# Device Information Service (DIS)

***Bluetooth*® Test Suite**

- **Revision:** DIS.TS.p6
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# Contents

# 1 Scope

This Bluetooth document contains the Test Suite Structure (TSS) and test cases to test the implementation of the Bluetooth Device Information 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 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 [2].

[1] Test Strategy and Terminology Overview

[2] Bluetooth Core Specification, Version 4.2 or later

[3] Device Information Service Specification, Version 1.1 or later

[4] ICS Proforma for Device Information Service, DIS.ICS

[5] GATT Test Suite, GATT.TS

[6] Characteristic and Descriptor descriptions are accessible via the Bluetooth SIG Assigned Numbers.

[7] Device Information Service Specification, Version 1.2

## 2.2 Definitions

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

## 2.3 Acronyms and abbreviations

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

# 3 Test Suite Structure (TSS)

## 3.1 Overview

The Device Information Service requires the presence of GAP and GATT. This is illustrated in Figure 3.1.

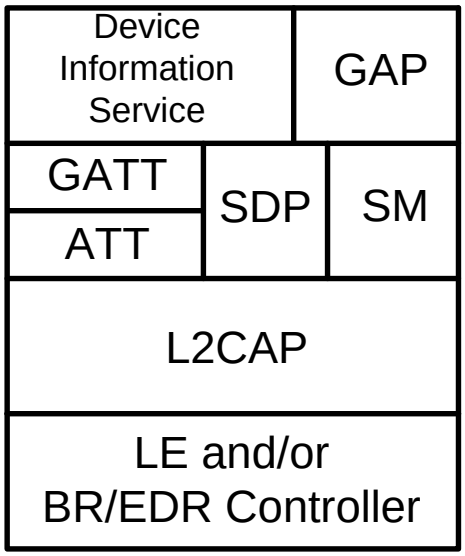


*Figure 3.1: Device Information Service test model*

## 3.2 Test Strategy

The test objectives are to verify functionality of the Device Information Service 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:

- Generic GATT Integrated Tests

# 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>.

| **Identifier Abbreviation** | **Spec Identifier <spec abbreviation>** |
|---|---|
| DIS | Device Information Service |
| **Identifier Abbreviation** | **Role Identifier <IUT role>** |
| SR | Server Role |
| **Identifier Abbreviation** | **Reference Identifier <GGIT test group>** |
| SGGIT | Server Generic GATT Integrated Tests |
| **Identifier Abbreviation** | **Reference Identifier <GGIT class>** |
| CHA | Characteristic |
| SDP | Validate SDP Record |
| SER | Service |

*Table 4.1: DIS 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 Launch Studio, 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 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 on LE Transport

- Preamble Procedure

  1. Establish an LE transport connection between the IUT and the Lower Tester.
  2. Establish an L2CAP channel 0x0004 between the IUT and the Lower Tester over that LE transport.

### 4.2.2 ATT Bearer on BR/EDR Transport

- 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.

## 4.3 Generic GATT Integrated Tests

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

| TCID | Service / Characteristic / Descriptor | Reference | Properties | Value Length (Octets) | Service Type |
|---|---|---|---|---|---|
| DIS/SR/SGGIT/SER/BV-01-C [Service GGIT – Device Information as a Primary Service] | Device Information Service | [3] 2 | - | - | Primary Service |
| DIS/SR/SGGIT/SER/BV-02-C [Service GGIT – Device Information as a Secondary Service] | Device Information Service | [3] 2 | - | - | Secondary Service |
| DIS/SR/SGGIT/SDP/BV-01-C [SDP Record – Device Information] | Device Information Service | [3] 4 | - | - | - |
| DIS/SR/SGGIT/CHA/BV-01-C [Characteristic GGIT – Manufacturer Name String] | Manufacturer Name String Characteristic | [3] 3 | 0x02 (Read) | Variable | - |
| DIS/SR/SGGIT/CHA/BV-02-C [Characteristic GGIT – Model Number String] | Model Number String Characteristic | [3] 3 | 0x02 (Read) | Variable | - |
| DIS/SR/SGGIT/CHA/BV-03-C [Characteristic GGIT – Serial Number String] | Serial Number String Characteristic | [3] 3 | 0x02 (Read) | Variable | - |
| DIS/SR/SGGIT/CHA/BV-04-C [Characteristic GGIT – Hardware Revision String] | Hardware Revision String Characteristic | [3] 3 | 0x02 (Read) | Variable | - |
| DIS/SR/SGGIT/CHA/BV-05-C [Characteristic GGIT – Firmware Revision String] | Firmware Revision String Characteristic | [3] 3 | 0x02 (Read) | Variable | - |
| DIS/SR/SGGIT/CHA/BV-06-C [Characteristic GGIT – Software Revision String] | Software Revision String Characteristic | [3] 3 | 0x02 (Read) | Variable | - |
| DIS/SR/SGGIT/CHA/BV-07-C [Characteristic GGIT – System ID] | System ID Characteristic | [3] 3 | 0x02 (Read) | 8 | - |
| DIS/SR/SGGIT/CHA/BV-08-C [Characteristic GGIT – IEEE 11073-20601 Regulatory Certification Data List] | IEEE 11073-20601 Regulatory Certification Data List Characteristic | [3] 3 | 0x02 (Read) | Variable | - |
| DIS/SR/SGGIT/CHA/BV-09-C [Characteristic GGIT – PnP ID] | PnP ID Characteristic | [3] 3 | 0x02 (Read) | 7 | - |

| TCID | Service / Characteristic / Descriptor | Reference | Properties | Value Length (Octets) | Service Type |
|---|---|---|---|---|---|
| DIS/SR/SGGIT/CHA/BV-10-C [Characteristic GGIT – UDI for Medical Devices] | UDI for Medical Devices Characteristic | [7] 3 | 0x02 (Read) | Variable | - |

*Table 4.2 Input for the GGIT Server test procedure*

# 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 Device Information Service (DIS) [4].

**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 [1].

For the purpose and structure of the ICS/IXIT, refer to [1].

| Item | Feature | Test Case(s) |
|---|---|---|
| DIS 2/1 AND DIS 5/1 | Device Information Service as a primary service | DIS/SR/SGGIT/SER/BV-01-C |
| DIS 2/1 AND DIS 5/2 | Device Information Service as a secondary service | DIS/SR/SGGIT/SER/BV-02-C |
| DIS 1/1 AND DIS 2/10 | SDP Record | DIS/SR/SGGIT/SDP/BV-01-C |
| DIS 2/2 | Manufacturer Name String | DIS/SR/SGGIT/CHA/BV-01-C |
| DIS 2/3 | Model Number String | DIS/SR/SGGIT/CHA/BV-02-C |
| DIS 2/4 | Serial Number String | DIS/SR/SGGIT/CHA/BV-03-C |
| DIS 2/5 | Hardware Revision String | DIS/SR/SGGIT/CHA/BV-04-C |
| DIS 2/6 | Firmware Revision String | DIS/SR/SGGIT/CHA/BV-05-C |
| DIS 2/7 | Software Revision String | DIS/SR/SGGIT/CHA/BV-06-C |
| DIS 2/8 | System ID | DIS/SR/SGGIT/CHA/BV-07-C |
| DIS 2/9 | IEEE 11073-20601 Regulatory Certification Data List | DIS/SR/SGGIT/CHA/BV-08-C |
| DIS 2/11 | PnP ID | DIS/SR/SGGIT/CHA/BV-09-C |
| DIS 2/12 | UDI for Medical Devices | DIS/SR/SGGIT/CHA/BV-10-C |

*Table 5.1: Test case mapping*

# 6 Revision history and acknowledgments

***Revision History***

| Publication Number | Revision Number | Date | Comments |
|---|---|---|---|
| 0 | 1.0.0 | 2011-05-24 | Prepare for publication. |
| | 1.1.0r1 | 2011-10-13 | Changes to include HID PnP ID characteristic per GPA discussion |
| | 1.1.0r2 | 2011-11-07 | Addressed BTI comments |
| | 1.1.0r3 | 2011-11-15 | Addressed comments from WG |
| 1 | 1.1.0 | 2011-11-29 | Adopted by the Bluetooth SIG Board of Directors |
| | 1.1.1r0 | 2012-06-05 | TSE 4427: Test Procedure update for 4.5 Characteristic Read test cases. |
| 2 | 1.1.1 | 2012-07-24 | Prepare for publication. |
| 3 | 1.1.2r00 | 2014-06-16 | TSE 5586: Updated TP/SD/BV-01-C to only be for LE Transport, otherwise it was a duplicate of TP/SDP/BV-01-C. Updated Initial Condition, Test Procedure, Pass Verdict and TCMT mapping for TP/SD/BV-01-C. |
| | 1.1.3r00 | 2016-05-24 | Converted to new Test Case ID conventions as defined in TSTO v4.1.0. |
| | 1.1.3r01 | 2016-06-01 | Template conversion |
| 4 | 1.1.3 | 2016-07-14 | Prepared for TCRL 2016-1 publication. |
| | 1.1.3 edition 2r00 | 2018-11-29 | Editorial changes only. Template updated. Revision History and contributors moved to the end of the document. |
| | 1.1.3 edition 2 | 2019-12-03 | 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. |
| | p5r00–r02 | 2022-03-23 – 2022-10-12 | TSE 18715 (rating 1): Editorials to align the document with the latest TS template in anticipation of a future .Z release. Assigned publication number 4 to previous v1.1.3 and aligned copyright page with v2 of the DNMD.<br>TSE 17271 (rating 2): Per Erratum 16573, converted the following test cases to GGIT: DIS/SR/SD/BV-01-C, DIS/SR/SDP/BV-01-C, DIS/SR/DEC/BV-01-C – -09-C, and DIS/SR/CR/BV-01-C – -09-C. The new GGIT converted TCIDs are: DIS/SR/SGGIT/SER/BV-01-C, DIS/SR/SGGIT/SDP/BV-01-C, and DIS/SR/SGGIT/CHA/BV-01-C – -09-C. Updated the TCMT accordingly. Updated the acknowledgments.<br>Performed template-related formatting fixes. Replaced Bluetooth logo and proprietary statement in footer. |
| 5 | p5 | 2023-02-07 | Approved by BTI on 2022-12-28. Prepared for TCRL 2022-2 publication. |

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|---|---|---|---|
| | p6r00–r02 | 2023-05-01 – 2023-05-12 | Incorporated the DIS.TSandICS.CRr02_MultipleInstances CR, which passed BTI vote on 2023-04-27, in support of the upcoming release of DIS v1.2. Updated the References to Core v4.2 or later/DIS v1.1 or later. Added new TC DIS/SR/SGGIT/SER/BV-02-C, renamed DIS/SR/SGGIT/SER/BV-01-C. Updated the TCMT accordingly.<br>Incorporated the DIS.TSandICS.CRr00_UDI-ac CR, which passed BTI vote on 2023-05-10, in support of the upcoming release of DIS v1.2. Updated the references to add “or later” to DIS v1.1 and added a new line item for DIS v1.2. Added new TC DIS/SR/SGGIT/CHA/BV-10-C. Updated the TCMT accordingly.<br>Updated the TCID description for DIS/SR/SGGIT/SDP/BV-01-C. Updated the TCMT. Updated the Table of Contents. |
| 6 | p6 | 2023-06-23 | Approved by BTI on 2023-05-21. DIS v1.2 adopted by the BoD on 2023-06-21. Prepared for publication. |

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