Indoor Positioning Service (IPS)

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

- **Revision:** IPS.ICS.p2
- **Revision Date:** 2023-02-07
- **Prepared By:** BTI
- **Published during TCRL:** TCRL.2022-2

This document, regardless of its title or content, is not a Bluetooth Specification as defined in the Bluetooth Patent/Copyright License Agreement ("PCLA") and Bluetooth Trademark License Agreement. Use of this document by members of Bluetooth SIG is governed by the membership and other related agreements between Bluetooth SIG Inc. ("Bluetooth SIG") and its members, including the PCLA and other agreements posted on Bluetooth SIG's website located at www.bluetooth.com.

THIS DOCUMENT IS PROVIDED "AS IS" AND BLUETOOTH SIG, ITS MEMBERS, AND THEIR AFFILIATES MAKE NO REPRESENTATIONS OR WARRANTIES AND DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, TITLE, NON-INFRINGEMENT, FITNESS FOR ANY PARTICULAR PURPOSE, THAT THE CONTENT OF THIS DOCUMENT IS FREE OF ERRORS.

TO THE EXTENT NOT PROHIBITED BY LAW, BLUETOOTH SIG, ITS MEMBERS, AND THEIR AFFILIATES DISCLAIM ALL LIABILITY ARISING OUT OF OR RELATING TO USE OF THIS DOCUMENT AND ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING LOST REVENUE, PROFITS, DATA OR PROGRAMS, OR BUSINESS INTERRUPTION, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, AND EVEN IF BLUETOOTH SIG, ITS MEMBERS, OR THEIR AFFILIATES HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

This document is proprietary to Bluetooth SIG. This document may contain or cover subject matter that is intellectual property of Bluetooth SIG and its members. The furnishing of this document does not grant any license to any intellectual property of Bluetooth SIG or its members.

This document is subject to change without notice.

Copyright © 2014-2023 by Bluetooth SIG, Inc. The Bluetooth word mark and logos are owned by Bluetooth SIG, Inc. Other third-party brands and names are the property of their respective owners.

Contents

1 Identification of the implementation 4
1.1 Implementation Under Test (IUT) identification 4
1.2 Version 5
1.3 Transports 5
1.4 Indoor Positioning Service - Advertiser Capabilities 5
1.5 Indoor Positioning Service - Server Capabilities 6
1.6 GATT Requirements 6
1.7 SDP Requirements 7
1.8 GAP Requirements 7
1.8.1 Methods 7
2 References 8
3 Revision history and acknowledgments 9

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 Version

Table 0: Major Versions (X.Y)

Item	Version	Reference	Status
1	IPS v1.0	[1]	M

Table 1: No longer used

Table 2: Features

Item	Feature	Reference	Status
1	Indoor Positioning Service Advertiser	[1] 2.2.2	C.1
2	Indoor Positioning Service Server	[1] 2	C.2

C.1: Mandatory IF IPS 3/2 “Service supported over LE”, otherwise Excluded.

C.2: Mandatory IF IPS 3/1 “Service supported over BR/EDR”, otherwise Optional.

1.3 Transports

Table 3: Transport Requirements

Item	Transport	Reference	Status
1	Service supported over BR/EDR	[1] 1.5	C.1
2	Service supported over LE	[1] 1.5	C.1

C.1: Mandatory to support at least one of IPS 3/1 “Service supported over BR/EDR” OR IPS 3/2 “Service supported over LE”.

1.4 Indoor Positioning Service - Advertiser Capabilities

Table 4: Advertisement Operations

Prerequisite: IPS 2/1 “Indoor Positioning Service Advertiser”

Item	Capability	Reference	Status
1	Advertising AD-type without data	[1] 2.2.2	C.1
2	Advertising AD-type with data	[1] 2.2.2	C.1

C.1: Mandatory to support at least one of IPS 4/1 “Advertising AD-type without data” OR IPS 4/2 “Advertising AD-type with data”.

Table 4a: Advertising Data Types

Prerequisite: IPS 2/1 “Indoor Positioning Service Advertiser”

Item	Capability	Reference	Status
1	AD Type – Indoor Positioning	[1] 2.2.2	M

1.5 Indoor Positioning Service - Server Capabilities

Table 5: Indoor Positioning Service Requirements

Prerequisite: IPS 2/2 "Indoor Positioning Service Server"

Item	Capability	Reference	Status
1	Indoor Positioning Configuration Characteristic	[1] 3.1	M
1b	Indoor Positioning Configuration, Extended Properties	[1] 3, 3.1	C.1
2	Global Coordinates (Latitude and Longitude Characteristics)	[1] 3.2, 3.3	M
2b	Global Coordinates (Latitude and Longitude Characteristics), Extended Properties	[1] 3, 3.2, 3.3	C.1
3	Local Coordinates (Local North Coordinate Characteristic and Local East Coordinate Characteristic)	[1] 3.4, 3,5	O
3b	Local Coordinates (Local North Coordinate Characteristic and Local East Coordinate Characteristic), Extended Properties	[1] 3, 3.4, 3.5	C.2
4	Floor Number Characteristic	[1] 3.6	O
4b	Floor Number Characteristic, Extended Properties	[1] 3, 3.6	C.3
5	Altitude Characteristic	[1] 3.7	O
5b	Altitude Characteristic, Extended Properties	[1] 3, 3.7	C.4
6	Uncertainty Characteristic	[1] 3.8	O
6b	Uncertainty Characteristic, Extended Properties	[1] 3, 3.8	C.5
7	Location Name Characteristic	[1] 3.9	O
7b	Location Name Characteristic, Extended Properties	[1] 3, 3.9	C.6
8	Location Name Characteristic longer than Min ATT_MTU	[1] 3.9	O

C.1: Optional IF IPS 6/5 "Characteristic Value Reliable Writes", otherwise Excluded.

C.2: Optional IF IPS 6/5 "Characteristic Value Reliable Writes" AND IPS 5/3 "Local Coordinates (Local North Coordinate Characteristic and Local East Coordinate Characteristic)", otherwise Excluded.

C.3: Optional IF IPS 6/5 "Characteristic Value Reliable Writes" AND IPS 5/4 "Floor Number Characteristic", otherwise Excluded.

C.4: Optional IF IPS 6/5 "Characteristic Value Reliable Writes" AND IPS 5/5 "Altitude Characteristic", otherwise Excluded.

C.5: Optional IF IPS 6/5 "Characteristic Value Reliable Writes" AND IPS 5/6 "Uncertainty Characteristic", otherwise Excluded.

C.6: Optional IF IPS 6/5 "Characteristic Value Reliable Writes" AND IPS 5/7 "Location Name Characteristic", otherwise Excluded.

1.6 GATT Requirements

Table 6: GATT Requirements

Prerequisite: IPS 2/2 "Indoor Positioning Service Server"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Generic Attribute Profile (GATT) Server	[1] 1.4	M	[2] GATT 1/2
2	Read Multiple Characteristic Values	[1] 1.4	M	[2] GATT 4/11

Item	Capability	Reference	Status	Inter-Layer Dependency
3	Read Long Characteristic Values	[1] 1.4	C.1	[2] GATT 4/10
4	Write Characteristic Value	[1] 1.4	O	[2] GATT 4/14
5	Characteristic Value Reliable Writes	[1] 1.4	O	[2] GATT 4/16
6	Write without Response	[1] 1.4	O	[2] GATT 4/12

C.1: Mandatory IF IPS 5/8 “Location Name Characteristic longer than Min ATT_MTU”, otherwise Optional.

1.7 SDP Requirements

Table 7: SDP Requirements

Prerequisite: IPS 3/1 “Service supported over BR/EDR”

Item	Capability	Reference	Status
1	SDP record present for IPS	[1] 4	M

1.8 GAP Requirements

1.8.1 Methods

Table 8: GAP Requirements

Prerequisite: IPS 2/1 “Indoor Positioning Service Advertiser”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Broadcast mode	[1] 1.3	M	[3] GAP 10/1

2 References

[1] Indoor Positioning Service Specification, Version 1.0

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

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

3 Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
0	1.0.0	2015-05-26	Prepared for publication
	1.0.1r00-r01	2018-05-26 – 2018-11-05	TSE 10894 (rating 3): Added 7 new items to the table 5 and 6 conditional statements. Template update.
1	1.0.1	2018-11-21	Approved by BTI. Prepared for TCRL 2018-2 publication.
	p2r00–r03	2022-10-25 – 2022-11-11	TSE 20347 (rating 1): Updated to align with current ICS conventions/template. Removed Support columns and “is supported” language. In Table 0, updated table title. Deleted Table 1 because it is no longer used. In Table 4, updated the prerequisite and C.1. Updated the references list. In Tables 4a and 5, updated the prerequisite. In Table 6, updated the prerequisite and references and added an ILD column. In Table 7, updated the Item 1 and deleted Items 2–4. In Table 8, updated the prerequisite and reference and added an ILD column. Added a Publication Number column to the Revision History. Revised the document numbering convention, setting the last release publication of 1.0.1 as p1. Performed additional template-related formatting fixes. Replaced the Bluetooth logo in the footer and updated the copyright page to align with v2 of the DNMD.
2	p2	2023-02-07	Approved by BTI on 2022-12-28. Prepared for TCRL 2022-2 publication.

Acknowledgments

Name	Company
Victor Zhodzishsky	Broadcom
Juha Salokannel	Nokia Corporation
Rasmus Abildgren	Samsung Electronics Co., Ltd.