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ZigBee RF4CE ZRC Profile PICS Version 2.0

ZigBee Document 14-0157r04ZB

July 10th, 2014

Sponsored by: ZigBee Alliance

Accepted by This document has not yet been accepted for release by the
ZigBee Alliance Board of Directors

Abstract The ZigBee RF4CE specification describes the protocol
infrastructure and services available to applications operating
on the ZigBee RF4CE platform

Keywords ZRC, Profile, PICS, Testing

July 10th, 2014

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Revision History

Revision	Date	Details	Editor
00	February 24 th , 2014	Initial version	Nick Shepherd
01	June 26 th , 2014	Updated after review at Vancouver members meeting	Joseph Reddy
04	July 10 th 2014	Final draft	Nick Shepherd

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1 Introduction

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

1.1 Scope

This document provides the protocol implementation conformance statement (PICS) proforma for the ZigBee RF4CE ZRC 2.0 Profile specifications cited in Reference [R1] in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ISO/IEC 9646-7, [R5].

1.2 Purpose

The supplier of a protocol implementation claiming to conform to the ZigBee RF4CE ZRC 2.0 Profile specification shall complete the following PICS proforma and accompany it with the information necessary to identify fully both the supplier and the implementation.

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

1.3 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.

1.3.1 ZigBee Alliance documents

- [R1] ZigBee RF4CE ZRC Profile Action Banks, ZigBee Document Number 13-0614r07, July 2014.
- [R2] ZigBee RF4CE Specification, ZigBee Document Number 094945, Version 1.0.1, November, 2010.
- [R3] ZigBee RF4CE GDP 2.0 Profile Specification, ZigBee Document Number 13-0396r28, July 2014.
- [R4] ZigBee RF4CE ZRC 2.0 Profile Specification, ZigBee Document Number 13-0442r22, July 2014.

1.3.2 ISO documents

- [R5] ISO/IEC 9646-7:1995, Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7. Implementation conformance statements.

38 2 Abbreviations and special symbols

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40 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 Number</i> : : <i>Status</i>	Status is conditional on support of item number

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

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

46

47 3 Instructions for completing the PICS proforma

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

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

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

4 Identification of the implementation56
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91**Implementation under test (IUT) identification**

IUT name:

Greenpeak ZRC 2.0 Recipient device prototype platform

IUT version:

1.0

System under test (SUT) identification

SUT name:

Greenpeak ZRC 2.0 Recipient device prototype platform

Software Version:

1.0.a

Hardware Version:

Prototype platform gp710 db07 rev E.

Operating system (optional):

Product supplier

Name:

Greenpeak Technologies BV

Address:

Leidse vcer 10

3511 SB

Utrecht - The Netherlands

Telephone number:

Facsimile number:

Email address:

Additional information:

92 **Client**

93 Name:

94 _____

95 Address:

96 _____

97 _____

98 _____

99 Telephone number:

100 _____

101 Facsimile number:

102 _____

103 Email address:

104 _____

105 Additional information:

106 _____

107 _____

108 _____

109 **PICS contact person**

110 Name:

111 *Van Moer Jan*

112 Address:

113 *Spinnerij straat 14*

114 *9240 Zele*

115 *Belgium*

116 Telephone number:

117 *+32 524 58739*

118 Facsimile number:

119 _____

120 Email address:

121 *jan.van.moer@grechpeak.com*

122 Additional information:

123 _____

124 _____

125 _____

126 _____

127 _____

128

5 Identification of the protocol

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This PICS proforma applies to the ZigBee RF4CE ZRC 2.0 Profile Specification [R4].

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6 Global statement of conformance

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

133

134

 Yes

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 No

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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.

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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. However, the supplier may find it helpful to continue to complete the detailed tabulations in the sub-clauses that follow.

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144 **7 PICS proforma tables**

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

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148 **7.1 Logical device types**

Item number	Item description	Reference	Status	Support
LDT1	Is this device capable of operating in the role of a ZRC Originator?	[R4]	O.1	N
LDT2	Is this device capable of operating in the role of a ZRC Recipient?	[R4]	O.1	Y

149 Note that a product may incorporate functionality of both the ZRC Originator and ZRC Recipient
 150 device types. However, on a given RF4CE link, it must operate in a single role only. The feature
 151 requirements in this section apply to the device operation on a given RF4CE link. A product that is
 152 capable of acting in either role should fill out separate PICS statement for each role.

153 **7.2 Network device type**

Item number	Item description	Reference	Status	Support
NDT1	Does the device operate as an RF4CE Controller?	[R2]	LDT1: O.2 LDT2: X	N
NDT2	Does the device operate as an RF4CE Target?	[R2]	LDT1: O.2 LDT2: M	Y

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155 **7.3 Binding**

Item number	Item description	Reference	Status	Support
BD1	Does the device function as a Binding Originator?	[R3]	LDT1: M LDT2: X	N
BD2	Does the device function as a Binding Recipient?	[R3]	LDT1: X LDT2: M	Y
BD3	Does the device function as a Proxy Binding Originator?	[R3]	LDT1: O LDT2: X	N
BD4	Does the device function as a Proxy Binding Recipient?	[R3]	LDT1: X LDT2: O	Y

Item number	Item description	Reference	Status	Support
BD5	Does the device support Interactive Validation functionality	[R3]	LDT1: N/A LDT2: O	Y

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158 **7.4 Actions**

Item number	Item description	Reference	Status	Support
ACT1	Does the device function as an Action Originator?	[R4]	LDT1: M LDT2: O	N
ACT2	Does the device function as an Action Recipient?	[R4]	LDT1: (NDT1: X NDT2: O) LDT2:M	Y

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160 **7.5 Action mapping**

Item number	Item description	Reference	Status	Support
AM1	Does the device function as an Action Mapping client?	[R4]	LDT1: O LDT2: (ACT1: O Else X)	N
AM2	Does the device function as an Action Mapping server?	[R4]	LDT1: (NDT1: X NDT2: O) LDT2: O	Y
AM3	Does the device support the transmission of IR frames with at least one vendor specific IRDB format?	[R4]	LDT1: (AM1: O Else X) LDT2: (AM1: O Else X)	N

161

162 **7.6 Home automation**

Item number	Item description	Reference	Status	Support
HA1	Does the device function as an HA Actions Originator?	[R4]	LDT1: O LDT2: (ACT1: O Else X)	N
HA2	Does the device function as an HA Actions Recipient?	[R4]	LDT1: (ACT2: O Else X) LDT2: O	Y
HA3	Does the device support HA Attributes?	[R4]	LDT1: (HA1: O Else X) LDT2: (HA1: O Else X)	N

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164 **7.7 Identification**

Item number	Item description	Reference	Status	Support
ID1	Does the device function as an Identify Client?	[R3]	LDT1: O LDT2: O	N
ID2	Does the device function as an Identify Server?	[R3]	LDT1: (NDT1: X NDT2: O) LDT2:M	Y

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166 **7.8 Polling**

Item number	Item description	Reference	Status	Support
PL1	Does the device function as a Poll Client?	[R3]	LDT1: (NDT1: O NDT2: X) LDT2: X	N

Item number	Item description	Reference	Status	Support
PL2	Does the device function as a Poll Server?	[R3]	LDT1: (NDT1: X NDT2: O) LDT2: M	Y

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168 **7.9 Key exchange**

Item number	Item description	Reference	Status	Support
KE1	Does the device function as a Key Exchange Initiator?	[R3]	LDT1: O LDT2: O	N
KE2	Does the device function as a Key Exchange Responder?	[R3]	LDT1: (NDT1: O NDT2: M) LDT2:M	Y
KE3	Does the device support key exchange using the default shared secret	[R3]	LDT1: (KE1: M KE2: M Else N/A) LDT2: M	Y

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170 **7.10 Notification**

Item number	Item description	Reference	Status	Support
NT1	Does the device function as a Notification Client?	[R3]	LDT1: (PL1: M HA3: M AMI: M Else: O) LDT2: (HA3: M AMI: M Else: O)	N

Item number	Item description	Reference	Status	Support
NT2	Does the device function as a Notification Server?	[R3]	LDT1: (HA2: M AM2: M ID2: M Else: (NDT1: X NDT2: O)) LDT2: M	Y

171

172 **7.11 Device types**

Item number	Item description	Reference	Status	Support
DT1	Does the device support the functionality of a TV?	[R1]/A	O	N
DT2	Does the device support the functionality of a projector?	[R1]/A	O	N
DT3	Does the device support the functionality of a player?	[R1]/A	O	N
DT4	Does the device support the functionality of a recorder?	[R1]/A	O	N
DT5	Does the device support the functionality of a video player/recorder?	[R1]/A	O	N
DT6	Does the device support the functionality of an audio player/recorder?	[R1]/A	O	N
DT7	Does the device support the functionality of an audio video recorder?	[R1]/A	O	N
DT8	Does the device support the functionality of a set top box?	[R1]/A	O	Y
DT9	Does the device support the functionality of a home theatre system?	[R1]/A	O	N
DT10	Does the device support the functionality of a media centre/PC?	[R1]/A	O	N
DT11	Does the device support the functionality of a game console?	[R1]/A	O	N

Item number	Item description	Reference	Status	Support
DT12	Does the device support the functionality of a satellite radio receiver?	[R1]/A	O	N
DT13	Does the device support the functionality of an IR extender?	[R1]/A	O	N
DT14	Does the device support the functionality of a monitor?	[R1]/A	O	N

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175 **7.12 Mandatory commands**

Item number	Item description	Reference	Status	Support
MC1	Does the TV device support all of the following commands: select, up, down, left, right, root menu, exit, channel up, channel down, volume up, volume down, power toggle function, power off function and power on function?	[R1]/A	DT1: M	N
MC2	Does the projector device support all of the following commands: select, up, down, left, right, root menu, exit, input select, power off function and power on function?	[R1]/A	DT2: M	N
MC3	Does the player device support all of the following commands: select, up, down, left, right, root menu, exit, play, stop, pause, rewind, fast forward, power toggle function, power off function and power on function?	[R1]/A	DT3: M	N
MC4	Does the recorder device support all of the following commands: select, up, down, left, right, root menu, exit, play, stop, pause, record, rewind, fast forward, power toggle function, power off function and power on function?	[R1]/A	DT4: M	N
MC5	Does the video player/recorder device support all of the following commands: select, up, down, left, right, root menu, exit, play, stop, pause, record, rewind, fast forward, power toggle function, power off function and power on function?	[R1]/A	DT5: M	N

Item number	Item description	Reference	Status	Support
MC6	Does the audio player/recorder device support all of the following commands: play, stop, pause, record, power toggle function, power off function and power on function?	[R1]/A	DT6: M	N
MC7	Does the audio/video recorder device support all of the following commands: select, up, down, left, right, root menu, exit, play, stop, pause, record, rewind, fast forward, power toggle function, power off function and power on function?	[R1]/A	DT7: M	N
MC8	Does the set top box device support all of the following commands: select, up, down, left, right, root menu, exit, channel up, channel down, volume up, volume down, power toggle function, power off function and power on function?	[R1]/A	DT8: M	Y
MC9	Does the home theatre system device support all of the following commands: select, up, down, left, right, root menu, exit, volume up, volume down, power toggle function, power off function and power on function?	[R1]/A	DT9: M	N
MC10	Does the media centre/PC device support all of the following commands: select, up, down, left, right, root menu, exit, volume up, volume down, play, stop, pause, rewind, fast forward, power toggle function, power off function and power on function?	[R1]/A	DT10: M	N

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8 Command function self declaration

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The table below lists the mandatory functions for the devices identified in section 7.11. To allow the test house to effectively observe behavior, enter the expected results in the “Functional declaration” column. If non mandatory commands are to be tested, enter command and behavior in the rows labeled “Other commands...”.

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Note that not all commands are supported by all devices – see section 7.12 for details.

ID	User operation	Function declaration
0x00	Select	<i>E.g. Menu item is activated.</i>
0x01	Up	<i>E.g. Menu cursor is moved one place upwards.</i>
0x02	Down	<i>E.g. Menu cursor is moved one place downwards.</i>
0x03	Left	<i>E.g. Cursor is moved one place to the left.</i>
0x04	Right	<i>E.g. Cursor is moved one place to the right.</i>
0x09	Root menu	<i>E.g. “Home” menu, is displayed.</i>
0x0d	Exit	<i>E.g. Takes user out of menu system.</i>
0x30	Channel up	<i>E.g. Channel number is incremented by 1 and new channel is displayed.</i>
0x31	Channel down	<i>E.g. Channel number is decremented by 1 and new channel is displayed.</i>
0x41	Volume up	<i>E.g. Volume level is incremented by 1 (as indicated by OSD).</i>
0x42	Volume down	<i>E.g. Volume level is decremented by 1 (as indicated by OSD).</i>
0x44	Play	<i>E.g. Playback is started or resumed if paused.</i>
0x45	Stop	<i>E.g. Playback is stopped and screen goes blank.</i>

ID	User operation	Function declaration
0x46	Pause	<i>E.g. Playback is temporarily halted, leaving current frame on screen.</i>
0x47	Record	<i>E.g. The currently displayed content is recorded to the hard drive.</i>
0x48	Rewind	<i>E.g. If playback is active, playback is played backwards at twice normal speed. If playback is not active, fast rewind begins.</i>
0x49	Fast forward	<i>E.g. If playback is active, playback is played forwards at twice normal speed. If playback is not active, fast forward begins.</i>
0x6b	Power toggle function	<i>E.g. Toggles the devices power state.</i>
0x6c	Power off function	<i>E.g. Puts the device into inactive (standby) state. If repeated the device stays in the inactive state.</i>
0x6d	Power on function	<i>E.g. Puts the device into active (non standby) state. If repeated the device stays in the active state.</i>
		<i>Other commands...</i>
		<i>Other commands...</i>
		<i>Other commands...</i>
		<i>Other commands...</i>