zigbee Document 08-0006-07
zigbee PRO Layer PICS and Stack Profiles
Revision 06

April 2017

Sponsored by:
zigbee alliance

Accepted for release by:
ZigBee Alliance Board of Directors.

Abstract:

Keywords:
zigbee, zigbee-PRO, Stack profile, Architecture.

Copyright © 2005-2017 zigbee alliance.
508 Second Street, Suite 206, Davis, CA 95616, USA http://www.zigbee.org
All rights reserved.

Permission is granted to members of the zigbee alliance to reproduce this document for their own use or the use of other zigbee alliance members only, provided this notice is included. All other rights reserved. Duplication for sale, or for commercial or for-profit use is strictly prohibited without the prior written consent of the zigbee alliance.

Notice of use and disclosure

Copyright © zigbee alliance (2005-2017). All rights reserved. This information within this document is the property of the zigbee alliance and its use and disclosure are restricted.

Elements of zigbee alliance specifications may be subject to third party intellectual property rights, including without limitation, patent, copyright or trademark rights (such a third party may or may not be a member of zigbee). zigbee is not responsible and shall not be held responsible in any manner for identifying or failing to identify any or all such third party intellectual property rights.

No right to use any zigbee name, logo or trademark is conferred herein. Use of any zigbee name, logo or trademark requires membership in the zigbee alliance and compliance with the zigbee Logo and Trademark Policy and related zigbee policies.

This document and the information contained herein are provided on an "AS IS" basis and zigbee DISCLAIMS ALL WARRANTIES EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO (A) ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OF THIRD PARTIES (INCLUDING WITHOUT LIMITATION ANY INTELLECTUAL PROPERTY RIGHTS INCLUDING PATENT, COPYRIGHT OR TRADEMARK RIGHTS) OR (B) ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE OR NONINFRINGEMENT. IN NO EVENT WILL ZIGBEE BE LIABLE FOR ANY LOSS OF PROFITS, LOSS OF BUSINESS, LOSS OF USE OF DATA, INTERRUPTION OF BUSINESS, OR FOR ANY OTHER DIRECT, INDIRECT, SPECIAL OR EXEMPLARY, INCIDENTIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY KIND, IN CONTRACT OR IN TORT, IN CONNECTION WITH THIS DOCUMENT OR THE INFORMATION CONTAINED HEREIN, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH LOSS OR DAMAGE. All company, brand, and product names may be trademarks that are the sole property of their respective owners.

The above notice and this paragraph must be included on all copies of this document that are made.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Contact information

Much of the information in this document is preliminary and subject to change. Members of the ZigBee Working Group are encouraged to review and provide inputs for this proposal. For document status updates, please contact:

Michael Cowan
639 Davis Drive
Morrisville, NC, USA 27560
michael.cowan@sensus.com
Desk Phone: 919-317-6320
Lab Phone: 919-317-6184

You can also submit comments using the ZigBee Alliance reflector. Its web site address is:

www.zigbee.org

The information on this page should be removed when this document is accepted.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Participants

The following is a list of those who were members of the ZigBee Alliance PRO Core Stack Working Group leadership when this document was released:

Robert Alexander: *Chair*

Arasch Honarbacht: *Vice Chair*

Tim Gillman: *Secretary*

The editing team was composed of the following members:

Colin Faulkner: EDMI, Ltd, Technical Editor ZigBee PRO Core Specification
Ian Winterburn: Landis&Gyr, Technical Editor ZigBee PRO Energy Specification
Michael Cowan: Sensus Technical Editor ZigBee PRO Energy Test Spec and PICS

Additionally, the following individuals contributed to the PICs document:

Robert Alexander	Silicon Laboratories, Inc.
Arasch Honarbacht	ubisys technologies GmbH
Chris Brandson	Exegin

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Table of Contents

1 Introduction 1
1.1 Scope 1
1.2 Purpose 1

2 References 2
2.1 ZigBee Alliance documents 2
2.2 IEEE documents 2
2.3 ETSI documents 2

3 Definitions 3

4 Acronyms and abbreviations 4

5 General description 5

6 Knob settings 6
6.1 Introduction 6
6.2 Network settings 6
6.3 Application settings 6
6.4 Security settings 7

7 Functional description 8
7.1 Device roles 8
7.2 ZigBee: Compatibility with Other Feature sets 8
7.3 ZigBee-PRO: Feature set 9
7.4 Binding tables 9
7.5 Multicast mechanism and groups 9
7.6 Trust Center Policies and Security Settings 9
7.7 Battery powered devices 9
7.8 Mains powered devices 10
7.9 Persistent storage 10
7.10 Address Reuse 10
7.11 Duty cycle limitations and fragmentation 10
7.11.1 Vulnerability join 10
7.11.2 Pre-installation 10
7.12 Security 10
7.12.1 Security Modes within PRO Networks 11

8 Instructions for completing the PICS proforma 12

9 Identification of the implementation 13

10 Protocol implementation conformance statement (PICS) proforma 14
10.1 Abbreviations and special symbols 14
10.2 ZigBee device types 14
10.3 IEEE 802.15.4 PICS 15
10.3.1 FDT2 and FDT3 network join options 15
10.3.2 IEEE 802.15.4 PHY 16
10.3.3 IEEE 802.15.4 MAC 17
10.4 Network layer PICS 31
10.4.1 ZigBee network frame format 31
10.4.2 Major capabilities of the ZigBee network layer 32
10.5 Security PICS 54
10.5.1 ZigBee security roles 54
10.5.2 ZigBee trust center capabilities 55
10.5.3 Modes of operation 56
10.5.4 Security levels 56

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

10.5.5 NWK layer security 58
10.5.6 APS layer security 60
10.5.7 Application layer security 65
10.6 Application layer PICS 70
10.6.1 ZigBee security device types 70
10.6.2 ZigBee APS frame format 70
10.6.3 Major capabilities of the ZigBee application layer 71

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

List of Tables

Table 1 – Document revision change history..... viii
Table 2 – Network settings for this feature set 6
Table 3 – Application settings for this feature set.....6
Table 4 – Security settings for this feature set.....7

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

147 # Change history

148 Table 1 shows the change history for this specification.

149 **Table 1 – Document revision change history**

Revision	Description
00	Original version based on 08-0006-05 snap shoot in Dec 2014.
01	Baseline original -00 document to ZigBee Document 08-0006-05 (R21 rev 1.0 equivalent document with all changes accepted) ZigBee PRO/2007 Layer PICS and Stack Profiles then added in R22 changes based on R22 Combined Document (Specification) dated Oct 8, 2015 10:37 AM.
02	Addressed All rev 0.7 comments and updated document for rev 0.7 re-ballot
03	Addressed All rev 0.7 re-ballot comments and updated document for rev 0.7 release
04	Address deferred rev 0.7 comments – comment 303 (Chris Brandson) fix section numbers references in PICS to match rev 0.9 PRO CORE Specification section numbers. Add update fixes for CCBs: CCB 2091 – NLF27 - Number of Entries in End Device Neighbor Table increase to 5 per specification section 3.6.1.4.2.1 CCB 2137 – Modify NLF4 slightly to note that this is for forming *centralized* networks. and AZD31 - Add a separate PICs item for forming *distributed* networks = AZD299 added. Same text for NLF4 except it would be mandatory for both FDT1 and FDT2. CCB 2144 – NDF106 – replace orphan notification and keep alive methods with end device timeout keep alive methods. CCB 2178 – Trust center must be collocated with ZC (short address 0x0000) throughout network life – SR1. CCB 2239 – Update NDF108 and NDF109 both conditional on NDF105 CCB 2240 – if support GP need to support list of items in PICS defined in CCB
05	Added Oct 17 2016 rev 0.9 comments from KAVI and release for reballot comments
06	No rev 0.9 re-ballot comments in KAVI, updated for Rev 1.0 release plans.

150

151

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

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 ZigBee R22 Draft specification (05-3474-22) in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ISO/IEC 9646-7. The specification adds multiband functionality support which required changes to PHY/MAC and network layers. In addition ZigBee 2007 was been deprecated by the ZigBee Alliance therefore all ZigBee 2007 stack protocol implementation conformance statement (PICS) have been removed from this document. Starting with R22 and later, only ZigBee PRO stack will be supported per ZigBee 3.0 inter-operability marketing decision.

1.2 Purpose

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

The protocol implementation conformance statement (PICS) of a protocol implementation is a statement of which capabilities and options of the protocol have been implemented. The statement 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.

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

2 References

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

2.1 ZigBee Alliance documents

[R1] ZigBee document 05-3474r22, ZigBee draft specification release 22, ZigBee Core Stack Group

[R2] ZigBee 04-0140r05, ZigBee Protocol Stack Settable Values (knobs) release 05, ZigBee Architecture Working Group

[R3] ZigBee document 04-0319r01, ZigBee IEEE 802.15.4 PHY & MAC Layer Test Specification release r01

[R4] ZigBee document 08-5195r02, ZigBee Trust Centre Best Practices, ZigBee Security Task Group.

[R5] CEPT/ERC/REC 70-03: "Relating to the use of Short Range Devices (SRD)". (13-0390-02). Version after Public Consultation CEPT SRDMG#60 13th December 2013.

[R6] EN 300 220-1 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods" version 2.4.1 (13-391-00)

[R7] ZigBee 09-5499r26 Green Power Specification

[R8] ZigBee 14-0563-16 PRO Green Power Feature specification

2.2 IEEE documents

[R9] IEEE 802.15.4:2011 "IEEE Standard for Local and metropolitan area networks Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs)"

[R10] IEEE 802.15.4:2015 "IEEE Standard for Local and metropolitan area networks Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs)"

[R11] IEEE Standards Style Manual, published and distributed in May 2000 and last revised in 2012. Available from https://development.standards.ieee.org/myproject/Public/mytools/draft/styleman.pdf

2.3 ETSI documents

[R12] ETSI TR 102 887-1 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Short Range Devices; Smart Metering Wireless Access Protocol; Part 1: PHY layer" (13-0425-00)

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

216

3 Definitions

Feature set	A collection of parameter values and configuration settings, collectively and loosely referred to as "knobs" in [R2], that determine the specific performance of a ZigBee stack variant and govern interoperability between stacks provided by different vendors.
ZigBee 2.4 GHz Coordinator	An IEEE 802.15.4-2011 PAN coordinator operating in a ZigBee 2.4 GHz network.
ZigBee 2.4 GHz End Device	An IEEE 802.15.4-2011 RFD participating in a ZigBee 2.4 GHz network, which is neither the ZigBee coordinator nor a ZigBee router.
ZigBee 2.4 GHz Router	An IEEE 802.15.4-2011 FFD participating in a ZigBee 2.4 GHz network, which is not the ZigBee coordinator but may act as an IEEE 802.15.4-2003 coordinator within its personal operating space, that is capable of routing messages between devices and supporting associations
ZigBee Sub-GHz Router	An IEEE 802.15.4-2015 FFD participating in a ZigBee Sub- GHz network, which is not the ZigBee coordinator but may act as an IEEE 802.15.4-2011 coordinator within its personal operating space, that is capable of routing messages between devices and supporting associations. ZigBee Sub-GHz Router (ZSR) is supported in R22 with power control on end device to routers and end devices to coordinators links. No power control for router to router, and router to coordinator links and devices should transmit at maximum power of + 14 dBm
ZigBee Multi-MAC Selection Router	An IEEE 802.15.4-2015 FFD participating in a ZigBee Sub-GHz **or** 2.4 GHz network but **not** in both bands. Power control only on Sub-GHz interface and not on the 2.4 GHz interface. Router in Sub-GHz mode in R22 will support power control on end device to routers and end devices to coordinators links. No power control for router to router, and router to coordinator links and devices should transmit at maximum power of + 14 dBm
ZigBee Multi-MAC Switch Router	An IEEE 802.15.4-2015 FFD participating in a ZigBee Sub-GHz **and** 2.4 GHz network. In R22 only allows a single ZigBee Multi-MAC Switch Router in the network integrated into the ZigBee Multi-MAC Switch Coordinator
ZigBee Multi-MAC Switch Coordinator	An IEEE 802.15.4-2015 PAN coordinator operating in a ZigBee 2.4 GHz network **and** in Sub-GHz band.
ZigBee Multi-MAC Selection End Device	An IEEE 802.15.4-2015 RFD participating in a ZigBee 2.4 GHz network **or** the Sub-GHz network which is neither the ZigBee coordinator nor a ZigBee router.
ZigBee Sub-GHz End Device	An IEEE 802.15.4-2015 RFD participating in a ZigBee Sub-GHz network which is neither the ZigBee coordinator nor a ZigBee router.

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

217 # 4 Acronyms and abbreviations

AODV	Ad-Hoc On-Demand Distance Vector
FFD	IEEE 802.15.4 Full Function Device
IEEE	Institute of Electrical and Electronic Engineers
PICS	Protocol Implementation Conformance Statement
RFD	IEEE 802.15.4 Reduced Function Device

218

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

5 General description

The sections in this document are:

- Knob settings – details of values to be used for parameters specified in the ZigBee specification for tuning the operation of the ZigBee stack, including network, application and security settings.
- Functional description – further operational restrictions to be applied to all devices in this feature set where various approaches are otherwise supported by the ZigBee specification.
- Protocol implementation conformance statement (PICS) – a formal definition of functionality to be implemented in these devices.

These requirements aim to allow a designer to make necessary assumptions about what settings, features and safeguards will be in place in the networks in which a device will be deployed.

For clarity, settings applied to the ZigBee PRO Multi-MAC (PRO MM) feature set will be marked with the string **ZigBee PRO MM** and settings applied to the ZigBee-PRO feature set will be marked with the string **ZigBee-PRO.** Parameters that are unique to Multi-Band (MB or sub GHz interface) will be called out in PRO MMPRO MM PICS cells including unique timing. If timing and functionality the same as ZigBee PRO and **ZigBee PRO MM** the cells will be merged to flag timing, behavior, etc.. are the same on Sub GHz interface and 2.4 GHz interface as part of rev 0.9 release.

R22 stack depreciated ZigBee 2007 stack functionality therefore starting in R22 ZigBee 2007 functionality can be removed from the R22 stack.

R22 sub GHz interface channel and channel spacing is targeted for Great Britain deployment and European country deployment.

Green Power is only certifiable on 2.4 GHz interface.

Functionality not supported by Great Britain will be called out in the PICS, for example sub GHz routers will not be supported.

Channel Change Manager is a function of the Multi-MAC (MM) Coordinator. Channel change is driven by head end systems which is out of scope of this document. MM and 2.4 GHz devices SHALL detect a channel change via a keep alive method or other methods and properly form network on new Sub-GHz channel and/or on new 2.4 GHz channel. Channel change can occur on Sub-GHz network or 2.4 GHz network or both networks. The reason for channel change is outside the scope of this document.

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

248 # 6 Knob settings

249 ## 6.1 Introduction

250 This section specifies values for parameters specified in the ZigBee specification for tuning the operation
251 of the **ZigBee PRO MM** and ZigBee-PRO stack. This section describes settings for both **ZigBee PRO**
252 **MM** and ZigBee-PRO feature sets applied to the ZigBee R22 Specification ([R1])

253 ## 6.2 Network settings

254 The network settings for the ZigBee PRO and **ZigBee PRO MM** feature sets are, for the most part,
255 described in the restricted PICS captured in Section 10.4. Those setting not covered by the PICS are
256 listed in Table 2.

257 **Table 2 – Network settings for this feature set**

Parameter Name	Setting		Comments
nwkTransactionPersistenceTime	0x01f4	ZigBee PRO MM	Note that this value essentially "covers" the MAC attribute of the same name. Note also that, while [R1] implies that this quantity has meaning only in beacon-enabled networks, it may actually be used in beaconless networks as well and, in that case, is a multiplier for *aBaseSuperframeDuration*. The value here yields a persistence time of 7.68 seconds using the 2.4Ghz symbol rate from [R9] in a non-beaconed network.
		ZigBee-PRO	
nwkReportConstantCost	FALSE	ZigBee PRO MM	The NWK layer in PRO shall always calculate routing cost on the basis of neighbor link cost and never report constant cost.
		ZigBee-PRO	

258 ## 6.3 Application settings

259 The application settings for the ZigBee and ZigBee-PRO feature sets are, for the most part, described in
260 the restricted PICS captured in Section 10.6. Those setting not covered by the PICS are listed in Table 3.

261 **Table 3 – Application settings for this feature set**

Parameter Name	Setting		Comments
Number of active endpoints per sleeping ZigBee end device (maximum)	-	ZigBee PRO MM	As the responsibility to arrange for caching of service discovery information lies with the end device itself, this parameter is not restricted.
		ZigBee-PRO	

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Parameter Name	Setting	Comments	
Config_NWK_Leave_removeChildren	FALSE	ZigBee PRO MM	
		ZigBee-PRO	

6.4 Security settings

The security settings for the ZigBee and ZigBee-PRO feature sets are listed in Table 4.

Table 4 – Security settings for this feature set

Parameter Name	Setting	Comments	
apsSecurityTimeoutPeriod	TxDuration[1] * (2*NWK Maximum Depth) + (AES Encrypt/Decrypt times)	ZigBee PRO MM	Where AES Encrypt/Decrypt times = 200ms, and Where NWK Maximum Depth is assumed to be 5, meaning every device in the network can be reached in not more than 10 hops , and Where TxDuration is assumed to be 1562.5 octetDurations (50 msec on 2.4GHz), meaning maximum duration of transmitting a packet by a hop, i.e. 700 milliseconds on 2.4 GHz. Note that this timeout assumes worst case AES engine speeds and is not indicative of expected performance for most devices.
		ZigBee-PRO	Where AES Encrypt/Decrypt times = 200ms, and Where NWK Maximum Depth is assumed to be 15, meaning every device in the network can be reached in not more than 30 hops, and Where TxDuration is assumed to be 1562.5 octetDurations (50 msec on 2.4GHz), meaning maximum duration of transmitting a packet by a hop, i.e. 1.7 seconds on 2.4 GHz. Note that this timeout assumes worst case AES engine speeds and is not indicative of expected performance for most devices.

[1] CCB 1623

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

7 Functional description

For the most part, the functioning of ZigBee **PRO MM** and ZigBee-PRO with respect to the NWK layer, the APS layer and the ZDO is described in [R1]. However, the configuration details and operational requirements for devices operating under the ZigBee **PRO MM** and ZigBee-PRO feature sets lead to some special functional considerations, which are detailed here.

7.1 Device roles

The basic roles performed by ZigBee devices in ZigBee **PRO MM** and ZigBee-PRO networks are determined by their device type:

- The **ZigBee PRO and PRO MM coordinator** initiates network formation, choosing the network channel, PAN ID and extended PAN ID in the process, and thereafter should act as a ZigBee router. It may also perform the roles of trust center and Network Channel Manager. With respect to binding, the ZigBee coordinator is expected to handle end device bind request on behalf of all end devices in the network but is not expected to be a global binding repository for the network.
- **All ZigBee routers** are called upon to relay traffic on behalf of other devices in the network and, in particular, are required to act as routing agents on behalf of their end device children, which will typically not have the neighbor tables, routing tables, route discovery tables or broadcast transaction tables required to perform routing. Since end devices may sleep, ZigBee routers and ZigBee coordinators in their role of ZigBee routers may cache discovery information on behalf of their sleeping end-device children. A ZigBee router may perform the role of trust center and Network Channel Manager.
- **All ZigBee end devices** are joined to and managed by ZigBee routers or the ZigBee coordinator. Because ZigBee-PRO networks are beaconless, there is no built-in synchronization mechanism between sleeping end devices and their router parents. End devices are free to set their own duty cycles within the broad polling limits defined by this feature set. End devices that wish to have their discovery information cached by their parent or some other device are responsible for using the discovery cache commands to achieve this.

Under the ZigBee and ZigBee-PRO feature sets, all devices are expected to manage their own binding tables if they use binding tables.

This section is valid for both the **ZigBee PRO MM** and **ZigBee PRO** feature sets. In R22 release only one ZigBee MB coordinator is supported per HAN network and no ZigBee MB or sub GHz routers are supported to simplify deployment for GB market.

7.2 ZigBee: Compatibility with Other Feature sets

Devices implementing the ZigBee feature set will advertise a feature set identifier of 1 in their beacon payloads as stated below in the additional restrictions for PICS item NLF4. In general, such devices will seek out and join networks in which the ZigBee coordinator (Centralized network) and all ZigBee routers implement the ZigBee feature set and advertise this fact by placing a feature set identifier of 1 in their beacon payloads.

In ZigBee 3.0 ZigBee End Devices (eg. Light, etc..) and ZigBee Router Devices (eg Light switch, etc..) can form multiple distributed networks without a ZigBee coordinator in the network using distributed security. (CCB 2178)

In order to provide compatibility with devices implemented according to the ZigBee-PRO feature set, ZigBee devices shall additionally be able to join networks which advertise a feature set identifier of 2 in their beacon payloads but the device must join the ZigBee-PRO networks as end devices and only those ZigBee-PRO networks employing standard network security.

This section is valid for the **ZigBee PRO MM and ZigBee PRO** feature set.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

7.3 ZigBee-PRO: Feature set

7.4 Binding tables

Binding tables, if used, shall be located on the source device. While binding is optional, devices that choose to use binding tables should allocate enough binding table entries to handle their own communications needs. This suggests that binding table size should be flexible enough that it can be set, at least at compile time, with some awareness of the actual intended usage of the device.

This section is valid for both the **ZigBee PRO MM** and **ZigBee-PRO** feature sets.

7.5 Multicast mechanism and groups

Support for APS level multicasts is mandatory to support compatibility with ZigBee devices. The multicast groups are then established using the application level mechanisms. Support for routing of network level multicasts is mandatory in the ZigBee-PRO feature set.

ZigBee devices do not support network level multicasts.

7.6 Trust Center Policies and Security Settings

A ZigBee PRO network shall have a trust center uniquely pointed to by each device in the network through apsTrustCenterAddress within each network member device. It is beyond the scope of the PRO Feature set to describe how this value is set or whether it is changed and the Trust Center relocated to another device during operation. The only requirement of the PRO Feature set is that all devices in the network point to the one unique Trust Center and that the device pointed to as the Trust Center supplies the security services described by this document.

The trust center dictates the security parameters of the network, such as which network key type to use, settings of the service permissions table, when, if at all, to allow devices to use unsecured association to the network, and when, if at all, to allow an application master or link key to be set up between two devices. For interoperability, there are two distinct security settings that can be used within the ZigBee PRO feature set – a standard and a high security.

Networks can exist for periods without a trust center. There are some operations where it is necessary for the trust center to be operational in the network. These include initial network setup, key changes, and when joining and rejoining devices require updated keys.

A wide range of implementations are possible, depending on the requirements of the application. A high security trust center may allow the user to install devices “out-of-band”, keep separate link keys for different devices, optionally ignore Mgmt_Permit_Joining_req commands from other nodes, and configure application trust policies between devices or groups of devices, etc. A standard security trust center would not offer these advantages, but would not be required to carry the associated costs.

7.7 Battery powered devices

ZigBee-PRO networks may, of course, contain battery-powered devices. ZigBee routers are required to have their receivers enabled whenever they are not transmitting.

As mentioned above, ZigBee-PRO networks are beaconless networks and, in the absence of an explicit mechanism for synchronization and indirect transmission, sleeping devices must set their own duty cycles and use polling, under ZDO control, if they expect to receive frames that are directed to them when they are asleep. The feature set provides that parent devices, i.e. ZigBee routers and the ZigBee coordinator, hold frames for 0x01F4 symbols[2] (7.68 seconds on 2.4 GHz) on behalf of sleeping end devices and this is also, roughly speaking, the maximum polling rate prescribed here. Devices may implement a polling interval longer than 0x01F4 symbols[3], however the application will then have to handle the potential loss of messages during longer sleep cycles.

[2] CCB 1624
[3] CCB 1624

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

7.8 Mains powered devices

It is assumed that for most ZigBee-PRO networks, the ZigBee coordinator and ZigBee routers will be mains-powered and always on in order to properly perform their required roles with respect to the operation of the network.

7.9 Persistent storage

The ZigBee-PRO feature set does not support devices without persistent storage. Devices have information required to be saved between unintentional restarts and power failures. See [R1] sections 2.2.8.1 and 3.6.8 for details of persistent data in the application and NWK layers. Various security material shall additionally be stored across power failures. All attributes in sections 4.3.3 and 4.4.10 shall be stored, except that it is not mandatory to store those values which can safely be recovered using other stored information, or other methods.

7.10 Address Reuse

Re-use of previously assigned network short addresses in ZigBee-PRO devices is permitted subject to execution of the address conflict procedure by the device on the re-used address.

7.11 Duty cycle limitations and fragmentation

No mandatory restrictions on 2.4 GHz are defined for intermittent, low channel usage data, although developers are encouraged to minimise bandwidth usage wherever possible.

Large acknowledged unicast transmissions should generally use the APS fragmentation mechanism, where supported, as this handles retransmissions, duplicate rejection, flow control and congestion control automatically. Use of the fragmentation mechanism is as specified in the application profile documents.

Sub GHz UK deployment limits Regulatory Duty Cycle to 2.5% when CSMA LBT is used.

7.11.1 Vulnerability join

Vulnerability join shall be optional for networked devices, but support for it shall be mandatory for trust centers. The default for networks is permit joining is off. Permit joining is allowed for established time periods based on application requirements and specific instructions based on the system design.

Devices that join but do not successfully acquire and use the relevant security keys within the specified security timeout period shall disassociate themselves from the network, and their short address may be reused.

7.11.2 Pre-installation

Pre-installation is acceptable. Pre-installed devices are not exempt from the other requirements in this document. For example, a device certified as a trust center for this feature set shall support vulnerability installation of new devices, even if it is initially pre-installed.

7.12 Security

This feature set is designed to allow the efficient deployment of low cost devices, while also supporting the security requirements of highly sensitive applications. Installation and network maintenance procedures and administration are defined with the goal of satisfying the requirements of a range of applications within a single network infrastructure.

To achieve this, two security modes are specified: Standard mode and High Security mode. By default all applications will use the network key for communications. However, where confidentiality from other network nodes is required an application shall be permitted to use application link keys. Where link keys are required by specific application profiles, commands not secured with a link key shall be processed according to the rules established by the application profile.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

398 The trust center plays a key role in determining the security settings in use in the network, and can
399 optionally be implemented to apply further restrictions on the network.

400 It is recommended that the trust center change the network key if it is discovered that any device has
401 been stolen or otherwise compromised, and in order to avoid deadlock if all frame counter records
402 become filled up. It is an application responsibility within the Trust Center to effect the change to the
403 network key. There is no expectation that the network key be changed when adding a new device.

404 All devices may implement a service permissions table, which they may use to determine which devices
405 are authorized to issue which commands. Unauthorized commands should not be carried out.

406 The trust center should be implemented to make appropriate choices about when to initiate an application
407 master/link key shared between two devices. Where restrictions between devices are required it is the
408 responsibility of the system installer/administrator to deploy a suitably intelligent trust center and
409 configure it to make relevant checks before initiating sharing of application link keys between two
410 devices. For example, it might facilitate policies based on certain times, certain manufacturers or device
411 types, or when the trust center is configured in a certain way, etc. By default a simple trust center should
412 always allow requests for link keys.

413 Devices may perform the relevant in or out of band authentication or key exchange before acquiring or
414 using a link key with a new target.

415 7.12.1 Security Modes within PRO Networks

416 The feature set shall use two security modes: Standard mode and High Security mode.

417 With the Standard mode, network keys and application link keys are permitted for all devices. The
418 network key type shall be the “standard” network key. It shall not be required that devices perform entity
419 authentication with their parent on joining nor shall it be required to perform entity authentication
420 between neighbors. If end devices wish to have a trust center link key, this should be requested using the
421 request key command. Note that it is optional for the trust center to support link keys.

422 With the High Security mode, all three key types are permitted and shall be supported by all devices. The
423 network key type shall be the “high security” network key. It shall be required that devices shall perform
424 entity authentication with their parent on joining and it shall be required to perform entity authentication
425 between neighbors. Frames from devices not in the neighbour table shall not be accepted.

426 When a “standard” type network key is in use, devices shall be permitted to update the network key when
427 requested to do so by a command appropriately secured with the current network key. When a “high
428 security” type of network key is in use this shall not be permitted. Additionally, in “high security”, new
429 trust center link keys may be deployed by SKKE only, i.e.: they shall not be sent using key transport.

430 Bit 6 of the capabilities field (security bit) shall be used to indicate whether or not a joining (or re-joining)
431 device supports High Security mode. It shall be set to 0 if the joining or re-joining device does not
432 support High Security mode (i.e. supports Standard mode), and shall be set to 1 if it does support High
433 Security mode. The trust center may optionally make use of this information as part of its policy settings,
434 for example when determining whether or not to allow the device onto the network, or when determining
435 whether to initiate SKKE with a new joiner or send a link key and/or network key in the clear to the new
436 device.

437 The above specifications are as currently described in the ZigBee specification. Standard mode and High
438 Security mode allow implementation of two different strengths of security depending on the application
439 requirements and the specification supports a device indicating its security capabilities as it joins the
440 network, thus giving the Trust Center the means to be able to accept or reject the device based on its
441 policy.

442

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

8 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 section.

The main part of the PICS is a fixed-format questionnaire, divided. 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.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

9 Identification of the implementation

System under test (SUT) identification

SUT name: **EmberZNet 6.3.1**

Software Version: **EmberZNet 6.3.1**

Hardware Version: **EFR32MG1x + Si4468 Family**

Operating system (optional): **None**

Specification Version Numbers at time of certification

ZigBee PRO Specification Revision: **R22**

Approved Errata Text to the ZigBee PRO Specification (if any)**:**

ZigBee PRO Test Plan Revision**:**

Approved Errata Text to the ZigBee PRO Test Plan (if any):

Product supplier Contact Information

Company Name: **Silicon Laboratories**

Contact Name: **John Loukota**

Address: **400 West Cesar Chavez Austin, TX 78701**

Telephone number: **(617) 951-1226**

Facsimile number: _____

Email address: **John.Loukota@silabs.com**

Additional information: _____

Signature _**John Loukota**

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

10 Protocol implementation conformance statement (PICS) proforma

10.1 Abbreviations and special symbols

Notations for requirement status:

M	Mandatory
O	Optional
O.n	Optional, but support of at least one of the group of options labeled O.n is required.
N/A	Not applicable
X	Prohibited

"item": Conditional, status dependent upon the support marked for the "item".

For example, if FDT1 and FDT2 are both marked "O.1" this indicates that the status is optional but at least one of the features described in FDT1 and FDT2 is required to be implemented, if this implementation is to follow the standard of which this PICS Proforma is a part.

In below table if a Multi-MAC (MM) device list bands supports, if supported concurrently with 2.4 GHz, and maximum Power level supported in each band.

10.2 ZigBee device types

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
FDT1	Is this device capable of acting as a ZigBee coordinator?	[R1]/Preface (Definitions)		ZigBee PRO MM	O.1		yes
				ZigBee-PRO	O.1		yes
FDT2	Is this device capable of acting as a ZigBee router? Note: Great Britain not supporting sub GHz router in R22 but can be deployed in other European markets.	[R1]/ Preface (Definitions)		ZigBee PRO MM	O.1		No
				ZigBee-PRO	O.1		No
FDT3	Is this a ZigBee end device?	[R1]/ Preface (Definitions)		ZigBee PRO MM	O.1		No
				ZigBee-PRO	O.1		No

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

512 ## 10.3 IEEE 802.15.4 PICS

513 ### 10.3.1 FDT2 and FDT3 network join options

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
JN1	The device joins a network by scanning and then associating (client)	[R9] 7.3.1.1	FDT1:X FDT2:O FDT3:O	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
JN10	The device supports joining a network by associating (server)	[R9] 7.3.1.1	FDT1: O FDT2: O FDT3: N/A	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
JN2	The device joins a network by using an orphan scan (client)	[R9] 7.3.2.3	FDT1: N/A FDT2: O FDT3: O	ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		No
				ZigBee-PRO	FDT1: X FDT2: O FDT3: O		No
JN20	The device supports joining a network by using an orphan scan (server)	[R9] 7.3.2.3	FDT1: O FDT2: O FDT3: N/A	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes

514

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

515 ### 10.3.2 IEEE 802.15.4 PHY

516 #### 10.3.2.1 Radio frequency of operation

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
RF1	The device operates at Sub GHz GB/OFCOM – Page 28 to 31 and defined channels	[R9] 6.1.1, 6.1.2, 6.6	O[3]	ZigBee PRO MM	O[3]		yes
				ZigBee-PRO	O[3]		yes
RF2	The device operates at a frequency of 2.4 GHz.	[R9] 6.1.1, 6.1.2, 6.5	O[3]	ZigBee PRO MM	O[3]		yes
				ZigBee-PRO	O[3]		yes

517 O[3]: at least one option must be selected.
518

519 #### 10.3.2.2 Clear channel assessment

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
CCA1	Mode 1: Energy above threshold is supported.	[R9] 6.7.9	O[4]	ZigBee PRO MM	O[4]		yes
				ZigBee-PRO	O[4]		yes
CCA2	Mode 2: Carrier sense only is supported.	[R9] 6.7.9	O[4]	ZigBee PRO MM	O[4]		no
				ZigBee-PRO	O[4]		no

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
CCA3	Mode 3: Carrier sense with energy above threshold is supported.	[R9] 6.7.9	O[4]	ZigBee PRO MM	O[4]		no
				ZigBee-PRO	O[4]		no

520 O[4]: at least one option must be selected.
521

522 ### 10.3.3 IEEE 802.15.4 MAC

523 #### 10.3.3.1 Channel access

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
CA1	A super-frame structure is supported.	[R9] 7.5.1.1	O	ZigBee PRO MM	X		no
				ZigBee-PRO	X		no
CA2	Un-slotted CSMA-CA is supported.	[R9] 7.5.1.1	M	ZigBee PRO MM	M	All devices shall set their MIB values as follows: *macBeaconOrder* = 0x0f, *macSuperframeOrder* = 0x0f.	yes
				ZigBee-PRO	M	All devices shall set their MIB values as follows: *macBeaconOrder* = 0x0f, *macSuperframeOrder* = 0x0f.	yes
CA3	Slotted CSMA-CA is supported.	[R9] 7.5.1.1	CA1: M	ZigBee PRO MM	X		no
				ZigBee-PRO	X		no

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
CA4	Super-frame timing is supported.	[R9] 7.5.1.1	CA1: M	ZigBee PRO MM	X		no
				ZigBee-PRO	X		no

524

525 **10.3.3.2 Guaranteed time slots**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
GTS1	Guaranteed time slots are supported (*server*).	[R9] 7.5.7	FDT1: O	ZigBee PRO MM	X		no
				ZigBee-PRO	X		no
GTS2	Guaranteed time slots are supported (*client*).	[R9] 7.5.7	FDT2: O FDT3: O	ZigBee PRO MM	X		no
				ZigBee-PRO	X		no
GTS3	The client device has the ability to request a GTS. Operations include: • Allocation requests • De-allocation requests • [MLME-GTS.request primitive] • [MLME-GTS.confirm primitive] • Transmission of the GTS request command.	[R9] 7.1.7.1, 7.1.7.2, 7.3.3.1, 7.5.7.2, 7.5.7.4	GTS2: M	ZigBee PRO MM	X		no
				ZigBee-PRO	X		no

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
GTS4	The server has the ability to process GTS requests. Operations include: • Allocation requests • De-allocation requests • Re-allocation requests • [MLME-GTS.indication primitive] • Reception and processing of the GTS request command.	[R9] 7.1.7.3, 7.3.3.1, 7.5.7.2, 7.5.7.4, 7.5.7.5	GTS1: M	ZigBee PRO MM	X		no
				ZigBee-PRO	X		no
GTS5	The server can manage the GTSs.	[R9] 7.5.7	GTS1: M	ZigBee PRO MM	X		no
				ZigBee-PRO	X		no
GTS6	The server can perform CAP maintenance.	[R9] 7.5.7.1	GTS1: M	ZigBee PRO MM	X		no
				ZigBee-PRO	X		no
GTS7	The device can transmit and/or receive data within a GTS.	[R9] 7.5.7.3	GTS1: M GTS2: M	ZigBee PRO MM	X		no
				ZigBee-PRO	X		no

526

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

527 **10.3.3.3 Scanning**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
S1	The device can perform some form of channel scan. Operations include: • Scanning mechanism • [MLME-SCAN.request primitive] • [MLME-SCAN.confirm primitive]	[R9] 7.1.11.1, 7.1.11.2, 7.5.2.1	M	ZigBee PRO MM	M	All devices shall be able to perform at least an active scan.	yes
				ZigBee-PRO	M	All devices shall be able to perform at least an active scan.	yes
S2	The device can perform an energy detection scan.	[R9] 7.5.2.1.1	FDT1: M	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X	Network devices shall perform an energy detection scan on request from the next higher layer.	yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X	The coordinator shall perform an energy detection scan on each available channel in the active channel mask before starting a network.	yes
S3	The device can perform an active scan. Operations include: • Transmission of the beacon request command.	[R9] 7.3.2.4, 7.5.2.1.2	FDT1: M JN1: M	ZigBee PRO MM	M	All devices shall perform an active scan on each available channel in the active channel mask.	yes
				ZigBee-PRO	M	All devices shall perform an active scan on each available channel in the active channel mask.	yes
S4	The device can perform a passive scan.	[R9] 7.5.2.1.3	O	ZigBee PRO MM	X		yes
				ZigBee-PRO	X		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
S5	The client can perform an orphan scan. Operations include: • Orphan device realignment. • Transmission of the orphan notify command. • Reception and processing of the coordinator realignment command.	[R9] 7.3.2.3, 7.3.2.5, 7.5.2.1.4	JN2: M	ZigBee PRO MM	JN2:M		yes
				ZigBee-PRO	JN2:M		yes
S6	The server can perform orphan scan processing. Operations include: • [MLME-ORPHAN.indicate primitive] • [MLME-ORPHAN.response primitive] • Reception and processing of the orphan notify command. • Transmission of the coordinator realignment command.	[R9] 7.1.8.1, 7.1.8.2, 7.3.2.3, 7.3.2.5, 7.5.2.1.4	FDT1: O FDT2: O	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X	Network rejoin is the preferred mechanism for devices to use, however, orphan scan may be used and the parent devices shall support orphan scan.	yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X	Network rejoin is the preferred mechanism for devices to use, however, orphan scan may be used and the parent devices shall support orphan scan.	yes
S7	The server can receive and process a beacon request command.	[R9] 7.3.2.4	S3 & FDT1: M	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes

528

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

529 **10.3.3.4 PAN identifier conflict resolution**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
PICR1	PAN identifier conflict resolution is supported (*server*). Operations include: • Reception and processing of the PAN identifier conflict notification command. • Transmission of the coordinator realignment command.	[R9] 7.3.2.2, 7.3.2.5, 7.5.2.2	FDT1: O	ZigBee PRO MM	FDT1: X FDT2: X FDT3: X		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: X		No
PICR2	PAN identifier conflict resolution is supported (*client*). Operations include: • Transmission of the PAN identifier conflict notification command. • Reception and processing of the coordinator realignment command.	[R9] 7.3.2.2, 7.3.2.5, 7.5.2.2	FDT2: O FDT3: O	ZigBee PRO MM	FDT1: X FDT2: X FDT3: X		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: X		No

530

531 **10.3.3.5 PAN start**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
PS1	Starting a PAN is supported. Operations include: • [MLME-START.request primitive] • [MLME-START.confirm primitive]	[R9] 7.1.14.1, 7.1.14.2, 7.5.2.3	FDT1: M FDT2: M FDT3: O	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes

532

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

533 **10.3.3.6 Association**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
A1	Association is supported (*server*).	[R9] 7.5.3.1	FDT1: O FDT2: O	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
A2	Association is supported (*client*).	[R9] 7.5.3.1	FDT2: O FDT3: O	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
A3	The server can process association requests. Operations include: • [MLME-ASSOCIATE.indicate primitive] • [MLME-ASSOCIATE.response primitive] • Reception and processing of the association request command. • Transmission of the association response command.	[R9] 7.1.3.2, 7.1.3.3, 7.3.1.1, 7.3.1.2	A1: M	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
A4	The client can perform association. Operations include: • [MLME-ASSOCIATE.request primitive] • [MLME-ASSOCIATE.confirm primitive] • Transmission of the association request command. • Reception and processing of the association response command.	[R9] 7.1.3.1, 7.1.3.4, 7.3.1.1, 7.3.1.2	A2: M	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No

534

535 ### 10.3.3.7 Disassociation

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
D1	The device can request a disassociation. Operations include: • [MLME-DISASSOCIATE.request primitive] • [MLME-DISASSOCIATE.confirm primitive] • Transmission of the disassociation notify command.	[R9] 7.1.4.1, 7.1.4.3, 7.3.1.3	O	ZigBee PRO MM	FDT1: X FDT2: X FDT3: X		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: X		No

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
D2	The client can react to a disassociation from the server. Operations include: • [MLME-DISASSOCIATE.indicate primitive] • Reception and processing of the disassociation notify command.	[R9] 7.1.4.2, 7.3.1.3	O	ZigBee PRO MM	FDT1: X FDT2: X FDT3: X		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: X		No
D3	The server can react to a disassociation from a client device. Operations include: • [MLME-DISASSOCIATE.indicate primitive] • Reception and processing of the disassociation notify command.	[R9] 7.1.4.2, 7.3.1.3	O	ZigBee PRO MM	FDT1: X FDT2: X FDT3: X		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: X		No

536

537 ### 10.3.3.8 Beacon synchronization

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
BS1	Beacon notification is supported. Operations include: • [MLME-BEACON-NOTIFY.indication primitive]	[R9] 7.1.5.1	O	ZigBee PRO MM	FDT1: M FDT2: M FDT3: M		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: M		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
BS2	The client can synchronize to a beacon. Operations include: • (Tracking only for beacon networks) • [MLME-SYNC.request primitive] • [MLME-SYNC-LOSS.indication primitive]	[R9] 7.1.15.1, 7.1.15.2, 7.5.4	O	ZigBee PRO MM	FDT1: X FDT2: X FDT3: X		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: X		No

538

539 ### 10.3.3.9 Transmission

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
T1	Frame transmission is supported. Operations include: • Frame construction • [MCPS-DATA.request primitive] • [MCPS-DATA.confirm primitive] • Transmission of data frames.	[R9] 7.1.1.1, 7.1.1.2, 7.2.1, 7.2.2.2, 7.5.6.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
T2	Implicit (command frame) transmission confirmation is supported. Operations include: • [MLME-COMM-STATUS.indication primitive]	[R9] 7.1.12.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes

540

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

541 **10.3.3.10 Reception**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
R1	Frame reception is supported. Operations include: • Data frame de-construction • [MCPS-DATA.indication primitive] • Reception of data frames.	[R9] 7.1.1.3, 7.2.1, 7.2.2.2	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
R2	Receiver control is supported. Operations include: • [MLME-RX-ENABLE.request primitive] • [MLME-RX-ENABLE.confirm primitive]	[R9] 7.1.10.1, 7.1.10.2	O	ZigBee PRO MM	O		No
				ZigBee-PRO	O		No
R3	Filtering and rejection is supported.	[R9] 7.5.6.2	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
R4	Promiscuous mode is supported.	[R9] 7.5.6.6	O	ZigBee PRO MM	O		No
				ZigBee-PRO	O		No

542

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

543 **10.3.3.11 Transaction handling**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
TH1	Transaction handling is supported (*server*).	[R9] 7.5.5	FDT1: O FDT2: O	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X	The server shall be able to handle at least one transaction.	yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X	The server shall be able to handle at least one transaction.	yes
TH2	Transaction handling is supported (*client*).	[R9] 7.5.5	FDT2: O FDT3: O	ZigBee PRO MM	FDT1: X FDT2: X FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: M		No
TH3	The server can manage transactions to its devices. Operations include: • Transaction queuing • Reception and processing of the data request command.	[R9] 7.5.5, 7.1.1.4, 7.1.1.5, 7.3.2.1	TH1: M	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
TH30	The server can manage transaction purging operations: • [MCPS-PURGE.request primitive] • [MCPS-PURGE.confirm primitive]	[R9] 7.1.1.4, 7.1.1.5, 7.3.2.1	TH1: M	ZigBee PRO MM	O		No
				ZigBee-PRO	O		No
TH4	The client can extract data from the coordinator following an indication of data in a beacon.	[R9] 7.5.6.3	TH2: O[5]	ZigBee PRO MM	FDT1: X FDT2: X FDT3: X		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: X		No

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
TH5	The client can poll for data. Operations include: • [MLME-POLL.request primitive] • [MLME-POLL.confirm primitive] • Transmission of the data request command.	[R9] 7.1.16.1, 7.1.16.2, 7.3.2.1	TH2: O[5]	ZigBee PRO MM	FDT1: X FDT2: X FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: M		No

544 O[5]: At least one of these options must be supported.

545 ### 10.3.3.12 Acknowledgement service

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AS1	The acknowledgement service is supported.	[R9] 7.5.6.4	O	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AS2	The device can transmit, receive and process acknowledgement frames.	[R9] 7.2.2.3	AS1: M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AS3	Deprecated	[R9] 7.5.6.4.2, 7.5.6.5	AS1: M	ZigBee PRO MM	X		Click here to enter text.
				ZigBee-PRO	X		Click here to enter text.

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AS4	Retransmissions are supported.	[R9] 7.5.6.5	AS1: M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes

546

547 **10.3.3.13 MIB management**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
MM1	MIB management is supported. Operations include: • MIB attribute storage	[R9] 7.4.2	O	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
MM2	The device supports the reading of MIB attributes. Operations include: • [MLME-GET.request primitive] • [MLME-GET.confirm primitive]	[R9] 7.1.6.1, 7.1.6.2, 7.4.2	MM1: O	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
MM3	The device supports the writing of MIB attributes. Operations include: • MIB attribute verification • [MLME-SET.request primitive] • [MLME-SET.confirm primitive]	[R9] 7.1.13.1, 7.1.13.2, 7.4.2	MM1: O	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes

548

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

549 #### 10.3.3.14 MAC security

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
MS1	The device supports ACL mode. Operations include: • ACL storage • ACL mode usage	[R9] 7.4.2, 7.5.8.1, 7.5.8.3	O	ZigBee PRO MM	X		No
				ZigBee-PRO	X		No
MS2	The device supports secured mode.	[R9] 7.5.8.4	O	ZigBee PRO MM	X		No
				ZigBee-PRO	X		No

550

551

552 #### 10.3.3.15 Device reset

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
DR1	The device is able to reset. Operations include: • [MLME-RESET.request primitive] • [MLME-RESET.confirm primitive]	[R9] 7.1.9.1, 7.1.9.2	O	ZigBee PRO MM	O		No
				ZigBee-PRO	O		No

553

554 ## 10.4 Network layer PICS

555 ### 10.4.1 ZigBee network frame format

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
GFF1		[R1]/3.3.1		ZigBee PRO MM	M		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the general ZigBee network frame format?			ZigBee-PRO	M		yes

556

557 ### 10.4.2 Major capabilities of the ZigBee network layer

558 Tables in the following sub-clauses detail the capabilities of NWK layer for ZigBee devices.

559 #### 10.4.2.1 Network layer functions

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NLF1	Does the network layer support transmission of data by the next higher layer?	[R1]/3.2.1.1, 3.2.1.2, 3.6.2.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
NLF2	Does the network layer support reception of data by the next higher layer?	[R1]/3.2.1.3, 3.6.2.2	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
NLF3	Does the network layer support discovery of existing ZigBee networks?	[R1]/3.2.2.1, 3.2.2.2	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NLF4	Does the network layer support formation of Distributed ZigBee networks? (CCB 2137)	[R1]/3.2.25,	O	ZigBee PRO MM / ZigBee PRO	FDT1: X FDT2: M FDT3: M	Devices using the ZigBee feature set shall set: Feature set = 1 *nwkcProtocolVersion* = 2 and shall advertise these values in their beacon payload in response to MAC beacon requests. Devices using the ZigBee feature set shall also set: *nwkSecurityLevel* = 1	No
	Does the network layer support formation of Centralized ZigBee networks?	[R1]/3.2.2.5,	O	ZigBee PRO MM / ZigBeePRO	FDT1: M FDT2: M FDT3: X	Devices using the ZigBee-PRO feature set shall set: Feature set = 2 *nwkcProtocolVersion* = 2 and shall advertise these values in their beacon payload in response to MAC beacon requests. Devices using the ZigBee-PRO feature set shall also set: *nwkSecurityLevel* = 5	No
NLF5	Can the network layer permit other devices to join the network of which it is a part (and also deny such permission)?	[R1]/3.2.2.5, 3.2.2.6, 3.6.1.2	FDT1:M, FDT2:M, FDT3:X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NLF6	Can the device start as a router?	[R1]/3.2.2.7, 3.2.2.8	FDT1:X, FDT2:M, FDT3:X	ZigBee PRO MM	FDT1: X FDT2: M FDT3: X		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: X		No
NLF60		[R1]/3.2.2.9, 3.2.2.10	M	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X	NLME-ED-SCAN is mandatory for the coordinator and optional for all routers on a ZigBee network.	yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Can the network layer perform energy detection scans at the request of the next higher layer?			ZigBee-PRO	FDT1: M FDT2: M FDT3: X	NLME-ED-SCAN is mandatory for the coordinator and all routers on a PRO network.	yes
NLF7	Can the device request membership in a ZigBee network?	[R1]/3.2.2.11, 3.2.2.13, 3.6.1.4	FDT1: N/A FDT2: M FDT3: M	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
NLF70	Can the device request to join or rejoin a network using the end device timeout or MAC_PHY polling procedure? (CCB 2144)	[R1]/3.2.2.14, 3.2.2.15, 3.6.1.4.3.1	FDT1: N/A FDT2: O FDT3: O	ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		No
				ZigBee-PRO	FDT1: X FDT2: O FDT3: O		No
NLF71	Can the device request to join / rejoin a network using the rejoin command frame and associated procedure?	[R1]/3.2.2.11, 3.2.2.13, 3.6.1.4.2.1	FDT1: N/A FDT2: O FDT3: O	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
NLF72	Can the network layer be directed by the next higher layer to change the operating channel of the network of which it is currently a part?	[R1]/3.2.2.11, 3.2.2.13	O	ZigBee PRO MM	M	The network layer can be directed by the next higher layer to change the operating channel of the network of which it is currently part.	yes
				ZigBee-PRO	M		yes
NLF8	Can the device respond to requests to join the network of which it is a part?	[R1]/3.6.1.4.1.2, 3.6.1.4.2.2	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NLF81	Does the network layer of a device inform the next higher layer when a second device has joined or rejoined its network as a child?	[R1]/3.2.2.12	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NLF9	Does the network layer employ the Distributed Address Mechanism to generate a unique network address to assign to a joining device?	[R1]/3.6.1.6	FDT1: O FDT2: O FDT3: N/A	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X	The ZigBee feature set always employs the distributed addressing scheme with: nwkMaxDepth = 5 nwkMaxChildren = 20 nwkMaxRouters = 6	yes
				ZigBee-PRO	FDT1: X FDT2: X FDT3: X		No
NLF90	Does the network layer employ the Stochastic Addressing Scheme to generate a unique network address to assign to a joining or rejoining device?	[R1]/3.6.1.7	FDT1: O FDT2: O FDT3: N/A	ZigBee PRO MM	FDT1: X FDT2: X FDT3: X		No
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X	The ZigBee-PRO feature set employs stochastic address allocation. The follow parameter values are defined: *nwkAddrAlloc* = 2 *nwkUseTreeRouting* = FALSE *nwkMaxDepth* = 15 Note that nwkMaxDepth above is only used to compute timeouts and shall not limit the actual network radius, as this feature set does not use tree-based addressing. The parameter *nwkMaxChildren* is not restricted in this feature set.	yes
NLF100		Deprecated	X	ZigBee PRO MM	X		Click here to enter text.

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the network layer employ the Higher Layer Address Assignment Mechanism to generate a unique network address to assign to a joining device?			ZigBee-PRO	X		Click here to enter text.
NLF10	Can the next higher layer request that a particular device be “pre-joined” to it using the DIRECT-JOIN procedure?	[R1]/3.2.2.14, 3.2.2.15, 3.6.1.4.3	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X	This service is useful for testing and may be allowed as a part of test procedures at the option of the stack developer.	Click here to enter text.
				ZigBee-PRO	X	This service is useful for testing and may be allowed as a part of test procedures at the option of the stack developer.	Click here to enter text.
NLF11	Can the device make a request to leave the network?	[R1]/3.2.2.16, 3.2.2.18, 3.6.1.10.1	O	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
NLF12	Can the device make a request that one of its child devices leave the network?	[R1]/3.2.2.16, 3.2.2.18, 3.6.1.10.2	FDT1: O FDT2: O FDT3: N/A	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NLF13	Can the network layer process network leave commands from child devices?	[R1]/3.6.1.10.3	FDT1: M FDT2: M FDT3: N/A	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NLF130	Can the network layer process network leave commands from parent devices?	[R1]/3.6.1.10.3	FDT1: N/A FDT2: M FDT3: M	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
NLF131	Does the network layer inform the next higher layer if the device itself has left the network?	[R1]/3.2.2.17	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
NLF14	Does the device support changing of the ZigBee coordinator configuration in an operating network?	[R1]/3.2.2.3, 3.2.2.4, 3.6.1.11	FDT1: O FDT2: X FDT3: X	ZigBee PRO MM	FDT1: M FDT2: X FDT3: X	The ZigBee coordinator shall change the logical channel and PAN ID when directed to by the Network Channel Manager.	yes
				ZigBee-PRO	FDT1: M FDT2: X FDT3: X		yes
NLF15	Does the device support changing of the ZigBee router configuration in an operating network?	[R1]/3.2.2.7, 3.2.2.8	FDT1: X FDT2: O FDT3: X	ZigBee PRO MM	FDT1: X FDT2: M FDT3: X	The ZigBee router shall change the logical channel and PAN ID when directed to by the Network Channel Manager.	No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: X		No
NLF16	Does the network layer support reset?	[R1]/3.2.2.19, 3.2.2.20, 3.6.1.12	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NLF17	Does the network layer allow the next higher layer to synchronize with or extract data from the device's ZigBee coordinator or router?	[R1]/3.2.2.22, 3.2.2.23	FDT1: X FDT2: O FDT3: M	ZigBee PRO MM	FDT1: X FDT2: X FDT3: M	Recommended polling rates for end devices using this feature set: Maximum: once per 7.5s Minimum: once per hour Note that these values represent the (rather loose) recommended boundaries on polling rate for normal operation only. Additionally, the polling rate established to meet this requirement shall have a maximum value less than *nwkTransactionPersistenceTime* to ensure that child devices can poll frequently enough to retrieve messages prior to expiration in the indirect message queue of their parent. The polling rate established here also does not consider APS acknowledgement timeout (which is much shorter than *nwkTransaction-PersistenceTime).* If APS acknowledged messages are directed to sleeping end devices, then the polling rate of those destination devices may be adjusted to occur more frequently than the APS acknowledgement timeout.	No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: M		No
NLF18	Does the network layer report a loss of synchronization with the device's ZigBee router or ZigBee coordinator to the next higher layer?	[R1]/3.2.2.23	FDT1: X FDT2: O FDT3: M	ZigBee PRO MM	X		No
				ZigBee-PRO	X		No
NLF19	Does the network layer offer the next higher layer the ability to retrieve network information base (NIB) attributes?	[R1]/3.2.2.26, 3.2.2.27	M	ZigBee PRO MM	M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
				ZigBee-PRO	M		yes
NLF20	Does the network layer offer the next higher layer the ability to set network information base (NIB) attributes?	[R1]/3.2.2.28, 3.2.2.29	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
NLF110	Does the network layer support network status reporting to the next higher layer?	[R1]/3.2.2.30	M	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NLF111	Does the network layer support Route Discovery?	[R1]/3.2.2.31, 3.2.2.32, 3.6.3.5	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NLF112	Does the network layer support Route Discovery requests with DstAddrMode of 0x00 in support of Many-to-One discovery?	[R1]/3.2.2.31, 3.2.2.32, 3.6.3.5	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X		No

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
				ZigBee-PRO	FDT1: O FDT2: O FDT3: X	Initiation of a Many-to-One route discovery is optional, and should be used in cases where there are relatively few concentrators in the network. Application developers should weigh the trade-offs between Many-to-One discovery and unicast discovery before deploying.	yes
NLF113	Does the network layer support Route Discovery requests with DstAddrMode of 0x01 in support of Multicast Group Discovery?	[R1]/3.2.2.31, 3.2.2.32, 3.6.3.5, 3.6.6	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X		No
				ZigBee-PRO	FDT1: O FDT2: O FDT3: X	Initiation of route discovery commands where DstAddrMode is 0x01 (Multicast Group Discovery) is optional.	yes
NLF114	Does the network layer support Route Discovery requests with DstAddrMode of 0x02 in support of the discovery of Unicast routes?	[R1]/3.2.2.31, 3.2.2.32, 3.6.3.5	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: O FDT2: O FDT3: X	Initiation of route discovery commands where DstAddrMode is 0x02 (Unicast) is optional. ZigBee coordinators and ZigBee routers shall support reception and correct handling of unicast discovery commands.	yes
				ZigBee-PRO	FDT1: O FDT2: O FDT3: X		yes
NLF115	Does the network layer employ tree routing?	3.6.3.3	O	ZigBee PRO MM	M	Devices using the ZigBee stack profile must set: *nwkUseTreeRouting* = TRUE	yes
				ZigBee-PRO	X	Devices using the ZigBee-PRO stack profile shall set: *nwkUseTreeRouting* = FALSE	yes
NLF21		3.6.3.1	O	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the network layer calculate routing cost based on probability of reception?			ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NLF22	Does the network layer maintain a routing table and route discovery table?	[R1]/3.6.3.2	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X	ZigBee coordinators and ZigBee routers shall maintain a routing table and a route discovery table as follows: Routing table (minimum): 8 entries Route discovery table (minimum): 4 entries	yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X	ZigBee coordinators and ZigBee routers shall maintain a routing table and a route discovery table as follows: Routing table (minimum): 10 entries An aging algorithm is recommended but is beyond the scope of this specification. Route discovery table entries (minimum): 4 entries The Route discovery table entries shall be managed as described in [R1] sub-clause 3.6.3.6.	yes
NLF220	Does the network layer maintain a route record table?	[R1]/3.5.2, 3.6.3.2	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X		yes
				ZigBee-PRO	FDT1: O FDT2: O FDT3: X		yes
NLF221	Does the network layer maintain a multicast group ID table?	[R1]/3.6.6.1	FDT1:O, FDT2:O, FDT3:X	ZigBee PRO MM	X	ZigBee coordinators and ZigBee routers that use this stack profile shall set *nwkUseMulticast* to FALSE.	yes
				ZigBee-PRO	FDT1: O FDT2: O FDT3: X		yes

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NLF23	Does the network layer reserve routing capacity for route repair operations? (Note: This capability has been removed from the ZigBee specification as of r08).	None	X	ZigBee PRO MM	X		No
				ZigBee-PRO	X		No
NLF24	Does the device implement beacon collision-avoidance measures?	[R1]/3.6.4	O	ZigBee PRO MM	X		No
				ZigBee-PRO	X		No
NLF25	Does the network layer support router re-enumeration as a route repair method? (Note: This capability has been removed from the ZigBee specification as of r10).	None	X	ZigBee PRO MM	X		Click here to enter text.
				ZigBee-PRO	X		Click here to enter text.
NLF26	Does the network layer assume that links are symmetrical and establish forward and reverse routes at the same time?	[R1]/3.5.2, 3.6.3.5.2	O	ZigBee PRO MM	X	Devices using the ZigBee stack profile must set: *nwkSymLink* = FALSE	yes
				ZigBee-PRO	M	Devices using the ZigBee-PRO stack profile shall set: *nwkSymLink* = TRUE	yes
NLF27	Does the network layer maintain a neighbor table or tables in order to store information about nearby devices?	[R1]/3.6.1.5	M	ZigBee PRO MM	M	ZigBee coordinators and ZigBee routers shall maintain a neighbor table or tables as follows: ZigBee coordinator (minimum): 24 entries ZigBee router (minimum): 25 entries ZigBee end device (minimum): 1 entry	yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
				ZigBee-PRO	M	ZigBee coordinators and ZigBee routers shall maintain a neighbor table or tables as follows: ZigBee coordinator (minimum): (Number of child end devices accepted) plus 16 ZigBee router (minimum): (Number of child end devices accepted) plus 16 ZigBee end device: 1 (Note: End Device shall support a minimum of 5 neighbor table entries and that entry shall be for their parent) (CCB 2091) Where (Number of child end devices accepted) is the minimum number of end device children that a particular router or coordinator in the network is configured to accept.	yes
NLF28	Does the network layer buffer frames pending route discovery or route repair operations?	[R1]/3.6.3.5.1	O	ZigBee PRO MM	O		yes
				ZigBee-PRO	O		yes
NLF29	Does the network layer buffer data frames on behalf of end device that are its children?	[R1]/3.6.5	FDT1:M FDT2:M FDT3:X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X	ZigBee router and coordinator devices shall set: Number of frames buffered on behalf of sleeping end devices (minimum): 1 Note that this means 1 frame TOTAL not 1 frame for each end device. In other words, it is up to the implementer to put in some buffering but routers should not be overburdened with, possibly unnecessary, buffering.	yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NLF30			O	ZigBee PRO MM	X		Click here to enter text.

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Is the device capable of participating in a beacon-oriented network?	[R1]/Preface Definitions and Network Topology sections		ZigBee-PRO	X	On invocation of the NLME-NETWORK-FORMATION.request or NLME-START-ROUTER.request primitives, devices shall employ: BeaconOrder = 0x0f SuperframeOrder = 0x0f	Click here to enter text.
NLF31	Does the network layer support the detection of address conflicts?	[R1]/3.6.1.9	O	ZigBee PRO MM	X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X	Address conflict detection is mandatory for this stack profile (nwkUniqueAddr = FALSE). The coordinator and all routers shall implement the Address Conflict procedure.	yes
NLF32	Does the network layer support resolving address conflicts?	[R1]/3.6.1.9.3	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X		No
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X	Address conflict resolution is mandatory for this stack profile (nwkUniqueAddr = FALSE). The coordinator and all routers shall implement the Address Conflict procedure.	yes
NLF33	Does the network layer support the detection of PAN ID conflicts?	[R1]/3.6.1.13	O	ZigBee PRO MM	FDT1:M FDT2:M FDT3:X	PAN ID conflict resolution is mandatory for the coordinator and routers. Notification of a PAN ID conflict via the NWK Status command frame directed to the nwkManagerAddr is mandatory for all routers and the coordinator. The nwkManagerAddr is required to process all NWK Status command frames directed to it by the coordinator and routers.	yes
				ZigBee-PRO	FDT1:M FDT2:M FDT3:X		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NLF34	Does the device support resolving PAN ID conflicts?	[R1]/3.6.1.13	O	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X	PAN ID conflict resolution is mandatory for the coordinator and routers. Notification of a PAN ID conflict via the NWK Status command frame directed to the nwkManagerAddr is mandatory for all routers and the coordinator. The nwkManagerAddr is required to process all NWK Status command frames directed to it by the coordinator and routers.	yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes

560

561 ### 10.4.2.2 Network layer frames

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NDF1	Does the device support the origination of network data frames?	[R1]/3.3.2.1, 3.6.2.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
NDF2	Does the device support the receipt of network data frames?	[R1]/3.3.2.1, 3.6.2.2	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
NDF3	Does the device support the relaying of unicast network data frames?	[R1]/3.3.2.1, 3.6.3.3	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes

562

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NDF4	Does the device support relaying of broadcast network data frames?	[R1]/3.3.2.1, 3.6.5	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X	Devices using the ZigBee stack profile must set: Broadcast Transaction Table size: 9 (minimum) nwkBroadcastDeliveryTime = 0x44AA2[4] Octet durations (9 seconds on 2.4 GHz) nwkPassiveAckTimeout = 0x3D09[5] Octet durations[6] (500 ms on 2.4 GHz)maximum nwkMaxBroadcastRetries = 2	yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X	Devices using the ZigBee-PRO stack profile shall set: Broadcast Transaction Table size: 9 (minimum) *nwkBroadcastDeliveryTime* = 0x44AA2[7] Octet durations (9 seconds on 2.4 GHz) *nwkPassiveAckTimeout* = 0x3D09[8] Octet Durations[9] (500 ms on 2.4 GHz) maximum *nwkMaxBroadcastRetries* = 2 Application designers should take care to use multicast and broadcast sparingly due to the limitations of the broadcast bandwidth of a network.	yes
NDF100	Does the device support relaying of multicast network data frames?	[R2]/3.3.2.1, 3.6.6	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X		No
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X	The coordinator and all routers in a PRO network shall be able to relay member mode multicast network data frames.	yes
NDF101		[R2]/3.3.2.1, 3.6.3.3.2	FDT1:O, FDT2:O, FDT3:X	ZigBee PRO MM	X		No

[4] CCB 1629
[5] CCB 1633
[6] CCB 1633
[7] CCB 1629
[8] CCB 1633
[9] CCB 1633

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the relaying of source routed network data frames?			ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NDF102	Does the device support conditionally setting the End Device Initiator bit of the NWK frame control?	[R1]/3.3.1.1.9		ZigBee-PRO	FDT1: X FDT2: X FDT3: M		No
NDF103	Does the device support processing NWK data frames with the End Device Initiator bit set?	[R1]/3.6.2.2		ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NDF104	Does the device support aging out children that have not sent a keepalive within the configured timeout?	[R1]/3.6.10		ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NDF105	Does the device support reception of a MAC Data poll as an End Device Keepalive?	[R1]/3.6.10.4	O	ZigBee-PRO	FDT1: O FDT2: O FDT3: M	It is permissible to not have support for this if NDF106 is supported.	yes
NDF106	Does the device support reception of an end device timeout keep alive? ? (CCB 2144)	[R1]/3.6.10.5	M	ZigBee-PRO	FDT1: MFDT2: M FDT3: M	It is permissible to not have support for this if NDF105 is supported.	yes
NDF107	Does the device support persistence of the end device configuration for end devices?	[R1]/3.6.10.8		ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NDF108	Does the device support sending a NWK leave message to an end device that is NOT in its neighbor table?	[R1]/3.6.10.4.1	M	ZigBee-PRO / ZigBee MB	FDT1: M FDT2: M FDT3: X	It is permissible to not have support for this if NDF109 is supported NDF105 must be supported to support NDF108 (CCB 2239).	yes
NDF109	Does the device support sending a ZDO_Mgmt _Leave_Req message to an end device that is NOT in its neighbor table?	[R1]/3.6.10.4.1		ZigBee-PRO / ZigBee MB	FDT1: M FDT2: M FDT3: X	It is permissible to not have support for this if NDF108 is supported. NDF105 must be supported to support NDF109 (CCB 2239).	yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NDF110	Does the end device support timing itself when it does not send a keepalive to its router parent within its timeout?	[R1]/3.6.10.7		ZigBee-PRO / ZigBee MB	FDT1: X FDT2: X FDT3: O		No
F-GP1	Does the device support the Green Power Feature? (CCB 2240)	[R1]/2.1.2	O	ZigBee-PRO / ZigBee MB	FDT1: O FDT2: O FDT3: O	Refer to Refer to [R7] and [R8] for additional details The Green Power cluster if implemented shall use endpoint 242.	No
NDF201	Does the device support reception of ZigBee NWK frames with non-incremental sequence number in the NWK header Sequence Number field?	[R1]/4.3.1.1, 4.3.1.2	M	ZigBee-PRO / ZigBee MB	FDT1: X FDT2: X FDT3: O	Included use of GP. Unconditionally mandatory for R22 CORE stack and later for all devices (CCB 2240)	yes

563 ### 10.4.2.3 Network command frames

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NCF1	Does the device support the origination of route request command frames?	[R1]/3.4.1, 3.6.3.5.1	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF2	Does the device support the receipt of route request command frames?	[R1]/3.4.1, 3.6.3.5.2	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF3		[R1]/3.4.1, 3.6.3.5.2	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the relaying of route request command frames?			ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF4	Does the device support the origination of route reply command frames?	[R1]/3.4.2, 3.6.3.5.2	FDT1:M, FDT2:M, FDT3:X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF5	Does the device support the receipt of route reply command frames?	[R1]/3.4.2, 3.6.3.5.3	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF6	Does the device support the relaying of route reply command frames?	[R1]/3.4.2, 3.6.3.5.3	FDT1:M, FDT2:M, FDT3:X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF7	Does the device support the transmission of network status command frames?	[R1]/3.4.3, 3.6.1.9.3, 3.6.3.3, 3.6.3.7.1	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF8	Does the device support the receipt of network status command frames?	[R1]/3.4.3, 3.6.1.9.3, 3.6.3.7.1	M	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF9	Does the device support the relaying of network command frames? In particular, does it support the relaying of those command frames, specifically network status, network report and network update, which require relaying but for which there are no special per-hop processing requirements?	[R1]/3.4.3, 3.4.9, 3.4.10	FDT1:M, FDT2:M, FDT3:X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF100	Does the device support the origination of leave command frames?	[R1]/3.4.4, 3.6.1.10	FDT1:O, FDT2:O, FDT3:O	ZigBee PRO MM	FDT1: M FDT2: M FDT3: M		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: M		yes
NCF101	Does the device support the receipt of leave command frames?	[R1]/3.4.4, 3.6.1.10	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
NCF103	Does the device support the origination of route record command frames?	[R1]/3.4.5, 3.6.3.5.4	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X		No
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NCF104	Does the device support the receipt of route record command frames?	[R1]/3.4.5, 3.6.3.5.4	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X		No
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF105	Does the device support the relaying of route record command frames?	[R1]/3.4.5, 3.6.3.5.4	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X		No
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF106	Does the device support the transmission of rejoin request command frames?	[R1]/3.4.6, 3.7.1.3.2.1	FDT1:X FDT2:M FDT3:M	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
NCF107	Does the device support the reception of rejoin request command frames?	[R1]/3.4.6, 3.7.1.3.2.2	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF108		[R1]/3.4.7, 3.7.1.3.2.2	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the transmission of rejoin response command frames?			ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF109	Does the device support the reception of rejoin response command frames?	[R1]/3.4.7, 3.7.1.3.2.1	FDT1: X FDT2: M FDT3: M	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
NCF110	Does the device support the generation of a network report command frame.	[R1]/3.4.9, 3.6.1.13.1	O	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
NCF111	Does the device support the reception of a network report command frame	[R1]/3.4.9, 3.6.1.13.2	O	ZigBee PRO MM	FDT1: O FDT2: O FDT3: X	While this feature is optional, one device in the network must be designated as the network manager and for that device this feature is mandatory.	Click here to enter text.
				ZigBee-PRO	FDT1: O FDT2: O FDT3: X		Click here to enter text.
NCF112	Does the device support the generation of a network update command frame.	[R1]/3.4.10, 3.6.1.13.2	O	ZigBee PRO MM	FDT1: O FDT2: O FDT3: X	While this feature is optional, one device in the network must be designated as the network manager and for that device this feature is mandatory.	Click here to enter text.
				ZigBee-PRO	FDT1: O FDT2: O FDT3: X		Click here to enter text.
NCF113		[R1]/3.4.10, 3.6.1.13.3	O	ZigBee PRO MM	FDT1: M FDT2: M FDT3: M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the reception of a network update command frame			ZigBee-PRO	FDT1: M FDT2: M FDT3: M		yes
NCF114	Does the device support the generation of a link status command frame.	[R1]/3.4.8, 3.6.3.4.1	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X		No
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF115	Does the device support the reception of a link status command frame.	[R1]/3.4.8, 3.6.1.5, 3.6.3.4.2	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	X		No
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
NCF116 [10]	Does the device support ignoring the NWK leave command?	[R1]/3.5.2, 3.6.1.10.3	FDT1:O FDT2: O FDT3:X	ZigBee-PRO	FDT1: O FDT2: O FDT3: X		yes

[10] CCB 1279

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

564 ## 10.5 Security PICS

565 ### 10.5.1 ZigBee security roles

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
SR1	Is this device capable of acting in the role of a trust center?	[R1]/1.4, 4.6.2	FDT1: M FDT2: O FDT3: X	ZigBee PRO MM	FDT1: M FDT2: O FDT3: X	Upon initial network formation, the coordinator must at least temporarily serve as the trust center. After formation, at least one of the routers or the coordinator must be capable of acting in the role of the trust center. It is an application responsibility to transition the trust center from the coordinator to another router device pointed to by apsTrust-CenterAddress within all devices in the network if desired. For the device whose address is apsTrustCenterAddress, it is mandatory to act in the role of the trust center. All devices in the network shall maintain a single consistent definition of apsTrust-CenterAddress. It is possible, under application control, to change apsTrustCenter-Address during later network operation, however, it is the application's responsibility to ensure that all devices in the network are notified of the change. Trust center must be collocated with ZC (short address 0x0000) throughout network life (CCB 2178)	yes
				ZigBee-PRO	FDT1: M FDT2: O FDT3: X		yes

566

567

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

568 ### 10.5.2 ZigBee trust center capabilities

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
TCC1	Is this device capable of acting as a ZigBee trust center in high security mode?	[R1]/1.4.1.2, 4.6.2.1	SR1:O.2	ZigBee PRO MM	X		Click here to enter text.
				ZigBee-PRO	SR1: O.2	Every PRO network shall have a Trust Center either running in Standard or High Security mode The device designated as the Trust Center shall be declared a concentrator in a PRO network and a Many to One route shall be created to the Trust Center. At least one of TCC1 or TCC2 must be supported if the device supports SR1. Trust center must be collocated with ZC (short address 0x0000) throughout network life (CCB 2178)	Click here to enter text.
TCC2	Is this device capable of acting as a ZigBee trust center in standard mode?	[R1]/1.4.1.2, 4.6.2.2	SR1:O.2	ZigBee PRO MM	M		yes
				ZigBee-PRO	SR1: O.2	Every PRO network shall have a Trust Center either running in Standard or High Security mode The device designated as the Trust Center shall be declared a concentrator in a PRO network and a Many to One route shall be created to the Trust Center. At least one of TCC1 or TCC2 must be supported if the device supports SR1. Trust center must be collocated with ZC (short address 0x0000) throughout network life (CCB 2178)	yes

569

570

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

571 ### 10.5.3 Modes of operation

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
MOO1	Is this device capable of operating in a network secured with a trust center running in high security mode?	[R1]/1.4.1.2, 4.6.2.1	O.3	ZigBee PRO MM	X		Click here to enter text.
				ZigBee-PRO	O.3	A PRO device shall join a PRO network either running in Standard or High Security mode. At least one of MOO1 or MOO2 must be supported.	Click here to enter text.
MOO2	Is this device capable of operating in a network secured with a trust center running in standard mode?	[R1]/1.4.1.2,	O.3	ZigBee PRO MM	M		yes
				ZigBee-PRO	O.3	A PRO device shall join a PRO network either running in Standard or High Security mode. At least one of MOO1 or MOO2 must be supported.	yes

572

573 ### 10.5.4 Security levels

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
SL1	Is this device capable of supporting security level 0x01?	[R1]/4.5.1.1.1	O.4	ZigBee PRO MM	X	The device shall not apply security to outgoing frames or accept secured incoming frames using any level other than level 0x05.	Click here to enter text.
				ZigBee-PRO	X		Click here to enter text.
SL2	Is this device capable of supporting security level 0x02?	[R1]/4.5.1.1.1	O.4	ZigBee PRO MM	X	The device shall not apply security to outgoing frames or accept secured incoming frames using any level other than level 0x05.	Click here to enter text.
				ZigBee-PRO	X		Click here to enter text.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
SL3	Is this device capable of supporting security level 0x03?	[R1]/4.5.1.1.1	O.4	ZigBee PRO MM	X	The device shall not apply security to outgoing frames or accept secured incoming frames using any level other than level 0x05.	Click here to enter text.
				ZigBee-PRO	X		Click here to enter text.
SL4	Is this device capable of supporting security level 0x04?	[R1]/4.5.1.1.1	O.4	ZigBee PRO MM	X	The device shall not apply security to outgoing frames or accept secured incoming frames using any level other than level 0x05.	Click here to enter text.
				ZigBee-PRO	X		Click here to enter text.
SL5	Is this device capable of supporting security level 0x05?	[R1]/4.5.1.1.1	O.4	ZigBee PRO MM	M	The device shall apply security to outgoing frames or accept secured incoming frames using only level 0x05 (i.e., ENC-MIC-32)	yes
				ZigBee-PRO	M		yes
SL6	Is this device capable of supporting security level 0x06?	[R1]/4.5.1.1.1	O.4	ZigBee PRO MM	X	The device shall not apply security to outgoing frames or accept secured incoming frames using any level other than level 0x05.	Click here to enter text.
				ZigBee-PRO	X		Click here to enter text.
SL7	Is this device capable of supporting security level 0x07?	[R1]/4.5.1.1.1	O.4	ZigBee PRO MM	X	The device shall not apply security to outgoing frames or accept secured incoming frames using any level other than level 0x05.	Click here to enter text.
				ZigBee-PRO	X		Click here to enter text.

574

575

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

576 **10.5.5 NWK layer security**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NLS1	Does the device support the security processing of NWK layer outgoing frames?	[R1]/4.3.1.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
NLS2	Does the device support the security processing of NWK layer incoming frames?	[R1]/4.3.1.2	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
NLS3	Does the device support the ZigBee secured NWK layer frame format?	[R1]/4.3.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
NLS4	Does the device support the ability to manage at least one network key and corresponding outgoing frame counter?	[R1]/4.2.1.3, 4.3.3	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NLS5	Does the device support the ability to manage two network keys and corresponding outgoing frame counter?	[R1]/4.2.1.3, 4.3.1, 4.3.3	O	ZigBee PRO MM	M	All devices shall maintain at least 2 NWK keys with the frame counters consistent with the security mode of the network (Standard or High). A NWK key of all zero's shall be treated as reserved. Due to the fact that a NWK key of all zero's was used as a "dummy key" and employed in the trust center exchange where pre-configured keys are used, a NWK key of all zero's is indistinguishable from transport of a dummy key.	yes
				ZigBee-PRO	M		yes
NLS7	Does the device support at least one frame counter for incoming NWK layer frames for each potential source of incoming frames (e.g., a coordinator or router should support the same number of counters per network key as the maximum number of neighbor table entries and an end device should support one counter per network key)?	[R1]/4.2.1.3, 4.3.1, 4.3.3	O	ZigBee PRO MM	M	Devices using this stack profile in Standard Security and High Security mode shall store a single frame counter per neighbor table entry associated with the current NWK Key.	yes
				ZigBee-PRO	M		yes
NLS8	Does the device support a setting to indicate that all incoming NWK frames must be checked for freshness (i.e., *nwkAllFresh*).	[R1]/4.4.1.2, 4.6.2.1, 4.6.2.2	MOO1: M MOO2: O	ZigBee PRO MM	MOO1: M MOO2: O	See also the trust centre policies document [R4].	yes
				ZigBee-PRO	MOO1: M MOO2: O		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
NLS9	Does the device support the ability to secure all incoming and outgoing NWK frames (i.e., the *nwkSecureAllFrames* attribute of the NIB)?	[R1]/4.2.3, 4.6	O	ZigBee PRO MM	M	Devices using the ZigBee and ZigBee-PRO feature sets shall set: nwkSecureAllFrames = TRUE	yes
				ZigBee-PRO	M		yes
NLS10	Does the device support the ability to reject frames from neighbors which have not been properly authenticated?	[R1]/4.2.3, 4.6	O	ZigBee PRO MM	MOO1: M MOO2: O	Coordinator and Router devices employing ZigBee and ZigBee PRO Standard Mode security shall not reject frames from neighbors which have not been properly authenticated. Coordinator and Router devices employing ZigBee PRO High Security shall reject frames from neighbors which have not been properly authenticated.	yes
				ZigBee-PRO	MOO1: M MOO2: O		yes

577

578 ### 10.5.6 APS layer security

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ASLS1	Does the device support the security processing of APS layer outgoing frames?	[R1]/4.4.1.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
ASLS2	Does the device support the security processing of APS layer incoming frames?	[R1]/4.4.1.2	M	ZigBee PRO MM	M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
				ZigBee-PRO	M		yes
ASLS3	Does the device support the ZigBee secured APS layer frame format?	[R1]/4.4.7.3	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
ASLS4	Does the device support the ability to manage trust center master keys?	[R1]/4.4.3, 4.4.10, 4.6.3	O	ZigBee PRO MM	MOO1: M MOO2: O	In ZigBee and ZigBee PRO Standard Mode security, trust center master keys are optional for all devices. In ZigBee PRO High Security, trust center master keys mandatory for all devices.	Click here to enter text.
				ZigBee-PRO	MOO1: M MOO2: O		Click here to enter text.
ASLS5	Does the device support the ability to manage application master keys?	[R1]/4.2.3.5, 4.4.3, 4.4.6, 4.4.10, 4.6.3.5	O	ZigBee PRO MM	O	In ZigBee and ZigBee PRO Standard and ZigBee PRO High security modes, application master keys are optional for all devices.	Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ASLS6	Does the device support the ability to manage application data keys and corresponding security material (e.g., the incoming and outgoing frame counters)?	[R1]/4.2.1.3, 4.4.1, 4.4.10	O	ZigBee PRO MM	O		yes
				ZigBee-PRO	O		yes
ASLS7	Does the device support network key incoming frame counters for incoming APS layer frames secured with the network key?	[R1]/4.4.1.2, 4.3.3	O	ZigBee PRO MM	X	ZigBee and ZigBee PRO Standard Mode or ZigBee-PRO High Mode security use nwkSecure-AllFrames=TRUE, the APS security header is not employed when the network key is used for incoming APS layer frames.	No
				ZigBee-PRO	X		No

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ASLS8	Does the device support establish-key service using the Symmetric-Key Key Establishment (SKKE) protocol?	[R1]/4.2.3.1, 4.4.2, 4.4.9.1	O	ZigBee PRO MM	MOO1: M MOO2: O	In ZigBee and ZigBee PRO Standard Mode security, SKKE is optional for all devices. In ZigBee PRO High Security, SKKE is mandatory for all devices.	Click here to enter text.
				ZigBee-PRO	MOO1: M MOO2: O		Click here to enter text.
ASLS9	Does the device support the origination of transport-key commands?	[R1]/4.2.3.2, 4.4.3, 4.4.9.2	SR1: M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ASLS10	Does the device support the receipt of transport-key commands?	[R1]/4.2.3.2, 4.4.3, 4.4.9.2	O	ZigBee PRO MM	M	A newly joined device in ZigBee or ZigBee PRO Standard and ZigBee PRO High Security shall be capable of receiving the NWK key from the trust center via transport-key commands.	yes
				ZigBee-PRO	M		yes
ASLS11	Does the device support the origination of update-device commands?	[R1]/4.2.3.3, 4.4.4, 4.4.9.3	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
ASLS12	Does the device support the receipt of update-device commands?	[R1]/4.2.3.3, 4.4.4, 4.4.9.3	SR1:M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ASLS13	Does the device support the origination of remove-device commands?	[R1]/4.2.3.4, 4.4.5, 4.4.9.4	SR1:M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ASLS14	Does the device support the receipt of remove-device commands?	[R1]/4.2.3.4, 4.4.5, 4.4.9.4	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X	The trust center shall be able to ask a ZigBee router or the ZigBee coordinator to request that a child device leave the network.	yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
ASLS15	Does the device support the origination of request-key commands?	[R1]/4.2.3.5, 4.4.6, 4.4.9.5	O	ZigBee PRO MM	O		yes
				ZigBee-PRO	O		yes
ASLS16	Does the device support the receipt of request-key commands?	[R1]/4.2.3.5, 4.4.6, 4.4.9.5	SR1:M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ASLS17	Does the device support origination of switch-key commands?	[R1]/4.2.3.6, 4.4.7, 4.4.9.6	SR1:M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ASLS18	Does the device support receipt of switch-key commands?	[R1]/4.2.3.6, 4.4.7, 4.4.9.6	O	ZigBee PRO MM	M		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
				ZigBee-PRO	M		yes
ASLS19	Does the device support origination of tunnel commands?	[R1]/4.4.3.1, 4.4.9.8	SR1:M	ZigBee PRO MM	MOO1: M MOO2: O	In ZigBee and ZigBee PRO Standard security, the ability to originate tunnel commands from the Trust Center is optional unless using link keys. In ZigBee PRO High Security, it is mandatory.	yes
				ZigBee-PRO	MOO1: M MOO2: O		yes
ASLS20	Does the device support receipt of tunnel commands?	[R1]/4.4.3.1, 4.4.9.8	O	ZigBee PRO MM	MOO2: FDT1: O FDT2: O FDT3: X	In ZigBee and ZigBee PRO Standard and High security, the ability for the coordinator and all routers to receive tunnel commands is mandatory.	yes
				ZigBee-PRO	MOO1: FDT1: M FDT2: M FDT3: X MOO2: FDT1: O FDT2: O FDT3: X		yes
ASLS21	Does the device support the authentication service using the entity authentication protocol?	[R1]/4.2.3.7, 4.4.8, 4.4.9.7	O	ZigBee PRO MM	MOO2: FDT1: O FDT2: O FDT3: X	In ZigBee and ZigBee PRO Standard security, the ability to support the authentication service using the entity authentication protocol is optional. In ZigBee PRO High Security, it is mandatory.	yes
				ZigBee-PRO	MOO1: FDT1: M FDT2: M FDT3: X MOO2: FDT1: O FDT2: O FDT3: X		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

579 **10.5.7 Application layer security**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ALS1	Is this device capable of learning and maintaining knowledge of its trust center using the *apsTrust-CenterAddress* attribute in the AIB?	[R1]/4.4.11, 4.6.2.2	O	ZigBee PRO MM	O	Trust Center must initially reside on the ZigBee coordinator but may, under application control, move to any router on the PAN as long as all devices in the PAN have their apsTrustCenterAddress attribute updated appropriately by the application. Trust Center must be collocated with ZC (short address 0x0000) throughout network life (CCB 2178)	yes
				ZigBee-PRO	M		yes
ALS2	Is this device capable of following the "joining a secure network procedure" in the role of a router?	[R1]/4.6.3.1	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
ALS3	Is this device capable of following the "joining a secure network procedure" in the role of a joining device?	[R1]/4.6.3.1	O	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
ALS4	Is this device capable of following the "authentication procedure" in the role of a trust center?	[R1]/4.6.3.2, 4.6.3.2.2.1	TCC1: O TCC2: O	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ALS5	Is this device capable of following the "authentication procedure" in the role of a router?	[R1]/4.6.3.2, 4.6.3.2.1	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
ALS6	Is this device capable of following the "authentication procedure" in the role of a joining device with a preconfigured network key?	[R1]/4.6.3.2, 4.6.3.2.3.1	O	ZigBee PRO MM	O	For devices implementing ZigBee and ZigBee PRO Standard Security, following the "authentication procedure" in the role of joining device with a pre-configured network key is optional. For devices implementing ZigBee PRO High Security, it is prohibited.	Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ALS7	Is this device capable of following the "authentication procedure" in the role of a joining device with a preconfigured trust center link key?	[R1]/4.6.3.2, 4.6.3.2.3.2	O	ZigBee PRO MM	O	For devices implementing ZigBee and ZigBee PRO Standard Security, following the "authentication procedure" in the role of joining device with a pre-configured trust center link key is optional. For devices implementing ZigBee PRO High Security, it is mandatory unless the ZigBee PRO High Security Trust Center policy permits in the clear delivery of the master key.	yes
				ZigBee-PRO	O		yes
ALS8		[R1]/4.6.3.2, 4.6.3.2.3.3	O	ZigBee PRO MM	O		Click here to enter text.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Is this device capable of following the “authentication procedure” in the role of a joining device without preconfigured network or trust center link keys?			ZigBee-PRO	O	For devices implementing ZigBee and ZigBee PRO Standard Security, following the “authentication procedure” in the role of joining device without a pre-configured trust center link key is optional and supported by default due to the requirement to permit ZigBee Residential Security Mode devices onto PRO Standard Security networks as end devices. For devices implementing ZigBee PRO High Security, it is optional and supported only if the ZigBee PRO High Security Trust Center policy permits in the clear delivery of the master key.	Click here to enter text.
ALS9	Is this device capable of following the “network key update procedure” in the role of a trust center?	[R1]/4.6.3.4, 4.6.3.4.1	TCC1: O TCC2: O	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ALS10	Is this device capable of following the “network key update procedure” in the role of a network device?	[R1]/4.6.3.4, 4.6.3.4.2	O	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
ALS11	Is this device capable of following the “network key recovery procedure” in the role of a trust center?		TCC1:O.1 TCC2:O.1	ZigBee PRO MM	X	This item was deprecated.	Click here to enter text.
				ZigBee-PRO	X		Click here to enter text.
ALS12			O	ZigBee PRO MM	X	This item was deprecated.	Click here to enter text.

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Is this device capable of following the “network key recovery procedure” in the role of a network device?			ZigBee-PRO	X		Click here to enter text.
ALS13	Is this device capable of following the “end-to-end application key establishment procedure” in the role of a trust center?	[R1]/4.6.3.5, 4.6.3.5.2	TCC1: O TCC2: O	ZigBee PRO MM	SR1: O	For ZigBee and ZigBee PRO Standard Security, it is optional for the trust center to perform the “end-to-end application key establishment” procedure. For ZigBee PRO High Security, it is mandatory.	yes
				ZigBee-PRO	SR1: O		yes
ALS14	Is this device capable of following the "end-to-end application key establishment procedure" in the role of a device receiving a master key for use with the SKKE protocol?	[R1]/4.6.3.5, 4.6.3.5.1, 4.6.3.5.1.2	O	ZigBee PRO MM	O	For ZigBee and ZigBee PRO Standard Security and ZigBee PRO High Security, it is optional for the network devices to perform the “end-to-end application key establishment” procedure.	Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ALS15	Is this device capable of following the “end-to-end application key establishment procedure” in the role of a device directly receiving a link key?	[R1]/4.6.3.5, 4.6.3.5.1, 4.6.3.5.1.1	O	ZigBee PRO MM	O	For ZigBee and ZigBee PRO Standard Security and ZigBee PRO High Security, it is optional for the network devices to perform the “end-to-end application key establishment” procedure.	yes
				ZigBee-PRO	O		yes
ALS16	Is this device capable of following the “network leave procedure” in the role of a trust center?	[R1]/4.6.3.6, 4.6.3.6.1	TCC1: O TCC2: O	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ALS17	Is this device capable of following the “network leave procedure” in the role of a router?	[R1]/4.6.3.6, 4.6.3.6.2	FDT1:O, FDT2:O, FDT3:X	ZigBee PRO MM	FDT1: X FDT2: M FDT3: X		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: X		No
ALS18		[R1]/4.6.3.6, 4.6.3.6.3	O	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Is this device capable of following the "network leave procedure" in the role of a leaving device?			ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
ALS19	Is this device capable of following the "intra-PAN portability procedure" in the role of a parent?	[R1]/4.6.3.3, 4.6.3.3.1	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
ALS20	Is this device capable of following the "intra-PAN portability procedure" in the role of an end device?	[R1]/4.6.3.3, 4.6.3.3.2	O	ZigBee PRO MM	FDT1: X FDT2: X FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: M		No
ALS21	Is this device capable of following the "command tunneling procedure" in the role of a trust center device?	[R1]/4.6.3.8, 4.6.3.8.1	TCC1: O TCC2: O	ZigBee PRO MM	SR1: O	For ZigBee PRO High Security, the command tunneling procedure in the role of a trust center device is mandatory. For ZigBee and ZigBee PRO Standard Security, it is optional.	yes
				ZigBee-PRO	SR1: O		yes
ALS22	Is this device capable of following the "command tunneling procedure" in the role of a router?	[R1]/4.6.3.8, 4.6.3.8.2	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: O FDT2: O FDT3: X	For ZigBee PRO High Security, the command tunneling procedure in the role of a router device is mandatory. For ZigBee and ZigBee PRO Standard Security, it is optional.	yes
				ZigBee-PRO	FDT1: O FDT2: O FDT3: X		yes
ALS23	Does the device support the permissions configuration table?	[R1]/4.2.3.8, 4.6.3.8	O	ZigBee PRO MM	O	The Permissions Configuration Table is optional for all devices.	Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.

580

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

581 ## 10.6 Application layer PICS

582 ### 10.6.1 ZigBee security device types

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
SDT1	Is this device capable of acting as a ZigBee Trust Center?	[R1]/4.2.4, 4.6.2	O.2	ZigBee PRO MM	FDT1: M FDT2: O FDT3: X	This item was deprecated in favor of SR1.	yes
				ZigBee-PRO	FDT1: M FDT2: O FDT3: X		yes
SDT2	Is this device capable of joining a secure ZigBee network only as a device?	[R1]/4.6.3	O.2	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No

583

584 ### 10.6.2 ZigBee APS frame format

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AFF1	Does the device support the general ZigBee APS frame format?	[R1]/2.2.5.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AFF2	Does the device support the ZigBee APS data frame format?	[R1]/2.2.5.2.1	M	ZigBee PRO MM	M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
				ZigBee-PRO	M		yes
AFF3	Does the device support the ZigBee APS command frame format?	[R1]/2.2.5.2.2, 2.2.6	O	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AFF4	Does the device support the ZigBee APS acknowledgement frame format?	[R1]/2.2.5.2.3	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes

585

586 ### 10.6.3 Major capabilities of the ZigBee application layer

587 *Tables in the following subclauses detail the capabilities of the APL layer for ZigBee devices.*

588 #### 10.6.3.1 Application layer functions

589 ##### 10.6.3.1.1 Application Support Sub-layer functions

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ALF1	Does the application support sub-layer support transmission of data by the next higher layer?	[R1]/2.2.4.1.1, 2.2.4.1.2	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
ALF200		[R1]/2.2.4.1.1	O	ZigBee PRO MM	X	This must be handled by the application.	No

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support transmission of outgoing APS frames within APSDE with the DstAddrMode set to 0x00 (indirect)			ZigBee-PRO	X		No
ALF201	Does the device support transmission of outgoing APS frames within APSDE with the DstAddrMode set to 0x01 (group addressed)	[R1]/2.2.4.1.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
ALF202	Does the device support transmission of outgoing APS frames within APSDE with the DstAddrMode set to 0x02 (unicast using NWK address and Destination Endpoint)	[R1]/2.2.4.1.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
ALF203	Does the device support transmission of outgoing APS frames within APSDE with the DstAddrMode set to 0x03 (unicast using IEEE address and Destination Endpoint)	[R1]/2.2.4.1.1	O	ZigBee PRO MM	O		Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ALF2	Does the application support sub-layer support reception of data by the next higher layer at the endpoint supplied by the incoming packet?	[R1]/2.2.4.1.3	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
ALF300		[R1]/2.2.4.1.3	O	ZigBee PRO MM	X		Click here to enter text.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support reception of incoming APS frames within APSDE with the DstAddrMode set to 0x00 (indirect)			ZigBee-PRO	X		Click here to enter text.
ALF301	Does the device support reception of incoming APS frames within APSDE with the DstAddrMode set to 0x01 (group addressed)	[R1]/2.2.4.1.3	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
ALF302	Does the device support reception of incoming APS frames within APSDE with the DstAddrMode set to 0x02 (unicast using NWK address and Destination Endpoint)	[R1]/2.2.4.1.3	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
ALF3	Does the application support sub-layer support BIND and UNBIND requests and confirms?	[R1]/2.2.4.3.1, 2.2.4.3.2, 2.2.4.3.3, 2.2.4.3.4	O	ZigBee PRO MM	O	Binding support is optional for all devices, except that: • Source binding only is supported (coordinator based binding is disallowed) • All devices shall minimally respond with NOT_IMPLEMENTED The ZigBee Coordinator shall implement the mechanism for matching end device bind requests (AZD24; FDT1: M).	yes
				ZigBee-PRO	O		yes
ALF4	Does the device's application support sub- layer offer the next higher layer the ability to get application information base (AIB) attributes.	[R1]/2.2.4.4.1, 2.2.4.4.2	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ALF5	Does the device's application support sub- layer offer the next higher layer the ability to set application information base (AIB) attributes.	[R1]/2.2.4.4.3 , 2.2.4.4.4	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
ALF100	Does the application support sub-layer support ADD GROUP requests and confirms?	[R1]/2.2.4.5.1 , 2.2.4.5.2	M	ZigBee PRO MM	O	If supported, the group table in the APS shall contain a minimum of 16 group addresses.	Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ALF101	Does the application support sub-layer support REMOVE GROUP requests and confirms?	[R1]/ 2.2.4.5.3, 2.2.4.5.4	M	ZigBee PRO MM	O		Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ALF102	Does the application support sub-layer support REMOVE ALL GROUPS requests and confirms?	[R1]/ 2.2.4.5.5, 2.2.4.5.6	M	ZigBee PRO MM	O		Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.

590

591 ### 10.6.3.1.2 Application layer frames

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ADF1		[R1]/2.2.5.1, 2.2.5.2.1, 2.2.8.4.1	M	ZigBee PRO MM	M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the origination of application data frames.			ZigBee-PRO	M		yes
ADF2	Does the device support the receipt of application data frames.	[R1]/2.2.5.1 2.2.5.2.1, 2.2.8.3.2, 2.2.8.3.3	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
ADF3	Does the device support the origination of application data frames with the auxiliary APS security header?	[R1]/ 2.2.5.1, 2.2.5.2.1, 2.2.8.4.1, 4.4.1.1	O	ZigBee PRO MM	O	Use of the auxiliary APS security header is optional for all devices. The application profiles shall determine requirements for use of the auxiliary APS security header.	Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ADF4	Does the device support the receipt of application data frames with the auxiliary APS security header?	[R1]/ 2.2.5.1 2.2.5.2.1, 2.2.8.3.2, 2.2.8.3.3, 4.4.1.2	O	ZigBee PRO MM	O	Use of the auxiliary APS security header is optional for all devices. The application profiles shall determine requirements for use of the auxiliary APS security header.	Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ADF5	Does the device support the origination of application data frames with the extended APS fragmentation/re-assembly header?	[R1]/ 2.2.5.1, 2.2.5.2.1, 2.2.8.4.1, 2.2.5.1.8, 2.2.8.4.5.1	O	ZigBee PRO MM	O	Use of the extended APS fragmentation/re-assembly header is optional, but in all cases the parameters shall be set by agreement within specific application profiles. Devices using the ZigBee and ZigBee-PRO feature sets shall set: *Config_Max_ZDO-_Payload = 0* (i.e. for compatibility with the earlier ZigBee feature set, ZDO messages shall not be fragmented)	Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ADF6	Does the device support the receipt of application data frames with the extended APS fragmentation/re-assembly header?	[R1]/ 2.2.5.1 2.2.5.2.1, 2.2.8.3.2, 2.2.8.3.3, 2.2.5.1.8, 2.2.8.4.5.2	O	ZigBee PRO MM	O	Use of the extended APS fragmentation/re-assembly header is optional, but in all cases the parameters shall be set by agreement within specific application profiles. Devices using the ZigBee and ZigBee-PRO feature sets shall set: *Config_Max_ZDO-_Payload = 0* (i.e. for compatibility with the earlier ZigBee feature set, ZDO messages shall not be fragmented)	Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.

592 **10.6.3.1.3 Application layer command frames**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ACF500	Does the device support the origination of command frames with the auxiliary APS security header?	[R1]/ 2.2.5.1, 2.2.5.2.2, 2.2.6, 4.4.1.1	O	ZigBee PRO MM	O		Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ACF501	Does the device support the receipt of command frames with the auxiliary APS security header?	[R1]/ 2.2.5.1 2.2.5.2.1, 2.2.6, 2.2.8.3.3, 4.4.1.2	O	ZigBee PRO MM	O		Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ACF1	Does the device support the origination of application command frames from the Trust Center.	[R1]/4.4.9, 4.6.2, 4.6.3.2, 4.6.3.3, 4.6.3.4, 4.6.3.5, 4.6.3.6, 4.6.3.7	SDT1: M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ACF100	Does the device support the origination of Key Establishment application command frames from the Trust Center?	[R1]/4.4.9.1	SDT1:M	ZigBee PRO MM	SR1: O	In ZigBee and ZigBee PRO Standard Security Mode, it is optional to originate Key Establishment command frames from the Trust Center. In ZigBee PRO High Security, it is mandatory.	No
				ZigBee-PRO	SR1: O		No
ACF101	Does the device support the origination of Transport Key application command frames from the Trust Center?	[R1]/4.4.9.2	SDT1:M	ZigBee PRO MM	SR1: M	In ZigBee and ZigBee PRO Standard Security Mode, it is mandatory to originate Transport Key command frames from the Trust Center for Key Type 1 (Network Key Standard Mode). In ZigBee PRO High Security Mode, it is mandatory to originate Transport Key command frames from the Trust Center for Key Type 0 (Trust Center Master Key) and Key Type 5 (Network Key High Security Mode). It is optional in either ZigBee and ZigBee PRO Standard Security or High Security to originate Transport Key command frames for Key Types 4 (Trust Center Link Key), Key Type 2 (Application Master Key) and Key Type 3 (Application Link Key).	yes
				ZigBee-PRO	SR1: M		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ACF102	Does the device support the origination of Remove Device application command frames from the Trust Center?	[R1]/4.4.9.4	SDT1:M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ACF103	Does the device support the origination of Switch Key application command frames from the Trust Center?	[R1]/4.4.9.6	SDT1:M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ACF104	Does the device support the origination of entity authentication application command frames?	[R1]/4.4.9.7	SDT1:M	ZigBee PRO MM	SR1: O		Click here to enter text.
				ZigBee-PRO	MOO2: O MOO1: M		Click here to enter text.
ACF2	Does the device support the receipt of application command frames at the Trust Center	[R1]/4.4.9, 4.6.2, 4.6.3.2, 4.6.3.3, 4.6.3.4, 4.6.3.5, 4.6.3.6, 4.6.3.7	SDT1:M	ZigBee PRO MM	SR1: M	Mandatory for the trust centre and optional for other devices.	yes
				ZigBee-PRO	SR1: M		yes
ACF200	Does the device support the receipt of Key Establishment application command frames at the Trust Center?	[R1]/4.4.9.1	SDT1:M	ZigBee PRO MM	SR1: O	In ZigBee and ZigBee PRO Standard Security Mode, it is optional to receive Key Establishment command frames from the Trust Center. In ZigBee PRO High Security, it is mandatory.	Click here to enter text.
				ZigBee-PRO	SR1: O		Click here to enter text.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ACF201	Does the device support the receipt of Transport Key application command frames at the Trust Center?	[R1]/4.4.9.2	SDT1:M	ZigBee PRO MM	SR1: M	In ZigBee and ZigBee PRO Standard Security Mode, it is mandatory to receive Transport Key command frames from the Trust Center for Key Type 1 (Network Key Standard Mode). In ZigBee PRO High Security Mode, it is mandatory to receive Transport Key command frames from the Trust Center for Key Type 0 (Trust Center Master Key) and Key Type 5 (Network Key High Security Mode). It is optional in ZigBee and ZigBee PRO Standard Security to receive Transport Key command frames for Key Types 4 (Trust Center Link Key), Key Type 2 (Application Master Key) and Key Type 3 (Application Link Key). It is prohibited in ZigBee PRO High Security to receive Transport Key command frames for Key Types 4 (Trust Center Link Key) and optional to receive Transport Key command frames for Key Type 2 (Application Master Key) and Key Type 3 (Application Link Key).	yes
				ZigBee-PRO	SR1: M		yes
ACF202	Does the device support the receipt of Update Device application command frames at the Trust Center?	[R1]/4.4.9.3	SDT1:M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ACF203	Does the device support the receipt of Request Key application command frames at the Trust Center?	[R1]/4.4.9.5	SDT1:M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ACF204	Does the device support the receipt of entity authentication application command frames?	[R1]/4.4.9.7	SDT1:M	ZigBee PRO MM	X		Click here to enter text.
				ZigBee-PRO	MOO1: M MOO2: O		Click here to enter text.
ACF3	Does the device support the origination of application command frames from a non-Trust Center device.	[R1]/4.4.9, 4.6.3	SDT2:M	ZigBee PRO MM	FDT1: X FDT2: M FDT3: O	In ZigBee and ZigBee PRO Standard Security, non Trust Center devices may optionally originate application command frames. In ZigBee PRO High Security, all non Trust Center routers and the coordinator shall originate application command frames and end devices may originate application command frames.	No
				ZigBee-PRO	MOO1: FDT1: X FDT2: M FDT3: M MOO2: FDT1: X FDT2: M FDT3: O		No
ACF300	Does the device support the origination of Key Establishment application command frames from a non-Trust Center device?	[R1]/4.4.9.1, 4.6.3.5	SDT2:M	ZigBee PRO MM	O	In ZigBee and ZigBee PRO Standard Security, it is optional for all devices to support origination of Key Establishment command frames from a non Trust Center device. In ZigBee PRO High Security, it is mandatory for all devices to support origination of Key Establishment command frames from a non Trust Center device.	No
				ZigBee-PRO	O		No
ACF301	Does the device support the origination of Transport Key application command frames from a non-Trust Center device?	[R1]/4.4.9.2	SDT2:M	ZigBee PRO MM	O		No
				ZigBee-PRO	O		No
ACF302	Does the device support the origination of Update Device application command frames from a non-Trust Center device?	[R1]/4.4.9.3, 4.6.3.4	SDT2:M	ZigBee PRO MM	FDT1: M FDT2: M FDT3: O	Assumes it is legal to have the Trust Center on a non-ZigBee Coordinator device for the ZigBee feature set via ZigBee-2007	No
				ZigBee-PRO	FDT1: M FDT2: M FDT3: O		No

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ACF303	Does the device support the origination of Request Key application command frames from a non-Trust Center device?	[R1]/4.4.9.5	SDT2:M	ZigBee PRO MM	O		yes
				ZigBee-PRO	O		yes
ACF304	Does the device support the origination of Authenticate application command frames from a non-Trust Center device?	[R1]/4.4.9.7, 4.6.3.2	SDT2:M	ZigBee PRO MM	O		Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ACF4	Does the device support the receipt of application command frames from a non-Trust Center device.	[R1]/4.4.9, 4.6.3	SDT1:M, SDT2:M	ZigBee PRO MM	SR1: FDT1: M FDT2: M FDT3: O	In all ZigBee and ZigBee PRO security modes, the Trust Center shall receive application command frames from non Trust Center devices. In ZigBee and ZigBee PRO Standard Security, all non Trust Center routers and the coordinator shall receive application command frames. In ZigBee PRO High Security, all non Trust Center devices shall receive application command frames.	yes
				ZigBee-PRO	SR1: FDT1: M FDT2: M FDT3: O		yes
ACF400	Does the device support the receipt of Key Establishment application command frames from a non-Trust Center device?	[R1]/4.4.9.1, 4.6.3.5	SDT1:M, SDT2:M	ZigBee PRO MM	O	For all devices in ZigBee PRO Standard Security, receipt of Key Establishment application command frames from a non Trust Center device is optional. In ZigBee PRO High Security, receipt of Key Establishment application command frames from non Trust Center devices is mandatory in all devices.	yes
				ZigBee-PRO	O		yes

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
ACF401	Does the device support the receipt of Transport Key application command frames from a non-Trust Center device?	[R1]/4.4.9.2	SDT1:M, SDT2:M	ZigBee PRO MM	SR1: M SDT2: M		yes
				ZigBee-PRO	SR1: M SDT2: M		yes
ACF402	Does the device support the receipt of Update Device application command frames from a non-Trust Center device?	[R1]/4.4.9.3, 4.6.3.4	SDT1:M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ACF403	Does the device support the receipt of Request Key application command frames from a non-Trust Center device?	[R1]/4.4.9.5	SDT1:M	ZigBee PRO MM	SR1: M		yes
				ZigBee-PRO	SR1: M		yes
ACF404	Does the device support the receipt of entity authenticate application command frames from a non-Trust Center device?	[R1]/4.4.9.7, 4.6.3.2	SDT1:M SDT2:M	ZigBee PRO MM	O	Need a comment that this feature is optional in ZigBee and ZigBee PRO Standard Security and mandatory for all devices in ZigBee PRO High Security.	Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
ACF405 [11]	Does the device support the receipt of a Transport Key message APS encrypted with the default TC link key?	[R1]/4.2.1.3	FDT1: X FDT2: M FDT3: M	ZigBee PRO MM	X		No
				ZigBee-PRO	SDT1:X SDT2:M		No

593

[11] CCB 1039

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

ACF406 [12]	Does the device support the transmission of a Transport Key message APS encrypted with the default TC link key?	[R1]/4.2.1.3	FDT1:M FDT2:X FDT3:X	ZigBee PRO MM	X		No
				ZigBee-PRO	SDT1:M SDT2:X		yes

594 **10.6.3.1.4 Application acknowledgement frames**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AFR1	Does the device support the origination of application acknowledgement frames.	[R1]/2.2.8.3.1 , 2.2.8.3.3	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AFR2	Does the device support the receipt of application acknowledgement frames?	[R1]/2.2.8.3.2 , 2.2.8.3.3	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes

595 **10.6.3.1.5 ZigBee Device Objects functions**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AZD700	Does the device support the permissions configuration table?	[R1]/4.6.3.8	O	ZigBee PRO MM	O		Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
AZD701		[R1]/4.6.3.8	AZD700: O	ZigBee PRO MM	AZD700: O		Click here to enter text.

[12] CCB 1039

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the ModifyPermissionsCapabilityTable element of the permissions configuration table?			ZigBee-PRO	AZD700: O		Click here to enter text.
AZD702	Does the device support the NetworkSettings element of the permissions configuration table?	[R1]/4.6.3.8	AZD700: O	ZigBee PRO MM	AZD700: O		Click here to enter text.
				ZigBee-PRO	AZD700: O		Click here to enter text.
AZD703	Does the device support the Application-Settings element of the permissions configuration table?	[R1]/4.6.3.8	AZD700: O	ZigBee PRO MM	AZD700: O		Click here to enter text.
				ZigBee-PRO	AZD700: O		Click here to enter text.
AZD704	Does the device support the SecuritySettings element of the permissions configuration table?	[R1]/4.6.3.8	AZD700: O	ZigBee PRO MM	AZD700: O		Click here to enter text.
				ZigBee-PRO	AZD700: O		Click here to enter text.
AZD705	Does the device support the Application-Commands element of the permissions configuration table?	[R1]/4.6.3.8	AZD700: O	ZigBee PRO MM	AZD700: O		Click here to enter text.
				ZigBee-PRO	AZD700: O		Click here to enter text.
AZD706		[R1]/4.6.3.8	AZD700: O	ZigBee PRO MM	AZD700: O		Click here to enter text.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the SKKEWith-MasterKey element of the permissions configuration table?			ZigBee-PRO	AZD700: O		Click here to enter text.
AZD707	Does the device support the NWK rejoin procedure?	[R1]/ 3.6.1.4.2	M	ZigBee PRO MM	M	Support of the rejoin mechanism for recovering from a missed network update (of any kind) is mandatory ([R1] Section 2.5.5.5.4). The length of time between hearing from its parent, or from the ZigBee coordinator, beyond which a ZigBee router shall initiate steps to rejoin the "fragment" of the network which has the ZigBee coordinator in it, is left up to the application designer.	yes
				ZigBee-PRO	M		yes
AZD600	Does the device act as a Binding Table Cache?	[R1]/2.5.5.5.3	FDT1: O FDT2: O FDT3: X	ZigBee PRO MM	FDT1: O FDT2: O FDT3: X		No
				ZigBee-PRO	FDT1: O FDT2: O FDT3: X		No
AZD601	Does the device perform the Intra-PAN portability parent procedure?	[R1]/2.5.5.5.4	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
AZD602	Does the device perform the Intra-PAN portability child procedure?	[R1]/2.5.5.5.4	FDT1: X FDT2: X FDT3: M	ZigBee PRO MM	FDT1: X FDT2: X FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: M		No

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AZD603	Does the device support the Configuration Parameters, Startup Procedures and Additional Configuration Parameters?	[R1]/2.5.5.5.6.1, 2.5.5.5.6.2, 2.5.5.5.6.3	O	ZigBee PRO MM	O	For the ChannelMask parameter, in the 2.4 Ghz band, channel 26 shall either not be used or else a special provision for limited transmission power shall be imposed to permit U.S. FCC operations.	yes
				ZigBee-PRO	M		yes
AZD1	Does the device support the mandatory Device and Service Discovery Object?	[R1]/2.5.5.6.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AZD2	Does the device support the mandatory attributes of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AZD3	Does the device support the optional attributes of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	O	ZigBee PRO MM	O		Click here to enter text.
				ZigBee-PRO	O		Click here to enter text.
AZD4	Does the device support the optional NWK address client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AZD5	Does the device support the optional IEEE address client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD6	Does the device support the optional Node Descriptor client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD7	Does the device support the optional Power Descriptor client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD8	Does the device support the optional Simple Descriptor client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD9	Does the device support the optional Active Endpoint client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AZD10	Does the device support the optional Match Descriptor client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD11	Does the device support the optional Complex Descriptor client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD12	Does the device support the optional Complex Descriptor server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD13	Does the device support the optional User Descriptor client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD14	Does the device support the optional User Descriptor server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AZD17	Does the device support the mandatory Device Announce client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD1: M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AZD18	Does the device support the Device Announce server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD1: M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AZD19	Does the device support the mandatory Security Manager Object? (CCB 2240)	[R1]/2.1.3, 2.5.2.3	M (for all R22 devices not on GP) (CCB 2240)	ZigBee PRO MM	NS	Green Power not supported on Sub GHz network	yes
				ZigBee-PRO	M		yes
AZD100	Does the device support the optional System Server Discovery client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD101	Does the device support the optional System Server Discovery server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		yes
				ZigBee-PRO	SR1: M		yes
AZD102		[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the optional Discovery Cache client service of the Device and Service Discovery Object?			ZigBee-PRO	AZD3: O		Click here to enter text.
AZD103	Does the device support the optional Discovery Cache server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: FDT1: O FDT2: O FDT3: X		Click here to enter text.
				ZigBee-PRO	AZD3: FDT1: O FDT2: O FDT3: X		Click here to enter text.
AZD104	Does the device support the optional Discovery Store client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD105	Does the device support the optional Discovery Store server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD103: M	ZigBee PRO MM	AZD103: M		yes
				ZigBee-PRO	AZD103: M		yes
AZD106	Does the device support the optional Node Descriptor Store client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD107		[R1]/2.5.5.6.1	AZD103: M	ZigBee PRO MM	AZD103: M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the optional Node Descriptor Store server service of the Device and Service Discovery Object?			ZigBee-PRO	AZD103: M		yes
AZD108	Does the device support the optional Power Descriptor Store client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD109	Does the device support the optional Power Descriptor Store server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD103: M	ZigBee PRO MM	AZD103: M		yes
				ZigBee-PRO	AZD103: M		yes
AZD110	Does the device support the optional Active Endpoint Store client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD111	Does the device support the optional Active Endpoint Store server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD103: M	ZigBee PRO MM	AZD103: M		yes
				ZigBee-PRO	AZD103: M		yes
AZD112		[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the optional Simple Descriptor Store client service of the Device and Service Discovery Object?			ZigBee-PRO	AZD3: O		Click here to enter text.
AZD113	Does the device support the optional Simple Descriptor Store server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD103: M	ZigBee PRO MM	AZD103: M		yes
				ZigBee-PRO	AZD103: M		yes
AZD114	Does the device support the optional Remove Node Cache client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD115	Does the device support the optional Remove Node Cache server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD103: M	ZigBee PRO MM	AZD103: M		yes
				ZigBee-PRO	AZD103: M		yes
AZD116	Does the device support the optional Find Node Cache client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD117		[R1]/2.5.5.6.1	AZD103: M	ZigBee PRO MM	AZD103: M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the optional Find Node Cache server service of the Device and Service Discovery Object?			ZigBee-PRO	AZD103: M		yes
AZD650	Does the device support the optional Extended Simple Descriptor client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD651	Does the device support the optional Extended Simple Descriptor server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD103: M	ZigBee PRO MM	AZD103: M		yes
				ZigBee-PRO	AZD103: M		yes
AZD652	Does the device support the optional Extended Active Endpoint client service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD3: O	ZigBee PRO MM	AZD3: O		Click here to enter text.
				ZigBee-PRO	AZD3: O		Click here to enter text.
AZD653	Does the device support the optional Extended Active Endpoint server service of the Device and Service Discovery Object?	[R1]/2.5.5.6.1	AZD103: M	ZigBee PRO MM	AZD103: M		yes
				ZigBee-PRO	AZD103: M		yes
AZD20		[R1]/2.5.5.7.1	AZD19: SDT1: M	ZigBee PRO MM	SR1: M		yes

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the mandatory attributes of the Security Manager Object with the device in a Trust Center role?			ZigBee-PRO	SR1: M		yes
AZD21	Does the device support the mandatory attributes of the Security Manager Object with the device in a non-Trust Center role?	[R1]/2.5.5.7.1	AZD19: SDT2: M	ZigBee PRO MM	SDT2: M		yes
				ZigBee-PRO	SDT2: M		yes
AZD22	Does the device support the optional Binding Manager Object?	[R1]/2.5.5.8.1	O	ZigBee PRO MM	FDT1: M FDT2: O FDT3: O	End_Device_Bind_req server processing in the coordinator is required. The ZigBee coordinator must process end device bind requests and supply Bind_req commands to the source of matched clusters in the paired end device bind requests.	yes
				ZigBee-PRO	FDT1: M FDT2: O FDT3: O		yes
AZD23	Does the device support the optional End Device Bind client service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.3.2.1	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		yes
AZD24	Does the device support the optional End Device Bind server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.1	AZD22: FDT1: M FDT2: X FDT3: X	ZigBee PRO MM	AZD22: FDT1: M FDT2: X FDT3: X		yes
				ZigBee-PRO	AZD22: FDT1: M FDT2: X FDT3: X		yes
AZD25	Does the device support the optional Bind client service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.3.2.2	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		yes
AZD26	Does the device support the optional Bind server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.2	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		yes
AZD27	Does the device support the optional Unbind client service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.3.2.3	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		yes
AZD28	Does the device support the optional Unbind server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.3	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		yes
AZD200	Does the device support the optional Bind Register client service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.3.2.4	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD201	Does the device support the optional Bind Register server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.4	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AZD202	Does the device support the optional Replace Device client service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.3.2.5	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD203	Does the device support the optional Replace Device server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.5	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD204	Does the device support the optional Store Backup Bind Entry client service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.3.2.6	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD205	Does the device support the optional Store Backup Bind Entry server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.6	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD206	Does the device support the optional Remove Backup Bind Entry client service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.3.2.7	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AZD207	Does the device support the optional Remove Backup Bind Entry server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.7	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD208	Does the device support the optional Backup Bind Table client service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.3.2.8	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD209	Does the device support the optional Backup Bind Table server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.8	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD210	Does the device support the optional Recover Bind Table client service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.3.2.9	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD211	Does the device support the optional Recover Bind Table server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.9	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD212		[R1]/2.5.5.8.1 [R1]/2.4.3.2.10	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the optional Backup Source Bind client service of the Binding Manager Object?			ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD213	Does the device support the optional Backup Source Bind server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.10	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD214	Does the device support the optional Recover Source Bind client service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.3.2.11	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD215	Does the device support the optional Recover Source Bind server service of the Binding Manager Object?	[R1]/2.5.5.8.1 [R1]/2.4.4.2.11	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		No
AZD29	Does the device support the optional APSME BIND and UNBIND service of the Binding Manager Object?	[R1]/2.5.5.8.1	AZD22: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD22: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD22: FDT1: O FDT2: O FDT3: O		yes
AZD30		[R1]/2.5.5.9.1	M	ZigBee PRO MM	M		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the mandatory NLME GET, SET and NETWORK DISCOVERY services of the Network Manager Object?			ZigBee-PRO	M		yes
AZD31	Does the device support the optional NLME NETWORK FORMATION service of the Network Manager Object?	[R1]/2.5.5.9.1	FDT1: M FDT2: X FDT3: X	ZigBee PRO MM	FDT1: M FDT2: X FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: X FDT3: X		yes
AZD299	Does the device support the optional NLME NETWORK FORMATION service of the DistributedNetwork Service Primitive? (CCB 2137)	[R1]/3.2.2.5	O	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M	Can form independent distributed network on sub-GHz network and a different distributed network on 2.4 GHz. Sub-GHz unique channel list.	Click here to enter text.
		[R1]/3.2.2.5	O	ZigBee-PRO	FDT1: X FDT2: M FDT3: M	Can form a distributed network on 2.4 GHz only	Click here to enter text.
AZD32	Does the device support the optional NLME JOIN service of the Network Manager Object?	[R1]/2.5.5.9.1	FDT1: X FDT2: M FDT3: M	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
AZD300	Does the device support the optional NLME START ROUTER service of the Network Manager Object?	[R1]/2.5.5.9.1	FDT1: X FDT2: M FDT3: X	ZigBee PRO MM	FDT1: X FDT2: M FDT3: X		No
				ZigBee-PRO	FDT1: X FDT2: M FDT3: X		No
AZD33		[R1]/2.5.5.9.1	FDT1: X FDT2: M FDT3: M	ZigBee PRO MM	FDT1: X FDT2: M FDT3: M		No

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the mandatory NLME LEAVE service of the Network Manager Object?			ZigBee-PRO	FDT1: X FDT2: M FDT3: M		No
AZD301	Does the device support the optional NLME PERMIT JOINING service of the Network Manager Object?	[R1]/2.5.5.9.1	FDT1: M FDT2: M FDT3: X	ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
AZD34	Does the device support the optional NLME RESET service of the Network Manager Object?	[R1]/2.5.5.9.1	FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	FDT1: O FDT2: O FDT3: O		yes
AZD35	Does the device support the optional NLME SYNC service of the Network Manager Object?	[R1]/2.5.5.9.1	FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	FDT1: X FDT2: X FDT3: M	See clause 8.4.2.1 in this document, Network layer functions, Item number NLF17.	No
				ZigBee-PRO	FDT1: X FDT2: X FDT3: M		No
AZD302	Does the device support the mandatory NLME NWK_STATUS service of the Network Manager Object?	[R1]/2.5.5.9.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AZD303		[R1]/2.5.5.9.1	FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	FDT1: O FDT2: O FDT3: O		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the optional NLME ROUTE DISCOVERY service of the Network Manager Object?			ZigBee-PRO	FDT1: O FDT2: O FDT3: O		yes
AZD36	Does the device support the optional Node Manager Object?	[R1]/2.5.5.10.1	FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	FDT1: M FDT2: M FDT3: O		yes
AZD37	Does the device support the optional Node Manager NWK Discovery client service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD36: FDT1: O FDT2: O FDT3: O		yes
AZD38	Does the device support the optional Node Manager NWK Discovery server service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: M FDT2: M FDT3: O		yes
				ZigBee-PRO	AZD36: FDT1: M FDT2: M FDT3: O		yes
AZD39	Does the device support the optional Node Manager LQI client service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD36: FDT1: O FDT2: O FDT3: O		yes
AZD40		[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: M FDT2: M FDT3: O		yes

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the optional Node Manager LQI server service?			ZigBee-PRO	AZD36: FDT1: M FDT2: M FDT3: O		yes
AZD41	Does the device support the optional Node Manager RTG client service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD36: FDT1: O FDT2: O FDT3: O		yes
AZD42	Does the device support the optional Node Manager RTG server service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD36: FDT1: M FDT2: M FDT3: O		yes
AZD43	Does the device support the optional Node Manager Bind client service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD36: FDT1: O FDT2: O FDT3: O		yes
AZD44	Does the device support the optional Node Manager Bind server service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: O FDT2: O FDT3: O		yes
				ZigBee-PRO	AZD36: FDT1: O FDT2: O FDT3: O		yes
AZD45	Does the device support the optional Node Manager Leave client service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: O FDT2: O FDT3: O		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
				ZigBee-PRO	AZD36: FDT1: O FDT2: O FDT3: O		yes
AZD46	Does the device support the optional Node Manager Leave server service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: M FDT2: M FDT3: O		yes
				ZigBee-PRO	AZD36: FDT1: M FDT2: M FDT3: O		yes
AZD47	Does the device support the optional Node Manager Direct Join client service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD36: FDT1: O FDT2: O FDT3: O		No
AZD48	Does the device support the optional Node Manager Direct Join server service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	X		No
				ZigBee-PRO	X		No
AZD400	Does the device support the optional Node Manager Permit Joining client service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: M FDT2: M FDT3: X		yes
				ZigBee-PRO	AZD36: FDT1: M FDT2: M FDT3: X		yes
AZD401	Does the device support the optional Node Manager Discovery Cache client service?	[R1]/2.5.5.10.1	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD36: FDT1: O FDT2: O FDT3: O		No

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AZD402	Does the device support the optional Node Manager Discovery Cache server service?	[R1]/2.5.5.10.2	AZD36: FDT1: O FDT2: O FDT3: O	ZigBee PRO MM	AZD36: FDT1: O FDT2: O FDT3: O		No
				ZigBee-PRO	AZD36: FDT1: O FDT2: O FDT3: O		No
AZD800	Does the device support the optional Node Manager NWK update client service?	[R1]/2.4.3.3.	AZD36: FDT1: O FDT2: O FDT3: X	ZigBee-PRO MM	AZD36: FDT1: O FDT2: O FDT3: O	The ability to send the Mgmt_NWK_Update-_req command in order to request the target to perform an energy scan is mandatory for the Network Channel Manager, and optional for all non Network Channel Manager routers and the coordinator. Applicable to 2.4 GHz channel list.	No
AZD801	Does the device support the optional Node Manager NWK Enhanced update client service?	[R1]/2.4.3.3.10	AZD36: FDT1: X FDT2: M FDT3: O	ZigBee-PRO MM	AZD36: FDT1: X FDT2: M FDT3: O	The ability to send the Mgmt_NWK_Update-_req command in order to request the target to perform an energy scan is mandatory for the Network Channel Manager, and optional for all non Network Channel Manager routers and the coordinator. Applicable to sub GHz channel list.	No
AZD802	Does the device support the optional Node Manager NWK update server service?	[R1]/2.4.4.3.9	AZD36: FDT1: M FDT2: X FDT3: X	ZigBee PRO MM	AZD36: FDT1: M FDT2: X FDT3: X	The ability for a non Network Channel Manager to receive and process the Mgmt_NWK_Update_-req command is mandatory for the network manager and all routers and optional for end devices. Applicable to 2.4 GHz channel list.	yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AZD803	Does the MM device support the Node Manager NWK Enhanced update server service?	[R1]/2.4.3.3.10	AZD36: FDT1: M FDT2: X FDT3: X	ZigBee PRO MM	MM Sub-GHz I/F FDT1: M FDT2: X FDT3: X MM 2.4 GHz I/F and 2.4GHz Devices FDT1: X FDT2: X FDT3: X	It's MANDATORY on ALL MM Devices to support Mgmt_NWK_Enhanced Update_req on Sub-GHz interface . All MM 2.4 GHz interface and 2.4 GHz devices SHALL NOT support Mgmt_NWK_Enhanced Update_req command.	yes
AZD804	Does the MM device support the Mgmt_NWK_IEEE_Joining_List client service?	[R1]/2.4.3.3.11	AZD36: FDT1: X FDT2: M FDT3: X	ZigBee PRO MM	AZD36: FDT1: X FDT2: M FDT3: X	Mgmt_NWK_IEEE_Joining_List_req is only required on Sub-GHz devices and networks that support Sub-GHz network routers. UK doesn't support Sub-GHz routers therefore not required in UK deployed devices.	No
AZD805	Does the MM device support the Mgmt_NWK_IEEE_Joining_List server service?	[R1]/2.4.3.3.11	AZD36: FDT1: M FDT2: X FDT3: X	ZigBee PRO MM	AZD36: FDT1: M FDT2: X FDT3: X	The ability for a non Network Channel Manager to receive and process the Mgmt_NWK_IEEE Joining List_-req command is mandatoryfor the network manager, all routers and all end devices for R22. Applicable to Sub GHz and 2.4 GHz channel list.	yes
AZD806	Does the MM device support the Channel Change Manager?		AZD36: FDT1:M FDT2: X FDT3:X	ZigBee PRO MM	AZD36: FDT1:M FDT2: X FDT3:X		yes
AZ807	Does the MM device support the LINK_POWER_DELTA command on Sub-GHz interface?		AZD36: FDT1:M FDT2: X FDT3:M	ZigBee PRO MM	AZD36: FDT1:M FDT2: X FDT3:M	LINK POWER DELTA command is only supported on MM Coordinator and Sub-GHz end devices on Sub-GHz interface.	yes
AZD49		[R1]/2.5.6	M	ZigBee-PRO	M		yes

zigbee alliance Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the mandatory Configuration Attributes?			ZigBee PRO MM	M		yes
AZD50	Does the device support the optional Complex Descriptor configuration attribute?	[R1]/2.5.6	O	ZigBee-PRO	O		yes
				ZigBee PRO MM	O		yes
AZD51	Does the device support the optional User Descriptor configuration attribute?	[R1]/2.5.6	O	ZigBee-PRO	O		yes
				ZigBee PRO MM	O		yes
AZD52	Does the device support the optional Max Bind configuration attribute?	[R1]/2.5.6	O	ZigBee-PRO	O		No
				ZigBee PRO MM	O		No
AZD53	Does the device support the optional Master Key configuration attribute?	[R1]/2.5.6	O	ZigBee-PRO	O		No
				ZigBee PRO MM	O		No
AZD54		[R1]/2.5.6	FDT1: M FDT2: X FDT3: X	ZigBee-PRO	FDT1: M FDT2: X FDT3: X		yes

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the optional End Device Bind Timeout configuration attribute?			ZigBee PRO MM	FDT1: M FDT2: X FDT3: X		yes
AZD55	Does the device support the optional Permit Join Duration configuration attribute?	[R1]/2.5.6	FDT1: M FDT2: M FDT3: X	ZigBee-PRO	FDT1: M FDT2: M FDT3: X		yes
				ZigBee PRO MM	FDT1: M FDT2: M FDT3: X		yes
AZD56	Does the device support the optional NWK Security Level configuration attribute?	[R1]/2.5.6	AZD19: O	ZigBee-PRO	AZD19: O		No
				ZigBee PRO MM	AZD19: O		No
AZD57	Does the device support the optional NWK Secure All Frames configuration attribute?	[R1]/2.5.6	AZD19: O	ZigBee-PRO	AZD19: O		yes
				ZigBee PRO MM	AZD19: O		yes
AZD500	Does the device support the optional NWK Leave Remove Children configuration attribute?	[R1]/2.5.6	AZD19: FDT1: M FDT2: M FDT3: X	ZigBee-PRO	AZD19: FDT1: M FDT2: M FDT3: X		yes
				ZigBee PRO MM	AZD19: FDT1: M FDT2: M FDT3: X		yes
AZD501		[R1]/2.5.6	FDT1: O FDT2: O FDT3: X	ZigBee-PRO	FDT1: O FDT2: O FDT3: X		No

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the optional NWK Broadcast Delivery configuration attribute?			ZigBee PRO MM	FDT1: O FDT2: O FDT3: X		No
AZD502	Does the device support the optional NWK Transaction Persistence Time configuration attribute?	[R1]/2.5.6	FDT1: O FDT2: O FDT3: X	ZigBee-PRO	FDT1: O FDT2: O FDT3: X		No
				ZigBee PRO MM	FDT1: O FDT2: O FDT3: X		No
AZD503	Does the device support the optional NWK Indirect Poll Rate configuration attribute?	[R1]/2.5.6	FDT1: X FDT2: X FDT3: M	ZigBee-PRO	FDT1: X FDT2: X FDT3: M		No
				ZigBee PRO MM	FDT1: X FDT2: X FDT3: M		No
AZD504	Does the device support the optional Max Associations configuration attribute?	[R1]/2.5.6	FDT1: O FDT2: O FDT3: X	ZigBee-PRO	FDT1: O FDT2: O FDT3: X		No
				ZigBee PRO MM	FDT1: O FDT2: O FDT3: X		No
AZD505	Does the device support the optional NWK Direct Join Addresses configuration attribute?	[R1]/2.5.6	FDT1: O FDT2: O FDT3: X	ZigBee-PRO	FDT1: O FDT2: O FDT3: X		No
				ZigBee PRO MM	FDT1: O FDT2: O FDT3: X		No
AZD506		[R1]/2.5.6	FDT1: X FDT2: O FDT3: O	ZigBee-PRO	FDT1: X FDT2: O FDT3: O		No

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
	Does the device support the optional Parent Link Retry Threshold configuration attribute?			ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		No
AZD507	Does the device support the mandatory end device timeout Rejoin Interval configuration attribute? (CCB 2144)	[R1]/3.6.10.3, 3.6.1.4.3.1	FDT1: X FDT2: O FDT3: O	ZigBee-PRO	FDT1: X FDT2: O FDT3: O		No
				ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		No
AZD508	Does the device support the optional Max end device timeout Rejoin Interval configuration attribute? (CCB2144)	[R1]/3.6.10.3, 3.6.1.4.3.1	FDT1: X FDT2: O FDT3: O	ZigBee-PRO	FDT1: X FDT2: O FDT3: O		No
				ZigBee-PRO ZigBee PROMB	FDT1: X FDT2: O FDT3: O		No
AZD509	When the routing procedure specifies that the NSDU is to be transmitted it is compliant to R22 per section 3.2.1.1.3?	[R1]3.2.1.1.3	FDT1: M FDT2: M FDT3: M	ZigBee-PRO ZigBee PROMB	FDT1: M FDT2: M FDT3: M		yes
AZD510	Does the device support Network Managemnt Data ChannelList Structure to support one or more MAC interfaces?	[R1]3.2.2.2.1	FDT1: X FDT2: O FDT3: O	ZigBee-PRO ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		
AZD511	Does the device support Energy DetectChannelInfo defined in Table 3.9?	[R1]3.2.2.2.3	FDT1: X FDT2: O FDT3: O	ZigBee-PRO ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		Click here to enter text.

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AZD512	Does the device properly support NLME-NETWORK-DISCOVERY. request and Request primitive defined in Table 3.10?	[R1]3.2.2.3.1	FDT1: X FDT2: O FDT3: O	ZigBee-PRO ZigBee PROMB	FDT1: X FDT2: O FDT3: O		Click here to enter text.
AZD513	Does the device properly support NLME-NETWORK _FORMATION request and response	[R1]3.2.2.5.3	FDT1: X FDT2: O FDT3: O	ZigBee-PRO ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		Click here to enter text.
AZD514	Does the device properly support NLME-ED-SCAN request and response?	[R1] 3.2.2.12.2	FDT1: X FDT2: O FDT3: O	ZigBee-PRO ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		Click here to enter text.
AZD515	Does the device support NLME-SET-INTERFACE command and response?	[R1]3.2.2.36	FDT1: X FDT2: O FDT3: O	ZigBee-PRO ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		Click here to enter text.
AZD516	Does the device support NLME-GET-INTERFACE command and response?	[R1]3.2.2.37	FDT1: X FDT2: O FDT3: O	ZigBee-PRO ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		Click here to enter text.
AZD517	Does the device support Verify Link Cost Command?	[R1]3.4.13	FDT1: X FDT2: O FDT3: O	ZigBee-PRO ZigBee PRO MM	FDT1: X FDT2: O FDT3: O		No
AZD518	Does the device support Power Negotiation on sub GHz channels?	[R1]3.6.11	FDT1: X FDT2: O FDT3: O	ZigBee-PRO	FDT1: X FDT2: O FDT3: O		No

Copyright © 2005-2017 zigbee alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support

596 **10.6.3.1.6 ZigBee Application Framework functions**

Item number	Item description	Reference	ZigBee Status	Feature set Support		Additional Constraints	Platform Support
AAF2	Does the device support the mandatory ZigBee Descriptor structures?	[R1]/2.3.2	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes
AAF3	Does the device support the optional ZigBee Complex Descriptor structure?	[R1]/2.3.2	O	ZigBee PRO MM	O		yes
				ZigBee-PRO	O		yes
AAF4	Does the device support the optional ZigBee User Descriptor structure?	[R1]/2.3.2	O	ZigBee PRO MM	O		yes
				ZigBee-PRO	O		yes
AAF5	Does the device support the transmission of descriptors?	[R1]/2.3.2.1	M	ZigBee PRO MM	M		yes
				ZigBee-PRO	M		yes

597

Copyright © 2005-2017, The ZigBee Alliance. All rights reserved.
This is an accepted ZigBee PICS proforma document.