Broadcast Audio Scan Service (BASS)

***Bluetooth*® Test Suite**

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1 Scope

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

2 References, definitions, and abbreviations

2.1 References

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

[1] Bluetooth Core Specification, Version 5.2 or later

[2] Test Strategy and Terminology Overview

[3] Broadcast Audio Scan Service (BASS), Version 1.0

[4] Broadcast Audio Scan Service ICS

[5] Broadcast Audio Scan Service IXIT

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

[7] GATT Test Suite, GATT.TS

2.2 Definitions

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

2.3 Acronyms and abbreviations

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

3 Test Suite Structure (TSS)

3.1 Overview

The Broadcast Audio Scan Service [3] requires the presence of GAP, SM (when used over LE transport), SDP (when used over BR/EDR transport), L2CAP, and GATT. In addition, EATT can optionally be used. This is illustrated in Figure 3.1.

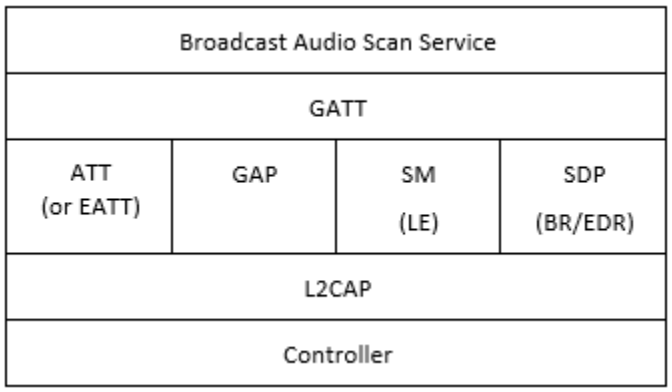

Figure 3.1: Broadcast Audio Scan Service test model

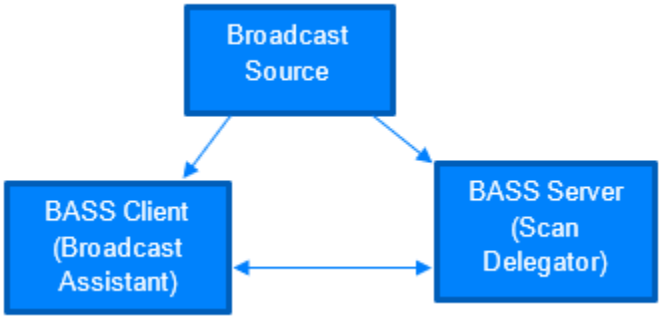

Figure 3.2: Broadcast Audio Scan Service topology

3.2 Test Strategy

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

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

A BASS Server is one part of a trio of elements of the Broadcast Audio Scan feature. The other two are the BASS Client and the Broadcast Source. The included tests support both the scenario where the

Broadcast Source is a separate device (Lower Tester 2) or resides on the same device as the BASS Client (Lower Tester).

This Test Suite contains Valid Behavior (BV) tests complemented with Invalid Behavior (BI) tests where required. The test coverage mirrored in the Test Suite Structure is the result of a process that started with catalogued specification requirements that were logically grouped and assessed for testability enabling coverage in defined test purposes.

3.3 Test groups

The following test groups have been defined:

- Generic GATT Integrated Tests
- Control Point Procedures
- Service Procedure – Error Handling

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 [7] 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>**
BASS	Broadcast Audio Scan Service
Identifier Abbreviation	**Role Identifier <IUT role>**
SR	Server
Identifier Abbreviation	**Feature Identifier <feat>**
CP	Control Point
SGGIT	Server Generic GATT Integrated Tests
SPE	Service Procedure Error Handling
Identifier Abbreviation	**Reference Identifier <GGIT class>**
CHA	Characteristic GGIT
SDP	SDP GGIT
SER	Service GGIT

Table 4.1: BASS 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, then the outcome of the test is a Fail verdict.

4.2 Setup preambles

4.2.1 ATT Bearer on LE Transport

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

4.2.2 ATT Bearer on BR/EDR Transport

1. Establish a BR/EDR transport connection between the IUT and the Lower Tester.
2. Establish an L2CAP channel (PSM 0x001F) between the IUT and the Lower Tester over that BR/EDR transport.

4.2.3 EATT Bearer on LE Transport

1. Establish an LE transport connection between the IUT and the Lower Tester.
2. Establish an L2CAP channel 0x0005 for signaling and one L2CAP channel (for ATT bearers) with EATT PSM (as defined in Assigned Numbers) between the IUT and the Lower Tester over that LE transport.

4.2.4 EATT Bearer on BR/EDR Transport

1. Establish a BR/EDR transport connection between the IUT and the Lower Tester.
2. Establish an L2CAP channel 0x0001 for signaling and one L2CAP channel (for ATT bearers) with EATT PSM (as defined in Assigned Numbers) between the IUT and the Lower Tester over that BR/EDR transport.

4.2.5 Broadcast Audio Scan Control Point preamble

1. Establish an ATT Bearer connection between the Lower Tester and the IUT as described in Section 4.2.1, if using ATT over an LE transport, or 4.2.2 if using ATT over a BR/EDR transport, or 4.2.3 if using EATT over an LE transport, or 4.2.4 if using EATT over a BR/EDR transport.
2. The handle of the Broadcast Audio Scan Control Point characteristic has been previously discovered by the Lower Tester during a test procedure in Section 4.3 or 4.4 or is known to the Lower Tester by other means.
3. The handle of the Client Configuration descriptor of the Broadcast Audio Scan Control Point characteristic has been previously discovered by the Lower Tester during a test procedure in Section 4.3 or is known to the Lower Tester by other means.
4. If the IUT requires bonding, then the Lower Tester performs a bonding procedure.

4.3 Generic GATT Integrated Tests

Execute the Generic GATT Integrated Tests defined in Section 6.3, Server test procedures (SGGIT), in [7] using Table 4.2 below as input:

TCID	Service / Characteristic / Descriptor	Reference	Properties	Value Length (Octets)	Type
BASS/SR/SGGIT/SER/BV-01-C [Service GGIT – Broadcast Scan]	Broadcast Audio Scan Service	[3] 2.1	-	-	-
BASS/SR/SGGIT/CHA/BV-01-C [Characteristic GGIT – Broadcast Audio Scan Control Point]	Broadcast Audio Scan Control Point Characteristic	[3] 3.1	0x0C (Write, Write Without Response)	skip	Unique
BASS/SR/SGGIT/CHA/BV-02-C [Characteristic GGIT – Broadcast Receive State]	Broadcast Receive State Characteristic	[3] 3.2	0x12 (Read, Notify)	skip	-
BASS/SR/SGGIT/SDP/BV-01-C [SDP Record]	Broadcast Audio Scan Service	[3] 4	-	-	-

Table 4.2: Input for the GGIT Server test procedure

4.4 Control Point Procedures

4.4.1 Remote Scan Stopped and Started

- Test Purpose

  Verify that the BASS Server IUT handles the writing of the Remote Scan Stopped and Started opcode.

- Reference

  [3] 3.1.1.2, 3.1.1.3

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point

- Test Case Configuration

TCID	Opcode
BASS/SR/CP/BV-01-C [Remote Scan Stopped]	Remote Scan Stopped
BASS/SR/CP/BV-02-C [Remote Scan Started]	Remote Scan Started

Table 4.3: Remote Scan Stopped and Started test cases

- Test Procedure

  1. The Lower Tester executes the GATT Write Characteristic Value sub-procedure for the Broadcast Audio Scan Control Point characteristic with the opcode specified in Table 4.3.
  2. The Lower Tester receives a Write Response from the IUT.

- Expected Outcome

  Pass verdict

  The IUT accepts the opcode.

4.4.2 Add and Remove Source – No Sync

- Test Purpose

  Verify that the BASS Server IUT updates a Broadcast Receive State characteristic when the Add Source and Remove Source opcode is written to the Broadcast Audio Scan Control Point.

- Reference

  [3] 3.1.1.4, 3.1.1.7

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.

- Test Case Configuration

TCID	GATT Write Type	Metadata
BASS/SR/CP/BV-03-C [Add and Remove Source – No Sync]	Write Characteristic Value	Zero length
BASS/SR/CP/BV-04-C [Add and Remove Source – No Sync – Write Long]	Write Long Characteristic Value	Random Metadata longer than the ATT_MTU

Table 4.4: Add and Remove Source – No Sync test cases

- Test Procedure

For each round as specified in Table 4.5, execute Steps 1–4.

1. The Lower Tester executes the GATT Write Type sub-procedure as specified in Table 4.4 for the Broadcast Audio Scan Control Point characteristic with the Add Source opcode with the PA_Sync set to 0x00, Num_Subgroups set to 1, BIS_Sync[0] set to 0x00000000, Advertising_Address_Type set to the Advertising Address Type specified in Table 4.5, PA_Interval set to a random value, Advertiser_Address set to a random device address, the Advertising_SID set to a random SID value, Broadcast_ID set to a random value, and Metadata set to the Metadata field specified in Table 4.4.
2. The Lower Tester receives a Write Response from the IUT.
3. The Lower Tester receives one or more notifications on a Broadcast Receive State characteristic.
4. The Upper Tester verifies the Metadata parsed by the IUT is what was sent by the Lower Tester.
5. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Remove opcode and the Source_ID set to the Source_ID received in Step 2.
6. The Lower Tester receives a notification from the IUT of the Broadcast Receive State characteristic.

Round	Advertising Address Type
1	Public Device or Public Identity Address (0x00)
2	Random Device or Random (static) Identity Address (0x01)

Table 4.5: Input values for Add and Remove Source – No Sync

- Expected Outcome

  Pass verdict

  In Step 3, the IUT sends one or more notifications to the Lower Tester with the PA_Sync_State and the BIS_Sync_State field is 0x00, the Source_Address_Type field matches the value used in that round, the Source_Address field matches the device address used, the Source_Adv_SID field matches the SID used in that round, and the Broadcast_ID field matches the Broadcast_ID used in that round.

  In Step 4, the Metadata is parsed by the IUT and it is verified that it is what was sent by the Lower Tester.

  In Step 6, the IUT sends a notification to the Lower Tester where the Broadcast Receive State characteristic is empty.

4.4.3 Sync PA

- Test Purpose

  Verify that the BASS Server IUT updates a Broadcast Receive State characteristic, with PA_Sync set, when the Add Source is written to the Broadcast Audio Scan Control Point. The IUT will sync with a Lower Tester as a Broadcast Source.

- Reference

  [3] 3.1.1.4, 3.1.1.5

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - The Lower Tester is broadcasting a BIS over a Public Address or a Random Device Address as specified in Table 4.6.
  - The Lower Tester is advertising using Periodic Advertising.
  - The Sync Timeout is specified by the TSPX_Sync_Timeout IXIT entry.
  - The Lower Tester is bonded with the IUT.

- Test Case Configuration

TCID	Advertising Address Type	Advertiser Address
BASS/SR/CP/BV-05-C [Add Source – Sync PA, Public Address Type]	0x00	Public Address
BASS/SR/CP/BV-06-C [Add Source – Sync PA, Random Address Type – Random Device Address]	0x01	Random Device Address

Table 4.6: Sync PA test cases

- Test Procedure

  1. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Add Source opcode and the PA_Sync set to 0x02, Num_Subgroups set to 1, BIS_Sync[0] set to 0, Advertising_Address_Type, Advertiser_Address set as specified in Table 4.6, Metadata_Length set to 0, Metadata set to 0 bytes, and Advertising_SID set to the Advertising_SID subfield of the ADI field of the AUX_ADV_IND, and Broadcast_ID set to the Broadcast_ID field of the AUX_ADV_IND.
  2. The Lower Tester waits TSPX_Sync_Timeout seconds until it receives a notification of the Broadcast Receive State characteristic where the PA_Sync_State is set to 0x02.

- Expected Outcome

  Pass verdict

  In Step 2, the IUT sends a notification of the Broadcast Receive State characteristic to the Lower Tester with PA_Sync_State set to 0x02, BIS_Sync_State set to 0x00000000, BIG_Encryption set to 0x00, and Advertising_Address_Type, Advertiser_Address set as specified in Table 4.6.

BASS/SR/CP/BV-07-C [Sync BIS]

- Test Purpose

  Verify that the BASS Server IUT updates a Broadcast Receive State characteristic when the Modify Source opcode is written with the PA_Sync field set. The IUT will sync with a Lower Tester acting as a Broadcast Source.

- Reference

  [3] 3.1.1.4, 3.1.1.5

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - The Lower Tester is broadcasting a BIS over a Public Address or a Random Address.
  - The Lower Tester is advertising using Periodic Advertising.
  - The IUT has synced to a PA using BASS/SR/CP/BV-05-C [Add Source – Sync PA, Public Address Type] through BASS/SR/CP/BV-06-C [Add Source – Sync PA, Random Address Type – Random Device Address] or through other means.
  - The BIS_index is specified by the TSPX_BIS_Index IXIT entry.
  - The Sync Timeout is specified by the TSPX_Sync_Timeout IXIT entry.
  - The Tester is bonded with the IUT.

- Test Procedure

For rounds 1–2 in Table 4.7, execute Steps 1–4.

1. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Modify Source opcode and the PA_Sync set to 0x02, BIS_Sync set as specified in Table 4.7, and Metadata set to the TSPX_Metadata IXIT entry.
2. The Lower Tester waits TSPX_Sync_Timeout seconds until it receives a notification of the Broadcast Receive State characteristic where the BIS_Sync_State indicates synced.
3. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Modify Source opcode, the PA_Sync set to 0x02, Num_Subgroups set to 1, and the BIS_Sync[0] set to 0x00000000.
4. The Lower Tester waits TSPX_Sync_Timeout seconds until it receives a notification of the Broadcast Receive State characteristic where the BIS_Sync_State indicates no sync.

Round	BIS_Sync
1	TSPX_BIS_Index
2	0xFFFFFFFF

Table 4.7: Input table for Sync BIS

- Expected Outcome

  Pass verdict

  In Step 2, the IUT sends a notification of the Broadcast Receive State characteristic to the Lower Tester with PA_Sync_State set to 0x02, BIS_Sync_State set to the index of the synced BIS, and BIG_Encryption set to 0x00.

  In Step 4, the IUT sends a notification of the Broadcast Receive State characteristic to the Lower Tester; it has PA_Sync_State set to 0x02, BIS_Sync_State set to 0x00000000, and BIG_Encryption set to 0x00.

4.4.4 Sync BIS, Periodic Advertising Sync Transfer

- Test Purpose

  Verify that the BASS Server IUT, that supports PAST, updates a Broadcast Receive State characteristic when the Add Source opcode is written with the PA_Sync field set. The IUT will sync with a Lower Tester as a Broadcast Source.

- Reference

  [3] 3.1.1.4, 3.1.1.5

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - Lower Tester 1 is broadcasting a BIS over a Public Address or a Random Address, as specified in Table 4.8.
  - Lower Tester 1 is advertising using Periodic Advertising.
  - Lower Tester 2 is broadcasting a BIS over a Public Address or a Random Address, as specified in Table 4.8.
  - Lower Tester 2 is advertising using Periodic Advertising.
  - The BIS_index is specified by the TSPX_BIS_Index IXIT entry.
  - The Sync Timeout is specified by the TSPX_Sync_Timeout IXIT entry.
  - The IRK used for RPA is specified by the TSPX_IRK IXIT entry.

- Test Case Configuration

TCID	Advertiser	Advertising Address Type	Advertiser Address
BASS/SR/CP/BV-08-C [Add Source – Sync BIS, PAST, Public Address Type - Single LT]	Lower Tester 1	0x00	Public
BASS/SR/CP/BV-09-C [Add Source – Sync BIS, PAST, Random Address Type – Single LT]	Lower Tester 1	0x01	Random
BASS/SR/CP/BV-10-C [Add Source – Sync BIS, PAST, Public Address Type]	Lower Tester 2	0x00	Public
BASS/SR/CP/BV-11-C [Add Source – Sync BIS, PAST, Random Address Type]	Lower Tester 2	0x01	Random

Table 4.8: Sync BIS, Periodic Advertising Sync Transfer test cases

- Test Procedure

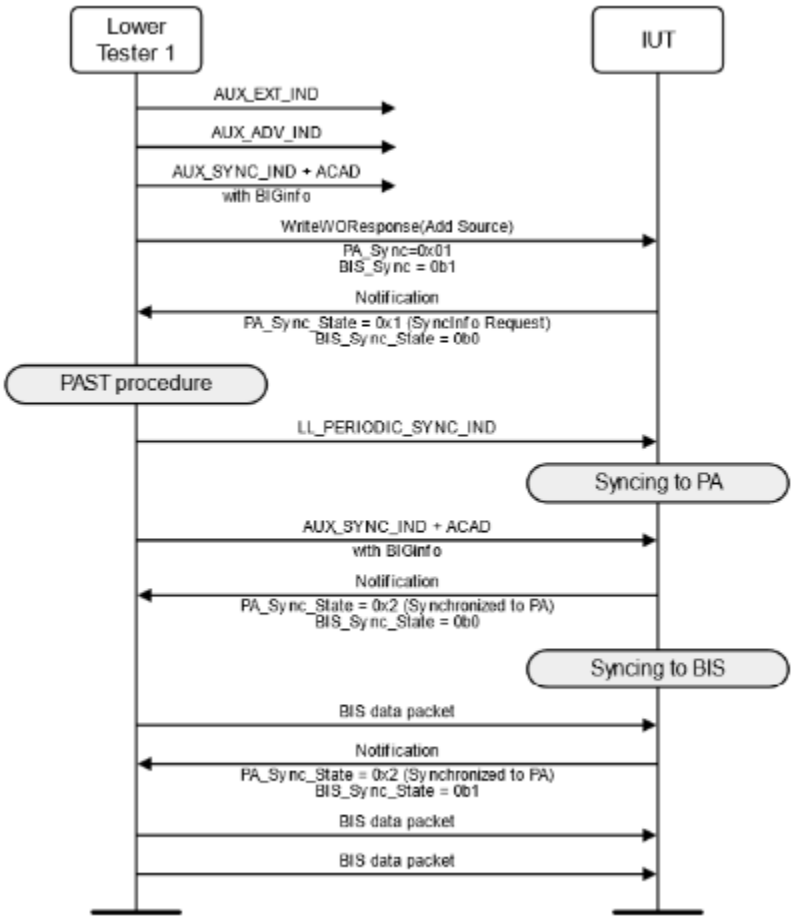

Figure 4.1: Broadcaster is Lower Tester 1 MSC

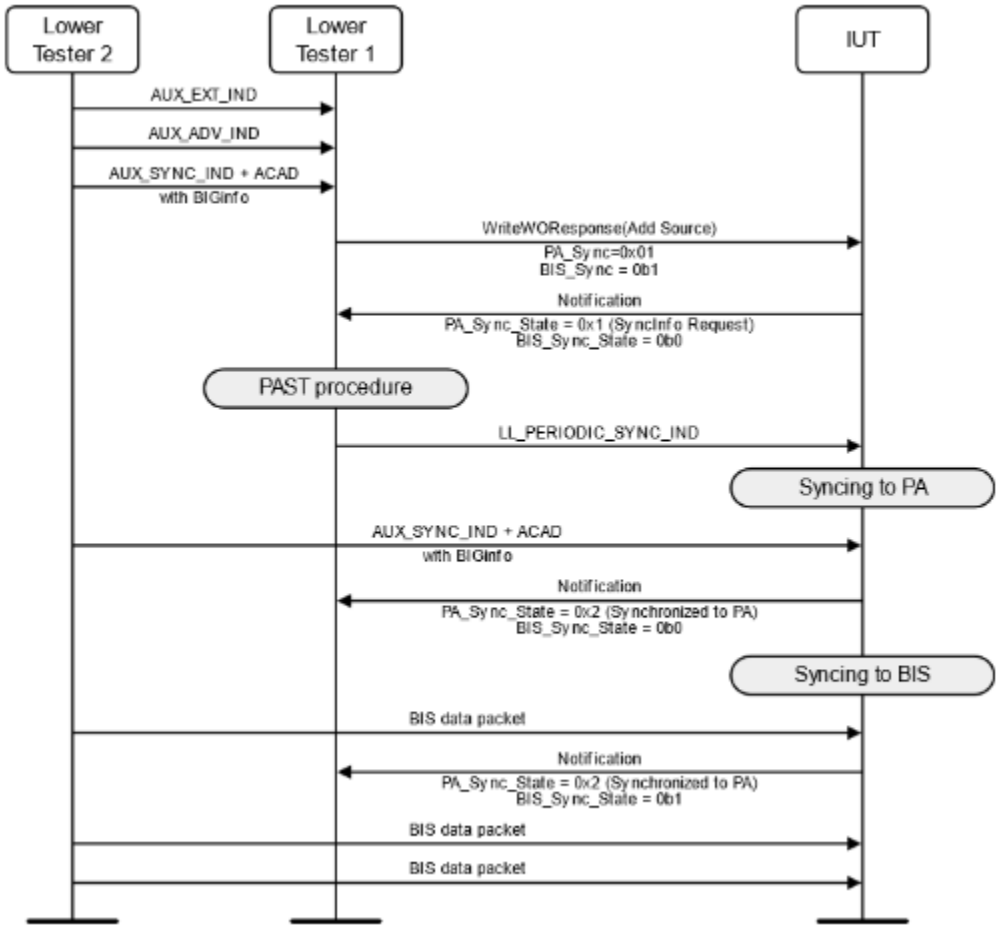

Figure 4.2: Broadcaster is Lower Tester 2 MSC

1. Lower Tester 1 executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Add Source opcode and the PA_Sync set to 0x01, BIS_Sync set to the BIS_index of Advertiser as specified in Table 4.8.
2. Lower Tester 1 waits TSPX_Sync_Timeout seconds until it receives a notification with the Broadcast Receive State characteristic synchronized with the PA_Sync_State set to 0x01 SyncInfo request.
3. Lower Tester 1 performs a Periodic Advertising Sync Transfer procedure (in Section 9.5.4 of Volume 3 Part C in [1]) by sending an LL_PERIODIC_SYNC_IND PDU with the SyncInfo field containing the Periodic Advertising for Advertiser as specified in Table 4.8.
4. The IUT synchronizes to the Periodic Advertising from Advertiser as specified in Table 4.8 using the SyncInfo field received in Step 1. The AUX_SYNC_IND advertisement from Advertiser as specified in Table 4.8 contains the BASE info in the BIGinfo field.
5. Lower Tester 1 waits TSPX_Sync_Timeout seconds until it receives a notification from the IUT of the Broadcast Receive State characteristic synchronized to the Periodic Advertising.
6. The IUT synchronizes with the BIS on Advertiser as specified in Table 4.8.
7. Lower Tester 1 receives a notification from the IUT of the Broadcast Receive State characteristic synchronized to the BIS, with BIS_index of Advertiser as specified in Table 4.8.

8. Lower Tester 1 executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Modify Source opcode and the PA_Sync set to 0x01, BIS_Sync set to 0x00000000.
9. Lower Tester 1 waits TSPX_Sync_Timeout seconds until it receives a notification of the Broadcast Receive State characteristic where the BIS_Sync_State is 0x00.

- Expected Outcome

  Pass verdict

  In Step 2, the IUT sends a notification of the Broadcast Receive State characteristic to Advertiser as specified in Table 4.8 with PA_Sync_State set to 0x01, BIS_Sync_State set to 0x00000000, and BIG_Encryption set to 0x00.

  In Step 5, the IUT sends a notification of the Broadcast Receive State characteristic to Advertiser as specified in Table 4.8, which has PA_Sync_State set to 0x02, BIS_Sync_State set to 0x00000000, and BIG_Encryption set to 0x00.

  In Step 7, the IUT sends a notification of the Broadcast Receive State characteristic to Advertiser as specified in Table 4.8, it has PA_Sync_State set to 0x02 and BIS_Sync_State set to the TSPX_BIS_Index IXIT entry and BIG_Encryption set to 0x00.

  In Step 9, the IUT sends a notification of the Broadcast Receive State characteristic to Advertiser as specified in Table 4.8, it has PA_Sync_State set to 0x02 and BIS_Sync_State set to 0x00000000 and BIG_Encryption set to 0x00.

BASS/SR/CP/BV-12-C [Modify Source – Do Not Synchronize]

- Test Purpose

  Verify that the BASS Server IUT handles writing of the Modify Source opcode to the Broadcast Audio Scan Control Point and does not synchronize to a PA and BIS.

- Reference

  [3] 3.1.1.5

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - The BIS_index is specified by the TSPX_BIS_Index IXIT entry.
  - The IUT has a source added by executing BASS/SR/CP/BV-05-C [Add Source – Sync PA, Public Address Type] through BASS/SR/CP/BV-06-C [Add Source – Sync PA, Random Address Type – Random Device Address] or through whatever means available with PA_Sync set to 0x02.
  - The Source ID is specified by the TSPX_Source_ID IXIT entry.

- Test Procedure

  1. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Modify Source opcode and the PA_Sync set to 0x00, Num_Subgroups set to 1, and BIS_Sync[0] set to 0x00000000.
  2. The Lower Tester waits TSPX_Sync_Timeout seconds until it receives a notification from the IUT of the Broadcast Receive State characteristic.

- Expected Outcome

  Pass verdict

  In Step 2, the IUT sends a notification of the Broadcast Receive State characteristic of the Lower Tester with PA_Sync_State set to 0x00 and BIS_Sync_State set to 0x00000000 and BIG_Encryption set to 0x00.

BASS/SR/CP/BV-13-C [Lose Sync]

- Test Purpose

  Verify that when the BASS Server IUT syncs with a Broadcast Source, it loses the Periodic Advertising sync and the sync to the Broadcast Source.

- Reference

  [3] 3.1.1.4

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - The Lower Tester enables notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - The Lower Tester is broadcasting a BIS using a Public Address.
  - The Lower Tester is advertising using Periodic Advertising.
  - The BIS_index is specified by the TSPX_BIS_Index IXIT entry.
  - The IUT has a source added through whatever means are available.
  - The IUT is synchronized with a broadcast source on the BIS_index.

- Test Procedure

  1. The Lower Tester executes the GATT Read Characteristic Value sub-procedure for each of the Broadcast Receive State characteristics.
  2. The Lower Tester stops advertising.
  3. The Lower Tester receives a notification from the IUT of the Broadcast Receive State characteristic.
  4. The Lower Tester stops the broadcast.
  5. The Lower Tester receives a notification from the IUT of the Broadcast Receive State characteristic.

- Expected Outcome

  Pass verdict

  In Step 1, the PA_Sync_State is set to 0x02 and the BIS_Sync_State is set to TSPX_BIS_Index.

In Step 3, the IUT sends a notification of the Broadcast Receive State characteristic of the Lower Tester with PA_Sync_State set to 0x00 and BIS_Sync_State set to TSPX_BIS_Index and BIG_Encryption set to 0x00.

In Step 5, the IUT sends a notification of the Broadcast Receive State characteristic of the Lower Tester with PA_Sync_State set to 0x00 and BIS_Sync_State set to 0x0 and BIG_Encryption set to 0x00.

4.4.5 Set Broadcast Code

- Test Purpose

  Verify that the BASS Server IUT handles writing of the Set Broadcast Code opcode to the Broadcast Audio Scan Control Point, after having synced to a BIS autonomously or through a Add Source Opcode.

- Reference

  [3] 3.1.1.6, 3.2

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - The Lower Tester is broadcasting an encrypted BIS over a Public Address.
  - The Lower Tester is advertising using Periodic Advertising.
  - The Broadcast Code is specified by the TSPX_Broadcast_Code IXIT entry.

- Test Case Configuration

TCID	Preamble
BASS/SR/CP/BV-18-C [Autonomous Sync BIS – Encrypted]	The Upper Tester forces the IUT to synchronize to the TSPX_BIS_Index of the Lower Tester broadcasting.
BASS/SR/CP/BV-14-C [Set Broadcast Code]	Perform BASS/SR/CP/BV-07-C [Sync BIS] to synchronize to the Lower Tester.

Table 4.9: Set Broadcast Code Test Cases

- Test Procedure

  1. Execute the Preamble specified in Table 4.9.
  2. The Lower Tester waits TSPX_Sync_Timeout seconds until it receives a notification of the Broadcast Receive State characteristic where the BIG_Encryption indicates Broadcast_Code required.
  3. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Set Broadcast Code opcode and the Source_ID set to the TSPX_Source_ID IXIT entry and Broadcast_Code set to the TSPX_Broadcast_Code IXIT entry.
  4. The Lower Tester waits TSPX_Sync_Timeout seconds to receive a notification of the Broadcast Receive State characteristic.

- Expected Outcome

  Pass verdict

  In Step 2, the IUT sends a notification of the Broadcast Receive State characteristic to the Lower Tester with the Source_Address_Type, Source_Address, Source_Adv_SID, and Broadcast_ID to that of the Lower Tester's Broadcaster, PA_Sync_State set to 0x02, and BIG_Encryption set to 0x01.

  In Step 4, the IUT sends a notification of the Broadcast Receive State characteristic to the Lower Tester with the Source_Address_Type, Source_Address, Source_Adv_SID, and Broadcast_ID to that of the Lower Tester's Broadcaster, PA_Sync_State set to 0x02, BIS_Sync_State[0] set to the TSPX_BIS_Index, and BIG_Encryption set to 0x02.

BASS/SR/CP/BV-15-C [Server Disconnects with a Synced BIS]

- Test Purpose

  Verify that the BASS Server IUT syncs with a Broadcast Source, disconnects, and updates the Broadcast Receive State Characteristic.

- Reference

  [3] 3.2.1

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - If the IUT requires bonding, then the Lower Tester performs a bonding procedure.
  - The BIS_index is specified by the TSPX_BIS_Index IXIT entry.
  - A source is added to the IUT (by any means that are available).
  - The Source ID is specified by the TSPX_Source_ID IXIT entry.
  - The Server is synchronized with a broadcast source on the BIS_index.
  - The Lower Tester disconnects from the IUT.

- Test Procedure

  1. The Upper Tester orders the IUT to stop synchronization with the broadcast source.
  2. The Lower Tester establishes a connection to the IUT.
  3. If bonded, the Lower Tester receives a notification of the Broadcast Receive State characteristic; otherwise, the Lower Tester executes the GATT Read Characteristic Value sub-procedure for each of the Broadcast Receive State characteristics.

- Expected Outcome

  Pass verdict

  In Step 3, the Broadcast Receive State characteristic has the BIS_Sync_State set to 0x0 and BIG_Encryption set to 0x00.

BASS/SR/CP/BV-16-C [Sync BIS, Failed to Synchronize to Periodic Advertising Sync Transfer]

- Test Purpose

  Verify that the BASS Server IUT, that supports PAST, properly notifies when the IUT does not receive the SyncInfo data from the Lower Tester.

- Reference

  [3] 3.1.1.4

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - The Lower Tester is advertising using Periodic Advertising.
  - The Sync Timeout is specified by the TSPX_Sync_Timeout IXIT entry.

- Test Procedure

  1. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Add Source opcode and the PA_Sync set to 0x01, Num_Subgroups set to 1, and BIS_Sync[0] set to TSPX_BIS_Index.
  2. The IUT sends a notification with the Broadcast Receive State characteristic synchronized with the PA_Sync_State set to 0x01 SyncInfo request.
  3. The Lower Tester does not send an LL_PERIODIC_SYNC_IND PDU.

- Expected Outcome

  Pass verdict

  After TSPX_Sync_Timeout, the IUT sends a notification of the Broadcast Receive State characteristic with PA_Sync_State set to 0x04 (No PAST) due to the absence of an LL_PERIODIC_SYNC_IND PDU from the Lower Tester after Step 2.

BASS/SR/CP/BV-17-C [Autonomous Sync BIS]

- Test Purpose

  Verify that the BASS Server IUT updates a Broadcast Receive State characteristic when it autonomously syncs with a BIS.

- Reference

  [3] 3.2.1

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.

- The Lower Tester is broadcasting a BIS over a Public Address.
- The Lower Tester is advertising using Periodic Advertising.

- Test Procedure

  1. The Upper Tester forces the IUT to synchronize to the TSPX_BIS_Index of the Lower Tester broadcasting.
  2. The Lower Tester waits TSPX_Sync_Timeout seconds until it receives a notification of the Broadcast Receive State characteristic where the BIS_Sync_State indicates syncing.

- Expected Outcome

  Pass verdict

  In Step 2, the IUT sends a notification of the Broadcast Receive State characteristic to the Lower Tester with the Source_Address_Type, Source_Address, Source_Adv_SID, Broadcast_ID to that of the Lower Tester's Broadcaster, PA_Sync_State set to 0x02, BIS_Sync_State[0] set to the index of the synced BIS, and BIG_Encryption set to 0x00.

BASS/SR/CP/BV-21-C [Set Broadcast Code without Sync]

- Test Purpose

  Verify that the BASS server IUT handles writing of the Set Broadcast Code Opcode to the Broadcast Audio Scan Control Point when it does not support Sync.

- Reference

  [3] 3.1.1.6, 3.2

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - The Broadcast Code is specified by the TSPX_Broadcast_Code IXIT entry.

- Test Procedure

  1. The Upper Tester orders the IUT to expose a Broadcast Receive State with BIG_Encryption field indicating Broadcast_Code required.
  2. The Lower Tester waits TSPX_Sync_Timeout seconds until it receives a notification of the Broadcast Receive State characteristic where the BIG_Encryption indicates Broadcast_Code required.
  3. The Lower Tester executes the GATT Write Value sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Set Broadcast Code Opcode and the Source_ID set to the TSPX_Source_ID IXIT entry and Broadcast_Code set to TSPX_Broadcast_Code IXIT entry.
  4. The Lower Tester receives a Write Response from the IUT.

- Expected Outcome

  Pass verdict

  In Step 2, the IUT sends a notification of the Broadcast Receive State characteristic to the Lower Tester with the Source_Address_Type, Source_Address, Source_Adv_SID, and Broadcast_ID set to valid values, and BIG_Encryption set to 0x01.

  In Step 4, the IUT Write Response to the Lower Tester.

4.4.6 Bad Broadcast Code

- Test Purpose

  Verify that the BASS Server IUT updates a Broadcast Receive State characteristic when it autonomously syncs with an encrypted BIS but has a bad Broadcast Code.

- Reference

  [3] 3.2.1

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - The Lower Tester is broadcasting an encrypted BIS over a Public Address.
  - The Lower Tester is advertising using Periodic Advertising.
  - The Broadcast Code is specified by the TSPX_Broadcast_Code IXIT entry.

- Test Case Configuration

TCID	Preamble	Bad_Code Result
BASS/SR/CP/BV-19-C [Autonomous Sync BIS – Bad Broadcast Code]	The Upper Tester forces the IUT to synchronize to the TSPX_BIS_Index of the Lower Tester broadcasting.	The Broadcast_Code value in Step 3
BASS/SR/CP/BV-20-C [Set Bad Broadcast Code]	Perform BASS/SR/CP/BV-07-C [Sync BIS] to synchronize to the Lower Tester.	The Broadcast_Code value in Step 3
BASS/SR/CP/BV-22-C [Autonomous Sync BIS – Bad Broadcast Code, v2]	The Upper Tester forces the IUT to synchronize to the TSPX_BIS_Index of the Lower Tester broadcasting.	0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
BASS/SR/CP/BV-23-C [Set Bad Broadcast Code, v2]	Perform BASS/SR/CP/BV-07-C [Sync BIS] to synchronize to the Lower Tester.	0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

Table 4.10: Bad Broadcast Code test cases

- Test Procedure

  1. Execute the Preamble specified in Table 4.10.
  2. The Lower Tester waits TSPX_Sync_Timeout seconds to receive a notification of the Broadcast Receive State characteristic where the BIG_Encryption indicates Broadcast_Code required.
  3. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Set Broadcast Code opcode and the Source_ID and Broadcast_Code set to a value other than the TSPX_Broadcast_Code IXIT entry.
  4. The Lower Tester waits TSPX_Sync_Timeout seconds to receive a notification of the Broadcast Receive State characteristic where the BIG_Encryption is equal to 0x03.

- Expected Outcome

  Pass verdict

  In Step 2, the IUT sends a notification of the Broadcast Receive State characteristic to the Lower Tester with the Source_Address_Type, Source_Address, Source_Adv_SID, and Broadcast_ID to that of the Lower Tester's Broadcaster, PA_Sync_State set to 0x02, and BIG_Encryption set to 0x01.

  In Step 4, the IUT sends a notification of the Broadcast Receive State characteristic to the Lower Tester with the Source_Address_Type, Source_Address, Source_Adv_SID, and Broadcast_ID to that of the Lower Tester's Broadcaster, PA_Sync_State set to 0x02, BIS_Sync_State[0] set to the TSPX_BIS_Index, BIG_Encryption set to 0x03, and Bad_Code set to the Bad_Code Result as specified in Table 4.10.

4.5 Service Procedures Error Handling

BASS/SR/SPE/BI-01-C [Ignore Invalid Source ID]

- Test Purpose

  Verify that the BASS Server IUT does not respond to a control point procedure call that uses an invalid Source_ID parameter.

- Reference

  [3] 3.1.1.1

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.

- Test Procedure

For each round in Table 4.11, execute Steps 1 and 2.

1. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Target opcode specified in Table 4.11, with the Source_ID set to an invalid Source ID and the other parameters set as specified in Table 4.11.
2. The Lower Tester waits TSPX_Sync_Timeout seconds to receive a notification of the Broadcast Receive State characteristic.

Round	Target Opcode	Parameter
1	Modify Source	PA_Sync_State = 0x00
2	Set Broadcast Code	Broadcast_Code = random 16 bytes
3	Remove Source	-

Table 4.11: Input table for Ignore Invalid Source ID

- Expected Outcome

  Pass verdict

  The IUT does not send a notification of the Broadcast Receive State characteristic after Step 1.

BASS/SR/SPE/BI-02-C [Modify Source - Ignore RFU Values]

- Test Purpose

  Verify that the BASS Server IUT does not respond to a Modify Source control point call that uses an RFU value for the PA_Sync parameter.

- Reference

  [3] 3.1.1.5

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - The Lower Tester is broadcasting a BIS over a Public Address and a Random Address.
  - The Lower Tester is advertising using Periodic Advertising.
  - The IUT has synced to a PA using BASS/SR/CP/BV-05-C [Add Source – Sync PA, Public Address Type] through BASS/SR/CP/BV-06-C [Add Source – Sync PA, Random Address Type – Random Device Address] or through other means.

- Test Procedure

  1. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Modify Source opcode, the Source_ID set to a valid Source ID, and the PA_Sync set to an RFU value, Num_Subgroups set to 1, and the BIS_Sync[0] field set to a valid value.
  2. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Modify Source opcode, the Source_ID set to a valid Source ID, and the PA_Sync set to 0x02 and two or more BIS_Sync subgroups with the same bit set in two of the subgroups.

- Expected Outcome

  Pass verdict

  The IUT does not send a notification of the Broadcast Receive State characteristic after Step 1.

BASS/SR/SPE/BI-03-C [Add Source - Ignore Invalid Values]

- Test Purpose

  Verify that the BASS Server IUT ignores Add Source control point procedure calls that include an RFU or Invalid parameter.

- Reference

  [3] 3.1.1.4

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.

- Test Procedure

For each round specified in Table 4.12, execute Step 1.

1. The Lower Tester executes the GATT Write Without Response sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Add Source opcode with the parameters set as specified in Table 4.12 and the Advertiser_Address set to a random device address.

Round	PA_Sync	Advertising Address Type	Advertising SID	BIS_Sync
1	RFU	random value in the range 0x00 – 0x03	random value in the range 0x0 – 0xF	Any valid value
2	random value in the range 0x00 – 0x02	RFU	random value in the range 0x0 – 0xF	Any valid value
3	random value in the range 0x00 – 0x02	random value in the range 0x0 – 0x3	RFU	Any valid value
4	random value in the range 0x00 – 0x02	random value in the range 0x0 – 0x3	random value in the range 0x0 – 0xF	Two or more subgroups with the same bit set in two of them

Table 4.12: Input table for Add Source - Ignore Invalid Values

- Expected Outcome

  Pass verdict

  The IUT does not send a notification of the Broadcast Receive State characteristic after Step 1.

BASS/SR/SPE/BI-04-C [Opcode Not Supported]

- Test Purpose

  Verify that the BASS Server IUT returns an Opcode Not Supported error response when the opcode written is not supported by the IUT or is within a range that is reserved for future use being written to the Broadcast Audio Scan Control Point.

- Reference

  [3] 3.1.1.1

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.

- Test Procedure

  1. The Lower Tester executes the GATT Write Characteristic Value sub-procedure for the Broadcast Audio Scan Control Point characteristic with an RFU opcode.
  2. The Lower Tester receives an Error Response with an error code of OPCODE NOT SUPPORTED.

- Expected Outcome

  Pass verdict

  The IUT sends an error response of OPCODE NOT SUPPORTED after Step 1.

BASS/SR/SPE/BI-05-C [Remove Source While Synchronized to a Source]

- Test Purpose

  Verify that the BASS Server IUT, if synchronized to PA and/or BIS, does not accept the Remove Source operation request.

- Reference

  [3] 3.1.1.7

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.
  - The IUT has a source added through whatever means are available.
  - The Source ID is defined by the TSPX_Source_ID IXIT entry.
  - The IUT is synced to a PA and/or a BIS with a Source ID matching the TSPX_Source_ID IXIT entry.

- Test Procedure

For each Broadcast Receive State characteristic, execute Steps 1–3.

1. The Lower Tester executes the GATT Read Characteristic Value sub-procedure.
2. The Lower Tester executes the GATT Write sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Remove Source opcode and the Source_ID set to the TSPX_Source_ID IXIT entry.

3. The Lower Tester receives a Write Response from the IUT.
4. The Lower Tester waits TSPX_Sync_Timeout seconds to ensure that no notifications are sent.

- Expected Outcome

  Pass verdict

  The IUT does not send a notification to the Lower Tester for the Broadcast Receive State characteristic.

4.5.1 Invalid Length

- Test Purpose

  Verify that the BASS Server IUT rejects writing of an opcode with an invalid length.

- Reference

  [3] 3.1.1.1

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.

- Test Configuration

TCID	Rounds Table
BASS/SR/SPE/BI-06-C [Invalid Length]	Table 4.14
BASS/SR/SPE/BI-08-C [Invalid Length – Set Broadcast Code]	Table 4.15

Table 4.13: Invalid Length test cases

- Test Procedure

  1. The Lower Tester executes the GATT Write Characteristic Value sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Opcode set to Add Source and valid values set for all other parameters.
  2. The Lower Tester receives a Write Response indicating the IUT has accepted the Opcode.
  3. The Lower Tester receives one or more notifications on a Broadcast Receive State characteristic.

     Repeat Steps 4-5 for each round as specified in Table 4.13.

  4. The Lower Tester executes the GATT Write Characteristic Value sub-procedure for the Broadcast Audio Scan Control Point characteristic with the opcode and random data for Total Length as specified in Table 4.14 or Table 4.15 and Num_Subgroups set to zero if used and if used Source_ID set to the value received in Step 3.
  5. The Lower Tester receives an ATT Error Response with Write Request Rejected indicating that the IUT has rejected the Opcode.

Round	Opcode	Total Length
1	Remote Scan Stopped (0)	greater than 1
2	Remote Scan Started (1)	greater than 1
3	Add Source (2)	<> 16
4	Modify Source (3)	<> 6
5	Remove Source (5)	<> 2

Table 4.14: Input table for Invalid Length

Round	Opcode	Total Length
1	Set Broadcast Code (4)	<> 18

Table 4.15: Input Table for Invalid Length – Set Broadcast Code

- Expected Outcome

  Pass verdict

  The IUT rejects the opcode.

4.5.2 Invalid Source ID

- Test Purpose

  Verify that the BASS Server IUT returns an error when a control point procedure passing an invalid Source_ID parameter is called.

- Reference

  [3] 3.1.1.1

- Initial Condition

  - Perform the preamble in Section 4.2.5 to enable the use of the Broadcast Audio Scan Control Point.
  - Enable notification by writing the value 0x0001 using the GATT Write Characteristic Descriptor sub-procedure for each Broadcast Receive State CCCD.

- Test Configuration

TCID	Rounds Table
BASS/SR/SPE/BI-07-C [Invalid Source ID]	Table 4.17
BASS/SR/SPE/BI-09-C [Invalid Source ID – Set Broadcast Code]	Table 4.18

Table 4.16: Invalid Source ID Test Cases

- Test Procedure

Repeat Steps 1–2 for each round as specified in Table 4.16.

1. The Lower Tester executes the GATT Write Characteristic Value sub-procedure for the Broadcast Audio Scan Control Point characteristic with the Target opcode specified in Table 4.17 or Table 4.18, with the Source_ID set to an invalid Source ID and the other parameters set as specified in Table 4.17.
2. The Lower Tester receives an ATT Error Response with ATT Error Response indicating that the IUT has rejected the opcode.

Round	Target Opcode	Parameter
1	Modify Source	PA_Sync = 0x00
2	Remove Source	-

Table 4.17: Input table for Invalid Source ID

Round	Target Opcode	Parameter
1	Set Broadcast Code	Broadcast_Code = random 16 bytes

Table 4.18: Input for Invalid Source ID – Set Broadcast Code

- Expected Outcome

  Pass verdict

  The IUT sends an ATT Error Response with the Error Code set to Invalid Source_ID in Step 2.

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 Broadcast Audio Scan Service [4].

If a test case is mandatory within the respective layer, then the y/x reference is omitted.

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 [2].

For the purpose and structure of the ICS/IXIT, refer to [2].

Item	Feature	Test Case(s)
BASS 2/1	Service Supported over BR/EDR	BASS/SR/SGGIT/SDP/BV-01-C
BASS 2/1 OR BASS 2/2	Broadcast Audio Scan Service	BASS/SR/SGGIT/SER/BV-01-C
BASS 3/1	Broadcast Audio Scan Control Point Characteristic	BASS/SR/SGGIT/CHA/BV-01-C BASS/SR/SPE/BI-01-C BASS/SR/SPE/BI-02-C BASS/SR/SPE/BI-03-C BASS/SR/SPE/BI-04-C BASS/SR/SPE/BI-06-C BASS/SR/SPE/BI-07-C
BASS 3/1 AND BASS 3/3 AND BASS 3/4 AND BASS 4/3	Sync with PAST with Failure	BASS/SR/CP/BV-16-C
BASS 3/1 AND BASS 3/4 AND BASS 3/3 AND BASS 4/3 AND BASS 4/4	Sync using PAST	BASS/SR/CP/BV-08-C BASS/SR/CP/BV-09-C BASS/SR/CP/BV-10-C BASS/SR/CP/BV-11-C
BASS 3/1 AND BASS 3/4 AND BASS 4/4	Modify Sync, No Sync	BASS/SR/CP/BV-12-C
BASS 3/1 AND BASS 4/1	Remote Scan Stopped	BASS/SR/CP/BV-01-C
BASS 3/1 AND BASS 4/2	Remote Scan Started	BASS/SR/CP/BV-02-C
BASS 3/1 AND BASS 4/3	Sync PA	BASS/SR/CP/BV-05-C BASS/SR/CP/BV-06-C
BASS 3/1 AND BASS 4/3 AND BASS 4/6	Add and Remove Source, No Sync	BASS/SR/CP/BV-03-C BASS/SR/CP/BV-04-C
BASS 3/1 AND BASS 4/4 AND BASS 3/4	Sync BIS	BASS/SR/CP/BV-07-C
BASS 3/1 AND BASS 4/5	Set Broadcast Code without Sync	BASS/SR/CP/BV-21-C
BASS 3/1 AND BASS 4/5 AND BASS 3/2a	Bad Broadcast Code, v2	BASS/SR/CP/BV-23-C
BASS 3/1 AND BASS 4/5 AND BASS 3/5	Set Broadcast Code - Autonomous	BASS/SR/CP/BV-18-C

Item	Feature	Test Case(s)
BASS 3/1 AND BASS 4/5 AND BASS 4/3 AND BASS 4/4	Set Broadcast Code	BASS/SR/CP/BV-14-C BASS/SR/SPE/BI-08-C BASS/SR/SPE/BI-09-C
BASS 3/1 AND BASS 4/5 AND NOT BASS 3/2a	Bad Broadcast Code, v1	BASS/SR/CP/BV-20-C
BASS 3/1 AND BASS 4/6	Remove Source	BASS/SR/SPE/BI-05-C
BASS 3/2	Broadcast Receive State	BASS/SR/SGGIT/CHA/BV-02-C
BASS 3/2 AND BASS 3/4	Losing Sync	BASS/SR/CP/BV-13-C BASS/SR/CP/BV-15-C
BASS 3/2 AND BASS 3/4 AND BASS 3/5	Autonomous Syncing	BASS/SR/CP/BV-17-C
BASS 3/2 AND BASS 3/4 AND BASS 3/5 AND BASS 3/2a	Autonomous Bad Broadcast Code, v2	BASS/SR/CP/BV-22-C
BASS 3/2 AND BASS 3/4 AND BASS 3/5 AND NOT BASS 3/2a	Autonomous Bad Broadcast Code, v1	BASS/SR/CP/BV-19-C

Table 5.1: Test case mapping

6 Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
0	p0	2021-09-21	Approved by BTI on 2021-08-25. Broadcast Audio Scan Service (BASS) v1.0 adopted by the BoD on 2021-09-14. Prepared for initial publication.
	p0ed2r00–r01	2023-03-09 – 2023-04-13	TSE 22760 (rating 1): Updated the test procedure for BASS/SR/CP/BV-01-C – -04-C and BASS/SR/SPE/BI-05-C. Updated the copyright page to align with v2 of the DNMD. Editorial edits to align the document with the latest TS template.
	p0 edition 2	2023-04-14	Approved by BTI on 2023-04-13. Prepared for edition 2 publication.
	p1r00–r03	2023-04-16 – 2023-05-25	TSE 22759 (rating 4): Condensed BASS/SR/CP/BV-14-C and -18-C into a table-driven format. Added new TC BASS/SR/CP/BV-21-C. Updated the TCMT accordingly. TSE 22786 (rating 4): Changed the following TCs to table-driven tests: BASS/SR/SPE/BI-06-C and -07-C. Added new TCs BASS/SR/SPE/BI-08-C and -09-C. Updated the TCMT accordingly. Updated the test procedures for BASS/SR/SPE/BI-06-C – -09-C.
1	p1	2023-06-29	Approved by BTI on 2023-06-05. Prepared for TCRL 2023-1 publication.
	p2r00	2024-08-26	TSE 25122 (rating 3): Per E23366, added test cases BASS/SR/CP/BV-22-C and -23-C and updated the Bad Broadcast Code test cases table to include Bad_Code Result values for BASS/SR/CP/BV-19-C, -20-C, -22-C, and -23-C. Updated the TCMT accordingly.
2	p2	2024-10-08	Approved by BTI on 2024-09-11. EE 23366 adopted by the BoD on 2024-10-01. Prepared for TCRL 2024-2-addition publication.
	p3r00	2024-11-21	TSE 24765 (rating 2): Updated the initial condition and test procedure for invalid length tests. TSE 24251 (rating 2): Per E22576, updated the pass verdict to check the BIG_Encryption value for BASS/SR/CP/BV-07-C – BV-13-C and BV-15-C.
3	p3	2025-02-18	Approved by BTI on 2025-02-09. BASS v1.0.1 adopted by the BoD on 2024-02-11. Prepared for TCRL 2025-1 publication.

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