Device Identification Profile (DID)

Bluetooth® Test Specification

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- **Group Prepared By:** BTI
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**Abstract:**
This document defines test structures and procedures for the interoperability test of Bluetooth devices implementing the Device Identification Profile.
### Revision History

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<th>Date</th>
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<td>0.9</td>
<td>2004/08/20</td>
<td>Initial release</td>
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<td>0.9r01</td>
<td>2004/10/11</td>
<td>Added text to Expected outcome section for Vendor ID Test</td>
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<td>0.9r02</td>
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<td>Added Test for SpecificationID attribute</td>
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<td>D12_r00</td>
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<td>1.2.1r1</td>
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<td>Magnus S: Changes to harmonize TS with SIG standards</td>
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<td>2006/01/11</td>
<td>Formatting updates to title, TOC, footer, Sec 2.1, Sec. 2.2 Added –I to TP/SDI/BV-03 in Appx A Removed 2nd sentence in Appx B.</td>
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<td>TSE 4183: TP/SDI/BV-04-I: Modify Pass verdict</td>
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<td>Converted to new Test Case ID conventions as defined in TSTO v4.1.</td>
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Annex B is now Section 5 TCMT.  
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1 Scope

This Bluetooth document contains the Test Suite Structure (TSS) and Test Cases (TC) to test the Device Identification Profile Specification.

The objective of this document is to provide a basis for the interoperability tests for Bluetooth devices giving a high probability of air interface interoperability between different manufacturers’ Bluetooth devices.
2 References, Definitions, and Abbreviations

2.1 References
This Bluetooth 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 Core Specification v2.0 or later
[2] Device ID Profile v1.2 or later

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

2.3 Acronyms and Abbreviations
For the purpose of this Bluetooth document, the abbreviations from [1] and [3] apply.
3 Test Suite Structure (TSS)

3.1 Overview

The DID profile defines how device identification (DID) information may be exported by devices in a standardized way, and in the Bluetooth SDP [1] framework. The DID Profile defines a SDP record, called DID Service record which enables devices to properly identify other devices that come into range with Bluetooth wireless technology.

There are no roles define for this profile. Conformance to the DID profile is wholly accomplished by implementation of a valid DID Service Record.

The DID profile is dependent on and is an extension of the behaviors defined by the Service Discovery Profile, as shown in Figure 3.1.

![Generic Access Profile (GAP)]

![Service Discovery Profile](Service Discovery Profile)

![DID Profile](DID Profile)

Other GAP-based profiles

Figure 3.1: Relationship of DID Profile to SDP

3.2 Test Suite Structure (TSS)

The following diagram shows the Test Suite Structure for the Device Identification Profile interoperability tests.

Each test case is based on the general assumption only a single ACL link exists between IUT and Lower Tester.

A point-to-point connection is used for all test cases.

<table>
<thead>
<tr>
<th>Test purpose</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDI</td>
<td>Valid DI Record DID/SR/SDI/BV-01-I</td>
</tr>
<tr>
<td></td>
<td>Primary Record DID/SR/SDI/BV-02-I</td>
</tr>
<tr>
<td></td>
<td>Vendor Information DID/SR/SDI/BV-03-I</td>
</tr>
<tr>
<td></td>
<td>Specification ID DID/SR/SDI/BV-04-I</td>
</tr>
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</table>
3.3 Test Groups

3.3.1 SDI

This test group verifies format of the device SDP record and support for the mandatory SDP commands specified by the Generic Access Profile. The DID descriptors are stored in the device SDP record and are verified in this test group.

3.3.2 Valid Behavior tests

This type of testing provides testing to verify that the IUT reacts in conformity with the Bluetooth standard and profile specification, after receipt or exchange of a valid PDU. Valid PDUs means that the exchange of messages and the content of the exchanged messages are considered as valid.

3.3.3 Message Sequence Diagrams

The message sequence for DID Service Discovery Record Conformance use in DID/SR/SDI/BV-01-I, DID/SR/SDI/BV-02-I, DID/SR/SDI/BV-03-I, DID/SR/SDI/BV-04-I is as follows:

![Message Sequence Diagram]

Figure 3.2: Device ID Discover Record Conformance
4 Test Cases (TC)

4.1 Introduction

4.1.1 Test Case Identification Conventions

Test cases shall be assigned unique identifiers per the conventions in [3]. The convention used here is `<spec abbreviation>/<IUT role>/<class>/<feat>/<func>/<subfunc>/<cap>/<xx>-<nn>-<y>`. Bolded ID parts shall appear in the order prescribed. Non-bolded parts (if applicable) shall appear between the bolded parts. The order of the non-bolded parts may vary from test specification to test specification, but shall be consistent within each individual test specification.

<table>
<thead>
<tr>
<th>Identifier Abbreviation</th>
<th>Spec Identifier &lt;spec abbreviation&gt;</th>
</tr>
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<tbody>
<tr>
<td>DID</td>
<td>Device Identification Profile</td>
</tr>
<tr>
<td>Identifier Abbreviation</td>
<td>Role Identifier &lt;IUT role&gt;</td>
</tr>
<tr>
<td>SR</td>
<td>Device Identification Server</td>
</tr>
<tr>
<td>Identifier Abbreviation</td>
<td>Feature Identifier &lt;feat&gt;</td>
</tr>
<tr>
<td>SDI</td>
<td>Service Discovery Database</td>
</tr>
</tbody>
</table>

*Table 4.1: Device Identification Profile TC Feature Naming Conventions*

4.1.2 Conformance

When conformance is claimed, all capabilities indicated as mandatory for this Specification shall be supported in the specified manner (process-mandatory). This also applies for all optional and conditional capabilities for which support is indicated. All mandatory capabilities, and optional and conditional capabilities for which support is indicated, are subject to verification as part of the Bluetooth Qualification Program.

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, OR
- That capabilities enabled by the implementations are sustained over durations expected by the use case, OR
- That the implementation gracefully handles any quantity of data expected by the use case, OR
- 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 OR
- 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 Generator, the Test Case as described in the Test Specification, 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, which outlines all the detailed pass criteria conditions that shall be met by the IUT to merit a Pass Verdict.

The convention in this test specification is that, unless there are 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 shall be the Fail Verdict.

4.2 Device ID Service Discovery Record Conformance

4.2.1 SDI Server Requirements

4.2.1.1 DID/SR/SDI/BV-01-I [Valid Device ID Service Record]

- Test Purpose
  To verify that the device IUT responds properly to the SDP commands and that any Device ID Service Records contained are valid.

- Reference
  [1] 7.10

- Initial Condition
  IUT and Lower Tester are connected.

- Test Procedure
  Lower Tester requests all Device ID SDP records.
  IUT: Sends all Device ID SDP records.

- Expected Outcome
  Pass verdict
  The IUT sends one or more Device ID SDP records identified by UUID PNPInformation, each mandatory attribute is present, each optional attribute supported by the IUT is present, and all included attributes are valid and of the correct type.

- Notes
  The manufacturer must define the SDP attributes supported for the device.

4.2.1.2 DID/SR/SDI/BV-02-I [Primary Record]

- Test Purpose
To verify that the device IUT responds properly to the SDP commands and that no more than one Device ID Service Record identified by UUID PNPInformation is marked as the primary record with attribute PrimaryRecord 0x204 = True.

- Reference
  [1] 7.10

- Initial Condition
  IUT and Lower Tester are connected.

- Test Procedure
  Lower Tester requests all Device ID SDP records.
  IUT sends all Device ID SDP records.

- Expected Outcome
  Pass verdict
  The IUT sends one or more Device ID SDP records identified by UUID PNPInformation, and that no more than one of these contains attribute 0x204 = True.

- Notes
  The manufacturer must define the SDP attributes supported for the IUT.

4.2.1.3 DID/SR/SDI/BV-03-I [Vendor Information]

- Test Purpose
  To verify that the device IUT responds properly to the SDP commands and that each Device ID Service Record identified by UUID PNPInformation is contains valid vendor information.

- Reference
  [1] 7.10

- Initial Condition
  IUT and Lower Tester are connected.

- Test Procedure
  Lower Tester requests all Device ID SDP records.
  IUT sends all Device ID SDP records.

- Expected Outcome
  Pass verdict
  The IUT sends one or more Device ID SDP records identified by UUID PNPInformation, and that for each of these one of the following statements is true.
VendorIDSource 0x0205 attribute equals 1 and the VendorID 0x0201 attribute is a valid Bluetooth SIG company identifier.

VendorIDSource 0x0205 attribute equals 2 and the VendorID 0x0201 attribute is a valid USB vendor identifier.

• Notes
The manufacturer must define the SDP attributes supported for the IUT.

4.2.1.4 DID/SR/SDI/BV-04-I [Specification ID]

• Test Purpose
To verify that the device IUT responds properly to the SDP commands and that each Device ID Service Record identified by UUID PNPInformation contains valid specification ID.

• Reference
[1] 7.10

• Initial Condition
IUT and Lower Tester are connected.

• Test Procedure
Lower Tester requests all Device ID SDP records.

IUT sends all Device ID SDP records.

• Expected Outcome
Pass verdict

The IUT sends one or more Device ID SDP records identified by UUID PNPInformation, and that the SpecificationID attribute in each record matches the version number of the Device ID Profile Specification to which compliance is claimed.

• Notes
The manufacturer must define the SDP attributes supported for the IUT.
5 Test Case Mapping

The Test Case Mapping Table (TCMT) maps test cases to specific requirements in the ICS. The product shall 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 y/x reference, where y corresponds to the table number and x corresponds to the feature number as defined in the ICS Proforma for Device ID profile [4]. If the item is defined with Protocol, Profile or Service abbreviation before y/x, the table and feature number referenced are defined in the abbreviated ICS Proforma document.

**Feature**: Recommended to be the primary feature defined in the ICS being tested or may be the test case name.

**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.

**Test Case Applicable**: May be used to note if a test is required based on the supported features.

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

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<tr>
<th>Item</th>
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</tr>
<tr>
<td>DID 1/2 OR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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*Table 5.1: Test Case Mapping*