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Project	ZigBee Alliance
Title	**SE Profile PICS R15 Tech Editors Copy**
Date Submitted	[11 March, 2010]
Source	[Dan Lohman] Voice: [509.891.3840] [Itron, Inc.] Fax: [ ] [2111 N Molter Rd Liberty Lake WA 99019] 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.

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1   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

[R5]   ZigBee document 075123r02, 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.

1 Change history

2 The following table shows the change history for this specification.

3 Revision 0 (November, 2007)

4 **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 1011Update reference CCB 1012 Time cluster optional for Range Extender CCB 1013 Clarify AMG3 CCB 1042 PICS item number conflict between SE and ZCL CCB 1120 Install Codes CCB 1130 Binding and Service Discovery

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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
Item Number: :Status	Status is conditional on support of item number

"*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: RFN420FL Zigbee ESI Module

IUT version:0.2.0

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_____

System under test (SUT) identification

SUT name: RFN420FL Zigbee ESI Module

_____

Software Version: 0.2.0

_____

Hardware Version: 1

_____

Operating system (optional):

_____

Product supplier

Name: Cooper Power Systems : Energy Automation Solutions

Address:
505 Highway 169N
Suite 1200
Minneapolis, MN 55441

Telephone number: 763-595-7777

Facsimile number: 763-543-7777

Email address: Doug.Burman@CooperIndustries.com

Additional information: _____

Client

Name: _____

Address: _____

_____

Telephone number: _____

Facsimile number: _____

Email address: _____

Additional information: _____

PICS contact person

Name: Douglas Burman

Address:
505 Highway 169N
Suite 1200
Minneapolis, MN 55441

Telephone number: 763-595-7777

Facsimile number: 763-543-7777

Email address: Doug.Burman@CooperIndustries.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	YES
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	NO

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

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[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	YES
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	YES

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

Item number	Item description	Reference	Status	Support
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? Editor's Note: Support of attribute reporting is optional. Those devices implementing the attribute reporting mechanism must do so as specified in the ZCL specification.	[R4]/5.10 [R5]	M	YES
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	NO
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	NO
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	YES
SEG8	Does the device support joining with pre-installed link keys? Note: SE specifies use of Install Codes to derive the link key.	[R4]/5.4.1	FDT2: M FDT3: M	NO
SEG9	Does the device support joining using the key establishment cluster?	[R4]/5.4.7	FDT2: M FDT3: M	NO
SEG10	Deleted	[R4]/5.5		

Item number	Item description	Reference	Status	Support
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 policy?	[R4]/5.7.2	O	YES
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? Editor's Note: Support of the ZCL Time Cluster is not mandatory for all SE devices. The SE device descriptions define the required Time cluster support.	[R4]/5.11.1.1	O	YES
SEG16	Does the device support discovery of optional attributes?	[R4]/5.11	M	YES
SEG17	Does the device application discover and handle unsupported attributes in other devices?	[R4]/5.11	M	YES
SEG18	Does the device support an indication to the user that the network has formed properly?	[R4]/5.5.1	O .	YES
SEG19	Does the device support an indication to the user that a device has joined a network successfully?	[R4]/5.5.1	O	YES
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
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
SEG23	Does one of the device support the SE Install Code Formats: 48, 64, 96, or 128 bit number and 16 bit CRC?	[R4]/5.4.8.1.1	O	NO

Item number	Item description	Reference	Status	Support
SEG24	Does the device expect to receive unsolicited from the DRLC, Messaging, Metering or Pricing clusters?	[R4]/5.4.5.1	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]	YES
SED2	Is the product programmed as a Metering Device?	[R4]/6.3.2	O.3	YES
SED3	Is the product programmed as an In-Premise Display?	[R4]/6.3.3	O.3	NO
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.

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[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.

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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
BCC1	O	Does the device support the Basic Cluster as a client?	NO
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	

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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

Item number	Item description	Reference	Status	Support
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 cluster as a client?	[R4]/Annex C.3.1	FDT2:M FDT3:M	YES
KES1	Does the device support the Key Establishment cluster as a server?	[R4]/Annex C.3.1	FDT1:M	YES
PC1	Does the device support the Price cluster as a client?	[R4]/5.11	O	NO
PS1	Does the device support the Price cluster as a server?	[R4]/5.11	O	YES
DRLC1	Does the device support the Demand Response and Load Control cluster as a client?	[R4]/5.11	O	NO
DRLS1	Does the device support the Demand Response and Load Control cluster as a server?	[R4]/5.11	O	YES
SMC1	Does the device support the Metering cluster as a client?	[R4]/5.11	O	NO
SMS1	Does the device support the Metering cluster as a server?	[R4]/5.11	O	YES
MC1	Does the device support the Message cluster as a client?	[R4]/5.11	O	NO
MS1	Does the device support the Message cluster as a server?	[R4]/5.11	O	YES
CMC1		[R4]/5.11	O	
CMS1		[R4]/5.11	O	
PPC1		[R4]/5.11	O	
PPS1		[R4]/5.11	O	
SECC1	Does the device support clusters with Reporting Capability?	[R4]/6.1.1	O	YES

Item number	Item description	Reference	Status	Support
SECC2	Are any manufacturer-specific cluster(s) supported?	[R4]/6.1.2	O	YES
SECC3	Are any non-SE ZCL or other application cluster(s) supported?	[R4]/6.1.3	O	NO
ICS1	Does the device support the Identify cluster?		O	NO
PCCS1	Does the device support the Power Configuration cluster?		O	NO

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1 ## 8.7   ZigBee SE Device Description Capabilities

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

3 ### 8.7.1   Energy Service Portal device functions

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5 **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	YES

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

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10 **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	YES
MS1	M	Message Cluster server is mandatory	YES
PS1	M	Price Cluster server is mandatory	YES
DRLS1	M	Demand Response and Load Cluster server is mandatory	YES
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

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1   ### 8.7.2 Metering device functions

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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

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

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Table 12 – Metering device SE PICS restrictions/requirements

SE PICS Item number	Status	Additional Constraints	Support
SMS1	M	Metering Cluster server is mandatory	YES
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

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8   ### 8.7.3 In-Premise display device functions

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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	

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

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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	
PC1	O	Price Cluster client is optional	
SMC1	O	Metering Cluster client is optional	
PPC1	O	Pre-payment Cluster client is optional	
MC1	O	Message Cluster client is optional	

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5   ### 8.7.4   Programmable Communicating Thermostat (PCT) device functions

6   **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	

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

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10   **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	
PPC1	O	Pre-payment Cluster client is optional	

SE PICS Item number	Status	Additional Constraints	Support
PC1	O	Price Cluster client is optional	
SMC1	O	Metering Cluster client is optional	
MC1	O	Message Cluster client is optional	

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8.7.5 Load Control device functions

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Table 17 – Load Control ZCL PICS restrictions/requirements

ZCL PICS Item number [R9]	Status	Additional Constraints	Support
TCC1	M	Time Cluster client is mandatory	

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

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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	
PC1	O	Price Cluster client is optional	

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1 ### 8.7.6 Range Extender device functions

2 **Table 19 – Range Extender ZCL PICS restrictions/requirements**

ZCL PICS Item number [R9]	Status	Additional Constraints	Support
TCC1	O	Time Cluster client is optional.	

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

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6 **Table 20 –Range Extender SE PICS restrictions/requirements**

SE PICS Item number	Status	Additional Constraints	Support

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8 ### 8.7.7 Smart Appliance device functions

9 **Table 21 – Smart Appliance ZCL PICS restrictions/requirements**

ZCL PICS Item number [R9]	Status	Additional Constraints	Support
TCC1	M	Time Cluster client is mandatory	

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

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13 **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	

SE PICS Item number	Status	Additional Constraints	Support
PC1	M	Price Cluster client is mandatory	
SMC1	O	Metering Cluster client is optional ED NOTE: This is not listed in the specification – should it be?	
MC1	O	Message Cluster client is optional	

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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	

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

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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	
PC1	M	Price Cluster client is mandatory	
SMC1	O	Metering Cluster client is optional	
MC1	O	Message Cluster client is optional	

1   ## 8.8   Smart Energy Application Specific Cluster function capabilities

2   ### 8.8.1   Basic Cluster

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Table 25 – Basic cluster server capabilities

Item number	Item description	Reference	Status	Support
BCS1	Is the Basic Cluster supported as a server?	[R5]/3.?	M	YES
BCS2	Is the xxxx attribute supported?		BCS1:M	YES
BCS3	Is the xxxx attribute supported?		BCS1:M	YES

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Table 26 – Basic cluster cluster capabilities

Item number	Item description	Reference	Status	Support
BCC1	Is the Basic Cluster supported as a client?	[R5]/3.?	O	NO

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8   ### 8.8.2   Identify

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11   ### 8.8.3   Alarms

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14   ### 8.8.4   Commissioning

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17   ### 8.8.5   Power Configuration

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1 ## 8.8.6 Time Cluster attributes and functions

2 **Table 27 – Time cluster server capabilities**

Item number	Item description	Reference	Status	Support
TICS1	Is the Time Cluster supported as a server?	[R5]/3.12	O	YES
TICS2	Is the Time attribute supported?		TICS1:M	YES
TICS3	Is the TimeStatus attribute supported?		TICS1:M	YES
TICS4	Is the TimeZone attribute supported?		TICS1:O	YES
TICS5	Is the DstStart attribute supported?		TICS1:O	YES
TICS6	Is the DstEnd attribute supported?		TICS1:O	YES
TICS7	Is the DstShift attribute supported?		TICS1:O	YES
TICS8	Is the StandardTime attribute supported?		TICS1:O	YES
TICS9	Is the LocalTime attribute supported?		TICS1:O	YES

3 **Table 28 – Time cluster client capabilities**

Item number	Item description	Reference	Status	Support
TICC1	Is the Time Cluster supported as a client?	[R5]/3.12	O	

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6 ## 8.8.7 Key Establishment Cluster attributes and functions

7 **Table 29 – Key Establishment cluster server capabilities**

Item number	Item description	Reference	Status	Support
KECS1	Is the Key Establishment Cluster supported as a server?	[R4]/C.3.1	M	YES
KECS2	Is the KeyEstablishmentSuite attribute supported?		KECS1:M	YES
KECS3	Is the reception of Initiate Key Establishment Request command supported?		KECS1:M	YES

Item number	Item description	Reference	Status	Support
KECS4	Is the reception of Ephemeral Data Request command supported?		KECS1:M	YES
KECS5	Is the reception of Confirm Key Data Request command supported?		KECS1:M	YES
KECS6	Is the reception of Terminate Key Establishment command supported?		KECS1:M	YES
KECS7	Is the generation of Initiate Key Establishment Response command supported?		KECS1:M	YES
KECS8	Is the generation of Ephemeral Data Response command supported?		KECS1:M	YES
KECS9	Is the generation of Confirm Key Data Response command supported?		KECS1:M	YES

1   **Table 30 – Key Establishment cluster client capabilities**

Item number	Item description	Reference	Status	Support
KECC1	Is the Key Establishment Cluster supported as a client?	[R4]/C.3.1	M	YES
KECC2	Is the KeyEstablishmentSuite attribute supported?		KECC1:M	YES
KECC3	Is the reception of Initiate Key Establishment Response command supported?		KECC1:M	YES
KECC4	Is the reception of Ephemeral Data Response command supported?		KECC1:M	YES
KECC5	Is the reception of Confirm Key Data Response command supported?		KECC1:M	YES
KECC6	Is the reception of Terminate Key Establishment command supported?		KECC1:M	YES
KECC7	Is the generation of Initiate Key Establishment Request command supported?		KECC1:M	YES
KECC8	Is the generation of Ephemeral Data Request command supported?		KECC1:M	YES

Item number	Item description	Reference	Status	Support
KECC9	Is the generation of Confirm Key Data Request command supported?		KECC1:M	YES
KECC10	Is the generation of Terminate Key Establishment command supported?		KECC1:M	YES

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8.8.8 Demand Response and Load Control Cluster attributes and functions

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Table 31 – Demand Response and Load Control cluster server capabilities

Item number	Item description	Reference	Status	Support
DRLCCS1	Is the Demand Response and Load Control Cluster supported as a server?	[R4]/D.2	O	YES
DRLCCS2	Is the reception of Report Event Status command supported?		DRLCCS1:M	YES
DRLCCS3	Is the reception of Get Scheduled Events command supported?		DRLCCS1:M	YES
DRLCCS4	Is the generation of Load Control Event command supported?		DRLCCS1:M	YES
DRLCCS5	Is the generation of Cancel Load Control Event command supported?		DRLCCS1:M	YES
DRLCCS6	Is the generation of Cancel All Load Control Events command supported?		DRLCCS1:M	YES

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Table 32 – Demand Response and Load Control cluster client capabilities

Item number	Item description	Reference	Status	Support
DRLCCC1	Is the Demand Response and Load Control Cluster supported as a client?	[R4]/D.2	O	NO
DRLCCC2	Is the UtilityEnrolmentGroup attribute supported?		DRLCCC1:M	
DRLCCC3	Is the StartRandomizeMinutes attribute supported?		DRLCCC1:M	
DRLCCC4	Is the StopRandomizeMinutes attribute		DRLCCC1:M	

Item number	Item description	Reference	Status	Support
	supported?			
DRLCCC5	Is the DeviceClassValue attribute supported?		DRLCCC1:M	
DRLCCC6	Is the reception of Load Control Event command supported?		DRLCCC1:M	
DRLCCC7	Is the reception of Cancel Load Control Event command supported?		DRLCCC1:M	
DRLCCC8	Is the reception of Cancel All Load Control Events command supported?		DRLCCC1:M	
DRLCCC9	Is the generation of Report Event Status command supported?		DRLCCC1:M	
DRLCCC10	Is the generation of Get Scheduled Events command supported?		DRLCCC1:M	

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8.8.9 Metering Cluster attributes and functions

Table 33 – Metering cluster server capabilities

Item number	Item description	Reference	Status	Support
MECS1	Is the Metering Cluster supported as a server?	[R4]/D.3	O	YES
MECS2	Is the CurrentSummationDelivered attribute supported?		MECS1:M	YES
MECS3	Is the CurrentSummationReceived attribute supported?		MECS1:O	YES
MECS4	Is the CurrentMaxDemandDelivered attribute supported?		MECS1:O	NO
MECS5	Is the CurrentMaxDemandReceived attribute supported?		MECS1:O	NO
MECS6	Is the DFTSummation attribute supported?		MECS1:O	NO
MECS7	Is the DailyFreezeTime attribute supported?		MECS1:O	NO

Item number	Item description	Reference	Status	Support
MECS8	Is the PowerFactor attribute supported?		MECS1:O	NO
MECS9	Is the ReadingSnapShotTime attribute supported?		MECS1:O	NO
MECS10	Is the CurrentMaxDemandDeliveredTime attribute supported?		MECS1:O	NO
MECS11	Is the CurrentMaxDemandReceivedTime attribute supported?		MECS1:O	NO
MECS12	Is the CurrentTier1SummationDelivered attribute supported?		MECS1:O	YES
MEC13	Is the CurrentTier1SummationReceived attribute supported?		MECS1:O	NO
MECS14	Is the CurrentTier2SummationDelivered attribute supported?		MECS1:O	YES
MECS15	Is the CurrentTier2SummationReceived attribute supported?		MECS1:O	NO
MECS16	Is the CurrentTier3SummationDelivered attribute supported?		MECS1:O	YES
MECS17	Is the CurrentTier3SummationReceived attribute supported?		MECS1:O	NO
MECS18	Is the CurrentTier4SummationDelivered attribute supported?		MECS1:O	YES
MECS19	Is the CurrentTier4SummationReceived attribute supported?		MECS1:O	NO
MECS20	Is the CurrentTier5SummationDelivered attribute supported?		MECS1:O	NO
MECS21	Is the CurrentTier5SummationReceived attribute supported?		MECS1:O	NO
MECS22	Is the CurrentTier6SummationDelivered attribute supported?		MECS1:O	NO
MECS23	Is the CurrentTier6SummationReceived attribute supported?		MECS1:O	NO

Item number	Item description	Reference	Status	Support
MECS24	Is the Meter Status attribute supported?		MECS1:M	YES
MECS25	Is the UnitofMeasure attribute supported?		MECS1:M	YES
MECS26	Is the Multiplier attribute supported?		MECS1:O	YES
MECS27	Is the Divisor attribute supported?		MECS1:O	YES
MECS28	Is the SummationFormatting attribute supported?		MECS1:M	YES
MECS29	Is the DemandFormatting attribute supported?		MECS1:O	YES
MECS30	Is the HistoricalConsumptionFormatting attribute supported?		MECS1:O	YES
MECS31	Is the MeteringDeviceType attribute supported?		MECS1:M	YES
MECS32	Is the InstantaneousDemand attribute supported?		MECS1:O	YES
MECS33	Is the CurrentDayConsumptionDelivered attribute supported?		MECS1:O	YES
MECS34	Is the CurrentDayConsumptionReceived attribute supported?		MECS1:O	YES
MECS35	Is the PreviousDayConsumptionDelivered attribute supported?		MECS1:O	YES
MECS36	Is the PreviousDayConsumptionReceived attribute supported?		MECS1:O	YES
MECS37	Is the CurrentPartialProfileIntervalStartTimeDelivered attribute supported?		MECS1:O	NO
MECS38	Is the CurrentPartialProfileIntervalStartTimeReceived attribute supported?		MECS1:O	NO
MECS39	Is the CurrentPartialProfileIntervalValueDelivered attribute supported?		MECS1:O	NO
MECS40	Is the CurrentPartialProfileIntervalValueReceived attribute supported?		MECS1:O	NO

Item number	Item description	Reference	Status	Support
MECS41	Is the MaxNumberOfPeriodsDelivered attribute supported?		MECS1:O	NO
MECS42	Is the CurrentDemandDelivered attribute supported?		MECS1:O	NO
MECS43	Is the DemandLimit attribute supported?		MECS1:O	NO
MECS44	Is the DemandIntegrationPeriod attribute supported?		MECS1:O	NO
MECS45	Is the NumberOfDemandSubintervals attribute supported?		MECS1:O	NO
MECS9	Is the reception of Get Profile command supported?		MECS1:O	NO
MECS10	Is the reception of Request Mirror Response command supported?		MECS1:O	NO
MECS11	Is the reception of Remove Mirror command supported?		MECS1:O	NO
MECS12	Is the generation of Get Profile Response command supported?		MECS1:O	NO
MECS13	Is the generation of Request Mirror command supported?		MECS1:O	NO
MECS14	Is the generation of Remove Mirror command supported?		MECS1:O	NO

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Table 34 – Metering cluster client capabilities

Item number	Item description	Reference	Status	Support
MECC1	Is the Metering Cluster supported as a client?	[R4]/D.3	O	NO
MECC2	Is the reception of Get Profile Response command supported?		MECC1:O	
MECC3	Is the reception of Request Mirror command supported?		MECC1:O	

Item number	Item description	Reference	Status	Support
MECC4	Is the reception of Remove Mirror command supported?		MECC1:O	
MECC5	Is the generation of Get Profile command supported?		MECC1:O	
MECC6	Is the generation of Request Mirror Response command supported?		MECC1:O	
MECC7	Is the generation of Remove Mirror command supported?		MECC1:O	

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8.8.10 Price Cluster attributes and functions

Table 35 – Price cluster server capabilities

Item number	Item description	Reference	Status	Support
PCS1	Is the Price Cluster supported as a server?	[R4]/D.4	O	YES
PCS2	Is the Tier1PriceLabel attribute supported?		PCS1:O	YES
PCS3	Is the Tier2PriceLabel attribute supported?		PCS1:O	YES
PCS4	Is the Tier3PriceLabel attribute supported?		PCS1:O	YES
PCS5	Is the Tier4PriceLabel attribute supported?		PCS1:O	YES
PCS6	Is the Tier5PriceLabel attribute supported?		PCS1:O	NO
PCS7	Is the Tier6PriceLabel attribute supported?		PCS1:O	NO
PCS8	Is the reception of Get Current Price command supported?		PCS1:M	YES
PCS9	Is the reception of Get Scheduled Prices command supported?		PCS1:O	YES
PCS10	Is the generation of Publish Price command supported?		PCS1:M	YES

1   **Table 36 – Price cluster client capabilities**

Item number	Item description	Reference	Status	Support
PCC1	Is the Price Cluster supported as a client?	[R4]/D.4	O	NO
PCC2	Is the reception of Publish Price command supported?		PCC1:M	
PCC3	Is the generation of Get Current Price command supported?		PCC1:M	
PCC4	Is the generation of Get Scheduled Prices command supported?		PCC1:O	

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3   **8.8.11 Messaging Cluster attributes and functions**

4   **Table 37 – Messaging cluster server capabilities**

Item number	Item description	Reference	Status	Support
MCS1	Is the Messaging Cluster supported as a server?	[R4]/D.5	O	YES
MCS2	Is the reception of Get Last Message command supported?		MCS1:M	YES
MCS2	Is the reception of Message Confirmation command supported?		MCS1:M	YES
MCS3	Is the generation of Display Message command supported?		MCS1:M	YES
MCS4	Is the generation of Cancel Message command supported?		MCS1:M	YES

5   **Table 38 – Messaging cluster client capabilities**

Item number	Item description	Reference	Status	Support
MCC1	Is the Messaging Cluster supported as a client?	[R4]/D.5	M	NO
MCC2	Is the reception of Display Message command supported?		MCC1:M	

Item number	Item description	Reference	Status	Support
MCC3	Is the reception of Cancel Message command supported?		MCC1:M	
MCC4	Is the generation of Get Last Message command supported?		MCC1:M	
MCC5	Is the generation of Message Confirmation command supported?		MCC1:M	

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