Headset Profile (HSP)

***Bluetooth*® Test Suite**

- **Revision:** HSP.TS.p12
- **Revision Date:** 2025-02-18
- **Prepared By:** BTI
- **Published during TCRL:** TCRL.2025-1

Contents

1 Scope

This Bluetooth document contains the Test Suite Structure (TSS) and test cases to test the implementation of the Bluetooth Headset Profile Specification with the objective to provide a high probability of air interface interoperability between the tested implementation and other manufacturers' Bluetooth devices.

2 References, definitions, and abbreviations

2.1 References

This document incorporates provisions from other publications by dated or undated reference. These references are cited at the appropriate places in the text, and the publications are listed hereinafter. Additional definitions and abbreviations can be found in [1] and [4].

[1] Bluetooth Core Specification, Version 2.0 or later

[2] Headset Profile Specification, Version 1.1 or later

[3] ICS Proforma for Headset Profile (HSP)

[4] Test Strategy and Terminology Overview

[5] Headset Profile Specification, Version 1.2 or later

[6] SDP Test Suite, SDP.TS

2.2 Definitions

In this Bluetooth document, the definitions from [1] and [4] apply.

Terms	Definition
Standby mode	a) For the HS: no connection to the AG b) For the AG: no active call and no connection to the HS

Table 2.1: Definitions

2.3 Acronyms and abbreviations

In this Bluetooth document, the definitions, acronyms, and abbreviations from [1] and [4] apply.

3 Test Suite Structure (TSS)

3.1 Test Strategy

The test objectives are to verify the functionality of the Headset Profile within a Bluetooth Host and enable interoperability between Bluetooth Hosts on different devices. The testing approach covers mandatory and optional requirements in the specification and matches these to the support of the IUT as described in the ICS. Any defined test herein is applicable to the IUT if the ICS logical expression defined in the Test Case Mapping Table (TCMT) evaluates to true.

The test equipment provides an implementation of the Radio Controller and the parts of the Host needed to perform the test cases defined in this Test Suite. A Lower Tester acts as the IUT's peer device and interacts with the IUT over-the-air interface. The configuration, including the IUT, needs to implement similar capabilities to communicate with the test equipment. For some test cases, it is necessary to stimulate the IUT from an Upper Tester. In practice, this could be implemented as a special test interface, a Man Machine Interface (MMI), or another interface supported by the IUT.

This Test Suite contains Valid Behavior (BV) tests complemented with Invalid Behavior (BI) tests where required. The test coverage mirrored in the Test Suite Structure is the result of a process that started with catalogued specification requirements that were logically grouped and assessed for testability enabling coverage in defined test purposes.

3.2 Test groups

The following test groups have been defined:

- Generic SDP Integrated Tests
- Audio connection establishment
- Audio connection release
- Audio connection transfer
- Remote audio volume control

3.2.1 Initialization

Before performing any test cases, an initialization procedure between the HS and the AG has to be performed to ensure that the devices have stored the information with which device they have to interoperate while performing the headset profile. As this procedure depends on the implementation and capabilities of the devices and is not part of the Headset Profile Specification, it is not covered by any test case. For all test cases, it is assumed as a general precondition that this initialization has been performed for this pair of devices.

4 Test cases (TC)

4.1 Introduction

4.1.1 Test case identification conventions

Test cases are assigned unique identifiers per the conventions in [4]. The convention used here is:
<spec abbreviation>/<IUT role>/<class>/**<feat>**/<func>/<subfunc>/<cap>/**<xx>-<nn>-<y>**.

Additionally, testing of this specification includes tests from the SDP Test Suite [6] referred to as Generic SDP Integrated Tests (GSIT); when used, the test cases in GSIT are referred to through a TCID string using the following convention:
<spec abbreviation>/<IUT role>/<GSIT test group>/< GSIT class >/<xx>-<nn>-<y>.

Identifier Abbreviation	**Spec Identifier <spec abbreviation>**
HSP	Headset Profile
Identifier Abbreviation	**Role Identifier <IUT role>**
AG	Audio Gateway role
HS	Headset role
Identifier Abbreviation	**Reference Identifier <GSIT test group>**
CGSIT	Client Generic SDP Integrated Tests
SGSIT	Server Generic SDP Integrated Tests
Identifier Abbreviation	**Reference Identifier <GSIT class>**
ATTR	Attribute
OFFS	Attribute ID Offset String
SERR	Service Record
SFC	SDP Future Compatibility
Identifier Abbreviation	**Feature Identifier <feat>**
ACR	Audio Connection Release
ACT	Audio Connection Transfer
AG	Audio Gateway role
HS	Headset role
HSP	Headset Profile
IAC	Incoming Audio Connection Establishment
OAC	Outgoing Audio Connection Establishment
RAV	Remote Audio Volume Control

Table 4.1: HSP TC feature naming conventions

4.1.2 Conformance

When conformance is claimed for a particular specification, all capabilities are to be supported in the specified manner. The mandated tests from this Test Suite depend on the capabilities to which conformance is claimed.

The Bluetooth Qualification Program may employ tests to verify implementation robustness. The level of implementation robustness that is verified varies from one specification to another and may be revised for cause based on interoperability issues found in the market.

Such tests may verify:

- That claimed capabilities may be used in any order and any number of repetitions not excluded by the specification
- That capabilities enabled by the implementations are sustained over durations expected by the use case
- That the implementation gracefully handles any quantity of data expected by the use case
- That in cases where more than one valid interpretation of the specification exists, the implementation complies with at least one interpretation and gracefully handles other interpretations
- That the implementation is immune to attempted security exploits

A single execution of each of the required tests is required to constitute a Pass verdict. However, it is noted that to provide a foundation for interoperability, it is necessary that a qualified implementation consistently and repeatedly pass any of the applicable tests.

In any case, where a member finds an issue with the test plan generated by the Bluetooth SIG qualification tool, with the test case as described in the Test Suite, or with the test system utilized, the member is required to notify the responsible party via an erratum request such that the issue may be addressed.

4.1.3 Pass/Fail verdict conventions

Each test case has an Expected Outcome section. The IUT is granted the Pass verdict when all the detailed pass criteria conditions within the Expected Outcome section are met.

The convention in this Test Suite is that, unless there is a specific set of fail conditions outlined in the test case, the IUT fails the test case as soon as one of the pass criteria conditions cannot be met. If this occurs, then the outcome of the test is a Fail verdict.

4.2 Generic SDP Integrated Tests

4.2.1 Server Generic SDP Integrated Tests

4.2.1.1 Headset Profile – Headset

Execute the Generic SDP Integrated Tests defined in Section 6.3, Server test procedures (SGSIT), in [6] using Table 4.2 below as input:

TCID	Reference	Attribute ID name	Attribute ID definition source (Universal, Profile)	Value/secondary value	Attribute presence (Present/Present for [role], Optionally present, TCMT defined)
HSP/HS/SGSIT/SERR/BV-02-C [Service record GSIT – HSP 1.2 HS]	[2] 5.3	ServiceClassIDList	Universal	“Headset – HS” (UUID), “Headset” (UUID), “Generic Audio” (UUID)	TCMT defined
HSP/HS/SGSIT/ATTR/BV-01-C [Attribute GSIT – Protocol Descriptor List]	[2] 5.3	ProtocolDescriptorList	Universal	“L2CAP” (UUID), “RFCOMM” (UUID): Server Channel – skip (Uint8)	Present for HS
HSP/HS/SGSIT/ATTR/BV-03-C [Attribute GSIT – Bluetooth Profile Descriptor List, HSP 1.2]	[2] 5.3	BluetoothProfileDescriptorList	Universal	“Headset” (UUID): Version – “0x0102” (Uint16)	TCMT defined
HSP/HS/SGSIT/ATTR/BV-04-C [Attribute GSIT – Remote Audio Volume Control]	[2] 5.3	Remote Audio Volume Control	Profile	skip (Boolean)	Optionally present

Table 4.2: Input for the Headset Profile Headset SGSIT SDP test procedure

4.2.1.2 Headset Profile – Audio Gateway

Execute the Generic SDP Integrated Tests defined in Section 6.3, Server test procedures (SGSIT), in [6] using Table 4.3 below as input:

TCID	Reference	Attribute ID name	Attribute ID definition source (Universal, Profile)	Value/secondary value	Attribute presence (Present/Present for [role], Optionally present, TCMT defined)
HSP/AG/SGSIT/SERR/BV-03-C [Service record GSIT – HSP AG]	[2] 5.3	ServiceClassIDList	Universal	"Headset Audio Gateway" (UUID), "Generic Audio" (UUID)	Present for AG
HSP/AG/SGSIT/ATTR/BV-05-C [Attribute GSIT – Protocol Descriptor List]	[2] 5.3	ProtocolDescriptorList	Universal	"L2CAP" (UUID), "RFCOMM" (UUID): Server Channel – skip (Uint8)	Present for AG
HSP/AG/SGSIT/ATTR/BV-07-C [Attribute GSIT – Bluetooth Profile Descriptor List, HSP 1.2]	[2] 5.3	BluetoothProfileDescriptorList	Universal	"Headset" (UUID): Version – "0x0102" (Uint16)	TCMT defined

Table 4.3: Input for the Headset Profile Audio Gateway SGSIT SDP test procedure

4.2.1.3 Headset Profile – Attribute ID Offset String tests

Execute the Generic SDP Integrated Tests defined in Section 6.3, Server test procedures (SGSIT), in [6] using Table 4.4 below as input:

TCID	Reference	ServiceSearchPattern	Attribute ID name	Attribute ID Offset	Attribute presence (Present/Present for [role], Optionally present, TCMT defined)
HSP/HS/SGSIT/OFFS/BV-01-C [Attribute ID Offset String GSIT – Service Name]	[2] 5.3	Headset, Headset – HS	ServiceName	0x0000	Optionally present
HSP/AG/SGSIT/OFFS/BV-02-C [Attribute ID Offset String GSIT – Service Name]	[2] 5.3	Headset Audio Gateway	ServiceName	0x0000	Optionally present

Table 4.4: Input for the Headset Profile SGSIT Attribute ID Offset String tests

4.2.2 Client Generic SDP Integrated Tests

Execute the Generic SDP Future Compatibility Tests defined in Section 6.4, Client test procedures (CGSIT), in [6] using Table 4.5 below as input:

TCID	Reference	Service Record Service Class UUID description	Lower Tester SDP record initial conditions
HSP/HS/CGSIT/SFC/BV-01-C [SDP Future Compatibility – IUT is HSP HS]	[2] 5.3	Headset Audio Gateway	The Lower Tester exposes an HSP AG SDP record. The version in the Bluetooth Profile Descriptor List is greater than the most recently adopted version.
HSP/AG/CGSIT/SFC/BV-02-C [SDP Future Compatibility – IUT is HSP AG]	[2] 5.3	Headset, Headset – HS	The Lower Tester exposes an HSP HS SDP record. The version in the Bluetooth Profile Descriptor List is greater than the most recently adopted version.

Table 4.5: Input for the Client CGSIT SDP future compatibility tests

4.3 Audio connection establishment

Verify the audio connection establishment.

4.3.1 Incoming audio connection establishment

Verify the connection establishment initiated from the audio gateway.

4.3.1.1 Incoming connection establishment – AG

- Test Purpose

  Verify that a complete audio connection can be established between the AG and the HS where the AG initiates the incoming connection.

- Reference

  [2] 4.2

- Initial Condition

  - Both devices are initialized (see Section 3.2.1).
  - Both devices are in standby mode.
  - Configure the AG to pass an incoming call/audio connection to the HS.

- Test Case Configuration

Test Case
HSP/HS/IAC/BV-01-C [Incoming connection establishment – AG]
HSP/AG/IAC/BV-01-C [Incoming connection establishment – AG]

Table 4.6: Incoming connection establishment – AG test cases

- Test Procedure

  1. Initiate a call/audio connection to the AG from a test device.
  2. Either the HS or the AG is alerted. Accept the incoming connection by the corresponding user action (e.g., press button) at the HS.

- Expected Outcome

  Pass verdict

  If an alert is provided to the HS IUT, the followed user action on the HS establishes the call/audio connection, and bi-directional conversation or any other intended audio application is possible.

  If no alert is provided, the call/audio connection is established without any further user action, and bi-directional conversation or any other intended audio application is possible.

  In the case where the AG has opened an SCO connection with in-band ring tone before sending the RING command, the HS may provide no other alert besides the playback of in-band ring. User action on the HS establishes the call/audio connection, and bi-directional conversation or any other intended audio application is possible.

  A call/audio connection is established.

4.3.1.2 Incoming connection establishment – inband ring

- Test Purpose

  Verify that, if supported and provided by the AG, the HS gives an in-band ringing tone during connection establishment initiated from the AG.

- Reference

  [2] 4.2

- Initial Condition

  - Both devices are initialized (see Section 3.2.1).
  - Both devices are in standby mode.
  - The AG is configured to provide an in-band ring tone.

- Test Case Configuration

Test Case
HSP/HS/IAC/BV-02-C [Incoming connection establishment – inband ring]
HSP/AG/IAC/BV-02-C [Incoming connection establishment – inband ring]

Table 4.7: Incoming connection establishment – inband ring test cases

- Test Procedure

  1. Initiate a call/audio connection to the AG from a test device.
  2. Upon alerting in the HS earpiece, establish the connection by the corresponding user action (e.g., press button) at the HS.

- Expected Outcome

  Pass verdict

  Upon the call/audio connection initiation to the AG, the HS alerts the user.

  The followed user action on the HS IUT establishes the call/audio connection, and bi-directional conversation is possible.

  No RING unsolicited response code is sent by the AG.

  A call/audio connection is established.

4.3.2 Outgoing audio connection establishment

Verify the connection establishment initiated from the headset.

4.3.2.1 Outgoing connection establishment – HS

- Test Purpose

  Verify that a complete audio connection is established correctly, initiated from the HS to the AG.

- Reference

  [2] 4.2

- Initial Condition
  - Both devices are initialized (see Section 3.2.1).
  - Both devices are in standby mode.
  - The AG has to be prepared for establishing outgoing connections upon user action on the HS (e.g., last dialed or pre-programmed number). The manufacturer must state which options for determination of the number are implemented. It is sufficient to test with one of these.
- Test Case Configuration

Test Case
HSP/HS/OAC/BV-01-C [Outgoing connection establishment – HS]
HSP/AG/OAC/BV-01-C [Outgoing connection establishment – HS]

Table 4.8: Outgoing connection establishment – HS test cases

- Test Procedure

  1. Initiate the user action (e.g., press button) on the HS to establish an outgoing call/audio connection.

- Expected Outcome

  Pass verdict

  The user action on the HS establishes the call/audio connection, and bi-directional conversation is possible.

  A call/audio connection is established with the AG.

4.4 Audio connection release

Verify the connection release.

4.4.1 Audio connection release Initiated from the HS

Verify the connection release initiated from the HS.

4.4.1.1 Audio connection release – HS

- Test Purpose

  Verify that a connection release initiated from the headset is successfully accepted by the AG.

- Reference

  [2] 4.4

  [5] 4.5

- Initial Condition
  - Both devices are initialized (see Section 3.2.1).
  - A call/audio connection is active.

- Test Case Configuration

Test Case
HSP/HS/ACR/BV-01-C [Audio connection release – HS]
HSP/AG/ACR/BV-01-C [Audio connection release – HS]

Table 4.9: Audio connection release – HS test cases

- Test Procedure

  1. Initiate the user action (e.g., press button) on the HS to release the connection.

- Expected Outcome

  Pass verdict

  The HS sends an AT+CKPD=200 command to the AG.

  The AG releases the call/audio connection.

4.4.2 Audio connection release initiated from the AG

Verify the connection release initiated from the AG.

4.4.2.1 Audio connection release – AG

- Test Purpose

  Verify that an audio connection release initiated on the AG is successful.

- Reference

  [2] 4.4

  [5] 4.5

- Initial Condition

  - Both devices are initialized (see Section 3.2.1).
  - A call/audio connection is active.

- Test Case Configuration

Test Case
HSP/HS/ACR/BV-02-C [Audio connection release – AG]
HSP/AG/ACR/BV-02-C [Audio connection release – AG]

Table 4.10: Audio connection release – AG test cases

- Test Procedure

  1. Initiate the user action or internal event on the AG to release the connection.

- Expected Outcome

  Pass verdict

  The user action on the AG releases the call/audio connection.

4.5 Audio connection transfer

Verify the audio connection transfer.

4.5.1 Audio connection transfer from AG to HS

Verify the audio connection transfer from the AG to the HS.

4.5.1.1 Connection transfer – HS initiated

- Test Purpose

  Verify that an audio connection transfer is performed from the AG to the HS initiated by a user action on the HS.

- Reference

  [2] 4.5.1

  [5] 4.6.1

- Initial Condition

  - Both devices are initialized (see Section 3.2.1).
  - The HS is in standby mode.
  - A call/audio connection is active at the AG.

- Test Case Configuration

Test Case
HSP/HS/ACT/BV-01-C [Connection transfer – HS initiated]
HSP/AG/ACT/BV-01-C [Connection transfer – HS initiated]

Table 4.11: Connection transfer – HS initiated test cases

- Test Procedure

  1. Initiate the user action (e.g., press button) on the HS to transfer the audio connection from the AG to the HS.

- Expected Outcome

  Pass verdict

  The user action on the HS transfers the audio connection from the AG to the HS.

  The call/audio connection is ongoing on the HS.

- Notes

  There is no dependency in this test case on the state of the AG's connection status with external entities.

  The AG as IUT initial condition of the 'available call/audio connection' can be met in different ways. For a cellular phone, the available connection may be an external call. For a PC, the available connection may be to an audio application that may or may not have audio I/O on the PC.

4.5.2 Audio connection transfer from HS to AG

Verify the audio connection transfer initiated by a user action on the AG.

4.5.2.1 Connection transfer – AG initiated

- Test Purpose

  Verify that an audio connection transfer is performed from the HS to the AG initiated by a user action on the AG.

- Reference

  [2] 4.5.1

  [5] 4.6.1

- Initial Condition

  - Both devices are initialized (see Section 3.2.1).
  - A call/audio connection between the AG and the HS is ongoing.

- Test Case Configuration

Test Case
HSP/HS/ACT/BV-02-C [Connection transfer – AG initiated]
HSP/AG/ACT/BV-02-C [Connection transfer – AG initiated]

Table 4.12: Connection transfer – AG initiated test cases

- Test Procedure

  1. Initiate the user action (e.g., press button) on the AG to transfer the audio connection from the HS to the AG.

- Expected Outcome

  Pass verdict

  The user action on the AG transfers the audio connection from the HS to the AG.

  The HS returns to standby mode.

  The call/audio connection is available at the AG.

- Notes

  There is no dependency in this test case on the state of the AG's connection status with external entities.

  The final state of 'available call/audio connection' can be achieved by an AG IUT in different ways. For a cellular phone, the available connection may be an external call. For a PC, the available connection may be to an audio application that may or may not have audio I/O on the PC.

4.6 Remote audio volume control

Verify that the microphone and speaker gain control of the headset.

4.6.1 Remote speaker volume control

Verify that the speaker gains control of the headset.

4.6.1.1 Speaker volume control – remote/local

- Test Purpose

  Verify that the speaker volume control of the headset if remote and local speaker volume control is supported.

- Reference

  [2] 4.6

  [5] 4.7

- Initial Condition

  - Both devices are initialized (see Section 3.2.1).
  - A call/audio connection is active.

- Test Case Configuration

Test Case
HSP/HS/RAV/BV-01-C [Speaker volume control – remote/local]
HSP/AG/RAV/BV-01-C [Speaker volume control – remote/local]

Table 4.13: Speaker volume control – remote/local test cases

- Test Procedure

  1. Initiate the user action (e.g., press button) on the AG to set the speaker volume on the HS to a level significantly higher than the nominal level.
  2. Initiate the user action (e.g., press button) on the HS to decrease the speaker volume to a level significantly lower than the nominal level.
  3. Initiate the user action (e.g., press button) on the AG to increase the speaker volume on the HS to the nominal level.

- Expected Outcome

  Pass verdict

  The user actions on the HS and the AG result in the respective speaker volume settings.

4.6.1.2 Speaker volume control – remote

- Test Purpose

  Verify that the speaker volume control of the headset if remote speaker volume control is supported.

- Reference

  [2] 4.6

  [5] 4.7

- Initial Condition
  - Both devices are initialized (see Section 3.2.1).
  - A call/audio connection is active.
- Test Case Configuration

Test Case
HSP/HS/RAV/BV-02-C [Speaker volume control – remote]
HSP/AG/RAV/BV-02-C [Speaker volume control – remote]

Table 4.14: Speaker volume control – remote test cases

- Test Procedure

1. Initiate the user action (e.g., press button) on the AG to set the speaker volume on the HS to the maximum level.
2. Initiate the user action (e.g., press button) on the AG to set the speaker volume on the HS to the minimum level.

- Expected Outcome

Pass verdict

The user actions on the HS and the AG result in the respective speaker volume settings.

4.6.1.3 Speaker volume control – store settings

- Test Purpose

Verify that if storing the speaker volume settings in the HS is supported, the correct settings are used when establishing a new connection.

- Reference

[2] 4.6

[5] 4.7

- Initial Condition
  - Both devices are initialized (see Section 3.2.1).
  - A call/audio connection is active.
- Test Case Configuration

Test Case
HSP/HS/RAV/BV-03-C [Speaker volume control – store settings]
HSP/AG/RAV/BV-03-C [Speaker volume control – store settings]

Table 4.15: Speaker volume control – store settings test cases

- Test Procedure

1. Set the volume control to a value significantly different from the nominal volume either by the HS or the AG.
2. Release the connection either by the HS or the AG.
3. Establish a new connection to the HS either by the HS or the AG.

- Expected Outcome

  Pass verdict

  After establishing the new connection, the speaker volume is restored to the value that was set before releasing the call/audio connection.

  The user may be notified of the restored volume level after establishing the new call/audio connection.

4.6.2 Remote microphone gain control

Verify that the microphone gains control of the headset.

4.6.2.1 Microphone gain control – remote/local

- Test Purpose

  Verify that the microphone gain control of the headset if remote and local microphone gain control is supported.

- Reference

  [2] 4.6

  [5] 4.7

- Initial Condition

  - Both devices are initialized (see Section 3.2.1).
  - A call/audio connection is active.

- Test Case Configuration

Test Case
HSP/HS/RAV/BV-04-C [Microphone gain control – remote/local]
HSP/AG/RAV/BV-04-C [Microphone gain control – remote/local]

Table 4.16: Microphone gain control – remote/local test cases

- Test Procedure

  1. Initiate the user action (e.g., press button) on the AG to set the microphone gain on the HS to the maximum level.
  2. Initiate the user action (e.g., press button) on the HS to set the microphone gain to the nominal level.
  3. Initiate the user action (e.g., press button) on the AG to set the microphone gain on the HS to the minimum level.

- Expected Outcome

  Pass verdict

  The user actions on the HS and the AG result in the respective microphone gain settings.

4.6.2.2 Microphone gain control – remote

- Test Purpose

  Verify that the microphone gain control of the headset if remote microphone gain control is supported.

- Reference

  [2] 4.6

  [5] 4.7

- Initial Condition

  - Both devices are initialized (see Section 3.2.1).
  - A call/audio connection is active.

- Test Case Configuration

Test Case
HSP/HS/RAV/BV-05-C [Microphone gain control – remote]
HSP/AG/RAV/BV-05-C [Microphone gain control – remote]

Table 4.17: Microphone gain control – remote test cases

- Test Procedure

  1. Initiate the user action (e.g., press button) on the AG to set the microphone gain on the HS to the maximum level.
  2. Initiate the user action (e.g., press button) on the AG to set the microphone gain on the HS to the minimum level.

- Expected Outcome

  Pass verdict

  The user actions on the AG result in the respective microphone gain settings on the HS.

- Notes

  Due to automatic gain control, it might be impossible to examine and evaluate the result.

4.6.2.3 Microphone gain control – store settings

- Test Purpose

  Verify that if storing the microphone gain settings in the HS is supported, the correct settings are used when establishing a new connection.

- Reference

  [2] 4.6

  [5] 4.7

- Initial Condition

  - Both devices are initialized (see Section 3.2.1).
  - A call/audio connection is active.

- Test Case Configuration

Test Case
HSP/HS/RAV/BV-06-C [Microphone gain control – store settings]
HSP/AG/RAV/BV-06-C [Microphone gain control – store settings]

Table 4.18: Microphone gain control – store settings test cases

- Test Procedure

  1. Set the microphone gain control to a value significantly different from the nominal level either by the HS or the AG.
  2. Release the connection either by the HS or the AG.
  3. Establish a new connection to the HS either by the HS or the AG.

- Expected Outcome

  Pass verdict

  After establishing the new connection, the microphone gain is restored to the value that was set before releasing the call/audio connection.

  The user may be notified of the restored volume level after establishing the new call/audio connection.

- Notes

  Due to automatic gain control, it might be impossible to examine and evaluate the result.

5 Test case mapping

The Test Case Mapping Table (TCMT) maps test cases to specific requirements in the ICS. The IUT is tested in all roles for which support is declared in the ICS document.

The columns for the TCMT are defined as follows:

Item: Contains a logical expression based on specific entries from the associated ICS document. Contains a logical expression (using the operators AND, OR, NOT as needed) based on specific entries from the applicable ICS document(s). The entries are in the form of y/x references, where y corresponds to the table number and x corresponds to the feature number as defined in the ICS document for Headset Profile (HSP) [3].

If a test case is mandatory within the respective layer, then the y/x reference is omitted.

Feature: A brief, informal description of the feature being tested.

Test Case(s): The applicable test case identifiers are required for Bluetooth Qualification if the corresponding y/x references defined in the Item column are supported. Further details about the function of the TCMT are elaborated in [4].

For the purpose and structure of the ICS/IXIT, refer to [4].

Item	Feature	Test Case(s)
HSP 0/2 AND HSP 1/1	HSP AG SDP Service, HSP 1.2	HSP/AG/SGSIT/ATTR/BV-07-C
HSP 1/1	HSP AG SDP Service	HSP/AG/SGSIT/SERR/BV-03-C HSP/AG/SGSIT/ATTR/BV-05-C HSP/AG/SGSIT/OFFS/BV-02-C HSP/AG/CGSIT/SFC/BV-02-C
HSP 0/2 AND HSP 1/2	HSP HS SDP Service, HSP 1.2	HSP/HS/SGSIT/SERR/BV-02-C HSP/HS/SGSIT/ATTR/BV-03-C
HSP 1/2	HSP HS SDP Service	HSP/HS/SGSIT/ATTR/BV-01-C HSP/HS/SGSIT/ATTR/BV-04-C HSP/HS/SGSIT/OFFS/BV-01-C HSP/HS/CGSIT/SFC/BV-01-C
HSP 2/1	Incoming audio connection establishment	HSP/AG/IAC/BV-01-C
HSP 3/1	Incoming audio connection establishment	HSP/HS/IAC/BV-01-C
HSP 2/3	Inband ring tone	HSP/AG/IAC/BV-02-C
HSP 3/3	Inband ring tone	HSP/HS/IAC/BV-02-C
HSP 2/4	Outgoing audio connection establishment	HSP/AG/OAC/BV-01-C
HSP 3/4	Outgoing audio connection establishment	HSP/HS/OAC/BV-01-C
HSP 2/5	Audio connection release from HS	HSP/AG/ACR/BV-01-C
HSP 3/5	Audio connection release from HS	HSP/HS/ACR/BV-01-C
HSP 2/6	Audio connection release from AG	HSP/AG/ACR/BV-02-C
HSP 3/6	Audio connection release from AG	HSP/HS/ACR/BV-02-C
HSP 2/7	Audio connection transfer: AG to HS	HSP/AG/ACT/BV-01-C
HSP 3/7	Audio connection transfer: AG to HS	HSP/HS/ACT/BV-01-C
HSP 2/8	Audio connection transfer: HS to AG	HSP/AG/ACT/BV-02-C
HSP 3/8	Audio connection transfer: HS to AG	HSP/HS/ACT/BV-02-C

Item	Feature	Test Case(s)
HSP 2/9	Remote audio volume control	HSP/AG/RAV/BV-02-C
HSP 3/9	Remote audio volume control	HSP/HS/RAV/BV-02-C
HSP 2/10	Local audio volume control	HSP/AG/RAV/BV-01-C
HSP 3/10	Local audio volume control	HSP/HS/RAV/BV-01-C
HSP 2/11	Audio volume setting storage	HSP/AG/RAV/BV-03-C
HSP 3/11	Audio volume setting storage	HSP/HS/RAV/BV-03-C
HSP 2/12	Remote microphone gain control	HSP/AG/RAV/BV-05-C
HSP 3/12	Remote microphone gain control	HSP/HS/RAV/BV-05-C
HSP 2/13	Local microphone gain control	HSP/AG/RAV/BV-04-C
HSP 3/13	Local microphone gain control	HSP/HS/RAV/BV-04-C
HSP 2/14	Microphone gain setting storage	HSP/AG/RAV/BV-06-C
HSP 3/14	Microphone gain setting storage	HSP/HS/RAV/BV-06-C

Table 5.1: Test case mapping

6 Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
0	1.1	2001-07-02	First version for Specification 1.1
	1.1b	2002-03-12	Includes changes described in Test_Spec_PartK6_1_1_Addendum_Sep02 and ESR 01
1	1.1.1	2004-07-08	Incorporated TSE 402 for TC HSP/AG/IAC/BV-01-I, HSP/HS/IAC/BV-01-I, HSP/AG/IAC/BV-02-I, HSP/HS/IAC/BV-02-I, HSP/AG/OAC/BV-01-I, and HSP/HS/OAC/BV-01-I (legacy test case IDs TP/IAC/BV-01-I, TP/IAC/BV-02-I, and TP/OAC/BV-01-I) Incorporated TSE 424 for TC TP/ACR/BV-03-I Incorporated TSE 446 for TC TP/ACR/BV-03-I and TCMT Incorporated TSE 447 for the TCMT Updated Revision History table, Contributors table, and Disclaimer and Copyright Notice.
	1.2	2004-08-11	Changed revision numbering methodology Incorporated review comments
	1.2r1	2004-08-25	Edits to the TCMT, editorial and to correct the reference to HSP ICS document.
	1.2r2	2004-08-26	Added parentheses to TCMT entry for added clarity.
	1.1.2r1	2005-01-06	Editorial and format change. Changed document numbering scheme. Incorporated TSE 399 for HSP/AG/ACT/BV-01-I, HSP/HS/ACT/BV-01-I, HSP/AG/ACT/BV-02-I, and HSP/HS/ACT/BV-02-I (legacy test case IDs TP/ACT/BV-01-I and TP/ACT/BV-02-I). Incorporated TSE 568 for HSP/AG/IAC/BV-01-I, HSP/HS/IAC/BV-01-I, HSP/AG/IAC/BV-02-I, HSP/HS/IAC/BV-02-I, HSP/AG/OAC/BV-01-I, and HSP/HS/OAC/BV-01-I (legacy test case IDs TP/IAC/BV-01-I, TP/IAC/BV-02-I, and TP/OAC/BV-01-I).
2	1.1.2	2005-01-25	Final update after review.
	1.1.3r0	2008-02-01	TSE 2452: HSP/AG/IAC/BV-02-I, HSP/HS/IAC/BV-02-I (legacy test case ID TP/IAC/BV-02-I): new pass verdict
3	1.1.3	2008-04-01	Prepare for publication.
	1.1.4r0	2008-11-26	Remove PARK state testing as this is removed from the profile spec
4	1.2.4	2008-12-04	Prepare for publication.
	1.2.5r0	2009-04-28	TSE 2767: HSP/AG/RAV/BV-05-I, HSP/HS/RAV/BV-05-I (legacy test case ID TP/RAV/BV-05-I): Expected outcome change
5	1.2.5	2009-08-10	Prepare for publication.

Publication Number	Revision Number	Date	Comments
	1.2.6r0	2011-01-06	TSE 3102: HSP/AG/IAC/BV-01-I, HSP/HS/IAC/BV-01-I (legacy test case ID TP/IAC/BV-01-I): Pass verdict TSE 3184: TP/PAR/BV-01-I, TP/PAR/BV-02-I, TP/PAR/BV-03-I: Remove from TCMT (and TCRL) TSE 3825: See TSE 3184: Same resolution.
	1.2.6r1	2011-02-10	Reflects Magnus's change to HSP/AG/IAC/BV-01-I, HSP/HS/IAC/BV-01-I (legacy test case ID TP/IAC/BV-01-I)
6	1.2.6	2011-07-21	Prepare for publication.
7	1.2.7	2012-03-30	Prepare for publication.
	1.2.8r1	2013-05-01	Updated Disclaimer and Copyright Notice to 2013. TSE 5038: Updated title from "Headset Profile (HSP) Specification 1.2" to "Headset Profile (HSP) Test Specification 1.1-1.2" Added Reference [4], Specification of the Bluetooth System v1.2 or later" Added references to sections in [4] to the following test cases: HSP/AG/ACR/BV-01-I, HSP/HS/ACR/BV-01-I, HSP/AG/ACR/BV-02-I, HSP/HS/ACR/BV-02-I, HSP/AG/ACT/BV-01-I, HSP/HS/ACT/BV-01-I, HSP/AG/ACT/BV-02-I, HSP/HS/ACT/BV-02-I, HSP/AG/RAV/BV-01-I, HSP/HS/RAV/BV-01-I, HSP/AG/RAV/BV-02-I, HSP/HS/RAV/BV-02-I, HSP/AG/RAV/BV-03-I, HSP/HS/RAV/BV-03-I, HSP/AG/RAV/BV-04-I, HSP/HS/RAV/BV-04-I, HSP/AG/RAV/BV-05-I, HSP/HS/RAV/BV-05-I, HSP/AG/RAV/BV-06-I, and HSP/HS/RAV/BV-06-I (legacy test case IDs TP/ACR/BV-01-I, TP/ACR/BV-02-I, TP/ACT/BV-01-I, TP/ACT/BV-02-I, TP/RAV/BV-01-C, TP/RAV/BV-02-C, TP/RAV/BV-03-C, TP/RAV/BV-04-C, TP/RAV/BV-05-C, and TP/RAV/BV-06-C).
8	1.2.8	2013-07-02	Prepare for Publication.
	1.2.9r01	2013-09-30	TSE 5305: Updates in 5.3.1 test subgroups objectives. Updated test in HSP/AG/ACR/BV-01-I, HSP/HS/ACR/BV-01-I, HSP/AG/ACR/BV-02-I, and HSP/HS/ACR/BV-02-I (legacy test case IDs TP/ACR/BV-01-I, and TP/ACR/BV-02-I).
	1.2.9r02	2013-10-22	Review by Siegfried
9	1.2.9	2013-12-03	Prepare for Publication
	1.2.10r00	2016-10-03	Converted to new Test Case ID conventions as defined in TSTO v4.1.
	1.2.10r01	2016-11-02	Converted to current template.
10	1.2.10	2016-12-13	Approved by BTI. Prepared for TCRL 2016-2 publication.

Publication Number	Revision Number	Date	Comments
	p11r00–r03	2023-10-23 – 2024-04-01	TSE 23912 (rating 1): Converted -I tests to -C tests as appropriate; updated the TCMT and TCRL accordingly. TSE 24530 (rating 4): Added a new GSIT section with new TCs HSP/AG/CGSIT/SFC/BV-02-C, HSP/AG/SGSIT/ATTR/BV-05-C – -07-C, HSP/AG/SGSIT/OFFS/BV-02-C, HSP/AG/SGSIT/SERR/BV-03-C, HSP/HS/CGSIT/SFC/BV-01-C, HSP/HS/SGSIT/ATTR/BV-01-C – -04-C, HSP/HS/SGSIT/OFFS/BV-01-C, and HSP/HS/SGSIT/SERR/BV-01-C and -02-C. Updated the TCMT accordingly. Added a reference to the SDP TS. Updated the Test Groups and TC Conventions sections. Updated the document to align with the latest standards.
11	p11	2024-07-01	Approved by BTI on 2024-05-22. Prepared for TCRL 2024-1 publication.
	p12r00–r01	2024-11-21 – 2024-12-02	TSE 26776 (rating 2): Deleted HSP/HS/SGSIT/SERR/BV-01-C, HSP/HS/SGSIT/ATTR/BV-02-C, and HSP/AG/SGSIT/ATTR/BV-06-C because HSP v1.1 is deprecated. Updated the TCMT accordingly. Updated the TCMT introduction to align with the current TS template.
12	p12	2025-02-18	Approved by BTI on 2024-12-25. Prepared for TCRL 2025-1 publication.

Acknowledgments

Name	Company
Alicia Courtney	Broadcom
Siegfried Lehmann	Cetecom USA
Burch Seymour	Continental Automotive Systems
Stefan Agnani	Ericsson
Martin Roter	Nokia