# Automation IO Service (AIOS)

*Bluetooth*® Test Suite

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# Contents

# 1 Scope

This Bluetooth document contains the Test Suite Structure (TSS) and test cases to test the implementation of the Bluetooth Automation IO Service Specification with the objective to provide a high probability of air interface interoperability between the tested implementation and other manufacturers' Bluetooth devices.

# 2   References, definitions, and abbreviations

## 2.1    References

This document incorporates provisions from other publications by dated or undated reference. These references are cited at the appropriate places in the text, and the publications are listed hereafter. Additional definitions and abbreviations can be found in [1] and [2].

[1]   Test Strategy and Terminology Overview

[2]   Bluetooth Core Specification, Version 4.0 or later

[3]   Automation IO Service Specification, Version 1.0

[4]   Automation IO Service ICS, AIOS.ICS

[5]   GATT Test Suite, GATT.TS

[6]   Automation IO Profile Specification, Version 1.0

[7]   Automation IO Service Implementation extra Information for Test, IXIT

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

# 3   Test Suite Structure (TSS)

## 3.1   Overview

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

```
┌─────────────────────────────────┐
│      Automation IO              │
│      Service                    │
├─────────────────────────────────┤
│              GATT               │
├──────┬───────┬──────┬───────────┤
│ ATT  │ GAP   │ SM   │ SDP       │
│      │       │ (LE) │ (BR/EDR)  │
├──────┴───────┴──────┴───────────┤
│             L2CAP               │
├─────────────────────────────────┤
│       LE or BR/EDR              │
│       Controller               │
└─────────────────────────────────┘
```
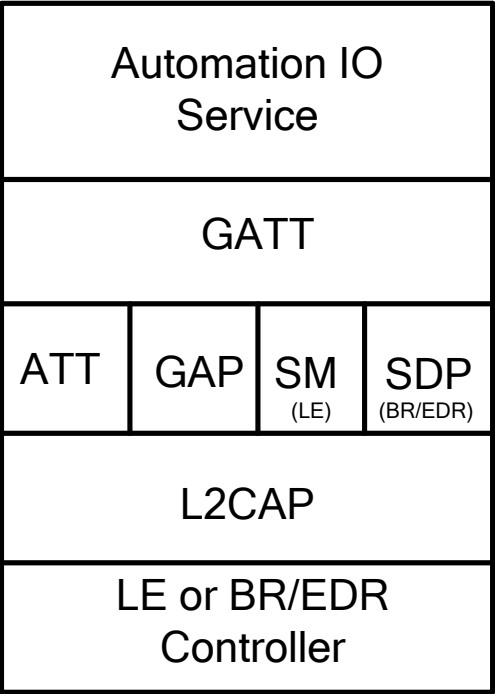
*Figure 3.1: Automation IO Service Test Model*

## 3.2   Test Strategy

The test objectives are to verify functionality of the Automation IO Service within a Bluetooth Host and enable interoperability between Bluetooth Hosts on different devices. The testing approach covers mandatory and optional requirements in the specification and matches these to the support of the IUT as described in the ICS [4]. Any defined test herein is applicable to the IUT if the ICS logical expression defined in the Test Case Mapping Table (TCMT) evaluates to true.

The test equipment provides an implementation of the Radio Controller and the parts of the Host needed to perform the test cases defined in this Test Suite. A Lower Tester acts as the IUT's peer device and interacts with the IUT over-the-air interface. The configuration, including the IUT, needs to implement similar capabilities to communicate with the test equipment. For some test cases, it is necessary to stimulate the IUT from an Upper Tester. In practice, this could be implemented as a special test interface, a Man Machine Interface (MMI), or another interface supported by the IUT.

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 purposes.

## 3.3    Test groups

The following test groups have been defined:

- Generic GATT Integrated Tests

- Characteristic Combinations

- Characteristic Descriptors

- Characteristic Read

- Characteristic Write and Write without Response

- Configure Indication and Notification

- Analog/Aggregate Notification

- Digital/Aggregate Indication

- Analog/Aggregate Indication

# 4 Test cases (TC)

## 4.1 Introduction

### 4.1.1 Test case identification conventions

Test cases are assigned unique identifiers per the conventions in [2]. The convention used here is:
**<spec abbreviation>/<IUT role>/**<class>/**<feat>**/<func>/<subfunc>**/<cap>/<xx>-<nn>-<y>**.

Additionally, testing of this specification includes tests from the GATT Test Suite [5] referred to as
Generic GATT Integrated Tests (GGIT); when used, the test cases in GGIT are referred to through a
TCID string using the following convention:
**<spec abbreviation>/<IUT role>/<GGIT test group>**/< GGIT class >/<xx>-<nn>-<y>.

| Identifier Abbreviation | Spec Identifier <spec abbreviation> |
|---|---|
| AIOS | Automation IO Service |
| **Identifier Abbreviation** | **Role Identifier <IUT role>** |
| SR | Server role |
| **Identifier Abbreviation** | **Reference Identifier <GGIT test group>** |
| SGGIT | Server Generic GATT Integrated Tests |
| **Identifier Abbreviation** | **Reference Identifier <GGIT class>** |
| CHA | Characteristic |
| SDP | SDP Records |
| SER | Service |
| **Identifier Abbreviation** | **Feature Identifier <feat>** |
| CI | Characteristic Indication |
| CN | Characteristic Notification |
| COM | Characteristics Combinations |
| CON | Configure Indication or Notification |
| CR | Characteristic Read |
| CW | Characteristic Write and Write without Response |
| DES | Characteristic Descriptors |

*Table 4.1: AIOS TC feature naming conventions*

### 4.1.2 Conformance

When conformance is claimed for a particular specification, all capabilities are to be supported in the
specified manner. The mandated tests from this Test Suite depend on the capabilities to which
conformance is claimed.

The Bluetooth Qualification Program may employ tests to verify implementation robustness. The level of
implementation robustness that is verified varies from one specification to another and may be revised for
cause based on interoperability issues found in the market.

Such tests may verify:

- That claimed capabilities may be used in any order and any number of repetitions not excluded by the
specification

- That capabilities enabled by the implementations are sustained over durations expected by the use case

- That the implementation gracefully handles any quantity of data expected by the use case

- That in cases where more than one valid interpretation of the specification exists, the implementation complies with at least one interpretation and gracefully handles other interpretations

- That the implementation is immune to attempted security exploits

A single execution of each of the required tests is required to constitute a Pass verdict. However, it is noted that to provide a foundation for interoperability, it is necessary that a qualified implementation consistently and repeatedly pass any of the applicable tests.

In any case, where a member finds an issue with the test plan generated by the Bluetooth SIG qualification tool, with the test case as described in the Test Suite, or with the test system utilized, the member is required to notify the responsible party via an erratum request such that the issue may be addressed.

### 4.1.3    Pass/Fail verdict conventions

Each test case has an Expected Outcome section. The IUT is granted the Pass verdict when all the detailed pass criteria conditions within the Expected Outcome section are met.

The convention in this Test Suite is that, unless there is a specific set of fail conditions outlined in the test case, the IUT fails the test case as soon as one of the pass criteria conditions cannot be met. If this occurs, the outcome of the test is a Fail verdict.

## 4.2    Setup preambles

The procedures defined in this section are used to achieve specific conditions on the IUT and the test equipment within the tests defined in this document. The preambles here are commonly used to establish initial conditions.

### 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 Generic GATT Integrated Tests

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

| TCID | Service / Characteristic / Descriptor | Reference | Properties | Value Length (Octets) | Service Type |
|------|-----|-----|-----|-----|-----|
| AIOS/SR/SGGIT/SER/BV-01-C [Service GGIT – Automation IO Service] | Automation IO Service | [3] 2 | - | - | Primary Service |
| AIOS/SR/SGGIT/SDP/BV-01-C [SDP Record – Automation IO Service] | Automation IO Service | [3] 4 | - | - | - |
| AIOS/SR/SGGIT/CHA/BV-01-C [Characteristic GGIT - Digital Characteristic - Read] | Digital Characteristic | [3] 3 | 0x02 (Read) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-02-C [Characteristic GGIT - Digital Characteristic - Write Without Response] | Digital Characteristic | [3] 3 | 0x04 (Write Without Response) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-03-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response] | Digital Characteristic | [3] 3 | 0x06 (Read, Write Without Response) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-04-C [Characteristic GGIT - Digital Characteristic - Write] | Digital Characteristic | [3] 3 | 0x08 (Write) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-05-C [Characteristic GGIT - Digital Characteristic - Read, Write] | Digital Characteristic | [3] 3 | 0x0A (Read, Write) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-06-C [Characteristic GGIT - Digital Characteristic - Write Without Response, Write] | Digital Characteristic | [3] 3 | 0x0C (Write Without Response, Write) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-07-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Write] | Digital Characteristic | [3] 3 | 0x0E (Read, Write Without Response, Write) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-08-C [Characteristic GGIT - Digital Characteristic - Read, Notify] | Digital Characteristic | [3] 3 | 0x12 (Read, Notify) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-09-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Notify] | Digital Characteristic | [3] 3 | 0x16 (Read, Write Without Response, Notify) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-10-C [Characteristic GGIT - Digital Characteristic - Read, Write, Notify] | Digital Characteristic | [3] 3 | 0x1A (Read, Write, Notify) | Skip | - |

| TCID | Service / Characteristic / Descriptor | Reference | Properties | Value Length (Octets) | Service Type |
|------|---------------------------------------|-----------|------------|------------------------|--------------|
| AIOS/SR/SGGIT/CHA/BV-11-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Write, Notify] | Digital Characteristic | [3] 3 | 0x1E (Read, Write Without Response, Write, Notify) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-12-C [Characteristic GGIT - Digital Characteristic - Read, Indicate] | Digital Characteristic | [3] 3 | 0x22 (Read, Indicate) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-13-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Indicate] | Digital Characteristic | [3] 3 | 0x26 (Read, Write Without Response, Indicate) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-14-C [Characteristic GGIT - Digital Characteristic - Read, Write, Indicate] | Digital Characteristic | [3] 3 | 0x2A (Read, Write, Indicate) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-15-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Write, Indicate] | Digital Characteristic | [3] 3 | 0x2E (Read, Write Without Response, Write, Indicate) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-16-C [Characteristic GGIT - Digital Characteristic - Read, Extended Properties] | Digital Characteristic | [3] 3 | 0x82 (Read, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-17-C [Characteristic GGIT - Digital Characteristic - Write Without Response, Extended Properties] | Digital Characteristic | [3] 3 | 0x84 (Write Without Response, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-18-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Extended Properties] | Digital Characteristic | [3] 3 | 0x86 (Read, Write Without Response, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-19-C [Characteristic GGIT - Digital Characteristic - Write, Extended Properties] | Digital Characteristic | [3] 3 | 0x88 (Write, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-20-C [Characteristic GGIT - Digital Characteristic - Read, Write, Extended Properties] | Digital Characteristic | [3] 3 | 0x8A (Read, Write, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-21-C [Characteristic GGIT - Digital Characteristic - Write Without Response, Write, Extended Properties] | Digital Characteristic | [3] 3 | 0x8C (Write Without Response, Write, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-22-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Write, Extended Properties] | Digital Characteristic | [3] 3 | 0x8E (Read, Write Without Response, Write, Extended Properties) | Skip | - |

| TCID | Service / Characteristic / Descriptor | Reference | Properties | Value Length (Octets) | Service Type |
|---|---|---|---|---|---|
| AIOS/SR/SGGIT/CHA/BV-23-C [Characteristic GGIT - Digital Characteristic - Read, Notify, Extended Properties] | Digital Characteristic | [3] 3 | 0x92 (Read, Notify, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-24-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Notify, Extended Properties] | Digital Characteristic | [3] 3 | 0x96 (Read, Write Without Response, Notify, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-25-C [Characteristic GGIT - Digital Characteristic - Read, Write, Notify, Extended Properties] | Digital Characteristic | [3] 3 | 0x9A (Read, Write, Notify, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-26-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Write, Notify, Extended Properties] | Digital Characteristic | [3] 3 | 0x9E (Read, Write Without Response, Write, Notify, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-27-C [Characteristic GGIT - Digital Characteristic - Read, Indicate, Extended Properties] | Digital Characteristic | [3] 3 | 0xA2 (Read, Indicate, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-28-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Indicate, Extended Properties] | Digital Characteristic | [3] 3 | 0xA6 (Read, Write Without Response, Indicate, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-29-C [Characteristic GGIT - Digital Characteristic - Read, Write, Indicate, Extended Properties] | Digital Characteristic | [3] 3 | 0xAA (Read, Write, Indicate, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-30-C [Characteristic GGIT - Digital Characteristic - Read, Write Without Response, Write, Indicate, Extended Properties] | Digital Characteristic | [3] 3 | 0xAE (Read, Write Without Response, Write, Indicate, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-31-C [Characteristic GGIT - Analog Characteristic - Read] | Analog Characteristic | [3] 3 | 0x02 (Read) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-32-C [Characteristic GGIT - Analog Characteristic - Write Without Response] | Analog Characteristic | [3] 3 | 0x04 (Write Without Response) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-33-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response] | Analog Characteristic | [3] 3 | 0x06 (Read, Write Without Response) | Skip | - |

| TCID | Service / Characteristic / Descriptor | Reference | Properties | Value Length (Octets) | Service Type |
|------|------|------|------|------|------|
| AIOS/SR/SGGIT/CHA/BV-34-C [Characteristic GGIT - Analog Characteristic - Write] | Analog Characteristic | [3] 3 | 0x08 (Write) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-35-C [Characteristic GGIT - Analog Characteristic - Read, Write] | Analog Characteristic | [3] 3 | 0x0A (Read, Write) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-36-C [Characteristic GGIT - Analog Characteristic - Write Without Response, Write] | Analog Characteristic | [3] 3 | 0x0C (Write Without Response, Write) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-37-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Write] | Analog Characteristic | [3] 3 | 0x0E (Read, Write Without Response, Write) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-38-C [Characteristic GGIT - Analog Characteristic - Read, Notify] | Analog Characteristic | [3] 3 | 0x12 (Read, Notify) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-39-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Notify] | Analog Characteristic | [3] 3 | 0x16 (Read, Write Without Response, Notify) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-40-C [Characteristic GGIT - Analog Characteristic - Read, Write, Notify] | Analog Characteristic | [3] 3 | 0x1A (Read, Write, Notify) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-41-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Write, Notify] | Analog Characteristic | [3] 3 | 0x1E (Read, Write Without Response, Write, Notify) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-42-C [Characteristic GGIT - Analog Characteristic - Read, Indicate] | Analog Characteristic | [3] 3 | 0x22 (Read, Indicate) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-43-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Indicate] | Analog Characteristic | [3] 3 | 0x26 (Read, Write Without Response, Indicate) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-44-C [Characteristic GGIT - Analog Characteristic - Read, Write, Indicate] | Analog Characteristic | [3] 3 | 0x2A (Read, Write, Indicate) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-45-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Write, Indicate] | Analog Characteristic | [3] 3 | 0x2E (Read, Write Without Response, Write, Indicate) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-46-C [Characteristic GGIT - Analog Characteristic - Read, Extended Properties] | Analog Characteristic | [3] 3 | 0x82 (Read, Extended Properties) | Skip | - |

| TCID | Service / Characteristic / Descriptor | Reference | Properties | Value Length (Octets) | Service Type |
|---|---|---|---|---|---|
| AIOS/SR/SGGIT/CHA/BV-47-C [Characteristic GGIT - Analog Characteristic - Write Without Response, Extended Properties] | Analog Characteristic | [3] 3 | 0x84 (Write Without Response, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-48-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Extended Properties] | Analog Characteristic | [3] 3 | 0x86 (Read, Write Without Response, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-49-C [Characteristic GGIT - Analog Characteristic - Write, Extended Properties] | Analog Characteristic | [3] 3 | 0x88 (Write, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-50-C [Characteristic GGIT - Analog Characteristic - Read, Write, Extended Properties] | Analog Characteristic | [3] 3 | 0x8A (Read, Write, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-51-C [Characteristic GGIT - Analog Characteristic - Write Without Response, Write, Extended Properties] | Analog Characteristic | [3] 3 | 0x8C (Write Without Response, Write, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-52-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Write, Extended Properties] | Analog Characteristic | [3] 3 | 0x8E (Read, Write Without Response, Write, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-53-C [Characteristic GGIT - Analog Characteristic - Read, Notify, Extended Properties] | Analog Characteristic | [3] 3 | 0x92 (Read, Notify, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-54-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Notify, Extended Properties] | Analog Characteristic | [3] 3 | 0x96 (Read, Write Without Response, Notify, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-55-C [Characteristic GGIT - Analog Characteristic - Read, Write, Notify, Extended Properties] | Analog Characteristic | [3] 3 | 0x9A (Read, Write, Notify, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-56-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Write, Notify, Extended Properties] | Analog Characteristic | [3] 3 | 0x9E (Read, Write Without Response, Write, Notify, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-57-C [Characteristic GGIT - Analog Characteristic - Read, Indicate, Extended Properties] | Analog Characteristic | [3] 3 | 0xA2 (Read, Indicate, Extended Properties) | Skip | - |

| TCID | Service / Characteristic / Descriptor | Reference | Properties | Value Length (Octets) | Service Type |
|------|---------------------------------------|-----------|------------|-----------------------|--------------|
| AIOS/SR/SGGIT/CHA/BV-58-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Indicate, Extended Properties] | Analog Characteristic | [3] 3 | 0xA6 (Read, Write Without Response, Indicate, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-59-C [Characteristic GGIT - Analog Characteristic - Read, Write, Indicate, Extended Properties] | Analog Characteristic | [3] 3 | 0xAA (Read, Write, Indicate, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-60-C [Characteristic GGIT - Analog Characteristic - Read, Write Without Response, Write, Indicate, Extended Properties] | Analog Characteristic | [3] 3 | 0xAE (Read, Write Without Response, Write, Indicate, Extended Properties) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-61-C [Characteristic GGIT - Aggregate Characteristic - Read] | Aggregate Characteristic | [3] 3 | 0x02 (Read) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-62-C [Characteristic GGIT - Aggregate Characteristic - Read, Notify] | Aggregate Characteristic | [3] 3 | 0x12 (Read, Notify) | Skip | - |
| AIOS/SR/SGGIT/CHA/BV-63-C [Characteristic GGIT - Aggregate Characteristic - Read, Indicate] | Aggregate Characteristic | [3] 3 | 0x22 (Read, Indicate) | Skip | - |

*Table 4.2: Input for the GGIT Server Test Procedure*

## 4.4    Characteristic Combinations

- Test Purpose

  This test group contains test cases to verify that combinations of characteristics and combinations of property fields of the characteristic declarations meets the requirements of the service.

- Reference

  [3] 3

- Initial Condition

  - The handle range of the Automation IO Service has been previously discovered by the Lower Tester in test case AIOS/SR/SGGIT/SER/BV-01-C [Service GGIT – Automation IO Service] or AIOS/SR/SGGIT/SDP/BV-01-C [SDP Record – Automation IO Service].

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

- Test Case Configuration

| Test Case | Requirements |
|---|---|
| AIOS/SR/COM/BV-01-C [Verify minimum configuration] | Verify that at least one Digital or Analog Characteristic is used ([3] 3). |
| AIOS/SR/COM/BV-02-C [Verify number of Aggregate] | The IUT has executed and passed test case AIOS/SR/COM/BV-01-C [Verify minimum configuration]. Verify that no more than one Aggregate characteristic exists ([3] 3). |
| AIOS/SR/COM/BV-03-C [Verify valid Digital, Analog and Aggregate combinations] | The IUT has executed and passed test case AIOS/SR/COM/BV-01-C [Verify minimum configuration]. If the Aggregate Characteristic exists, verify that all Digital or Analog characteristics exist with Characteristic Property values of 0x02, 0x04, 0x06, 0x08, 0x0A, 0x0C, 0x0E, 0x82, 0x84, 0x86, 0x88, 0x8A, 0x8C, or 0x8E ([3] 3). |

*Table 4.3: Characteristic Combination test cases*

- Test Procedure

  1. The Lower Tester executes either the Discover All Characteristics of a Service or Discover Characteristics by UUID sub-procedure.

  2. For the discovered characteristics, verify the requirements that are listed in Table 4.3**Error! Reference source not found.Error! Reference source not found.**.

- Expected Outcome

  Pass verdict

  See Table 4.3**Error! Reference source not found.**.

## 4.5    Characteristic Descriptors

- Test Purpose

  This test group contains test cases to verify that the characteristic descriptors meet the requirements of the Automation IO Service. The verification is done one descriptor at a time, as enumerated in the test cases in Table 4.4**Error! Reference source not found.**, 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 4.3 or is known to the Lower Tester by other means.

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

- Test Case Configuration

| Test Case | Value Requirements |
|---|---|
| AIOS/SR/DES/BV-02-C [Digital – Number of Digitals Descriptor] | Verify that the number corresponds to the number of digital signals supported by the IO Module (IOM) device ([3] 3.1.1). |
| AIOS/SR/DES/BV-03-C [Digital - Characteristic Presentation Format Descriptor] | The format field is always set to 0x1B. The exponent, unit, and descriptor fields always have the value 0x00 ([3] 3.1.2). Verify that the Name Space has the value 0x01 and that the Description has the value 0x0001 or higher and is not the same as for another Digital ([3] 3.1.2). |
| AIOS/SR/DES/BV-04-C [Digital - Characteristic Extended Properties Descriptor] | Verify that the value is 0x0000 or 0x0002 ([3] 3.1.2). |
| AIOS/SR/DES/BV-05-C [Digital - Characteristic User Description Descriptor] | Verify that value field is a null string or valid string. If the Characteristic Extended Properties exists and has the value of 0x0002, write a string to the value field and verify it by reading it ([3] 3.1.2). |
| AIOS/SR/DES/BV-06-C [Digital – Value Trigger Setting Descriptor] | Verify that the condition part of the value has value of 0x00, 0x04, or 0x07 ([3] 3.5.1). |
| AIOS/SR/DES/BV-07-C [Digital – Time Trigger Setting Descriptor] | Verify that a Time Trigger Setting Descriptor exists for this characteristic ([3] 3.5.2). Verify that condition part of the value has value of 0x00, 0x01, 0x02, or 0x03 ([3] 3.5.2). |
| AIOS/SR/DES/BV-08-C [Analog - Client Characteristic Configuration Descriptor] | 0x0000, 0x0001 (if the Characteristic Properties bitmap value is 0x12, 0x16, 0x1A, 0xIE, 0x92, 0x96, 0x9A or 0x9E), or 0x0002 (if the Characteristic Properties bitmap value is 0x22, 0x26, 0x2A, 0x2E, 0xA2, 0xA6, 0xAA, or 0xAE) or not present (if the Characteristic Property Bitmap value is 0x02, 0x06, 0x0A, 0x0C, 0x0E, 0x82, 0x86 0x8A, 0x8C, or 0x8E) ([3] 3.2.1). |
| AIOS/SR/DES/BV-09-C [Analog - Characteristic Presentation Format Descriptor] | Verify that the format field is 0x04, 0x05, 0x06, 0x0C, 0x0D, 0x0E, 0x16, or 0x18. Verify that the Name Space has the value 0x01 and that the Description has the value 0x0001 or higher and is not the same as for another Analog ([3] 3.2.2). |
| AIOS/SR/DES/BV-10-C [Analog - Characteristic Extended Properties Descriptor] | Verify that the value is 0x0000 or 0x0002 ([3] 3.2.2). |
| AIOS/SR/DES/BV-11-C [Analog - Characteristic User Description Descriptor] | Verify that value field is a null string or valid string. If the Characteristic Extended Properties exists and has the value of 0x0002, write a string to the value field and verify it by reading it ([3] 3.3.2). |

| Test Case | Value Requirements |
|---|---|
| AIOS/SR/DES/BV-12-C [Analog - Characteristic Valid Range Descriptor] | Verify that the value field consists of 2 consecutive 16-bit values representing lower and upper bounds (inclusive) of the Analog Characteristic ([3] 3.2.2). Verify that the first value is less than or equal to the second ([3] 3.2.2). |
| AIOS/SR/DES/BV-13-C [Analog – Value Trigger Setting Descriptor] | Verify that the condition part of the value has value of 0x00, 0x01, 0x02, 0x03, 0x05, 0x06, or 0x07 ([3] 3.5.1). |
| AIOS/SR/DES/BV-14-C [Analog – Time Trigger Setting Descriptor] | Verify that a Time Trigger Setting Descriptor exists for this characteristic ([3] 3.5.2). Verify that the condition part of the value has value of 0x00, 0x01, 0x02, or 0x03 ([3] 3.5.2). |
| AIOS/SR/DES/BV-15-C [Aggregate - Client Characteristic Configuration Descriptor] | 0x0000, 0x0001 (if the Characteristic Properties bitmap value is 0x12), or 0x0002 (if the Characteristic Properties bitmap value is 0x22) or not present (if the Characteristic Property Bitmap value is 0x02) ([3] 3.3.2). |

*Table 4.4: Characteristic Descriptor test cases*

- Test Procedure

    1. The Lower Tester executes the Discover All Characteristic Descriptors sub-procedure.
    2. If the descriptor UUID returned is listed in Table 4.4, the Lower Tester executes the Read Characteristic Descriptors sub-procedure for that descriptor.
    3. Verify if mandatory characteristic descriptors are available.
    4. Verify that the value of the characteristic descriptor meets the requirements of the Automation IO Service.

- Expected Outcome

    Pass verdict

    The characteristic descriptor is discovered, the characteristic descriptor is read, and the value of the characteristic descriptor meets the requirements of the Automation IO Service.

## 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 with the specification.

    The verification is performed one characteristic at a time, as enumerated in the test cases in Table 4.5**Error! Reference source not found.** using this generic test procedure:

- Reference

    [3] 3.1.1, 3.2.1, and 3.3.1

- Initial Condition

    - The handle of each characteristic value referenced in the test cases below has been previously discovered by the Lower Tester during the test procedure in Section 4.3 or is known to the Lower Tester by other means.

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

- Establish an ATT Bearer connection between the Lower Tester and IUT as defined 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 Case Configuration

| Test Case | Value Requirements |
|---|---|
| AIOS/SR/CR/BV-01-C [Characteristic Read – Digital] | For the first readable Digital, verify that the value read corresponds to the value set by the Upper Tester ([3] 3.1.1). |
| AIOS/SR/CR/BV-02-C [Characteristic Read – Analog] | For the first readable Analog, verify that the value read corresponds to the value set by the Upper Tester ([3] 3.2.1). |
| AIOS/SR/CR/BV-03-C [Characteristic Read – Aggregate] | Verify that the value read corresponds to the values (aggregated digital inputs and analog inputs) set by the Upper Tester ([3] 3.3.1). |

*Table 4.5: Characteristic Read Value test cases*

- Test Procedure

  1. The Lower Tester sends an ATT_Read_Request to the IUT to read the characteristic value.

  2. The IUT sends an ATT_Read_Response to the Lower Tester.

  3. Verify that the characteristic value meets the requirements of the Automation IO Service.

- Expected Outcome

  Pass verdict

  The characteristic is successfully read and the characteristic value meets the requirements of the Automation IO Service.

## 4.7     Characteristic Write

- Test Purpose

  This test group contains test cases to write and verify that the characteristic values required by the service are compliant.

  The verification is performed one characteristic at a time, as enumerated in the test cases in Table 4.6**Error! Reference source not found.**, using this generic test procedure:

- Reference

  [3] 3.1.1, 3.2.1

- Initial Condition

  - The handle of each characteristic value referenced in the test cases below has been previously discovered by the Lower Tester during the test procedure in Section 4.3 or is known to the Lower Tester by other means.

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

  - Establish an ATT Bearer connection between the Lower Tester and IUT as defined 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 Case Configuration

| Test Case | Value Requirements |
|---|---|
| AIOS/SR/CW/BV-01-C [Characteristic Write – Digital] | For the first writable Digital Characteristic, verify that the value is successfully written ([3] 3.1.1). |
| AIOS/SR/CW/BV-02-C [Characteristic Write – Analog] | For the first writable Analog Characteristic, verify that the value is successfully written ([3] 3.2.1). |

*Table 4.6: Characteristic Write Value test cases*

- Test Procedure

   1. The Lower Tester sends an ATT_Write_Request to the IUT to write the characteristic value.
   2. The IUT sends an ATT_Write_Response to the Lower Tester.
   3. The Lower Tester sends an ATT_Read_Request to the IUT to read the characteristic value written in step 1.
   4. The IUT sends an ATT_Read_Response to the Lower Tester.
   5. Verify that the written characteristic value meets the requirements of the Automation IO Service and corresponds to the values seen in the Upper Tester.

- Expected Outcome

   Pass verdict

   The characteristic value is successfully written.

## 4.8     Characteristic Write without Response

- Test Purpose

   This test group contains test cases to write without response and verify that the characteristic values required by the service are compliant.

   The verification is performed one characteristic at a time, as enumerated in the test cases in Table 4.7**Error! Reference source not found.**, using this generic test procedure:

- Reference

   [3] 3.1.1, 3.2.1

- Initial Condition

   - The handle of each characteristic value referenced in the test cases below has been previously discovered by the Lower Tester during the test procedure in Section 4.3 or is known to the Lower Tester by other means.

   - The optional property "Write without response" is set.

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

   - Establish an ATT Bearer connection between the Lower Tester and IUT as defined 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 Case Configuration

| Test Case | Value Requirements |
|---|---|
| AIOS/SR/CW/BV-03-C [Characteristic Write without Response – Digital] | For the first Digital Characteristic supporting Write without Response, verify that the value is successfully written ([3] 3.1.1). |
| AIOS/SR/CW/BV-04-C [Characteristic Write without Response – Analog] | For the first Analog Characteristic supporting Write without Response, verify that the value is successfully written ([3] 3.2.1). |

*Table 4.7: Characteristic Write Value without Response test cases*

- Test Procedure

    1. The Lower Tester sends an ATT_Write_Command to the IUT to write the characteristic value.

    2. The IUT sends the ATT_Write_Command to the Upper Tester.

    3. Verify that the written characteristic value meets the requirements of the Automation IO Service and corresponds to the values seen in the Upper Tester.

- Expected Outcome

    Pass verdict

    The characteristic value is successfully written.

## 4.9    Configure Indication and Notification

- Test Purpose

    This test group contains test cases to verify compliant operation in response to enable and disable characteristic indication or notification.

    The verification is performed one characteristic at a time, as enumerated in the test cases in Table 4.8**Error! Reference source not found.**, using this generic test procedure:

- Reference

    [3] 3.1.2, 3.2.2, 3.3.2

- Initial Condition

    - The handle of each characteristic value referenced in the test cases below has been previously discovered by the Lower Tester during the test procedure in Section 4.3 or is known to the Lower Tester by other means.

    - The handle of the client characteristic configuration descriptor of each characteristic referenced in the test cases below has been previously discovered by the Lower Tester during the test procedure in Section 4.3 or is known to the Lower Tester by other means.

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

    - Establish an ATT Bearer connection between the Lower Tester and IUT as defined 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 descriptor require a specific security mode or security level, establish a connection meeting those requirements.

- Test Case Configuration

| Test Case | Value (Requirements) |
|---|---|
| AIOS/SR/CON/BV-01-C [Configure Notification – Digital] | 0x0001 ([3] 3.1.2). |
| AIOS/SR/CON/BV-02-C [Configure Indication – Digital] | 0x0002 ([3] 3.1.2). |
| AIOS/SR/CON/BV-03-C [Configure Notification – Analog] | 0x0001 ([3] 3.2.2). |
| AIOS/SR/CON/BV-04-C [Configure Indication – Analog] | 0x0002 ([3] 3.2.2). |
| AIOS/SR/CON/BV-05-C [Configure Notification – Aggregate] | 0x0001 ([3] 3.3.2). |
| AIOS/SR/CON/BV-06-C [Configure Indication – Aggregate] | 0x0002 ([3] 3.3.2). |

*Table 4.8: Configure Indication and Notification test cases*

- Test Procedure

  1. The Lower Tester sends an ATT_Write_Request to disable indication or notification by writing value 0x0000 to the client characteristic configuration descriptor of the first available digital or analog characteristic.

  2. If the test case is for notification, the Lower Tester sends an ATT_Write_Request to enable notification by writing value 0x0001 to the client characteristic configuration descriptor of the characteristic.

  3. If the test case is for indication, the Lower Tester sends an ATT_Write_Request to enable indication by writing value 0x0002 to the client characteristic configuration descriptor of the characteristic.

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

- Expected Outcome

  Pass verdict

  The characteristic descriptor is successfully written and the value returned when read is consistent with the value written.

## 4.10 Digital/Aggregate Notification

- Test Purpose

  This test group contains test cases to verify compliant operation in response to enable and disable characteristic notification.

  The verification is done if a Digital characteristic with Read Property is available, when enumerated in the test cases in Table 4.9**Error! Reference source not found.**.

  Verify that the IUT can send notifications of a Digital or Aggregate characteristic. If an Aggregate characteristic is available this will be used for notification.

  If multiple digital characteristics are present the verification is performed using first available characteristics present, as enumerated in the test cases in Table 4.9**Error! Reference source not found.**, using this generic test procedure:

- Reference

  [3] 3.1

- Initial Condition

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

- Establish an ATT Bearer connection between the Lower Tester and IUT as defined 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 Digital characteristic require a specific security mode or security level, establish a connection meeting those requirements.

- Test Case Configuration

| Test Case | Requirements on the Test Case |
|---|---|
| AIOS/SR/CN/BV-01-C [Digital Notification – Custom Condition] | Used when a custom condition is available. Do the necessary offline actions to enable Notification ([3] 3.1.1). |
| AIOS/SR/CN/BV-02-C [Digital Notification – Value Trigger Setting Condition value 0x00 and no Time Trigger Setting condition is available or the Time Trigger Setting condition is 0x00] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). <br> No Time Trigger Setting Descriptor exists or write 0x00 to the Time Trigger Condition Field ([3] 3.5.2). <br> Verify that notifications are sent when the value condition is fulfilled ([3] 3.5.1). |
| AIOS/SR/CN/BV-03-C [Digital Notification – Value Trigger Setting Condition value 0x04 and no Time Trigger Setting condition is available or the Time Trigger Setting condition is 0x00] | Write 0x04 to the Value Trigger Setting Condition Field ([3] 3.5.1). <br> No Time Trigger Setting Descriptor exists or write 0x00 to the Time Trigger Condition Field ([3] 3.5.2). <br> Verify that notifications are sent when the value condition is fulfilled ([3] 3.5.1). |
| AIOS/SR/CN/BV-04-C [Digital Notification – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x01] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). <br> Write 0x01 to the Time Trigger Condition Field ([3] 3.5.2). <br> Verify that notifications are not sent when the value conditions are fulfilled. Verify that notifications are sent when the time condition is fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CN/BV-05-C [Digital Notification – Value Trigger Setting Condition value 0x04 and the Time Trigger Setting condition is 0x01] | Write 0x04 to the Value Trigger Setting Condition Field ([3] 3.5.1). <br> Write 0x01 to the Time Trigger Condition Field ([3] 3.5.2). <br> Verify that notifications are not sent when the value conditions are fulfilled. Verify that notifications are sent when the time condition is fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CN/BV-06-C [Digital Notification – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x02] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). <br> Write 0x02 to the Time Trigger Condition Field ([3] 3.5.2). <br> Verify that notifications are sent when the value condition and time condition are fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CN/BV-07-C [Digital Notification – Value Trigger Setting Condition value 0x04 and the Time Trigger Setting condition is 0x02] | Write 0x04 to the Value Trigger Setting Condition Field ([3] 3.5.1). <br> Write 0x02 to the Time Trigger Condition Field ([3] 3.5.2). <br> Verify that notifications are sent when the value condition and time condition are fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CN/BV-08-C [Digital Notification – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x03] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). <br> Write 0x03 to the Time Trigger Condition Field ([3] 3.5.2). <br> Verify that notifications are sent when the value condition and time condition are fulfilled ([3] 3.5.1 and 3.5.2). |

| Test Case | Requirements on the Test Case |
|---|---|
| AIOS/SR/CN/BV-09-C [Digital Notification – Value Trigger Setting Condition value 0x04 and the Time Trigger Setting condition is 0x03] | Write 0x04 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x03 to the Time Trigger Condition Field ([3] 3.5.2). Verify that notifications are sent when the value condition and time condition are fulfilled ([3] 3.5.1 and 3.5.2). |

*Table 4.9: Digital Notification test cases*

- Test Procedure

  1. If a Custom Condition is not used update the Value Trigger Setting and Time Trigger Setting according to the test cases in Table 4.10**Error! Reference source not found.**.

  2. Configure the Digital or Aggregate characteristic for notification (both cannot be configured for notification at the same time), see Section 4.9.

  3. Perform an action on the IUT that will induce it, once connected, to send notifications of the Digital or Aggregate characteristic (see Table 4.10**Error! Reference source not found.** for the requirements on how this is done).

  4. A connection is established between the Lower Tester and IUT meeting the security requirements of the IUT, if not already done so prior to step 1.

  5. If required, the Upper Tester is used to trigger the notification.

  6. The Lower Tester receives an *ATT_Handle_Value_Notification* from the IUT containing the Digital or Aggregate characteristic handle and value.

  7. Verify that the characteristic value meets the requirements of the Automation IO Service and the value set/given by the Upper Tester.

  8. If required perform an action to stop notifications and then repeat steps 5-7 until the Lower Tester receives additionally at least one more notification.

  9. The Lower Tester configures the Digital or Aggregate characteristic to disable notifications.

  10. Repeat steps 1–2 with notifications disabled.

  11. Verify that the Lower Tester does not receive an *ATT_Handle_Value_Notification* from the IUT containing the Digital characteristic or the Aggregate characteristic (depending on which is used).

- Expected Outcome:

  Pass verdict

  If a Value Trigger Setting descriptor and Time Trigger Setting descriptor is used to trigger the notification, two responses are valid for the writing of the ValueTrigger Setting or Time Trigger Setting Condition value:

  - The IUT returns the error code "Trigger condition value not supported" (see [3] 1.6). In this case, test execution ceases with a Pass verdict applied.

  - The IUT accepts the value written and the test continues.

  - The IUT sends one or more notifications of the Digital or Aggregate characteristic.

- The value of each field of the characteristic meets the requirements of the Automation IO Service and has the same value as given/set by the Upper Tester.

- The IUT stops sending notifications of the Digital or Aggregate characteristic after the Lower Tester configures the characteristic to disable notifications.

## 4.11 Analog/Aggregate Notification

- Test Purpose

  This test group contains test cases to verify compliant operation in response to enable and disable characteristic notification.

  The verification is done one Analog characteristic with Read Property at a time, as enumerated in the test cases in Table 4.10**Error! Reference source not found.**.

  Verify that the IUT can send notifications of an Analog or Aggregate characteristic. If an Aggregate characteristic is available this will be used for notification.

  The verification is performed one characteristic at a time (first available if multiple analog characteristics are present), as enumerated in the test cases in Table 4.10**Error! Reference source not found.**, using this generic test procedure:

- Reference

  [3] 3.2

- Initial Condition

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

  - Establish an ATT Bearer connection between the Lower Tester and IUT as defined 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 Analog characteristic require a specific security mode or security level, establish a connection meeting those requirements.

- Test Case Configuration

| Test Case | Requirements on the Test Case |
|---|---|
| AIOS/SR/CN/BV-10-C [Analog Notification – Custom Condition] | Used when a custom condition is available. Do the necessary offline actions to enable Notification ([3] 3.2.1). |
| AIOS/SR/CN/BV-11-C [Analog Notification – Value Trigger Setting Condition value 0x00 and no Time Trigger Setting condition is available or the Time Trigger Setting condition is 0x00] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). No Time Trigger Setting Descriptor exists or write 0x00 to the Time Trigger Condition Field ([3] 3.5.2). Verify that notifications are sent when the value condition is fulfilled ([3] 3.5.1). |
| AIOS/SR/CN/BV-12-C [Analog Notification – Value Trigger Setting Condition value 0x01 and no Time Trigger Setting condition is available or the Time Trigger Setting condition is 0x00] | Write 0x01 to the Value Trigger Setting Condition Field ([3] 3.5.1). No Time Trigger Setting Descriptor exists or write 0x00 to the Time Trigger Condition Field ([3] 3.5.2). Verify that notifications are sent when the value condition is fulfilled ([3] 3.5.1). |

| Test Case | Requirements on the Test Case |
|---|---|
| AIOS/SR/CN/BV-13-C [Analog Notification – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x01] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x01 to the Time Trigger Condition Field ([3] 3.5.2). Verify that notifications are not sent when the value condition is fulfilled. Verify that notifications are sent when the time condition is fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CN/BV-14-C [Analog Notification – Value Trigger Setting Condition value 0x01 and the Time Trigger Setting condition is 0x01] | Write 0x01 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x01 to the Time Trigger Condition Field ([3] 3.5.2). Verify that notifications are not sent when the value conditions are fulfilled. Verify that notifications are sent when the time condition is fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CN/BV-15-C [Analog Notification – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x02] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x02 to the Time Trigger Condition Field ([3] 3.5.2). Verify that notifications are sent when the value condition and the time condition are fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CN/BV-16-C [Analog Notification – Value Trigger Setting Condition value 0x01 and the Time Trigger Setting condition is 0x02] | Write 0x01 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x02 to the Time Trigger Condition Field ([3] 3.5.2). Verify that notifications are sent when the value condition and the time condition are fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CN/BV-17-C [Analog Notification – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x03] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x03 to the Time Trigger Condition Field ([3] 3.5.2). Verify that notifications are sent when the value condition and the time condition are fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CN/BV-18-C [Analog Notification – Value Trigger Setting Condition value 0x01 and the Time Trigger Setting condition is 0x03] | Write 0x01 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x03 to the Time Trigger Condition Field ([3] 3.5.2). Verify that notifications are sent when the value condition and the time condition are fulfilled ([3] 3.5.1 and 3.5.2). |

*Table 4.10: Analog Notification test cases*

- Test Procedure

1. If a Custom Condition is not used update the Value Trigger Setting and Time Trigger Setting according to the test cases in Table 4.10**Error! Reference source not found.**. The Value Trigger Setting should be set according to IXIT [7].

2. Configure the Analog or Aggregate characteristic for notification (both cannot be configured for notification at the same time), see Section 4.9.

3. Perform an action on the IUT that will induce it, once connected, to send notifications of the Analog or Aggregate characteristic (see Table 4.10**Error! Reference source not found.** for the requirements on how this is done).

4. A connection is established between the Lower Tester and IUT meeting the security requirements of the IUT, if not already done so prior to step 1.

5. If required, the Upper Tester is used to trigger the notification.

6. The Lower Tester receives an *ATT_Handle_Value_Notification* from the IUT containing the Analog characteristic handle and value.

7. Verify that the characteristic value meets the requirements of the Automation IO Service and the value set/given by the Upper Tester.

8. If required perform an action to stop notifications and then repeat steps 5-7 until the Lower Tester receives additionally at least one more notification.

9. The Lower Tester configures the Analog or Aggregate characteristic to disable notifications.

10. Repeat steps 1–2 with notifications disabled.

11. Verify that the Lower Tester does not receive an *ATT_Handle_Value_Notification* from the IUT containing the Analog or Aggregate characteristic.

- Expected Outcome

    Pass verdict

    If a Trigger Setting descriptor is used to enable the notification, two responses are valid for the writing of the Trigger Setting Condition value:

    - The IUT returns the error code "Trigger condition value not supported" (see [3] 1.6). In this case, test execution ceases with a Pass verdict applied.

    - The IUT accepts the value written and the test continues.

    - The IUT sends one or more notifications of the Analog or Aggregate characteristic.

    - The value of each field of the characteristic meets the requirements of the Automation IO Service and has the same value as given/set by the Upper Tester.

    - The IUT stops sending notifications of the Analog or Aggregate characteristic after the Lower Tester configures the characteristic to disable notifications.

## 4.12  Digital/Aggregate 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 if a Digital characteristic with Read Property is available, when enumerated in the test cases in Section 4.3.

    Verify that the IUT can send indications of a Digital or Aggregate characteristic. If an Aggregate characteristic is available this will be used for notification.

    The verification is performed one characteristic at a time (first available if multiple digital characteristics are present), as enumerated in the test cases in Table 4.11**Error! Reference source not found.**, using this generic test procedure:

- Reference

    [3] 3.1

- Initial Condition

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

- Establish an ATT Bearer connection between the Lower Tester and IUT as defined 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 Digital characteristic require a specific security mode or security level, establish a connection meeting those requirements.

- Test Case Configuration

| Test Case | Requirements on the Test Case |
|---|---|
| AIOS/SR/CI/BV-01-C [Digital Indication – Custom Condition] | Used when a custom condition is available. Do the necessary offline actions to enable Indication ([3] 3.1.1). |
| AIOS/SR/CI/BV-02-C [Digital Indication – Value Trigger Setting Condition value 0x00 and no Time Trigger Setting condition is available or the Time Trigger Setting condition is 0x00] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). No Time Trigger Setting Descriptor exists or write 0x00 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition is fulfilled ([3] 3.5.1). |
| AIOS/SR/CI/BV-03-C [Digital Indication – Value Trigger Setting Condition value 0x04 and no Time Trigger Setting condition is available or the Time Trigger Setting condition is 0x00] | Write 0x04 to the Value Trigger Setting Condition Field ([3] 3.5.1). No Time Trigger Setting Descriptor exists or write 0x00 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition is fulfilled ([3] 3.5.1). |
| AIOS/SR/CI/BV-04-C [Digital Indication – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x01] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x01 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are not sent when the value conditions are fulfilled. Verify that indications are sent when the time condition is fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CI/BV-05-C [Digital Indication – Value Trigger Setting Condition value 0x04 and the Time Trigger Setting condition is 0x01] | Write 0x04 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x01 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are not sent when the value conditions are fulfilled. Verify that indications are sent when the time condition is fulfilled. ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CI/BV-06-C [Digital Indication – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x02] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x02 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition and the time condition are fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CI/BV-07-C [Digital Indication – Value Trigger Setting Condition value 0x04 and the Time Trigger Setting condition is 0x02] | Write 0x04 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x02 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition and the time condition are fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CI/BV-08-C [Digital Indication – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x03] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x03 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition and the time condition are fulfilled ([3] 3.5.1 and 3.5.2). |

| Test Case | Requirements on the Test Case |
|---|---|
| AIOS/SR/CI/BV-09-C [Digital Indication – Value Trigger Setting Condition value 0x04 and the Time Trigger Setting condition is 0x03] | Write 0x04 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x03 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition and the time condition are fulfilled ([3] 3.5.1 and 3.5.2). |

*Table 4.11: Digital Indication test cases*

- Test Procedure

    1. If a Custom Condition is not used update the Value Trigger Setting and Time Trigger Setting according to the test cases in Table 4.11**Error! Reference source not found.**.

    2. Configure the Digital or Aggregate characteristic for indication (both cannot be configured for indication at the same time), see Section 4.9.

    3. Perform an action on the IUT that will induce it, once connected, to send indications of the Digital or Aggregate characteristic (see Table 4.11**Error! Reference source not found.** for the requirements on how this is done).

    4. A connection is established between the Lower Tester and IUT meeting the security requirements of the IUT, if not already done so prior to step 1.

    5. If required the Upper Tester is used to trigger the indication.

    6. The Lower Tester receives an *ATT_Handle_Value_Indication* from the IUT containing the Digital characteristic handle and value.

    7. Verify that the characteristic value meets the requirements of the Automation IO Service and the value set/given by the Upper Tester.

    8. If required perform an action to stop indications and then repeat steps 5-7 until the Lower Tester receives additionally at least one more indication.

    9. The Lower Tester configures the Digital or Aggregate characteristic to disable indications.

    10. Repeat steps 1-2 with indications disabled.

    11. Verify that the Lower Tester does not receive an *ATT_Handle_Value_Indication* from the IUT containing the Digital characteristic or the Aggregate characteristic (depending on which is used).

- Expected Outcome:

    Pass verdict

    If a Value Trigger Setting descriptor and Time Trigger Setting descriptor is used to trigger the indication, two responses are valid for the writing of the Value Trigger Setting or Time Trigger Setting Condition value:

    - The IUT returns the error code "Trigger condition value not supported" (see [3] 1.6). In this case, test execution ceases with a Pass verdict applied.

    - The IUT accepts the value written and the test continues.

    - The IUT sends one or more indications of the Digital or Aggregate characteristic.

- The value of each field of the characteristic meets the requirements of the Automation IO Service and has the same value as given/set by the Upper Tester.

- The IUT stops sending indications of the Digital or Aggregate characteristic after the Lower Tester configures the characteristic to disable indications.

## 4.13   Analog/Aggregate 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 Analog characteristic with Read Property at a time, as enumerated in the test cases in Table 4.12**Error! Reference source not found.**.

  Verify that the IUT can send indications of an Analog or Aggregate characteristic. If an Aggregate characteristic is available this will be used for indication.

  The verification is performed one characteristic at a time (first available if multiple analog characteristics are present), as enumerated in the test cases in Table 4.12**Error! Reference source not found.**, using this generic test procedure:

- Reference

  [3] 3.1

- Initial Condition

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

  - Establish an ATT Bearer connection between the Lower Tester and IUT as defined 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 Analog characteristic require a specific security mode or security level, establish a connection meeting those requirements.

- Test Case Configuration

| Test Case | Requirements on the Test Case |
|---|---|
| AIOS/SR/CI/BV-10-C [Analog Indication – Custom Condition] | Used when a custom condition is available. Do the necessary offline actions to enable Indication ([3] 3.2.1). |
| AIOS/SR/CI/BV-11-C [Analog Indication – Value Trigger Setting Condition value 0x00 and no Time Trigger Setting condition is available or the Time Trigger Setting condition is 0x00] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). No Time Trigger Setting Descriptor exists or write 0x00 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition is fulfilled ([3] 3.5.1). |
| AIOS/SR/CI/BV-12-C [Analog Indication – Value Trigger Setting Condition value 0x01 and no Time Trigger Setting condition is available or the Time Trigger Setting condition is 0x00] | Write 0x01 to the Value Trigger Setting Condition Field ([3] 3.5.1). No Time Trigger Setting Descriptor exists or write 0x00 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition is fulfilled ([3] 3.5.1). |

| Test Case | Requirements on the Test Case |
|---|---|
| AIOS/SR/CI/BV-13-C [Analog Indication – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x01] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x01 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are not sent when the value conditions are fulfilled. Verify that notifications are sent when the time condition is fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CI/BV-14-C [Analog Indication – Value Trigger Setting Condition value 0x01 and the Time Trigger Setting condition is 0x01] | Write 0x01 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x01 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are not sent when the value conditions are fulfilled. Verify that indications are sent when the time condition is fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CI/BV-15-C [Analog Indication – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x02] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x02 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition and the time condition are fulfilled ([3] 3.5.1 and 3.5.2). |
| AIOS/SR/CI/BV-16-C [Analog Indication – Value Trigger Setting Condition value 0x01 and the Time Trigger Setting condition is 0x02] | Write 0x01 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x02 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition is fulfilled ([3] 3.5.1). |
| AIOS/SR/CI/BV-17-C [Analog Indication – Value Trigger Setting Condition value 0x00 and the Time Trigger Setting condition is 0x03] | Write 0x00 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x03 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition is fulfilled ([3] 3.5.1). |
| AIOS/SR/CI/BV-18-C [Analog Indication – Value Trigger Setting Condition value 0x01 and the Time Trigger Setting condition is 0x03] | Write 0x01 to the Value Trigger Setting Condition Field ([3] 3.5.1). Write 0x03 to the Time Trigger Condition Field ([3] 3.5.2). Verify that indications are sent when the value condition is fulfilled ([3] 3.5.1). |

*Table 4.12: Analog Indication test cases*

- Test Procedure

    1. If a Custom Condition is not used to update the Value Trigger Setting and Time Trigger Setting according to the test cases in Table 4.12**Error! Reference source not found.**, the Value Trigger Setting should be set according to the IXIT [7].

    2. Configure the Analog or Aggregate characteristic for indication (both cannot be configured for indication at the same time), see Section 4.9.

    3. Perform an action on the IUT that will induce it, once connected, to send indications of the Analog or Aggregate characteristic (see Table 4.12**Error! Reference source not found.** for the requirements on how this is done).

    4. A connection is established between the Lower Tester and IUT meeting the security requirements of the IUT, if not already done so prior to step 1.

    5. If required the Upper Tester is used to trigger the indication.

6.  The Lower Tester receives an *ATT_Handle_Value_Indication* from the IUT containing the Analog characteristic handle and value.

7.  Verify that the characteristic value meets the requirements of the Automation IO Service and the value set/given by the Upper Tester.

8.  If required perform an action to stop indications and then repeat steps 5-7 until the Lower Tester receives additionally at least one more indication.

9.  The Lower Tester configures the Analog or Aggregate characteristic to disable indications.

10. Repeat steps 1–2 with indications disabled.

11. Verify that the Lower Tester does not receive an *ATT_Handle_Value_Indication* from the IUT containing the Analog or Aggregate characteristic.

- Expected Outcome

  Pass verdict

  If a Trigger Setting descriptor is used to enable the indication, two responses are valid for the writing of the Trigger Setting Condition value:

  -  The IUT returns the error code "Trigger condition value not supported" (see [3] 1.6). In this case, test execution ceases with a Pass verdict applied.

  -  The IUT accepts the value written and the test continues.

  The IUT sends one or more indications of the Analog or Aggregate characteristic.

  The value of each field of the characteristic meets the requirements of the Automation IO Service has the same value as given/set by the Upper Tester.

  The IUT stops sending indications of the Analog or Aggregate characteristic after the Lower Tester configures the characteristic to disable indications.

# 5  Test case mapping

The Test Case Mapping Table (TCMT) maps test cases to specific requirements in the ICS. The IUT is tested in all roles for which support is declared in the ICS document.

The columns for the TCMT are defined as follows:

**Item:** Contains a logical expression based on specific entries from the associated ICS document. Contains a logical expression (using the operators AND, OR, NOT as needed) based on specific entries from the applicable ICS document(s). The entries are in the form of y/x references, where y corresponds to the table number and x corresponds to the feature number as defined in the ICS document for Automation IO Service (AIOS) [4].

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

**Test Case(s):** The applicable test case identifiers are required for Bluetooth Qualification if the corresponding y/x references defined in the Item column are supported. Further details about the function of the TCMT are elaborated in [1].

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

| Item | Feature | Test Case(s) |
|---|---|---|
| AIOS 2/1 | Discover Automation IO Service | AIOS/SR/SGGIT/SER/BV-01-C |
| AIOS 1/1 AND AIOS 2/1 | Discover Automation IO Service over BR/EDR | AIOS/SR/SGGIT/SDP/BV-01-C |
| AIOS 2/2 OR AIOS 2/3 OR AIOS 2/16 OR AIOS 2/17 OR AIOS 2/30 | Verify mandatory Characteristic support combinations | AIOS/SR/COM/BV-01-C<br>AIOS/SR/COM/BV-03-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read | AIOS/SR/SGGIT/CHA/BV-01-C |
| AIOS 2/2 AND NOT AIOS 2/4 AND NOT AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Write Without Response | AIOS/SR/SGGIT/CHA/BV-02-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Read, Write Without Response | AIOS/SR/SGGIT/CHA/BV-03-C |
| AIOS 2/2 AND NOT AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Write | AIOS/SR/SGGIT/CHA/BV-04-C |
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read, Write | AIOS/SR/SGGIT/CHA/BV-05-C |
| AIOS 2/2 AND NOT AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Write Without Response, Write | AIOS/SR/SGGIT/CHA/BV-06-C |

| Item | Feature | Test Case(s) |
|---|---|---|
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Read, Write Without Response, Write | AIOS/SR/SGGIT/CHA/BV-07-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read, Notify | AIOS/SR/SGGIT/CHA/BV-08-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Read, Write Without Response, Notify | AIOS/SR/SGGIT/CHA/BV-09-C |
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read, Write, Notify | AIOS/SR/SGGIT/CHA/BV-10-C |
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND AIOS 2/6 AND NOT AIOS 2/7 AND NOT AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Read, Write Without Response, Write, Notify | AIOS/SR/SGGIT/CHA/BV-11-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND NOT AIOS 2/6 AND AIOS 2/7 AND NOT AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read, Indicate | AIOS/SR/SGGIT/CHA/BV-12-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND NOT AIOS 2/6 AND AIOS 2/7 AND NOT AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Read, Write Without Response, Indicate | AIOS/SR/SGGIT/CHA/BV-13-C |
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND AIOS 2/7 AND NOT AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read, Write, Indicate | AIOS/SR/SGGIT/CHA/BV-14-C |
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND AIOS 2/7 AND NOT AIOS 2/12 AND AIOS 2/15 | Digital Characteristic – Read, Write Without Response, Write, Indicate | AIOS/SR/SGGIT/CHA/BV-15-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic – Read, Extended Properties | AIOS/SR/SGGIT/CHA/BV-16-C |
| AIOS 2/2 AND NOT AIOS 2/4 AND NOT AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND AIOS 2/15 | Digital Characteristic – Write Without Response, Extended Properties | AIOS/SR/SGGIT/CHA/BV-17-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND AIOS 2/15 | Digital Characteristic – Read, Write Without Response, Extended Properties | AIOS/SR/SGGIT/CHA/BV-18-C |
| AIOS 2/2 AND NOT AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic – Write, Extended Properties | AIOS/SR/SGGIT/CHA/BV-19-C |

| Item | Feature | Test Case(s) |
|------|---------|--------------|
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read, Write, Extended Properties | AIOS/SR/SGGIT/CHA/BV-20-C |
| AIOS 2/2 AND NOT AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Write Without Response, Write, Extended Properties | AIOS/SR/SGGIT/CHA/BV-21-C |
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Read, Write Without Response, Write, Extended Properties | AIOS/SR/SGGIT/CHA/BV-22-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read, Notify, Extended Properties | AIOS/SR/SGGIT/CHA/BV-23-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Read, Write Without Response, Notify, Extended Properties | AIOS/SR/SGGIT/CHA/BV-24-C |
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read, Write, Notify, Extended Properties | AIOS/SR/SGGIT/CHA/BV-25-C |
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND AIOS 2/6 AND NOT AIOS 2/7 AND AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Read, Write Without Response, Write, Notify, Extended Properties | AIOS/SR/SGGIT/CHA/BV-26-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND NOT AIOS 2/6 AND AIOS 2/7 AND AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read, Indicate, Extended Properties | AIOS/SR/SGGIT/CHA/BV-27-C |
| AIOS 2/2 AND AIOS 2/4 AND NOT AIOS 2/5 AND NOT AIOS 2/6 AND AIOS 2/7 AND AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Read, Write Without Response, Indicate, Extended Properties | AIOS/SR/SGGIT/CHA/BV-28-C |
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND AIOS 2/7 AND AIOS 2/12 AND NOT AIOS 2/15 | Digital Characteristic - Read, Write, Indicate, Extended Properties | AIOS/SR/SGGIT/CHA/BV-29-C |
| AIOS 2/2 AND AIOS 2/4 AND AIOS 2/5 AND NOT AIOS 2/6 AND AIOS 2/7 AND AIOS 2/12 AND AIOS 2/15 | Digital Characteristic - Read, Write Without Response, Write, Indicate, Extended Properties | AIOS/SR/SGGIT/CHA/BV-30-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/4 | Digital Characteristic: Read | AIOS/SR/CR/BV-01-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/5 | Digital Characteristic: Write | AIOS/SR/CW/BV-01-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/15 | Digital Characteristic: Write Without Response | AIOS/SR/CW/BV-03-C |

| Item | Feature | Test Case(s) |
|---|---|---|
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read | AIOS/SR/SGGIT/CHA/BV-31-C |
| AIOS 2/16 AND NOT AIOS 2/18 AND NOT AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Write Without Response | AIOS/SR/SGGIT/CHA/BV-32-C |
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response | AIOS/SR/SGGIT/CHA/BV-33-C |
| AIOS 2/16 AND NOT AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Write | AIOS/SR/SGGIT/CHA/BV-34-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Write | AIOS/SR/SGGIT/CHA/BV-35-C |
| AIOS 2/16 AND NOT AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Write Without Response, Write | AIOS/SR/SGGIT/CHA/BV-36-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Write | AIOS/SR/SGGIT/CHA/BV-37-C |
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Notify | AIOS/SR/SGGIT/CHA/BV-38-C |
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Notify | AIOS/SR/SGGIT/CHA/BV-39-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Write, Notify | AIOS/SR/SGGIT/CHA/BV-40-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND AIOS 2/20 AND NOT AIOS 2/21 AND NOT AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Write, Notify | AIOS/SR/SGGIT/CHA/BV-41-C |
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND NOT AIOS 2/20 AND AIOS 2/21 AND NOT AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Indicate | AIOS/SR/SGGIT/CHA/BV-42-C |
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND NOT AIOS 2/20 AND AIOS 2/21 AND NOT AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Indicate | AIOS/SR/SGGIT/CHA/BV-43-C |

| Item | Feature | Test Case(s) |
|---|---|---|
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND AIOS 2/21 AND NOT AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Write, Indicate | AIOS/SR/SGGIT/CHA/BV-44-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND AIOS 2/21 AND NOT AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Write, Indicate | AIOS/SR/SGGIT/CHA/BV-45-C |
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Extended Properties | AIOS/SR/SGGIT/CHA/BV-46-C |
| AIOS 2/16 AND NOT AIOS 2/18 AND NOT AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Write Without Response, Extended Properties | AIOS/SR/SGGIT/CHA/BV-47-C |
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Extended Properties | AIOS/SR/SGGIT/CHA/BV-48-C |
| AIOS 2/16 AND NOT AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Write, Extended Properties | AIOS/SR/SGGIT/CHA/BV-49-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Write, Extended Properties | AIOS/SR/SGGIT/CHA/BV-50-C |
| AIOS 2/16 AND NOT AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Write Without Response, Write, Extended Properties | AIOS/SR/SGGIT/CHA/BV-51-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Write, Extended Properties | AIOS/SR/SGGIT/CHA/BV-52-C |
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Notify, Extended Properties | AIOS/SR/SGGIT/CHA/BV-53-C |
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Notify, Extended Properties | AIOS/SR/SGGIT/CHA/BV-54-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Write, Notify, Extended Properties | AIOS/SR/SGGIT/CHA/BV-55-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND AIOS 2/20 AND NOT AIOS 2/21 AND AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Write, Notify, Extended Properties | AIOS/SR/SGGIT/CHA/BV-56-C |

| Item | Feature | Test Case(s) |
|------|---------|--------------|
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND NOT AIOS 2/20 AND AIOS 2/21 AND AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Indicate, Extended Properties | AIOS/SR/SGGIT/CHA/BV-57-C |
| AIOS 2/16 AND AIOS 2/18 AND NOT AIOS 2/19 AND NOT AIOS 2/20 AND AIOS 2/21 AND AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Indicate, Extended Properties | AIOS/SR/SGGIT/CHA/BV-58-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND AIOS 2/21 AND AIOS 2/25 AND NOT AIOS 2/29 | Analog Characteristic - Read, Write, Indicate, Extended Properties | AIOS/SR/SGGIT/CHA/BV-59-C |
| AIOS 2/16 AND AIOS 2/18 AND AIOS 2/19 AND NOT AIOS 2/20 AND AIOS 2/21 AND AIOS 2/25 AND AIOS 2/29 | Analog Characteristic - Read, Write Without Response, Write, Indicate, Extended Properties | AIOS/SR/SGGIT/CHA/BV-60-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/18 | Analog Characteristic: Read | AIOS/SR/CR/BV-02-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/19 | Analog Characteristic: Write | AIOS/SR/CW/BV-02-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/29 | Analog Characteristic: Write Without Response | AIOS/SR/CW/BV-04-C |
| AIOS 2/30 AND NOT AIOS 2/31 AND NOT AIOS 2/32 | Aggregate Characteristic - Read | AIOS/SR/SGGIT/CHA/BV-61-C |
| AIOS 2/30 AND AIOS 2/31 AND NOT AIOS 2/32 | Aggregate Characteristic - Read, Notify | AIOS/SR/SGGIT/CHA/BV-62-C |
| AIOS 2/30 AND NOT AIOS 2/31 AND AIOS 2/32 | Aggregate Characteristic - Read, Indicate | AIOS/SR/SGGIT/CHA/BV-63-C |
| AIOS 2/30 | Aggregate Characteristic: Read | AIOS/SR/COM/BV-02-C AIOS/SR/CR/BV-03-C |
| AIOS 2/30 AND AIOS 2/31 | Aggregate Characteristic: Notifications | AIOS/SR/CON/BV-05-C |
| AIOS 2/30 AND AIOS 2/32 | Aggregate Characteristic: Indications | AIOS/SR/CON/BV-06-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/6 | Digital Characteristic: Notifications | AIOS/SR/CON/BV-01-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/7 | Digital Characteristic: Indications | AIOS/SR/CON/BV-02-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/8 | Digital Characteristic: Number of Digitals descriptor | AIOS/SR/DES/BV-02-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/11 | Digital Characteristic: Presentation Format descriptor | AIOS/SR/DES/BV-03-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/12 | Digital Characteristic: Characteristic Extended Properties descriptor | AIOS/SR/DES/BV-04-C |

| Item | Feature | Test Case(s) |
|------|---------|--------------|
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/13 | Digital Characteristic: User Description descriptor | AIOS/SR/DES/BV-05-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/9 | Digital Characteristic: Value Trigger Settings descriptor | AIOS/SR/DES/BV-06-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/10 | Digital Characteristic: Time Trigger Settings descriptor | AIOS/SR/DES/BV-07-C |
| (AIOS 2/16 OR AIOS 2/17) AND (AIOS 2/20 OR AIOS 2/21) | Analog Characteristic: Client Characteristic Configuration descriptor | AIOS/SR/DES/BV-08-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/20 | Analog Characteristic: Notifications | AIOS/SR/CON/BV-03-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/21 | Analog Characteristic: Indications | AIOS/SR/CON/BV-04-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/24 | Analog Characteristic: Presentation Format descriptor | AIOS/SR/DES/BV-09-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/25 | Analog Characteristic: Characteristic Extended Properties descriptor | AIOS/SR/DES/BV-10-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/26 | Analog Characteristic: User Description descriptor | AIOS/SR/DES/BV-11-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/28 | Analog Characteristic: Valid Range descriptor | AIOS/SR/DES/BV-12-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/22 | Analog Characteristic: Value Trigger Settings descriptor | AIOS/SR/DES/BV-13-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/23 | Analog Characteristic: Time Trigger Settings descriptor | AIOS/SR/DES/BV-14-C |
| AIOS 2/30 AND (AIOS 2/31 OR AIOS 2/32) | Aggregate Characteristic: Client Characteristic Configuration descriptor | AIOS/SR/DES/BV-15-C |
| (AIOS 2/2 OR AIOS 2/3) AND (AIOS 2/6 OR (AIOS 2/30 AND AIOS 2/31 AND AIOS 2/33)) | Digital Characteristic: Notifications with Custom Condition | AIOS/SR/CN/BV-01-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/9 AND (AIOS 2/6 OR (AIOS 2/30 AND AIOS 2/31 AND AIOS 2/33)) | Digital Characteristic: Notifications with Value Trigger Settings only. | AIOS/SR/CN/BV-02-C<br>AIOS/SR/CN/BV-03-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/9 AND AIOS 2/10 AND (AIOS 2/6 OR (AIOS 2/30 AND AIOS 2/31 AND AIOS 2/33)) | Digital Characteristic: Notifications with Value and Time Trigger Settings | AIOS/SR/CN/BV-04-C<br>AIOS/SR/CN/BV-05-C<br>AIOS/SR/CN/BV-06-C<br>AIOS/SR/CN/BV-07-C<br>AIOS/SR/CN/BV-08-C<br>AIOS/SR/CN/BV-09-C |

| Item | Feature | Test Case(s) |
|---|---|---|
| (AIOS 2/2 OR AIOS 2/3) AND (AIOS 2/7 OR (AIOS 2/30 AND AIOS 2/32 AND AIOS 2/33)) | Digital Characteristic: Indications with Custom Condition | AIOS/SR/CI/BV-01-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/9 AND (AIOS 2/7 OR (AIOS 2/30 AND AIOS 2/32 AND AIOS 2/33)) | Digital Characteristic: Indications with Value Trigger Settings only | AIOS/SR/CI/BV-02-C<br>AIOS/SR/CI/BV-03-C |
| (AIOS 2/2 OR AIOS 2/3) AND AIOS 2/9 AND AIOS 2/10 AND (AIOS 2/7 OR (AIOS 2/30 AND AIOS 2/32 AND AIOS 2/33)) | Digital Characteristic: Indications with Value and Time Trigger Settings | AIOS/SR/CI/BV-04-C<br>AIOS/SR/CI/BV-05-C<br>AIOS/SR/CI/BV-06-C<br>AIOS/SR/CI/BV-07-C<br>AIOS/SR/CI/BV-08-C<br>AIOS/SR/CI/BV-09-C |
| (AIOS 2/16 OR AIOS 2/17) AND (AIOS 2/20 OR (AIOS 2/30 AND AIOS 2/31 AND AIOS 2/33)) | Analog Characteristic: Notifications with Custom Condition | AIOS/SR/CN/BV-10-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/22 AND (AIOS 2/20 OR (AIOS 2/30 AND AIOS 2/31 AND AIOS 2/33)) | Analog Characteristic: Notifications with Value Trigger Settings only | AIOS/SR/CN/BV-11-C<br>AIOS/SR/CN/BV-12-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/22 AND AIOS 2/23 AND (AIOS 2/20 OR (AIOS 2/30 AND AIOS 2/31 AND AIOS 2/33)) | Analog Characteristic: Notifications with Value and Time Trigger Settings | AIOS/SR/CN/BV-13-C<br>AIOS/SR/CN/BV-14-C<br>AIOS/SR/CN/BV-15-C<br>AIOS/SR/CN/BV-16-C<br>AIOS/SR/CN/BV-17-C<br>AIOS/SR/CN/BV-18-C |
| (AIOS 2/16 OR AIOS 2/17) AND (AIOS 2/21 OR (AIOS 2/30 AND AIOS 2/32 AND AIOS 2/33)) | Analog Characteristic: Indications with Custom Condition | AIOS/SR/CI/BV-10-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/22 AND (AIOS 2/21 OR (AIOS 2/30 AND AIOS 2/32 AND AIOS 2/33)) | Analog Characteristic: Indications with Value Trigger Settings only | AIOS/SR/CI/BV-11-C<br>AIOS/SR/CI/BV-12-C |
| (AIOS 2/16 OR AIOS 2/17) AND AIOS 2/22 AND AIOS 2/23 AND (AIOS 2/21 OR (AIOS 2/30 AND AIOS 2/32 AND AIOS 2/33)) | Analog Characteristic: Indications with Value and Time Trigger Settings | AIOS/SR/CI/BV-13-C<br>AIOS/SR/CI/BV-14-C<br>AIOS/SR/CI/BV-15-C<br>AIOS/SR/CI/BV-16-C<br>AIOS/SR/CI/BV-17-C<br>AIOS/SR/CI/BV-18-C |

*Table 5.1: Test case mapping*

# 6   Revision history and acknowledgments

*Revision History*

| Publication Number | Revision Number | Date | Comments |
|---|---|---|---|
| 0 | 1.0.0 | 2015-07-21 | Prepared for publication |
| | 1.0.1r00 | 2016-05-16 | Converted to new Test Case ID conventions as defined in TSTO v4.1. |
| 1 | 1.0.1 | 2016-07-13 | Prepared for TCRL 2016-1 publication. |
| | 1.0.1 edition 2r00 | 2018-11-29 | Editorial changes only. Template updated. Revision History and Contributors moved to the end of the document. |
| | 1.0.1 edition 2 | 2019-11-11 | Updated copyright page and confidentiality markings to support new Documentation Marking Requirements, performed minor formatting updates, and accepted all tracked changes to prepare for edition 2 publication. |
| | p2r00–r01 | 2023-09-28 – 2023-12-11 | TSE 23244 (rating 2): Converted the following 5 test cases to SGGIT: AIOS/SR/SD/BV-01-C and -02-C and AIOS/SR/DEC/BV-01-C – -03-C. The 65 new SGGIT converted TCIDs are AIOS/SR/SGGIT/SER/BV-01-C, AIOS/SR/SGGIT/SDP/BV-01-C, and AIOS/SR/SGGIT/CHA/BV-01-C – -63-C. Deleted test case AIOS/SR/DES/BV-01-C. Updated the TCMT accordingly. Updated the test procedures for AIOS/SR/DES/BV-02-C – -15-C, AIOS/SR/CR/BV-01-C – -03-C, AIOS/SR/CW/BV-01-C – -04-C, and AIOS/SR/CON/BV-01-C – -06-C. Moved the TC configuration table in all TCs to precede the test procedure. <br><br> TSE 23531 (rating 2): Updated the Requirements value for AIOS/SR/COM/BV-03-C. <br><br> Performed other editorials to align the document with the latest TS template, including updates to the scope, references, Test Strategy, test groups, test case identification conventions, conformance, Pass/Fail verdict conventions, and TCMT introductory text. Replaced the Bluetooth logo in the footer and updated the copyright page to align with v2 of the DNMD. Added a Publication Number column to the Revision History. Revised the document numbering convention, setting the last release publication of 1.0.1 as p1. |
| 2 | p2 | 2024-07-01 | Approved by BTI on 2024-04-21. Prepared for TCRL 2024-1 publication. |

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