

Hearing Access Profile (HAP)

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 Roles

Table 1: Role Requirements

Item	Role	Reference	Status
1	Hearing Aid (HA)	[1] 3	C.1
2	Hearing Aid Unicast Client (HAUC)	[1] 4	C.1
3	Hearing Aid Remote Controller (HARC)	[1] 5	C.1
4	Immediate Alert Client (IAC)	[1] 6	C.2

C.1: Mandatory to support at least one of HAP 1/1 “Hearing Aid (HA)” OR HAP 1/2 “Hearing Aid Unicast Client (HAUC)” OR HAP 1/3 “Hearing Aid Remote Controller (HARC)”.

C.2: Optional IF HAP 1/2 “Hearing Aid Unicast Client (HAUC)” OR HAP 1/3 “Hearing Aid Remote Controller (HARC)”, otherwise Excluded.

1.3 Transports

Table 2: Transport Requirements

Item	Transport	Reference	Status
1	Profile supported over BR/EDR	[1] 2.5	C.1
2	Profile supported over LE	[1] 2.5	M

C.1: Excluded for this Profile.

1.4 Hearing Aid Role

1.4.1 Versions

Table 10: Hearing Aid, Major Versions (X.Y)

Prerequisite: HAP 1/1 “Hearing Aid (HA)”

Item	Version	Reference	Status
1	Hearing Access Profile 1.0	[1]	M

Table 11: Hearing Aid, Minor Versions (X.Y.Z)

Table number reserved but not yet in use

1.4.2 Features

Table 12: Hearing Aid, Features

Prerequisite: HAP 1/1 “Hearing Aid (HA)”

Item	Capability	Reference	Status
1	Volume Balance	[1] 3.1	O
2	Binaural Hearing Aid Set	[1] 3.1	C.1
3	Banded Hearing Aid	[1] 3.5	C.1
4	Monaural Hearing Aid	[1] 3.5	C.1
5	Connected Isochronous Stream	[1] 3.2	M

Item	Capability	Reference	Status
6	Broadcast Isochronous Stream	[1] 3.2	M
7	7.5 ms Transport Interval	[1] 3.2	O

C.1: Mandatory to support at least one of HAP 12/2 “Binaural Hearing Aid Set” OR HAP 12/3 “Banded Hearing Aid” OR HAP 12/4 “Monaural Hearing Aid”.

1.4.3 Profile and service dependencies

Table 13: Hearing Aid, Profile Dependencies

Prerequisite: HAP 1/1 “Hearing Aid (HA)”

Item	Service	Reference	Status	Inter-Layer Dependency
1	Call Control Client (CCP)	[1] 2.2	O	[10] CCP 1/2
2	Volume Renderer (VCP)	[1] 2.2	M	[6] VCP 1/1
3	Microphone Device (MICP)	[1] 2.2	C.1	[7] MICP 1/1
4	Set Member (CSIP)	[1] 2.2	C.2	[8] CSIP 1/1
5	Unicast Server (BAP)	[1] 2.2	M	[11] BAP 1/1
6	Acceptor (CAP)	[1] 2.2	M	[12] CAP 1/1

C.1: Mandatory IF HAP 19/2 “Audio Source”, otherwise not defined.

C.2: Mandatory IF HAP 12/2 “Binaural Hearing Aid Set”, otherwise not defined.

Table 14: Hearing Aid, Service Dependencies

Prerequisite: HAP 1/1 “Hearing Aid (HA)”

Item	Service	Reference	Status	Inter-Layer Dependency
1	Hearing Access Service (HAS)	[1] 3.5.1	M	[13] HAS
2	Immediate Alert Service (IAS)	[1] 3.5.3	O	[14] IAS
3	Coordinated Set Identification Service (CSIS)	[1] 3.6	C.1	[9] CSIS

C.1: Mandatory IF HAP 12/2 “Binaural Hearing Aid Set”, otherwise not defined.

1.4.4 Feature requirements in dependent services

1.4.4.1 CCP Client requirements

Table 15: Hearing Aid, CCP Client Requirements

Table number reserved but not yet in use

1.4.4.2 VCP Volume Renderer requirements

Table 16: Hearing Aid, VCP Volume Renderer Requirements

Prerequisite: HAP 13/2 "Volume Renderer (VCP)"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Volume Offset Control Service	[1] 3.8	C.1	[6] VCP 5/2
2	Audio Input Control Service	[1] 3.8	O	[6] VCP 5/3

C.1: Mandatory IF HAP 12/1 "Volume Balance", otherwise not defined.

1.4.4.3 MICP Microphone Device requirements

Table 17: Hearing Access, MICP Microphone Device Requirements

Prerequisite: HAP 13/3 "Microphone Device (MICP)"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Microphone Control Service	[1] 3.9	M	[6] MICP 5/1

1.4.4.4 CSIP Set Member requirements

Table 18: Hearing Aid, CSIP Set Member Requirements

Prerequisite: HAP 13/4 "Set Member (CSIP)"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Coordinated Set Size Characteristic	[1] 3.6	M	[9] CSIS 2/2

1.4.4.5 BAP Unicast Server requirements

Table 19: Hearing Aid, BAP Unicast Server Requirements

Prerequisite: HAP 13/5 "Unicast Server (BAP)"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Audio Sink	[1] 3.7	M	[11] BAP 8/1
2	Audio Source	[1] 3.7	O	[11] BAP 8/2

1.4.4.6 CAP Acceptor requirements

Table 20: Hearing Aid, CAP Acceptor Requirements

Table number reserved but not yet in use

1.4.4.7 Hearing Access Service requirements

Table 21: Hearing Aid, Hearing Access Service Requirements

Table number reserved but not yet in use



1.4.4.8 Immediate Alert Service requirements

Table 22: Hearing Access, Immediate Alert Service Requirements

Table number reserved but not yet in use

1.4.4.9 Coordinated Set Identification Service requirements

Table 23: Hearing Access, Coordinated Set Identification Service Requirements

Table number reserved but not yet in use

1.4.5 Feature requirements in Core layers

1.4.5.1 GAP requirements

Table 24: Hearing Aid, GAP Requirements

Prerequisite: HAP 1/1 "Hearing Aid (HA)"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Unauthenticated Pairing (LE security mode 1 level 2) with LE Secure Connections Pairing only	[1] 9.1	M	[4] GAP 25/11
2	Minimum 128 Bit entropy key	[1] 9.1	M	[4] GAP 25/13
3	Service UUID	[1] 3.3	O	[4] GAP 20a/1
4	Appearance	[1] 3.4	O	[4] GAP 20a/11
5	Resolvable private address generation procedure	[1] 3.4	O	[4] GAP 26/3

1.4.5.2 SM requirements

Table 25: Hearing Aid, SM Requirements

Prerequisite: HAP 1/1 "Hearing Aid (HA)"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	LE Secure Connections	[1] 9.1	M	[5] SM 2/5

1.4.5.3 Link Layer requirements

Table 26: Hearing Aid, LL Requirements

Prerequisite: HAP 1/1 "Hearing Aid (HA)"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	LE 2M PHY	[1] 3.2	M	[3] LL 9/7

1.5 Hearing Aid Unicast Client Role

1.5.1 Versions

Table 40: Hearing Aid Unicast Client, Major Versions (X.Y)

Prerequisite: HAP 1/2 “Hearing Aid Unicast Client (HAUC)”

Item	Version	Reference	Status
1	Hearing Access Profile 1.0	[1]	M

Table 41: Hearing Aid Unicast Client, Minor Versions (X.Y.Z)

Table number reserved but not yet in use

1.5.2 Features

Table 42: Hearing Aid Unicast Client, Features

Table number reserved but not yet in use

1.5.3 Profile and service dependencies

Table 43: Hearing Aid Unicast Client, Profile Dependencies

Prerequisite: HAP 1/2 “Hearing Aid Unicast Client (HAUC)”

Item	Service	Reference	Status	Inter-Layer Dependency
1	Call Control Server (CCP)	[1] 2.2	O	[10] CCP 1/1
2	Set Coordinator (CSIP)	[1] 2.2	M	[8] CSIP 1/2
3	Unicast Client (BAP)	[1] 2.2	M	[11] BAP 1/2
4	Initiator (CAP)	[1] 2.2	M	[12] CAP 1/2

1.5.4 Feature requirements in dependent profiles and services

1.5.4.1 CCP Server requirements

Table 44: Hearing Aid Unicast Client, CCP Server Requirements

Table number reserved but not yet in use

1.5.4.2 CSIP Set Coordinator requirements

Table 45: Hearing Aid Unicast Client, CCP Server Requirements

Table number reserved but not yet in use

1.5.4.3 BAP Unicast Client requirements

Table 46: Hearing Aid Unicast Client, BAP Unicast Client Requirements

Prerequisite: HAP 43/3 “Unicast Client (BAP)”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Audio Source	[1] 5.3	M	[11] BAP 29/2
2	Audio Sink	[1] 5.3	C.1	[11] BAP 29/1

C.1: Mandatory IF HAP 43/1 “Call Control Server (CCP)”, otherwise not defined.

Table 47: Hearing Aid Unicast Client, Audio Source G.729A Codec Requirements

Prerequisite: HAP 46/1 “Audio Source”

Item	Capability	Reference	Status
1	G.729A Codec Capability Setting (Audio Source)	[1] 7.1	O
2	G.729A QoS Config Setting – 30000 SDU Interval, unframed, 30 Max SDU Size, 1 RTN, 30 Max Transport Latency (Audio Source)	[1] 7.1	C.1

C.1: Mandatory IF HAP 47/1 “G.729A Codec Capability Setting (Audio Source)”, otherwise Excluded.

Table 48: Hearing Aid Unicast Client, Audio Sink G.729A Codec Requirements

Prerequisite: HAP 46/2 “Audio Sink”

Item	Capability	Reference	Status
1	G.729A Codec Capability Setting (Audio Sink)	[1] 7.1	O
2	G.729A QoS Config Setting – 30000 SDU Interval, unframed, 30 Max SDU Size, 1 RTN, 30 Max Transport Latency (Audio Sink)	[1] 7.1	C.1

C.1: Mandatory IF HAP 48/1 “G.729A Codec Capability Setting (Audio Sink)”, otherwise Excluded.

1.5.4.4 CAP Initiator

Table 49: Hearing Aid Unicast Client, CCP Server Requirements

Table number reserved but not yet in use

1.5.5 Feature requirements in Core layers

1.5.5.1 GATT requirements

Table 50: GATT Requirements – Hearing Aid Unicast Client Role

Prerequisite: HAP 1/2 “Hearing Aid Unicast Client (HAUC)”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Discover All Primary Services	[1] 5.2	C.1	[2] GATT 3/2
2	Discover Primary Services by Service UUID	[1] 5.2	C.1	[2] GATT 3/3

C.1: Mandatory to support at least one of HAP 50/1 “Discover All Primary Services” OR HAP 50/2 “Discover Primary Services by Service UUID”.

1.5.5.2 Link Layer requirements

Table 51: Hearing Aid Unicast Client, LL Requirements

Prerequisite: HAP 1/2 “Hearing Aid Unicast Client (HAUC)”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	LE 2M PHY	[1] 5.1	M	[3] LL 9/7

1.6 Hearing Aid Remote Controller Role

1.6.1 Versions

Table 70: Hearing Aid Remote Controller, Major Versions (X.Y)

Prerequisite: HAP 1/3 “Hearing Aid Remote Controller (HARC)”

Item	Version	Reference	Status
1	Hearing Access Profile 1.0	[1]	M

Table 71: Hearing Aid Remote Controller, Minor Versions (X.Y.Z)

Table number reserved but not yet in use

1.6.2 Features

1.6.2.1 Characteristic Discovery requirements

Table 72: Hearing Aid Remote Controller, Characteristic Discovery Requirements

Prerequisite: HAP 1/3 “Hearing Aid Remote Controller (HARC)”

Item	Capability	Reference	Status
1	Active Preset Index Characteristic	[1] 5.6	O
2	Hearing Aid Preset Control Point Characteristic	[1] 5.5	C.1

Item	Capability	Reference	Status
3	Hearing Aid Features Characteristic	[1] 5.4	C.2
4	Hearing Aid Features Characteristic, Notifications	[1] 5.4	C.3

C.1: Mandatory IF HAP 72/1 “Active Preset Index Characteristic”, otherwise Optional.

C.2: Mandatory IF HAP 72/2 “Hearing Aid Preset Control Point Characteristic”, otherwise Excluded.

C.3: Optional IF HAP 72/3 “Hearing Aid Features Characteristic”, otherwise Excluded.

1.6.2.2 Preset Control Point requirements

Table 73: Hearing Aid Remote Controller, Preset Control Point Requirements

Prerequisite: HAP 72/2 “Hearing Aid Preset Control Point Characteristic”

Item	Capability	Reference	Status
1	Write Preset Name Procedure	[1] 5.5.4	O
2	Set Active Preset Procedure	[1] 5.5.5	C.3
3	Set Next Preset Procedure	[1] 5.5.6	C.3
4	Set Previous Preset Procedure	[1] 5.5.7	C.3
5	Set Active Preset – Synchronized Locally Procedure	[1] 5.5.8	C.4
6	Set Next Preset – Synchronized Locally Procedure	[1] 5.5.9	C.5
7	Set Previous Preset – Synchronized Locally Procedure	[1] 5.5.10	C.6
8	Read Preset by Index Procedure	[1] 5.5.2	C.2
9	Preset Changed Procedure	[1] 5.5.3	C.1

C.1: Mandatory IF HAP 73/1 “Write Preset Name Procedure” OR HAP 73/2 “Set Active Preset Procedure”, otherwise Optional.

C.2: Mandatory IF HAP 72/1 “Active Preset Index Characteristic”, otherwise Optional.

C.3: Mandatory to support at least one of HAP 73/2 “Set Active Preset Procedure” OR HAP 73/3 “Set Next Preset Procedure” OR HAP 73/4 “Set Previous Preset Procedure”.

C.4: Mandatory IF HAP 73/2 “Set Active Preset Procedure”, otherwise Excluded.

C.5: Mandatory IF HAP 73/3 “Set Next Preset Procedure”, otherwise Excluded.

C.6: Mandatory IF HAP 73/4 “Set Previous Preset Procedure”, otherwise Excluded.

1.6.3 Profile and service dependencies

Table 74: Hearing Aid Remote Controller, Profile Dependencies

Prerequisite: HAP 1/3 “Hearing Aid Remote Controller (HARC)”

Item	Service	Reference	Status	Inter-Layer Dependency
1	Volume Controller (VCP)	[1] 2.2	M	[6] VCP 1/2
2	Microphone Controller (MICP)	[1] 2.2	O	[7] MICP 1/2
3	Set Coordinator (CSIP)	[1] 2.2	M	[8] CSIP 1/2
4	Commander (CAP)	[1] 2.2	M	[12] CAP 1/3

Table 75: Hearing Aid Remote Controller, Service Dependencies*Prerequisite: HAP 1/3 "Hearing Aid Remote Controller (HARC)"*

Item	Service	Reference	Status	Inter-Layer Dependency
1	Hearing Access Service Client (HAS)	[1] 2.2	M	N/A

1.6.4 Feature requirements in dependent profiles and services

1.6.4.1 VCP Volume Controller requirements

Table 76: Hearing Aid Remote Controller, VCP Volume Controller Requirements*Prerequisite: HAP 74/1 "Volume Controller (VCP)"*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Set Absolute Volume	[1] 6.5	M	[6] VCP 12/6

1.6.4.2 MICP Microphone Controller requirements

Table 77: Hearing Aid Remote Controller, MICP Microphone Controller Requirements

Table number reserved but not yet in use

1.6.4.3 CSIP Set Coordinator requirements

Table 78: Hearing Aid Remote Controller, CSIP Set Coordinator Requirements

Table number reserved but not yet in use

1.6.4.4 CAP Commander requirements

Table 79: Hearing Aid Remote Controller, CAP Commander Requirements

Table number reserved but not yet in use

1.6.4.5 HAS Hearing Access Service Client requirements

Table 80: Hearing Aid Remote Controller, HAS Hearing Access Service Client Requirements

Table number reserved but not yet in use

1.6.5 Feature requirements in Core layers

1.6.5.1 Link Layer requirements

Table 81: Hearing Aid Remote Controller, LL Requirements*Prerequisite: HAP 1/3 "Hearing Aid Remote Controller (HARC)"*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	LE 2M PHY	[1] 3.2	M	[3] LL 9/7

1.6.6 Feature requirements in Core layers

1.6.6.1 GAP requirements

Table 82: GAP Requirements – Immediate Alert Client Role

Prerequisite: HAP 1/3 “Hearing Aid Remote Controller (HARC)”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Bondable mode (LE)	[1] 9.4	M	[4] GAP 34/2

1.7 Immediate Alert Client Role

1.7.1 Versions

Table 90: Immediate Alert Client, Major Versions (X.Y)

Prerequisite: HAP 1/4 “Immediate Alert Client (IAC)”

Item	Version	Reference	Status
1	Hearing Access Profile 1.0	[1]	M

Table 91: Immediate Alert Client, Minor Versions (X.Y.Z)

Table number reserved but not yet in use

1.7.2 Service dependencies

Table 92: Immediate Alert Client, Service Dependencies

Prerequisite: HAP 1/4 “Immediate Alert Client (IAC)”

Item	Service	Reference	Status	Inter-Layer Dependency
1	Immediate Alert Service (IAS)	[1] 6.1	M	[14] IAS

2 References

- [1] Hearing Access Profile, Version 1.0
- [2] ICS Proforma for Generic Attribute Profile (GATT)
- [3] ICS Proforma for Bluetooth Low Energy Link Layer Protocol Specification
- [4] ICS Proforma for Generic Access Profile (GAP)
- [5] ICS Proforma for Security Manager (SM)
- [6] ICS Proforma for Volume Control Profile (VCP)
- [7] ICS Proforma for Microphone Control Profile (MICP)
- [8] ICS Proforma for Coordinated Set Identification Profile (CSIP)
- [9] ICS Proforma for Coordinated Set Identification Service (CSIS)
- [10] ICS Proforma for Call Control Profile (CCP)
- [11] ICS Proforma for Basic Audio Profile (BAP)
- [12] ICS Proforma for Common Audio Profile (CAP)
- [13] ICS Proforma for Hearing Access Service (HAS)
- [14] ICS Proforma for Immediate Alert Service (IAS)

3 Revision history and acknowledgments

Revision History

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0	p0	2022-06-14	HAP v1.0 adopted by the BoD on 2022-06-07. Prepared for initial publication.
	p1r00–r01	2022-07-28 – 2022-11-21	TSE 19154 (rating 2): Updated Status for 1/1 and updated C.1 and C.2 for Table 1. Consistency checker editorials.
1	p1	2023-02-07	Approved by BTI on 2022-12-19. Prepared for TCRL 2022-2 publication.

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