



| | | | |
|---------|-----------------|--|--|
| Project | ZigBee Alliance | | |
|---------|-----------------|--|--|

| | | | |
|-------|--|--|--|
| Title | SE Profile PICS R15 Tech Editors Copy | | |
|-------|--|--|--|

| | | | |
|----------------|------------------|--|--|
| Date Submitted | [21 April, 2009] | | |
|----------------|------------------|--|--|

| | | |
|--------|--|---|
| Source | [Dan Lohman] [Itron, Inc.] [2111 N Molter Rd Liberty Lake WA 99019] | Voice: [509.891.3840] Fax: [] E-mail: [daniel.lohman@itron.com] |
|--------|--|---|

| | | | |
|-----|--|--|--|
| Re: | [075356r15 (SEP), 075390r04 (PICS) and 075384r17 (Test)] | | |
|-----|--|--|--|

| | | | |
|----------|---|--|--|
| Abstract | [This document lists PICS for Smart Energy Profile] | | |
|----------|---|--|--|

| | | | |
|---------|---|--|--|
| Purpose | [Provides a list of changes that are applied to the ZigBee SE Profile Specification revision 15, PICS and Test specification. The changes will be incorporated into a future release of the specification.] | | |
|---------|---|--|--|

| | | | |
|--------|--|--|--|
| Notice | This document has been prepared to assist the ZigBee Alliance. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. | | |
|--------|--|--|--|

| | | | |
|---------|---|--|--|
| Release | The contributor acknowledges and accepts that this contribution will be posted in the member area of the ZigBee web site. | | |
|---------|---|--|--|

Legal
Notice

Copyright © ZigBee Alliance, Inc. 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.

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 NON-INFRINGEMENT. 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, INCIDENTAL, 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.

ZigBee Alliance, Inc.
2400 Camino Ramon, Suite 375
San Ramon, CA 94583

Table of Contents

References..... 4

 1.1 ZigBee Alliance documents..... 4

 1.2 IEEE documents..... 4

 1.3 ISO documents..... 4

Change history 5

 Revision 0 (November, 2007)..... 5

2 Introduction..... 6

 2.1 Scope..... 6

 2.2 Purpose..... 6

3 Abbreviations and special symbols..... 7

4 Instructions for completing the PICS proforma..... 8

5 Identification of the implementation..... 9

6 Identification of the protocol 11

7 Global statement of conformance 12

8 PICS proforma tables..... 13

 8.1 ZigBee Device Types..... 13

 8.2 Stack Profile..... 13

 8.3 Stack Profile extensions for SE 14

 8.4 SE general requirements support 14

 8.5 ZigBee SE device description support..... 18

 8.6 SE common clusters..... 18

 8.7 ZigBee SE Device Description Capabilities..... 22

 8.7.1 Energy Service Portal device functions 22

 8.7.2 Metering device functions 23

 8.7.3 In-Premise display device functions 23

 8.7.4 Programmable Communicating Thermostat (PCT) device functions..... 24

 8.7.5 Load Control device functions..... 25

 8.7.6 Range Extender device functions 26

 8.7.7 Smart Appliance device functions 26

 8.7.8 Prepayment Terminal device functions 27

References

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

1.1 ZigBee Alliance documents

- [R1] ZigBee document 053474r17: ZigBee Specification 2007
- [R2] ZigBee document 064321r08, ZigBee Stack Profile
- [R3] ZigBee document 074855r04, ZigBee PRO Stack Profile
- [R4] ZigBee document 075356r15: ZigBee SE Application Profile Specification < = 075356r15ZB_ZSE-ZSE-AMI_Profile_Specification.pdf>
- [R5] ZigBee document 075123r01, ZigBee Cluster Library Specification
- [R6] ZigBee document 04300r08: ZigBee Network Layer PICS
- [R7] ZigBee document 064147r07: ZigBee Application Layer PICS
- [R8] ZigBee document 043171r04: ZigBee Security Layer PICS
- [R9] ZigBee document 064113r07: ZigBee Cluster Library PICS
- [R10] ZigBee document 08006r03: ZigBee 2007 Layer PICS and Stack Profiles

1.2 IEEE documents

- [R11] IEEE Standard for Part 15.4: Wireless Medium Access Control (MAC) and Physical Layer (PHY) specifications for Low Rate Wireless Personal Area Networks (LR-WPANs), 2003.

1.3 ISO documents

- [R12] ISO/IEC 9646-1:1991, Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts.
- [R13] ISO/IEC 9646-7:1995, Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7. Implementation conformance statements.

Change history

The following table shows the change history for this specification.

Revision 0 (November, 2007)

Table 1 – Revision change history for revision 0

| Revision | Version | Description |
|----------|---------|---|
| R00 | - | Initial draft |
| R01 | - | Updated to Revision 12 of the SE specification and Errata. |
| R02 | - | Updated to Revision 14 of the SE specification |
| R03 | - | Fix typo. Update SE specification reference to r14. |
| R04 | | Update SE specification reference to r15. Update section references. |
| R05 | - | Use 2009 ZB template Change AMI to SE item numbers and headings R15 CCBs: CCB 940 Rename Simple Metering to Metering CCB 1011 Update reference CCB 1012 Time cluster optional for Range Extender CCB 1013 Clarify AMG3 CCB 1042 PICS item number conflict between SE and ZCL |

2 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).

2.1 Scope

This document provides the protocol implementation conformance statement (PICS) proforma for the ZigBee specifications cited in Reference [R4] in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ISO/IEC 9646-7.

This document addresses the ZigBee SE Application Profile.

2.2 Purpose

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

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

3 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 |
| <i>Item</i> | Status is conditional on support of item number |
| <i>Number: :Status</i> | |

“*Item Number*”: Conditional, status dependent upon the support marked for the “*Item Number*”.

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

4 Instructions for completing the PICS proforma

If a given implementation is claimed to conform to this standard, the actual PICS proforma to be filled in by a supplier shall be technically equivalent to the text of the PICS proforma in this annex, 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 annex.

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

5 Identification of the implementation

Implementation under test (IUT) identification

IUT name: EMU

IUT version: V1.0

System under test (SUT) identification

SUT name: EMU

Software Version: 1.0

Hardware Version: 3.0

Operating system (optional): <Jennic>

Product supplier

Name: Rainforest Automation, Inc.

Address: 34 West 7th Avenue, Vancouver, B.C., Canada, V5Y 1L6

Telephone number: 604-630-4287

Facsimile number:

Email address: jfarges@rainforestautomation.com

Additional information:

Client

Name: Rainforest Automation, Inc.

Address: 34 West 7th Avenue, Vancouver, B.C., Canada, V5Y 1L6

Telephone number: 604-630-4287

Facsimile number:

Email address: jfarges@rainforestautomation.com

Additional information:

PICS contact person

Name: Jacques Farges

Address: 34 West 7th Avenue, Vancouver, B.C., Canada, V5Y 1L6

Telephone number: 604-630-4287

Facsimile number:

Email address: jfarges@rainforestautomation.com

Additional information:

PICS/System conformance statement

6 Identification of the protocol

This PICS proforma applies to ZigBee SE Application Profile, cited in Reference [R4].

7 Global statement of conformance

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

Application Profile: ZigBee SE – 075356r15

Yes

No

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

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

8 PICS proforma tables

The following tables are composed of the detailed questions to be answered, which make up the PICS proforma.

8.1 ZigBee Device Types

Table 2 - Functional device types

| Item number | Item description | Reference | Status | Support |
|-------------|---|----------------|------------------|---------|
| FDT1 | Is this device capable of acting as a ZigBee coordinator? | [R1]/2.5.5.5.1 | ¹ O.1 | No |
| FDT2 | Is this device capable of acting as a ZigBee router? | [R1]/2.5.5.5.2 | O.1 | No |
| FDT3 | Is this a ZigBee end device? | [R1]/2.5.5.5.3 | O.1 | Yes |

8.2 Stack Profile

Table 3 –Stack Profile

| Item number | Item description | Reference | Status | Support |
|-------------|--|------------------|------------------|---------|
| ZSP1 | Is the device built on a ZigBee Compliant Platform certified for the ZigBee stack profile [R2]? | [R6] [R4]/5.2 | O.2 ² | No |
| ZSP2 | Is the device built on a ZigBee PRO Compliant Platform certified for the ZigBee PRO stack profile [R3] ? | [R3] [R4]/5.2 | O.2 | Yes |

¹ O.1 – Device under test must select only one of these options. Devices under test supporting multiple ZigBee device types must serially re-test using each supported ZigBee device type.

² O.2 – Device under test must be deployed on either of the ZigBee or ZigBee PRO stack profiles.

8.3 Stack Profile extensions for SE

Table 4 – Stack profile extensions for SE

| Item number | Item description | Reference | Status | Support |
|-------------|--|--------------------------------|------------------|-------------------------|
| SPE1 | Does the device support Application Link Keys? | [R4]/5.2 [R8]/ASLS6 | M | Yes |
| SPE2 | Does this device use a stack that supports fragmentation? | [R4]/5.2 [R7]/ADF5, ADF6 | M | Yes |
| SPE3 | Does this device use any SE Profile Commands that require the use of Fragmentation? | [R4]/5.2 [R7]/ADF5, ADF6 | MC1: M MS1: M | No |
| SPE4 | Does the device adhere to the polling rate specifications given in [R4]/5.2 (i.e. Does your application poll equal to or less often as called out in the specification)? | [R4]/5.2 | FDT3:M | We poll every 31seconds |

8.4 SE general requirements support

Table 5 – SE general requirements support

| Item number | Item description | Reference | Status | Support |
|-------------|--|-------------------------|--------|---------|
| SEG1 | Does the device support the ZigBee Cluster Library? | [R4]/5.10, 5.11 [R5] | M | Yes |
| SEG2 | Does the device support the ZigBee Cluster Library List specified for SE including the mandatory/optional clusters detailed in the ZCL PICs? | [R4]/5.10, 5.11 [R9] | M | Yes |
| SEG3 | Does the device support the ZigBee Cluster Library with the attribute reporting, reporting configuration and read reporting configuration parameters as detailed in the SE Profile clusters? | [R4]/5.10 [R5] | M | No |

| Item number | Item description | Reference | Status | Support |
|-------------|--|---|---|---|
| | ED NOTE: Support of attribute reporting is optional. Those devices implementing the attribute reporting mechanism must do so as specified in the ZCL specification. | | | |
| SEG4 | Is the device capable of joining a ZigBee SE network and does it interact with a consumer ZigBee Home Area Network only through a bridge device? | [R4]/5.1 | FDT2: M FDT3: M | Yes |
| SEG5 | Does the device support “E-Mode” commissioning? SE Profile requirement: Those devices that will join an existing network must support button pushes or simple documented user interfaces to initiate the joining process. | [R4]/5.1 | FDT2: M FDT3: M For joining devices | Yes, list of available networks is provided to user, who selects one based on short id. |
| SEG6 | Deleted | [R4]/5.1 | | |
| SEG7 | Does the device support the compatible Startup Attribute Set, Join Parameters, Security Parameters, End Device Parameters, Link Status Parameters, Concentrator Parameters, APS Transport Parameters and Binding Parameters? | [R4]/5.3, 5.3.1, 5.3.2, 5.3.3, 5.3.4, 5.3.5, 5.3.6, 5.3.7, 5.3.8, 5.3.9 | M | compatible Startup Attribute Set |
| SEG8 | Does the device support joining with pre-installed link keys? | [R4]/5.4.1 | FDT2: M FDT3: M | Yes |
| SEG9 | Does the device support joining using the key establishment cluster? | [R4]/5.4.7 | FDT2: M FDT3: M | Yes |
| SEG10 | Deleted | [R4]/5.5 | | |
| SEG11 | Does the device support the list of SE preferred channels? | [R4]/5.7.1 | O | Yes |
| SEG12 | Does the device support the SE broadcast | [R4]/5.7.2 | O | Yes |

| Item number | Item description | Reference | Status | Support |
|-------------|--|---------------|--------|---|
| | policy? | | | |
| SEG13 | Does the device support the SE frequency agility policy? | [R4]/5.7.3 | O | No |
| SEG14 | Does the device support the security key update policies for SE networks? | [R4]/5.7.4 | M | Yes |
| SEG15 | Does the device support the ZCL Time Cluster and SE time synchronization? ED NOTE: Support of the ZCL Time Cluster is not mandatory for all SE devices. The SE device description define the required Time cluster support. | [R4]/5.11.1.1 | O | No |
| SEG16 | Does the device support discovery of optional attributes? | [R4]/5.11 | M | Yes, we implement this by asking for all attributes we need in a read attributes request and handle the read attribute response correctly rather than sending explicit attribute discovery commands |
| hjSEG17 | Does the device application discover and handle unsupported attributes in other devices? | [R4]/5.11 | M | Yes, we implement this by asking for all |

| Item number | Item description | Reference | Status | Support |
|-------------|---|--------------------------|--------|--|
| | | | | attributes we need in a read attributes request and handle the read attribute response correctly rather than sending explicit attribute discovery commands |
| SEG18 | Does the device support an indication to the user that the network has formed properly? | [R4]/5.5.1 | O | No |
| SEG19 | Does the device support an indication to the user that a device has joined a network successfully? | [R4]/5.5.1 | O | No |
| SEG20 | Does the device support the commissioning modes and provide supporting commissioning documentation according to network type? | [R4]/5.5.2, 5.5.3, 5.5.4 | M | Yes, see our user manual |
| SEG21 | Does the device use the appropriate security key per cluster? | [R4]/5.4.6 | M | Yes |
| SEG22 | Does the device support the SE Mirrored Device Capacity – Service Discovery? | [R4]/5.7.5 | O | No |

8.5 ZigBee SE device description support

Table 6 – SE device description support

| Item number | Item description | Reference | Status | Support |
|-------------|---|------------|------------------|---------|
| SED1 | Is the product programmed as an Energy Service Portal? | [R4]/6.3.1 | O.3 ³ | No |
| SED2 | Is the product programmed as a Metering Device? | [R4]/6.3.2 | O.3 | No |
| SED3 | Is the product programmed as an In-Premise Display? | [R4]/6.3.3 | O.3 | Yes |
| SED4 | Is the product programmed as a Programmable Communicating Thermostat (PCT)? | [R4]/6.3.4 | O.3 | No |
| SED5 | Is the product programmed as a Load Control? | [R4]/6.3.5 | O.3 | No |
| SED6 | Is the product programmed as a Range Extender? | [R4]/6.3.6 | O.3 | No |
| SED7 | Is the product programmed as a Smart Appliance? | [R4]/6.3.7 | O.3 | No |
| SED8 | Is the product programmed as a Prepayment Terminal? | [R4]/6.3.8 | O.3 | No |

8.6 SE common clusters

The common cluster ZCL PICs restrictions/requirements are obtained from [R4]/5.10, 5.11.

Table 7 – Common cluster ZCL PICs restrictions/requirements

| ZCL PICs Item number [R9] | Status | Additional Constraints | Support |
|---------------------------|--------|---|---------|
| FC100 | M | ZCL Cluster ID enumeration is mandatory | Yes |
| FC1 | M | General ZCL Frame Format is mandatory | Yes |

³ O.3 – Device under test must select at least one and may select more than one of the SE device descriptions. If multiple SE device descriptions are supported in the same device then each of the supported device descriptions must be deployed on individual endpoints within the device under test.

| ZCL PICS Item number [R9] | Status | Additional Constraints | Support |
|---------------------------|--------|---|----------------------------|
| BCC1 | O | Does the device support the Basic Cluster as a client? | No – only as server |
| BCS1 | M | Does the device support the Basic Cluster as a server? | Yes |
| GCC1 | O | Deleted | |
| GCS1 | O | Deleted | |
| ACC1 | O | Does the device support the Alarms Cluster as a client? | No |
| ACS1 | O | Does the device support the Alarms Cluster as a server? | No |
| TCS1 | | Deleted | |
| TCC1 | | Deleted | |

Table 8 – Common cluster support

| Item number | Item description | Reference | Status | Support |
|-------------|---|----------------|--------|------------|
| ASDC1 | Deleted | [R4]/5.10 | | |
| ASDC2 | Deleted | [R4]/5.10 | | |
| ASDC3 | Deleted | [R4]/5.10 | | |
| ASDS1 | Deleted | | O | |
| ASDS2 | Does the device support the server Price Cluster sent via the Anonymous Inter-PAN transmission mechanism? | [R4]/Annex D.4 | O | No |
| ASDS3 | Does the device support the server Message Cluster sent via the Anonymous Inter-PAN transmission mechanism? | [R4]/Annex D.5 | O | No |
| KEC1 | Does the device support the Key Establishment | [R4]/Annex | FTD2:M | Yes |

| Item number | Item description | Reference | Status | Support |
|-------------|---|------------------|--------|---------|
| | cluster as a client? | C.3.1 | FTD3:M | |
| KES1 | Does the device support the Key Establishment cluster as a server? | [R4]/Annex C.3.1 | FTD1:M | Yes |
| PC1 | Does the device support the Price cluster as a client? | [R4]/5.10 | O | No |
| PS1 | Does the device support the Price cluster as a server? | [R4]/5.10 | O | No |
| DRLC1 | Does the device support the Demand Response and Load Control cluster as a client? | [R4]/5.10 | O | No |
| DRLS1 | Does the device support the Demand Response and Load Control cluster as a server? | [R4]/5.10 | O | No |
| SMC1 | Does the device support the Metering cluster as a client? | [R4]/5.10 | O | Yes |
| SMS1 | Does the device support the Metering cluster as a server? | [R4]/5.10 | O | No |
| MC1 | Does the device support the Message cluster as a client? | [R4]/5.10 | O | No |
| MS1 | Does the device support the Message cluster as a server? | [R4]/5.10 | O | No |
| CMC1 | | [R4]/5.10 | O | No |
| CMS1 | | [R4]/5.10 | O | No |
| PPC1 | | [R4]/5.10 | O | No |
| PPS1 | | [R4]/5.10 | O | No |
| SECC1 | Does the device support clusters with Reporting Capability? | [R4]/6.1.1 | O | No |
| SECC2 | Are any manufacturer-specific cluster(s) supported? | [R4]/6.1.2 | O | No |
| SECC3 | Are any non-SE ZCL or other application cluster(s) supported? | [R4]/6.1.3 | O | No |

| Item number | Item description | Reference | Status | Support |
|-------------|--|-----------|--------|---------|
| ICS1 | Does the device support the Identify cluster? | | O | No |
| PCCS1 | Does the device support the Power Configuration cluster? | | O | No |

8.7 ZigBee SE Device Description Capabilities

Tables in the following sub-clauses detail the capabilities specific to a device description.

8.7.1 Energy Service Portal device functions

Table 9 – Energy Service Portal ZCL PICS restrictions/requirements

| ZCL PICS Item number [R9] | Status | Additional Constraints | Support |
|---------------------------|--------|----------------------------------|---------|
| TCS1 | M | Time Cluster server is mandatory | No |

Table 10 provides the SE PICS restrictions based on requirements in [R4]/6.3.1.1.

Table 10 – Energy Service Portal SE PICS restrictions/requirements

| SE PICS Item number | Status | Additional Constraints | Support |
|---------------------|--------|--|---------|
| SMC1 | O | Metering Cluster client is optional | No |
| SMS1 | O | Metering Cluster server is optional | No |
| MS1 | M | Message Cluster server is mandatory | No |
| PS1 | M | Price Cluster server is mandatory | No |
| DRLS1 | M | Demand Response and Load Cluster server is mandatory | No |
| PC1 | O | Price Cluster client is optional | No |
| MS1 | O | Message Cluster client is optional | No |
| PPC1 | O | Pre-payment Cluster client is optional | No |
| PPS1 | O | Pre-payment Cluster server is optional | No |

8.7.2 Metering device functions

Table 11 – Metering device ZCL PICS restrictions/requirements

| ZCL PICS Item number [R9] | Status | Additional Constraints | Support |
|---------------------------|--------|---------------------------------|---------|
| TCC1 | O | Time Cluster client is optional | No |

Table 12 provides the SE PICs restrictions based on requirements in [R4]/6.3.2.1.

Table 12 – Metering device SE PICS restrictions/requirements

| SE PICS Item number | Status | Additional Constraints | Support |
|---------------------|--------|--|---------|
| SMS1 | M | Metering Cluster server is mandatory | No |
| CMS1 | O | SE Tunneling (Complex Metering) Cluster server is optional | No |
| PPC1 | O | Pre-payment Cluster client is optional | No |
| PC1 | O | Price Cluster client is optional | No |
| MC1 | O | Message Cluster client is optional | No |

8.7.3 In-Premise display device functions

Table 13 – In-Premise display device ZCL PICS restrictions/requirements

| ZCL PICS Item number [R9] | Status | Additional Constraints | Support |
|---------------------------|--------|---------------------------------|---------|
| TCC1 | O | Time Cluster client is optional | No |

Table 14 provides the SE PICs restrictions based on requirements in [R4]/6.3.3.1.

Table 14 – In-Premise display device SE PICS restrictions/requirements

| SE PICS Item number | Status | Additional Constraints | Support |
|---------------------|--------|---|---------|
| DRLC1 | O | Demand Response and Load Cluster client is optional | No |
| PC1 | O | Price Cluster client is optional | No |
| SMC1 | O | Metering Cluster client is optional | Yes |
| PPC1 | O | Pre-payment Cluster client is optional | No |
| MC1 | O | Message Cluster client is optional | No |

8.7.4 Programmable Communicating Thermostat (PCT) device functions

Table 15 Programmable Communicating Thermostat (PCT) ZCL PICS restrictions/requirements

| ZCL PICS Item number [R9] | Status | Additional Constraints | Support |
|---------------------------|--------|----------------------------------|---------|
| TCC1 | M | Time Cluster client is mandatory | No |

Table 16 provides the SE PICS restrictions based on requirements in [R4]/6.3.4.1.

Table 16 Programmable Communicating Thermostat (PCT) SE PICS restrictions/requirements

| SE PICS Item number | Status | Additional Constraints | Support |
|---------------------|--------|--|---------|
| DRLC1 | M | Demand Response and Load Cluster client is mandatory | No |
| PPC1 | O | Pre-payment Cluster client is optional | No |

| SE PICS Item number | Status | Additional Constraints | Support |
|---------------------|--------|-------------------------------------|---------|
| PC1 | O | Price Cluster client is optional | No |
| SMC1 | O | Metering Cluster client is optional | No |
| MC1 | O | Message Cluster client is optional | No |

8.7.5 Load Control device functions

Table 17 – Load Control ZCL PICS restrictions/requirements

| ZCL PICS Item number [R9] | Status | Additional Constraints | Support |
|---------------------------|--------|----------------------------------|---------|
| TCC1 | M | Time Cluster client is mandatory | No |

Table 18 provides the SE PICS restrictions based on requirements in [R4]/6.3.5.1.

Table 18 – Load Control SE PICS restrictions/requirements

| SE PICS Item number | Status | Additional Constraints | Support |
|---------------------|--------|--|---------|
| DRLC1 | M | Demand Response and Load Cluster client is mandatory | No |
| PC1 | O | Price Cluster client is optional | No |

8.7.6 Range Extender device functions

Table 19 – Range Extender ZCL PICS restrictions/requirements

| ZCL PICS Item number [R9] | Status | Additional Constraints | Support |
|---------------------------|--------|----------------------------------|---------|
| TCC1 | O | Time Cluster client is optional. | No |

Table 20 provides the SE PICS restrictions based on requirements in [R4]/6.3.6.1.

Table 20 –Range Extender SE PICS restrictions/requirements

| SE PICS Item number | Status | Additional Constraints | Support |
|---------------------|--------|------------------------|---------|
| | | | No |

8.7.7 Smart Appliance device functions

Table 21 – Smart Appliance ZCL PICS restrictions/requirements

| ZCL PICS Item number [R9] | Status | Additional Constraints | Support |
|---------------------------|--------|----------------------------------|---------|
| TCC1 | M | Time Cluster client is mandatory | No |

Table 22 provides the SE PICS restrictions based on requirements in [R4]/6.3.7.1.

Table 22 –Smart Appliance SE PICS restrictions/requirements

| SE PICS Item number | Status | Additional Constraints | Support |
|---------------------|--------|---|---------|
| DRLC1 | O | Demand Response and Load Cluster client is optional | No |

| SE PICS Item number | Status | Additional Constraints | Support |
|---------------------|--------|---|---------|
| PC1 | M | Price Cluster client is mandatory | No |
| SMC1 | O | Metering Cluster client is optional ED NOTE: This is not listed in the specification – should it be? | No |
| MC1 | O | Message Cluster client is optional | No |

8.7.8 Prepayment Terminal device functions

Table 23 – Prepayment Terminal ZCL PICS restrictions/requirements

| ZCL PICS Item number [R9] | Status | Additional Constraints | Support |
|---------------------------|--------|----------------------------------|---------|
| TCC1 | M | Time Cluster client is mandatory | No |

Table 24 provides the SE PICS restrictions based on requirements in [R4]/6.3.8.1.

Table 24 – Per-payment Terminal SE PICS restrictions/requirements

| SE PICS Item number | Status | Additional Constraints | Support |
|---------------------|--------|---|---------|
| DRLC1 | O | Demand Response and Load Cluster client is optional | No |
| PC1 | M | Price Cluster client is mandatory | No |
| SMC1 | O | Metering Cluster client is optional | No |
| MC1 | O | Message Cluster client is optional | No |