

Ranging Profile (RAP)

Bluetooth® Implementation Conformance Statement (ICS) Proforma

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Contents

1	Identification of the implementation	4
1.1	Implementation Under Test (IUT) identification	4
1.2	Versions	5
1.3	Transports	5
1.4	Roles	5
1.5	Ranging Responder role	6
1.5.1	Service references (Ranging Responder)	6
1.5.2	Ranging Service (Ranging Responder)	6
1.5.3	GAP requirements (Ranging Responder)	6
1.6	Ranging Requester role	7
1.6.1	Service references (Ranging Requester)	7
1.6.2	Ranging Service (Ranging Requester)	7
1.6.3	GATT requirements (Ranging Requester)	8
1.6.4	GAP requirements (Ranging Requester)	9
2	References	10
3	Revision history and acknowledgments	11

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 Versions

Table 0: X.Y Versions (Ranging Responder)

Prerequisite: RAP 3/1 “Ranging Responder”

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

Table 0a: X.Y.Z Versions (Ranging Responder)

Table number reserved but not yet in use.

Table 1: X.Y Versions (Ranging Requester)

Prerequisite: RAP 3/2 “Ranging Requester”

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

Table 1a: X.Y.Z Versions (Ranging Requester)

Table number reserved but not yet in use.

1.3 Transports

Table 2: Transport Requirements

Item	Transport	Reference	Status
1	Profile supported over BR/EDR	[1] 2.6	C.1
2	Profile supported over LE	[1] 2.6	M

C.1: Excluded for this Profile.

1.4 Roles

Table 3: Role Requirements

Item	Role	Reference	Status
1	Ranging Responder	[1] 2.1	C.1
2	Ranging Requester	[1] 2.1	C.1

C.1: Mandatory to support at least one.

1.5 Ranging Responder role

1.5.1 Service references (Ranging Responder)

Table 4: Services Included in Ranging Responder

Prerequisite: RAP 3/1 “Ranging Responder”

Item	Service	Reference	Status	Inter-Layer Dependency
1	Ranging Service	[1] 3	M	[2] RAS

1.5.2 Ranging Service (Ranging Responder)

Table 5: Main Features of Ranging Service

Prerequisite: RAP 3/1 “Ranging Responder”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Ranging Service UUID in AD Type field of Advertising Data	[1] 3.1.1	O	N/A
2	Real-time Ranging Data characteristic	[1] 3	O	[2] RAS 2/2
3	Abort Operation	[1] 3	O	[2] RAS 3/4
4	Set Filter	[1] 3	O	[2] RAS 3/5

1.5.3 GAP requirements (Ranging Responder)

Table 6: GAP Requirements (Ranging Responder)

Prerequisite: RAP 3/1 “Ranging Responder”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Peripheral	[1] 2.4	C.1	[4] GAP 5/3 OR GAP 38/3
2	Minimum 128-bit entropy key	[1] 6.2	C.2	[4] GAP 25/13
3	LE Secure Connections	[1] 6.2	C.2	[4] GAP 27b/5
4	CS Initiator Role	[1] 2.4	C.3	[4] GAP 23a/1
5	CS Reflector Role	[1] 2.4	C.3	[4] GAP 23a/2
6	Out of Band	[1] 6.3	C.4	[4] GAP 27b/9
7	Central	[1] 2.4	C.1	[4] GAP 5/4 OR GAP 38/4
8	Minimum 128-bit entropy key	[1] 6.2	C.5	[4] GAP 35/13
9	LE Secure Connections	[1] 6.2	C.5	[4] GAP 37b/5
10	CS Initiator Role	[1] 2.4	C.6	[4] GAP 33a/1

Item	Capability	Reference	Status	Inter-Layer Dependency
11	CS Reflector Role	[1] 2.4	C.6	[4] GAP 33a/2
12	Out of Band	[1] 6.3	C.7	[4] GAP 37b/9

C.1: Mandatory to support at least one.

C.2: Mandatory IF RAP 6/1 “Peripheral”, otherwise not defined.

C.3: Mandatory to support at least one IF RAP 6/1 “Peripheral”, otherwise not defined.

C.4: Optional IF RAP 6/1 “Peripheral”, otherwise not defined.

C.5: Mandatory IF RAP 6/7 “Central”, otherwise not defined.

C.6: Mandatory to support at least one IF RAP 6/7 “Central”, otherwise not defined.

C.7: Optional IF RAP 6/7 “Central”, otherwise not defined.

1.6 Ranging Requester role

1.6.1 Service references (Ranging Requester)

Table 7: Services Included in Ranging Requester Role

Prerequisite: RAP 3/2 “Ranging Requester”

Item	Capability	Reference	Status
1	Discover Ranging Service	[1] 4.3	M

1.6.2 Ranging Service (Ranging Requester)

Table 8: Discover Ranging Service Characteristics

Prerequisite: RAP 7/1 “Discover Ranging Service”

Item	Capability	Reference	Status
1	Discover Ranging Features characteristic	[1] 4.3.2	M
2	Read Ranging Features characteristic	[1] 4.3.2	M
3	Discover Real-time Ranging Data characteristic	[1] 4.4.1	O
4	Receive Real-time Ranging Data characteristic indications	[1] 4.4.1	C.1
5	Receive Real-time Ranging Data characteristic notifications	[1] 4.4.1	C.1
6	Discover On-demand Ranging Data characteristic	[1] 4.4.2	M
7	Receive On-demand Ranging Data characteristic indications	[1] 4.4.2	M
8	Receive On-demand Ranging Data characteristic notifications	[1] 4.4.2	M
9	Discover RAS Control Point characteristic	[1] 4.5	M
10	Write RAS Control Point characteristic	[1] 4.5.1	M
11	Receive RAS Control Point characteristic indications	[1] 4.5.2	M
12	Discover Ranging Data Ready characteristic	[1] 4.4.3	M
13	Receive Ranging Data Ready characteristic indications	[1] 4.4.3	M
14	Receive Ranging Data Ready characteristic notifications	[1] 4.4.3	O
15	Read Ranging Data Ready characteristic	[1] 4.4.3.1	O
16	Discover Ranging Data Overwritten characteristic	[1] 4.4.4	M
17	Receive Ranging Data Overwritten characteristic indications	[1] 4.4.4	M

Item	Capability	Reference	Status
18	Receive Ranging Data Overwritten characteristic notifications	[1] 4.4.4	O
19	Read Ranging Data Overwritten characteristic	[1] 4.4.4	O

C.1: Mandatory IF RAP 8/3 “Discover Real-time Ranging Data characteristic”, otherwise Excluded.

Table 9: RAS Control Point Procedures

Prerequisite: RAP 8/10 “Write RAS Control Point characteristic”

Item	Capability	Reference	Status
1	Get Ranging Data	[1] 4.5.1	M
2	ACK Ranging Data	[1] 4.5.1	M
3	Retrieve Lost Ranging Data Segments	[1] 4.5.1	O
4	Abort Operation	[1] 4.5.1.2	O
5	Set Filter	[1] 4.5.1.1	O

1.6.3 GATT requirements (Ranging Requester)

Table 10: GATT Requirements (Ranging Requester)

Prerequisite: RAP 3/2 “Ranging Requester”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	GATT Client over LE	[1] 2.2	M	[3] GATT 1a/1
2	Discover All Primary Services	[1] 4.6	C.1	[3] GATT 3/2
3	Discover Primary Services by Service UUID	[1] 4.6	C.1	[3] GATT 3/3
4	Discover All Characteristic Descriptors	[1] 4.6	M	[3] GATT 3/7
5	Find Included Services	[1] 4.6	M	[3] GATT 3/4
6	Discover All Characteristics of a Service	[1] 4.6	C.2	[3] GATT 3/5
7	Discover Characteristics by UUID	[1] 4.6	C.2	[3] GATT 3/6
8	Read Characteristic Value	[1] 4.6	M	[3] GATT 3/8
9	Write without Response	[1] 4.6	M	[3] GATT 3/12
10	Notifications	[1] 4.6	M	[3] GATT 3/17
11	Indications	[1] 4.6	M	[3] GATT 3/18
12	Read Characteristic Descriptors	[1] 4.6	M	[3] GATT 3/19
13	Write Characteristic Descriptors	[1] 4.6	M	[3] GATT 3/21

C.1: Mandatory to support at least one.

C.2: Mandatory to support at least one.

1.6.4 GAP requirements (Ranging Requester)

Table 11: GAP Requirements (Ranging Requester)

Prerequisite: RAP 3/2 “Ranging Requester”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Peripheral	[1] 2.4	C.1	[4] GAP 5/3 OR GAP 38/3
2	Minimum 128-bit entropy key	[1] 6.1, 6.1.1	C.2	[4] GAP 25/13
3	LE Secure Connections	[1] 6.1, 6.1.3	C.2	[4] GAP 27b/5
4	CS Initiator Role	[1] 2.4	C.3	[4] GAP 23a/1
5	CS Reflector Role	[1] 2.4	C.3	[4] GAP 23a/2
6	Out of Band	[1] 6.3	C.4	[4] GAP 27b/9
7	Central	[1] 2.4	C.1	[4] GAP 5/4 OR GAP 38/4
8	Minimum 128-bit entropy key	[1] 6.1, 6.1.1	C.5	[4] GAP 35/13
9	LE Secure Connections	[1] 6.1, 6.1.3	C.5	[4] GAP 37b/5
10	CS Initiator Role	[1] 2.4	C.6	[4] GAP 33a/1
11	CS Reflector Role	[1] 2.4	C.6	[4] GAP 33a/2
12	Out of Band	[1] 6.3	C.7	[4] GAP 37b/9

C.1: Mandatory to support at least one.

C.2: Mandatory IF RAP 11/1 “Peripheral”, otherwise not defined.

C.3: Mandatory to support at least one IF RAP 11/1 “Peripheral”, otherwise not defined.

C.4: Optional IF RAP 11/1 “Peripheral”, otherwise not defined.

C.5: Mandatory IF RAP 11/7 “Central”, otherwise not defined.

C.6: Mandatory to support at least one IF RAP 11/7 “Central”, otherwise not defined.

C.7: Optional IF RAP 11/7 “Central”, otherwise not defined.

2 References

- [1] Ranging Profile Specification, Version 1.0
- [2] ICS Proforma for Ranging Service (RAS)
- [3] ICS Proforma for Generic Attribute Profile (GATT)
- [4] ICS Proforma for Generic Access Profile (GAP)

3 Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
0	p0	2024-11-19	Approved by BTI on 2024-10-29. RAP v1.0 adopted by the BoD on 2024-11-12. Prepared for initial publication.

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