Weight Scale Service (WSS)

Bluetooth® Test Suite

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1 Scope

This Bluetooth document contains the Test Suite Structure (TSS) and Test Cases (TC) to test the Bluetooth Weight Scale Service Specification.

The objective of this test suite is to provide a basis for interoperability 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 Test Strategy and Terminology Overview
[2] Bluetooth Core Specification, Version 4.0 or later
[3] Weight Scale Service Specification v1.0
[4] ICS Proforma for Weight Scale Service, WSS.ICS
[5] GATT Test Suite, GATT.TS
3 Test Suite Structure (TSS)

3.1 Overview

The Weight Scale Service requires the presence of GAP, SM (LE), SDP (BR/EDR), and GATT. This is illustrated in Figure 3.1.

![Weight Scale Service Test Model](image)

*Figure 3.1: Weight Scale Service Test Model*

### 3.2 Test Strategy

The test objectives are to verify functionality of the Weight Scale Service within a Bluetooth Host and enable interoperability between Bluetooth Hosts on different devices. The testing approach is to cover mandatory and optional requirements in the service specification and to match these to the support of the IUT as described in the ICS Proforma.

The test equipment shall provide an implementation of the Radio Controller and the parts of the Host needed to perform the test cases defined in the Weight Scale Service Test Suite. For some test cases, it is necessary to stimulate the IUT from an Upper Tester. In practice, this could be implemented as a special test interface, an Upper Tester, or another interface supported by the IUT.

The 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.
3.3 Test Groups

The following test groups have been defined.

3.3.1 Service Definition
Verify the service definition.

3.3.2 Characteristic Declaration
Verify the presence and contents of characteristic declarations.

3.3.3 Characteristic Descriptors
Verify the presence and contents of characteristic descriptors.

3.3.4 Characteristic Read
Verify characteristics which support reading can be read. Verify the format and value of characteristic values.

3.3.5 Configure Indication
Verify characteristics can be configured for indication.

3.3.6 Characteristic Indication
Verify characteristics which support indication can be indicated.
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>WSS</td>
<td>Weight Scale Service</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Identifier Abbreviation</th>
<th>Feature Identifier &lt;feat&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI</td>
<td>Characteristic Indication</td>
</tr>
<tr>
<td>CON</td>
<td>Configure Indications</td>
</tr>
<tr>
<td>CR</td>
<td>Characteristic Read</td>
</tr>
<tr>
<td>DEC</td>
<td>Characteristic Declaration</td>
</tr>
<tr>
<td>DES</td>
<td>Characteristic Descriptors</td>
</tr>
<tr>
<td>SD</td>
<td>Service Definition</td>
</tr>
</tbody>
</table>

Table 4.1: Weight Scale Service 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 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 generated by Launch Studio, the Test Case as described in the Test Suite, or with the Test System utilized, the Member is required to notify the responsible party via an errata request such that the issue may be addressed.

4.1.3 Pass/Fail Verdict Conventions
Each test case has an Expected Outcome section, 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 ATT Bearer on LE Transport
Follow the preamble procedure described in [5] section 4.2.1.2 with the IUT operating in the Peripheral role.

4.2.2 ATT Bearer on BR/EDR Transport
Follow the preamble procedure described in [5] section 4.2.1.1.

4.3 Service Definition
Verify the service definition.

4.3.1 WSS/SEN/SD/BV-01-C [Service Definition over LE]
• Test Purpose
  Verify the IUT has an instantiation of the Weight Scale Service as either a primary service or a secondary service. This test case only applies when using the LE transport.

• Reference
  [3] 2
Weight Scale Service (WSS) / Test Suite

• Initial Condition
  Initial conditions are as specified in the GATT test cases referenced below.

• Test Procedure
  1. The Lower Tester attempts to discover the service as a primary service by executing the test
     procedure included in GATT test case GATT/SR/GAD/BV-02-C [Discover Primary Services by
     to 0x0001 and Ending Handle set to 0xFFFF, until all Primary Services with a matching service
     UUID (if any) are found.
  2. The Lower Tester attempts to discover the service as a secondary service by executing the test
     procedure included in GATT test case GATT/SR/GAD/BV-03-C [Find Included Services - from
     server] in [5] with Starting Handle set to 0x0001 and Ending Handle set to 0xFFFF, until all
     Include declarations containing the service UUID «Weight Scale Service» in the response (if any)
     are found.
  3. Verify that the Weight Scale Service has been discovered in at least one of the above steps.

• Expected Outcome
  Pass verdict

   One attribute handle range is returned (either as a primary service or a secondary service),
   containing the starting handle and the ending handle of the service definition. The Attribute Type in
   that service declaration is either «primary service» or «secondary service».

4.3.2 WSS/SEN/SD/BV-02-C [SDP Record]

• Test Purpose
  Verify the SDP Record for the Weight Scale Service. This test case only applies when using the
  BR/EDR transport.

• Reference
  [3] 2, 4

• Initial Condition
  An ACL connection over BR/EDR is established between the Lower Tester and IUT.

• Test Procedure
  1. The Lower Tester establishes an SDP connection to the IUT.
  2. The Lower Tester sends SDP requests to retrieve all attributes of the SDP record for the Weight
     Scale Service.

• Expected Outcome
  Pass verdict

   The SDP record for the service is found.
   All attributes which are mandatory for the service are present in the SDP record.
   The values of all attributes in the SDP record meet the requirements of the service.
The GATT Start Handle and GATT End Handle parameters in the SDP record match the start handle and end handle of the service.

### 4.4 Characteristic Declaration

**• Test Purpose**

This test group contains test cases to verify that the characteristic property field of the characteristic declaration meets the requirements of the service. The verification is performed one property at a time, as enumerated in the test cases in Table 4.2 below, using this generic test procedure.

**• Reference**

[3] 3

**• Initial Condition**

The handle range of the service has been previously discovered by the Lower Tester in test case WSS/SEN/SD/BV-01-C [Service Definition over LE] or WSS/SEN/SD/BV-02-C [SDP Record].

Establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1 if using an LE transport or Section 4.2.2 if using a BR/EDR transport.

**• Test Procedure**

The following test procedure applies to the test cases listed in Table 4.2:

1. Discover all characteristics of the service by executing the test procedure of GATT test case GATT/SR/GAD/BV-04-C [Discover All Characteristics of a Service - from server] in [4].

2. For a discovered characteristic that is listed in Table 4.2, verify the characteristic properties field of the characteristic declaration meets the requirements of the service.

**• Expected Outcome**

The following pass and fail verdicts apply to the test cases listed in Table 4.2:

**Pass verdict**

The characteristic is discovered and the characteristic properties field of the characteristic declaration meets the requirements of the service.

### Characteristic Declaration Test Cases

<table>
<thead>
<tr>
<th>Test Case</th>
<th>Characteristic Properties Value (Requirements)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.1</td>
<td>WSS/SEN/DEC/BV-01-C [Characteristic Declaration – Weight Scale Feature]</td>
</tr>
<tr>
<td>4.4.2</td>
<td>WSS/SEN/DEC/BV-02-C [Characteristic Declaration– Weight Measurement]</td>
</tr>
</tbody>
</table>

*Table 4.2: Characteristic Declaration Test Cases*
4.5 Characteristic Descriptors

- Test Purpose
  This test group contains test cases to verify that the characteristic descriptors meet the requirements of the service. The verification is done one descriptor at the time, as enumerated in the test cases in Table 4.3, using this generic test procedure.

- Reference
  [3] 3

- Initial Condition
  The handle range of each characteristic referenced in the test cases below has been previously discovered by the Lower Tester during the test procedure in Section 4.4 or is known to the Lower Tester by other means.

  Establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1 if using an LE transport or Section 4.2.2 if using a BR/EDR transport.

- Test Procedure
  The following test procedure applies to the test cases listed in Table 4.3:

  1. Discover all characteristic descriptors of the characteristic by executing the test procedure of GATT test case GATT/SR/GAD/BV-06-C [Discover All Characteristic Descriptors - from server] in [4] using the handle range of the characteristic. The IUT returns one or more handle-UUID pairs.

  2. If the UUID in a handle-UUID pair is for a characteristic descriptor referenced in a test case below, read the characteristic descriptor by executing the test procedure of GATT test case GATT/SR/GAR/BV-06-C [Read Characteristic Descriptors - from server server] in [4].

  3. Verify the value of the characteristic descriptor meets the requirements of the service.

- Expected Outcome
  The following pass and fail verdicts apply to the test cases listed in Table 4.3:

  Pass verdict

  The characteristic descriptor is discovered, the characteristic descriptor is read, and the value of the characteristic descriptor meets the requirements of the service.

### Characteristic Descriptor Test Cases

<table>
<thead>
<tr>
<th>Test Case</th>
<th>Value (Requirements)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5.1 WSS/SEN/DES/BV-01-C [Weight Measurement - Client Characteristic Configuration Descriptor]</td>
<td>0x0000 or 0x0002 ([3] 3)</td>
</tr>
</tbody>
</table>

Table 4.3: Characteristic Descriptor Test Cases
4.6 Characteristic Read

• Test Purpose
This test group contains test cases to read and verify that the characteristic values required by the service are compliant. The verification is done one value at a time, as enumerated in the test cases in Table 4.4, using this generic test procedure.

• Reference
[3] 3.1.1, 3.3.1

• Initial Condition
The handle range of each characteristic referenced in the test cases below has been previously discovered by the Lower Tester during the test procedure in Section 4.4 or is known to the Lower Tester by other means.

If the IUT requires a bonding procedure then perform a bonding procedure.

Establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1 if using an LE transport or Section 4.2.2 if using a BR/EDR transport.

If IUT permissions for the characteristic require a specific security mode or security level, establish a connection meeting those requirements.

• Test Procedure
The following test procedure applies to the test cases listed in Table 4.4:

1. Read the characteristic value by executing the test procedure of GATT test case GATT/SR/GAR/BV-01-C [Read Characteristic Value - from Server] in [4].

2. Verify the characteristic value meets the requirements of the service.

• Expected Outcome
The following pass and fail verdicts apply to the test cases listed in Table 4.4:

Pass verdict

The characteristic is successfully read and the characteristic value meets the requirements of the service.

Characteristic Read Value Test Cases

<table>
<thead>
<tr>
<th>Test Case</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6.1 WSS/SEN/CR/BV-01-C [Characteristic Read – Weight Scale Feature]</td>
<td>2 octets with RFU bits set to 0. ([3] 3.1.1)</td>
</tr>
</tbody>
</table>

Table 4.4: Characteristic Read Value Test Cases
4.7 Configure Indication

• Test Purpose
This test group contains test cases to verify compliant operation in response to enable and disable characteristic indication. The verification is done one value at a time, as enumerated in the test cases in Table 4.5, using this generic test procedure.

• Reference
[3] 3.2

• Initial Condition
The handle range of each characteristic referenced in the test cases below has been previously discovered by the Lower Tester during the test procedure in Section 4.4 or is known to the Lower Tester by other means.

The handle of the Client Characteristic Configuration descriptor of each characteristic referenced in the test cases below has been previously discovered by the Lower Tester during the test procedure in Section 4.5 or is known to the Lower Tester by other means.

If the IUT requires a bonding procedure then perform a bonding procedure.

Establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1 if using an LE transport or Section 4.2.2 if using a BR/EDR transport.

If IUT permissions for the characteristic require a specific security mode or security level, establish a connection meeting those requirements.

• Test Procedure
The following test procedure applies to the test cases listed in Table 4.5:

1. Disable indication by writing value 0x0000 to the client characteristic configuration descriptor of the characteristic using the test procedure of GATT test case GATT/SR/GAW/BV-08-C [Write Characteristic Descriptors – from Server] in [4].

2. Enable indication by writing value 0x0002 to the client characteristic configuration descriptor of the characteristic.

3. The Lower Tester reads the value of the client characteristic configuration descriptor.

• Expected Outcome
The following pass and fail verdicts apply to the test cases listed in Table 4.5:

Pass verdict

The characteristic descriptor is successfully written and the value returned when read is consistent with the value written.
Configure Indication Test Cases

<table>
<thead>
<tr>
<th>Test Case</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.7.1</td>
<td>WSS/SEN/CON/BV-01-C [Configure Indication - Weight Measurement] 0x0002 ([3] 3.2)</td>
</tr>
</tbody>
</table>

Table 4.5: Configure Indication Test Cases

4.8 Characteristic Indication

This test group contains test cases to verify compliant operation when the IUT sends indications of characteristic values.

4.8.1 WSS/SEN/CI/BV-01-C [Weight Measurement Indications]

• Test Purpose
  Verify the IUT can send an indication of the Weight Measurement characteristic that includes the mandatory fields (i.e., the Flags field and the Weight field).

• Reference
  [3] 3.2

• Initial Condition
  If the IUT requires a bonding procedure, then perform a bonding procedure.
  If the IUT requires the use of consent, the Lower Tester registers a new user and retains the chosen consent code and the assigned User ID.
  The Weight Measurement characteristic is configured for indication.
  The Lower Tester has read and cached the value of the Weight Scale Feature characteristic.
  If desired, establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1 if using an LE transport or Section 4.2.2 if using a BR/EDR transport.
  If IUT permissions for the Weight Measurement characteristic require a specific security mode or security level, establish a connection meeting those requirements.

• Test Procedure
  1. Perform an action on the IUT that will induce it to send an indication of the Weight Measurement characteristic along with the Flags field and the Weight field (i.e., the IUT advertises). The IUT and Lower Tester connect.
  2. If the devices were not bonded, the Lower Tester configures the Weight Measurement characteristic for indication.
  3. The Lower Tester receives one ATT_Handle_Value_Indication from the IUT containing the Weight Measurement characteristic handle and value along with the Flags field and the Weight field.
  4. The Lower Tester sends an ATT_Handle_Value_Confirmation to the IUT.
5. Verify the characteristic value meets the requirements of the service.
6. The Lower Tester configures the Weight Measurement characteristic to disable indications.
7. Perform an action on the IUT that will generate a new Weight measurement.
8. Verify the Lower Tester does not receive an ATT_Handle_Value_Indication from the IUT containing the Weight Measurement characteristic.

• Expected Outcome

**Pass verdict**

The IUT sends one indication of the Weight Measurement characteristic and it includes at least the Flags field and the Weight field.

The value of each field of the characteristic meets the requirements of the service.

The IUT stops sending indications of the Weight Measurement characteristic after the Lower Tester configures the characteristic to disable indications.

The RFU bits of the Flags field are set to zero.

4.8.2 **WSS/SEN/CI/BV-02-C [Weight Measurement Indications – Time Stamp]**

• Test Purpose

Verify the IUT can send an indication of the Weight Measurement characteristic that includes the Time Stamp field.

• Reference

[3] 3.2.1.3

• Initial Condition

If the IUT requires a bonding procedure, then perform a bonding procedure.

If the IUT requires the use of consent, the Lower Tester registers a new user and retains the chosen consent code and the assigned User ID.

The Weight Measurement characteristic is configured for indication.

The Lower Tester has read and cached the value of the Weight Scale Feature characteristic.

If desired, establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1 if using an LE transport or Section 4.2.2 if using a BR/EDR transport.

If IUT permissions for the Weight Measurement characteristic require a specific security mode or security level, establish a connection meeting those requirements.

• Test Procedure

1. Perform an action on the IUT that will induce it to send an indication of the Weight Measurement characteristic along with the Time Stamp field (i.e., the IUT advertises). The IUT and Lower Tester connect.
2. If the devices were not bonded, the Lower Tester configures the Weight Measurement characteristic for indication.

3. The Lower Tester receives one ATT_Handle_Value_Indication from the IUT containing the Weight Measurement characteristic handle and value along with the Time Stamp field.

4. The Lower Tester sends an ATT_Handle_Value_Confirmation to the IUT.

5. Verify the characteristic value meets the requirements of the service.

- Expected Outcome

**Pass verdict**

The IUT sends one indication of the Weight Measurement characteristic and it includes the Time Stamp field with the appropriate flag set in the Flags field.

The value of each field of the characteristic meets the requirements of the service.

The value of the Time Stamp Supported bit of the cached Weight Scale Feature characteristic is set to 1.

The RFU bits of the Flags field are set to zero.

### 4.8.3 WSS/SEN/CI/BV-03-C [Weight Measurement Indications – User ID]

- **Test Purpose**

Verify the IUT can send an indication of the Weight Measurement characteristic that includes the User ID field.

- **Reference**

[3] 3.2.1.4

- **Initial Condition**

If the IUT requires a bonding procedure, then perform a bonding procedure.

If the IUT requires the use of consent, the Lower Tester registers a new user and retains the chosen consent code and the assigned User ID.

The Weight Measurement characteristic is configured for indication.

The Lower Tester has read and cached the value of the Weight Scale Feature characteristic.

If desired, establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1 if using an LE transport or Section 4.2.2 if using a BR/EDR transport.

The IUT has previously been configured for at least two users and Lower Tester has been assigned only one User ID at initial connection with the IUT.

If IUT permissions for the Weight Measurement characteristic require a specific security mode or security level, establish a connection meeting those requirements.
• **Test Procedure**

  1. Perform an action on the IUT that will induce it to send an indication of the Weight Measurement characteristic along with the User ID field (i.e., the IUT advertises). The IUT and Lower Tester connect.

  2. If the devices were not bonded, the Lower Tester configures the Weight Measurement characteristic for indication.

  3. The Lower Tester receives one ATT_Handle_Value_Indication from the IUT containing the Weight Measurement characteristic handle and value along with the User ID field and appropriate User ID value.

  4. The Lower Tester sends an ATT_Handle_Value_Confirmation to the IUT.

  5. Verify the characteristic value meets the requirements of the service.

  6. Perform an action on the IUT that will induce it to send an indication of the Weight Measurement characteristic that is not designated for the user assigned to the Lower Tester (i.e., the IUT advertises).

• **Expected Outcome**

  **Pass verdict**

  The IUT sends one indication of the Weight Measurement characteristic and it includes the User ID field with the appropriate flag set in the Flags field.

  The value of each field of the characteristic meets the requirements of the service.

  The value of the User ID field is consistent with the value assigned to the Lower Tester at initial configuration.

  The Lower Tester does not receive the second measurement for the user to which it is not associated.

  The value of the Multiple Users Supported bit of the cached Weight Scale Feature characteristic is set to 1.

  The RFU bits of the Flags field are set to zero.

4.8.4 **WSS/SEN/CI/BV-04-C [Weight Measurement Indications – BMI]**

• **Test Purpose**

  Verify the IUT can send an indication of the Weight Measurement characteristic that includes the BMI and Height fields.

• **Reference**

  [3] 3.2.1.5

• **Initial Condition**

  If the IUT requires a bonding procedure, then perform a bonding procedure.

  If the IUT requires the use of consent, the Lower Tester registers a new user and retains the chosen consent code and the assigned User ID.
The Weight Measurement characteristic is configured for indication.

The Lower Tester has read and cached the value of the Weight Scale Feature characteristic.

If desired, establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1 if using an LE transport or Section 4.2.2 if using a BR/EDR transport.

If IUT permissions for the Weight Measurement characteristic require a specific security mode or security level, establish a connection meeting those requirements.

- **Test Procedure**
  1. Perform an action on the IUT that will induce it to send an indication of the Weight Measurement characteristic along with BMI and Height fields (i.e., the IUT advertises). The IUT and Lower Tester connect.
  2. If the devices were not bonded, the Lower Tester configures the Weight Measurement characteristic for indication.
  3. The Lower Tester receives one ATT_Handle_Value_Indication from the IUT containing the Weight Measurement characteristic handle and value along with the BMI and Height fields.
  4. The Lower Tester sends an ATT_Handle_Value_Confirmation to the IUT.
  5. Verify the characteristic value meets the requirements of the service.

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

  The IUT sends one indication of the Weight Measurement characteristic and it includes the BMI and Height fields with the appropriate flag set in the Flags field.

  The value of each field of the characteristic meets the requirements of the service.

  The value of the BMI Supported bit of the cached Weight Scale Feature characteristic is set to 1.

  The RFU bits of the Flags field are set to zero.

**4.8.5 WSS/SEN/CI/BV-05-C [Stored Weight Measurements – Single User]**

- **Test Purpose**
  
  Verify the single-user IUT can send multiple indications of stored Weight Measurement characteristics that include the Time Stamp field.

- **Reference**
  
  [3] 3.2.1.3

- **Initial Condition**
  
  If the IUT requires a bonding procedure then perform a bonding procedure.

  The Weight Measurement characteristic is configured for indication.

  The Lower Tester has read and cached the value of the Weight Scale Feature characteristic.
If desired, establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1 if using an LE transport or Section 4.2.2 if using a BR/EDR transport.

If IUT permissions for the Weight Measurement characteristic require a specific security mode or security level, establish a connection meeting those requirements.

If a connection exists, it should be disconnected.

• Test Procedure

1. Perform an action on the IUT that will induce it to store several (e.g., 5 or more) Weight measurements.
2. Perform an action on the IUT that will induce it to send stored measurements (i.e., the IUT advertises). The IUT and Lower Tester connect.
3. If the devices were not bonded, the Lower Tester configures the Weight Measurement characteristic for indication.
4. The Lower Tester receives one ATT_Handle_Value_Indication from the IUT containing the Weight Measurement characteristic handle and value along with the Time Stamp field.
5. The Lower Tester sends an ATT_Handle_Value_Confirmation to the IUT.
6. Repeat steps 4-5 until all stored measurements are received (the IUT may terminate the connection upon completion).
7. Verify the characteristic value in each indication contains the time stamp field.
8. Verify the indications are received in order according to the time stamp with the oldest measurement received first.

• Expected Outcome

Pass verdict

The IUT sends several indications of the Weight Measurement characteristic.

Each characteristic includes the Time Stamp field with the appropriate flag set in the Flags field.

The value of each field of the characteristic meets the requirements of the service.

The value of the Time Stamp Supported bit of the cached Weight Scale Feature characteristic is set to 1.

The RFU bits of the Flags field are set to zero.

The indications are received with the oldest data being sent first followed by the next oldest data (in FIFO order) until all stored data has been transferred.

4.8.6 WSS/SEN/CI/BV-06-C [Stored Weight Measurements – Multiple Users]

• Test Purpose

Verify the multi-user IUT can send multiple indications of stored Weight Measurement characteristics that include the Time Stamp field and the User ID field to the designated Lower Tester.
• Reference

[3] 3.2.1.3, 3.2.1.4

• Initial Condition

If the IUT requires a bonding procedure, then perform a bonding procedure.

If the IUT requires the use of consent, the Lower Tester registers a new user and retains the chosen consent code and the assigned User ID.

The Weight Measurement characteristic is configured for indication.

The Lower Tester has read and cached the value of the Weight Scale Feature characteristic.

If desired, establish an ATT Bearer connection between the Lower Tester and IUT as described in Section 4.2.1 if using an LE transport or Section 4.2.2 if using a BR/EDR transport.

The IUT has previously been configured for at least two users and Lower Tester has been assigned only one User ID at initial connection with the IUT.

If IUT permissions for the Weight Measurement characteristic require a specific security mode or security level, establish a connection meeting those requirements.

If a connection exists, it should be disconnected.

• Test Procedure

1. Perform an action on the IUT that will induce it to store several (e.g., 5 or more) Weight measurements for the user assigned to the Lower Tester and also several (e.g., 5 or more) Weight measurements for one or more users not assigned to the Lower Tester.

2. Perform an action on the IUT that will induce it to send stored measurements (i.e., the IUT advertises). The IUT and Lower Tester connect.

3. If the devices were not bonded, the Lower Tester configures the Weight Measurement characteristic for indication.

4. The Lower Tester receives one ATT_Handle_Value_Indication from the IUT containing the Weight Measurement characteristic handle and value along with the Time Stamp field and appropriate User ID value.

5. The Lower Tester sends an ATT_Handle_Value_Confirmation to the IUT.

6. Repeat steps 4-5 until all stored measurements are received (the IUT may terminate the connection upon completion).

7. Verify the characteristic value in each indication contains the time stamp field.

8. Verify the indications are received in order according to the time stamp with the oldest measurement received first.

• Expected Outcome

Pass verdict

The IUT sends several indications of the Weight Measurement characteristic.
Each characteristic includes the Time Stamp field and User ID field with the appropriate flag set in the Flags field.

The value of each field of the characteristic meets the requirements of the service.

The value of the Time Stamp Supported bit of the cached Weight Scale Feature characteristic is set to 1.

The value of the Multiple Users Supported bit of the cached Weight Scale Feature characteristic is set to 1.

The value of the User ID field is consistent with the value assigned to the Lower Tester at initial configuration.

The Lower Tester does not receive any measurements for users to which it is not associated.

The RFU bits of the Flags field are set to zero.

The indications are received with the oldest data being sent first followed by the next oldest data (in FIFO order) until all stored data has been transferred.
5 Test Case Mapping

The Test Case Mapping Table (TCMT) maps test cases to specific capabilities in the ICS.

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 Weight Scale Service (WSS) [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.

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>
<th>Feature</th>
<th>Test Case(s)</th>
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<tbody>
<tr>
<td>WSS 2/2 AND WSS 0/1</td>
<td>Weight Scale Service – Service Definition over LE</td>
<td>WSS/SEN/SD/BV-01-C</td>
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<tr>
<td>WSS 2/1 AND WSS 0/1</td>
<td>Weight Scale Service – SDP Record</td>
<td>WSS/SEN/SD/BV-02-C</td>
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<td>WSS 4/1</td>
<td>Weight Scale Feature Characteristic</td>
<td>WSS/SEN/DEC/BV-01-C</td>
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<td></td>
<td>WSS/SEN/CR/BV-01-C</td>
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<tr>
<td>WSS 4/2</td>
<td>Weight Measurement Characteristic</td>
<td>WSS/SEN/DEC/BV-02-C</td>
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<td>WSS/SEN/CON/BV-01-C</td>
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<td>WSS/SEN/CI/BV-01-C</td>
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<td>Characteristic</td>
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<td>Stored Weight Measurement Characteristics – Single</td>
<td>WSS/SEN/CI/BV-05-C</td>
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<tr>
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<td>User ID field of the Weight Measurement Characteristic</td>
<td>WSS/SEN/CI/BV-03-C</td>
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<tr>
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<td>Stored Weight Measurement Characteristics – Multiple</td>
<td>WSS/SEN/CI/BV-06-C</td>
</tr>
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<td>Users</td>
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<td>Item</td>
<td>Feature</td>
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<td>---------</td>
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<tr>
<td>WSS 4/5</td>
<td>BMI and Height fields of the Weight Measurement Characteristic</td>
<td>WSS/SEN/CI/BV-04-C</td>
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*Table 5.1: Test Case Mapping*
6 Revision History and Contributors

Revision History

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<td>1.0.0</td>
<td>2014-10-21</td>
<td>Publication</td>
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<tr>
<td>1.0.1r00</td>
<td>2016-05-26</td>
<td>Converted to new Test Case ID conventions as defined in TSTO v4.1.</td>
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<tr>
<td>1.0.1r01</td>
<td>2016-06-18</td>
<td>Converted to current test specification template</td>
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<tr>
<td>1.0.1</td>
<td>2016-07-14</td>
<td>Prepared for TCRL 2016-1 publication.</td>
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<tr>
<td>1.0.2r00</td>
<td>2019-04-09</td>
<td>TSE 11480 (rating 2): Updated template. Added use of consent in initial conditions for WSS/SEN/CI/BV-01-C – -04-C and -06-C.</td>
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<tr>
<td>1.0.2</td>
<td>2019-07-29</td>
<td>Approved by BTI. Prepared for TCRL 2019-1 publication.</td>
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<table>
<thead>
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<td>Elvis Pfutzenreuter</td>
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