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ZigBee RF4CE ZRC Profile PICS

Version 2.0

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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

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Table of Contents

1	Introduction	1
1.1	Scope	1
1.2	Purpose	1
1.3	References	1
1.3.1	ZigBee Alliance documents	1
1.3.2	ISO documents	1
2	Abbreviations and special symbols	2
3	Instructions for completing the PICS proforma	3
4	Identification of the implementation	4
5	Identification of the protocol	6
6	Global statement of conformance	7
7	PICS proforma tables	8
7.1	Logical device types	8
7.2	Network device type	8
7.3	Binding	8
7.4	Actions	9
7.5	Action mapping	9
7.6	Home automation	10
7.7	Identification	10
7.8	Polling	10
7.9	Key exchange	11
7.10	Notification	11
7.11	Device types	12
7.12	Mandatory commands	13
8	Command function self declaration	15

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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.

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

41

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

3 Instructions for completing the PICS proforma

- 47
- 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 implementation

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Implementation under test (IUT) identification

IUT name: Freescale ZRC Profile

IUT version: 2.0

System under test (SUT) identification

SUT name: ZRC 2.0 Remote Control

Software Version: 1.8

Hardware Version: MC1323x

Operating system (optional): BeeStack TS

Product supplier

Name:

Freescale Semiconductor, Inc.

Address:

6501 William Cannon Drive West, Austin, TX 78735, USA

Telephone number:

+1-512-895-7396

Facsimile number:

+1-512-895-2487

Email address:

keith.tilley@freescale.com

Additional information:

83 **Client**

84 Name:

85 Freescale Semiconductor, Inc.

86 Address:

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92 Email address:

93 keith.tilley@freescale.com

94 Additional information:

95

96

97 **PICS contact person**

98 Name:

99 Alin Lazar

100 Address: 45 Tudor Vladimirescu Bvd., Bucharest, 050881, RO

101 Telephone number: +40-21-3052-293

102 Facsimile number: +40-21-3052-211

103

104 Email address:

105 alin.lazar@freescale.com

106 Additional information:

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111 **5 Identification of the protocol**

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

6 Global statement of conformance

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

117 Yes

118 No

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

122 The supplier will have fully complied with the requirements for a statement of conformance by
123 completing the statement contained in this sub-clause. That means, by clicking the above, the statement
124 of conformance is complete. However, the supplier may find it helpful to continue to complete the
125 detailed tabulations in the sub-clauses that follow.

126

127 7 PICS proforma tables

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

130

131 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	YES
LDT2	Is this device capable of operating in the role of a ZRC Recipient?	[R4]	O.1	NO

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

136 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	YES
NDT2	Does the device operate as an RF4CE Target?	[R2]	LDT1: O.2 LDT2: M	NO

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138 7.3 Binding

Item number	Item description	Reference	Status	Support
BD1	Does the device function as a Binding Originator?	[R3]	LDT1: M LDT2: X	YES
BD2	Does the device function as a Binding Recipient?	[R3]	LDT1: X LDT2: M	NO
BD3	Does the device function as a Proxy Binding Originator?	[R3]	LDT1: O LDT2: X	YES
BD4	Does the device function as a Proxy Binding Recipient?	[R3]	LDT1: X LDT2: O	NO

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

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141 **7.4 Actions**

Item number	Item description	Reference	Status	Support
ACT1	Does the device function as an Action Originator?	[R4]	LDT1: M LDT2: O	YES
ACT2	Does the device function as an Action Recipient?	[R4]	LDT1: (NDT1: X NDT2: O) LDT2:M	NO

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143 **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)	YES
AM2	Does the device function as an Action Mapping server?	[R4]	LDT1: (NDT1: X NDT2: O) LDT2: O	NO
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)	YES

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145 **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)	YES
HA2	Does the device function as an HA Actions Recipient?	[R4]	LDT1: (ACT1: O Else X) LDT2: O	NO
HA3	Does the device support HA Attributes?	[R4]	LDT1: (HA1: O Else X) LDT2: (HA1: O Else X)	YES

146

147 **7.7 Identification**

Item number	Item description	Reference	Status	Support
ID1	Does the device function as an Identify Client?	[R3]	LDT1: O LDT2: O	YES
ID2	Does the device function as an Identify Server?	[R3]	LDT1: (NDT1: X NDT2: O) LDT2:M	NO

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149 **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	YES

Item number	Item description	Reference	Status	Support
PL2	Does the device function as a Poll Server?	[R3]	LDT1: (NDT1: X NDT2: O) LDT2: M	NO

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151 **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	YES
KE2	Does the device function as a Key Exchange Responder?	[R3]	LDT1: (NDT1: O NDT2: M) LDT2:M	YES
KE3	Does the device support key exchange using the default shared secret	[R3]	LDT1: (KE1: M KE2: M Else N/A) LDT2: M	YES

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153 **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 AM1: M Else: O) LDT2: (HA3: M AM1: M Else: O)	YES

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	NO

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155 **7.11 Device types**

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

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

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158 **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	
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	
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	
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	
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	

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	
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	
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	
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	
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	

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8 Command function self declaration

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

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

ID	User operation	Function declaration
0x00	Select	
0x01	Up	
0x02	Down	
0x03	Left	
0x04	Right	
0x09	Root menu	
0x0d	Exit	
0x30	Channel up	
0x31	Channel down	
0x41	Volume up	
0x42	Volume down	
0x44	Play	
0x45	Stop	
0x46	Pause	
0x47	Record	
0x48	Rewind	
0x49	Fast forward	
0x6b	Power toggle function	
0x6c	Power off function	
0x6d	Power on function	
0x00- 0xff	All HDMI codes.	

166