ZigBee Smart Energy Protocol Implementation Conformance Statement

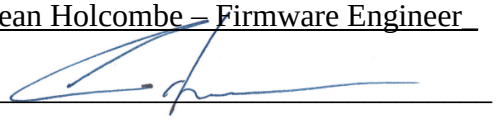
Manufacturer:	Landis + Gyr EMS
Product Type:	ESP/Electricity Meter
Product Name:	Gridstream RF Focus AX
Firmware Revision:	Radio FW: 08.56 DCW: 08.55 HAN FW: 02.00.07
Tested ZigBee Smart Energy Spec version:	R20

Disclaimer:
The information provided in this document can be made available to the general public in order to identify the tested versions, features and options.

By signing this document, the manufacturer confirms that all information provided in this document is correct and the applicable features have been tested.

Manufacturer name: Landis + Gyr EMS

Representative name and title: Sean Holcombe – Firmware Engineer

Signature: 

Date: 5.2.2013

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 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.

2 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.

3 Identification of the implementation

Device under test (DUT) identification – Device to be certified as ZigBee Smart Energy product

DUT manufacturer: Landis + Gyr EMS

DUT name: Gridstream RF Focus AX

DUT version (Firmware, Hardware): Radio FW: 08.56/DCW: 08.55/HAN FW: 02.00.07/HW: 25-4477 rev AE
DUT used ZigBee Compliance Platform (name, version): EmberZNet 4.3.5

Is this a revision to an existing products (if yes, which product): Yes – Firmware rev

Manufacturer identification

Name: Landis+Gyr EMS

Address: 30000 Mill Creek Avenue Suite 100 Alpharetta, GA 30022

Telephone number: 678-258-1500

Fax number: 678-258-1649

Additional information (optional):

Contact information

Name: Sean Holcombe

Telephone number: 678-258-3152

Email address: sean.holcombe@landisgyr.com

System configuration under test (SUT) identification (only if DUT required additional support hardware/software (PC, external drivers, etc.)

SUT name or configuration (e.g. Desktop PC connected via RS-232):

Software Version:

Hardware Version:

Operating system (optional):

Required for final certification:

- Product marketing description for web postings (50 words)
- Product picture for website (can be provided later)
- Web link to associate with certified product on website

If you would like to postpone posting your product on the ZigBee Alliance website for a period of time, please fill out the following section.

_____ (Manufacturer) herewith requests that the submitted product shall not be posted on the ZigBee Alliance product web page until _____ (date).

Name: _____

Signature: _____

4 Global statement of conformance

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

Application Profile: ZigBee Smart Energy Test 1.1b Specification – 07-5384 rev 20

(•) Yes

( ) No

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

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

5 Protocol Implementation Conformance Statement

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

8.1 ZigBee Device Types

Table 1 - 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 2 –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 3 – 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	N/A

8.4 SE general requirements support

Table 4 – 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	YES

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	N/A
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	N/A
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?	[R4]/5.4.1	FDT2: M FDT3: M	N/A
SEG9	Does the device support joining using the key establishment cluster?	[R4]/5.4.7	FDT2: M FDT3: M	N/A
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 policy?	[R4]/5.7.2	O	YES

Item number	Item description	Reference	Status	Support
SEG13	Does the device support the SE frequency agility policy?	[R4]/5.7.3	O	YES
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	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

8.5 ZigBee SE device description support

Table 5 – 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.

Table 6 – 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
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 7 – 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

Item number	Item description	Reference	Status	Support
KEC1	Does the device support the Key Establishment cluster as a client?	[R4]/Annex C.3.1	FTD2:M FTD3:M	YES
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	YES
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	YES
SMC1	Does the device support the Metering cluster as a client?	[R4]/5.10	O	NO
SMS1	Does the device support the Metering cluster as a server?	[R4]/5.10	O	YES
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	YES
CMC1		[R4]/5.10	O	
CMS1		[R4]/5.10	O	
PPC1		[R4]/5.10	O	
PPS1		[R4]/5.10	O	
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

Item number	Item description	Reference	Status	Support
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

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 8 – Energy Service Portal ZCL PICS restrictions/requirements

ZCL PICS Item number [R9]	Status	Additional Constraints	Support
TCS1	M	Time Cluster server is mandatory	YES

Table 9 provides the SE PICs restrictions based on requirements in [R4]/6.3.1.1.

Table 9 – 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

8.7.2 Metering device functions

Table 10 – Metering device ZCL PICS restrictions/requirements

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

Table 11 provides the SE PICs restrictions based on requirements in [R4]/6.3.2.1.

Table 11 – Metering device SE PICS restrictions/requirements

SE PICS Item number	Status	Additional Constraints	Support
SMS1	M	Metering Cluster server is mandatory	N/A
CMS1	O	SE Tunneling (Complex Metering) Cluster server is optional	N/A
PPC1	O	Pre-payment Cluster client is optional	N/A
PC1	O	Price Cluster client is optional	N/A
MC1	O	Message Cluster client is optional	N/A

8.7.3 In-Premise display device functions

Table 12 – In-Premise display device ZCL PICS restrictions/requirements

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

Table 13 provides the SE PICs restrictions based on requirements in [R4]/6.3.3.1.

Table 13 – 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	N/A
PC1	O	Price Cluster client is optional	N/A
SMC1	O	Metering Cluster client is optional	N/A
PPC1	O	Pre-payment Cluster client is optional	N/A
MC1	O	Message Cluster client is optional	N/A

8.7.4 Programmable Communicating Thermostat (PCT) device functions

Table 14 Programmable Communicating Thermostat (PCT) ZCL PICS restrictions/requirements

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

Table 15 provides the SE PICs restrictions based on requirements in [R4]/6.3.4.1.

Table 15 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	N/A
PPC1	O	Pre-payment Cluster client is optional	N/A

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

8.7.5 Load Control device functions

Table 16 – Load Control ZCL PICS restrictions/requirements

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

Table 17 provides the SE PICs restrictions based on requirements in [R4]/6.3.5.1.

Table 17 – Load Control SE PICS restrictions/requirements

SE PICS Item number	Status	Additional Constraints	Support
DRLC1	M	Demand Response and Load Cluster client is mandatory	N/A
PC1	O	Price Cluster client is optional	N/A

8.7.6 Range Extender device functions

Table 18 – Range Extender ZCL PICS restrictions/requirements

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

Table 19 provides the SE PICs restrictions based on requirements in [R4]/6.3.6.1.

Table 19 –Range Extender SE PICS restrictions/requirements

SE PICS Item number	Status	Additional Constraints	Support
			N/A

8.7.7 Smart Appliance device functions

Table 20 – Smart Appliance ZCL PICS restrictions/requirements

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

Table 21 provides the SE PICs restrictions based on requirements in [R4]/6.3.7.1.

Table 21 –Smart Appliance SE PICS restrictions/requirements

SE PICS Item number	Status	Additional Constraints	Support
DRLC1	O	Demand Response and Load Cluster client is optional	N/A

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

8.7.8 Prepayment Terminal device functions

Table 22 – Prepayment Terminal ZCL PICS restrictions/requirements

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

Table 23 provides the SE PICs restrictions based on requirements in [R4]/6.3.8.1.

Table 23 – 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	N/A
PC1	M	Price Cluster client is mandatory	N/A
SMC1	O	Metering Cluster client is optional	N/A
MC1	O	Message Cluster client is optional	N/A

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