

# BR/EDR Connection Handover Profile (CHP)

## **Bluetooth® Test Suite**

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# 1 Scope

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This Bluetooth document contains the Test Suite Structure (TSS) and test cases to test the implementation of Bluetooth BR/EDR Connection Handover Profile (CHP) 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 hereafter. Additional definitions and abbreviations can be found in [1], [2], and [3].

- [1] Bluetooth Core Specification, Version 4.2 or later
- [2] Test Strategy and Terminology Overview
- [3] BR/EDR Connection Handover Profile (CHP), Version 1.0
- [4] Transport Discovery Service, Version 1.1
- [5] GATT Test Suite, GATT.TS
- [6] Characteristic and Descriptor descriptions are accessible via the [Bluetooth SIG Assigned Numbers](#)
- [7] ICS Proforma for BR/EDR Connection Handover Profile (CHP)
- [8] IXIT Proforma for BR/EDR Connection Handover Profile (CHP)

### 2.2 Definitions

In this Bluetooth document, the definitions from [1], [2], and [3] apply.

### 2.3 Acronyms and abbreviations

In this Bluetooth document, the definitions, acronyms, and abbreviations from [1], [2], and [3] apply.

## 3 Test Suite Structure (TSS)

### 3.1 Overview

The CHP requires the presence of L2CAP, GAP, SM (for LE), SDP (for BR/EDR), ATT, and GATT. This is illustrated in Figure 3.1.

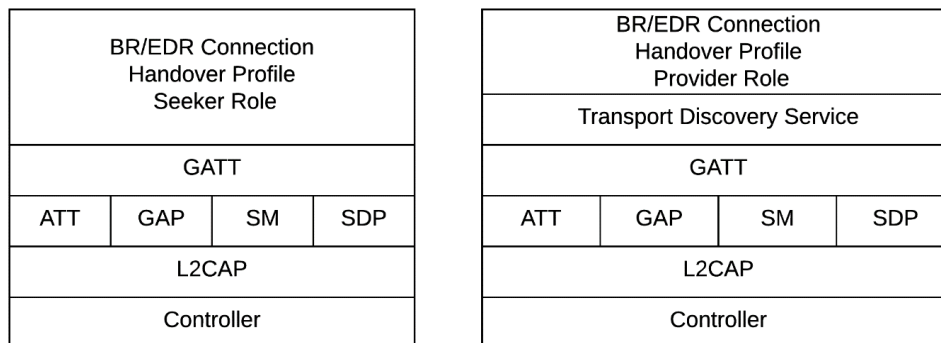


Figure 3.1: BR/EDR Connection Handover Test Models

### 3.2 Test Strategy

The test objectives are to verify functionality of the CHP 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.

### 3.3 Test groups

The following test groups have been defined:

- GATT Integrated Tests
- Seeker Service Discovery Advertising Data
- Configure Indications
- Seeker Service Procedure
- Service Procedure – Error handling
- Provider Advertising Data
- Provider Service Procedure

## 4 Test cases (TC)

### 4.1 Introduction

#### 4.1.1 Test case identification conventions

Test cases are assigned unique identifiers per the conventions in [2]. 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 GATT Test Suite [5] referred to as Generic GATT Integrated Tests (GGIT); when used, the test cases in GGIT are referred through a TCID string using the following convention:

**<spec abbreviation>/<IUT role>/<GGIT test group>/<GGIT class>/<xx>-<nn>-<y>.**

Identifier Abbreviation	Spec Identifier <spec abbreviation>
CHP	BR/EDR Connection Handover Profile
Identifier Abbreviation	Role Identifier <IUT role>
PRO	Provider
SEE	Seeker
Identifier Abbreviation	Reference Identifier <GGIT test group>
CGGIT	Client Generic GATT Integrated Tests
SGGIT	Server Generic GATT Integrated Tests
Identifier Abbreviation	Reference Identifier <GGIT class>
CHA	Characteristic
SER	Service
Identifier Abbreviation	Feature Identifier <feat>
CS	Characteristic Status
PAD	Provide Advertising Data
SDAD	Seeker Discovery Advertising Data
SP	Service Procedures
SPEH	Service Procedures Error Handling

Table 4.1: CHP 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, the outcome of the test is a Fail verdict.

## 4.2 Setup Preambles and Generic Test Sequences

The procedures defined in this section are provided for information, as they are used by test equipment in achieving the initial conditions in certain tests.

### 4.2.1 Set up ATT Bearer over LE Transport

- Preamble Purpose  
Establish an LE transport connection.
- Preamble Procedure
  1. Establish an LE transport connection between the IUT (Seeker) and the Lower Tester (Provider).
  2. Establish an L2CAP channel 0x0004 between the IUT and the Lower Tester over that LE transport.

If the Lower Tester and IUT were not previously bonded, perform a pairing procedure. If the Lower Tester and IUT were previously bonded, re-enable encryption if not already enabled.

### 4.2.2 Set up ATT Bearer over BR/EDR Transport

- Preamble Purpose  
Establish a BR/EDR transport connection.
- Preamble Procedure
  1. Establish a BR/EDR transport connection between the IUT and the Lower Tester.
  2. Establish an L2CAP channel (PSM 0x001F) between the IUT and the Lower Tester over that BR/EDR transport.

### 4.2.3 TDS Control Point

#### 4.2.3.1 Configure TDS Control Point – LE Transport

- Preamble Purpose

This preamble procedure enables the IUT for use with the TDS Control Point.

- Preamble Procedure

1. If a connection exists, it is disconnected.
2. Establish an ATT Bearer connection between the Lower Tester (Provider) and IUT (Seeker) as described in Section 4.2.1.
3. The handle of the TDS Control Point characteristic as well as the handle of the client characteristic configuration descriptor have been previously discovered by the Upper Tester during the test procedures in Section 4.3.1 or are known to the Upper Tester by other means.
4. If the IUT requires bonding, then the Lower Tester performs a bonding procedure.
5. The IUT configures the TDS Control Point Characteristic for indications.

## 4.3 Generic GATT Integrated Tests

### 4.3.1 Client Generic GATT Integrated Tests (CGGIT)

Execute the Generic GATT Integrated Tests defined in Section 6.4 Client test procedures (CGGIT) of [5] using Table 4.2 below as input:

TCID	Service/ Characteristic/ Descriptor	Reference	Properties	Value Length (Octets)	Service Type
CHP/SEE/CGGIT/SER/BV-01-C [Service GGIT – Transport Discovery]	Transport Discovery Service	[3] 4 [4] 2	-	-	Primary Service
CHP/SEE/CGGIT/CHA/BV-02-C [Characteristic GGIT – TDS Control Point]	TDS Control Point	[3] 4, 4.5.1 [4] 4, 4.1	0x28 (Write, Indicate)	Skip	-
CHP/SEE/CGGIT/CHA/BV-03-C [Characteristic GGIT – BR-EDR Handover Data]	BR-EDR Handover Data	[3] 4, 4.5.2 [4] 5, 5.1	0x02 (Read)	10	-
CHP/SEE/CGGIT/CHA/BV-04-C [Characteristic GGIT – Bluetooth SIG Data]	Bluetooth SIG Data	[3] 4, 4.5.3 [4] 5, 5.2	0x00	Skip	-
CHP/SEE/CGGIT/DES/BV-05-C [Descriptor GGIT – Complete BR- EDR Transport Block Data]	Complete BR- EDR Transport Block Data descriptor	[3] 4, 4.5.3 [4] 5, 5.2.1	0x02 (Read)	3 - 29	-

Table 4.2: Input for the GGIT Client Test Procedure

### 4.3.2 Server Generic GATT Integrated Test Cases

Execute the Generic GATT Integrated Tests defined in Section 6.3 Server test procedures (SGGIT) of [5] using Table 4.3 below as input:

TCID	Service/ Characteristic/ Descriptor	Reference	Properties	Value Length (Octets)	Service Type
CHP/PRO/SGGIT/SER/BV-01-C [Service GGIT – Transport Discovery]	Transport Discovery Service	[3] 3 [4] 2	-	-	Primary Service
CHP/PRO/SGGIT/CHA/BV-02-C [Characteristic GGIT – BR-EDR Handover Data]	BR-EDR Handover Data	[3] 3.3 [4] 5, 5.1	0x02 (Read)	10	-
CHP/PRO/SGGIT/CHA/BV-03-C [Characteristic GGIT – Bluetooth SIG Data]	Bluetooth SIG Data	[3] 3.3 [4] 5, 5.2	0x00	Skip	-
CHP/PRO/SGGIT/DES/BV-04-C [Descriptor GGIT – Complete BR- EDR Transport Block Data]	Complete BR- EDR Transport Block Data descriptor	[3] 3.3 [4] 5, 5.2.1	0x02 (Read)	3 - 29	-

Table 4.3: Input for the GGIT Server Test Procedure

## 4.4 Seeker Service Discovery Advertising Data

This test group contains test cases to verify that the Seeker scans for advertisements from compatible Providers and correctly decodes compliant advertising Data.

### CHP/SEE/SDAD/BV-01-C [Transport Discovery Data AD Type Format]

- Test Purpose
 

Verify that the IUT (Seeker) receives valid Transport Discovery Data AD Type data in the advertising packet from the Lower Tester (Provider).
- Reference
 

[3] 4.4
- Initial Condition
  - The Lower Tester is in GAP Peripheral or Broadcaster role and is transmitting connectable advertisements containing the Transport Discovery Data AD Type.
  - The contents of the Transport Discovery Data AD Type to be received are known from the IXIT [8].
- Test Procedure
  1. The Upper Tester orders the IUT to scan for one or more advertising packets containing the Transport Discovery Data AD Type.
  2. The IUT receives one or more advertising packets containing the Transport Discovery Data AD Type and reports it to the Upper Tester.

- Expected Outcome

Pass verdict

The IUT scans, receives, and parses the advertising packets which include the Transport Discovery Data AD type as indicated by the use of Type Code «Transport Discovery Data» and reports it to the Upper Tester.

The format and value meet the requirements of the service and are consistent with the value that is known from the IXIT [8].

### CHP/SEE/SDAD/BV-02-C [Transport Discovery Data AD Type Format – Multiple Transport Blocks]

- Test Purpose

Verify that the IUT (Seeker) receives valid Transport Discovery Data AD Type data in the advertising packet that contain multiple Transport Blocks.

- Reference

[3] 4.4

- Initial Condition

- The Lower Tester is in GAP Peripheral or Broadcaster role and is transmitting connectable advertisements containing the Transport Discovery Data AD Type.
- The contents of at least the first two Transport Blocks of the Transport Discovery Data AD Type to be transmitted are known from the IXIT [8].

- Test Procedure

1. The Upper Tester orders the IUT to scan for advertising packets containing the Transport Discovery Data AD Type.
2. The IUT begins scanning and receives advertising and reports it to the Upper Tester.

- Expected Outcome

Pass verdict

The IUT scans, receives, and parses advertising packets which include the Transport Discovery Data AD type which contain more than one Transport Block and reports it to the Upper Tester.

The values of the first two Transport Blocks received and parsed are consistent with the values that are known from the IXIT [8].

### CHP/SEE/SDAD/BV-03-C [Transport Discovery Data AD Type Transport Data Format]

- Test Purpose

Verify that the IUT (Seeker) parses valid Transport Discovery Data AD Type data received in the advertising packet.

- Reference

[3] 2.3, 4.4.4

- Initial Condition
  - The Lower Tester is in GAP Peripheral or Broadcaster role and is transmitting connectable advertisements containing the Transport Discovery Data AD Type.
  - The Lower Tester transmits an advertisement with multiple LTV Structures, which also includes the LTV specified in the IXIT [8].
- Test Procedure
  1. The Upper Tester orders the IUT to scan for one or more advertising packets containing the Transport Discovery Data AD Type.
  2. The IUT receives an advertisement using the Transport Discovery Data AD Type that contains the Type field matching the LTV Structure specified in the IXIT [8] and reports it to the Upper Tester.
- Expected Outcome
 

Pass verdict

The IUT scans, receives, and parses the Transport Discovery Data AD type corresponding to the value in the IXIT [8] and reports it to the Upper Tester.

## 4.5 Service Procedures

This test group contains tests to verify that the IUT (Seeker) can correctly write to the TDS Control Point.

### CHP/SEE/SP/BV-01-C [Activate Transport – Parameter field with a Single Service UUID]

- Test Purpose
 

Verify that the IUT (Seeker) can write the Activate Transport Op Code with a Parameter field comprising the LTV structures of a single Service UUID and Seeker Address.
- Reference
 

[3] 4.5.1.1
- Initial Condition
  - The Lower Tester is in the GAP Peripheral or the GAP Broadcaster role.
  - Perform the preamble defined in Section 4.2.3.1.
  - The LTVs for the supported Service UUID and Seeker Address are known from the IXIT [8].
- Test Procedure
  1. The Upper Tester sends a command to the IUT to write the Activate Transport Op Code (0x01) to the TDS Control Point characteristic with an Organization ID value set to 0x01 and Parameter field value comprising the LTV structures of a single Service UUID, as described in the IXIT [8], and the Seeker Address.
  2. The IUT sends an *ATT\_Write\_Request* with the instruction from step 1 to the Lower Tester.
  3. The IUT receives an *ATT\_Handle\_Value\_Indication* of the TDS Control Point characteristic with the Requested Op Code (0x01), followed by the Result Code value for Success (0x00) and a Response Parameter that includes the Organization ID (0x01 - Bluetooth SIG) followed by the Service Discovery UUID LTV describing the services that the Provider supports from the Lower Tester.
  4. The IUT sends an *ATT\_Handle\_Value\_Confirmation* to the Lower Tester.
  5. The IUT reports the TDS Control Point characteristic handle and values to the Upper Tester.

6. The Upper Tester sends a command to the IUT to initiate a BR/EDR connection establishment procedure.
7. Verify that the BR/EDR connection establishment procedure is initiated.

- Expected Outcome

Pass verdict

The IUT writes the Activate Transport Op Code (0x01) to the TDS Control Point characteristic with an Organization ID value set to 0x01 and a Parameter field value comprising the LTV structures of a single Service UUID and the Seeker Address.

The IUT receives an *ATT\_Handle\_Value\_Indication* from the Lower Tester containing the TDS Control Point characteristic handle and value and reports it to the Upper Tester.

The IUT initiates a BR/EDR connection establishment procedure.

### CHP/SEE/SP/BV-02-C [Activate Transport – Parameter Field with Multiple Service UUIDs]

- Test Purpose

Verify that the IUT (Seeker) can write the Activate Transport Op Code with a Parameter field value comprising the LTV structures of at least 2 Service UUIDs and Seeker Address.

- Reference

[3] 4.5.1.1

- Initial Condition

- The Lower Tester is in the GAP Peripheral or Broadcaster role.
- Perform the preamble defined in Section 4.2.3.1.
- The LTVs for the supported Service UUIDs and Seeker Address are known from the IXIT [8].

- Test Procedure

1. The Upper Tester sends a command to the IUT to write the Activate Transport Op Code (0x01) to the TDS Control Point characteristic with an Organization ID value set to 0x01 and a Parameter field value comprising the LTV structures of at least 2 Service UUIDs, as described in the IXIT [8], and the Seeker Address.
2. The IUT sends an *ATT\_Write\_Request* with the instruction from step 1 to the Lower Tester.
3. The IUT receives an *ATT\_Handle\_Value\_Indication* of the TDS Control Point characteristic with the Requested Op Code (0x01), followed by the Result Code value for Success (0x00) and a Response Parameter that includes the Organization ID (0x01 - Bluetooth SIG) followed by the Service Discovery UUID LTVs describing the services that the Provider supports from the Lower Tester.
4. The IUT sends an *ATT\_Handle\_Value\_Confirmation* to the Lower Tester.
5. The IUT reports the TDS Control Point characteristic handle and values to the Upper Tester.
6. The Upper Tester sends a command to the IUT to initiate a BR/EDR connection establishment procedure.
7. Verify that the BR/EDR connection establishment procedure is initiated.

- Expected Outcome

Pass verdict

The IUT writes the Activate Transport Op Code (0x01) to the TDS Control Point characteristic with an Organization ID value set to 0x01 and a Parameter field value comprising the LTV structures of at least 2 Service UUIDs and the Seeker Address.

The IUT receives an *ATT\_Handle\_Value\_Indication* from the Lower Tester containing the TDS Control Point characteristic handle and value and reports it to the Upper Tester.

The IUT initiates the BR/EDR connection establishment procedure.

## 4.6 Characteristic Status

This test group contains test cases to verify the IUT's (Seeker) ability to configure indication.

### CHP/SEE/CS/BV-01-C [Configure TDS Control Point for Indication]

- Test Purpose

This test verifies that the IUT (Seeker) can configure the TDS Control Point in the Lower Tester (Provider) for indication.

- Reference

[3] 4.5.1

- Initial Conditions

- Establish an ATT bearer connection between the Lower Tester and IUT by executing the preamble procedure for the IUT to initiate a connection to the Server included in Section 4.2.1.
- The IUT has discovered the Client Characteristic Configuration descriptor, by using the procedures in Section 4.3.1, of the TDS Control Point characteristic contained in the Lower Tester.

- Test Procedure

The Upper Tester sends a command to the IUT to configure the Lower Tester to indicate the TDS Control Point characteristic.

- Expected Outcome

Pass verdict

The IUT sends a correctly formatted *ATT\_Write\_Request* to the Lower Tester with the handle set to that of the Client Characteristic Configuration descriptor for the Control Point characteristic with the value set to Indication.

## 4.7 Service Procedures – Error Handling

This test group contains test cases to verify compliant operation of the Seeker when the Provider is unable to support the requested procedure.

### CHP/SEE/SPEH/BI-01-C [Response Parameters with Unknown Octets]

- Test Purpose
 

Verify that the IUT (Seeker) ignores any unknown octets it receives in the response parameter in response to a valid TDS Control Point OP Code and continues to process commands and operate normally.
- Reference
 

[3] 4.6
- Initial Conditions
  - Perform the preamble described in Section 4.2.3.1.
  - The supported Parameter value for the TDS Control Point request is known from the IXIT [8].
- Test Procedure
  1. The Upper Tester sends a command to the IUT to write the Activate Transport Op Code (0x01) to the TDS Control Point characteristic with an Organization ID value set to 0x01 and Parameter field value comprising the LTV structures of a single Service UUID and the Seeker Address.
  2. The IUT sends an *ATT\_Write\_Request* with the instruction from step 1 to the Lower Tester.
  3. The IUT receives an *ATT\_Handle\_Value\_Indication* of the TDS Control Point characteristic with the Requested Op Code (0x01), followed by the Result Code value for Success (0x00) and a Response Parameter that includes the Organization ID (0x01 - Bluetooth SIG) followed by unknown octets from the transport-specific data from the Lower Tester.
  4. The IUT sends an *ATT\_Handle\_Value\_Confirmation* to the Lower Tester.
  5. The IUT reports the TDS Control Point characteristic handle and values to the Upper Tester.
  6. The Upper Tester sends a command to the IUT to initiate a BR/EDR connection establishment procedure.
  7. Verify that the BR/EDR connection establishment procedure is initiated.
- Expected Outcome
 

Pass verdict

Upon receiving the response from the Lower Tester, step 3, the IUT ignores the unknown octets and continues to process commands and operate normally.

The IUT initiates the BR/EDR connection establishment procedure.

#### 4.7.1 Transport Block Fields or Bits Set to RFU Values

- Test Purpose
 

Verify that for each test case listed in Table 4.4 the IUT (Seeker) ignores Transport Block fields or bits set to RFU values and continues to process commands and operate normally.
- Reference
 

[3] 4.6



- Initial Conditions
  - For each test case in [Table 4.4](#) the Lower Tester (Provider) is in GAP Peripheral or Broadcaster role and is transmitting connectable advertisements containing the Transport Discovery Data AD Type including the <Value> and the <Field> as specified in the table.
  - The contents of the valid Transport Discovery Data AD Type to be received are known from the IXIT [\[8\]](#).

- Test Case Configuration

Test Case ID	Field	Value
<a href="#">CHP/SEE/SPEH/BI-02-C [Transport Block - RFU Bits in the TDS Flags Field set to "1"]</a>	TDS Flags	0xF8 – 0xFF
<a href="#">CHP/SEE/SPEH/BI-03-C [Transport Block - OrgID Set to RFU Value]</a>	Organization ID	≠ 0x01
<a href="#">CHP/SEE/SPEH/BI-04-C [Transport Block - Length Field set to RFU Value]</a>	Length	0xF0 – 0xFF

Table 4.4: Invalid Characteristic/Descriptor Value test cases

- Test Procedure
  - The Upper Tester orders the IUT to scan for one or more advertising packets containing the Transport Discovery Data AD Type.
  - The Lower Tester sends advertising packets for 30 s containing the Transport Discovery Data AD Type including the <Value> and the <Field> as specified in [Table 4.4](#) to the IUT.
  - Perform the preamble as described in Section [4.2.3.1](#).
  - The IUT receives the advertising packets containing the Transport Discovery Data AD Type.

- Expected Outcome

#### Pass verdict

Upon receiving the Transport Discovery Data AD Type from the Lower Tester, the IUT parses and reports to the Upper Tester the valid data and ignores the unsupported RFU values.

For test case [CHP/SEE/SPEH/BI-02-C \[Transport Block - RFU Bits in the TDS Flags Field set to "1"\]](#), the IUT connects to the Lower Tester.

For test case [CHP/SEE/SPEH/BI-03-C \[Transport Block - OrgID Set to RFU Value\]](#) and [CHP/SEE/SPEH/BI-04-C \[Transport Block - Length Field set to RFU Value\]](#), the IUT does not connect to the Lower Tester.

### [CHP/SEE/SPEH/BI-05-C \[Procedure Timeout Handling\]](#)

- Test Purpose

Verify that if the IUT (Seeker) does not receive a response to a TDS Control Point Op Code, it will time out after the ATT Timeout.

- Reference

[\[3\]](#) 4.5.1.2

- Initial Conditions
  - Perform the preamble described in Section 4.2.3.1.
  - The LTVs for the supported Service UUID and Seeker Address are known from the IXIT [8].
- Test Procedure
  1. The Upper Tester sends a command to the IUT to write the Activate Transport Op Code (0x01) to the TDS Control Point characteristic with an Organization ID value set to 0x01 and Parameter field value comprising the LTV structures of a single Service UUID and the Seeker Address.
  2. The IUT sends an *ATT\_Write\_Request* with the instruction from step 1 to the Lower Tester.
  3. The IUT receives an *ATT\_Write\_Response* from the Lower Tester and begins a 10s timer.
  4. The IUT does not receive a TDS Control Point Indication from the Lower Tester before the 10s timer expires.
  5. The IUT considers the procedure to have failed and reports the timeout status to the Upper Tester.

- Expected Outcome

Pass verdict

After the 10s timer has expired, the IUT considers the procedure to have executed and notifies the Upper Tester of the timeout. During the 10s timer, there are no reads or writes to any TDS Characteristic.

### CHP/SEE/SPEH/BI-06-C [Characteristic Configuration Descriptor Incorrect]

- Test Purpose
 

Verify that the IUT (Seeker) responds appropriately when it receives a 'Client Characteristic Configuration Descriptor Improperly Configured' ATT Error Code from the TDS Control Point.
- Reference
 

[3] 4.5.1
- Initial Condition
  - Perform the preamble described in Section 4.2.3.1.
  - The LTVs for the supported Service UUID and Seeker Address are known from the IXIT [8].
- Test Procedure
  1. The Upper Tester sends a command to the IUT to write the Activate Transport Op Code (0x01) to the TDS Control Point characteristic with an Organization ID value set to 0x01 and Parameter field value comprising the LTV structures of a single Service UUID and the Seeker Address.
  2. The IUT sends an *ATT\_Write\_Request* with the instruction from step 1 to the Lower Tester.
  3. The IUT receives an ATT Error response with the error code set to 'Client Characteristic Configuration Descriptor Improperly Configured' (0xFD) from the Lower Tester.
  4. Verify that the IUT returns to stable state and can process commands normally.
- Expected Outcome

Pass verdict

The IUT receives the ATT Error response of Client Characteristic Configuration Descriptor Improperly Configured (0xFD) and provides the information to the Upper Tester.

The IUT considers the procedure to have failed.



## 4.8 Provider Advertising Data

This test group contains tests to verify that the IUT (Provider) includes the Transport Discovery AD Type in the Advertising packet.

### CHP/PRO/PAD/BV-01-C [Transport Discovery Data AD Type Format]

- Test Purpose

Verify that the IUT (Provider) includes the Transport Discovery Data AD Type data in the advertising packet with the Organization ID Field set to Bluetooth SIG.
- Reference

[3] 3.2.1
- Initial Condition
  - The Lower Tester is in a GAP Central role.
  - The contents of the Transport Discovery Data AD Type Organization ID Field to be transmitted are set to Bluetooth SIG (0x01).
- Test Procedure
  1. The IUT begins advertising using the Transport Discovery Data AD Type with the Organization ID Field set to Bluetooth SIG (0x01).
- Expected Outcome

Pass verdict

The advertising data from the IUT includes the Transport Discovery Data AD Type as indicated.

The format and value meet the requirements of the service.

The Organization ID field is included in the Transport Block with a valid 1 octet Organization ID value set to Bluetooth SIG (0x01).

## 4.9 Service Procedures – Activate BR/EDR Transport

This test group contains test cases to verify that the IUT (Provider) correctly utilizes the TDS Control Point to set up BR/EDR Transport.

### CHP/PRO/SP/BV-01-C [Activate BR/EDR Transport]

- Test Purpose

Verify that the IUT (Provider) correctly utilizes the TDS Control Point to activate the BR/EDR Transport.
- Reference

[3] 3.2.2
- Initial Condition
  - Establish an ATT Bearer connection between the Lower Tester (Seeker) and IUT as described in Section 4.2.1.
  - The handle of the TDS Control Point is known to the Lower Tester.

- The handle of the Client Characteristic Configuration descriptor of the TDS Control Point characteristic is known to the Lower Tester.
- The Lower Tester configures the TDS Control Point Characteristic for indications.
- At least one Transport Block in the Transport Discovery AD Type includes the Bluetooth SIG Organization ID (0x01).
- The LTVs for the supported Service UUID and Seeker Address are known from the IXIT [8].
- Test Procedure
  1. The Lower Tester writes the Activate Transport Op Code (0x01) to the TDS Control Point with Organization ID set to Bluetooth SIG (0x01) and a parameter value known from the IXIT [8].
  2. The IUT sends an *ATT\_Write\_Response* to acknowledge the write to the TDS Control Point characteristic handle and value.
  3. The IUT sends the *ATT\_Handle\_Value\_Indication* to the Lower Tester containing the TDS Control Point characteristic handle and value.
  4. The IUT receives the *ATT\_Handle\_Value\_Confirmation* from the Lower Tester.
  5. The IUT activates the BR/EDR Transport.

- Expected Outcome

Pass verdict

The IUT sends an indication of the TDS Control Point characteristic containing the Requested Op Code (0x01) followed by the Result Code for 'Success' (0x00).

The IUT activates the BR/EDR Transport.

## 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 CHP [7].

**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 [2].

For purpose and structure of the ICS/IXIT, refer to [2].

Item	Feature	Test Case(s)
CHP 13/1	Transport Discovery Service	CHP/SEE/CGGIT/SER/BV-01-C
CHP 13/2	TDS Control Point	CHP/SEE/CGGIT/CHA/BV-02-C CHP/SEE/CS/BV-01-C
CHP 13/3	BR-EDR Handover Data	CHP/SEE/CGGIT/CHA/BV-03-C
CHP 13/4	Bluetooth SIG Data	CHP/SEE/CGGIT/CHA/BV-04-C
CHP 13/4 AND CHP 13/5	Complete BR-EDR Transport Block Data	CHP/SEE/CGGIT/DES/BV-05-C
CHP 13/6	Seeker Receive Transport Discovery Data AD Type	CHP/SEE/SDAD/BV-01-C CHP/SEE/SDAD/BV-02-C CHP/SEE/SDAD/BV-03-C CHP/SEE/SPEH/BI-02-C CHP/SEE/SPEH/BI-03-C CHP/SEE/SPEH/BI-04-C
CHP 14/1	Activate Transport	CHP/SEE/SP/BV-01-C CHP/SEE/SP/BV-02-C CHP/SEE/SPEH/BI-01-C CHP/SEE/SPEH/BI-05-C CHP/SEE/SPEH/BI-06-C
CHP 5/3	Provider Transport Discovery Service Support	CHP/PRO/PAD/BV-01-C
CHP 5/1	Transport Discovery	CHP/PRO/SGGIT/SER/BV-01-C
CHP 7/1	Provider Additional Characteristic: BR-EDR Handover Data	CHP/PRO/SGGIT/CHA/BV-02-C
CHP 7/2	Provider Additional Characteristic: Bluetooth SIG Data	CHP/PRO/SGGIT/CHA/BV-03-C
CHP 7/2 AND CHP 7/3	Provider Additional descriptor: Complete BR-EDR Transport Block Data descriptor	CHP/PRO/SGGIT/DES/BV-04-C
CHP 6/2	Activate BR/EDR Transport	CHP/PRO/SP/BV-01-C

Table 5.1: Test case mapping



## 6 Revision history and acknowledgments

### Revision History

Publication Number	Revision Number	Date	Comments
0	p0	2020-08-18	Set publication number to publication 0. Replaced “Conformance” and “Pass/Fail verdict conventions” sections with text from the latest TS template. Approved by BTI on 2020-08-03. CHP v1.0 specification adopted by BoD on 2020-08-11. Prepared for publication.
	p1r00–r01	2023-10-20 – 2023-11-08	TSE 23264 (rating 1): Converted -I tests to -C tests as appropriate; updated the TCMT and TCRL accordingly. Performed editorials to align the document with the latest TS template, including updates to the Test Strategy and Test groups sections. Updated the copyright page to align with v2 of the DNMD.
1	p1	2024-07-01	Approved by BTI on 2024-04-21. Prepared for TCRL 2024-1 publication.

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