Transport Discovery Service (TDS)

Bluetooth® Test Suite

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- **Group Prepared By**: Discovery of Things WG
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Contents

1 Scope ........................................................................................................................................... 4

2 References, definitions, and abbreviations ................................................................................. 5
  2.1 References .............................................................................................................................. 5
  2.2 Definitions .............................................................................................................................. 5
  2.3 Abbreviations ......................................................................................................................... 5

3 Test suite structure (TSS) .......................................................................................................... 6
  3.1 Overview ................................................................................................................................ 6
  3.2 Test strategy ........................................................................................................................... 6
  3.3 Test groups ............................................................................................................................. 7

4 Test cases (TC) ............................................................................................................................ 8
  4.1 Introduction ............................................................................................................................ 8
    4.1.1 Test case identification conventions .................................................................................. 8
    4.1.2 Conformance .................................................................................................................... 8
    4.1.3 Pass/Fail verdict conventions ........................................................................................... 9
  4.2 Setup Preambles ..................................................................................................................... 9
    4.2.1 ATT Bearer ....................................................................................................................... 9
    4.2.2 Initial TDS Control Point Configuration ........................................................................... 9
  4.3 Generic GATT Integrated Test Cases ..................................................................................... 10
    TDS/SR/SGGIT/SER/BV-01-C [Service GGIT – Transport Discovery] ........................................ 10
    TDS/SR/SGGIT/CHA/BV-02-C [Characteristic GGIT – TDS Control Point] ............................. 10
    TDS/SR/SGGIT/CHA/BV-03-C [Characteristic GGIT – BR-EDR Handover Data] ...................... 10
    TDS/SR/SGGIT/CHA/BV-04-C [Characteristic GGIT – Bluetooth SIG Data] ............................ 10
    TDS/SR/SGGIT/DES/BV-05-C [Descriptor GGIT – Complete BR-EDR Transport Block Data] ...... 10
  4.4 Transport Discovery Advertising Data .................................................................................. 10
    TDS/SR/TDADV/BV-01-C [Transport Discovery Data AD Type Format] ................................. 10
    TDS/SR/TDADV/BV-02-C [Transport Discovery Data AD Type Format] ................................... 11
  4.5 Configure Indication ............................................................................................................. 12
    TDS/SR/CON/BV-01-C [Configure Indication – CP] .................................................................. 12
  4.6 Service Procedures – TDS Control Point .............................................................................. 13
    TDS/SR/SP/BV-01-C [CP - Activate Transport] ....................................................................... 13
  4.7 Service Procedures – TDS Control Point Error Handling ...................................................... 14
    TDS/SR/SPE/BI-02-C [CP - Client Characteristic Configuration Descriptor Improperly Configured] ...... 15
    TDS/SR/SPE/BI-03-C [CP – Invalid Parameter] ....................................................................... 15

5 Test Case Mapping .................................................................................................................. 17

6 Revision History and Contributors ........................................................................................... 18
1 Scope

This Bluetooth document contains the test suite structure (TSS) and test cases (TC) to test the implementation of the Bluetooth Transport Discovery Service 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, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter.

[1] Bluetooth Test Strategy and Terminology Overview
[5] GATT Test Suite, GATT.TS
[6] Characteristic and Descriptor descriptions and fixed Protocol Service Multiplexer (PSM) values are accessible via the Bluetooth SIG Assigned Numbers.
[7] Transport Discovery Service Implementation eXtra Information for Test, IXIT
[8] Transport Discovery Service Specification v1.1

2.2 Definitions
For the purpose of this Bluetooth document, the definitions from [1], [2], and [3] apply.

2.3 Abbreviations
For the purpose of this Bluetooth document, the abbreviations from [1], [2], and [3] apply.
3 Test suite structure (TSS)

3.1 Overview

The Transport Discovery Service 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: Transport Discovery Service Test Model](image)

3.2 Test strategy

The test objectives are to verify functionality of the Transport Discovery Service within a Bluetooth Host and enable interoperability between Bluetooth Hosts on different devices. The testing approach is to cover mandatory and optional requirements in the service specification and to match 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) is valid.

The test equipment provides an implementation of the Radio Controller and the parts of the Host needed to perform the test cases defined in the Transport Discovery Service test suite. 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, or another interface supported by the IUT.

The Transport Discovery Service 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:

- Generic GATT Integrated Tests
  - Verify that the IUT properly implements the GATT Server role for the supported service and characteristics.

- Transport Discovery Advertising Data
  - Verify the format of the Transport Discovery Data AD Type.

- Configure Indication
  - Verify that characteristics can be configured for indication.

- Service Procedures – TDS Control Point (CP)
  - Verify that the IUT properly handles the CP procedures.
  - Verify that the IUT generates the correct CP error responses when error conditions are presented to the IUT when using the TDS Control Point.
4 Test cases (TC)

4.1 Introduction

4.1.1 Test case identification conventions

Test cases are assigned unique identifiers per the conventions in [1]. 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 GGIT tests are referred to through a TCID string using the following convention:

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

<table>
<thead>
<tr>
<th>Identifier Abbreviation</th>
<th>Spec Identifier &lt;spec abbreviation&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDS</td>
<td>Transport Discovery Service</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Identifier Abbreviation</th>
<th>Role Identifier &lt;IUT role&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR</td>
<td>Server Role</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Identifier Abbreviation</th>
<th>Reference Identifier &lt;GGIT test group&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGGIT</td>
<td>Server Generic GATT Integrated Tests</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Identifier Abbreviation</th>
<th>Reference Identifier &lt;GGIT class&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHA</td>
<td>Characteristic</td>
</tr>
<tr>
<td>SER</td>
<td>Service</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Identifier Abbreviation</th>
<th>Feature Identifier &lt;feat&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CON</td>
<td>Configure Indication</td>
</tr>
<tr>
<td>SP</td>
<td>(control point) Service Procedure</td>
</tr>
<tr>
<td>SPE</td>
<td>(control point) Service Procedure – Error handling</td>
</tr>
<tr>
<td>TDADV</td>
<td>Transport Discovery Advertising Data</td>
</tr>
</tbody>
</table>

Table 4.1: TDS TC feature naming convention

4.1.2 Conformance

When conformance is claimed for a particular specification, all capabilities are to be supported in the specified manner (process-mandatory). 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 that is 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 exist, 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 in order to constitute a pass verdict. However, it is noted that in order 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 Launch Studio, 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 errata 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

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 ATT Bearer

If LE is specified, the setup procedure defined in Section 4.2.1.1 is executed.

If BR/EDR is specified, the setup procedure defined in Section 4.2.1.2 is executed.

##### 4.2.1.1 ATT Bearer on LE Transport

Follow the preamble procedure described in [5] Section 4.2.1.2.

##### 4.2.1.2 ATT Bearer on BR/EDR Transport

Follow the preamble procedure described in [5] Section 4.2.1.1.

#### 4.2.2 Initial TDS Control Point Configuration

- **Preamble Purpose**
  
  This preamble procedure enables the IUT for use with the TDS Control Point.
• Preamble Procedure

1. Establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1.
2. The handle of the TDS Control Point characteristic has been previously discovered by the Lower Tester as described in the test procedure in Section 4.3 or is known to the Lower Tester by other means.
3. The handle of the Client Characteristic Configuration descriptor of the TDS Control Point has been previously discovered by the Lower Tester as described in the test procedure in Section 4.3 using the handle range of the characteristic or is known to the Lower Tester by other means.
4. If the IUT requires bonding, then the Lower Tester performs a bonding procedure.
5. The Lower Tester configures the TDS Control Point characteristic for indications by writing the value 0x0002 to the Client Characteristic Configuration descriptor of the characteristic as described in the test procedure of GATT test case GATT/SR/GAW/BV-08-C in [5].

4.3 Generic GATT Integrated Test Cases

Execute the Generic GATT Integrated Tests defined in Section 6.3 Server test procedures (SGGIT) of [5] using Table 4.2 below as input:

<table>
<thead>
<tr>
<th>TCID</th>
<th>Service/Characteristic/Descriptor</th>
<th>Reference</th>
<th>Properties</th>
<th>Value Length (Octets)</th>
<th>Service Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDS/SR/SGGIT/CHA/BAV-03-C [Characteristic GGIT – BR-EDR Handover Data]</td>
<td>BR-EDR Handover Data</td>
<td>[8] 5, 5.1</td>
<td>0x02 (Read)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>TDS/SR/SGGIT/CHA/BAV-04-C [Characteristic GGIT – Bluetooth SIG Data]</td>
<td>Bluetooth SIG Data</td>
<td>[8] 5, 5.2</td>
<td>0x00</td>
<td>Skip</td>
<td></td>
</tr>
<tr>
<td>TDS/SR/SGGIT/DES/BV-05-C [Descriptor GGIT – Complete BR-EDR Transport Block Data]</td>
<td>Complete BR-EDR Transport Block Data descriptor</td>
<td>[8] 5, 5.2.1</td>
<td>0x02 (Read)</td>
<td>3 - 29</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2: Input for the GGIT Server Test Procedure

4.4 Transport Discovery Advertising Data

This test group contains test cases to verify compliance of the Transport Discovery Advertising Data. Where the Transport Discovery Data AD Type contains multiple Transport Blocks, this verification is performed one block at a time.

TDS/SR/TDADV/BV-01-C [Transport Discovery Data AD Type Format]

• Test Purpose

  Verify that the IUT sends valid Transport Discovery Data AD Type data in the advertising packet.
• Reference
[3] 3.1.1, 3.1.2

• Initial Condition
The Lower Tester is GAP Observer or Central.
The contents of the Transport Discovery Data AD Type to be transmitted are known from the IXIT [7].

• Test Procedure
  1. The Upper Tester orders the IUT to broadcast an advertising packet containing the Transport Discovery Data AD Type.
  2. The IUT begins advertising using the Transport Discovery Data AD Type.

• Expected Outcome
  Pass verdict
  The advertising data from the IUT includes the Transport Discovery Data AD type as indicated by the use of Type Code «Transport Discovery Data».
The format and value meets the requirements of the service.
The value received is consistent with the value that is known from the IXIT.
The Organization ID field is included in the Transport Block with a valid 1 octet Organization ID value from the Assigned Numbers.
The TDS Flags field is included in the Transport Block with a valid 1 octet value that represents the role of the device and information about its state and supported features and with all RFU bits set to 0, and Role bits set to an appropriate value for the Transport Block, and the Transport Data Incomplete bit set to an appropriate value for the Transport Block, and the Transport State bits set to an appropriate value for the Transport Block.
The Transport Data Length field is included in the Transport Block with a valid 1 octet length value in accordance with the optional Transport Data field.

TDS/SR/TADV/BV-02-C [Transport Discovery Data AD Type Format]

• Test Purpose
  Verify that the IUT sends valid Transport Discovery Data AD Type data in the advertising packet that contains multiple Transport Blocks.

• Reference
  [3] 3.1.2.5

• Initial Condition
  The Lower Tester is GAP Observer or Central.
The contents of at least the first two blocks Transport Discovery Data AD Type to be transmitted are known from the IXIT [7].
Test Procedure
1. The Upper Tester orders the IUT to broadcast an advertising packet containing the Transport Discovery Data AD Type.
2. The IUT begins advertising using the Transport Discovery Data AD Type.

Expected Outcome
 Pass verdict
The Transport Discovery Data AD type contains more than one Transport Block.
The format and value of each Transport Block meets the requirements of the service.
The values of the first two Transport Blocks received are consistent with the values that are known from the IXIT.

4.5 Configure Indication
This test group contains test cases to verify compliant operation in response to disabling and enabling characteristic indication.

TDS/SR/CON/BV-01-C [Configure Indication – CP]

Test Purpose
Verify that the Client Characteristic Configuration descriptor of the TDS Control Point characteristic can be disabled and enabled.

Reference
[3] 4.1

Initial Condition
The handle of the TDS Control Point characteristic has been previously discovered by the Lower Tester during the test procedure in Section 4.3 or is known to the Lower Tester by other means.
The handle of the client characteristic configuration descriptor of the TDS Control Point characteristic has been previously discovered by the Lower Tester during the test procedure in Section 4.3 or is known to the Lower Tester by other means.
If IUT permissions for the characteristic descriptor require a specific security mode or security level, establish a connection meeting those requirements.
Establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1.

Test Procedure
1. Disable indication by writing value 0x0000 to the Client Characteristic Configuration descriptor of the characteristic using the test procedure of GATT test case GATT/SR/GAW/BV-08-C in [5].
2. The Lower Tester reads the value of the Client Characteristic Configuration descriptor.
3. Enable indication by writing value 0x0002 to the Client Characteristic Configuration descriptor of the characteristic using the test procedure of GATT test case GATT/SR/GAW/BV-08-C in [5].
4. The Lower Tester reads the value of the Client Characteristic Configuration descriptor.
• Expected Outcome
  Pass verdict

  The characteristic descriptor is successfully written, and the value returned when read in steps 2 and 4 is consistent with the value written.

4.6  Service Procedures – TDS Control Point

This test group contains test cases to verify compliant operation of the TDS Control Point procedures.

TDS/SR/SP/BV-01-C [CP - Activate Transport]

• Test Purpose
  Verify that the IUT can perform the CP Activate Transport procedure.

• Reference
  [3] 4.1.3

• Initial Condition
  Perform the preamble described in Section 4.2.2.

  The supported parameter value for the TDS Control Point request and the supported Organization ID are known from the IXIT [7].

• Test Procedure
  1. The Lower Tester writes the Activate Transport Op Code (0x01) to the TDS Control Point with a supported Organization ID and a Parameter value that is known from the IXIT.
  2. The IUT, after sending a Write Response to acknowledge the write to the TDS Control Point, sends an indication of the TDS Control Point characteristic.
  3. The Lower Tester receives an ATT_Handle_Value_Indication from the IUT containing the TDS Control Point characteristic handle and value.
  4. The Lower Tester sends an ATT_Handle_Value_Confirmation to the IUT.

• Note
  The actual activation of the alternate transport is beyond the scope of the TDS specification.

• 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) and, optionally, a Parameter value.
4.7 Service Procedures – TDS Control Point Error Handling

This test group contains test cases to verify compliant operation when the Lower Tester uses the TDS Control Point procedure and an error results.

TDS/SR/SPE/BI-01-C [CP - Op Code Not Supported]

- Test Purpose
  Verify that the IUT responds appropriately when a Client writes an unsupported Op Code to the TDS Control Point.

- Reference
  [3] 4.1.4.2.1

- Initial Condition
  Perform the preamble described in Section 4.2.2.

- Test Procedure
  1. The Lower Tester writes an Op Code Value of 0x00 to the TDS Control Point with a Parameter Value to be determined by the Lower Tester.
  2. The IUT, after sending a Write Response to acknowledge the write to the TDS Control Point, sends an indication of the TDS Control Point characteristic.
  3. The Lower Tester receives an ATT_Handle_Value_Indication from the IUT containing the TDS Control Point characteristic handle and value.
  4. The Lower Tester sends an ATT_Handle_Value_Confirmation to the IUT.
  5. The Lower Tester writes an Op Code value from the Reserved for Future Use (RFU) range other than 0x00 to the TDS Control Point with a Parameter Value to be determined by the Lower Tester.
  6. The IUT, after sending a Write Response to acknowledge the write to the TDS Control Point characteristic, sends an indication of the TDS Control Point characteristic.
  7. The Lower Tester receives an ATT_Handle_Value_Indication from the IUT containing the TDS Control Point characteristic handle and value.
  8. The Lower Tester sends an ATT_Handle_Value_Confirmation to the IUT.
  9. Verify that the IUT indication meets the requirements of the service.

- Expected Outcome
  **Pass verdict**

  In step 2, the IUT sends an indication of the TDS Control Point characteristic with the Requested Op Code (0x00), followed by the Result Code for ‘Op Code not supported’ (0x01) and, optionally, a Parameter value.

In step 6, the IUT sends an indication of the TDS Control Point characteristic with the Requested Op Code (i.e., the RFU value written in step 5), followed by the Result Code for ‘Op Code not supported’ (0x01) and, optionally, a Parameter value.

The IUT continues to perform normal operations.
TDS/SR/SPE/BI-02-C [CP - Client Characteristic Configuration Descriptor Improperly Configured]

- **Test Purpose**
  Verify that the IUT responds appropriately when a Client attempts to perform a TDS Control Point procedure with a Client Characteristic Configuration descriptor that is improperly configured.

- **Reference**
  [3] 4.1.4.1

- **Initial Condition**
  Perform the preamble described in Section 4.2.2.

- **Test Procedure**
  1. The Lower Tester resets the value of the Client Characteristic Configuration descriptor of the TDS Control Point characteristic to 0x0000.
  2. The Lower Tester writes a valid Op Code to the TDS Control Point that is supported by the IUT.
  3. Verify that the IUT response meets the requirements of the service.

- **Expected Outcome**
  **Pass verdict**
  The IUT rejects the Write Request by sending an Error Response with an Attribute Protocol Error Code set to “Client Characteristic Configuration Descriptor Improperly Configured” (0xFD).
  The IUT continues to perform normal operations.

TDS/SR/SPE/BI-03-C [CP – Invalid Parameter]

- **Test Purpose**
  Verify that the IUT responds appropriately when a Client requests a CP procedure with an Op Code that requires a parameter and the parameter is invalid.

- **Reference**
  [3] 4.1.4.2.2

- **Initial Condition**
  Perform the preamble described in Section 4.2.2.

  A parameter value for the TDS Control Point request that is invalid for the implementation and the supported Organization ID are known from the IXIT [7].

- **Test Procedure**
  1. The Lower Tester writes the Activate Transport Op Code to the TDS Control Point with a supported Organization ID and an invalid Parameter Value that is known from the IXIT.
  2. The IUT, after sending a Write Response to acknowledge the write to the TDS Control Point, sends an indication of the TDS Control Point characteristic.
3. The Lower Tester receives an `ATT_Handle_Value_Indication` from the IUT containing the TDS Control Point characteristic handle and value.
4. The Lower Tester sends an `ATT_Handle_Value_Confirmation` to the IUT.

- **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 ‘Invalid Parameter’ (0x02) and, optionally, a Parameter value.

**TDS/SR/SPE/BI-04-C [CP – Unsupported Organization ID]**

- **Test Purpose**
  
  Verify that the IUT responds appropriately when a Client requests the Activate Transport Op Code with an unsupported Organization ID value.

- **Reference**
  
  [3] 4.1.4.2.3

- **Initial Condition**
  
  Perform the preamble described in Section 4.2.2.

  A parameter value for the TDS Control Point request that is invalid for the implementation and an unsupported Organization ID are known from the IXIT [7].

- **Test Procedure**
  
  1. The Lower Tester writes the Activate Transport Op Code to the TDS Control Point with an unsupported Organization ID and a Parameter value that is known from the IXIT.
  2. The IUT, after sending a Write Response to acknowledge the write to the TDS Control Point, sends an indication of the TDS Control Point characteristic.
  3. The Lower Tester receives an `ATT_Handle_Value_Indication` from the IUT containing the TDS Control Point characteristic handle and value.
  4. The Lower Tester sends an `ATT_Handle_Value_Confirmation` to the IUT.

- **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 ‘Unsupported Organization ID’ (0x03) and, optionally, a Parameter value.
5 Test Case Mapping

The test case mapping table (TCMT) maps test cases to specific requirements in the ICS. The IUT will be 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 TDS [4].

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

**Test Case(s):** The applicable test case identifiers required for Bluetooth Qualification if the corresponding y/x references defined in the Item column are supported.

For purpose and structure of the ICS/IXIT and instructions for completing the ICS/IXIT, refer to the Bluetooth ICS and IXIT Proforma document.

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Test Case(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(TDS 2/1 AND TDS 8/2) OR TDS 2/2</td>
<td>Transport Discovery Service</td>
<td>TDS/SR/SGGIT/SER/BV-01-C</td>
</tr>
<tr>
<td>TDS 4/2</td>
<td>BR-EDR Handover Data</td>
<td>TDS/SR/SGGIT/CHA/BV-03-C</td>
</tr>
<tr>
<td>TDS 4/3</td>
<td>Bluetooth SIG Data</td>
<td>TDS/SR/SGGIT/CHA/BV-04-C</td>
</tr>
<tr>
<td>TDS 4/3 AND TDS 4/4</td>
<td>Complete BR-EDR Transport Block Data descriptor</td>
<td>TDS/SR/SGGIT/DES/BV-05-C</td>
</tr>
<tr>
<td>TDS 2/1</td>
<td>Transport Discovery Data AD Type Format</td>
<td>TDS/SR/TDADV/BV-01-C</td>
</tr>
<tr>
<td>TDS 3/2</td>
<td>Multiple Transport Blocks</td>
<td>TDS/SR/TDADV/BV-02-C</td>
</tr>
<tr>
<td>TDS 4/1</td>
<td>TDS Control Point</td>
<td>TDS/SR/SGGIT/CHA/BV-02-C</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>TDS/SR/SPE/BI-04-C</td>
</tr>
</tbody>
</table>

*Table 5.1: Test case mapping*
## 6 Revision History and Contributors

### Revision History

<table>
<thead>
<tr>
<th>Publication Number</th>
<th>Revision History</th>
<th>Date</th>
<th>Comments</th>
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</thead>
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<tr>
<td>0</td>
<td>1.0.0</td>
<td>2015-11-17</td>
<td>Spec adopted by BoD. Prepared for publication.</td>
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<tr>
<td></td>
<td>1.0.1r00</td>
<td>2016-01-15</td>
<td>Converted test case IDs to new conventions as outlined in TSTO v4.1</td>
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<td>1.0.1r01</td>
<td>2016-02-23</td>
<td>Updated ID conventions following BTI review.</td>
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<td>1.0.1r02</td>
<td>2016-06-01</td>
<td>Review by Miles Smith</td>
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<td>1.0.1</td>
<td>2016-07-14</td>
<td>Prepared for TCRL 2016-1 publication.</td>
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<td></td>
<td>1.0.1 edition 2r00</td>
<td>2018-11-29</td>
<td>Editorial changes only. Template updated. Revision History and contributors moved to the end of the document.</td>
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<tr>
<td>2</td>
<td>1.0.1 edition 2</td>
<td>2020-01-10</td>
<td>Updated copyright page and confidentiality markings to support new Documentation Marking Requirements, performed minor formatting updates, and accepted all tracked changes to prepare for edition 2 publication.</td>
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<td>Updated document numbering. Resolved BTI comments.</td>
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<td>3</td>
<td>p3</td>
<td>2020-08-18</td>
<td>Set publication number for previous v1.0.1 edition 2 to publication 2. Replaced “Conformance” and “Pass/Fail verdict conventions” sections with text from the latest TS template. Approved by BTI on 2020-08-03. TDS v1.1 specification adopted by BoD on 2020-08-11. Prepared for publication.</td>
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**Contributors**

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
</tr>
</thead>
<tbody>
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<td>Robert D. Hughes</td>
<td>Intel Corporation</td>
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</tbody>
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