S.C03.Rsp, LC.S.C04.Rsp, LC.S.C05.Rsp, LC.S.C06.Rsp, LC.S.C07.Rsp
Ballast Configuration	BC.S BC.S.A0002, BC.S.Afffd

856

857

858 16 On/off plug-in unit

859 The on/off plug-in unit is a device that can be switched on or off via a bound controller device such as
860 an on/off light switch or a non-color controller. The device may then have a non-ZigBee-enabled light
861 attached to it.

862 16.1 Device configuration

863 When the on/off plug-in unit device type is implemented on an endpoint, the following configurations
864 apply:

- 865 • The *application device version* field of the corresponding simple descriptor SHALL be set to
866 0x1.
- 867 • The device class SHALL be *simple*.
- 868 • The device SHALL implement a finding & binding *target*.

869 16.2 Supported clusters

870 The on/off plug-in unit device SHALL support the mandatory clusters and MAY support the
871 recommended optional clusters listed in Figure 11.

872

On/off plug-in unit [Device ID: 0x010a]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	<i>None</i>
	0x0003: Identify	
	0x0004: Groups	
	0x0005: Scenes	
	0x0006: On/off	
Recommended optional	0x0008: <i>Level control</i>	<i>OTA upgrade: 0x0019</i>

873

Figure 11 – Clusters supported by the on/off plug-in unit device type

874

875 For this device, since its only states are on or off, if the *level control* cluster is implemented, it SHALL
876 not have any effect on the actual light level except for those commands that cause an on/off state change,
877 i.e. the “with on/off” commands. The device SHALL accept and process *level control* cluster commands,
878 adjusting the value of the *CurrentLevel* attribute accordingly and, where necessary, adjusting the *on/off*
879 cluster *OnOff* attribute as described in [R1]. The inclusion of the *level control* cluster on this device is
880 required to provide a consistent user experience when the device is grouped with additional dimmable
881 lights and the “with on/off” commands are used.

882 16.2.1 Required attributes

883 An on/off plug-in unit device SHALL support the attributes listed in Table 32.

884

885 **Table 32 – Mandatory attributes for an on/off plug-in unit**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Groups (S)	0x0000	NameSupport	✘	-
Scenes (S)	0x0000	SceneCount	✘	-
Scenes (S)	0x0001	CurrentScene	✘	-
Scenes (S)	0x0002	CurrentGroup	✘	-
Scenes (S)	0x0003	SceneValid	✘	-
Scenes (S)	0x0004	NameSupport	✘	-
On/off (S)	0x0000	OnOff	✓	✓
On/off (S)	0x4000	GlobalSceneControl	✘	-
On/off (S)	0x4001	OnTime	✘	-
On/off (S)	0x4002	OffWaitTime	✘	-
On/off (S)	0x4003	StartUpOnOff	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

886

887 **16.2.2 Required commands received**

888 An on/off plug-in unit device SHALL be able to receive and process the commands listed in Table 33.

889

890

Table 33 – Mandatory commands received by an on/off plug-in unit

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query

Cluster	Identifier	Name
Identify (S)	0x40	Trigger effect
Groups (S)	0x00	Add group
Groups (S)	0x01	View group
Groups (S)	0x02	Get group membership
Groups (S)	0x03	Remove group
Groups (S)	0x04	Remove all groups
Groups (S)	0x05	Add group if identifying
Scenes (S)	0x00	Add scene
Scenes (S)	0x01	View scene
Scenes (S)	0x02	Remove scene
Scenes (S)	0x03	Remove all scenes
Scenes (S)	0x04	Store scene
Scenes (S)	0x05	Recall scene
Scenes (S)	0x06	Get scene membership
Scenes (S)	0x40	Enhanced add scene
Scenes (S)	0x41	Enhanced view scene
Scenes (S)	0x42	Copy scene
On/off (S)	0x00	Off
On/off (S)	0x01	On
On/off (S)	0x02	Toggle
On/off (S)	0x40	Off with effect
On/off (S)	0x41	On with recall global scene
On/off (S)	0x42	On with timed off

891

892 **16.2.3 Required commands generated**

893 An on/off plug-in unit device SHALL be able to generate the commands listed in Table 34.

894

895

Table 34 – Mandatory commands generated by an on/off plug-in unit

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response	Identify query	U--
Groups (S)	0x00	Add group response	Add group	U--
Groups (S)	0x01	View group response	View group	U--
Groups (S)	0x02	Get group membership response	Get group membership	U--
Groups (S)	0x03	Remove group response	Remove group	U--

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Scenes (S)	0x00	Add scene response	Add scene	U--
Scenes (S)	0x01	View scene response	View scene	U--
Scenes (S)	0x02	Remove scene response	Remove scene	U--
Scenes (S)	0x03	Remove all scenes response	Remove all scenes	U--
Scenes (S)	0x04	Store scene response	Store scene	U--
Scenes (S)	0x06	Get scene membership response	Get scene membership	U--
Scenes (S)	0x40	Enhanced add scene response	Enhanced add scene	U--
Scenes (S)	0x41	Enhanced view scene response	Enhanced view scene	U--
Scenes (S)	0x42	Copy scene response	Copy scene	U--

896

897

898 **16.3 PICS**

899 The following PICS items SHALL be supported for this device. Note that a device MAY support other
900 optional PICS items.

Cluster	PICS item
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S I.S.A0000, I.S.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx
Groups [R8]	G.S G.S.A0000, G.S.Afffd G.S.C00.Rsp, G.S.C01.Rsp, G.S.C02.Rsp, G.S.C03.Rsp, G.S.C04.Rsp, G.S.C05.Rsp G.S.C00.Tx, G.S.C01.Tx, G.S.C02.Tx, G.S.C03.Tx
Scenes [R9]	S.S S.S.A0000, S.S.A0001, S.S.A0002, S.S.A0003, S.S.A0004, S.S.Afffd S.S.C00.Rsp, S.S.C01.Rsp, S.S.C02.Rsp, S.S.C03.Rsp, S.S.C04.Rsp, S.S.C05.Rsp, S.S.C06.Rsp, S.S.C40.Rsp, S.S.C41.Rsp, S.S.C42.Rsp S.S.C00.Tx, S.S.C01.Tx, S.S.C02.Tx, S.S.C03.Tx, S.S.C04.Tx, S.S.C06.Tx, S.S.C40.Tx, S.S.C41.Tx, S.S.C42.Tx
On/off [R10]	OO.S OO.S.A0000, OO.S.A4000, OO.S.A4001, OO.S.A4002, OO.S.A4003, OO.S.Afffd OO.S.C00.Rsp, OO.S.C01.Rsp, OO.S.C02.Rsp, OO.S.C40.Rsp, OO.S.C41.Rsp, OO.S.C42.Rsp

901

902

903 **17 Dimmable plug-in unit**

904 The dimmable plug-in unit is a device that can be switched on or off and have its level adjusted via a
 905 bound controller device such as a dimmer switch or a non-color controller. The device may then have
 906 a non-ZigBee-enable light attached to it.

907 **17.1 Device configuration**

908 When the dimmable plug-in unit device type is implemented on an endpoint, the following
 909 configurations apply:

- 910 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 911 0x1.
- 912 • The device class SHALL be *simple*.
- 913 • The device SHALL implement a finding & binding *target*.
- 914 • The minimum light level SHALL be 0x01 and the maximum light level SHALL be 0xfe.

915 **17.2 Supported clusters**

916 The dimmable plug-in unit device SHALL support the mandatory clusters and MAY support the
 917 recommended optional clusters listed in Figure 12.

918

Dimmable plug-in unit [Device ID: 0x010b]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	<i>None</i>
	0x0003: Identify	
	0x0004: Groups	
	0x0005: Scenes	
	0x0006: On/off	
	0x0008: Level control	
Recommended optional	<i>None</i>	<i>OTA upgrade: 0x0019</i>

919 **Figure 12 – Clusters supported by the dimmable plug-in unit device type**

920

921 **17.2.1 Required attributes**

922 A dimmable plug-in unit device SHALL support the attributes listed in Table 35.

923

924 **Table 35 – Mandatory attributes for a dimmable plug-in unit**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Groups (S)	0x0000	NameSupport	✘	-
Scenes (S)	0x0000	SceneCount	✘	-
Scenes (S)	0x0001	CurrentScene	✘	-
Scenes (S)	0x0002	CurrentGroup	✘	-
Scenes (S)	0x0003	SceneValid	✘	-
Scenes (S)	0x0004	NameSupport	✘	-
On/off (S)	0x0000	OnOff	✓	✓
On/off (S)	0x4000	GlobalSceneControl	✘	-
On/off (S)	0x4001	OnTime	✘	-
On/off (S)	0x4002	OffWaitTime	✘	-
On/off (S)	0x4003	StartUpOnOff	✘	-
Level control (S)	0x0000	CurrentLevel	✓	✓
Level control (S)	0x0001	RemainingTime	✘	-
Level control (S)	0x000f	Options	✘	-
Level control (S)	0x4000	StartUpCurrentLevel	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

925

926 17.2.2 Required commands received

927 A dimmable plug-in unit device SHALL be able to receive and process the commands listed in Table
928 36.

929

930

Table 36 – Mandatory commands received by a dimmable plug-in unit

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect
Groups (S)	0x00	Add group
Groups (S)	0x01	View group
Groups (S)	0x02	Get group membership
Groups (S)	0x03	Remove group
Groups (S)	0x04	Remove all groups
Groups (S)	0x05	Add group if identifying
Scenes (S)	0x00	Add scene
Scenes (S)	0x01	View scene
Scenes (S)	0x02	Remove scene
Scenes (S)	0x03	Remove all scenes
Scenes (S)	0x04	Store scene
Scenes (S)	0x05	Recall scene
Scenes (S)	0x06	Get scene membership
Scenes (S)	0x40	Enhanced add scene
Scenes (S)	0x41	Enhanced view scene
Scenes (S)	0x42	Copy scene
On/off (S)	0x00	Off
On/off (S)	0x01	On
On/off (S)	0x02	Toggle
On/off (S)	0x40	Off with effect
On/off (S)	0x41	On with recall global scene
On/off (S)	0x42	On with timed off
Level control (S)	0x00	Move to level
Level control (S)	0x01	Move
Level control (S)	0x02	Step
Level control (S)	0x03	Stop
Level control (S)	0x04	Move to level (with on/off)
Level control (S)	0x05	Move (with on/off)
Level control (S)	0x06	Step (with on/off)
Level control (S)	0x07	Stop (with on/off)

931

932 **17.2.3 Required commands generated**

933 A dimmable plug-in unit device SHALL be able to generate the commands listed in Table 37.

934

935 **Table 37 – Mandatory commands generated by a dimmable plug-in unit**

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response	Identify query	U--
Groups (S)	0x00	Add group response	Add group	U--
Groups (S)	0x01	View group response	View group	U--
Groups (S)	0x02	Get group membership response	Get group membership	U--
Groups (S)	0x03	Remove group response	Remove group	U--
Scenes (S)	0x00	Add scene response	Add scene	U--
Scenes (S)	0x01	View scene response	View scene	U--
Scenes (S)	0x02	Remove scene response	Remove scene	U--
Scenes (S)	0x03	Remove all scenes response	Remove all scenes	U--
Scenes (S)	0x04	Store scene response	Store scene	U--
Scenes (S)	0x06	Get scene membership response	Get scene membership	U--
Scenes (S)	0x40	Enhanced add scene response	Enhanced add scene	U--
Scenes (S)	0x41	Enhanced view scene response	Enhanced view scene	U--
Scenes (S)	0x42	Copy scene response	Copy scene	U--

936

937

938 **17.3 PICS**

939 The following PICS SHALL be supported for this device. Note that a device MAY support other
 940 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S I.S.A0000, I.S.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx
Groups [R8]	G.S G.S.A0000, G.S.Afffd G.S.C00.Rsp, G.S.C01.Rsp, G.S.C02.Rsp, G.S.C03.Rsp, G.S.C04.Rsp, G.S.C05.Rsp G.S.C00.Tx, G.S.C01.Tx, G.S.C02.Tx, G.S.C03.Tx
Scenes [R9]	S.S S.S.A0000, S.S.A0001, S.S.A0002, S.S.A0003, S.S.A0004, S.S.Afffd S.S.C00.Rsp, S.S.C01.Rsp, S.S.C02.Rsp, S.S.C03.Rsp, S.S.C04.Rsp, S.S.C05.Rsp, S.S.C06.Rsp, S.S.C40.Rsp, S.S.C41.Rsp, S.S.C42.Rsp S.S.C00.Tx, S.S.C01.Tx, S.S.C02.Tx, S.S.C03.Tx, S.S.C04.Tx, S.S.C06.Tx, S.S.C40.Tx, S.S.C41.Tx, S.S.C42.Tx
On/off [R10]	OO.S OO.S.A0000, OO.S.A4000, OO.S.A4001, OO.S.A4002, OO.S.A4003, OO.S.Afffd OO.S.C00.Rsp, OO.S.C01.Rsp, OO.S.C02.Rsp, OO.S.C40.Rsp, OO.S.C41.Rsp, OO.S.C42.Rsp
Level Control [R11]	LC.S LC.S.A0000, LC.S.A0001, LC.S.A000f, LC.S.A4000, LC.S.Afffd LC.S.C00.Rsp, LC.S.C01.Rsp, LC.S.C02.Rsp, LC.S.C03.Rsp, LC.S.C04.Rsp, LC.S.C05.Rsp, LC.S.C06.Rsp, LC.S.C07.Rsp

941

942

943 **18 Color temperature light**

944 The color temperature light is a lighting device that can be switched on or off, the intensity of its light
 945 adjusted and its color adjusted via a bound controller device such as a color controller. The device
 946 supports adjustment of color via color temperature.

947 **18.1 Device configuration**

948 When the color temperature device type is implemented on an endpoint, the following configurations
 949 apply:

- 950 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 951 0x1.
- 952 • The device class SHALL be *simple*.
- 953 • The device SHALL implement a finding & binding *target*.
- 954 • The minimum light level SHALL be 0x01 and the maximum light level SHALL be 0xfe.

955 **18.2 Supported clusters**

956 The color temperature light device SHALL support the mandatory clusters and MAY support the
 957 recommended optional clusters listed in Figure 13.

958

Color temperature light [Device ID: 0x010c]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	<i>None</i>
	0x0003: Identify	
	0x0004: Groups	
	0x0005: Scenes	
	0x0006: On/off	
	0x0008: Level control	
	0x0300: Color control	
Recommended optional	0x1000: Touchlink commissioning	<i>OTA upgrade: 0x0019</i>

959 **Figure 13 – Clusters supported by the color temperature light device type**

960

961 **18.2.1 Required attributes**

962 A color temperature light device SHALL support the attributes listed in Table 38.

963

964 **Table 38 – Mandatory attributes for a color temperature light**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Groups (S)	0x0000	NameSupport	✘	-
Scenes (S)	0x0000	SceneCount	✘	-
Scenes (S)	0x0001	CurrentScene	✘	-
Scenes (S)	0x0002	CurrentGroup	✘	-
Scenes (S)	0x0003	SceneValid	✘	-
Scenes (S)	0x0004	NameSupport	✘	-
On/off (S)	0x0000	OnOff	✓	✓
On/off (S)	0x4000	GlobalSceneControl	✘	-
On/off (S)	0x4001	OnTime	✘	-
On/off (S)	0x4002	OffWaitTime	✘	-
On/off (S)	0x4003	StartUpOnOff	✘	-
Level control (S)	0x0000	CurrentLevel	✓	✓
Level control (S)	0x0001	RemainingTime	✘	-
Level control (S)	0x000f	Options	✘	-
Level control (S)	0x4000	StartUpCurrentLevel	✘	-
Color control (S)	0x0002	RemainingTime	✘	-
Color control (S)	0x0007	ColorTemperature	✓	✓
Color control (S)	0x0008	ColorMode	✘	-
Color control (S)	0x000f	Options	✘	-
Color control (S)	0x0010	NumberOfPrimaries ⁴	✘	-

⁴ A device SHALL also support the attributes Primary*i*X, Primary*i*Y and Primary*i*Intensity, where *i* is in the range from 1 to the value of NumberOfPrimaries.

Cluster	Identifier	Name	Scene table	Reportable
Color control (S)	0x4000	EnhancedCurrentHue	✓	-
Color control (S)	0x400a	ColorCapabilities	✗	-
Color control (S)	0x400b	ColorTempPhysicalMin	✗	-
Color control (S)	0x400c	ColorTempPhysicalMax	✗	-
Color control (S)	0x400d	CoupleColorTempToLevelMin-Mireds	✗	-
Color control (S)	0x4010	StartUpColorTemperature	✗	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✗	-

965

966 **18.2.2 Required commands received**967 A color temperature light device SHALL be able to receive and process the commands listed in Table
968 39.

969

970

Table 39 – Mandatory commands received by a color temperature light

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect
Groups (S)	0x00	Add group
Groups (S)	0x01	View group
Groups (S)	0x02	Get group membership
Groups (S)	0x03	Remove group
Groups (S)	0x04	Remove all groups
Groups (S)	0x05	Add group if identifying
Scenes (S)	0x00	Add scene
Scenes (S)	0x01	View scene
Scenes (S)	0x02	Remove scene
Scenes (S)	0x03	Remove all scenes
Scenes (S)	0x04	Store scene
Scenes (S)	0x05	Recall scene
Scenes (S)	0x06	Get scene membership
Scenes (S)	0x40	Enhanced add scene
Scenes (S)	0x41	Enhanced view scene
Scenes (S)	0x42	Copy scene
On/off (S)	0x00	Off

Cluster	Identifier	Name
On/off (S)	0x01	On
On/off (S)	0x02	Toggle
On/off (S)	0x40	Off with effect
On/off (S)	0x41	On with recall global scene
On/off (S)	0x42	On with timed off
Level control (S)	0x00	Move to level
Level control (S)	0x01	Move
Level control (S)	0x02	Step
Level control (S)	0x03	Stop
Level control (S)	0x04	Move to level (with on/off)
Level control (S)	0x05	Move (with on/off)
Level control (S)	0x06	Step (with on/off)
Level control (S)	0x07	Stop (with on/off)
Color control (S)	0x0a	Move to color temperature
Color control (S)	0x47	Stop move step
Color control (S)	0x4b	Move color temperature
Color control (S)	0x4c	Step color temperature

971

972 **18.2.3 Required commands generated**

973 A color temperature light device SHALL be able to generate the commands listed in Table 40.

974

975 **Table 40 – Mandatory commands generated by a color temperature light**

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response	Identify query	U--
Groups (S)	0x00	Add group response	Add group	U--
Groups (S)	0x01	View group response	View group	U--
Groups (S)	0x02	Get group membership response	Get group membership	U--
Groups (S)	0x03	Remove group response	Remove group	U--
Scenes (S)	0x00	Add scene response	Add scene	U--
Scenes (S)	0x01	View scene response	View scene	U--
Scenes (S)	0x02	Remove scene response	Remove scene	U--
Scenes (S)	0x03	Remove all scenes response	Remove all scenes	U--

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Scenes (S)	0x04	Store scene response	Store scene	U--
Scenes (S)	0x06	Get scene membership response	Get scene membership	U--
Scenes (S)	0x40	Enhanced add scene response	Enhanced add scene	U--
Scenes (S)	0x41	Enhanced view scene response	Enhanced view scene	U--
Scenes (S)	0x42	Copy scene response	Copy scene	U--

976

977 **18.3 Generic usage notes**

978 For this device, in the *color control* cluster, the *ColorCapabilities* attribute SHALL be set to 0x0010,
 979 indicating support for color temperature.

980

981 **18.4 PICS**

982 The following PICS SHALL be supported for this device. Note that a device MAY support other
 983 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S I.S.A0000, I.S.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx
Groups [R8]	G.S G.S.A0000, G.S.Afffd G.S.C00.Rsp, G.S.C01.Rsp, G.S.C02.Rsp, G.S.C03.Rsp, G.S.C04.Rsp, G.S.C05.Rsp G.S.C00.Tx, G.S.C01.Tx, G.S.C02.Tx, G.S.C03.Tx
Scenes [R9]	S.S S.S.A0000, S.S.A0001, S.S.A0002, S.S.A0003, S.S.A0004, S.S.Afffd S.S.C00.Rsp, S.S.C01.Rsp, S.S.C02.Rsp, S.S.C03.Rsp, S.S.C04.Rsp, S.S.C05.Rsp, S.S.C06.Rsp, S.S.C40.Rsp, S.S.C41.Rsp, S.S.C42.Rsp S.S.C00.Tx, S.S.C01.Tx, S.S.C02.Tx, S.S.C03.Tx, S.S.C04.Tx, S.S.C06.Tx, S.S.C40.Tx, S.S.C41.Tx, S.S.C42.Tx
On/off [R10]	OO.S OO.S.A0000, OO.S.A4000, OO.S.A4001, OO.S.A4002, OO.S.A4003, OO.S.Afffd OO.S.C00.Rsp, OO.S.C01.Rsp, OO.S.C02.Rsp, OO.S.C40.Rsp, OO.S.C41.Rsp, OO.S.C42.Rsp
Level Control [R11]	LC.S LC.S.A0000, LC.S.A0001, LC.S.A000f, LC.S.A4000, LC.S.Afffd LC.S.C00.Rsp, LC.S.C01.Rsp, LC.S.C02.Rsp, LC.S.C03.Rsp, LC.S.C04.Rsp, LC.S.C05.Rsp, LC.S.C06.Rsp, LC.S.C07.Rsp
Color Control [R12]	CC.S CC.S.A0002, CC.S.A0007, CC.S.A0008, CC.S.A000f, CC.S.A0010, CC.S.A4000, CC.S.A400a, CC.S.A400b, CC.S.A400c, CC.S.A400d, CC.S.Afffd CC.S.C0a.Rsp, CC.S.C47.Rsp, CC.S.C4b.Rsp, CC.S.C4c.Rsp

984

985

986 **19 Extended color light**

987 The extended color light is a lighting device that can be switched on or off, the intensity of its light
 988 adjusted and its color adjusted via a bound controller device such as a color controller. The device
 989 supports adjustment of color via hue/saturation, enhanced hue, color looping, XY coordinates and color
 990 temperature. In addition, it may also be switched via a bound occupancy sensor.

991 **19.1 Device configuration**

992 When the extended color light device type is implemented on an endpoint, the following configurations
 993 apply:

- 994 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 995 0x1.
- 996 • The device class SHALL be *simple*.
- 997 • The device SHALL implement a finding & binding *target*.
- 998 • The minimum light level SHALL be 0x01 and the maximum light level SHALL be 0xfe.

999 **19.2 Supported clusters**

1000 The extended color light device SHALL support the mandatory clusters and MAY support the
 1001 recommended optional clusters listed in Figure 14.

1002

Extended color light [Device ID: 0x010d]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	<i>None</i>
	0x0003: Identify	
	0x0004: Groups	
	0x0005: Scenes	
	0x0006: On/off	
	0x0008: Level control	
	0x0300: Color control	
Recommended optional	0x1000: Touchlink commissioning	<i>OTA upgrade: 0x0019</i>

1003 **Figure 14 – Clusters supported by the extended color light device type**

1004

1005 **19.2.1 Required attributes**

1006 An extended color light device SHALL support the attributes listed in Table 41.

1007

1008 **Table 41 – Mandatory attributes for an extended color light**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Groups (S)	0x0000	NameSupport	✘	-
Scenes (S)	0x0000	SceneCount	✘	-
Scenes (S)	0x0001	CurrentScene	✘	-
Scenes (S)	0x0002	CurrentGroup	✘	-
Scenes (S)	0x0003	SceneValid	✘	-
Scenes (S)	0x0004	NameSupport	✘	-
On/off (S)	0x0000	OnOff	✓	✓
On/off (S)	0x4000	GlobalSceneControl	✘	-
On/off (S)	0x4001	OnTime	✘	-
On/off (S)	0x4002	OffWaitTime	✘	-
On/off (S)	0x4003	StartUpOnOff	✘	-
Level control (S)	0x0000	CurrentLevel	✓	✓
Level control (S)	0x0001	RemainingTime	✘	-
Level control (S)	0x000f	Options	✘	-
Level control (S)	0x4000	StartUpCurrentLevel	✘	-
Color control (S)	0x0000	CurrentHue	✘ ⁵	✓
Color control (S)	0x0001	CurrentSaturation	✓	✓
Color control (S)	0x0002	RemainingTime	✘	-
Color control (S)	0x0003	CurrentX	✓	✓
Color control (S)	0x0004	CurrentY	✓	✓

⁵ Note that the *EnhancedCurrentHue* attribute is added to the scene table in favor of the *CurrentHue* attribute.

Cluster	Identifier	Name	Scene table	Reportable
Color control (S)	0x0007	ColorTemperature	✓	✓
Color control (S)	0x0008	ColorMode	✗	-
Color control (S)	0x000f	Options	✗	-
Color control (S)	0x0010	NumberOfPrimaries ⁶	✗	-
Color control (S)	0x4000	EnhancedCurrentHue	✓	-
Color control (S)	0x4001	EnhancedColorMode	✗	-
Color control (S)	0x4002	ColorLoopActive	✓	-
Color control (S)	0x4003	ColorLoopDirection	✓	-
Color control (S)	0x4004	ColorLoopTime	✓	-
Color control (S)	0x4005	ColorLoopStartEnhancedHue	✗	-
Color control (S)	0x4006	ColorLoopStoredEnhancedHue	✗	-
Color control (S)	0x400a	ColorCapabilities	✗	-
Color control (S)	0x400b	ColorTempPhysicalMin	✗	-
Color control (S)	0x400c	ColorTempPhysicalMax	✗	-
Color control (S)	0x400d	CoupleColorTempToLevelMin-Mireds	✗	-
Color control (S)	0x4010	StartUpColorTemperature	✗	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✗	-

1009

1010 **19.2.2 Required commands received**

1011 An extended color light device SHALL be able to receive and process the commands listed in Table
 1012 42.

1013

1014

Table 42 – Mandatory commands received by an extended color light

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect
Groups (S)	0x00	Add group
Groups (S)	0x01	View group
Groups (S)	0x02	Get group membership

⁶ A device SHALL also support the attributes Primary i X, Primary i Y and Primary i Intensity, where i is in the range from 1 to the value of NumberOfPrimaries.

Cluster	Identifier	Name
Groups (S)	0x03	Remove group
Groups (S)	0x04	Remove all groups
Groups (S)	0x05	Add group if identifying
Scenes (S)	0x00	Add scene
Scenes (S)	0x01	View scene
Scenes (S)	0x02	Remove scene
Scenes (S)	0x03	Remove all scenes
Scenes (S)	0x04	Store scene
Scenes (S)	0x05	Recall scene
Scenes (S)	0x06	Get scene membership
Scenes (S)	0x40	Enhanced add scene
Scenes (S)	0x41	Enhanced view scene
Scenes (S)	0x42	Copy scene
On/off (S)	0x00	Off
On/off (S)	0x01	On
On/off (S)	0x02	Toggle
On/off (S)	0x40	Off with effect
On/off (S)	0x41	On with recall global scene
On/off (S)	0x42	On with timed off
Level control (S)	0x00	Move to level
Level control (S)	0x01	Move
Level control (S)	0x02	Step
Level control (S)	0x03	Stop
Level control (S)	0x04	Move to level (with on/off)
Level control (S)	0x05	Move (with on/off)
Level control (S)	0x06	Step (with on/off)
Level control (S)	0x07	Stop (with on/off)
Color control (S)	0x00	Move to hue
Color control (S)	0x01	Move hue
Color control (S)	0x02	Step hue
Color control (S)	0x03	Move to saturation
Color control (S)	0x04	Move saturation
Color control (S)	0x05	Step saturation
Color control (S)	0x06	Move to hue and saturation
Color control (S)	0x07	Move to color
Color control (S)	0x08	Move color

Cluster	Identifier	Name
Color control (S)	0x09	Step color
Color control (S)	0x0a	Move to color temperature
Color control (S)	0x40	Enhanced move to hue
Color control (S)	0x41	Enhanced move hue
Color control (S)	0x42	Enhanced step hue
Color control (S)	0x43	Enhanced move to hue and saturation
Color control (S)	0x44	Color loop set
Color control (S)	0x47	Stop move step
Color control (S)	0x4b	Move color temperature
Color control (S)	0x4c	Step color temperature

1015

1016 **19.2.3 Required commands generated**

1017 An extended color light device SHALL be able to generate the commands listed in Table 43.

1018

1019

Table 43 – Mandatory commands generated by an extended color light

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response	Identify query	U--
Groups (S)	0x00	Add group response	Add group	U--
Groups (S)	0x01	View group response	View group	U--
Groups (S)	0x02	Get group membership response	Get group membership	U--
Groups (S)	0x03	Remove group response	Remove group	U--
Scenes (S)	0x00	Add scene response	Add scene	U--
Scenes (S)	0x01	View scene response	View scene	U--
Scenes (S)	0x02	Remove scene response	Remove scene	U--
Scenes (S)	0x03	Remove all scenes response	Remove all scenes	U--
Scenes (S)	0x04	Store scene response	Store scene	U--
Scenes (S)	0x06	Get scene membership response	Get scene membership	U--
Scenes (S)	0x40	Enhanced add scene response	Enhanced add scene	U--
Scenes (S)	0x41	Enhanced view scene response	Enhanced view scene	U--
Scenes (S)	0x42	Copy scene response	Copy scene	U--

1020

1021 **19.3 Generic usage notes**

1022 For this device, in the *color control* cluster, the *ColorCapabilities* attribute SHALL be set to 0x001f,
1023 indicating support for hue/saturation, enhanced hue, color loop, XY and color temperature.

1024 **19.4 PICS**

1025 The following PICS SHALL be supported for this device. Note that a device MAY support other
1026 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S I.S.A0000, I.S.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx
Groups [R8]	G.S G.S.A0000, G.S.Afffd G.S.C00.Rsp, G.S.C01.Rsp, G.S.C02.Rsp, G.S.C03.Rsp, G.S.C04.Rsp, G.S.C05.Rsp G.S.C00.Tx, G.S.C01.Tx, G.S.C02.Tx, G.S.C03.Tx
Scenes [R9]	S.S S.S.A0000, S.S.A0001, S.S.A0002, S.S.A0003, S.S.A0004, S.S.Afffd S.S.C00.Rsp, S.S.C01.Rsp, S.S.C02.Rsp, S.S.C03.Rsp, S.S.C04.Rsp, S.S.C05.Rsp, S.S.C06.Rsp, S.S.C40.Rsp, S.S.C41.Rsp, S.S.C42.Rsp S.S.C00.Tx, S.S.C01.Tx, S.S.C02.Tx, S.S.C03.Tx, S.S.C04.Tx, S.S.C06.Tx, S.S.C40.Tx, S.S.C41.Tx, S.S.C42.Tx
On/off [R10]	OO.S OO.S.A0000, OO.S.A4000, OO.S.A4001, OO.S.A4002, OO.S.A4003, OO.S.Afffd OO.S.C00.Rsp, OO.S.C01.Rsp, OO.S.C02.Rsp, OO.S.C40.Rsp, OO.S.C41.Rsp, OO.S.C42.Rsp
Level Control [R11]	LC.S LC.S.A0000, LC.S.A0001, LC.S.A000f, LC.S.A4000, LC.S.Afffd LC.S.C00.Rsp, LC.S.C01.Rsp, LC.S.C02.Rsp, LC.S.C03.Rsp, LC.S.C04.Rsp, LC.S.C05.Rsp, LC.S.C06.Rsp, LC.S.C07.Rsp
Color Control [R12]	CC.S CC.S.A0000, CC.S.A0001, CC.S.A0002, CC.S.A0003, CC.S.A0004, C.S.A0007, CC.S.A0008, CC.S.A000f, CC.S.A0010, CC.S.A4000, CC.S.A4001, CC.S.A4002, CC.S.A4003, CC.S.A4004, CC.S.A4005, CC.S.A4006, CC.S.A400a, C.S.A400b, CC.S.A400c, CC.S.A400d, CC.S.A4010, CC.S.Afffd CC.S.C00.Rsp, CC.S.C01.Rsp, CC.S.C02.Rsp, CC.S.C03.Rsp, CC.S.C04.Rsp, CC.S.C05.Rsp, CC.S.C06.Rsp, CC.S.C07.Rsp, CC.S.C08.Rsp, CC.S.C09.Rsp, CC.S.C0a.Rsp, CC.S.C40.Rsp, CC.S.C41.Rsp, CC.S.C42.Rsp, CC.S.C43.Rsp, CC.S.C44.Rsp, CC.S.C47.Rsp, CC.S.C4b.Rsp, CC.S.C4c.Rsp

1027

1028

1029 **20 Light level sensor**

1030 The light level sensor is a measurement and sensing device that, when bound to a lighting device such
 1031 as an on/off ballast, can be used to switch the device on or off.

1032 **20.1 Device configuration**

1033 When the light level sensor device type is implemented on an endpoint, the following configurations
 1034 apply:

- 1035 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 1036 0x1.
- 1037 • The device class SHALL be *simple*.
- 1038 • The device SHALL implement a finding & binding *initiator*.

1039 **20.2 Supported clusters**

1040 The light level sensor device SHALL support the mandatory clusters and MAY support the
 1041 recommended optional clusters listed in Figure 15.

1042

Light level sensor [Device ID: 0x010e]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	
	0x0401: Illuminance level sensing	
Recommended optional	None	Groups: 0x0004
		OTA upgrade: 0x0019

1043 **Figure 15 – Clusters supported by the light level sensor device type**

1044

1045 **20.2.1 Required attributes**

1046 A light level sensor device SHALL support the attributes listed in Table 44.

1047

1048 **Table 44 – Mandatory attributes for a light level sensor**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
Illuminance level sensing (S)	0x0000	LevelStatus	✘	✓
Illuminance level sensing (S)	0x0010	IlluminanceTargetLevel	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

1049

1050 20.2.2 Required commands received

1051 A light level sensor device SHALL be able to receive and process the commands listed in Table 45.

1052

1053

Table 45 – Mandatory commands received by a light level sensor

Cluster	Identifier	Name
Identify (S)	0x00	Identify
Identify (S)	0x01	Identify query
Identify (S)	0x40	Trigger effect

1054

1055 20.2.3 Commands generated

1056 A light level sensor device SHALL generate the commands indicated with an asterisk (*) and MAY
1057 generate any of the other commands listed in Table 46.

1058

1059

Table 46 – Commands generated by a light level sensor

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB

1060

1061

1062 **20.3 PICS**

1063 The following PICS SHALL be supported for this device. Note that a device MAY support other
 1064 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp I.S.C00.Tx, I.C.C01.Tx
Illuminance Level Sensing	ILS.S ILS.S.A0000, ILS.S.A0010, ILS.S.Afffd

1065

1066

1067

21 Color controller

1068

1069

1070

The color controller is a controller device that, when bound to a lighting device such as a color light, can be used to switch the device on or off, adjust the intensity of the light being emitted and adjust the color of the light being emitted.

1071

21.1 Device configuration

1072

1073

When the color controller device type is implemented on an endpoint, the following configurations apply:

1074

1075

1076

1077

- The *application device version* field of the corresponding simple descriptor SHALL be set to 0x1.
- The device class SHALL be *simple*.
- The device SHALL implement a finding & binding *initiator*.

1078

21.2 Supported clusters

1079

1080

1081

The color controller device SHALL support the mandatory clusters and MAY support the recommended optional clusters listed in Figure 16.

Color controller [Device ID: 0x0800]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	On/off: 0x0006
		Level control: 0x0008
		Color control: 0x0300
Recommended optional	0x1000: Touchlink commissioning	Groups: 0x0004
		OTA upgrade: 0x0019
		Touchlink commissioning: 0x1000

1082

Figure 16 – Clusters supported by the color controller device type

1083

1084

1085

Note: If the touchlink commissioning cluster is supported on this device then the server side of the utility part of this cluster SHALL be mandatory (see also [R1]).

1086

21.2.1 Required attributes

1087

1088

A color controller device SHALL support the attributes listed in Table 47.

1089

Table 47 – Mandatory attributes for a color controller

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

1090

1091 **21.2.2 Required commands received**

1092 A color controller device SHALL be able to receive and process the commands listed in Table 48.

1093

1094

Table 48 – Mandatory commands received by a color controller

Cluster	Identifier	Name	If generated
Identify (S)	0x00	Identify	-
Identify (S)	0x01	Identify query	-
Identify (S)	0x40	Trigger effect	-
Identify (C)	0x00	Identify query response	Identify query

1095

1096 **21.2.3 Required commands generated**1097 A color controller device SHALL generate the commands indicated with an asterisk (*) and MAY
1098 generate any of the other commands listed in Table 49.

1099

1100

Table 49 – Commands generated by a color controller

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB
On/off (C)	0x00	Off	-	UGB
On/off (C)	0x01	On	-	UGB
On/off (C)	0x02	Toggle	-	UGB
On/off (C)	0x40	Off with effect	-	UGB
On/off (C)	0x41	On with recall global scene	-	UGB
On/off (C)	0x42	On with timed off	-	UGB
Level control (C)	0x00	Move to level	-	UGB
Level control (C)	0x01	Move	-	UGB
Level control (C)	0x02	Step	-	UGB
Level control (C)	0x03	Stop	-	UGB
Level control (C)	0x04	Move to level (with on/off)	-	UGB
Level control (C)	0x05	Move (with on/off)	-	UGB
Level control (C)	0x06	Step (with on/off)	-	UGB
Level control (C)	0x07	Stop (with on/off)	-	UGB
Color control (C)	0x00	Move to hue	-	UGB
Color control (C)	0x01	Move hue	-	UGB
Color control (C)	0x02	Step hue	-	UGB
Color control (C)	0x03	Move to saturation	-	UGB
Color control (C)	0x04	Move saturation	-	UGB
Color control (C)	0x05	Step saturation	-	UGB
Color control (C)	0x06	Move to hue and saturation	-	UGB
Color control (C)	0x07	Move to color	-	UGB
Color control (C)	0x08	Move color	-	UGB
Color control (C)	0x09	Step color	-	UGB
Color control (C)	0x0a	Move to color temperature	-	UGB
Color control (C)	0x40	Enhanced move to hue	-	UGB
Color control (C)	0x41	Enhanced move hue	-	UGB
Color control (C)	0x42	Enhanced step hue	-	UGB
Color control (C)	0x43	Enhanced move to hue and saturation	-	UGB

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Color control (C)	0x44	Color loop set	-	UGB
Color control (C)	0x47	Stop move step	-	UGB
Color control (C)	0x4b	Move color temperature	-	UGB
Color control (C)	0x4c	Step color temperature	-	UGB

1101

1102 **21.3 PICS**

1103 The following PICS SHALL be supported for this device. Note that a device MAY support other
 1104 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp, I.C.C00.Rsp I.S.C00.Tx, I.C.C01.Tx
On/off [R10]	OO.C OO.C.Afffd
Level Control [R11]	LC.C LC.C.Afffd
Color Control [R12]	CC.C CC.C.Afffd

1105

1106

1107 **22 Color scene controller**

1108 The color scene controller is a controller device that, when bound to a lighting device such as a color
 1109 light, can be used to switch the device on or off, adjust the intensity of the light being emitted and
 1110 adjust the color of the light being emitted. In addition, the device can also be used for setting scenes.

1111 **22.1 Device configuration**

1112 When the color scene controller device type is implemented on an endpoint, the following
 1113 configurations apply:

- 1114 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 1115 0x1.
- 1116 • The device class SHALL be *simple*.
- 1117 • The device SHALL implement a finding & binding *initiator*.

1118 **22.2 Supported clusters**

1119 The color scene controller device SHALL support the mandatory clusters and MAY support the
 1120 recommended optional clusters listed in Figure 17.

1121

Color scene controller [Device ID: 0x0810]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	Scenes: 0x0005
		On/off: 0x0006
		Level control: 0x0008
		Color control: 0x0300
Recommended optional	0x1000: Touchlink commissioning	Groups: 0x0004
		OTA upgrade: 0x0019
		Touchlink commissioning: 0x1000

1122 **Figure 17 – Clusters supported by the color scene controller device type**

1123

1124 Note: If the touchlink commissioning cluster is supported on this device then the server side of the utility
 1125 part of this cluster SHALL be mandatory (see also [R1]).

1126 **22.2.1 Required attributes**

1127 A color scene controller device SHALL support the attributes listed in Table 50.

1128

1129 **Table 50 – Mandatory attributes for a color scene controller**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

1130

1131 **22.2.2 Required commands received**

1132 A color scene controller device SHALL be able to receive and process the commands listed in Table
1133 51.

1134

1135

Table 51 – Mandatory commands received by a color scene controller

Cluster	Identifier	Name	Mandatory on transmission of
Identify (S)	0x00	Identify	-
Identify (S)	0x01	Identify query	-
Identify (S)	0x40	Trigger effect	-
Identify (C)	0x00	Identify query response	Identify query
Scenes (C)	0x00	Add scene response	Add scene
Scenes (C)	0x01	View scene response	View scene
Scenes (C)	0x02	Remove scene response	Remove scene
Scenes (C)	0x03	Remove all scenes response	Remove all scenes
Scenes (C)	0x04	Store scene response	Store scene
Scenes (C)	0x06	Get scene membership response	Get scene membership
Scenes (C)	0x40	Enhanced add scene response	Enhanced add scene
Scenes (C)	0x41	Enhanced view scene response	Enhanced view scene
Scenes (C)	0x42	Copy scene response	Copy scene

1136

1137 **22.2.3 Required commands generated**

1138 A color scene controller device SHALL generate the commands indicated with an asterisk (*) and
 1139 MAY generate any of the other commands listed in Table 52.

1140

1141

Table 52 – Commands generated by a color scene controller

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB
Scenes (C)	0x00	Add scene	-	U--
Scenes (C)	0x01	View scene	-	U--
Scenes (C)	0x02	Remove scene	-	UG-
Scenes (C)	0x03	Remove all scenes	-	UG-
Scenes (C)	0x04	Store scene	-	UG-
Scenes (C)	0x05	Recall scene	-	UG-
Scenes (C)	0x06	Get scene membership	-	UG-
Scenes (C)	0x40	Enhanced add scene	-	UGB
Scenes (C)	0x41	Enhanced view scene	-	UGB
Scenes (C)	0x42	Copy scene	-	UGB
On/off (C)	0x00	Off	-	UGB
On/off (C)	0x01	On	-	UGB
On/off (C)	0x02	Toggle	-	UGB
On/off (C)	0x40	Off with effect	-	UGB
On/off (C)	0x41	On with recall global scene	-	UGB
On/off (C)	0x42	On with timed off	-	UGB
Level control (C)	0x00	Move to level	-	UGB
Level control (C)	0x01	Move	-	UGB
Level control (C)	0x02	Step	-	UGB
Level control (C)	0x03	Stop	-	UGB
Level control (C)	0x04	Move to level (with on/off)	-	UGB
Level control (C)	0x05	Move (with on/off)	-	UGB
Level control (C)	0x06	Step (with on/off)	-	UGB
Level control (C)	0x07	Stop (with on/off)	-	UGB
Color control (C)	0x00	Move to hue	-	UGB
Color control (C)	0x01	Move hue	-	UGB
Color control (C)	0x02	Step hue	-	UGB

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Color control (C)	0x03	Move to saturation	-	UGB
Color control (C)	0x04	Move saturation	-	UGB
Color control (C)	0x05	Step saturation	-	UGB
Color control (C)	0x06	Move to hue and saturation	-	UGB
Color control (C)	0x07	Move to color	-	UGB
Color control (C)	0x08	Move color	-	UGB
Color control (C)	0x09	Step color	-	UGB
Color control (C)	0x0a	Move to color temperature	-	UGB
Color control (C)	0x40	Enhanced move to hue	-	UGB
Color control (C)	0x41	Enhanced move hue	-	UGB
Color control (C)	0x42	Enhanced step hue	-	UGB
Color control (C)	0x43	Enhanced move to hue and saturation	-	UGB
Color control (C)	0x44	Color loop set	-	UGB
Color control (C)	0x47	Stop move step	-	UGB
Color control (C)	0x4b	Move color temperature	-	UGB
Color control (C)	0x4c	Step color temperature	-	UGB

1142

1143

1144 **22.3 PICS**

1145 The following PICS SHALL be supported for this device. Note that a device MAY support other
 1146 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp, I.C.C00.Rsp I.S.C00.Tx, I.C.C01.Tx
Scenes [R9]	S.C S.C.Afffd S.C.C00.Rsp, S.C.C01.Rsp, S.C.C02.Rsp, S.C.C03.Rsp, S.C.C04.Rsp, S.C.C06.Rsp, S.C.C40.Rsp, S.C.C41.Rsp, S.C.C42.Rsp
On/off [R10]	OO.C OO.C.Afffd
Level Control [R11]	LC.C LC.C.Afffd
Color Control [R12]	CC.C CC.C.Afffd

1147

1148

1149 **23 Non-color controller**

1150 The non-color controller is a controller device that, when bound to a lighting device such as a
 1151 dimmable light, can be used to switch the device on or off and adjust the intensity of the light being
 1152 emitted.

1153 **23.1 Device configuration**

1154 When the non-color controller device type is implemented on an endpoint, the following configurations
 1155 apply:

- 1156 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 1157 0x1.
- 1158 • The device class SHALL be *simple*.
- 1159 • The device SHALL implement a finding & binding *initiator*.

1160 **23.2 Supported clusters**

1161 The non-color controller device SHALL support the mandatory clusters and MAY support the
 1162 recommended optional clusters listed in Figure 18.

1163

Non-color controller [Device ID: 0x0820]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	On/off: 0x0006
		Level control: 0x0008
Recommended optional	0x1000: Touchlink commissioning	Groups: 0x0004
		OTA upgrade: 0x0019
		Touchlink commissioning: 0x1000

1164 **Figure 18 – Clusters supported by the non-color controller device type**

1165

1166 Note: If the touchlink commissioning cluster is supported on this device then the server side of the utility
 1167 part of this cluster SHALL be mandatory (see also [R1]).

1168 **23.2.1 Required attributes**

1169 A non-color controller device SHALL support the attributes listed in Table 53.

1170

1171

Table 53 – Mandatory attributes for a non-color controller

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

1172

1173 23.2.2 Required commands received

1174 A non-color controller device SHALL be able to receive and process the commands listed in Table 54.

1175

1176

Table 54 – Mandatory commands received by a non-color controller

Cluster	Identifier	Name	Mandatory on transmission of
Identify (S)	0x00	Identify	-
Identify (S)	0x01	Identify query	-
Identify (S)	0x40	Trigger effect	-
Identify (C)	0x00	Identify query response	Identify query

1177

1178 23.2.3 Required commands generated

1179 A non-color controller device SHALL generate the commands indicated with an asterisk (*) and MAY
1180 generate any of the other commands listed in Table 55.

1181

1182

Table 55 – Commands generated by a non-color controller

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB
On/off (C)	0x00	Off	-	UGB
On/off (C)	0x01	On	-	UGB
On/off (C)	0x02	Toggle	-	UGB
On/off (C)	0x40	Off with effect	-	UGB
On/off (C)	0x41	On with recall global scene	-	UGB
On/off (C)	0x42	On with timed off	-	UGB
Level control (C)	0x00	Move to level	-	UGB
Level control (C)	0x01	Move	-	UGB
Level control (C)	0x02	Step	-	UGB
Level control (C)	0x03	Stop	-	UGB
Level control (C)	0x04	Move to level (with on/off)	-	UGB
Level control (C)	0x05	Move (with on/off)	-	UGB
Level control (C)	0x06	Step (with on/off)	-	UGB
Level control (C)	0x07	Stop (with on/off)	-	UGB

1183

1184

1185 **23.3 PICS**

1186 The following PICS SHALL be supported for this device. Note that a device MAY support other
 1187 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp, I.C.C00.Rsp I.S.C00.Tx, I.C.C01.Tx
On/off [R10]	OO.C OO.C.Afffd
Level Control [R11]	LC.C LC.C.Afffd

1188

1189

1190 **24 Non-color scene controller**

1191 The non-color scene controller is a controller device that, when bound to a lighting device such as a
 1192 dimmable light, can be used to switch the device on or off and adjust the intensity of the light being
 1193 emitted. In addition, the device can also be used for setting scenes.

1194 **24.1 Device configuration**

1195 When non-color scene controller device type is implemented on an endpoint, the following
 1196 configurations apply:

- 1197 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 1198 0x1.
- 1199 • The device class SHALL be *simple*.
- 1200 • The device SHALL implement a finding & binding *initiator*.

1201 **24.2 Supported clusters**

1202 The non-color scene controller device SHALL support the mandatory clusters and MAY support the
 1203 recommended optional clusters listed in Figure 19.

1204

Non-color scene controller [Device ID: 0x0830]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	Scenes: 0x0005
		On/off: 0x0006
		Level control: 0x0008
Recommended optional	0x1000: Touchlink commissioning	Groups: 0x0004
		OTA upgrade: 0x0019
		Touchlink commissioning: 0x1000

1205 **Figure 19 – Clusters supported by the non-color scene controller device type**

1206

1207 Note: If the touchlink commissioning cluster is supported on this device then the server side of the utility
 1208 part of this cluster SHALL be mandatory (see also [R1]).

1209 **24.2.1 Required attributes**

1210 A non-color scene controller device SHALL support the attributes listed in Table 56.

1211

1212 **Table 56 – Mandatory attributes for a non-color scene controller**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

1213

1214 **24.2.2 Required commands received**

1215 A non-color scene controller device SHALL be able to receive and process the commands listed in
 1216 Table 57.

1217

1218

Table 57 – Mandatory commands received by a non-color scene controller

Cluster	Identifier	Name	Mandatory on transmission of
Identify (S)	0x00	Identify	-
Identify (S)	0x01	Identify query	-
Identify (S)	0x40	Trigger effect	-
Identify (C)	0x00	Identify query response	Identify query
Scenes (C)	0x00	Add scene response	Add scene
Scenes (C)	0x01	View scene response	View scene
Scenes (C)	0x02	Remove scene response	Remove scene
Scenes (C)	0x03	Remove all scenes response	Remove all scenes
Scenes (C)	0x04	Store scene response	Store scene
Scenes (C)	0x06	Get scene membership response	Get scene membership
Scenes (C)	0x40	Enhanced add scene response	Enhanced add scene
Scenes (C)	0x41	Enhanced view scene response	Enhanced view scene
Scenes (C)	0x42	Copy scene response	Copy scene

1219

1220 **24.2.3 Required commands generated**

1221 A non-color scene controller device SHALL generate the commands indicated with an asterisk (*) and
 1222 MAY generate any of the other commands listed in Table 58.

1223

1224

Table 58 – Commands generated by a non-color scene controller

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB
Scenes (C)	0x00	Add scene	-	U--
Scenes (C)	0x01	View scene	-	U--
Scenes (C)	0x02	Remove scene	-	UG-
Scenes (C)	0x03	Remove all scenes	-	UG-
Scenes (C)	0x04	Store scene	-	UG-
Scenes (C)	0x05	Recall scene	-	UG-
Scenes (C)	0x06	Get scene membership	-	UG-
Scenes (C)	0x40	Enhanced add scene	-	UGB
Scenes (C)	0x41	Enhanced view scene	-	UGB
Scenes (C)	0x42	Copy scene	-	UGB
On/off (C)	0x00	Off	-	UGB
On/off (C)	0x01	On	-	UGB
On/off (C)	0x02	Toggle	-	UGB
On/off (C)	0x40	Off with effect	-	UGB
On/off (C)	0x41	On with recall global scene	-	UGB
On/off (C)	0x42	On with timed off	-	UGB
Level control (C)	0x00	Move to level	-	UGB
Level control (C)	0x01	Move	-	UGB
Level control (C)	0x02	Step	-	UGB
Level control (C)	0x03	Stop	-	UGB
Level control (C)	0x04	Move to level (with on/off)	-	UGB
Level control (C)	0x05	Move (with on/off)	-	UGB
Level control (C)	0x06	Step (with on/off)	-	UGB
Level control (C)	0x07	Stop (with on/off)	-	UGB

1225

1226

1227 **24.3 PICS**

1228 The following PICS SHALL be supported for this device. Note that a device MAY support other
 1229 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp, I.C.C00.Rsp I.S.C00.Tx, I.C.C01.Tx
Scenes [R9]	S.C S.C.Afffd S.C.C00.Rsp, S.C.C01.Rsp, S.C.C02.Rsp, S.C.C03.Rsp, S.C.C04.Rsp, S.C.C06.Rsp, S.C.C40.Rsp, S.C.C41.Rsp, S.C.C42.Rsp
On/off [R10]	OO.C OO.C.Afffd
Level Control [R11]	LC.C LC.C.Afffd

1230

1231

1232 **25 Control bridge**

1233 The control bridge is a controller device that, when bound to a lighting device such as a color light, can
 1234 be used to switch the device on or off, adjust the intensity of the light being emitted and adjust the color
 1235 of the light being emitted. In addition, the device can also be used for setting scenes.

1236 **25.1 Device configuration**

1237 When the control bridge device type is implemented on an endpoint, the following configurations
 1238 apply:

- 1239 • The *application device version* field of the corresponding simple descriptor SHALL be set to
 1240 0x1.
- 1241 • The device class SHALL be *dynamic*.

1242 **25.2 Supported clusters**

1243 The control bridge device SHALL support the mandatory clusters and MAY support the recommended
 1244 optional clusters listed in Figure 20.

1245

Control bridge [Device ID: 0x0840]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	Groups: 0x0004
		Scenes: 0x0005
		On/off: 0x0006
		Level control: 0x0008
		Color control: 0x0300
Recommended optional	0x0019: OTA Upgrade	OTA upgrade: 0x0019
	0x1000: Touchlink commissioning	Illuminance measurement: 0x0400
		Illuminance level sensing: 0x0401
		Occupancy sensing: 0x0406
		Touchlink commissioning: 0x1000

1246 **Figure 20 – Clusters supported by the control bridge device type**

1247

1248 Note: If the touchlink commissioning cluster is supported on this device then the server side of the utility
 1249 part of this cluster SHALL be mandatory (see also [R1]).

1250 **25.2.1 Required attributes**

1251 A control bridge device SHALL support the attributes listed in Table 59.

1252

1253

Table 59 – Mandatory attributes for a control bridge

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

1254

1255 **25.2.2 Required commands received**

1256 A control bridge device SHALL be able to receive and process the commands listed in Table 60.

1257

1258

Table 60 – Mandatory commands received by a control bridge

Cluster	Identifier	Name	Mandatory on transmission of
Identify (S)	0x00	Identify	-
Identify (S)	0x01	Identify query	-
Identify (S)	0x40	Trigger effect	-
Identify (C)	0x00	Identify query response	Identify query
Groups (C)	0x00	Add group response	Add group
Groups (C)	0x01	View group response	View group
Groups (C)	0x02	Get group membership response	Get group membership
Groups (C)	0x03	Remove group response	Remove group
Scenes (C)	0x00	Add scene response	Add scene
Scenes (C)	0x01	View scene response	View scene
Scenes (C)	0x02	Remove scene response	Remove scene
Scenes (C)	0x03	Remove all scenes response	Remove all scenes
Scenes (C)	0x04	Store scene response	Store scene

Cluster	Identifier	Name	Mandatory on transmission of
Scenes (C)	0x06	Get scene membership response	Get scene membership
Scenes (C)	0x40	Enhanced add scene response	Enhanced add scene
Scenes (C)	0x41	Enhanced view scene response	Enhanced view scene
Scenes (C)	0x42	Copy scene response	Copy scene

1259

1260 **25.2.3 Required commands generated**

1261 A control bridge device SHALL generate the commands indicated with an asterisk (*) and MAY
 1262 generate any of the other commands listed in Table 61.

1263

1264

Table 61 – Commands generated by a control bridge

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB
Groups (C)	0x00	Add group	-	UGB
Groups (C)	0x01	View group	-	UGB
Groups (C)	0x02	Get group membership	-	UGB
Groups (C)	0x03	Remove group	-	UGB
Groups (C)	0x04	Remove all groups	-	UGB
Groups (C)	0x05	Add group if identifying	-	UGB
Scenes (C)	0x00	Add scene	-	U--
Scenes (C)	0x01	View scene	-	U--
Scenes (C)	0x02	Remove scene	-	UG-
Scenes (C)	0x03	Remove all scenes	-	UG-
Scenes (C)	0x04	Store scene	-	UG-
Scenes (C)	0x05	Recall scene	-	UG-
Scenes (C)	0x06	Get scene membership	-	UG-
Scenes (C)	0x40	Enhanced add scene	-	UGB
Scenes (C)	0x41	Enhanced view scene	-	UGB
Scenes (C)	0x42	Copy scene	-	UGB

Cluster	Identifier	Name	On receipt of	Permitted transmissions
On/off (C)	0x00	Off	-	UGB
On/off (C)	0x01	On	-	UGB
On/off (C)	0x02	Toggle	-	UGB
On/off (C)	0x40	Off with effect	-	UGB
On/off (C)	0x41	On with recall global scene	-	UGB
On/off (C)	0x42	On with timed off	-	UGB
Level control (C)	0x00	Move to level	-	UGB
Level control (C)	0x01	Move	-	UGB
Level control (C)	0x02	Step	-	UGB
Level control (C)	0x03	Stop	-	UGB
Level control (C)	0x04	Move to level (with on/off)	-	UGB
Level control (C)	0x05	Move (with on/off)	-	UGB
Level control (C)	0x06	Step (with on/off)	-	UGB
Level control (C)	0x07	Stop (with on/off)	-	UGB
Color control (C)	0x00	Move to hue	-	UGB
Color control (C)	0x01	Move hue	-	UGB
Color control (C)	0x02	Step hue	-	UGB
Color control (C)	0x03	Move to saturation	-	UGB
Color control (C)	0x04	Move saturation	-	UGB
Color control (C)	0x05	Step saturation	-	UGB
Color control (C)	0x06	Move to hue and saturation	-	UGB
Color control (C)	0x07	Move to color	-	UGB
Color control (C)	0x08	Move color	-	UGB
Color control (C)	0x09	Step color	-	UGB
Color control (C)	0x0a	Move to color temperature	-	UGB
Color control (C)	0x40	Enhanced move to hue	-	UGB
Color control (C)	0x41	Enhanced move hue	-	UGB
Color control (C)	0x42	Enhanced step hue	-	UGB
Color control (C)	0x43	Enhanced move to hue and saturation	-	UGB
Color control (C)	0x44	Color loop set	-	UGB
Color control (C)	0x47	Stop move step	-	UGB
Color control (C)	0x4b	Move color temperature	-	UGB
Color control (C)	0x4c	Step color temperature	-	UGB

1265

1266

1267 **25.3 PICS**

1268 The following PICS SHALL be supported for this device. Note that a device MAY support other
 1269 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp, I.C.C00.Rsp I.S.C00.Tx
Groups [R8]	G.C G.C.Afffd G.C.C00.Rsp, G.C.C01.Rsp, G.C.C02.Rsp, G.C.C03.Rsp
Scenes [R9]	S.C S.C.Afffd S.C.C00.Rsp, S.C.C01.Rsp, S.C.C02.Rsp, S.C.C03.Rsp, S.C.C04.Rsp, S.C.C06.Rsp, S.C.C40.Rsp, S.C.C41.Rsp, S.C.C42.Rsp
On/off [R10]	OO.C OO.C.Afffd
Level Control [R11]	LC.C LC.C.Afffd
Color Control [R12]	CC.C CC.C.Afffd

1270

1271

1272 26 On/off sensor

1273 The on/off sensor is a measurement and sensing device that, when bound to a lighting device such as a
1274 color light, can be used to switch the device on or off.

1275 26.1 Device configuration

1276 When the on/off sensor device type is implemented on an endpoint, the following configurations apply:

- 1277 • The *application device version* field of the corresponding simple descriptor SHALL be set to
1278 0x1.
- 1279 • The device class SHALL be *simple*.
- 1280 • The device SHALL implement a finding & binding *initiator*.

1281 26.2 Supported clusters

1282 The on/off sensor device SHALL support the mandatory clusters and MAY support the recommended
1283 optional clusters listed in Figure 21.

1284

On/off sensor [Device ID: 0x0850]		
	Server clusters	Client clusters
Mandatory	0x0000: Basic	Identify: 0x0003
	0x0003: Identify	On/off: 0x0006
Recommended optional	0x1000: Touchlink commissioning	Groups: 0x0004
		Scenes: 0x0005
		Level control: 0x0008
		OTA upgrade: 0x0019
		Color control: 0x0300
		Touchlink commissioning: 0x1000

1285 **Figure 21 – Clusters supported by the on/off sensor device type**

1286 26.2.1 Required attributes

1287 An on/off sensor device SHALL support the attributes listed in Table 62.

1288

1289 **Table 62 – Mandatory attributes for an on/off sensor**

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0000	ZCLVersion	✘	-
Basic (S)	0x0001	ApplicationVersion	✘	-
Basic (S)	0x0002	StackVersion	✘	-
Basic (S)	0x0003	HWVersion	✘	-
Basic (S)	0x0004	ManufacturerName	✘	-
Basic (S)	0x0005	ModelIdentifier	✘	-
Basic (S)	0x0006	DateCode	✘	-

Cluster	Identifier	Name	Scene table	Reportable
Basic (S)	0x0007	PowerSource	✘	-
Basic (S)	0x0008	GenericDeviceClass	✘	-
Basic (S)	0x0009	GenericDeviceType	✘	-
Basic (S)	0x000a	ProductCode	✘	-
Basic (S)	0x000b	ProductURL	✘	-
Basic (S)	0x4000	SWBuildID	✘	-
Identify (S)	0x0000	IdentifyTime	✘	-
All supported clusters (S&C)	0xfffd	ClusterRevision	✘	-

1290

1291 26.2.2 Required commands received

1292 An on/off sensor device SHALL be able to receive and process the commands listed in Table 63.

1293

1294

Table 63 – Mandatory commands received by an on/off sensor

Cluster	Identifier	Name	Mandatory on transmission of
Identify (S)	0x00	Identify	-
Identify (S)	0x01	Identify query	-
Identify (S)	0x40	Trigger effect	-
Identify (C)	0x00	Identify query response	Identify query

1295

1296 26.2.3 Required commands generated

1297 An on/off sensor device SHALL generate the commands indicated with an asterisk (*) and MAY
1298 generate any of the other commands listed in Table 64.

1299

1300

Table 64 – Commands generated by an on/off sensor

Cluster	Identifier	Name	On receipt of	Permitted transmissions
Identify (S)	0x00	Identify query response*	Identify query	U--
Identify (C)	0x00	Identify	-	UGB
Identify (C)	0x01	Identify query*	-	UGB
Identify (C)	0x40	Trigger effect	-	UGB
On/off (C)	0x00	Off	-	UGB
On/off (C)	0x01	On	-	UGB
On/off (C)	0x02	Toggle	-	UGB
On/off (C)	0x40	Off with effect	-	UGB

Cluster	Identifier	Name	On receipt of	Permitted transmissions
On/off (C)	0x41	On with recall global scene	-	UGB
On/off (C)	0x42	On with timed off	-	UGB

1301

1302 **26.3 PICS**

1303 The following PICS SHALL be supported for this device. Note that a device MAY support other
 1304 optional PICS items.

Cluster	PICS
Basic [R6]	B.S B.S.A0000, B.S.A0001, B.S.A0002, B.S.A0003, B.S.A0004, B.S.A0005, B.S.A0006, B.S.A0007, B.S.A0008, B.S.A0009, B.S.A000a, B.S.A000b, B.S.A4000, B.S.Afffd
Identify [R7]	I.S, I.C I.S.A0000, I.S.Afffd, I.C.Afffd I.S.C00.Rsp, I.S.C01.Rsp, I.S.C40.Rsp, I.C.C00.Rsp I.S.C00.Tx, I.C.C01.Tx
On/off [R10]	OO.C OO.C.Afffd

1305

1306

1307 27 ZCL enhancements

1308 This clause specifies the enhancements to specific cluster defined in the ZCL (see [R1]) required by
1309 this specification.

1310 27.1 Clusters enhanced in this specification

1311 The devices specified in this document require the enhancements to the clusters listed in Table 65.
1312 Each cluster will be discussed in the following sub-sections.

1313

1314 **Table 65 – Cluster enhancements specified in this specification**

Cluster ID	Cluster name	Reference
0x0000	Basic	27.2
0x0006	On/off	27.3
0x0008	Level control	27.4
0x0300	Color control	27.5

1315

1316 27.2 Basic cluster [0x0000]

1317 27.2.1 Server

1318 27.2.1.1 Attributes

1319 When a device implements the *basic* cluster at the ZCL server side, it SHALL support the additional
1320 attributes listed in Table 66.

1321

1322 **Table 66 – Additional attributes of the server side of the basic cluster**

Identifier	Name	Type	Range	Access	Default	Mandatory/ Optional
0x0008	<i>GenericDevice- Class</i>	8-bit enumeration	0x00- 0xff	Read only	0xff	Optional
0x0009	<i>GenericDevice- Type</i>	8-bit enumeration	0x00- 0xff	Read only	0xff	Optional
0x000a	<i>ProductCode</i>	Octet string	-	Read only	-	Optional
0x000b	<i>ProductURL</i>	Character string	-	Read only	-	Optional

1323

1324 27.2.1.1.1 *GenericDeviceClass* attribute

1325 The *GenericDeviceClass* attribute define the field of application of the *GenericDeviceType* attribute. It
1326 SHALL be set to one of the non-reserved values listed in Table 67.

1327

1328

Table 67 - Values of the *GenericDeviceClass* attribute

<i>GenericDeviceClass</i> value	Description
0x00	Lighting
0x01 – 0xff	Reserved

1329

1330 **27.2.1.1.2 *GenericDeviceType* attribute**

1331 The *GenericDeviceType* attribute allows an application to show an icon on a rich user interface (e.g.
1332 smartphone app).

1333 Notes on the usage of the *GenericDeviceType* attribute:

- 1334 • lamps with integrated radio module SHALL have a proper value indicating the lamp type,
1335 according to the table below;
- 1336 • devices that cannot be assigned to a proper category SHALL be set as “unspecified”;

1337

1338 When the *GenericDeviceClass* attribute is set to 0x00 (i.e. lighting) the *GenericDeviceType* attribute
1339 SHALL be set to one of the non-reserved values listed in Table 68.

1340

1341

Table 68 – Values of the *GenericDeviceType* attribute for the lighting class

<i>GenericDeviceType</i> value	Description
0x00	Incandescent
0x01	spotlight Halogen
0x02	Halogen bulb
0x03	CFL
0x04	Linear Fluorescent
0x05	LED bulb
0x06	Spotlight LED
0x07	LED strip
0x08	LED tube
0x09	Generic indoor luminaire/light fixture
0x0a	Generic outdoor luminaire/light fixture
0x0b	Pendant Luminaire/light fixture
0x0c	Floor standing luminaire/light fixture
0x0d – 0xdf	Reserved
0xe0	Generic Controller (e.g. Remote controller)
0xe1	Wall Switch
0xe2	Portable remote controller
0xe3	Motion sensor / light sensor
0xe4 – 0xef	Reserved

<i>GenericDeviceType</i> value	Description
0xf0	Generic actuator
0xf1	Wall socket
0xf2	Gateway/Bridge
0xf3	Plug-in unit
0xf4	Retrofit actuator
0xf5 ... 0xfe	Reserved
0xff	Unspecified

1342

1343 27.2.1.1.3 *ProductCode* attribute

1344 The *ProductCode* attribute allows an application to specify a code for the product. The *ProductCode*
1345 attribute SHALL have the format defined in Figure 22.

1346

Octets:1	1	variable
Octet count	CodeId (see Table 69)	The code represented as an sequence of ASCII characters
	Octet data	

1347 **Figure 22 – Format of the *ProductCode* attribute**

1348

1349

Table 69 – Values of the *CodeId* field of the *ProductCode* attribute

Code ID	Code type
0x00	Manufacturer defined
0x01	International article number (EAN)
0x02	Global trade item number (GTIN)
0x03	Universal product code (UPC)
0x04	Stock keeping unit (SKU)
0x05...0xff	Reserved

1350

1351 In case no code has been provided, the length field SHALL be set to 0 (i.e. the octet string is empty).

1352 27.2.1.1.4 *ProductURL* attribute

1353 The *ProductURL* attribute specifies a link to a web page containing specific product information.

1354 Notes on the usage of the *ProductURL* attribute:

- 1355 • The length of the URL SHALL be limited by the maximum number of bytes that can be
1356 transmitted from the application in a single frame. In most cases, such limit is around 50
1357 bytes.
- 1358 • In case no URL has been provided, the string SHALL be empty (i.e. the first byte is set to
1359 zero).

1360

1361 **27.3 On/off cluster [0x0006]**1362 **27.3.1 Server**1363 **27.3.1.1 Attributes**

1364 When a device implements the *on/off* cluster at the ZCL server side, it SHALL support the additional
 1365 attributes listed in Table 70.

1366

1367 **Table 70 – Additional attributes of the server side of the *on/off* cluster**

Identifier	Name	Type	Range	Access	Default	Mandatory/ Optional
0x4003	<i>StartUpOnOff</i>	8-bit enumeration	0x00-0xff	Read/Write	Defined by manufacturer	Optional

1368

1369 **27.3.1.1.1 *StartUpOnOff* attribute**

1370 The *StartUpOnOff* attribute SHALL define the desired startup behavior of a lamp device when it is
 1371 supplied with power and this state SHALL be reflected in the *OnOff* attribute. The values of the
 1372 *StartUpOnOff* attribute are listed in Table 71.

1373

1374 **Table 71 – Values of the *StartUpOnOff* attribute**

<i>StartUpOnOff</i> value	Action on power up
0x00	Set the <i>OnOff</i> attribute to 0 (off).
0x01	Set the <i>OnOff</i> attribute to 1 (on).
0x02	If the previous value of the <i>OnOff</i> attribute is equal to 0, set the <i>OnOff</i> attribute to 1. If the previous value of the <i>OnOff</i> attribute is equal to 1, set the <i>OnOff</i> attribute to 0 (toggle).
0x03 – 0xfe	These values are reserved. No action.
0xff	Set the <i>OnOff</i> attribute to its previous value.

1375

1376

1377 **27.4 Level control cluster [0x0008]**1378 **27.4.1 Server**1379 **27.4.1.1 Attributes**

1380 For devices implemented according to this specification, the *CurrentLevel* attribute SHALL be
 1381 interpreted as follows:

- 1382 • A value of 0x00 SHALL not be used.
- 1383 • A value of 0x01 SHALL indicate the minimum level that can be attained on a device.
- 1384 • A value of 0xfe SHALL indicate the maximum level that can be attained on a device.
- 1385 • A value of 0xff SHALL represent an undefined value.
- 1386 • All other values are application specific gradations from the minimum to the maximum level.

1387 When a device implements the server side of the *Level control* cluster, it SHALL support the additional
 1388 attributes listed in Table 72.

1389

1390 **Table 72 – Additional attributes of the server side of the *level control* cluster**

Identifier	Name	Type	Range	Access	Default	Mandatory/ Optional
0x000f	<i>Options</i>	8-bit bitmap	0b000000xx	Read/write	0b00000000	Mandatory
0x4000	<i>StartUp- CurrentLevel</i>	Unsigned 8-bit integer	0x00-0xff	Read/write	Defined by manufacturer	Optional

1391

1392 **27.4.1.1.1 Options attribute**

1393 The *Options* attribute SHALL be enhanced as follows:

Bit	Name	Values & Summary
0	ExecuteIfOff	See [R1].
1	CoupleColorTempToLevel (See also 27.5.1.3)	0 – Do not couple changes to the <i>CurrentLevel</i> attribute with the color temperature.
		1 – Couple changes to the <i>CurrentLevel</i> attribute with the color temperature.

1394

1395 **27.4.1.1.2 StartUpCurrentLevel attribute**

1396 The *StartUpCurrentLevel* attribute SHALL define the desired startup level a lamp SHALL use when it
 1397 is supplied with power and this level SHALL be reflected in the *CurrentLevel* attribute. The values of
 1398 the *StartUpCurrentLevel* attribute are listed in Table 73.

1399

1400

Table 73 – Values of the *StartUpCurrentLevel* attribute

<i>StartUpCurrentLevel</i> value	Action on power up
0x00	Set the <i>CurrentLevel</i> attribute to the minimum value permitted on the device (see also 27.4.1.1).
0x01 – 0xfe	Set the <i>CurrentLevel</i> attribute to this value.
0xff	Set the <i>CurrentLevel</i> attribute to its previous value.

1401

1402 **27.5 Color Control Cluster [0x0300]**1403 **27.5.1 Server**1404 **27.5.1.1 Attributes**

1405 When a device implements the server side of the *color control* cluster, it SHALL support the additional
 1406 attributes listed in Table 74 if the *ColorTemperatureMireds* attribute is supported (*).

1407

1408 **Table 74 – Additional attributes of the server side of the color control cluster**

Identifier	Name	Type	Range	Access	Default	Mandatory/Optional
0x400d	<i>CoupleColorTempToLevelMinMireds</i>	Unsigned 16-bit integer	<i>ColorTempPhysicalMinMireds</i> to <i>ColorTempPhysicalMaxMireds</i>	Read only	Defined by manufacturer	Mandatory*
0x4010	<i>StartUpColorTemperatureMireds</i>	Unsigned 16-bit integer	0x0000-0xffff	Read/Write	Defined by manufacturer	Mandatory*

1409

1410 **27.5.1.1.1 *CoupleColorTempToLevelMinMireds* attribute**

1411 The *CoupleColorTempToLevelMinMireds* attribute specifies a lower bound on the value of the
 1412 *ColorTemperatureMireds* attribute for the purposes of coupling the *ColorTemperatureMireds* attribute
 1413 to the *CurrentLevel* attribute when the *CoupleColorTempToLevel* bit of the *Options* attribute of the
 1414 *Level Control* cluster is equal to 1. When coupling the *ColorTemperatureMireds* attribute to the
 1415 *CurrentLevel* attribute, this value SHALL correspond to a *CurrentLevel* value of 0xfe (100%).

1416 This attribute SHALL be set such that the following relationship exists:

$$1417 \quad \textit{ColorTempPhysicalMinMireds} \leq \textit{CoupleColorTempToLevelMinMireds} \leq \textit{ColorTemperatureMireds}$$

1418 Note that since this attribute is stored as a micro reciprocal degree (mired) value (i.e. color temperature
 1419 in kelvins = 1,000,000 / *CoupleColorTempToLevelMinMireds*), the *CoupleColorTempToLevel-*
 1420 *MinMireds* attribute corresponds to an upper bound on the value of the color temperature in kelvins
 1421 supported by the device.

1422 **27.5.1.1.2 StartUpColorTemperatureMireds attribute**

1423 The *StartUpColorTemperatureMireds* attribute SHALL define the desired startup color temperature
 1424 value a lamp SHALL use when it is supplied with power and this value SHALL be reflected in the
 1425 *ColorTemperatureMireds* attribute. In addition, the *ColorMode* and *EnhancedColorMode* attributes
 1426 SHALL be set to 0x02 (*color temperature*). The values of the *StartUpColorTemperatureMireds* attribute
 1427 are listed in Table 75.

1428

1429

Table 75 – Values of the *StartUpColorTemperatureMireds* attribute

<i>StartUpColorTemperatureMireds</i> value	Action on power up
0x0000 – 0xffef	Set the <i>ColorTemperatureMireds</i> attribute to this value.
0xffff	Set the <i>ColorTemperatureMireds</i> attribute to its previous value.

1430

1431 **27.5.1.2 Scene table enhancements**

1432 The following attribute SHALL be added to the scene table when the *scenes* cluster server is
 1433 implemented:

1434 *ColorTemperatureMireds*

1435 Note that this attribute SHALL be added as attribute 8 of the scene table extensions listed in [R1].

1436 **27.5.1.3 Coupling color temperature to level**

1437 If the *Level Control* cluster is supported on the same endpoint as the *Color Control* cluster and color
 1438 temperature is supported, it is possible to couple changes in the current level to the color temperature.

1439 The *CoupleColorTempToLevel* bit of the *Options* attribute of the *Level Control* cluster indicates whether
 1440 the color temperature is to be linked with the *CurrentLevel* attribute in the *Level Control* cluster.

1441 If the *CoupleColorTempToLevel* bit of the *Options* attribute of the *Level Control* cluster is equal to 1 and
 1442 the *ColorMode* or *EnhancedColorMode* attribute is set to 0x02 (*color temperature*) then a change in the
 1443 *CurrentLevel* attribute SHALL affect the *ColorTemperatureMireds* attribute. This relationship is
 1444 manufacturer specific, with the qualification that the maximum value of the *CurrentLevel* attribute
 1445 SHALL correspond to a *ColorTemperatureMired* attribute value equal to the
 1446 *CoupleColorTempToLevelMinMireds* attribute. This relationship is one-way so a change to the
 1447 *ColorTemperatureMireds* attribute SHALL NOT have any effect on the *CurrentLevel* attribute.

1448 In order to simulate the behavior of an incandescent bulb, a low value of the *CurrentLevel* attribute
 1449 SHALL be associated with a high value of the *ColorTemperatureMireds* attribute (i.e., a low value of
 1450 color temperature in kelvins).

1451 If the *CoupleColorTempToLevel* bit of the *Options* attribute of the *Level Control* cluster is equal to 0,
 1452 there SHALL be no link between color temperature and current level.

1453