

Location and Navigation Service (LNS)

Bluetooth® Implementation Conformance Statement (ICS) Proforma

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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 Version requirements

Table 0: Service Version

Item	Version	Reference	Status
1	LNS 1.0	[2]	M

Table 0a: No longer used

1.3 Transport requirements

Table 1: Transport Requirements

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

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

1.4 Service requirements

Table 2: Feature Requirements

Item	Capability	Reference	Status
1	Instantaneous Speed	[2] 3.2.1.2	O
2	Total Distance	[2] 3.2.1.3, 3.4.2.1	O
3	Location	[2] 3.2.1.4	O
4	Elevation	[2] 3.2.1.5	O
5	Heading	[2] 3.2.1.6	O
6	Rolling Time	[2] 3.2.1.7	O
7	UTC Time	[2] 3.2.1.8	O
8	Remaining Distance	[2] 3.5.1.4	C.1
9	Remaining Vertical Distance	[2] 3.5.1.5	C.1
10	Estimated Time of Arrival	[2] 3.5.1.6	C.1
11	Number of Beacons in Solution	[2] 3.3.1.2	O
12	Number of Beacons in View	[2] 3.3.1.3	O
13	Time to First Fix	[2] 3.3.1.4	O
14	Estimated Horizontal Position Error	[2] 3.3.1.5	O
15	Estimated Vertical Position Error	[2] 3.3.1.6	O
16	Horizontal Dilution of Precision	[2] 3.3.1.7	O
17	Vertical Dilution of Precision	[2] 3.3.1.8	O
18	Location and Speed Content Masking	[2] 3.4.2.2	O
19	Fix Rate Setting	[2] 3.4.2.7	O
20	Elevation Setting	[2] 3.4.2.8	O

Item	Capability	Reference	Status
21	Navigation	[2] 3.5, 3.4.2.3, 3.4.3.4, 3.4.2.5, 3.4.2.6	O

C.1: Optional IF LNS 2/21 “Navigation”, otherwise Excluded.

Table 3: Service Requirements

Item	Capability	Reference	Status
1	Location and Navigation Service	[2] 2	M
2	Location and Navigation Feature Characteristic	[2] 3.1	M
3	Location and Speed Characteristic	[2] 3.2	M
4	Instantaneous Speed Field of Location and Speed Characteristic	[2] 3.2.1.2	C.1
5	Total Distance Field of Location and Speed Characteristic	[2] 3.2.1.3	C.2
6	Total Distance Field of Location and Speed Characteristic	[2] 3.2.1.4	C.3
7	Elevation Field of Location and Speed Characteristic	[2] 3.2.1.5	C.4
8	Heading Field of Location and Speed Characteristic	[2] 3.2.1.6	C.5
9	Rolling Time Field of Location and Speed Characteristic	[2] 3.2.1.7	C.6
10	UTC Time Field of Location and Speed Characteristic	[2] 3.2.1.8	C.7
11	Navigation Characteristic	[2] 3.5	O
12	Bearing Field of the Navigation Characteristic	[2] 3.5.1.2	C.8
13	Heading Field of the Navigation Characteristic	[2] 3.5.1.3	C.8
14	Remaining Distance Field of the Navigation Characteristic	[2] 3.5.1.4	C.9
15	Remaining Vertical Distance Field of the Navigation Characteristic	[2] 3.5.1.5	C.10
16	Estimated Time of Arrival Field of the Navigation Characteristic	[2] 3.5.1.6	C.11
17	Position Quality Characteristic	[2] 3.3	O
18	Number of Satellites in Solution Field of the Position Quality characteristic	[2] 3.3.1.2	C.12
19	Number of Satellites in View Field of the Position Quality Characteristic	[2] 3.3.1.3	C.13
20	Time to First Fix Field of the Position Quality Characteristic	[2] 3.3.1.4	C.14
21	Estimated Horizontal Position Error Field of the Position Quality Characteristic	[2] 3.3.1.5	C.15
22	Estimated Vertical Position Error Field of the Position Quality Characteristic	[2] 3.3.1.6	C.16
23	Horizontal Dilution Of Precision Field of the Position Quality Characteristic	[2] 3.3.1.7	C.17

Item	Capability	Reference	Status
24	Vertical Dilution Of Precision Field of the Position Quality Characteristic	[2] 3.3.1.8	C.18
25	LN Control Point Characteristic	[2] 3.4	C.19
26	Set Cumulative Value Procedure – Set to zero	[2] 3.4.1, 3.4.2.1	C.2
27	Set Cumulative Value Procedure – Set to non-zero	[2] 3.4.1, 3.4.2.1	C.2
28	Mask Location and Speed Characteristic Content	[2] 3.4.1, 3.4.2.2	C.20
29	Navigation Control Procedure	[2] 3.4.1, 3.4.2.3	C.8
30	Request Number of Routes Procedure	[2] 3.4.1, 3.4.2.4	C.8
31	Request Name of Route Procedure	[2] 3.4.1, 3.4.2.5	C.8
32	Select Route Procedure	[2] 3.4.1, 3.4.2.6	C.8
33	Set Fix Rate Procedure	[2] 3.4.1, 3.4.2.7	C.21
34	Set Elevation Procedure	[2] 3.4.1, 3.4.2.8	C.22

- C.1: Mandatory IF LNS 2/1 “Instantaneous Speed”, otherwise Excluded.
- C.2: Mandatory IF LNS 2/2 “Total Distance”, otherwise Excluded.
- C.3: Mandatory IF LNS 2/3 “Location”, otherwise Excluded.
- C.4: Mandatory IF LNS 2/4 “Elevation”, otherwise Excluded.
- C.5: Mandatory IF LNS 2/5 “Heading”, otherwise Excluded.
- C.6: Mandatory IF LNS 2/6 “Rolling Time”, otherwise Excluded.
- C.7: Mandatory IF LNS 2/7 “UTC Time”, otherwise Excluded.
- C.8: Mandatory IF LNS 2/21 “Navigation”, otherwise Excluded.
- C.9: Mandatory IF LNS 2/8 “Remaining Distance”, otherwise Excluded.
- C.10: Mandatory IF LNS 2/9 “Remaining Vertical Distance”, otherwise Excluded.
- C.11: Mandatory IF LNS 2/10 “Estimated Time of Arrival”, otherwise Excluded.
- C.12: Mandatory IF LNS 2/11 “Number of Beacons in Solution”, otherwise Excluded.
- C.13: Mandatory IF LNS 2/12 “Number of Beacons in View”, otherwise Excluded.
- C.14: Mandatory IF LNS 2/13 “Time to First Fix”, otherwise Excluded.
- C.15: Mandatory IF LNS 2/14 “Estimated Horizontal Position Error”, otherwise Excluded.
- C.16: Mandatory IF LNS 2/15 “Estimated Vertical Position Error”, otherwise Excluded.
- C.17: Mandatory IF LNS 2/16 “Horizontal Dilution of Precision”, otherwise Excluded.
- C.18: Mandatory IF LNS 2/17 “Vertical Dilution of Precision”, otherwise Excluded.
- C.19: Mandatory IF LNS 2/2 “Total Distance” OR LNS 2/18 “Location and Speed Content Masking” OR LNS 2/19 “Fix Rate Setting” OR LNS 2/20 “Elevation Setting” OR LNS 2/21 “Navigation”, otherwise Excluded.
- C.20: Mandatory IF LNS 2/18 “Location and Speed Content Masking”, otherwise Excluded.
- C.21: Mandatory IF LNS 2/19 “Fix Rate Setting”, otherwise Excluded.
- C.22: Mandatory IF LNS 2/20 “Elevation Setting”, otherwise Excluded.

1.5 GATT requirements

Table 4: GATT Requirements

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Generic Attribute Profile (GATT) Server	[2] 1.4	M	[3] GATT 1/2
2	Write Characteristic Value	[2] 1.4	C.1	[3] GATT 4/14



Item	Capability	Reference	Status	Inter-Layer Dependency
3	Notifications	[2] 1.4	M	[3] GATT 4/17
4	Indications	[2] 1.4	C.1	[3] GATT 4/18
5	Read Characteristic Descriptors	[2] 1.4	M	[3] GATT 4/19
6	Write Characteristic Descriptors	[2] 1.4	M	[3] GATT 4/21

C.1: Mandatory IF LNS 3/25 “LN Control Point Characteristic”, otherwise not defined.

1.6 SDP requirements

Table 5: SDP Requirements

Prerequisite: LNS 1/1 “Service supported over BR/EDR”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Support for Server role	N/A	M	[5] SDP 1b/1
2	ProtocolDescriptorList	N/A	M	[5] SDP 9/2
3	BrowseGroupList	N/A	M	[5] SDP 9/5

2 References

- [1] Specification of the Bluetooth System, Version 4.0 or later
- [2] Location and Navigation Service Specification, Version 1.0
- [3] Generic Attribute Profile (GATT) ICS, GATT.ICS
- [4] Generic Access Profile (GAP) ICS, GAP.ICS
- [5] Service Discovery Protocol (SDP) ICS, SDP.ICS

3 Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
0	1.0.0	2013-04-30	Release for publication.
	1.0.1r00	2014-10-06	TSE 5641: Removed references to CSA in the Core Specification Version table (0a) and Core Specification Reference [1].
1	1.0.1	2014-12-05	Prepare for TCRL 2014-2 publication
	1.0.2r00	2015-05-10	TSE 5998: Revised statuses and conditionals in Table 3 to remove duplicate entries
	1.0.2r01	2015-06-04	Deleted Section 1.2 (Global Statement of Conformance) per current ICS template standards.
	1.0.2r02	2015-06-09	Review by Alicia Courtney. Converted to current document template.
2	1.0.2	2015-07-14	Prepared for TCRL 2015-1 publication.
	1.0.2 edition 2r00	2018-11-26	Editorial changes only. Template updated. Revision History and contributors moved to the end of the document.
	1.0.2 edition 2	2020-01-07	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	2022-03-23	TSE 18674 (rating 1): Removed Table 0a because it is no longer used. TSE 18721 (rating 1): Editorials to align the document with the latest ICS template in anticipation of a future .Z release. Editorials, including assigning publication number 2 to previous v1.0.2, consistency checker updates, and aligning the copyright page with v2 of the DNMD.
3	p3	2022-06-28	Approved by BTI on 2022-05-31. Prepared for TCRL 2022-1 publication.

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