ZigBee Cluster Library
Occupancy Sensing Cluster (0x0406)
Test Specification
Version 1.0

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December 19th, 2017	
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Accepted by	This document has not yet been accepted for release by the ZigBee Alliance Board of Directors
Abstract	This document describes the certification tests for devices which implement the ZCL Occupancy Sensing cluster.
Keywords	ZCL, Occupancy Sensing, cluster

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1

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36

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Revision history

Revision	Date	Details	Editor
00	April, 2015	Created from ZHA test specifications.	Phil Jamieson
01	August 12th, 2015	Resolved comments received since the Hull test event in June 2015.	Phil Jamieson
02	September 28th, 2015	Added the new mandatory global attributes.	Phil Jamieson
03	October 30th, 2015	Addressed comments from the v0.9 ballot.	Phil Jamieson
04	September 23rd, 2016	Address comments from the ZigBee 3.0 SVE.	Phil Jamieson
05	October 4th, 2016	Added the use of new *OccupancySensorType-Bitmap* attribute, support for the new physical contact sensor and other test cases fixes.	Phil Jamieson
06	October 11th, 2016	Clarified the reporting test case OS-TC-04S to remove the <= tests as this would allow a report at less than the minimal interval.	Phil Jamieson
007	December 19th, 2017	Updated from errata 17-02808-003: Resolved CCBs 2284, 2285, 2294 and 2305.	Phil Jamieson

41

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43

Table of Contents

78

79 This page is intentionally blank

1 Introduction

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

1.1 Conformance levels

The key words "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED" and "MAY" in this document are to be interpreted as described in [R5].

2 References

2.1 ZigBee Alliance documents

[R1] ZigBee Cluster Library Specification, ZigBee Alliance document 07-5123.
[R2] ZCL General Test Specification, ZigBee Alliance document TBD.
[R3] ZCL Occupancy Sensing Cluster XML PICS, ZigBee Alliance document 16-02811.
[R4] ZCL Extension for Occupancy Sensor cluster (0x0406): physical contact occupancy sensor Specification set, ZigBee Alliance document 16-02028.

2.2 IETF documents

[R5] S. Bradner, Key words for use in RFCs to Indicate Requirement Levels, IETF RFC 2119, March 1997.

98 # 3 PIXIT items

Item number	Feature	Support
OS.PIXIT.MINRI	What is the minimum reporting interval for reporting attributes?	*"Number of seconds, e.g. 30 "*
OS.PIXIT.MAXRI	What is the non-zero maximum reporting interval for reporting attributes?	*"Number of seconds (>0), e.g. 60 "*

99

4 PICS

All references are for the ZigBee Cluster Library specification [R1] unless otherwise indicated.
An XML version of these PICS is also available in [R3].

4.1 Usage

Item number	Feature	Reference	Status	Support
OS.S	Does the device implement the *occupancy sensing* cluster as a server?	4.8.2	O	Yes/No
OS.C	Does the device implement the *occupancy sensing* cluster as a client?	4.8.3	O	Yes/No

4.2 Server

4.2.1 Occupancy sensor type

Item number	Feature	Reference	Status	Support
OS.S.OST00	Does the device implement a PIR occupancy sensor, i.e., bit 0 of the *OccupancySensor-TypeBitmap* attribute is set?	[R4]	OS.S: O.1	Yes/No
OS.S.OST01	Does the device implement an ultrasonic occupancy sensor, i.e., bit 1 of the *OccupancySensorTypeBitmap* attribute is set?	[R4]	OS.S: O.1	Yes/No
OS.S.OST02	Does the device implement a physical contact occupancy sensor, i.e., bit 2 of the *OccupancySensorTypeBitmap* attribute is set?	[R4]	OS.S: O.1	Yes/No

Notes:

O.1 A device SHALL support at least one of these occupancy sensor types.

4.2.2 Attributes

Item number	Feature	Reference	Status	Support
OS.S.A0000	Does the device implement the *Occupancy* attribute?	Table 4.23, 4.8.2.2.1.1	OS.S: M	Yes/No
OS.S.A0000.Report.Tx	Does the device implement receiving and responding to the global report attribute commands for the *Occupancy* attribute and sending reports?	4.8.2.5	OS.S.A0000: M	Yes/No

Item number	Feature	Reference	Status	Support
OS.S.A0001	Does the device implement the *OccupancySensingType* attribute?	Table 4.23, 4.8.2.2.1.2	OS.S: M	Yes/No
OS.S.A0002	Does the device implement the *OccupancySensingTypeBitmap* attribute?	[R4]	OS.S: M	Yes/No
OS.S.A0010	Does the device implement the *PIROccupiedToUnoccupiedDelay* attribute?	Table 4.25, 4.8.2.2.2.1	OS.S.OST00: O	Yes/No
OS.S.A0011	Does the device implement the *PIRUnoccupiedToOccupiedDelay* attribute?	Table 4.25, 4.8.2.2.2.2	OS.S.OST00: O OS.S.A0012: M	Yes/No
OS.S.A0012	Does the device implement the *PIRUnoccupiedToOccupiedThreshold* attribute?	Table 4.25, 4.8.2.2.2.3	OS.S.OST00: O OS.S.A0011: M	Yes/No
OS.S.A0020	Does the device implement the *UltrasonicOccupiedToUnoccupiedDelay* attribute?	Table 4.26, 4.8.2.2.3.1	OS.S.OST01: O	Yes/No
OS.S.A0021	Does the device implement the *UltrasonicUnoccupiedToOccupiedDelay* attribute?	Table 4.26, 4.8.2.2.3.2	OS.S.OST01: O OS.S.A0022: M	Yes/No
OS.S.A0022	Does the device implement the *UltrasonicUnoccupiedToOccupiedThreshold* attribute?	Table 4.26, 4.8.2.2.3.3	OS.S.OST01: O OS.S.A0021: M	Yes/No
OS.S.A0030	Does the device implement the *PhysicalContactOccupiedTo-UnoccupiedDelay* attribute?	[R4]	OS.S.OST02: O	Yes/No
OS.S.A0031	Does the device implement the *PhysicalContactUnoccupiedTo-OccupiedDelay* attribute?	[R4]	OS.S.OST02: O OS.S.A0032: M	Yes/No
OS.S.A0032	Does the device implement the *PhysicalContactUnoccupiedTo-OccupiedThreshold* attribute?	[R4]	OS.S.OST02: O OS.S.A0031: M	Yes/No
OS.S.Afffd	Does the device implement the *ClusterRevision* global attribute?	Table 2-1, 2.3.5.1.1	OS.S: M	Yes/No
OS.S.Afffe	Does the device implement the *AttributeReportingStatus* global attribute?	Table 2-1, 2.3.5.1.2	OS.S: O	Yes/No

111

112 ## 4.3 Client

113 ### 4.3.1 Attributes

Item number	Feature	Reference	Status	Support
OS.C.A0000.Report.Rsp	Does the device implement sending global report attribute command requests and receiving reports for the *Occupancy* attribute?	4.8.2.5	OS.C: O	Yes/No
OS.C.Afffd	Does the device implement the *ClusterRevision* global attribute?	Table 2-1, 2.3.5.1.1	OS.C: M	Yes/No
OS.C.Afffe	Does the device implement the *AttributeReportingStatus* global attribute?	Table 2-1, 2.3.5.1.2	OS.C: O	Yes/No

114

5 Test specification

5.1 Introduction

5.1.1 Test case overview

The following test cases are available for the *occupancy sensing* cluster:

Test ID	Description	Reference
Global tests		
OS-TC-01G	Global attributes	5.2.1
Server side tests		
OS-TC-01S	Attributes with server as DUT	5.3.1
OS-TC-02S	Primary functionality with server as DUT	5.3.2
OS-TC-03S	Secondary functionality with server as DUT	5.3.3
OS-TC-04S	Reporting functionality with server as DUT	5.3.4
Client side tests		
OS-TC-01C	Functionality with client as DUT	5.4.1

5.1.2 Testing tolerances

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

5.1.3 Client DUTs

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

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

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

5.1.4 Test steps manipulating attributes

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

5.2 Generic test cases

5.2.1 OS-TC-01G: Global attributes

This test case verifies the behavior of the global attributes of the *occupancy sensing* cluster client and server.

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

5.2.1.1 Scope

General:

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

Occupancy sensing cluster (0x0406):

- All global attributes

PICS:

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

5.2.1.2 Required devices

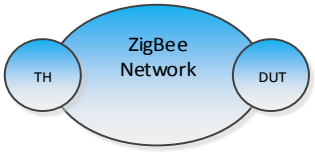
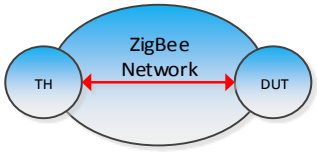
Designation	Symbol	Description
DUT		Device under test implementing: • The *occupancy sensing* cluster server or client.
TH		Test harness implementing: • The *occupancy sensing* cluster client or server, i.e. the opposite cluster instantiation as implemented on the DUT.

161 #### 5.2.1.3 Initial conditions

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

162

163 #### 5.2.1.4 Test preparation

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

164

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

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

165

166 **5.2.1.5 Test procedure**

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

Continued…

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

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

167

5.3 Server test cases

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

This test case verifies the behavior of the attributes of the *occupancy sensing* cluster server.

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

5.3.1.1 Scope

General:

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

Occupancy sensing cluster (0x0406):

- All non-global attributes

PICS:

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

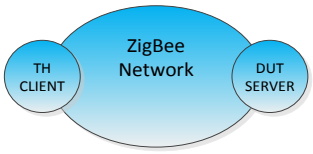
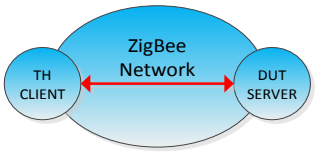
5.3.1.2 Required devices

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

5.3.1.3 Initial conditions

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

191 #### 5.3.1.4 Test preparation

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

192

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

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

193

194 **5.3.1.5 Test procedure**

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

Continued…

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

Continued…

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

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

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

This test case verifies the primary functionality of the *occupancy sensing* cluster server.

5.3.2.1 Scope

General:

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

Occupancy sensing cluster (0x0406):

- *Occupancy* attribute (0x0000)
- *OccupancySensorTypeBitmap* attribute (0x0002)
- *PIROccupiedToUnoccupiedDelay* attribute (0x0010)
- *PIRUnoccupiedToOccupiedDelay* attribute (0x0011)
- *PIRUnoccupiedToOccupiedThreshold* attribute (0x0012)
- *UltrasonicOccupiedToUnoccupiedDelay* attribute (0x0020)
- *UltrasonicUnoccupiedToOccupiedDelay* attribute (0x0021)
- *UltrasonicUnoccupiedToOccipiedThreshold* attribute (0x0022)
- *PhysicalContactOccupiedToUnoccupiedDelay* attribute (0x0030)
- *PhysicalContactUnoccupiedToOccupiedDelay* attribute (0x0031)
- *PhysicalContactUnoccupiedToOccupiedThreshold* attribute (0x0032)

PICS:

- OS.S
- OS.S.OST00, OS.S.OST01, OS.S.OST02
- OS.S.A0000, OS.S.A0002, OS.S.A0010, OS.S.A0011, OS.S.A0012, OS.S.A0020, OS.S.A0021, OS.S.A0022, OS.S.A0030, OS.S.A0031, OS.S.A0032

5.3.2.2 Required devices

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

224 #### 5.3.2.3 Initial conditions

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

225
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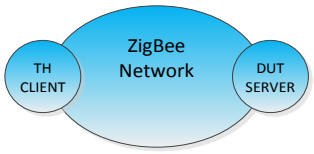
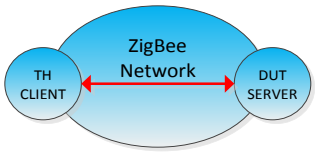
227

228 #### 5.3.2.4 Test preparation

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

229

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

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

230
231

232 #### 5.3.2.5 Test procedure

OS-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
1	OS.S.A0002	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *OccupancySensorTypeBitmap* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *OccupancySensorTypeBitmap* attribute has a value appropriate to the PICS of DUT SERVER.
2	OS.S.A0000	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute. Note: the sensor must remain in an unoccupied state until step 6a.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x00 (unoccupied).
3a	OS.S.OST00 OS.S.A0010	***Conditional on bit 0 of the OccupancySensorTypeBitmap attribute being equal to 1 (PIR) and the PIROccupied-ToUnoccupiedDelay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PIROccupiedTo-UnoccupiedDelay* attribute to 0x0000.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS).
3b	OS.S.OST00 OS.S.A0011	***Conditional on bit 0 of the OccupancySensorTypeBitmap attribute being equal to 1 (PIR) and the PIRUnoccupiedToOccupied-Delay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PIRUnoccupiedTo-OccupiedDelay* attribute to 0x0000.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS).

OS-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
3c	OS.S.OST00 OS.S.A0012	***Conditional on bit 0 of the OccupancySensorTypeBitmap attribute being equal to 1 (PIR) and the PIRUnoccupiedToOccupied-Threshold attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PIRUnoccupiedTo-OccupiedThreshold* attribute to 0x01.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS).

Continued…

4a	OS.S.OST01 OS.S.A0020	***Conditional on bit 1 of the OccupancySensorTypeBitmap attribute being equal to 1 (ultrasonic) and the UltrasonicOccupiedTo-UnoccupiedDelay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *UltrasonicOccupiedTo-UnoccupiedDelay* attribute to 0x0000.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS).
4b	OS.S.OST01 OS.S.A0021	***Conditional on bit 1 of the OccupancySensorTypeBitmap attribute being equal to 1 (ultrasonic) and the UltrasonicUnoccupiedTo-OccupiedDelay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *UltrasonicUnoccupiedTo-OccupiedDelay* attribute to 0x0000.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS).

OS-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
4c	OS.S.OST01 OS.S.A0022	***Conditional on bit 1 of the OccupancySensorTypeBitmap attribute being equal to 1 (ultrasonic) and the UltrasonicUnoccupiedTo-OccupiedThreshold attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *UltrasonicUnoccupiedTo-OccupiedThreshold* attribute to 0x01.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS).
5a	OS.S.OST02 OS.S.A0030	***Conditional on bit 2 of the OccupancySensorTypeBitmap attribute being equal to 1 (physical contact) and the PhysicalContactOccupied-ToUnoccupiedDelay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PhysicalContactOccupied-ToUnoccupiedDelay* attribute to 0x0000.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS).

Continued…

5b	OS.S.OST02 OS.S.A0031	***Conditional on bit 2 of the OccupancySensorTypeBitmap attribute being equal to 1 (physical contact) and the PhysicalContactUnoccupied-ToOccupiedDelay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PhysicalContactUnoccupied-ToOccupiedDelay* attribute to 0x0000.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS).

OS-TC-02S: Primary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
5c	OS.S.OST02 OS.S.A0032	***Conditional on bit 2 of the OccupancySensorTypeBitmap attribute being equal to 1 (physical contact) and the PhysicalContactUnoccupied-ToOccupiedThreshold attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PhysicalContactUnoccupied-ToOccupiedThreshold* attribute to 0x01.	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS).
6a	-	By means appropriate to the type of sensor, start a detection event. Note: the detection event must remain active until step 7a.	None.
6b	OS.S.A0000	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x01 (occupied).
7a	-	By appropriate means to the type of sensor, stop the detection event started in step 6a.	None.
7b	OS.S.A0000	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x00 (unoccupied).

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

5.3.3 OS-TC-03S: Secondary functionality with server as DUT

This test case verifies the secondary functionality of the *occupancy sensing* cluster server.

5.3.3.1 Scope

General:

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

Occupancy sensing cluster (0x0406):

- *Occupancy* attribute (0x0000)
- *OccupancySensorTypeBitmap* attribute (0x0002)
- *PIROccupiedToUnoccupiedDelay* attribute (0x0010)
- *PIRUnoccupiedToOccupiedDelay* attribute (0x0011)
- *PIRUnoccupiedToOccupiedThreshold* attribute (0x0012)
- *UltrasonicOccupiedToUnoccupiedDelay* attribute (0x0020)
- *UltrasonicUnoccupiedToOccupiedDelay* attribute (0x0021)
- *UltrasonicUnoccupiedToOccupiedThreshold* attribute (0x0022)
- *PhysicalContactOccupiedToUnoccupiedDelay* attribute (0x0030)
- *PhysicalContactUnoccupiedToOccupiedDelay* attribute (0x0031)
- *PhysicalContactUnoccupiedToOccupiedThreshold* attribute (0x0032)

PICS:

- OS.S
- OS.S.OST00, OS.S.OST01, OS.S.OST02
- OS.S.A0000, OS.S.A0002, OS.S.A0010 – OS.S.A0012, OS.S.A0020 – OS.S.A0022, OS.S.A0030 – OS.S.A0032

5.3.3.2 Required devices

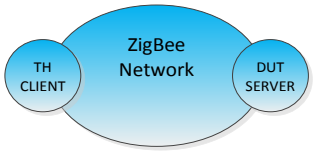
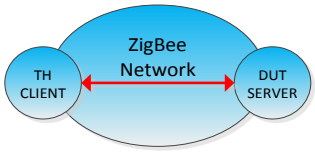
Designation	Symbol	Description
TH CLIENT		Test harness client implementing: • The *occupancy sensing* cluster client.
DUT SERVER		Device under test server implementing: • The *occupancy sensing* cluster server.

262 #### 5.3.3.3 Initial conditions

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

263
264

265 #### 5.3.3.4 Test preparation

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

266

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

--- End of test case OS-TC-03S preparation ---

267
268

269 **5.3.3.5 Test procedure**

OS-TC-03S: Secondary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
1	OS.S.A0002	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *OccupancySensorTypeBitmap* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of SUCCESS. *OccupancySensorTypeBitmap* attribute has a value appropriate to the PICS of DUT SERVER.
2	OS.S.A0000	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute. Note: the sensor must remain in an unoccupied state until step 6.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of SUCCESS. *Occupancy* attribute has the value 0x00 (unoccupied).
3a	OS.S.OST00 OS.S.A0010	***Conditional on bit 0 of the OccupancySensorTypeBitmap attribute being equal to 1 (PIR) and the PIROccupied-ToUnoccupiedDelay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PIROccupiedTo-UnoccupiedDelay* attribute to 0x0014 (20s).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.
3b	OS.S.OST00 OS.S.A0011	***Conditional on bit 0 of the OccupancySensorTypeBitmap attribute being equal to 1 (PIR) and the PIRUnoccupiedToOccupied-Delay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PIRUnoccupiedTo-OccupiedDelay* attribute to 0x000a (10s).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.

Continued…

OS-TC-03S: Secondary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
3c	OS.S.OST00 OS.S.A0012	***Conditional on step 3b being executed:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PIRUnoccupiedTo-OccupiedThreshold* attribute to 0x01 (1 detection event before activation).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.
4a	OS.S.OST01 OS.S.A0020	***Conditional on bit 1 of the OccupancySensorTypeBitmap attribute being equal to 1 (ultrasonic) and the UltrasonicOccupiedTo-UnoccupiedDelay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *UltrasonicOccupiedTo-UnoccupiedDelay* attribute to 0x0014 (20s).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.
4b	OS.S.OST01 OS.S.A0021	***Conditional on bit 1 of the OccupancySensorTypeBitmap attribute being equal to 1 (ultrasonic) and the UltrasonicUnoccupiedTo-OccupiedDelay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *UltrasonicUnoccupiedTo-OccupiedDelay* attribute to 0x000a (10s).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.

Continued…

OS-TC-03S: Secondary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
4c	OS.S.OST01 OS.S.A0022	***Conditional on step 4b being executed:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *UltrasonicUnoccupiedTo-OccupiedThreshold* attribute to 0x01 (1 detection event before activation).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.
5a	OS.S.OST02 OS.S.A0030	***Conditional on bit 2 of the OccupancySensorTypeBitmap attribute being equal to 1 (physical contact) and the PhysicalContactOccupied-ToUnoccupiedDelay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PhysicalContactOccupied-ToUnoccupiedDelay* attribute to 0x0014 (20s).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.
5b	OS.S.OST02 OS.S.A0031	***Conditional on bit 2 of the OccupancySensorTypeBitmap attribute being equal to 1 (physical contact) and the PhysicalContactUnoccupied-ToOccupiedDelay attribute being supported on the DUT:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PhysicalContact-UnoccupiedToOccupiedDelay* attribute to 0x000a (10s).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.

Continued…

OS-TC-03S: Secondary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
5c	OS.S.OST02 OS.S.A0032	***Conditional on step 5b being executed:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PhysicalContact-UnoccupiedToOccupied-Threshold* attribute to 0x01 (1 detection event before activation).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.
6	-	By means appropriate to the type of sensor, start a detection event.	None.
7a	OS.S.A0000, OS.S.A0011, OS.S.A0021, OS.S.A0031	***Conditional on the xUnoccupiedToOccupied-Delay attribute being supported on the DUT (where x is appropriate for the sensor type):*** Before *xUnoccupiedTo-OccupiedDelay* seconds have elapsed since step 6 (where x is appropriate for the sensor type), TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x00 (unoccupied).
7b	OS.S.A0011, OS.S.A0021, OS.S.A0031	***Conditional on step 7a being executed:*** Wait for more than *xUnoccupiedToOccupiedDelay* seconds after step 6 (where x is appropriate for the sensor type).	None.

Continued…

OS-TC-03S: Secondary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
8	OS.S.A0000	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x01 (occupied).
9	-	By means appropriate to the type of sensor, stop the detection event.	None.
10a	OS.S.A0000, OS.S.A0010, OS.S.A0020, OS.S.A0030	***Conditional on the xOccupiedToUnoccupied-Delay attribute being supported on the DUT (where x is appropriate for the sensor type):*** Before *xOccupiedTo-UnoccupiedDelay* seconds have elapsed since step 9 (where x is appropriate for the sensor type), TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x01 (occupied).
10b	OS.S.A0010, OS.S.A0020, OS.S.A0030	***Conditional on step 10a being executed:*** Wait for more than *xOccupiedToUnoccupiedDelay* seconds after step 9 (where x is appropriate for the sensor type).	None.
11	OS.S.A0000	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x00 (unoccupied).

Continued…

OS-TC-03S: Secondary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
12a	OS.S.OST00 OS.S.A0012	***Conditional on step 3b being executed:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PIRUnoccupiedTo-OccupiedThreshold* attribute to 0x04 (4 detection events before activation).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.
12b	OS.S.OST01 OS.S.A0022	***Conditional on step 4b being executed:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *UltrasonicUnoccupiedTo-OccupiedThreshold* attribute to 0x04 (4 detection events before activation).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.
12c	OS.S.OST02 OS.S.A0032	***Conditional on step 5b being executed:*** TH CLIENT unicasts a ZCL *write attributes* command frame to DUT SERVER to set the *PhysicalContact-UnoccupiedToOccupied-Threshold* attribute to 0x04 (4 detection events before activation).	DUT SERVER unicasts a ZCL *write attributes response* command frame to TH CLIENT with a *status* of SUCCESS.
13	-	By means appropriate to the type of sensor, start a detection event.	None.

Continued…

OS-TC-03S: Secondary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
14a	OS.S.A0000, OS.S.A0011, OS.S.A0021, OS.S.A0031	***Conditional on the xUnoccupiedTo-OccupiedDelay attribute being supported on the DUT (where x is appropriate for the sensor type):*** Before *xUnoccupiedTo-OccupiedDelay* seconds have elapsed since step 13 (where x is appropriate for the sensor type), TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x00 (unoccupied).
14b	OS.S.A0011, OS.S.A0021, OS.S.A0031	***Conditional on step 14a being executed:*** Wait for more than *xUnoccupiedToOccupiedDelay* seconds after step 13 (where x is appropriate for the sensor type).	None.
15	OS.S.A0000	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x00 (unoccupied).
16	-	By means appropriate to the type of sensor, stop the detection event.	None.
17	-	By means appropriate to the type of sensor, start a detection event.	None.

Continued…

OS-TC-03S: Secondary functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
18a	OS.S.A0000, OS.S.A0011, OS.S.A0021, OS.S.A0031	***Conditional on the xUnoccupiedToOccupied-Delay attribute being supported on the DUT (where x is appropriate for the sensor type):*** Before *xUnoccupiedTo-OccupiedDelay* seconds have elapsed since step 17 (where x is appropriate for the sensor type), TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x00 (unoccupied).
18b	-	By means appropriate to the type of sensor, create 3 more detection events.	None.
18c	OS.S.A0011, OS.S.A0021, OS.S.A0031	***Conditional on step 18a being executed:*** Wait for more than *xUnoccupiedToOccupiedDelay* seconds after step 17 (where x is appropriate for the sensor type).	None.
19	OS.S.A0000	TH CLIENT unicasts a ZCL *read attributes* command frame to DUT SERVER to read the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read attributes response* command frame to TH CLIENT with a *status* of 0x00 (SUCCESS). *Occupancy* attribute has the value 0x01 (occupied).
20	-	By appropriate means, stop the detection event.	None.

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

5.3.4 OS-TC-04S: Reporting functionality with server as DUT

This case test verifies the attribute reporting behavior of the *occupancy sensing* cluster server.

5.3.4.1 Scope

General:

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

Occupancy sensing cluster (0x0406):

- *Occupancy* attribute (0x0000)

PIXIT:

- OS.PIXIT.MINRI, OS.PIXIT.MAXRI

PICS:

- OS.S
- OS.S.A0000
- OS.S.A0000.Report.Tx

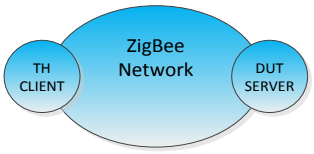
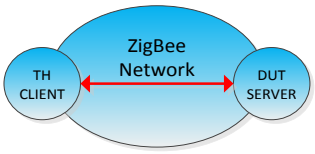
5.3.4.2 Required devices

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

5.3.4.3 Initial conditions

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

295 #### 5.3.4.4 Test preparation

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

296

OS-TC-04S: Reporting functionality with server as DUT		
Item	**Preparation Step**	**Observation**
P1	Form a ZigBee network.	Observe appropriate command frame to form the network.
P2	Power on TH CLIENT and DUT SERVER.	TH CLIENT and DUT SERVER are powered on.
P3	Join TH CLIENT and DUT SERVER to a ZigBee network.	Observe appropriate communication between TH CLIENT, DUT SERVER and any other relevant node on the ZigBee network.
P5	Establish a binding link in the reverse direction from an endpoint on DUT SERVER to a corresponding endpoint on TH CLIENT that both support the *occupancy sensing* cluster.	Observe appropriate communication between DUT SERVER, TH CLIENT and any other relevant node on the ZigBee network.

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

297

298

299 #### 5.3.4.5 Test procedure

OS-TC-04S: Reporting functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
1a	OS.S.A0000	TH CLIENT unicasts a ZCL *read reporting configuration* command frame to DUT SERVER to read the default reporting configuration of the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read reporting configuration response* command frame to TH CLIENT with a single attribute reporting configuration record for the *Occupancy* attribute and the *status* field set to SUCCESS. Set RI_{max} to the value of the *maximum reporting interval* field. Store the default report parameters contained in the *read reporting configuration response* command frame.
1b	OS.S.A0000, OS.S.A0000.Report.Tx	Wait for the attribute report according to the default configuration.	At a time $\leq(RI_{max} + 2)$ seconds, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *Occupancy* attribute.
2a	OS.S.A0000, OS.S.A0000.Report.Tx	TH CLIENT unicasts a ZCL *configure reporting* command frame to DUT SERVER for the *Occupancy* attribute with a *direction* field set to 0x00, the *minimum reporting interval* field set to OS.PIXIT.MINRI and the *maximum reporting interval* field set to OS.PIXIT.MAXRI.	DUT SERVER unicasts a ZCL *configure reporting response* command frame to TH CLIENT, confirming the configured attributes and with the *status* field set to SUCCESS.
2b	OS.S.A0000, OS.S.A0000.Report.Tx	None	At a time ≤(OS.PIXIT.MAXRI + 2) seconds after receiving the *configure reporting response* command frame in step 2a, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *Occupancy* attribute.

Continued…

OS-TC-04S: Reporting functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
3a	-	By means appropriate to the type of sensor, create a detection event to switch the sensor into an occupied state which will last until a report is sent in step 3b.	DUT SERVER does nothing.
3b	OS.S.A0000, OS.S.A0000.Report.Tx	None	At a time approximately OS.PIXIT.MINRI seconds after creating the detection event in step 3a, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *Occupancy* attribute.
3c	OS.S.A0000, OS.S.A0000.Report.Tx	None	At a time approximately OS.PIXIT.MAXRI seconds after sending the report in step 3b, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *Occupancy* attribute.
4a	OS.S.A0000, OS.S.A0000.Report.Tx	TH CLIENT unicasts a ZCL *configure reporting* command frame to DUT SERVER for the *Occupancy* attribute and the *maximum reporting interval* field set to 0xffff (do not send reports).	DUT SERVER unicasts a ZCL *configure reporting response* command frame to TH CLIENT, confirming the configured attributes and with the *status* field set to SUCCESS.
4b	OS.S.A0000.Report.Tx	Wait for (OS.PIXIT.MAXRI + 2) seconds after the report sent in step 4c.	DUT SERVER does not send any further reports.
5	OS.S.A0000	TH CLIENT unicasts a ZCL *read reporting configuration* command frame to DUT SERVER to read the default reporting configuration of the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read reporting configuration response* command frame to TH CLIENT with a single attribute reporting configuration record for the *Occupancy* attribute and the *status* field equal to either 0x8b (NOT_FOUND) or 0x00 (SUCCESS). If the *status* field is equal to 0x00, the *maximum reportable interval* field is equal to 0xffff.

OS-TC-04S: Reporting functionality with server as DUT			
Item	**PICS**	**Test Harness Step**	**DUT Pass Verification**
Continued…			
6a	OS.S.A0000	TH CLIENT unicasts a ZCL *configure reporting* command frame to DUT SERVER for the *Occupancy* attribute with a *direction* field set to 0x00, the *minimum reporting interval* field set to 0xffff and the *maximum reporting interval* field set to 0x0000 (restore default report configuration).	DUT SERVER unicasts a ZCL *configure reporting response* command frame to TH CLIENT, confirming the configured attributes and with the *status* field set to SUCCESS.
6b	OS.S.A0000	TH CLIENT unicasts a ZCL *read reporting configuration* command frame to DUT SERVER to read the default reporting configuration of the *Occupancy* attribute.	DUT SERVER unicasts a ZCL *read reporting configuration response* command frame to TH CLIENT with a single attribute reporting configuration record for the *Occupancy* attribute and the *status* field set to SUCCESS. Verify that the default reporting configuration is commensurate with the parameters stored in step 1a.
6c	OS.S.A0000, OS.S.A0000.Report.Tx	Wait for the attribute report according to the default configuration.	At a time $\leq(RI_{max} + 2)$ seconds after step 6a, DUT SERVER unicasts a ZCL *report attributes* command frame to TH CLIENT with the *Occupancy* attribute.

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

5.4 Client test cases

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

This case test verifies the functionality of the *occupancy sensor* cluster client.

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

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

5.4.1.1 Scope

General:

- *Configure reporting* command (0x06)

PICS:

- OS.C
- OS.C.A0000.Report.Rsp

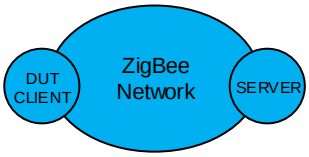
5.4.1.2 Required devices

Designation	Symbol	Description
DUT CLIENT		Device under test client implementing: • The *occupancy sensor* cluster client.
SERVER		Suitable server device implementing: • The *occupancy sensor* cluster server.

5.4.1.3 Initial conditions

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

324 #### 5.4.1.4 Test preparation

Link DUT CLIENT with SERVER	
 *Before*	 *After*

325

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

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

326

327

328 #### 5.4.1.5 Test procedure

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

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

329
330
331

6 Annex A: PICS to test case cross reference

6.1 Server

	Test case				
PICS	OS-TC-01G	OS-TC-01S	OS-TC-02S	OS-TC-03S	OS-TC-04S
OS.S	X	X	X	X	X
OS.S.OST00			X	X	
OS.S.OST01			X	X	
OS.S.OST02			X	X	
OS.S.A0000		X	X	X	X
OS.S.A0000.Report.Tx					X
OS.S.A0001		X			
OS.S.A0002		X	X	X	
OS.S.A0010		X	X	X	
OS.S.A0011		X	X	X	
OS.S.A0012		X		X	
OS.S.A0020		X	X	X	
OS.S.A0021		X	X	X	
OS.S.A0022		X		X	
OS.S.A0030		X	X	X	
OS.S.A0031		X	X	X	
OS.S.A0032		X		X	
OS.S.Afffd	X				
OS.S.Afffe	X				

6.2 Client

	Test case	
PICS	OS-TC-01G	OS-TC-01C
OS.C	X	X
OS.C.A0000.Report.Rsp		X
OS.C.Afffd	X	
OS.C.Afffe	X	