Running Speed and Cadence Profile (RSCP)

Bluetooth® Test Suite

- Revision: RSCP.TS.1.0.5
- Revision Date: 2018-11-21
- Group Prepared By: BTI
- Feedback Email: bti-main@bluetooth.org

Abstract:
This document defines test structures and procedures for the conformance test of products implementing the Running Speed and Cadence Profile.
Revision History

<table>
<thead>
<tr>
<th>Revision History</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.1.0.0</td>
<td>2012-08-07</td>
<td>Adopted by the Bluetooth SIG Board of Directors</td>
</tr>
<tr>
<td>1.0.0</td>
<td>2012-08-07</td>
<td>Prepare for Publication</td>
</tr>
<tr>
<td>1.0.1r1</td>
<td>2013-04-23</td>
<td>TSE 5021: Revision of SC Control Point preamble</td>
</tr>
<tr>
<td>1.0.1</td>
<td>2013-07-02</td>
<td>Prepare for Publication</td>
</tr>
<tr>
<td>1.0.2r01</td>
<td>2013-09-30</td>
<td>TSE 5296: Updated first sentence of test procedure in TP/RSCD/CO/BV-12-I to add, “and a disconnection may occur between the two tests” for clarification.</td>
</tr>
<tr>
<td>1.0.2</td>
<td>2013-12-03</td>
<td>Prepare for Publication</td>
</tr>
<tr>
<td>1.0.3r00</td>
<td>2015-05-10</td>
<td>TSE 6239: Corrected TCMT mapping for TP/RSCD/RSC/BV-04-I</td>
</tr>
<tr>
<td>1.0.3r01</td>
<td>2015-05-27</td>
<td>Added Section 4.1.3 on verdict conventions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deleted non-specific Fail verdicts throughout document.</td>
</tr>
<tr>
<td>1.0.3r02</td>
<td>2015-06-03</td>
<td>Updated wording in Section 1 to reflect that the document contains both interoperability and conformance tests.</td>
</tr>
<tr>
<td>1.0.3</td>
<td>2015-07-14</td>
<td>Prepared for TCRL 2015-1 publication</td>
</tr>
<tr>
<td>1.0.4r00</td>
<td>2016-05-26</td>
<td>Converted to new Test Case ID conventions as defined in TSTO v4.1.</td>
</tr>
<tr>
<td>1.0.4r02</td>
<td>2016-06-10</td>
<td>Test Spec Template Conversion</td>
</tr>
<tr>
<td>1.0.4</td>
<td>2016-07-14</td>
<td>Prepared for TCRL 2016-1 publication.</td>
</tr>
<tr>
<td>1.0.5r00-r01</td>
<td>2018-10-03 – 2018-11-05</td>
<td>TSE 10178 (rating 2): Updated TCMT for GLP/SEN/GLD/BV-03-I.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Template update.</td>
</tr>
<tr>
<td>1.0.5</td>
<td>2018-11-21</td>
<td>Approved by BTI. Prepared for TCRL 2018-2 publication.</td>
</tr>
</tbody>
</table>

Contributors

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bob Hughes</td>
<td>Intel</td>
</tr>
<tr>
<td>Guillaume Schatz</td>
<td>Polar</td>
</tr>
<tr>
<td>Leif Aschehoug</td>
<td>Nordic</td>
</tr>
</tbody>
</table>
Use of this specification is your acknowledgement that you agree to and will comply with the following notices and disclaimers. You are advised to seek appropriate legal, engineering, and other professional advice regarding the use, interpretation, and effect of this specification.

Use of Bluetooth specifications by members of Bluetooth SIG is governed by the membership and other related agreements between Bluetooth SIG and its members, including those agreements posted on Bluetooth SIG's website located at www.bluetooth.com. Any use of this specification by a member that is not in compliance with the applicable agreements and other related agreements is prohibited and, among other things, may result in (i) termination of the applicable agreements and (ii) liability for infringement of the intellectual property rights of Bluetooth SIG and its members.

Use of this specification by anyone who is not a member of Bluetooth SIG is prohibited and is an infringement of the intellectual property rights of Bluetooth SIG and its members. The furnishing of this specification does not grant any license to any intellectual property of Bluetooth SIG or its members. THIS SPECIFICATION IS PROVIDED “AS IS” AND BLUETOOTH SIG, ITS MEMBERS AND THEIR AFFILIATES MAKE NO REPRESENTATIONS OR WARRANTIES AND DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY, TITLE, NON-INFRINGEMENT, FITNESS FOR ANY PARTICULAR PURPOSE, OR THAT THE CONTENT OF THIS SPECIFICATION IS FREE OF ERRORS. For the avoidance of doubt, Bluetooth SIG has not made any search or investigation as to third parties that may claim rights in or to any specifications or any intellectual property that may be required to implement any specifications and it disclaims any obligation or duty to do so.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, BLUETOOTH SIG, ITS MEMBERS AND THEIR AFFILIATES DISCLAIM ALL LIABILITY ARISING OUT OF OR RELATING TO USE OF THIS SPECIFICATION AND ANY INFORMATION CONTAINED IN THIS SPECIFICATION, INCLUDING LOST REVENUE, PROFITS, DATA OR PROGRAMS, OR BUSINESS INTERRUPTION, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, AND EVEN IF BLUETOOTH SIG, ITS MEMBERS OR THEIR AFFILIATES HAVE BEEN ADVISED OF THE POSSIBILITY OF THE DAMAGES.

If this specification is a prototyping specification, it is solely for the purpose of developing and using prototypes to verify the prototyping specifications at Bluetooth SIG sponsored IOP events. Prototyping Specifications cannot be used to develop products for sale or distribution and prototypes cannot be qualified for distribution.

Products equipped with Bluetooth wireless technology (“Bluetooth Products”) and their combination, operation, use, implementation, and distribution may be subject to regulatory controls under the laws and regulations of numerous countries that regulate products that use wireless non-licensed spectrum. Examples include airline regulations, telecommunications regulations, technology transfer controls and health and safety regulations. You are solely responsible for complying with all applicable laws and regulations and for obtaining any and all required authorizations, permits, or licenses in connection with your use of this specification and development, manufacture, and distribution of Bluetooth Products. Nothing in this specification provides any information or assistance in connection with complying with applicable laws or regulations or obtaining required authorizations, permits, or licenses.

Bluetooth SIG is not required to adopt any specification or portion thereof. If this specification is not the final version adopted by Bluetooth SIG’s Board of Directors, it may not be adopted. Any specification adopted by Bluetooth SIG’s Board of Directors may be withdrawn, replaced, or modified at any time. Bluetooth SIG reserves the right to change or alter final specifications in accordance with its membership and operating agreements.

Copyright © 2011–2019. All copyrights in the Bluetooth Specifications themselves are owned by Apple Inc., Ericsson AB, Intel Corporation, Lenovo (Singapore) Pte. Ltd., Microsoft Corporation, Nokia Corporation, and Toshiba Corporation. The Bluetooth word mark and logos are owned by Bluetooth SIG, Inc. Other third-party brands and names are the property of their respective owners.
Contents

1 Scope ........................................................................................................................................... 6

2 References, Definitions, and Abbreviations ............................................................................. 7
  2.1 References .................................................................................................................................. 7
  2.2 Definitions ................................................................................................................................... 7
  2.3 Abbreviations ............................................................................................................................... 7

3 Test Suite Structure (TSS) .............................................................................................................. 8
  3.1 Overview ..................................................................................................................................... 8
  3.2 Test Strategy ............................................................................................................................... 8
  3.3 Test Groups ............................................................................................................................... 9
    3.3.1 Discovery of Services and Characteristics ......................................................................... 9
    3.3.2 Features .................................................................................................................................. 9
    3.3.3 Service Procedures ............................................................................................................. 9

4 Test Cases (TC) ............................................................................................................................... 10
  4.1 Introduction .............................................................................................................................. 10
    4.1.1 Test Case Identification Conventions .............................................................................. 10
    4.1.2 Conformance ..................................................................................................................... 10
    4.1.3 Pass/Fail Verdict Conventions ......................................................................................... 11
  4.2 Setup Preambles ........................................................................................................................ 11
    4.2.1 Set up LE Transport .......................................................................................................... 11
    4.2.2 Set up BR/EDR Transport .................................................................................................. 11
    4.2.3 Collector: Configure RSC Sensor for use with SC Control Point ..................................... 11
    4.2.4 LE Collector: Scan to detect Sensor Advertisements ...................................................... 12
    4.2.5 BR/EDR Collector .............................................................................................................. 13
    4.2.5.1 Connection Establishment for Unbonded Devices ...................................................... 13
    4.2.5.2 Connection Establishment for Bonded Devices .......................................................... 13
  4.3 Discover Services and Characteristics ..................................................................................... 14
    4.3.1 RSCP/COL/RSCD/BV-01-I [Discover Running Speed and Cadence Service over LE] ........ 14
    4.3.2 RSCP/COL/RSCD/BV-02-I [Discover Device Information Service over LE] .................. 15
    4.3.3 RSCP/COL/RSCD/BV-03-I [SDP Service Discovery] ....................................................... 15
    4.3.4 RSCP/SEN/RSCD/BV-04-I [Running Speed and Cadence Service not discoverable over BR/EDR] ... 16
    4.3.5 RSCP/COL/RSCD/BV-05-I [Discover RSC Measurement Characteristic] ....................... 16
    4.3.6 RSCP/COL/RSCD/BV-06-I [Discover RSC Measurement – Client Characteristic Configuration Descriptor] ................................................................. 17
    4.3.7 RSCP/COL/RSCD/BV-07-I [Discover RSC Feature Characteristic] ................................. 18
    4.3.8 RSCP/COL/RSCD/BV-08-I [Discover Sensor Location Characteristic] .............................. 19
    4.3.9 RSCP/COL/RSCD/BV-09-I [Discover SC Control Point Characteristic] .......................... 20
    4.3.10 RSCP/COL/RSCD/BV-10-I [Discover SC Control Point – Client Characteristic Configuration Descriptor] ................................. 21
    4.3.11 RSCP/COL/RSCD/BV-11-I [Discover Device Information Service Characteristics] .................. 21
    4.3.12 RSCP/COL/RSCD/BV-12-I [Read Device Information Service Characteristics] .................. 22
  4.4 Running Speed and Cadence Features ..................................................................................... 23
    4.4.1 RSCP/SEN/RSCF/BV-01-I [Running Speed and Cadence Service UUID in AD] ............. 23
    4.4.2 RSCP/SEN/RSCF/BV-02-I [Local Name included in AD or Scan Response] .................... 24
    4.4.3 RSCP/SEN/RSCF/BV-03-I [Appearance included in AD or Scan Response] .................... 25
    4.4.4 RSCP/COL/RSCF/BV-04-I [Configure RSC Measurement for Notification] ..................... 26
<table>
<thead>
<tr>
<th>Section</th>
<th>Test Case</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.5</td>
<td>RSCP/COL/RSCF/BV-05-I</td>
<td>Receive RSC Measurement for Notifications</td>
</tr>
<tr>
<td>4.4.6</td>
<td>RSCP/COL/RSCF/BI-01-I</td>
<td>Receive RSC Measurement Notifications with reserved flags</td>
</tr>
<tr>
<td>4.4.7</td>
<td>RSCP/COL/RSCF/BI-02-I</td>
<td>Receive RSC Measurement Notifications with additional octets not represented in the flags field</td>
</tr>
<tr>
<td>4.4.8</td>
<td>RSCP/COL/RSCF/BV-06-I</td>
<td>Receive multiple RSC Measurement Notifications</td>
</tr>
<tr>
<td>4.4.9</td>
<td>RSCP/COL/RSCF/BV-07-I</td>
<td>Read RSC Feature characteristic</td>
</tr>
<tr>
<td>4.4.10</td>
<td>RSCP/COL/RSCF/BI-03-I</td>
<td>Read RSC Feature characteristic with reserved value</td>
</tr>
<tr>
<td>4.4.11</td>
<td>RSCP/COL/RSCF/BV-08-I</td>
<td>Read Sensor Location characteristic</td>
</tr>
<tr>
<td>4.4.12</td>
<td>RSCP/COL/RSCF/BI-04-I</td>
<td>Read Sensor Location characteristic with reserved value</td>
</tr>
<tr>
<td>4.4.13</td>
<td>RSCP/COL/RSCF/BV-09-I</td>
<td>Lost Bond Procedure when using LE transport</td>
</tr>
<tr>
<td>4.4.14</td>
<td>RSCP/COL/RSCF/BV-10-I</td>
<td>Lost Bond Procedure when using BR/EDR transport</td>
</tr>
<tr>
<td>4.4.15</td>
<td>RSCP/COL/RSCF/BV-11-I</td>
<td>[Reserved]</td>
</tr>
<tr>
<td>4.5</td>
<td>Service Procedures – Set Cumulative Value</td>
<td></td>
</tr>
<tr>
<td>4.5.1</td>
<td>RSCP/COL/SPS/BV-01-I</td>
<td>Set Cumulative Value – Set to zero</td>
</tr>
<tr>
<td>4.5.2</td>
<td>RSCP/COL/SPS/BV-02-I</td>
<td>Set Cumulative Value – Set to non-zero</td>
</tr>
<tr>
<td>4.6</td>
<td>Service Procedures – Start Sensor Calibration</td>
<td></td>
</tr>
<tr>
<td>4.6.1</td>
<td>RSCP/COL/SPC/BV-01-I</td>
<td>Start Sensor Calibration</td>
</tr>
<tr>
<td>4.7</td>
<td>Service Procedures – Request Supported Sensor Locations</td>
<td></td>
</tr>
<tr>
<td>4.7.1</td>
<td>RSCP/COL/SPL/BV-01-I</td>
<td>Request Supported Sensor Locations</td>
</tr>
<tr>
<td>4.8</td>
<td>Service Procedures – Update Sensor Location</td>
<td></td>
</tr>
<tr>
<td>4.8.1</td>
<td>RSCP/COL/SPU/BV-01-I</td>
<td>Update Sensor Location</td>
</tr>
<tr>
<td>4.9</td>
<td>Service Procedures – General Error Handling</td>
<td></td>
</tr>
<tr>
<td>4.9.1</td>
<td>RSCP/COL/SPE/BI-01-C</td>
<td>Unsupported Op Code</td>
</tr>
<tr>
<td>4.9.2</td>
<td>RSCP/COL/SPE/BI-02-C</td>
<td>Invalid Parameter</td>
</tr>
<tr>
<td>4.9.3</td>
<td>RSCP/COL/SPE/BI-03-C</td>
<td>Operation Failed</td>
</tr>
<tr>
<td>4.9.4</td>
<td>RSCP/COL/SPE/BI-04-C</td>
<td>SC Control Point Procedure Timeout</td>
</tr>
<tr>
<td>5</td>
<td>Test Case Mapping</td>
<td></td>
</tr>
</tbody>
</table>
1 Scope

This Bluetooth document contains the Test Suite Structure (TSS) and Test Cases (TC) to test the Bluetooth Running Speed and Cadence Profile Specification.

The objective of this test suite is to provide a basis for 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] Test Strategy and Terminology Overview
[2] Bluetooth Core Specification, v4.0 or later
[3] Running Speed and Cadence Profile Specification v1.0 or later
[4] ICS Proforma for Running Speed and Cadence Profile, RSCP.ICS
[5] GATT Test Suite, GATT.TS
[6] Running Speed and Cadence Service v1.0 or later
[8] Device Information Service Specification v1.1 or later
[9] Running Speed and Cadence Profile Implementation eXtra Information for Test, IXIT

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

2.3 Abbreviations
For the purpose of this Bluetooth document, the abbreviations in [1] and [2] apply.
3 Test Suite Structure (TSS)

3.1 Overview

The Running Speed and Cadence Profile requires the presence of GAP, SM and GATT. This is illustrated in Figure 3.1.

![Diagram of Running Speed and Cadence Profile]

Figure 3.1: Running Speed and Cadence Test Model

3.2 Test Strategy

The test objectives are to verify functionality of the Running Speed and Cadence Profile 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 profile specification and to match these to the support of the IUT as described in the ICS Proforma.

The basis for the test approach is the general concepts and conformance testing principles defined in ISO/IEC 9646-1 and ISO/IEC 9646-2; both are part of the OSI Conformance Testing Methodology and Framework (CTMF).

The conformance test equipment shall provide an implementation of the Radio Controller and the parts of the Host needed to perform the test cases defined in this document. 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, an MMI, or another interface supported by the IUT.
The Running Speed and Cadence Profile 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 cases.

The test suite structure is a tree with the first level representing the protocol groups. This structure is shown in Section 3.3.

3.3 Test Groups
The following test groups have been defined.

3.3.1 Discovery of Services and Characteristics
This group tests IUT discovery of the Running Speed and Cadence Service and characteristics and Device Information Service characteristics.

3.3.2 Features
This group tests IUT implementation of Running Speed and Cadence Profile Features.

3.3.3 Service Procedures
This group tests the operation of additional procedures defined in the service specification including Set Cumulative Value, Start Sensor Calibration, Update Sensor Location and Request Supported Sensor Locations procedures.
# 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 [1]. 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 ID parts (if applicable) shall appear between the bolded parts. The order of the non-bolded parts may vary from test suite to test suite, but shall be consistent within each individual test suite.

<table>
<thead>
<tr>
<th>Identifier Abbreviation</th>
<th>Spec identifier &lt;spec abbreviation&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSCP</td>
<td>Running Speed and Cadence Profile</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Identifier Abbreviation</th>
<th>Role Identifier &lt;IUT role&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>COL</td>
<td>Collector Role</td>
</tr>
<tr>
<td>SEN</td>
<td>RSC Sensor Role</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Identifier Abbreviation</th>
<th>Class Identifier &lt;class&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSCD</td>
<td>Discovery of Services and Characteristics</td>
</tr>
<tr>
<td>RSCF</td>
<td>Features</td>
</tr>
<tr>
<td>SPC</td>
<td>Service Procedure – Start Sensor Calibration</td>
</tr>
<tr>
<td>SPE</td>
<td>Service Procedure – Error Handling</td>
</tr>
<tr>
<td>SPL</td>
<td>Service Procedure – Request Supported Sensor Locations</td>
</tr>
<tr>
<td>SPS</td>
<td>Service Procedure – Set Cumulative Value</td>
</tr>
<tr>
<td>SPU</td>
<td>Service Procedure – Update Sensor Location</td>
</tr>
</tbody>
</table>

*Table 4.1: Running Speed and Cadence Profile TC Class Naming Convention*

### 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 are 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 the implementation gracefully rejects any attempt to exercise capabilities which were declared as not supported. Graceful rejection means that the implementation demonstrates uninterrupted conformance to the specification immediately after rejecting such attempts without any need to be externally reset or adjusted, OR
- 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 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 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, 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 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 shall be the 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 Set up LE Transport

Use GATT.TS [5] Preamble [Set up ATT Bearer over LE].

4.2.2 Set up BR/EDR Transport

Use GATT.TS [5] Preamble [Set up ATT Bearer over BR/EDR].

4.2.3 Collector: Configure RSC Sensor for use with SC Control Point

This preamble procedure specifies how the Collector IUT configures the RSC Sensor for use with SC Control Point and is valid for LE and BR/EDR transports.

1. Establish an ATT Bearer connection between the Lower Tester and IUT as described in section 4.2.1 if using an LE transport or 4.2.2 if using a BR/EDR transport.
2. The handles of the RSC Measurement characteristic, RSC Feature, Sensor Location and SC Control Point characteristic have been previously discovered by the Lower Tester during the test procedures in Section 4.3 or are known to the Lower Tester by other means.

3. The handles of the Client Characteristic Configuration descriptor of the RSC Measurement characteristic, SC Control Point characteristic have been previously discovered by the Lower Tester during the test procedure in Section 4.3 or are known to the Lower Tester by other means.

4. The Lower Tester may perform a bonding procedure. If previously bonded, enable encryption if not already enabled.

5. The IUT configures the SC Control Point characteristic for indications, and if the test case requires notifications of the RSC Measurement characteristic, the IUT configures the RSC Measurement characteristic for notifications. These configurations may occur in any order.

4.2.4 LE Collector: Scan to detect Sensor Advertisements

This LE preamble procedure specifies how the Collector IUT scans for RSC Sensor advertisements for the case when a Sensor has new data available.

- Reference

  [3] 5.2

  [2] GAP 9.3.3, 9.3.4

- Preamble Procedure

  1. Configure the Collector IUT to accept commands from the Upper Tester to receive RSC measurements.

  2. The Upper Tester commands the Collector IUT to initiate a connection and the IUT starts scanning.

  3. The RSC Sensor (Lower Tester) advertises to the Collector IUT either using:

     • ALT 1: GAP Directed Connectable Mode (send ADV_DIRECT_IND packets).

     or

     • ALT 2: GAP Undirected Connectable Mode (send ADV_IND packets).

  4. The Lower Tester waits for responses from the Collector IUT.

  5. The Collector IUT sends a CONNECT_REQ and an optionally empty PDU to the Lower Tester.
4.2.5 BR/EDR Collector

4.2.5.1 Connection Establishment for Unbonded Devices
This BR/EDR preamble procedure specifies how the Collector IUT scans for the RSC Sensor for the case when an RSC Sensor has new data available.

- Reference
  [3] 5.3
  [2] GAP 4.1, 4.2

- Preamble Procedure
  1. Configure the Collector IUT to accept commands to receive RSC measurements.
  2. Put the RSC Sensor in General Discoverable mode.
  3. The Upper Tester commands the Collector IUT to initiate a connection and the IUT starts scanning.
  4. The RSC Sensor (Lower Tester) exposes the SDP record for the Running Speed and Cadence Service.
  5. The Collector IUT validates the SDP record and establishes a connection to the RSC Sensor.
  6. The Collector uses the GAP General Discovery procedure to discover a RSC Sensor to establish a connection to a RSC Sensor.

4.2.5.2 Connection Establishment for Bonded Devices
In case of BR/EDR, either an RSC Sensor or Collector could initiate connection when they are bonded. The device initiating the connection becomes a master and is referred here as “master to be” and the device accepting the connection becomes a slave and is referred here as “slave to be”.

This BR/EDR preamble procedure specifies how a “master to be” connects to a “slave to be”.

- Reference
  [3] 5.3
GAP 4.1, 4.2

• Preamble Procedure
  1. Configure the Collector to accept commands to receive RSC measurements.
  2. Put the "slave to be" in connectable mode to accept a connection from the "master to be".
  3. The connection is initiated by "master to be".
  4. The "slave to be" exposes the SDP record for the Running Speed and Cadence Service.
  5. The "master to be" validates the SDP record and establishes a connection to the "slave to be".
  6. The "master to be" uses the GAP Link Establishment Procedure to connect to any bonded device.

4.3 Discover Services and Characteristics
The procedures defined in this test group verify IUT’s ability to discover the services and characteristics exposed by a RSC Sensor (Lower Tester).

4.3.1 RSCP/COL/RSCD/BV-01-I [Discover Running Speed and Cadence Service over LE]

• Test Purpose
  Verify that the Running Speed and Cadence Service can be detected by the RSC Collector IUT.

• Reference
  [3] 4.2.1

• Initial Condition
  Establish an ATT Bearer connection between the Lower Tester and IUT and run the preamble procedure for the Collector to initiate connection to a RSC Sensor included in the Section 4.2.4.
  The Lower Tester includes one instantiation of the Running Speed and Cadence Service [6].

• Test Procedure
  The Upper Tester issues a command to the IUT to discover primary services. There are two alternatives:
  1. Execute the procedure included in GATT.TS [5] Discover All Primary Services, GATT/CL/GAD/BV-01-C, once, with the database specified in [6].
  2. Execute the procedure included in GATT.TS [5] Discover Primary Services by Service UUID, GATT/CL/GAD/BV-02-C, with the service UUID set to «Running Speed and Cadence Service», with the database specified in [6].

• Expected Outcome
  Pass verdict
  The IUT performs at least one of the two alternatives to discover the primary services.
An attribute handle range is returned, containing the starting handle and the ending handle of the instantiation of a Running Speed and Cadence Service definition.

4.3.2 RSCP/COL/RSCD/BV-02-I [Discover Device Information Service over LE]

- **Test Purpose**
  
  Verify that the Device Information Service can be detected by the Collector IUT when using an LE Transport.

- **Reference**
  
  [3] 4.2.2

- **Initial Condition**
  
  Run the preamble procedure to enable the Collector to initiate connection to a RSC Sensor included in Section 4.2.4.

  The Lower Tester has one instantiation of the Device Information Service [8].

- **Test Procedure**
  
  The Upper Tester issues a command to the IUT to discover primary services. There are two alternatives:


- **Expected Outcome**
  
  Pass verdict

  An attribute handle range is returned, containing the starting handle and the ending handle of the instantiation of the Device Information Service definition.

4.3.3 RSCP/COL/RSCD/BV-03-I [SDP Service Discovery]

- **Test Purpose**
  
  Verify that the Collector IUT can discover the SDP record for the Running Speed and Cadence Service and Device Information Service (if supported) of the Lower Tester when using the BR/EDR transport.

- **Reference**
  
  [3] 4.2

- **Initial Condition**
  
  An ACL connection over BR/EDR is established between the Lower Tester and IUT.
• Test Procedure
  1. The IUT establishes an SDP connection to the Lower Tester.
  2. The IUT sends SDP requests to retrieve all attributes of all SDP records from the Lower Tester.
• Expected Outcome
  Pass verdict
  The SDP record for the Running Speed and Cadence Service is retrieved.
  If supported, the SDP record for the Device Information Service is retrieved.

4.3.4 RSCP/SEN/RSCD/BV-04-I [Running Speed and Cadence Service not discoverable over BR/EDR]
• Test Purpose
  Verify that the Running Speed and Cadence Service on a BR/EDR/LE (i.e. dual mode) RSC Sensor IUT that only supports the service over LE cannot be discovered by a Collector when using a BR/EDR based ATT Bearer.
• Reference
  [3] 2.5
• Initial Condition
  The IUT includes one instantiation of the Running Speed and Cadence Service [6].
• Test Procedure
  1. Establish a BR/EDR ATT Bearer connection between the Lower Tester and IUT (4.2.2).
  2. The Lower Tester sends an ATT_Find_By_Type_Value_Request (0x0001, 0xFFFF) to the IUT, with type set to «Primary Service» and Value set to «Running Speed and Cadence Service».
  3. If no instances of Running Speed and Cadence Service as a primary service are found over BE/EDR, the Lower Tester sends an ATT_Find_By_Type_Value_Request (0x0001, 0xFFFF) to the IUT, with type set to «Secondary Service» and Value set to the UUID for «Running Speed and Cadence Service».
• Expected Outcome
  Pass verdict
  The Running Speed and Cadence Service is not discovered over BR/EDR.

4.3.5 RSCP/COL/RSCD/BV-05-I [Discover RSC Measurement Characteristic]
• Test Purpose
  Verify that a RSC Measurement characteristic can be detected by the Collector IUT.
• Reference
  [3] 4.3.1.1
Initial Condition

Establish an ATT Bearer connection between the Lower Tester and IUT and run the preamble procedure for the Collector to initiate connection to a RSC Sensor included in the Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.

The Lower Tester includes one instantiation of the Running Speed and Cadence Service [6] including all defined characteristics. This instantiation also contains two «future» characteristics:

- One inserted between the last mandatory characteristic and the first optional characteristic.
- One appended after the last optional characteristic.
- The «future» characteristic is a 16-bit UUID randomly selected from unassigned UUIDs at the time of the test.

The IUT has discovered the Running Speed and Cadence Service and has saved the handle range for an instantiation of the Running Speed and Cadence Service that instantiation contains an instantiation of the RSC Measurement characteristic. This was done by previously using GATT-based methods as in RSCP/COL/RSCD/BV-01-I [Discover Running Speed and Cadence Service over LE] for LE or using SDP as in RSCP/COL/RSCD/BV-03-I [SDP Service Discovery] for BR/EDR.

Test Procedure

1. The Upper Tester issues a command to the IUT to Discover RSC Measurement Characteristic.

2. The IUT executes either of the procedures included in GATT.TS [5]: Discover All Characteristics of a Service, GATT/CL/GAD/BV-04-C, with the specified handle range for the instantiation of the Running Speed and Cadence Service, or Discover Characteristics by UUID, GATT/CL/GAD/BV-05-C, with the specified handle range for the instantiation of the Running Speed and Cadence Service and UUID set to «RSC Measurement». In the selected procedure, only one pass is needed with the server database defined in the Initial Condition.

Expected Outcome

Pass verdict

One attribute handle/value pair is returned containing the UUID «RSC Measurement» characteristic with the appropriate property and handle.

4.3.6 RSCP/COL/RSCD/BV-06-I [Discover RSC Measurement – Client Characteristic Configuration Descriptor]

Test Purpose

Verify that the Collector IUT can discover the Client Characteristic Configuration descriptor of the RSC Measurement characteristic.

Reference

[3] 4.3.1.1
• Initial Condition

Establish an ATT Bearer connection between the Lower Tester and IUT and run the preamble procedure for the Collector to initiate connection to a RSC Sensor included in the Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.

The Lower Tester includes one instantiation of the Running Speed and Cadence Service [6] and an associated Client Characteristic Configuration descriptor.

The IUT has discovered the handle range of the RSC Measurement.

• Test Procedure

1. The Upper Tester issues a command to the IUT to Discover All Characteristic Descriptors using the handle range of the characteristic.

2. The IUT executes one pass of the procedure included in GATT.TS [5] Discover all Characteristic Descriptors, GATT/CL/GAD/BV-06-C using the specified handle range, with the server database defined in the Initial Condition.

• Expected Outcome

   Pass verdict

One attribute handle/value pair is returned containing the UUID «Client Characteristic Descriptor».

4.3.7 RSCP/COL/RSCD/BV-07-I [Discover RSC Feature Characteristic]

• Test Purpose

Verify that a RSC Feature characteristic can be detected by the Collector IUT.

• Reference

[3] 4.3.1.2

• Initial Condition

Establish an ATT Bearer connection between the Lower Tester and IUT and run the preamble procedure for the Collector to initiate connection to a RSC Sensor included in the Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.

The Lower Tester includes one instantiation of the Running Speed and Cadence Service [6] including all defined characteristics. This instantiation also contains two «future» characteristics:

- One inserted between the last mandatory characteristic and the first optional characteristic.
- One appended after the last optional characteristic.
- The «future» characteristic is a 16-bit UUID randomly selected from unassigned UUIDs at the time of the test.

The IUT has discovered the Running Speed and Cadence Service and has saved the handle range for an instantiation of the Running Speed and Cadence Service that contains an instantiation of the RSC Feature characteristic. This was done by previously using GATT-based methods as in
• Test Procedure
  1. The Upper Tester issues a command to the IUT to Discover RSC Feature characteristic.
  2. The IUT executes either of the procedures included in GATT.TS [5]: Discover All Characteristics of a Service, GATT/CL/GAD/BV-04-C, with the specified handle range for the instantiation of the Running Speed and Cadence Service, or Discover Characteristics by UUID, GATT/CL/GAD/BV-05-C, with the specified handle range for the instantiation of the Running Speed and Cadence Service and UUID set to «RSC Feature». In the selected procedure, only one pass is needed with the server database defined in the Initial Condition.

• Expected Outcome
  Pass verdict

One attribute handle/value pair is returned containing the UUID «RSC Feature» characteristic.

4.3.8 RSCP/COL/RSCD/BV-08-I [Discover Sensor Location Characteristic]

• Test Purpose
  Verify that a Sensor Location characteristic can be detected by the Collector IUT.

• Reference
  [3] 4.3.1.3

• Initial Condition
  Establish an ATT Bearer connection between the Lower Tester and IUT and run the preamble procedure for the Collector to initiate connection to a RSC Sensor included in the Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.

  The Lower Tester includes one instantiation of the Running Speed and Cadence Service [6] including all defined characteristics. This instantiation also contains two «future» characteristics:

  - One inserted between the last mandatory characteristic and the first optional characteristic.
  - One appended after the last optional characteristic.
  - The «future» characteristic is a 16-bit UUID randomly selected from unassigned UUIDs at the time of the test.

  The IUT has discovered the Running Speed and Cadence Service and has saved the handle range for an instantiation of the Running Speed and Cadence Service that contains an instantiation of the Sensor Location characteristic. This was done by previously using GATT-based methods as in RSCP/COL/RSCD/BV-01-I [Discover Running Speed and Cadence Service over LE] for LE or using SDP as in RSCP/COL/RSCD/BV-03-I [SDP Service Discovery] for BR/EDR.

• Test Procedure
  1. The Upper Tester issues a command to the IUT to Discover Sensor Location Characteristic.
2. The IUT executes either of the procedures included in GATT.TS [5]: Discover All Characteristics of a Service, GATT/CL/GAD/BV-04-C, with the specified handle range for the instantiation of the Running Speed and Cadence Service, or Discover Characteristics by UUID, GATT/CL/GAD/BV-05-C, with the specified handle range for the instantiation of the Running Speed and Cadence Service and UUID set to «Sensor Location». In the selected procedure, only one pass is needed with the server database defined in the Initial Condition.

• Expected Outcome

   Pass verdict

   One attribute handle/value pair is returned containing the UUID « Sensor Location» characteristic.

4.3.9 RSCP/COL/RSCD/BV-09-I [Discover SC Control Point Characteristic]

• Test Purpose

   Verify that a SC Control Point characteristic can be detected by the Collector IUT.

• Reference

   [3] 4.3.1.4

• Initial Condition

   Establish an ATT Bearer connection between the Lower Tester and IUT and run the preamble procedure for the Collector to initiate connection to a RSC Sensor included in the Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.

   The Lower Tester includes one instantiation of the Running Speed and Cadence Service [6] including all defined characteristics. This instantiation also contains two «future» characteristics:

   - One inserted between the last mandatory characteristic and the first optional characteristic.
   - One appended after the last optional characteristic.
   - The «future» characteristic is a 16-bit UUID randomly selected from unassigned UUIDs at the time of the test.

   The IUT has discovered the Running Speed and Cadence Service and has saved the handle range for an instantiation of the Running Speed and Cadence Service that contains an instantiation of the SC Control Point characteristic. This was done by previously using GATT-based methods as in RSCP/COL/RSCD/BV-01-I [Discover Running Speed and Cadence Service over LE] for LE or using SDP as in RSCP/COL/RSCD/BV-03-I [SDP Service Discovery] for BR/EDR.

• Test Procedure

   1. The Upper Tester issues a command to the IUT to Discover SC Control Point Characteristic.

   2. The IUT executes either of the procedures included in GATT.TS [5]: Discover All Characteristics of a Service, GATT/CL/GAD/BV-04-C, with the specified handle range for the instantiation of the Running Speed and Cadence Service, or Discover Characteristics by UUID, GATT/CL/GAD/BV-05-C, with the specified handle range for the instantiation of the Running Speed and Cadence Service and UUID set to «SC Control Point characteristic». In the selected procedure, only one pass is needed with the server database defined in the Initial Condition.
• Expected Outcome

Pass verdict

One attribute handle/value pair is returned containing the UUID «SC Control Point characteristic».

4.3.10 RSCP/COL/RSCD/BV-10-I [Discover SC Control Point – Client Characteristic Configuration Descriptor]

• Test Purpose
  Verify that the Collector IUT can discover the Client Characteristic Configuration descriptor of the SC Control Point characteristic.

• Reference
  [3] 4.3.1.4

• Initial Condition
  Establish an ATT Bearer connection between the Lower Tester and IUT and run the preamble procedure for the Collector to initiate connection to a RSC Sensor included in the Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.

  The Lower Tester includes one instantiation of the Running Speed and Cadence Service [6] and an associated Client Characteristic Configuration descriptor.

  The IUT has discovered the handle range of the SC Control Point characteristic.

• Test Procedure
  1. The Upper Tester issues a command to the IUT to Discover All Characteristic Descriptors using the handle range of the characteristic.
  2. The IUT executes either of the procedures included in GATT.TS [5]: Discover All Characteristic Descriptors, GATT/CL/GAD/BV-06-C, using the specified handle range, with the server database defined in the Initial Condition.

• Expected Outcome

Pass verdict

One attribute handle/value pair is returned containing the UUID «Client Characteristic Descriptor».

4.3.11 RSCP/COL/RSCD/BV-11-I [Discover Device Information Service Characteristics]

• Test Purpose
  Verify that a Collector IUT can discover all characteristics of a Device Information Service supported by the IUT.

• Reference
  [3] 4.3.2
• Initial Condition

Via IXIT [9] the IUT manufacturer specifies all characteristics of the Device Information Service supported by the IUT.

Run the preamble procedure to enable the Collector to initiate connection to a RSC Sensor included in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.

The Lower Tester includes one the Device Information Service including all defined characteristics. This instantiation also contains two «future» characteristics:

- One inserted before the first characteristic defined in [8].
- One appended after the last characteristic defined in [8].
- The «future» characteristic is a 16-bit UUID randomly selected from unassigned UUIDs at the time of the test.

The IUT has discovered the handle range for an instantiation of the Device Information contained in the Lower Tester. The Device Information Service contains one or more characteristics. This was done by previously using GATT-based methods as in RSCP/COL/RSCD/BV-02-I [Discover Device Information Service over LE] for LE or using SDP as in RSCP/COL/RSCD/BV-03-I [SDP Service Discovery] for BR/EDR.

• Test Procedure

The Upper Tester issues a command to the IUT to discover all characteristics of the Device Information Service supported by the IUT. There are two alternatives:


2. The IUT executes the procedure included in GATT.TS [5] Discover Characteristics by UUID, GATT/CL/GAD/BV-05-C several times, using each of the UUIDs for the characteristics of the Device Information Service supported by the IUT, with the Lower Tester instantiating the database specified in the Initial Condition.

• Expected Outcome

Pass verdict

For each characteristic supported by the IUT contained in the Lower Tester’s instantiation of the Device Information Service, the IUT shall report an attribute handle/value pair for each characteristic specified in the IXIT [9] to the Upper Tester.

4.3.12 RSCP/COL/RSCD/BV-12-I [Read Device Information Service Characteristics]

• Test Purpose

Verify that a Collector IUT can read all characteristics of a Device Information Service supported by the IUT.
• Reference
[3] 3.2, 4.3.2

• Initial Condition
Via IXIT [9] the IUT manufacturer specifies all characteristics of the Device Information Service supported by the IUT.

Run the preamble procedure to enable the Collector to initiate connection to a RSC Sensor included in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.

The Lower Tester includes one instantiation of the Device Information Service [8] including all defined characteristics.

The IUT has the handle/value pairs for all characteristics of the Device Information Service supported by the IUT.

• Test Procedure
This test shall be run twice and a disconnection may occur between the two tests. In the first pass, the string shall include only character values in the ASCII printable range (i.e. 0x20 – 0x7E). In the second pass, the string shall include character values outside the ASCII printable range.

The Upper Tester issues a command to the IUT to read all characteristics of the Device Information Service supported by the IUT.

For each characteristic of the Device Information Service supported by the IUT, the IUT shall execute the procedure included in GATT.TS [5] GATT/CL/GAR/BV-01-C [Read Characteristic Value – by client].

• Expected Outcome
Pass verdict

For each characteristic contained in the Lower Tester’s instantiation of the Device Information Service supported by the IUT, the IUT shall report the characteristic value for all characteristics specified in the IXIT [9] to the Upper Tester, including any printable or non-printable ASCII values.

4.4 Running Speed and Cadence Features
The procedures defined in this test group verify Running Speed and Cadence Sensor IUT implementation of the Features defined in the Running Speed and Cadence Profile Specification [3] by a RSC Sensor IUT, and usage of the same features by a Collector IUT.

4.4.1 RSCP/SEN/RSCF/BV-01-I [Running Speed and Cadence Service UUID in AD]

• Test Purpose
Verify that the Running Speed and Cadence Service UUID is included in AD (Advertising Data) from the RSC Sensor IUT when using the LE Transport.
• Reference

[3] 3.1.1

• Initial Condition

The IUT is powered on in GAP Discoverable Mode.

The IUT is induced to generate Advertising Packets using preamble 4.2.3.

• Test Procedure

The Lower Tester listens for Advertising Packets from the IUT.

• Expected Outcome

Pass verdict

At least one received Advertising Packet contains the defined Service UUID for «Running Speed and Cadence Service».

4.4.2 RSCP/SEN/RSCF/BV-02-I [Local Name included in AD or Scan Response]

• Test Purpose

Verify that the Local Name is included in AD (Advertising Data) or Scan Response data from the RSC Sensor IUT when using the LE Transport.

• Reference

[3] 3.1.1.2

• Initial Condition

The IUT is powered on.

The IUT is induced to generate Advertising Packets using preamble 4.2.3.

• Test Procedure

1. The Lower Tester listens for Advertising Packets from the IUT. When the Lower Tester receives an Advertising Packet from IUT, it sends a Scan Request to the IUT. Then the Lower Tester listens for a Scan Response from the IUT.
• Expected Outcome

Pass verdict

The IUT sends an Advertising packet and a Scan Response packet.

The IUT includes the Local Name in either the Advertising packet or Scan Response packet, but not both.

4.4.3 RSCP/SEN/RSCF/BV-03-I [Appearance included in AD or Scan Response]

• Test Purpose

Verify that the Appearance characteristic value is included in AD (Advertising Data) or Scan Response data from the RSC Sensor IUT when using the LE Transport.

• Reference

[3] 3.1.1.4

• Initial Condition

The IUT is powered on.

The IUT is induced to generate Advertising Packets using preamble 4.2.3.

• Test Procedure

1. The Lower Tester listens for Advertising Packets from the IUT. When the Lower Tester receives an Advertising Packet from IUT, it sends a Scan Request to the IUT. Then the Lower Tester listens for a Scan Response from the IUT.
• Expected Outcome

**Pass verdict**

The IUT sends an Advertising packet and a Scan Response packet.

The IUT includes the Appearance characteristic value in either the Advertising packet or Scan Response packet, but not both.

4.4.4 **RSCP/COL/RSCF/BV-04-I [Configure RSC Measurement for Notification]**

• Test Purpose

Verify that the Collector IUT can configure a RSC Sensor (Lower Tester) to notify RSC Measurement characteristics.

• Reference

[3] 4.4

• Initial Condition

A preamble procedure defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport is used to setup the transport and L2CAP channel and initiate connection to a RSC Sensor.

The IUT has discovered the Client Configuration Descriptor for a RSC Measurement characteristic contained in the Lower Tester.

• Test Procedure

1. The Upper Tester sends a command to the IUT to configure the RSC Sensor to receive RSC Measurement characteristics.
• Expected Outcome

Pass verdict

IUT sends a correctly formatted ATT_Write_Request (0x12) to the Lower Tester, with the handle set to that of the Client Configuration Descriptor for a RSC Measurement characteristic, and the value set to «notification».

4.4.5 RSCP/COL/RSCF/BV-05-I [Receive RSC Measurement for Notifications]

• Test Purpose

Verify that the Collector IUT can receive notifications of the RSC Measurement Characteristic, including all variants.

• Reference

[3] 4.4

• Initial Condition

A preamble procedure defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport is used to setup the transport and L2CAP channel and initiate connection to a RSC Sensor.

The IUT has executed the procedure included in RSCP/COL/RSCF/BV-04-I [Configure RSC Measurement for Notification], which configures it to expect RSC Measurement Notifications.

The IUT knows the handle of the RSC Measurement characteristic.

• Test Procedure

1. The Lower Tester sends an ATT_Handle_Value_Notification containing a RSC Measurement characteristic value to the IUT.

2. The Lower Tester sends one RSC Measurement characteristic notification for each Test Pattern shown in the following table. For each Test Pattern, the value of the Flags field is shown along with the corresponding pass criteria.

<table>
<thead>
<tr>
<th>Test Pattern</th>
<th>Flags Field Value</th>
<th>Pass Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0000000000</td>
<td>No optional fields are present and Walking or Running Status indicates that the user is walking.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2</td>
<td>00000001</td>
<td>Only optional field present is Instantaneous Stride Length and the Walking or Running Status bit indicates that the user is walking.</td>
</tr>
<tr>
<td>3</td>
<td>00000010</td>
<td>Only optional field present is Total Distance and the Walking or Running Status bit indicates that the user is walking.</td>
</tr>
<tr>
<td>4</td>
<td>00000100</td>
<td>No optional fields are present and the Walking or Running Status bit indicates that the user is running.</td>
</tr>
<tr>
<td>5</td>
<td>00001111</td>
<td>All optional fields are present and the Walking or Running Status bit indicates that the user is running</td>
</tr>
</tbody>
</table>

**Expected Outcome**

**Pass verdict**

IUT is able to correctly parse the received RSC Measurement values according to the pass criteria in the table above. The reported RSC Measurement field values match the ones sent by the Lower Tester.

### 4.4.6 RSCP/COL/RSCF/BI-01-I [Receive RSC Measurement Notifications with reserved flags]

- **Test Purpose**
  
  Verify that the Collector IUT can receive notifications of the RSC Measurement Characteristic from a RSC Sensor including reserved flags.

- **Reference**
  
  [3] 4.4
• Initial Condition
A preamble procedure defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport is used to setup the transport and L2CAP channel and initiate connection to a RSC Sensor.

The IUT has executed the procedure included in RSCP/COL/RSCF/BV-04-I [Configure RSC Measurement for Notification], which configures it to expect RSC Measurement Notifications.

The IUT knows the handle of the RSC Measurement characteristic.

• Test Procedure
The Lower Tester sends an ATT_Handle_Value_Notification containing a RSC Measurement characteristic value to the IUT. There are many combinations of reserved flag settings. For this test use Flags = 0xFF. This includes reserved bits 7, 6, 5, 4 and 3 = 11111 and valid uses of the other flags: Instantaneous Stride Length Present bit = 1, Total Distance Present bit = 1, Walking or Running Status bit = 1.

• Expected Outcome
Pass verdict

IUT reports the received RSC Measurement value to the Upper Tester. The reported RSC Measurement value matches the one sent by the Lower Tester, including the reserved bits of the Flags field.

4.4.7 RSCP/COL/RSCF/BI-02-I [Receive RSC Measurement Notifications with additional octets not represented in the flags field]

• Test Purpose
Verify that the Collector IUT can receive notifications of the RSC Measurement Characteristic from a RSC Sensor including additional octets not represented in the flags field.
• Reference

[3] 4.4

• Initial Condition

A preamble procedure defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport is used to setup the transport and L2CAP channel and initiate connection to a RSC Sensor.

The IUT has executed the procedure included in RSCP/COL/RSCF/BV-04-I [Configure RSC Measurement for Notification], which configures it to expect RSC Measurement Notifications.

The IUT knows the handle of the RSC Measurement characteristic.

• Test Procedure

The Lower Tester sends an ATT_Handle_Value_Notification containing a RSC Measurement characteristic value to the IUT. That value shall contain: Flags = 0x00, Instantaneous Stride Length is not present, Total Distance is not present, and at least two additional octets not represented in the flags field. The total number of octets shall not exceed the maximum MTU size.

![Diagram showing test procedure]

• Expected Outcome

Pass verdict

IUT reports the received RSC Measurement value to the Upper Tester with no additional octets. The reported RSC Measurement value matches the one sent by the Lower Tester.

Fail verdict

Any of the pass verdicts fail to occur. In particular, if the additional octets are reported to the Upper Tester.
4.4.8 RSCP/COL/RSCF/BV-06-I [Receive multiple RSC Measurement Notifications]

- **Test Purpose**
  Verify that the collector IUT can receive multiple RSC Measurement notifications.

- **Reference**
  [3] 4.4, 4.5

- **Initial Condition**
  A preamble procedure defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport is used to setup the transport and L2CAP channel and initiate connection to a RSC Sensor.

  The IUT is configured to enable RSC Measurement Notification, by executing the procedure contained in RSCP/COL/RSCF/BV-04-I [Configure RSC Measurement for Notification].

  The IUT knows the handle of the RSC Measurement characteristic.

- **Test Procedure**
  The Lower Tester sends two or more ATT_Handle_Value_Notifications to the IUT; each contains the RSC Measurement characteristic value.

- **Expected Outcome**
  **Pass verdict**

  For each ATT_Handle_Value_Notification sent to the IUT:
  - The IUT reports the received RSC Measurement value to the Upper Tester.
  - The reported RSC Measurement values match that sent by the Lower Tester.

4.4.9 RSCP/COL/RSCF/BV-07-I [Read RSC Feature characteristic]

- **Test Purpose**
  Verify that the Collector IUT can read the RSC Feature characteristic from a RSC Sensor.

- **Reference**
  [3] 4.5

- **Initial Condition**
  A preamble procedure defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport is used to setup the transport and L2CAP channel and initiate connection to a RSC Sensor.

  The Upper Tester knows the handle of a RSC Feature characteristic contained in the Lower Tester.

- **Test Procedure**
  1. Send a command from Upper Tester to request IUT to read a RSC Feature characteristic from the Lower Tester e.g., RSCP_ReadRequest (handle, value).
2. After receipt of the expected result by the Lower Tester from the IUT, send an ATT_Read_Response (0x0B) from the Lower Tester to the IUT containing a defined value of the RSC Feature characteristic.

• Expected Outcome
  Pass verdict

  The IUT sends a correctly formatted ATT_Read_Request (0x0A) to the Lower Tester, containing the handle specified by the Upper Tester.

  The IUT receives the response from the Lower Tester and sends the RSCP_ReadResponse containing the correct RSC Feature value to the Upper Tester.

4.4.10 RSCP/COL/RSCF/BI-03-I [Read RSC Feature characteristic with reserved value]

• Test Purpose
  Verify that the Collector IUT can read the RSC Feature characteristic from a RSC Sensor, and ignore reserved bits.

• Reference
  [3] 4.5

• Initial Condition
  A preamble procedure defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport is used to setup the transport and L2CAP channel and initiate connection to a RSC Sensor.

  The Upper Tester knows the handle of a RSC Feature characteristic contained in the Lower Tester.

• Test Procedure
  1. Send a command from Upper Tester to request the IUT to read a RSC Feature Characteristic from the Lower Tester e.g., RSCP_ReadRequest (handle, value).
2. After receipt of the expected result by the Lower Tester from the IUT, send an ATT_Read_Response (0x0B) from the Lower Tester to the IUT containing values with some reserved bits set to 1.

- Expected Outcome
  Pass verdict

  The IUT sends a correctly formatted ATT_Read_Request (0x0A) to the Lower Tester, containing the handle specified by the Upper Tester.

  The IUT receives the response from the Lower Tester, ignores the reserved bits and continues to operate as if the reserved bits were not set.

4.4.11 RSCP/COL/RSCF/BV-08-I [Read Sensor Location characteristic]

- Test Purpose
  Verify that the Collector IUT can read the Sensor Location characteristic from a RSC Sensor.

- Reference
  [3] 4.6

- Initial Condition
  A preamble procedure defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport is used to setup the transport and L2CAP channel and initiate connection to a RSC Sensor.

  The Upper Tester knows the handle of a Sensor Location characteristic contained in the Lower Tester.

- Test Procedure
  1. Send a command from Upper Tester to request IUT to read a Sensor Location characteristic from the Lower Tester e.g., RSCP_ReadRequest (handle, value).

  2. After receipt of the expected result by the Lower Tester from the IUT, send an ATT_Read_Response (0x0B) from the Lower Tester to the IUT containing a defined value of the Sensor Location characteristic.
• Expected Outcome

Pass verdict

The IUT sends a correctly formatted ATT_Read_Request (0x0A) to the Lower Tester, containing the handle specified by the Upper Tester.

The IUT receives the response from the Lower Tester and sends the RSCP_ReadResponse containing the correct Sensor Location value to the Upper Tester.

4.4.12 RSCP/COL/RSCF/BI-04-I [Read Sensor Location characteristic with reserved value]

• Test Purpose

Verify that the Collector IUT can read the Sensor Location characteristic from a RSC Sensor, and discard a reserved value or change it to ‘Other’.

• Reference

[3] 4.6

• Initial Condition

A preamble procedure defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport is used to setup the transport and L2CAP channel and initiate connection to a RSC Sensor.

The Upper Tester knows the handle of a Sensor Location characteristic contained in the Lower Tester.

• Test Procedure

1. Send a command from Upper Tester to request IUT to read a Sensor Location characteristic from the Lower Tester e.g., RSCP_ReadRequest (handle, value).

2. After receipt of the expected result by the Lower Tester from the IUT, send an ATT_Read_Response (0x0B) from the Lower Tester to the IUT containing a reserved.
• Expected Outcome

**Pass verdict**

The IUT sends a correctly formatted ATT_Read_Request (0x0A) to the Lower Tester, containing the handle specified by the Upper Tester.

The IUT receives the response from the Lower Tester and discards it or changes it to ‘Other’.

### 4.4.13 RSCP/COL/RSCF/BV-09-I [Lost Bond Procedure when using LE transport]

• Test Purpose

Verify that the Collector IUT starts encryption with a bonded RSC Sensor on reconnection and rediscovers and reconfigures the RSC Sensor if bond is lost.

• Reference

[3] 5.2.2

• Initial Condition

The IUT and the Lower Tester have previously bonded.

The IUT has configured the Lower Tester to enable notifications on the RSC Measurement characteristic of the Lower Tester's Running Speed and Cadence Service.

The Lower Tester has the «Service Changed» characteristic.

No connection is established between the IUT and Lower Tester.

The bond is deleted at the Lower Tester.

• Test Procedure

1. The Lower Tester begins advertising using GAP undirected connectable mode.
2. The IUT establishes a connection to the Lower Tester.
3. The Lower Tester does not send any notifications to IUT.
4. Verify that the IUT starts encryption when the connection is established and rediscovers and reconfigures the RSC Sensor upon detection of the lost bond.

   • Expected Outcome

     Pass verdict

     The IUT starts encryption when the connection is established.

     The IUT rediscovers the RSC Service.

     The IUT reconfigures the Client Characteristic Configuration descriptors of the RSC Measurement characteristic and the SC Control Point characteristic (if supported).

4.4.14 RSCP/COL/RSCF/BV-10-I [Lost Bond Procedure when using BR/EDR transport]

   • Test Purpose

     Verify that the Collector IUT reconfigures the RSC Sensor if the bond is lost.

     In case of BR/EDR, either the Lower tester or Collector IUT could initiate connection when they are bonded. The device initiating the connection becomes a master and is referred here as “master to be” and the device accepting the connection becomes a slave and is referred here as “slave to be”. Verify that the “master to be” starts encryption with a bonded “slave to be” on reconnection.

   • Reference

     [3] 5.3.1.2

   • Initial Condition

     The IUT and the Lower Tester have previously bonded.

     The IUT has configured the Lower Tester to enable notifications on the RSC Measurement characteristic of the Lower Tester's Running Speed and Cadence Service.

     The Lower Tester has the «Service Changed» characteristic.

     No connection is established between the IUT and Lower Tester.

     The bond is deleted at the Lower Tester.

   • Test Procedure

     1. The "slave to be" is in connectable mode.

     2. The "master to be" establishes a connection to the "slave to be".

     3. The Lower Tester does not send any notifications to IUT.

     4. The "master to be" starts encryption when the connection is established.

     5. Verify that the IUT rediscovers and reconfigures the RSC Sensor upon detection of the lost bond.
• Expected Outcome
  
  Pass verdict
  
  The "master to be" starts encryption when the connection is established.
  
  The IUT rediscovers the RSC Service.
  
  The IUT reconfigures the Client Characteristic Configuration descriptors of the RSC Measurement characteristic and the SC Control Point characteristic (if supported).

4.5  Service Procedures – Set Cumulative Value

This test group contains test cases to verify compliant operation when the SC Control Point Set Cumulative Value procedure is used.

4.5.1  RSCP/COL/SPS/BV-01-I [Set Cumulative Value – Set to zero]

• Test Purpose
  
  Verify that the Collector IUT can perform the Set Cumulative Value procedure to set a zero value.
  
• Reference
  
  [3] 4.7.2.1

• Initial Condition
  
  Perform the preamble described in Section 4.2.3.
  
  The value of Total Distance in the Lower Tester is set to a known non-zero value.

• Test Procedure
  
  1. A connection is established between the IUT and Lower Tester using the Preamble defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.
  2. The Lower Tester sends one or more notifications of the RSC Measurement characteristic with the Total Distance field set to a non-zero value.
  3. IUT writes the Set Cumulative Value Op Code (0x01) to the SC Control Point with a Parameter Value of 0x00000000.
  4. The Lower Tester sends an indication of the SC Control Point characteristic with the Response Code Op Code (0x10) and a Parameter representing Request Op Code (0x01) followed by the Response Code for ‘success’ (0x01).
  5. The Lower Tester sends a notification of the RSC Measurement characteristic with the Total Distance field set to 0 (or close to 0).
  6. Verify the characteristic value meets the requirements of the service.

• Expected Outcome
  
  Pass verdict
  
  The IUT receives one or more notifications of the RSC Measurement characteristic with the Total Distance field set to a non-zero value.
After setting the value to zero, the IUT receives the next notification of the RSC Measurement characteristic containing the Total Distance with the value of the Total Distance field set to 0 (or slightly higher in case of movement).

### 4.5.2 RSCP/COL/SPS/BV-02-I [Set Cumulative Value – Set to non-zero]

- **Test Purpose**
  Verify that the Collector IUT can perform the Set Cumulative Value procedure to set a non-zero value.

- **Reference**
  [3] 4.7.2.1

- **Initial Condition**
  Perform the preamble described in Section 4.2.3.

  The value of Total Distance in the Lower Tester is set to a known non-zero value.

- **Test Procedure**
  1. A connection is established between the IUT and Lower Tester using the Preamble defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.
  2. The Lower Tester sends one or more notifications of the RSC Measurement characteristic with the Total Distance field set to any value.
  3. IUT writes the Set Cumulative Value Op Code (0x01) to the SC Control Point with a Parameter Value that is different than the initial value (e.g. 0x0000FFFF).
  4. The Lower Tester sends an indication of the SC Control Point characteristic with the Response Code Op Code (0x10) and a Parameter representing Request Op Code (0x01) followed by the Response Code for ‘success’ (0x01).
  5. The Lower Tester sends a notification of the RSC Measurement characteristic with the Total Distance field set to the specified value (or close to the specified value).
  6. Verify the characteristic value meets the requirements of the service.

- **Expected Outcome**
  **Pass verdict**

  The IUT receives one or more notifications of the RSC Measurement characteristic with the Total Distance field set to the specified non-zero value.

  After setting the value, the IUT receives the next notification of the RSC Measurement characteristic containing the Total Distance with the value of the Total Distance field set to the specified value (or slightly higher in case of movement).

### 4.6 Service Procedures – Start Sensor Calibration

This test group contains test cases to verify compliant operation when the SC Control Point Start Sensor Calibration procedure is used.
4.6.1 RSCP/COL/SPC/BV-01-I [Start Sensor Calibration]

• Test Purpose
  Verify that the Collector IUT can perform the Start Sensor Calibration procedure.

• Reference
  [3] 4.7.2.2

• Initial Condition
  Perform the preamble described in Section 4.2.3.

• Test Procedure
  1. A connection is established between the IUT and Lower Tester using the Preamble defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.
  2. IUT writes the Start Sensor Calibration Op Code (0x02) to the SC Control Point.
  3. The Lower Tester sends an indication of the SC Control Point characteristic with the Response Code Op Code (0x10) and a Parameter representing Request Op Code (0x02) followed by the Response Code for ‘success’ (0x01).
  4. Verify the characteristic value meets the requirements of the service.

• Expected Outcome
  Pass verdict
  The IUT receives the Request Op Code ‘success’.

4.7 Service Procedures – Request Supported Sensor Locations

This test group contains test cases to verify compliant operation when the SC Control Point Start Sensor Calibration procedure is used.

4.7.1 RSCP/COL/SPL/BV-01-I [Request Supported Sensor Locations]

• Test Purpose
  Verify that the Collector IUT can perform the Request Supported Sensor Locations procedure.

• Reference
  [3] 4.7.2.4

• Initial Condition
  Perform the preamble described in Section 4.2.3.

• Test Procedure
  1. A connection is established between the IUT and Lower Tester using the Preamble defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.
  2. IUT writes the Request Supported Sensor Location Op Code (0x04) to the SC Control Point with no Parameter.
3. The Lower Tester sends an indication of the SC Control Point characteristic with the Response Code Op Code (0x10) and a Parameter representing Request Op Code (0x04) followed by the Response Code for ‘success’ (0x01) and a list of supported sensor locations.

4. Verify the supported sensor locations values meet the requirements of the service.
   - Expected Outcome
     Pass verdict

     The IUT receives a list of supported and valid sensor locations.

**4.8 Service Procedures – Update Sensor Location**

This test group contains test cases to verify compliant operation when the SC Control Point Update Sensor Location procedure is used.

**4.8.1 RSCP/COL/SPU/BV-01-I [Update Sensor Location]**

- **Test Purpose**
  Verify that the Collector IUT can perform the Update Sensor Location procedure.

- **Reference**
  [3] 4.7.2.3

- **Initial Condition**
  Perform the preamble described in Section 4.2.3.

- **Test Procedure**
  1. A connection is established between the IUT and Lower Tester using the Preamble defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.
  2. IUT writes the Update Sensor Location Op Code (0x03) to the SC Control Point with the Parameter of this Control Point set to a location supported by the RSC Sensor.
  3. The Lower Tester sends an indication of the SC Point characteristic with the Response Code Op Code (0x10) and a Parameter representing Request Op Code (0x03) followed by the Response Code for ‘success’ (0x01).
  4. Verify the characteristic value meets the requirements of the service.

- **Expected Outcome**
  Pass verdict

  The Sensor Location value is updated with the correct value.

  The IUT receives the Request Op Code ‘success’.

**4.9 Service Procedures – General Error Handling**

This test group contains test cases to verify compliant operation when an error is caused by the Server side.
### 4.9.1 RSCP/COL/SPE/BI-01-C [Unsupported Op Code]

- **Test Purpose**
  Verify that the Collector IUT behaves appropriately when it receives an ‘Op Code not supported’ SC Control Point Response Code.

- **Reference**
  [3] 3.7.3

- **Initial Condition**
  Perform the preamble described in Section 4.2.3.

- **Test Procedure**
  1. A connection is established between the IUT and Lower Tester using the Preamble defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.
  3. The Lower Tester sends an indication of the SC Control Point characteristic with the Response Code Op Code (0x10) and a Parameter representing Request Op Code followed by the Response Code Value for ‘Op Code not supported’ (0x02) (i.e. the Lower Tester simulates an unsupported Op Code).
  4. Verify that the IUT considers the procedure to have failed.

- **Expected Outcome**
  **Pass verdict**

  The IUT returns to stable state and can process commands normally.

- **Notes**
  The test purpose is to verify the IUTs capability to handle an Op Code not supported response by the Sensor. This Sensor response may be provoked by the IUT writing an Op Code that is not supported by the responding compliant Sensor, or where the Sensor response to the IUT may be yielded by a test system that emulates that it does not support an Op Code.

### 4.9.2 RSCP/COL/SPE/BI-02-C [Invalid Parameter]

- **Test Purpose**
  Verify that the Collector IUT behaves appropriately when it receives an ‘Invalid Parameter’ SC Control Point Response Code.

- **Reference**
  [3] 3.7.3

- **Initial Condition**
  Perform the preamble described in Section 4.2.3.
• Test Procedure

1. A connection is established between the IUT and Lower Tester using the Preamble defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.

2. IUT writes the Update Sensor Location Op Code to the SC Control Point using any Sensor Location value.

3. The Lower Tester sends an indication of the SC Control Point characteristic with the Response Code Op Code (0x10) and a Parameter representing Request Op Code (0x03) followed by the Response Code Value for 'Invalid Parameter' (0x03) (i.e. the Lower Tester simulates an unsupported value).

• Expected Outcome

  Pass verdict

  The IUT returns to stable state and can process commands normally.

4.9.3 RSCP/COL/SPE/BI-03-C [Operation Failed]

• Test Purpose

Verify that the Collector IUT behaves appropriately when it receives an ‘Operation Failed’ SC Control Point Response Code.

• Reference

  [3] 3.7.3

• Initial Condition

  Perform the preamble described in Section 4.2.3.

• Test Procedure

1. A connection is established between the IUT and Lower Tester using the Preamble defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.


3. The Lower Tester sends an indication of the SC Control Point characteristic with the Response Code Op Code (0x10) and a Parameter representing Request Op Code followed by the Response Code Value for 'Operation Failed' (0x04) (i.e. the Lower Tester simulates a failed operation).

• Expected Outcome

  Pass verdict

  The IUT returns to stable state and can process commands normally.

4.9.4 RSCP/COL/SPE/BI-04-C [SC Control Point Procedure Timeout]

• Test Purpose

Verify that if the Collector IUT does not receive a response to an SC Control Point Op Code, it will time out after the Attribute Transaction Timeout.
• Reference

[3] 4.7.4

• Initial Condition

Perform the preamble described in Section 4.2.3.

• Test Procedure

1. A connection is established between the IUT and Lower Tester using the Preamble defined in Section 4.2.4 if using an LE transport or 4.2.5 if using a BR/EDR transport.

2. IUT writes any of the defined Op Codes (Set Cumulative Value or Start Calibration or Update Sensor Location or Request Supported Sensor Locations) to the SC Control Point using an appropriate Parameter for the Op Code.

3. The Lower Tester does not send an indication of the SC Control Point characteristic for at least longer than the Attribute Protocol Timeout.

4. After the specified timeout the IUT sends a notification of Attribute Transaction Timeout to the Upper Tester and the IUT considers the procedure to have failed.

• Expected Outcome

Pass verdict

The IUT returns to stable state and can process commands normally.
# 5 Test Case Mapping

The Test Case Mapping Table (TCMT) maps test cases to specific capabilities in the ICS. Profiles, protocols and services may define multiple roles, and it is possible that a product may implement more than one role. 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 an y/x reference, where y corresponds to the table number and x corresponds to the feature number as defined in the ICS Proforma for Running Speed and Cadence Profile (RCSP) [3]. 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.

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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Test case(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSCP 2/2 AND RSCP 8/1</td>
<td>Discover Running Speed and Cadence Service - LE</td>
<td>RSCP/COL/RSCD/BV-01-I</td>
</tr>
<tr>
<td>RSCP 2/2 AND RSCP 9/1</td>
<td>Discover Device Information Service - LE</td>
<td>RSCP/COL/RSCD/BV-02-I</td>
</tr>
<tr>
<td>RSCP 2/1 AND RSCP 8/1</td>
<td>Discover Running Speed and Cadence Service – BR/EDR</td>
<td>RSCP/COL/RSCD/BV-03-I</td>
</tr>
<tr>
<td>(RSCP 2/2 AND NOT RSCP 2/1) AND RSCP 3/1 AND GAP 0/3 AND GATT 1a/4</td>
<td>Discover Running Speed and Cadence Service – Not Discoverable over BR/EDR</td>
<td>RSCP/SEN/RSCD/BV-04-I</td>
</tr>
<tr>
<td>RSCP 8/2</td>
<td>Discover RSC Measurement characteristic</td>
<td>RSCP/COL/RSCD/BV-05-I</td>
</tr>
<tr>
<td>RSCP 8/3</td>
<td>Discover RSC Measurement - Client Characteristic Configuration Descriptor</td>
<td>RSCP/COL/RSCD/BV-06-I</td>
</tr>
<tr>
<td>RSCP 8/4</td>
<td>Discover RSC Feature characteristic</td>
<td>RSCP/COL/RSCD/BV-07-I</td>
</tr>
<tr>
<td>RSCP 8/5</td>
<td>Discover Sensor Location</td>
<td>RSCP/COL/RSCD/BV-08-I</td>
</tr>
<tr>
<td>RSCP 8/6</td>
<td>Discover SC Control Point characteristic</td>
<td>RSCP/COL/RSCD/BV-09-I</td>
</tr>
<tr>
<td>RSCP 8/7</td>
<td>Discover SC Control Point - Client Characteristic Configuration Descriptor</td>
<td>RSCP/COL/RSCD/BV-10-I</td>
</tr>
<tr>
<td>RSCP 9/2 OR RSCP 9/4</td>
<td>Discover Manufacturer Name String Characteristic Discover Model Number String Characteristic</td>
<td>RSCP/COL/RSCD/BV-11-I</td>
</tr>
<tr>
<td>RSCP 9/3 OR RSCP 9/5</td>
<td>Read Manufacturer Name String Characteristic Read Model Number String Characteristic</td>
<td>RSCP/COL/RSCD/BV-12-I</td>
</tr>
<tr>
<td>RSCP 2/2 AND RSCP 3/2</td>
<td>Running Speed and Cadence Service UUID in AD in GAP Discoverable Mode</td>
<td>RSCP/SEN/RSCF/BV-01-I</td>
</tr>
<tr>
<td>RSCP 2/2 AND RSCP 3/3</td>
<td>Local Name in AD or Scan Response</td>
<td>RSCP/SEN/RSCF/BV-02-I</td>
</tr>
<tr>
<td>RSCP 2/2 AND RSCP 3/4</td>
<td>Appearance in AD or Scan Response</td>
<td>RSCP/SEN/RSCF/BV-03-I</td>
</tr>
<tr>
<td>Item</td>
<td>Feature</td>
<td>Test case(s)</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>RSCP 11/1</td>
<td>Configure RSC Measurement characteristic for notifications</td>
<td>RSCP/COL/RSCF/BV-04-I</td>
</tr>
<tr>
<td>RSCP 11/2</td>
<td>Receive RSC Measurement characteristic notifications</td>
<td>RSCP/COL/RSCF/BV-05-I, RSCP/COL/RSCF/BV-06-I, RSCP/COL/RSCF/BV-01-I, RSCP/COL/RSCF/BV-02-I</td>
</tr>
<tr>
<td>RSCP 11/3</td>
<td>Read RSC Feature characteristic</td>
<td>RSCP/COL/RSCF/BV-07-I, RSCP/COL/RSCF/BV-03-I</td>
</tr>
<tr>
<td>RSCP 11/4</td>
<td>Read Sensor Location characteristic</td>
<td>RSCP/COL/RSCF/BV-08-I, RSCP/COL/RSCF/BV-04-I</td>
</tr>
<tr>
<td>RSCP 2/2 AND RSCP 11/13</td>
<td>Verify Bond Status on Reconnection - LE</td>
<td>RSCP/COL/RSCF/BV-09-I</td>
</tr>
<tr>
<td>RSCP 2/1 AND RSCP 11/13</td>
<td>Verify Bond Status on Reconnection – BR/EDR</td>
<td>RSCP/COL/RSCF/BV-10-I</td>
</tr>
<tr>
<td>RSCP 10/1</td>
<td>Set Cumulative Value – Set to zero</td>
<td>RSCP/COL/SPS/BV-01-I</td>
</tr>
<tr>
<td>RSCP 10/2</td>
<td>Set Cumulative Value – Set to non-zero</td>
<td>RSCP/COL/SPS/BV-02-I</td>
</tr>
<tr>
<td>RSCP 10/3</td>
<td>Start Calibration</td>
<td>RSCP/COL/SPC/BV-01-I</td>
</tr>
<tr>
<td>RSCP 10/5</td>
<td>Request Supported Sensor Locations</td>
<td>RSCP/COL/SPL/BV-01-I</td>
</tr>
<tr>
<td>RSCP 10/4</td>
<td>Update Sensor Location</td>
<td>RSCP/COL/SPU/BV-01-I, RSCP/COL/SPE/BV-02-C</td>
</tr>
<tr>
<td>RSCP 11/6 AND RSCP 11/7</td>
<td>Write to SC Control Point characteristic and Receive SC Control Point characteristic indications</td>
<td>RSCP/COL/SPE/BI-01-C, RSCP/COL/SPE/BI-03-C</td>
</tr>
<tr>
<td>RSCP 11/12</td>
<td>SC Control Point Characteristic – Procedure Time Out</td>
<td>RSCP/COL/SPE/BI-04-C</td>
</tr>
</tbody>
</table>

*Table 5.1: Test Case Mapping*