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ZigBee RF4CE ZRC Profile PICS

Version 1.1.0

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| ZigBee Document rZB | |
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| 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 |  |

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# 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).

## Scope

This document provides the protocol implementation conformance statement (PICS) proforma for the ZigBee RF4CE ZRC 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.

## Purpose

The supplier of a protocol implementation claiming to conform to the ZigBee RF4CE ZRC 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.

## 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.

### ZigBee Alliance documents

1. ZigBee RF4CE ZRC Profile Specification, Version 1.1.0, ZigBee Document Number 105546r01ZB, November 2010.

### IEEE documents

1. 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), 2006.

### ISO documents

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

# 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.

# 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 that 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 multiple 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.

# Identification of the implementation

**Implementation under test (IUT) identification**

IUT name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_Technicolor H44-100\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

IUT version: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**System under test (SUT) identification**

SUT name: ­­­­­  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Technicolor H44-100\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Software Version:   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_1.581\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hardware Version:   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2.2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Operating system (optional):   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Product supplier**

Name:   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Telephone number:   
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Email address:   
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Additional information:   
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**Client**

Name:   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Additional information:   
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**Specification Versions Implemented**

ZRC Specification Document Number (include revision): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ZRC Specification Errata Document Number - if applicable (include revision): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ZRC Test Specification Document (include revision): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ZRC Test Specification Errata Document Number - if applicable (include revision): \_\_\_\_\_\_\_\_\_\_\_\_\_

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Additional information:   
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# Identification of the protocol

This PICS proforma applies to the ZigBee RF4CE ZRC Profile Specification [R1].

# Global statement of conformance

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





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

# PICS proforma tables

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

## Logical device types

| Item number | Item description | Reference | Status | Support |
| --- | --- | --- | --- | --- |
| LDT1 | Is this device capable of operating in the role of an RF4CE Target? | - | O.1 | Yes |
| LDT2 | Is this device capable of operating in the role of an RF4CE Controller? | - | O.1 | No |

## Supported command frames

| Item number | Item description | Reference | Status | Support |
| --- | --- | --- | --- | --- |
| SCF1 | Does the device support the user control pressed command frame? | [R1]/3.1 | M | Yes |
| SCF2 | Does the device support the user control repeated command frame? | [R1]/3.2 | M | Yes |
| SCF3 | Does the device support the user control released command frame? | [R1]/3.3 | M | Yes |
| SCF4 | Does the device support the command discovery request command frame? | [R1]/3.4 | O | Yes |
| SCF5 | Does the device support the command discovery response command frame? | [R1]/3.5 | LDT1: M LDT2: O | Yes |

## User control procedure

| Item number | Item description | Reference | Status | Support |
| --- | --- | --- | --- | --- |
| UCP1 | Does the device support a minimum of one key press at a time? | [R1]/5.3 | M | Yes |
| UCP2 | Does the device generate and send a user control pressed command frame on receipt of a key press from the user? | [R1]/5.3.1 | M | Yes |
| UCP3 | If the key is released within *aplKeyRepeatInterval*, does the device generate and send a user control released command frame? | [R1]/5.3.1 | UCP2: O | Yes |
| UCP4 | If the key is not release within *aplKeyRepeatInterval*, does the device generate and send a user control repeated command frame? | [R1]/5.3.1 | UCP2: M | Yes |
| UCP5 | If the key remains pressed, does the device generate and send a user control repeated command frame at a rate of *aplKeyRepeatInterval*? | [R1]/5.3.1 | UCP4: M | Yes |
| UCP6 | If the key is released, does the device generate and send a user control released command frame? | [R1]/5.3.1 | UCP5: M | Yes |
| UCP7 | If a device receives a user control pressed command frame, does it execute the appropriate operation once? | [R1]/5.3.2 | M | Yes |
| UCP8 | If a device receives a user control repeated command frame, does it begin executing the appropriate operation at a rate of *aplKeyRepeatWaitTime*? | [R1]/5.3.2 | M | Yes |
| UCP9 | If a user control repeated command frame is not received within *aplKeyRepeatWaitTime* or a user control released command frame is received within *aplKeyRepeatWaitTime*, does the device terminate the appropriate operation. | [R1]/5.3.2 | UCP8: M | Yes |
| UCP10 | If a user control released command frame is received without a prior user control pressed or user control repeated command frame being received, does the device ignore the frame? | [R1]/5.3.2 | M | Yes |

## Command discovery

| Item number | Item description | Reference | Status | Support |
| --- | --- | --- | --- | --- |
| CD1 | Does the device wait at least *aplcMinTargetBlackoutPeriod* after pairing before requesting command discovery? | [R1]/5.4 | SCF4: M | Yes |

## Device types

| Item number | Item description | Reference | Status | Support |
| --- | --- | --- | --- | --- |
| DT1 | Does the device support the functionality of a TV? | [R1]/A | O.1 | Yes |
| DT2 | Does the device support the functionality of a projector? | [R1]/A | O.1 | No |
| DT3 | Does the device support the functionality of a player? | [R1]/A | O.1 | Yes |
| DT4 | Does the device support the functionality of a recorder? | [R1]/A | O.1 | Yes |
| DT5 | Does the device support the functionality of a video player/recorder? | [R1]/A | O.1 | Yes |
| DT6 | Does the device support the functionality of an audio player/recorder? | [R1]/A | O.1 | No |
| DT7 | Does the device support the functionality of an audio video recorder? | [R1]/A | O.1 | No |
| DT8 | Does the device support the functionality of a set top box? | [R1]/A | O.1 | Yes |
| DT9 | Does the device support the functionality of a home theatre system? | [R1]/A | O.1 | No |
| DT10 | Does the device support the functionality of a media centre/PC? | [R1]/A | O.1 | No |

## 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 | Yes |
| 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 | No |
| 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 | Yes |
| 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 | Yes |
| 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 | Yes |
| 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 | No |
| 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 | No |
| 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 | Yes |
| 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 | No |
| 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 | No |

# Command function self declaration

The table below lists the mandatory functions for the devices identified in section 7.5. 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…”.

Note that not all commands are supported by all devices – see section 7.6 for details.

| **ID** | **User operation** | **Function declaration** |
| --- | --- | --- |
| 0x00 | Select | * + 1. Menu item is activated. |
| 0x01 | Up | * + 1. Cursor is moved one place upwards. |
| 0x02 | Down | * + 1. Cursor is moved one place downwards. |
| 0x03 | Left | * + 1. Cursor is moved one place to the left. |
| 0x04 | Right | * + 1. Cursor is moved one place to the right. |
| 0x09 | Root menu | * + 1. Main menu is displayed. |
| 0x0d | Exit | * + 1. Takes user out of menu system. |
| 0x30 | Channel up | * + 1. Channel number is incremented by 1 and new channel is displayed. |
| 0x31 | Channel down | * + 1. Channel number is decremented by 1 and new channel is displayed. |
| 0x41 | Volume up | * + 1. Volume level is incremented by 1 (as indicated by OSD). |
| 0x42 | Volume down | * + 1. Volume level is decremented by 1 (as indicated by OSD). |
| 0x44 | Play | * + 1. Playback is started or resumed if paused. |
| 0x45 | Stop | * + 1. N/A |
| 0x46 | Pause | * + 1. Playback is temporarily halted, leaving current frame on screen. |
| 0x47 | Record | * + 1. The currently displayed content is recorded to the hard drive. |
| 0x48 | Rewind | * + 1. If playback is active, playback is played backwards at twice normal speed |
| 0x49 | Fast forward | * + 1. If playback is active, playback is played forwards at twice normal speed. |
| 0x6b | Power toggle function | * + 1. Toggles the devices power state. |
| 0x6c | Power off function | Puts the device into inactive (standby) state. |
| 0x6d | Power on function | Puts the device into active (non standby) state |
|  |  | Other commands… |
|  |  | Other commands… |
|  |  | Other commands… |
|  |  | Other commands… |

# Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Revision | Date | Details | Editor |
| 00 | January 2011 | Initial revision | Phil Jamieson |
| 01 | January 2013 | Addition for specification versions | Nick Shepherd |
| 02 | January 2013 | Ref 1updated to refer to ZRC 1.1.0 spec | Nick Shepherd |
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