Base Device Behavior PICS Proforma
Version 1.0

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Abstract	This specification defines the base device behavior specification for devices operating on the ZigBee-PRO stack, ensuring profile interoperability between application profiles.
Keywords	Base device, profile interoperability, ZigBee-PRO, PICS

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Revision history

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02	October 30th, 2015	Addressed comments from the v0.9 ballot.	Phil Jamieson
03	March 8th, 2016	Addressed comments from the ZigBee 3.0 SVEs.	Phil Jamieson
04	April 18th, 2016	Changed status to “approved” and version to 1.0.	Phil Jamieson

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1 Introduction

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented for a given standard. Such a statement is called a protocol implementation conformance statement (PICS).

1.1 Scope

This document provides the protocol implementation conformance statement (PICS) proforma for the Base Device Behavior specification [R2] in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ISO/IEC 9646-7.

1.2 Purpose

The supplier of a protocol implementation claiming to conform to the Base Device Behavior specification shall complete the following PICS proforma and accompany it with the information necessary to identify fully both the supplier and the implementation.

The PICS is in the form of answers to a set of questions in the PICS proforma. The questions in a proforma consist of a systematic list of protocol capabilities and options as well as their implementation requirements. The implementation requirement indicates whether implementation of a capability is mandatory, optional, or conditional depending on options selected. When a protocol implementer answers questions in a PICS proforma, they would indicate whether an item is implemented or not, and provide explanations if an item is not implemented.

1.3 Abbreviations and special symbols

Notations for requirement status:

Symbol	**Description**
<Item Number>	PICS item reference composed of an item set abbreviation and a numeric item identifier, e.g. ZLT1.
<Status>	Implementation requirement status for this item (see below).
<Item Number>: *<Status>*	*Status* is conditional on support of *Item Number*.
<Item number>.<i>	*<i>* is a sub-item of *<Item number>*.
×	Specific negative test case item.
M	Feature is mandatory.
O	Feature is optional.
R	Feature is optional but recommended.
O.n	Feature is optional, but support of at least one of the group of options labeled O.n is required.

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Symbol	Description
N/A	Feature is not applicable.
X	Feature is prohibited.
~	Boolean NOT operator.
&&	Boolean AND operator.
||	Boolean OR operator.

Unless explicitly stated, items that do not match may be considered optional.

For example, FD1: O.1 indicates that the status is optional but at least one of the features described in FD1 is required to be implemented, if this implementation is to follow the standard of which this PICS proforma is a part.

1.4 Instructions for completing the PICS proforma

If a given implementation is claimed to conform to this standard, the actual PICS proforma to be filled in by a supplier shall be technically equivalent to the text of the PICS proforma in this document, and shall preserve the numbering and naming and the ordering of the PICS proforma.

A PICS which conforms to this document shall be a conforming PICS proforma completed in accordance with the instructions for completion given in this document.

The main part of the PICS is a fixed-format questionnaire. Answers to the questionnaire are to be provided in the rightmost column, either by simply marking an answer to indicate a restricted choice (such as Yes or No), or by entering a value, set, or range of values.

If an implementation supports multiple application devices on multiple endpoints, a separate PICS proforma SHALL be completed for each device.

1.5 PICS proforma tables

The tables in clauses 4 onwards are composed of the detailed questions to be answered, which make up the PICS proforma. References are to the Base Device Behavior Specification [R2] unless otherwise indicated.

1.6 Errata

Any errata against this specification can be found in [R5].

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2 References

The following standards contain provisions, which, through reference in this document, constitute provisions of this standard. All the standards listed are normative references. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

2.1 ZigBee Alliance documents

[R1] ZigBee Specification, ZigBee document 05-3474.

[R2] Base Device Behavior Specification, ZigBee document 13-0402.

[R3] ZigBee Cluster Library, ZigBee document 07-5123.

[R4] ZigBee Application Architecture, ZigBee document 13-0589.

[R5] Errata for Base Device Behavior PICS, ZigBee document 16-02010.

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3 Implementation declaration

3.1 Identification of the implementation

Implementation under test (IUT) identification

IUT name	Kroger ZigBee Access Point
IUT software version	1.0
IUT hardware version	1.0
Operating system (optional)	

Product supplier

Name	Kroger
Address	11450 Grooms Rd, Blue Ash, OH 45242
Telephone number	513 489 6006
Fax number	
Email address	
Additional information	

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Client

Name	
Address	
Telephone number	
Fax number	
Email address	
Additional information	

PICS contact person

Name	Zin Thein Kyaw
Address	7725 Gateway, Irvine, CA 92618
Telephone number	650 861 9368
Fax number	
Email address	zin.kyaw@kroger.com
Additional information	

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3.2 Identification of the protocol

This PICS proforma applies to the Base Device Behavior specification [R2].

3.3 Global statement of conformance

The implementation described in this PICS proforma meets all of the mandatory requirements of the referenced standards:

Base Device Behavior specifications [R2]

- (•) Yes
- ( ) No

Note -- Answering 'No' indicates non-conformance to the specified protocol standard. Non-supported mandatory capabilities are to be identified in the following tables, with an explanation by the implementer explaining why the implementation is non-conforming.

The supplier will have fully complied with the requirements for a statement of conformance by completing the statement contained in this sub-clause. That means, by clicking the above, the statement of conformance is complete.

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4 Base device PIXIT

4.1 Internal attributes

Item number	Feature	Reference	Status	Support
IA1	*bdbCommissioningGroupID*: What is the list of groups the node is able to use for finding & binding?	5.3.1	M	*"0xffff, List of group IDs"* 0xffff
IA2	*bdbJoinUsesInstallCodeKey*: Does the Trust Center policy require all nodes to join using an install code?	5.3.6	ZLT1: M	*"True, False"* FALSE
IA3	*bdbPrimaryChannelSet*: What is the primary channel set?	5.3.10	M	*"0x00000000, Channel mask"* 0x00100000
IA4	*bdbScanDuration*: What is the scan duration?	5.3.11	M	*"8-bit integer"* 4
IA5	*bdbSecondaryChannelSet*: What is the secondary channel set?	5.3.12	M	*"0x00000000, Channel mask"* 0x00200000
IA6	*bdbTCLinkKeyExchangeAttemptsMax*: What is the maximum number of attempts a node will try to exchange its Trust Center link key?	5.3.14	ZLT2: M ZLT3: M	*"8-bit integer"* 3
IA7	*bdbTCLinkKeyExchangeMethod*: What is the Trust Center link key exchange method?	5.3.15	ZLT2: M ZLT3: M	*"0x00, 0x01"* 0x00
IA8	*bdbTrustCenterNodeJoinTimeout*: What is the Trust Center node join timeout?	5.3.16	ZLT1: M	*"8-bit integer"* 255
IA9	*bdbTrustCenterRequireKeyExchange*: Does the Trust Center's policy require a node to exchange its initial link key with a new link key generated by the Trust Center?	5.3.17	ZLT1: M	*"True, False"* TRUE

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4.2 Commissioning combinations

The actions specified in this section serve as a guide for testing the individual commissioning mechanisms. Verification of commissioning feature support is covered later in this document.

Indicate support of all relevant combinations and add any further combinations supported by the device.

Item number	Feature	Status	Support
CC1	Can the product be stimulated to invoke touchlink commissioning only?	O	Yes/No N
CC2	Can the product be stimulated to invoke network formation only?	O	Yes/No N
CC3	Can the product be stimulated to invoke network steering only?	O	Yes/No N
CC4	Can the product be stimulated to invoke finding & binding only?	O	Yes/No N
CC5	Can the product be stimulated to invoke touchlink commissioning followed by network steering?	O	Yes/No N
CC6	Can the product be stimulated to invoke network formation followed by network steering?	O	Yes/No N
CC7	Can the product be stimulated to invoke network steering followed by network formation?	O	Yes/No N
CC8	Can the product be stimulated to reset before network formation?	O	Yes/No N
CC9	Can the product be stimulated to automatically form a network upon startup when factory new?	O	Yes/No N
	…		

4.3 Miscellaneous

Item number	Feature	Status	Support
M1	Can the node disable network steering via local application trigger?	O	Yes/No N
M2	Can the node store more than one NWK outgoing frame counters?	O	Yes/No N

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Item number	Feature	Status	Support
M3.1	If supported, give the identifier of a cluster that has at least one writable attribute.	O	*"Cluster ID or N/A"* 0x0000
M3.2	Give the attribute identifier of a writable attribute.	M3.1: M	*"Attribute ID"* 0x0011

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5 General requirements

5.1 [ZLT] ZigBee logical device types

Item number	Feature	Reference	Status	Support
ZLT1	Is the logical device type specified as a ZigBee coordinator?	[R1]/2.5.4.5.1	O.1	Yes/No Y
ZLT1.1	Does the node encompass the role of the Trust Center?	6.1	ZLT1: M ZLT2: X ZLT3: X	Yes/No Y
ZLT1.2	Does the node form a centralized security network?	6.1	ZLT1: M ZLT2: X ZLT3: X	Yes/No Y
ZLT1.3	Does the node NOT attempt to join another network?	6.1	ZLT1: M	Yes/No Y
ZLT2	Is the logical device type specified as a ZigBee router?	[R1]/2.5.4.5.2	O.1	Yes/No N
ZLT2.1	Can the router node join another network?	6.1	ZLT2: M	Yes/No N
ZLT2.2	Does the node form a distributed network?	6.1	ZLT1: X ZLT2: O ZLT3: X	Yes/No N
ZLT3	Is the logical device type specified as a ZigBee end device?	[R1]/2.5.4.5.5	O.1	Yes/No N
ZLT3.1	Can the end device node join another network?	6.1	ZLT3: M	Yes/No N
ZLT3.2	Is the end device sleepy?	-	ZLT3: O	Yes/No N/A
ZLT4	Can the node switch between ZLT1 and ZLT2 types under application control.	6.1	O.1	Yes/No N

Notes:

O.1 A node SHALL support one of ZLT1 or ZLT2 or ZLT3 or (ZLT1 and ZLT2, switchable under application control).

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5.2 [NSM] Network security models

Item number	Feature	Reference	Status	Support
NSM1	Can the node join a centralized security network?	6.2	ZLT1: X ZLT2: M ZLT3: M	Yes/No N
NSM2	Can the node join a distributed security network?	6.2	ZLT1: X ZLT2: M ZLT3: M	Yes/No N

5.3 [LK] Link keys

Item number	Feature	Reference	Status	Support
LK1	Does the node contain the default global Trust Center link key?	6.3	M	Yes/No Y
LK2	Does the node contain the distributed security global link key?	6.3	M	Yes/No Y
LK3	Does the node contain an install code derived preconfigured link key?	6.3	M	Yes/No Y
LK4	Does the node contain the touchlink preconfigured link key?	6.3	GRC5: M	Yes/No N

5.4 [UIC] Use of install codes

Item number	Feature	Reference	Status	Support
UIC1	Does the node support install codes?	6.4	M	Yes/No Y
UIC2	Will the node not be available via retail channels and be professionally installed?	6.4	O.2	Yes/No Y
UIC3	Will the node be available via retail channels?	6.4	O.2	Yes/No N
UIC4	Is the node configured to only require the use of install codes on joining?	6.4	UIC2: O UIC3: X	Yes/No N
UIC5	Does the node have a user configuration mechanism?	6.4	UIC3: O.3	Yes/No N

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Item number	Feature	Reference	Status	Support
UIC6	Does the node not have a user configuration mechanism?	6.4	UIC3: O.3	Yes/No Y
UIC7	Does the node default to requiring potential networks to use of install codes on joining?	6.4	UIC5: O UIC6: X	Yes/No N
UIC8	Can the node be switched into a mode whereby all networks are considered for joining?	6.4	UIC5: M	Yes/No N
UIC9	Can the node join all types of networks?	6.4	UIC6: M	Yes/No N/A
UIC10	Does the Trust Center require the use of install codes for all joining nodes?	6.4	ZLT1: O	Yes/No N

Notes:

O.2 One of the items marked O.2 SHALL be supported.

O.3 One of the items marked O.3 SHALL be supported.

5.5 [GRC] Commissioning

Item number	Feature	Reference	Status	Support
GRC1	Does the node support network steering?	6.5	M	Yes/No Y
GRC2.1	Is the device implemented as having a simple device class (see [R4])?	6.5	O.4	Yes/No Y
GRC2.2	Is the device implemented as having a dynamic device class (see [R4])?	6.5	O.4	Yes/No N
GRC2.3	Is the device implemented as having a node device class (see [R4])?	6.5	O.4	Yes/No N
GRC4	Does the device support finding & binding as either an initiator or a target?	6.5	GRC2.1: M GRC2.2: O GRC2.3: O	Yes/No Y
GRC5	Does the device support touchlink commissioning as either an initiator or a target or both?	6.5	O	Yes/No N

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Item number	Feature	Reference	Status	Support
GRC5.1	Does the device support touchlink commissioning as an initiator.	6.5	GRC5: O.5	Yes/No N
GRC5.2	Does the device support touchlink commissioning as a target.	6.5	GRC5: O.5	Yes/No N
GRC6	If touchlink commissioning as an initiator is attempted and is successful does the device not attempt any further commissioning operations?	6.5	GRC5.1: M	Yes/No N/A
GRC7	If network steering is attempted does the node follow the correct steering procedure dependent on whether the node is joined to a network or not?	6.5	M	Yes/No N/A
GRC8	Does the node only form a network if the node is not yet joined to a network?	6.5	ZLT1.2: M ZLT2.2: M	Yes/No N/A
GRC9	Can the node form a centralized network?	6.5	ZLT1.2: M	Yes/No Y
GRC10	Can the node form a distributed network?	6.5	ZLT2.2: M	Yes/No Y
GRC11	Does the node skip network formation?	6.5	ZLT3: M	Yes/No N
GRC12	Does the node attempt finding & binding only if it is joined to a network?	6.5	ZLT2: M ZLT3: M	Yes/No N/A
GRC13	Does the node instigate finding & binding on one or more endpoints implemented on the node?	6.5	GRC4: O	Yes/No N
GRC14	Does the node attempt finding & binding as an initiator endpoint if the endpoint supports a type 1 client or type 2 server cluster?	6.5	GRC4: M	Yes/No N
GRC15	Does the node attempt finding & binding as a target endpoint if the endpoint supports a type 1 server or type 2 client cluster?	6.5	GRC4: M	Yes/No Y
GRC16	Is the node capable of binding to a group during finding & binding?		GRC4: O	Yes/No N

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Item number	Feature	Reference	Status	Support
GRC17	Is the device able to transmit groupcast messages?		O	Yes/No N

Notes:

O.4 One of the items marked O.4 SHALL be supported.

O.5 One of the items marked O.5 SHALL be supported.

5.6 [MRD] Minimum requirements for all devices

Item number	Feature	Reference	Status	Support
MRD1	Can the node process the ZDO *Active_EP_req* command and respond with the ZDO *Active_EP_rsp* command?	6.6	M	Yes/No Y
MRD1.1	Can the node process the ZDO *Node_Desc_req* command and respond with the ZDO *Node_Desc_rsp* command?	6.6	M	Yes/No Y
MRD2	Can the node process the ZDO *Simple_Desc_req* command and respond with the ZDO *Simple_Desc_rsp* command?	6.6	M	Yes/No Y
MRD3	Can the node process the ZDO *IEEE_Addr_req* command and respond with the ZDO *IEEE_Addr_rsp* command?	6.6	M	Yes/No Y
MRD4	Can the node process the ZDO *NWK_Addr_req* command and respond with the ZDO *NWK_Addr_rsp* command?	6.6	M	Yes/No Y
MRD5	Can the node process the ZDO *Match_Desc_req* command and respond with the ZDO *Match_Desc_rsp* command?	6.6	M	Yes/No Y
MRD6	Can the node process the ZDO *Mgmt_Bind_req* command and respond with the ZDO *Mgmt_Bind_rsp* command?	6.6	M	Yes/No Y
MRD7	Can the node process the ZDO *Mgmt_Lqi_req* command and respond with the ZDO *Mgmt_Lqi_rsp* command?	6.6	M	Yes/No Y

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Item number	Feature	Reference	Status	Support
MRD8	Can the node process the ZDO *Bind_req* command and respond with the ZDO *Bind_rsp* command?	6.6	M	Yes/No Y
MRD9	Can the node process the ZDO *Unbind_req* command and respond with the ZDO *Unbind_rsp* command?	6.6	M	Yes/No Y
MRD10	Can the node process the ZDO *Mgmt_Leave_req* command and respond with the ZDO *Mgmt_Leave_rsp* command?	6.6	M	Yes/No Y
MRD11	Can the node process at least one *identify* cluster, *identify query response* command after broadcasting an *identify* cluster, *identify query* command?	6.6	M	Yes/No Y
MRD12	Can the node process more than one *identify* cluster, *identify query response* command after broadcasting an *identify* cluster, *identify query* command?	6.6	O	Yes/No N
MRD13	Does the node implement a binding table whose number of entries is ≥ the sum of cluster instances supported on each device?	6.6	M	Yes/No Y
MRD14	Regardless of the commissioning mechanism, is the binding table consistent such that its contents can be retrieved using the ZDO *Mgmt_Bind_req* command?	6.6	M	Yes/No Y
MRD15	Does the node have a default reporting configuration for every implemented attribute that is specified as mandatory and reportable?	6.6	DRC1: M	Yes/No N/A
MRD16	Does the node have a cluster which is the target of an operational transaction?	6.6	O	Yes/No Y
MRD17	Does the node support group addressing and at least 8 memberships in the group table?	6.6	MRD16: M	Yes/No Y

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5.7 [DRC] Default reporting configuration

Item number	Feature	Reference	Status	Support
DRC1	Does the node have at least one attribute that is specified as reportable?	6.7	O	Yes/No N
DRC2	Does the node have a default reporting configuration for every attribute that is specified as reportable?	6.7	DRC1: M	Yes/No N/A
DRC3	Does the node automatically send reports to a node that binds with a cluster containing an attribute that is specified as reportable?	6.7	DRC2: M	Yes/No N/A
DRC4	If any default reporting configuration is overwritten, is the updated reporting configuration used instead?	6.7	DRC1: M	Yes/No N/A
DRC5	If the maximum reporting interval of an attribute is greater than 0x0000, is a report generated when the time that has elapse since the previous report of the same attribute is equal to the maximum reporting interval for that attribute?	6.7	DRC1: M	Yes/No N/A
DRC6	If the maximum reporting interval of an attribute is equal to 0x0000, is a report generated when the attribute value changes?	6.7	DRC1: M	Yes/No N/A

5.8 [MDP] MAC data polling

Item number	Feature	Reference	Status	Support
MDP1	Is the MAC data polling rate dynamic based on the operating state of the node?	6.8	ZLT3: R	Yes/No N/A
MDP2	Does the node have at least a fast and a slow MAC data polling rate?	6.8	ZLT3: R	Yes/No N/A
MDP3	Does the device poll more frequently than once per 7.5 seconds?	6.8	ZLT3: R	Yes/No N/A

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Item number	Feature	Reference	Status	Support
MDP4	While waiting for an active response message, does the node poll at its fast rate?	6.8	MDP2: R	Yes/No N/A
MDP5	Is the fast poll rate at least once every 3 seconds?	6.8	MDP2: R	Yes/No N/A
MDP6	While not actively waiting for messages, does the node poll at its slow rate?	6.8	MDP2: O	Yes/No N/A
MDP7	Does the node poll at its fast rate during commissioning?	6.8	MDP2: R	Yes/No N/A

5.9 [ZPD] ZigBee persistent data

Item number	Feature	Reference	Status	Support
ZPD1	Does the node preserve the value of the *bdbNodeIsOnANetwork* attribute across resets?	6.9	M	Yes/No Y

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6 Initialization

6.1 [INP] Initialization procedure

Item number	Feature	Reference	Status	Support
INP1	Does the node support the initialization procedure?	7.1	M	Yes/No Y
INP2	Does the node restore its persistent ZigBee data?	7.1	M	Yes/No Y
INP3	If the node is a ZigBee End Device and was previously on a network, does it attempt to rejoin the network?	7.1	ZLT3: M	Yes/No N/A
INP4	On successful rejoining, does the node broadcast a *device_annce* ZDO command?	7.1	M	Yes/No N/A
INP5	If the node is a ZigBee Router and supports touchlink but was not previously on a network, does it switch to a touchlink primary channel?	7.1	(ZLT2 && GRC5): M	Yes/No N/A

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7 [COM] Commissioning

Item number	Feature	Reference	Status	Support
COM1	Does the implementation provide a mechanism to invoke network steering?	8	M	Yes/No Y
COM2	Does the implementation provide a mechanism to invoke finding & binding?	8	GRC4: M	Yes/No Y

7.1 [TLC] Top level commissioning procedure

Item number	Feature	Reference	Status	Support
TLC1	If touchlink commissioning is requested, does the node follow the *touchlink for initiator* procedure?	8.1	GRC5.1: M	Yes/No N/A
TLC2	If network steering is requested when *bdbNodeIsOnANetwork* is equal to TRUE, does the node follow the *network steering for a node on a network* procedure?	8.1	M	Yes/No Y
TLC3	If network steering is requested when *bdbNodeIsOnANetwork* is equal to FALSE, does the node follow the *network steering for a node not on a network* procedure?	8.1	M	Yes/No Y
TLC4	If network formation is requested when *bdbNodeIsOnANetwork* is equal to FALSE, does the node follow the *network formation* procedure?	8.1	ZLT1: M ZLT2: M	Yes/No Y
TLC5×	If network formation is requested when *bdbNodeIsOnANetwork* is equal to TRUE, does the node follow the *network formation* procedure?	8.1	X	Yes/No
TLC6	If finding & binding is requested when *bdbNodeIsOnANetwork* is equal to TRUE, does the node follow the *finding & binding* procedure according to cluster class?	8.1	GRC4: M	Yes/No Y

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Item number	Feature	Reference	Status	Support
TLC7×	If finding & binding is requested when *bdbNodeIsOnANetwork* is equal to FALSE, does the node follow the *finding & binding* procedure according to cluster class?	8.1	X	Yes/No

7.2 [NSO] Network steering procedure for a node on a network

Item number	Feature	Reference	Status	Support
NSO1	Is the *network steering for a node on a network* procedure supported?	8.2	M	Yes/No Y
NSO2	Does the node first broadcast the *Mgmt_Permit_Joining_req* ZDO command?	8.2	M	Yes/No Y
NSO3	If the node is a ZigBee Coordinator or a ZigBee Router, does the node activate its permit joining flag for ≥ *bdbcMinCommissioningTime*?	8.2	(ZLT1 || ZLT2): M	Yes/No Y

7.3 [NSN] Network steering procedure for a node not on a network

NOT APPLICABLE FOR ZC

Item number	Feature	Reference	Status	Support
NSN1	Is the *network steering for a node not on a network* procedure supported?	8.3	ZLT1: X ZLT2: M ZLT3: M	Yes/No
NSN2	Does the node attempt to discover networks over a set of channels?	8.3	NSN1: M	Yes/No
NSN3	If suitable networks were found, does the node attempt to join one of them using MAC association?	8.3	NSN1: M	Yes/No
NSN4	If the join was not successful and there are more suitable networks to join, does the node attempt to join another network?	8.3	NSN1: M	Yes/No

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Item number	Feature	Reference	Status	Support
NSN5	If the join was successful, does the node wait *apsSecurityTimeOutPeriod* milliseconds to receive the network key?	8.3	NSN1: M	Yes/No
NSN6	If the network key is not received within *apsSecurityTimeOutPeriod* milliseconds, the network key is received but could not be decrypted or the authentication fails does the node reset its network parameters?	8.3	NSN1: M	Yes/No
NSN7	Does the node broadcast a *Device_annce* ZDO command?	8.3	NSN1: M	Yes/No
NSN9	If the TC link key exchange is not successful, does the node reset its network parameters and remove itself from the network?	8.3	NSN1: M	Yes/No
NSN10	If the TC link key exchange is successful, does the node broadcast the *Mgmt_Permit_Joining_req* ZDO command?	8.3	NSN1: M	Yes/No
NSN11	Does the node activate its permit joining flag if new nodes can join this node?	8.3	(ZLT1 || ZLT2): M	Yes/No Y

7.4 [NFP] Network formation procedure

Item number	Feature	Reference	Status	Support
NFP1	Is the *network formation* procedure supported?	8.4	ZLT1: M ZLT2: O	Yes/No Y
NFP2	Does the node attempt to form a network over a set of channels?	8.4	NFP1: M	Yes/No Y
NFP3	If formation is successful and the node is a ZigBee Coordinator, does it initiate its Trust Center functionality?	8.4	(NFP1 && ZLT1): M	Yes/No Y

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7.5 [FBT] Finding & binding procedure for a target endpoint

Item number	Feature	Reference	Status	Support
FBT1	Is the *finding & binding for a target endpoint* procedure supported?	8.5	GRC15: M	Yes/No Y
FBT2	Does the target identify itself for at least *bdbMinCommissioningTime* seconds?	8.5	FBT1: M	Yes/No Y
FBT3	Does the target respond to *Identify* cluster *Identify Query* commands?	8.5	FBT1: M	Yes/No Y

7.6 [FBI] Finding & binding procedure for an initiator endpoint

NOT APPLICABLE

Item number	Feature	Reference	Status	Support
FBI1	Is the *finding & binding for an initiator endpoint* procedure supported?	8.6	GRC14: M	Yes/No N
FBI2	Is the *Identify* cluster *Identify Query* command broadcast supported?	8.6	FBI1: M	Yes/No
FBI3	Is the simple descriptor of each respondent obtained with the *Simple_Desc_req* ZDO command?	8.6	FBI1: M	Yes/No
FBI4	Does the initiator create a binding table entry for each matching cluster to the respondent?	8.6	FBI1: M	Yes/No
FBI5	If a group binding is requested, does the initiator add the respondent to an appropriate group?	8.6	(FBI1 && GRC16): M	Yes/No

7.7 [TLI] Touchlink procedure for an initiator

NOT APPLICABLE

Item number	Feature	Reference	Status	Support
TLI1	Is the *touchlink for an initiator* procedure supported?	8.7	GRC5.1: M	Yes/No
TLI2	Does the initiator broadcast 5 *scan request* inter-PAN command frames on the first primary touchlink channel and then once for each remaining primary channel?	8.7	TLI1: M	Yes/No

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Item number	Feature	Reference	Status	Support
TLI3	Does the initiator broadcast a *scan request* inter-PAN command frames on each secondary touchlink channel when using touchlink for formation or joining?	8.7	TLI1: O	Yes/No
TLI4	If the initiator is not on a network, does it ignore any *scan request* command frames from other factory new initiators?	8.7	TLI1: M	Yes/No
TLI5	If the initiator is not on a network, does it switch into a target mode if any *scan request* command frames are received from other non-factory new initiators?	8.7	TLI1: O	Yes/No
TLI6	If a target is found, does the initiator transmit a *device information request* inter-PAN command frame to the selected target?	8.7	TLI1: O	Yes/No
TLI7	If a target is found, does the initiator transmit one or more *identify request* inter-PAN command frame to the selected target?	8.7	TLI1: O	Yes/No
TLI8	If a *scan request* command frame is received from a target on the same network as the initiator with the *network update identifier* field lower than *nwkUpdateId*, does the initiator transmit a *network update request* inter-PAN command frame to the selected target and then terminate the touchlink procedure?	8.7	TLI1: M	Yes/No
TLI9	If a target is found on a different network to the initiator and the initiator is on a centralized network, does it terminate the touchlink procedure?	8.7	TLI1: M	
TLI10	If the initiator is not on a network and the target is a ZigBee Router, does the initiator transmit a *network start request* inter-PAN command frame to the selected target?	8.7	TLI1: M	Yes/No

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Item number	Feature	Reference	Status	Support
TLI11	If the initiator is on a network and the target is a ZigBee Router, does the initiator transmit a *network join router request* inter-PAN command frame to the selected target?	8.7	TLI1: M	Yes/No
TLI12	If the initiator is on a network and the target is a ZigBee End Device, does the node transmit a *network join end device request* inter-PAN command frame to the selected target?	8.7	TLI1: M	Yes/No
TLI13	If the initiator is an end device and a *network start request* inter-PAN command frame was sent to the selected target, does the node rejoin the network?	8.7	(ZLT3 && TLI1): M	Yes/No

7.8 [TLT] Touchlink procedure for an target

Item number	Feature	Reference	Status	Support
TLT1	Is the *touchlink for a target* procedure supported?	8.8	GRC5.2: M	Yes/No
TLT2	Does the target discard any touchlink commissioning command other than a *scan request* command and terminate the procedure?	8.8	TLT1: M	Yes/No
TLT3	Does the target discard *scan request* command frames with an RSSI lower than a product specific threshold and terminate the procedure?	8.8	TLT1: M	Yes/No
TLT4	Does the target respond to a *scan request* command frame with a *scan response* command frame?	8.8	TLT1: M	Yes/No
TLT5	Does the target respond to a *device information request* command frame with a *device information response* command frame?	8.8	TLT1: M	Yes/No
TLT6	Does the target identify itself on receipt of a *identify request* command frame?	8.8	TLT1: M	Yes/No

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Item number	Feature	Reference	Status	Support
TLT7	If the target receives a *network start request* command frame, is a ZigBee Router and decides to start a network, does it perform a network discovery?	8.8	(TLT1 && ZLT2): M	Yes/No
TLT8	If the target receives a *network join router request* command frame, is a ZigBee Router and decides to join the network of the initiator, does it respond with a *network join router response* command frame?	8.8	(TLT1 && ZLT2): M	Yes/No
TLT9	If the target receives a *network join end device request* command frame, is a ZigBee End Device and decides to join the network of the initiator, does it respond with a *network join end device response* command frame?	8.8	(TLT1 && ZLT3): M	Yes/No
TLT10	If target is already part of a network, does it leave its current network?	8.8	TLT1: M	Yes/No
TLT11	If requested by the initiator, does the target start a new network and respond with a *network start response* command frame?	8.8	TLT1: M	Yes/No
TLT12	After starting a new network, does the target direct join the initiator to its new network?	8.8	TLT1: M	Yes/No

Add item for being on a centralized network and ignoring the start or join.

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8 Reset

8.1 [RBC] Reset via the basic cluster

Item number	Feature	Reference	Status	Support
RBC2	Does the initiator transmit a *reset to factory defaults* command frame to a target?	9.1	O	Yes/No N
RBC3	On receipt of a *reset to factory defaults* command frame, does the target reset all attributes of all clusters to their default values?	9.1	O	Yes/No Y
RBC4	On receipt of a *reset to factory defaults* command frame, does the target not reset its network parameters?	9.1	M	Yes/No Y

8.2 [RTL] Reset via the touchlink commissioning cluster

N/A

Item number	Feature	Reference	Status	Support
RTL2	Does the initiator transmit a *reset to factory new* command frame to a target?	9.2	GRC5: M	Yes/No
RTL3	On receipt of a *reset to factory new* command frame and if the target is on a distributed security network, does it leave the network?	9.2	GRC5: M	Yes/No
RTL4	On receipt of a *reset to factory new* command frame and if the target is on a centralized security network, does it ignore the command?	9.2	GRC5: O	Yes/No
RTL5	Does the initiator use an extended channel scan during a reset via the touchlink commissioning cluster?	9.2	GRC5: M	Yes/No

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8.3 [RNL] Reset via network leave command

Item number	Feature	Reference	Status	Support
RNL1	Does a node transmit a *leave* NWK command frame to another node to trigger the other node to leave?	9.4	O	Yes/No N
RNL2	On receipt of a *leave* NWK command frame with the *request* bit set to 1, does the node leave the network?	9.4	M	Yes/No N

8.4 [RLZ] Reset via the Mgmt_Leave_req ZDO command

Item number	Feature	Reference	Status	Support
RLZ1	Does a node transmit an *Mgmt_Leave_req* ZDO command frame to another node?	9.5	O	Yes/No N
RLZ2	On receipt of an *Mgmt_Leave_req* ZDO command frame, does the node leave the network?	9.5	M	Yes/No N

8.5 [RLA] Reset via local action

Item number	Feature	Reference	Status	Support
RLA1	Does the node provide a local reset mechanism?	9.6	O	Yes/No N
RLA2	On activation of the local reset mechanism, does the node reset itself?	9.6	RLA1: M	Yes/No N/A

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9 Security

9.1 [RLK] Receiving a new Trust Center link key

N/A for ZC

Item number	Feature	Reference	Status	Support
RLK0	Does the node exchange its link key during network steering on a centralized security network?	10.2.5	ZLT2: M ZLT3: M	Yes/No
RLK1a	Does the node execute the appropriate steps defined by the alternative link key exchange mechanism?	10.2.5, step 1	(RLK0 && (IA7!=0x00)): M	Yes/No
RLK1b	If the alternative mechanism is successful, does the node terminate the node link key exchange procedure?	10.2.5, step 1	RLK1a: M	Yes/No
RLK3	If the APS Request Key method is used or the alternative mechanism is not successful, does the node transmit the *Node_Desc_req* ZDO command to the Trust Center?	10.2.5, step 3	(RLK0 && (IA7==0x00)): M RLK1a: M	Yes/No
RLK4a	If a *Node_Desc_rsp* ZDO command is not received within *bdbcTCLinkKey-ExchangeTimeout* seconds does the node retry up to the maximum attempts permitted?	10.2.5, step 4	RLK3: M	Yes/No
RLK4b	If a *Node_Desc_rsp* ZDO command is not received after the maximum number of attempts permitted, does it terminate the node link key exchange procedure?	10.2.5, step 4	RLK3: M	Yes/No
RLK5	If a *Node_Desc_rsp* ZDO command is received and the server mask of the node descriptor indicates a core stack of r20 or earlier, does the node terminate the node link key exchange procedure?	10.2.5, step 5	RLK3: M	Yes/No
RLK7	If a *Node_Desc_rsp* ZDO command is received and the server mask of the node descriptor indicates a core stack of r21 or later, does the node request a new link key using the *Request Key* APS command frame to the Trust Center, encrypted with its initial link key?	10.2.5, step 7	RLK3: M	Yes/No

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Item number	Feature	Reference	Status	Support
RLK8a	If a *Transport Key* APS command is not received within *bdbcTCLinkKey-ExchangeTimeout* seconds does the node retry up to the maximum attempts permitted?	10.2.5, step 8	RLK7: M	Yes/No
RLK8b	If a *Transport Key* APS command is not received after the maximum number of attempts permitted, does it terminate the node link key exchange procedure?	10.2.5, step 8	RLK7: M	Yes/No
RLK9	If a *Transport Key* APS command frame is received from the Trust Center, containing a new link key, does the node update its Trust Center link key with the new key?	10.2.5, step 9	RLK7: M	Yes/No
RLK11	Does the node verify the new key using the *Verify Key* APS command frame to the Trust Center?	10.2.5, step 11	RLK7: M	Yes/No
RLK12a	If a *Confirm Key* APS command is not received within *bdbcTCLinkKey-ExchangeTimeout* seconds does the node retry up to the maximum attempts permitted?	10.2.5, step 12	RLK11: M	Yes/No
RLK12b	If a *Confirm Key* APS command is not received after the maximum number of attempts permitted, does it terminate the node link key exchange procedure?	10.2.5, step 12	RLK11: M	Yes/No

9.2 [AIC] Adding an install code

Item number	Feature	Reference	Status	Support
AIC0	Does the Trust Center allow the input of an install code?	10.3.1	ZLT1: O	Yes/No N
AIC2	On receipt of an installation code, does the Trust Center create an entry in its node/link key mapping table (*apsDeviceKeyPairSet*) with the installation code derived key?	10.3.1, step 2	(AIC0 && (IA2==True)): M	Yes/No N/A

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9.3 [ANN] Adding a new node into the network

Item number	Feature	Reference	Status	Support
ANN1	On receipt of an *Update Device* APS command frame, does the Trust Center follow the procedure for adding a new node into the network?	10.3.2	ZLT1: M	Yes/No Y
ANN2	If an install code is required and the new node is not in *apsDeviceKeyPairSet*, does the Trust Center terminate the Trust Center link key exchange procedure?	10.3.2	(ANN1 && (IA2==True)): M	Yes/No N/A
ANN3	If an install code is not required and the new node is not in *apsDeviceKey-PairSet*, does the Trust Center create an entry in its *apsDeviceKeyPairSet* for the joining node?	10.3.2	(ANN1 && (IA2==False)): M	Yes/No Y
ANN4	Does the Trust Center send the network key to the joining node using a *Transport Key* APS command frame, encrypted with the entry in *apsDeviceKeyPairSet* corresponding to the joining node?	10.3.2	ANN1: M	Yes/No Y
ANN5	If a *Request Key* APS command frame is not received and the Trust Center requires the new node to exchange its link key, does it request the new node leaves the network?	10.3.2	(IA9==TRUE): M	Yes/No Y
ANN6	On receipt of a *Request Key* APS command frame from the joining node, encrypted with its initial link key, does the Trust Center generate a new link key and transport it to the joining node using a *Transport Key* APS command frame?	10.3.2	ANN5: M	Yes/No Y
ANN7	If a *Verify Key* APS command frame is not received by the Trust Center from the joining node, does it request the new node leaves the network?	10.3.2	ANN6: M	Yes/No Y

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Item number	Feature	Reference	Status	Support
ANN8	Does the Trust Center receive a *Verify Key* APS command frame from the joining node, update the entry in *apsDeviceKeyPairSet* corresponding to the joining node with the new key and respond with a *Confirm Key* APS command frame?	10.3.2	ANN7: M	Yes/No Y

9.4 [BKN] Behavior when a known node joins

Item number	Feature	Reference	Status	Support
BKN1	Does the Trust Center allow a known node to join but in a fresh state?	10.3.3	ZLT1: M	Yes/No Y
BKN2	Does the Trust Center store the original install code derived link key for devices that have joined?	10.3.3	ZLT1: O	Yes/No N/A
BKN3	Does the Trust Center overwrite the link key for a joining node with the original install code derived link key?	10.3.3	((IA2==TRUE) && BKN2): M	Yes/No N/A
BKN4	Does the Trust Center overwrite the link key for a joining node with the default global Trust Center link key?	10.3.3	(IA2==FALSE): M	Yes/No Y

9.5 [TCP] Trust center policies

Item number	Feature	Reference	Status	Support
TCP1.1	Does the Trust Center allow any nodes to join (Trust Center policy *useWhiteList*)?	[R1] Table 4.33	ZLT1.1: O.7	Yes/No Y
TCP1.2	Does the Trust Center allow only known nodes to join (Trust Center policy *useWhiteList*)?	[R1] Table 4.33	ZLT1.1: O.7	Yes/No N

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Item number	Feature	Reference	Status	Support
TCP2.1	Does the Trust Center allow a node on the network that transmits a ZDO Mgmt_Permit_Join with a significance set to 1 to affect the Trust Center policy (Trust Center policy *allowRemoteTc-PolicyChange*)?	[R1] Table 4.33	ZLT1.1: O.8	Yes/No Y
TCP2.2	Does the Trust Center forbid a node on the network that transmits a ZDO Mgmt_Permit_Join with a significance set to 1 to affect the Trust Center policy (Trust Center policy *allowRemoteTc-PolicyChange*)?	[R1] Table 4.33	ZLT1.1: O.8	Yes/No N

Notes:

O.7 One or both of the items marked O.7 SHALL be supported.

O.8 One or both of the items marked O.8 SHALL be supported.

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