

Radio Frequency Physical Layer (RFPHY)

Bluetooth® Implementation Conformance Statement (ICS) Proforma

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- **Group Prepared By:** BTI



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1 Identification of the implementation

1.1 Implementation Under Test (IUT) identification

Identification of the Implementation Under Test (IUT) is to be filled in to provide as much detail as possible regarding version numbers and configuration options.

An ICS contact person to respond to queries regarding information supplied in this ICS proforma is named in the Declaration of Compliance: Summary of Selected Specifications in Implementation.

1.2 Capability Statement

Table 1: Bluetooth LE RF Capabilities

| Item | Capability | Reference | Status |
|------|---|-----------|--------|
| 1 | LE Transmitter | [1] 3 | C.1 |
| 2 | LE Receiver | [1] 4 | C.1 |
| 3 | LE Transceiver | [1] 3, 4 | C.1 |
| 4 | LE 2M PHY | [3] 3, 4 | C.2 |
| 5 | Stable Modulation Index - Transmitter | [3] 3.1.1 | C.3 |
| 6 | Stable Modulation Index - Receiver | [3] 3.1.1 | C.4 |
| 7 | LE Coded PHY | [3] 3, 4 | C.2 |
| 8 | Transmitting Constant Tone Extensions | [4] 5 | C.10 |
| 9 | 2 μ s Antenna Switching During Constant Tone Extension Transmission (AoD) | [4] 5 | C.5 |
| 10 | 1 μ s Antenna Switching During Constant Tone Extension Transmission (AoD) | [4] 5 | C.6 |
| 11 | 2 μ s Antenna Sampling During Constant Tone Extension Reception (AoD) | [4] 5 | C.11 |
| 12 | 2 μ s Antenna Switching and Sampling During Constant Tone Extension Reception (AoA) | [4] 5 | C.7 |
| 13 | 1 μ s Antenna Sampling During Constant Tone Extension Reception (AoD) | [4] 5 | C.7 |
| 14 | 1 μ s Antenna Switching and Sampling During Constant Tone Extension Reception (AoA) | [4] 5 | C.8 |
| 15 | Power Class 1 | [5] 4.6 | C.9 |

- C.1: Mandatory to support at least one of RFPHY 1/1 “LE Transmitter” OR RFPHY 1/2 “LE Receiver” OR RFPHY 1/3 “LE Transceiver”. Note: Selecting both RFPHY 1/1 “LE Transmitter” and RFPHY 1/2 “LE Receiver” is equivalent to selecting RFPHY 1/3 “LE Transceiver” and vice versa.
- C.2: Excluded IF SUM ICS 21/14 “Core v4.2”, otherwise Optional.
- C.3: Excluded IF SUM ICS 21/14 “Core v4.2”, otherwise Optional IF RFPHY 1/1 “LE Transmitter” OR RFPHY 1/3 “LE Transceiver”, otherwise Excluded.
- C.4: Excluded IF SUM ICS 21/14 “Core v4.2”, otherwise Optional IF RFPHY 1/2 “LE Receiver” OR RFPHY 1/3 “LE Transceiver”, otherwise Excluded.
- C.5: Optional IF RFPHY 1/8 “Transmitting Constant Tone Extensions”, otherwise Excluded.
- C.6: Optional IF RFPHY 1/9 “2 μ s Antenna Switching During Constant Tone Extension Transmission (AoD)”, otherwise Excluded.
- C.7: Optional IF RFPHY 1/11 “2 μ s Antenna Sampling During Constant Tone Extension Reception (AoD)”, otherwise Excluded.
- C.8: Mandatory IF RFPHY 1/12 “2 μ s Antenna Switching and Sampling During Constant Tone Extension Reception (AoA)” AND RFPHY 1/13 “1 μ s Antenna Sampling During Constant Tone Extension Reception (AoD)”, otherwise Excluded.
- C.9: Excluded IF SUM ICS 21/14 “Core v4.2” AND NOT SUM ICS 21/15 “CSA 5”, otherwise Optional IF RFPHY 1/1 “LE Transmitter” OR RFPHY 1/3 “LE Transceiver”, otherwise Excluded.
- C.10: Excluded IF SUM ICS 21/14 “Core v4.2” OR SUM ICS 21/16 “Core v5.0”, otherwise Optional IF RFPHY 1/1 “LE Transmitter” OR RFPHY 1/3 “LE Transceiver”, otherwise Excluded.
- C.11: Excluded IF SUM ICS 21/14 “Core v4.2” OR SUM ICS 21/16 “Core v5.0”, otherwise Optional IF RFPHY 1/2 “LE Receiver” OR RFPHY 1/3 “LE Transceiver”, otherwise Excluded.

1.3 Test Interface Implementation Characteristics

Table 2: Bluetooth LE Test Interface Capabilities

| Item | Capability | Reference | Status |
|------|---------------------|-----------|--------|
| 1 | HCI Test Interface | [2] 2 | C.1 |
| 2 | UART Test Interface | [2] 3 | C.1 |

C.1: Mandatory to support at least one of RFPHY 2/1 “HCI Test Interface” OR RFPHY 2/2 “UART Test Interface”.

2 References

- [1] Specification of the Bluetooth System, Physical Layer Specification (PHY) Volume 6, Part A, Version 4.0 or later
- [2] Specification of the Bluetooth System, Direct Test Mode, Volume 6, Part F, Version 4.0 or later
- [3] Specification of the Bluetooth System, Physical Layer Specification (PHY) Volume 6, Part A, Version 5.0 or later
- [4] Specification of the Bluetooth System, Physical Layer Specification (PHY) Volume 6, Part A, Version 5.1 or later
- [5] Specification of the Bluetooth System, Link Layer Specification (PHY) Volume 6, Part B, Version 4.2 or later

3 Revision history and acknowledgments

Revision History

| Publication Number | Revision Number | Date | Comments |
|--------------------|-----------------|-------------------------|---|
| | 0.5d1 | 2007-06-12 | Initial ULP RF-PHY ICS Draft |
| | 0.5d2 | 2007-10-22 | First revision including device category mapping |
| | 0.5d3 | 2007-10-30 | Second revision for BTI review, minor editorial changes |
| | 0.7d1 | 2008-09-23 | Updated to be in synch with the RF PHY TS version 0.7d2. Name update from ULP to LE |
| | 0.7d2 | 2008-09-29 | Minor editorial adjustments related to name transition |
| | 0.9d1 | 2009-01-13 | Reference to test interface used for IUT RF PHY test added |
| | 0.9d2 | 2009-01-14 | Edit by Magnus Sommansson: Inclusion of Table 2; Test interface capabilities. Editorial adjustment of references. |
| | 0.9d3 | 2009-04-02 | Updated references, version submitted to BTI |
| | 1.0d1 | 2009-10-30 | Updated references |
| | 1.0d2 | 2009-11-12 | Editorial review |
| | 1.0d3 | 2009-11-20 | Capability statement made independent of profile roles (Controller spec scheduled for December 2009 adoption does not contain profile role definitions) Updated references |
| | 10d4 | 2009-12-08 | Updated references in table 2 |
| 0 | 4.0.0 | 2009-12-15 | Prepare for publication |
| | 4.1.0r01 | 2013-11-11 | Updated revision to 4.1.0 Updated top sheet to include version 4.1 |
| 1 | 4.1.0 | 2013-12-03 | Prepare for Publication |
| | 4.2.0r00 | 2014-11-17 | Revved version to align with Core Specification Version 4.2 Release. |
| 2 | 4.2.0 | 2014-12-04 | Prepare for TCRL 2014-2 publication |
| | 5.0.0r00 | 2016-06-01 | Integrated changes for Core Specification 5.0 release |
| | 5.0.0r01 | 2016-09-01 | Issue 7534: Updated "TBD" reference in Table 1. Issue 7550: Added new reference and conditionals C.3 and C.4 to Table 1. Added new reference for Bluetooth Core Specification 5.0. |
| | 5.0.0r01 | 2016-11-14 | Updated to current template. Removed unnecessary parentheses and replaced with quotation marks. |
| 3 | 5.0.0 | 2016-12-13 | Approved by BTI. Prepared for TCRL 2016-2 publication. |
| | 5.1.0r00-r01 | 2018-11-13 – 2018-11-27 | Updated revision number to 5.1.0 to align with the adoption of Core Specification version 5.1. Updated conditionals in Table 1 for Core 5.1. |
| 4 | 5.1.0 | 2018-12-07 | Approved by BTI. Prepared for TCRL 2018-2 publication. |

| Publication Number | Revision Number | Date | Comments |
|--------------------|-----------------|----------------------------|---|
| | 5.1.1r00–r02 | 2019-04-24– 2019-06-12 | TSE 11791 (rating 2): Updated Capability Statement table and notes and References section to address issues with the number and gain of the antennas and the length of the CTE. TSE 11957 (rating 1): Updated references section to more accurately reflect the correct Part of the spec and updated field codes to reflect resulting new numbering. |
| 5 | 5.1.1 | 2019-08-01 | Approved by BTI. Prepared for TCRL 2019-1 publication. |
| | p6r00–r02 | 2019-09-16 – 2019-11-12 | TSE 12127 (rating 2): Updated Table 1 (items 1–3) and C.1–C.4 and C.6 conditionals to clarify roles after TCMT updates to take into account the PHYs for the IQ sample tests. Removed deprecated specs from 1:C.2–C.4 per integration review feedback. Revised document numbering convention, setting last release publication of 5.1.1 as p5; added publication number column to Revision History. |
| 6 | p6 | 2020-01-07 | Approved by BTI on 2019-12-22. Prepared for TCRL 2019-2 publication. |
| | p7r00–r01 | 2021-03-29 – 2021-06-11 | TSE 16485 (rating 4): To address E16372 regarding Transmit Power Level for Power Class, added a reference to LL v4.2; updated table 1 with new item 15 and new conditional C.9. TSE 16697 (rating 1): Changed title of document and updated all instances of “RF PHY” and “RF-PHY” to “RFPHY” to align with new TCID structure. Minor editorials to item 14 and conditional C.8. Template-related and consistency checker editorials. |
| 7 | p7 | 2021-07-13 | Approved by BTI on 2021-06-27. Prepared for TCRL 2021-1 publication. |
| | p7ed2r00 | 2022-02-18 | TSE 18365 (rating 1): Updated “is/not supported” language in conditionals globally to align with new conventions. Made template-related editorials, including aligning the copyright page with v2 of the DNMD. |
| | p7, edition 2 | 2022-03-07 | Approved by BTI on 2022-03-07. Prepared for edition 2 publication. |
| | p8r00–r03 | 2022-03-14 – 2022-04-18 | TSE 18260 (rating 2): Updated row 8 and C.4 and added C.10 in Table 1. TSE 18347 (rating 2): Updated C.9 of Table 1. Performed template-related formatting fixes. Made consistency checker editorials. |
| 8 | p8 | 2022-06-28 | Approved by BTI on 2022-05-31. Prepared for TCRL 2022-1 publication. |

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