Pulse Oximeter Profile (PLXP)

***Bluetooth*® Implementation Conformance Statement (ICS) Proforma**

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1 General principles

1.1 Implementation Under Test (IUT) identification

Using the Bluetooth SIG qualification tool, the implementer is expected to declare details about what will be implemented.

1.2 Enforcement of inter-layer dependencies

This ICS includes one or more tables with inter-layer dependencies (ILDs). ILDs are used for specification requirements that are dependent on other supporting specifications. ILDs can refer to an individual ICS item in a separate layer (individual ILD), or it can refer to the full layer (full-layer ILD).

ILDs residing in an X2Core layer will be enforced from the Bluetooth SIG qualification tool in the following conditions, depending on where the referred ILD is residing:

Referred ILD resides in	Individual ILD	Full-layer ILD
Controller layer	Core-Complete configuration, or Referred layer is supported	N/A
Lower HCI layer	HCI is supported	N/A
Upper HCI layer	Core-Host configuration, or UHCI is supported	N/A
Host layer	Core-Host configuration, or Core-Complete configuration, or Referred layer is supported	N/A
X2Core layer	Core-Host configuration, or Core-Complete configuration, or Referred layer is supported	Core-Host configuration, or Core-Complete configuration

Table 1.1: Enforcement of an ILD within the Bluetooth SIG qualification tool

2 ICS declarations

2.1 Versions

Table 0: X.Y Versions

Item	Version	Reference	Status
1	PLXP v1.0	[1]	C.1, C.2

C.1: Mandatory.

C.2: Can only be supported with an active X.Y.Z version after Deprecation or Withdrawal. Deprecated 2023-02-01. Withdrawn 2025-02-01.

Table 0a: X.Y.Z Versions

Item	Version	Reference	Status
1	PLXP v1.0.1	[1]	C.1

C.1: Mandatory IF PLXP 0/1 “PLXP v1.0”, otherwise Excluded.

2.2 Roles

Table 1: Role Requirements

Item	Roles	Reference	Status
1	Pulse Oximeter Sensor	[1] 3.1.1	C.1
2	Collector	[1] 3.1.1	C.1

C.1: Mandatory to support at least one.

2.3 Transports

Table 2: Transport Requirements

Item	Transport	Reference	Status
1	Profile supported over BR/EDR	[1] 3.1.5	C.1, C.3
2	Profile supported over LE	[1] 3.1.5	C.2, C.3

C.1: Excluded for this Profile IF CORE 41/2 “LE Core Configuration”.

C.2: Excluded for this Profile IF CORE 41/1 “BR/EDR Core Configuration”.

C.3: Mandatory to support at least one.

2.4 Pulse Oximeter Sensor Role

2.4.1 Services

Table 3: Services, Sensor Role

Prerequisite: PLXP 1/1 “Pulse Oximeter Sensor”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Pulse Oximeter Service (PLXS)	[1] 4	M	[8] PLXS

Item	Capability	Reference	Status	Inter-Layer Dependency
1a	PLXS implemented as a Primary Service	[1] 4	M	N/A
2	No longer used	N/A	N/A	N/A
3	Service UUID	[1] 4.1.2.1	C.1	[7] GAP 20a/1
4	Local Name	[1] 4.1.2.2	C.1	[7] GAP 20a/2
5	Appearance	[1] 4.1.2.3	C.1	[7] GAP 20a/11
6	Device Information Service	[1] 4	M	[2] DIS
7	Bond Management Service	[1] 4	C.2	[3] BMS
8	Current Time Service	[1] 4	O	[4] CTS
9	Battery Service	[1] 4	O	[5] BAS
10	Support for Measurement Status	[1] 5.6.1	O	N/A
11	Support for Device and Sensor Status	[1] 5.6.1	O	N/A
12	Support for Spot-check Measurement Storage	[1] 5.6.1	O	N/A
13	Support for SpO2PR-Fast Metric	[1] 5.6.1	O	N/A
14	Support for SpO2PR-Slow Metric	[1] 5.6.1	O	N/A
15	Support for Timestamp	[1] 5.6.1	C.3	N/A
16	Support for Pulse Amplitude Index	[1] 5.6.1	O	N/A
17	Support for Multiple Bonds	[1] 5.6.1	O	N/A
18	Support for Measurement Status Support Field in PLX Features Characteristic	[1] 5.6.2	C.4	N/A
19	Support for Device and Sensor Status Support Field in PLX Features Characteristic	[1] 5.6.3	C.5	N/A

C.1: Optional IF PLXP 2/2 “Profile supported over LE”, otherwise not defined.

C.2: Mandatory IF PLXP 3/17 “Support for Multiple Bonds”, otherwise Optional.

C.3: Mandatory IF PLXP 3/12 “Support for Spot-check Measurement Storage”, otherwise Optional.

C.4: Mandatory IF PLXP 3/10 “Support for Measurement Status”, otherwise Excluded.

C.5: Mandatory IF PLXP 3/11 “Support for Device and Sensor Status”, otherwise Excluded.

2.4.2 Device Information Service requirements – Pulse Oximeter Sensor Role

Table 4: DIS Requirements – Pulse Oximeter Sensor Role

Prerequisite: PLXP 1/1 “Pulse Oximeter Sensor”

Item	Feature	Reference	Status	Inter-Layer Dependency
1	Manufacturer Name String Characteristic	[1] 4.1.3	M	[2] DIS 2/2
2	Model Number String Characteristic	[1] 4.1.3	M	[2] DIS 2/3
3	Serial Number String Characteristic	[1] 4.1.3	O	[2] DIS 2/4
4	System ID Characteristic	[1] 4.1.3	O	[2] DIS 2/8

Item	Feature	Reference	Status	Inter-Layer Dependency
5	Hardware Revision String Characteristic	[1] 4.1.3	O	[2] DIS 2/5
6	Software Revision String Characteristic	[1] 4.1.3	O	[2] DIS 2/7
7	Firmware Revision String Characteristic	[1] 4.1.3	O	[2] DIS 2/6
8	IEEE 11073-20601 Regulatory Certification Data List Characteristic	[1] 4.1.3	O	[2] DIS 2/9

2.4.3 Bond Management Service requirements – Pulse Oximeter Sensor Role

Table 5: BMS Requirements – Pulse Oximeter Sensor Role

Prerequisite: PLXP 3/7 "Bond Management Service"

Item	Feature	Reference	Status
1	Bond Management Control Point	[1] 4.1.4	M
2	Bond Management Feature	[1] 4.1.4	M

2.4.4 GAP requirements – Pulse Oximeter Sensor Role

Table 6: GAP Requirements – Pulse Oximeter Sensor Role

Prerequisite: PLXP 1/1 "Pulse Oximeter Sensor"

Item	Feature	Reference	Status	Inter-Layer Dependency
1	Peripheral	[1] 3.1.4.1	C.1	[7] GAP 5/3 OR GAP 38/3
2	LE security mode 1	[1] 7.1	C.1	[7] GAP 25/1
3	General discoverable mode	[1] 8.1	C.2	[7] GAP 1/3
4	Limited discoverable mode	[1] 8.1	C.2	[7] GAP 1/2
5	No longer used	N/A	N/A	N/A
6	Bondable mode (LE)	[1] 6.1, 7.1	C.1	[7] GAP 24/2
7	Bondable mode (BR/EDR)	[1] 7.3, 8.1	C.3	[7] GAP 1/7
8	Unauthenticated Pairing (LE security mode 1 level 2)	[1] 7.1	C.4	[7] GAP 25/8
9	Authenticated Pairing (LE security mode 1 level 3)	[1] 7.1	C.4	[7] GAP 25/7
10	LE security mode 1 level 4	[1] 7.1	C.4	[7] GAP 25/9

C.1: Mandatory IF PLXP 2/2 "Profile supported over LE", otherwise not defined.

C.2: Mandatory to support at least one IF PLXP 2/1 "Profile supported over BR/EDR", otherwise not defined.

C.3: Mandatory IF PLXP 2/1 "Profile supported over BR/EDR", otherwise not defined.

C.4: Mandatory to support at least one IF PLXP 2/2 "Profile supported over LE" otherwise not defined.

Table 7: No longer used

2.5 Pulse Oximeter Collector Role

2.5.1 Service Support – Pulse Oximeter Collector Role

Table 8: Client Service Supported

Prerequisite: PLXP 1/2 "Collector"

Item	Feature	Reference	Status
1	Pulse Oximeter Service	[1] 5	M
2	Device Information Service	[1] 5	O
3	Bond Management Service	[1] 5	O
4	Current Time Service	[1] 5	O
5	Battery Service	[1] 5	O

2.5.2 Discover Services and Characteristics - Collector Role

Table 9: Discover Services and Characteristics – Collector Role

Prerequisite: PLXP 1/2 "Collector"

Item	Feature	Reference	Status
1	Discover Pulse Oximeter Service	[1] 5.2.1	M
2	Discover PLX Spot-check Measurement characteristic	[1] 5.3.1.1	M
3	Discover PLX Spot-check Measurement – Client Characteristic Configuration Descriptor	[1] 5.3.1.1	M
4	Discover PLX Continuous Measurement	[1] 5.3.1.2	M
5	Discover PLX Continuous Measurement – Client Characteristic Configuration Descriptor	[1] 5.3.1.2	M
6	Discover PLX Features Characteristic	[1] 5.3.1.3	M
6a	Discover PLX Features Characteristic - Client Characteristic Configuration Descriptor	[9] 5.3.1.3	C.2
7	Discover Record Access Control Point characteristic	[1] 5.3.1.4	C.1
8	Discover Record Access Control Point - Client Characteristic Configuration Descriptor	[1] 5.3.1.4	C.1

C.1: Mandatory IF PLXP 10/16 "Support for Spot-check Measurement Storage", otherwise Optional.

C.2: Optional IF PLXP 0/1 "PLXP v1.0" AND NOT PLXP 0a/1 "PLXP v1.0.1", otherwise Mandatory.

2.5.3 Feature Support – Pulse Oximeter Collector Role

Table 10: Features – Collector Role

Prerequisite: PLXP 1/2 "Collector"

Item	Feature	Reference	Status
1	Configure PLX Spot-check Measurement characteristic for indications	[1] 5.4	M
2	Receive PLX Spot-check Measurement characteristic indications	[1] 5.4	M
3	Configure PLX Continuous Measurement characteristic for notifications	[1] 5.5	M
4	Receive PLX Continuous Measurement characteristic notifications	[1] 5.5	M
5	Configure Record Access Control Point characteristic for indications	[1] 5.7	C.1
6	Receive Record Access Control Point characteristic indications	[1] 5.7	C.1
7	Write to Record Access Control Point characteristic	[1] 5.7	C.1
8	RACP Characteristic - Report Number of Stored Records Op Code	[1] 5.7.2.1	O
9	RACP Characteristic - Delete Stored Records Op Code	[1] 5.7.2.2	O
10	RACP Characteristic - Report Stored Records Op Code	[1] 5.7.2.3	M
11	RACP Characteristic - Abort Procedure Op Code	[1] 5.7.2.4	O
12	Read PLX Features characteristic	[1] 5.6	M
13	Verify Bond Status on Reconnection	[1] 6.2	M
14	Support for Measurement Status	[1] 5.6.1	O
15	Support for Device and Sensor Status	[1] 5.6.1	O
16	Support for Spot-check Measurement Storage	[1] 5.6.1	O
17	Support for Timestamp	[1] 5.6.1	C.2
18	Support for SpO2PR-Fast Metric	[1] 5.6.1	O
19	Support for SpO2PR-Slow Metric	[1] 5.6.1	O
20	Support for Pulse Amplitude Index	[1] 5.6.1	O
21	Support for Multiple Bonds	[1] 5.6.1	O
22	Support for Measurement Status Support Field in PLX Features Characteristic	[1] 5.6.2	C.3
23	Support for Device and Sensor Status Support Field in PLX Features Characteristic	[1] 5.6.3	C.4
24	Configure characteristic for indications to determine supported features	[9] 5.6	C.5

C.1: Mandatory IF PLXP 9/7 "Discover Record Access Control Point characteristic", otherwise Excluded.

C.2: Mandatory IF PLXP 10/16 "Support for Spot-check Measurement Storage", otherwise Optional.

C.3: Mandatory IF PLXP 10/14 "Support for Measurement Status", otherwise Excluded.

C.4: Mandatory IF PLXP 10/15 "Support for Device and Sensor Status", otherwise Excluded.

C.5: Optional IF PLXP 0/1 "PLXP v1.0" AND NOT PLXP 0a/1 "PLXP v1.0.1", otherwise Mandatory.

Table 10a: Determining Supported Features - Configure Characteristic for Indications

Prerequisite: PLXP 10/24 "Configure characteristic for indications to determine supported features"

Item	Capability	Reference	Status
1	Configure and receive PLX Features characteristic indications	[9] 5.6	C.1
2	Read PLX Features characteristic on reconnection	[9] 5.6	C.1
3	Configure and receive Bond Management Feature characteristic indications	[9] 5.8.5	C.2
4	Read Bond Management Feature characteristic on reconnection	[9] 5.8.5	C.2

C.1: Mandatory to support at least one IF PLXP 8/3 "Bond Management Service", otherwise Excluded.

C.2: Mandatory to support at least one IF PLXP 8/3 "Bond Management Service", otherwise Excluded.

2.5.4 RACP Procedures

Table 11: RACP Procedures

Prerequisite: PLXP 10/16 "Support for Spot-check Measurement Storage"

Item	Feature	Reference	Status
1	Report Number of Stored Records Procedure – All Records Operator	[1] 5.7.2.1	O
2	Delete Stored Records Procedure – All Records Operator	[1] 5.7.2.2	O
3	Report Stored Records Procedure – All Records Operator	[1] 5.7.2.3	M
4	Abort Operation	[1] 5.7.2.4	O

2.5.5 Discover DIS and Related Characteristics

Table 12: DIS and related Characteristics – Collector Role

Prerequisite: PLXP 8/2 "Device Information Service"

Item	Feature	Reference	Status
1	Discover Device Information Service	[1] 5.2.2	M
2	Manufacturer Name String Characteristic	[1] 5.3.3	M
3	Model Number String Characteristic	[1] 5.3.3	M
4	Serial Number String Characteristic	[1] 5.3.3	O
5	System ID Characteristic	[1] 5.3.3	O
6	Hardware Revision String Characteristic	[1] 5.3.3	O
7	Software Revision String Characteristic	[1] 5.3.3	O
8	Firmware Revision String Characteristic	[1] 5.3.3	O
9	IEEE 11073-20601 Regulatory Certification Data List Characteristic	[1] 5.3.3	O

2.5.6 Discover BMS and Related Characteristics

Table 13: BMS and related Characteristics – Collector Role

Prerequisite: PLXP 8/3 "Bond Management Service"

Item	Feature	Reference	Status
1	Discover Bond Management Service	[1] 5.2.3	O
2	Bond Management Control Point	[1] 5.2.3, 5.3.2	O
3	Bond Management Feature	[1] 5.2.3, 5.3.2	O

2.5.7 Discover Battery Service and Related Characteristics

Table 14: Battery Service Procedure Requirements - Collector Role

Prerequisite: PLXP 8/5 "Battery Service"

Item	Feature	Reference	Status
1	Discover Battery Service	[1] 5.2.5	O
2	Read Battery Level characteristic	[1] 5.3.5	O
3	Receive Battery Level characteristic notifications	[1] 5.3.5	O

2.5.8 Discover Current Time Service and Related Characteristics

Table 15: Current Time Service Procedure Requirements - Collector Role

Prerequisite: PLXP 8/4 "Current Time Service"

Item	Feature	Reference	Status
1	Discover Current Time service	[1] 5.2.4	O
2	Read Current Time characteristic	[1] 5.3.4	O
3	Write Current Time characteristic	[1] 5.3.4	O
4	Receive Current Time characteristic notifications	[1] 5.3.4	O

2.5.9 GATT requirements – Collector Role

Table 16: GATT Requirements – Collector Role

Prerequisite: PLXP 1/2 "Collector"

Item	Feature	Reference	Status	Inter-Layer Dependency
1	No longer used	N/A	N/A	N/A
2	GATT Client over LE	[1] 3.1.5	C.1	[6] GATT 1a/1
3	GATT Client over BR/EDR	[1] 3.1.5	C.2	[6] GATT 1a/2
4	Discover All Primary Services	[1] 5.2	C.3	[6] GATT 3/2
5	Discover Primary Services by Service UUID	[1] 5.2	C.3	[6] GATT 3/3

Item	Feature	Reference	Status	Inter-Layer Dependency
6	Discover All Characteristics of a Service	[1] 5.3	C.4	[6] GATT 3/5
7	Discover Characteristics by UUID	[1] 5.3	C.4	[6] GATT 3/6
8	Discover All Characteristic Descriptors	[1] 5.3	M	[6] GATT 3/7
9	Single Notification	[1] 5.1	M	[6] GATT 3/17
10	Indications	[1] 5.1	M	[6] GATT 3/18
11	Read Characteristic Value	[1] 5.1	M	[6] GATT 3/8
12	Write Characteristic Value	[1] 5.1	M	[6] GATT 3/14
13	Read Characteristic Descriptors	[1] 5.1	M	[6] GATT 3/19
14	Write Characteristic Descriptors	[1] 5.1	M	[6] GATT 3/21
15	Authentication procedure	[1] 6.2	M	[6] GATT 7/4
16	Write Long Characteristic Values	[1] 5.1	C.5	[6] GATT 3/15
17	Characteristic Value Reliable Writes	[1] 5.1	C.5	[6] GATT 3/16

C.1: Mandatory IF PLXP 2/2 “Profile supported over LE”, otherwise not defined.

C.2: Mandatory IF PLXP 2/1 “Profile supported over BR/EDR”, otherwise not defined.

C.3: Mandatory to support at least one.

C.4: Mandatory to support at least one.

C.5: Mandatory IF PLXP 8/3 “Bond Management Service”, otherwise Optional.

2.5.10 GAP requirements – Collector Role

Table 17: GAP Requirements – Collector Role

Prerequisite: PLXP 1/2 “Collector”

Item	Feature	Reference	Status	Inter-Layer Dependency
1	Central	[1] 2.2	M	[7] GAP 5/4 OR GAP 38/4
2	LE security mode 1	[1] 7.2	C.1	[7] GAP 35/1
3	Initiation of general inquiry	[1] 8.2	C.2	[7] GAP 3/1
4	Bondable mode (LE)	[1] 6.2	C.1	[7] GAP 34/2
5	Bondable mode (BR/EDR)	[1] 8.1	C.2	[7] GAP 1/7
6	Initiation of general bonding	[1] 8.2	C.2	[7] GAP 3/5
7	Unauthenticated Pairing (LE security mode 1 level 2)	[1] 7.2	C.3	[7] GAP 35/8
8	Authenticated Pairing (LE security mode 1 level 3)	[1] 7.2	C.3	[7] GAP 35/7
9	LE security mode 1 level 4	[1] 7.2	C.3	[7] GAP 35/9

C.1: Mandatory IF PLXP 2/2 “Profile supported over LE”, otherwise not defined.

C.2: Mandatory IF PLXP 2/1 “Profile supported over BR/EDR”, otherwise not defined.

C.3: Mandatory to support at least one IF PLXP 2/2 “Profile supported over LE”, otherwise not defined.

Table 18: No longer used

3 References

[1] Pulse Oximeter Profile Specification, Version 1.0 or later

[2] ICS Proforma for Device Information Service (DIS)

[3] ICS Proforma for Bond Management Service (BMS)

[4] ICS Proforma for Current Time Service (CTS)

[5] ICS Proforma for Battery Service (BAS)

[6] ICS Proforma for Generic Attribute Profile (GATT)

[7] ICS Proforma for Generic Access Profile (GAP)

[8] ICS Proforma for Pulse Oximeter Service (PLXS)

[9] Pulse Oximeter Profile Specification, Version 1.0.1

4 Revision history and acknowledgments

Revision History

Publication Number	Revision History	Date	Comments
0	1.0.0	2015-07-21	Prepare for publication.
1	1.0.0 edition 2r00	2018-11-26	Editorial changes only. Template updated. Revision History and contributors moved to the end of the document.
2	1.0.0 edition 2	2020-01-09	Updated copyright page and confidentiality markings to support new Documentation Marking Requirements, performed minor formatting updates, and accepted all tracked changes to prepare for edition 2 publication.
	p3r00–r10	2021-02-21 – 2022-01-03	TSE 16766 (rating 4): Added new Table 0, Table 0a, Table 10a, new items PLXP 9/6a and C.2, PLXP 10/24 and C.5. Added reference for PLXP Specification v1.0.1 (E16277). Removed reference to Bluetooth Core Specification, as it is not used in the ICS. TSE 18113 (rating 2): Added new item PLXP 3/1a. Removed PLXP 3/2, as it is a duplicate of PLXP 6/5. Added new items PLXP 16/16–17 and C.5. In Table 10, corrected C.1. Performed editorial work, including updating to the latest ICS template, removing the ILD column from Table 12, making consistency checker fixes, and aligning the copyright with v2 of the DNMD.
3	p3	2022-01-25	Approved by BTI on 2022-01-06. Prepared for TCRL 2021-2 publication.
	p4r00–r01	2022-10-28 – 2022-11-21	TSE 20626 (rating 3): Updated to align with current ICS conventions/template. Removed “is supported” language. Corrected the ILD in GAP tables (Tables 6 and 17). In Table 6, deleted Item 5 and updated Item 7 and C.3. Added an ILD for LE Secure Connections (Tables 7 and 18). In Table 7, also updated C.1. Updated C.2 in Table 9. Updated C.5 in Table 10. In Table 17, updated Items 4 and 5, added Item 6, and deleted C.3. In Table 18, marked Item 3 as no longer used, updated C.1, and deleted C.2. Updated the references list.
4	p4	2023-02-07	Approved by BTI on 2022-12-28. Prepared for TCRL 2022-2 publication.
	p5r00–r01	2023-10-06 – 2023-12-06	TSE 23675 (rating 2): Resolved GAP inter-layer dependencies. In Table 0, added new conditional C.1 and updated the existing C.1 (now C.2). Updated C.1 for Tables 0, 1, and 2. In Table 6, updated C.2 and C.4. In Table 10a, updated C.1 and C.2. In Table 16, updated C.3 and C.4. In Table 17, updated the Reference values for Items 4 and 5 and updated C.3. Made editorial edits to align the document with the latest ICS template, including updates to table titles and references.

Publication Number	Revision History	Date	Comments
5	p5	2024-07-01	Approved by BTI on 2024-04-21. Prepared for TCRL 2024-1 publication.
	p5ed2r00–r01	2025-07-08 – 2025-07-15	TSE 27378 (rating 1): Updated the Status for PLXP 2/1 and PLXP 2/2, added conditions C.1 and C.2, and renumbered the previous C.1 as C.3.
	p5 edition 2	2025-08-05	Approved by BTI on 2025-08-05. Prepared for edition 2 publication.

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