Emergency Configuration Service (EMCS)

***Bluetooth*® Test Suite**

- **Revision:** EMCS.TS.p1
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- **Prepared By:** Personal User Interface Device (PUID) WG
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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 Emergency Configuration Service (EMCS) 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.

[1] Bluetooth Core Specification, Version 5.0 or later

[2] Test Strategy and Terminology Overview

[3] Emergency Configuration Service

[4] Bluetooth Core Specification, Version 4.0 or later, Volume 3, Part G (Generic Attribute Profile)

[5] GATT Test Suite, GATT.TS

[6] GAP Test Suite, GAP.TS

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

[8] ICS Proforma for Emergency Configuration Service

2.2 Definitions

In this Bluetooth document, the definitions from [1], [2], and [3] apply.

2.3 Acronyms and abbreviations

In this Bluetooth document, the definitions, acronyms, and abbreviations from [1], [2], and [3] apply.

3 Test Suite Structure (TSS)

3.1 Overview

The Emergency Configuration Service (EMCS) requires the presence of ATT, GAP, SM, and GATT. This is illustrated in Figure 3.1.

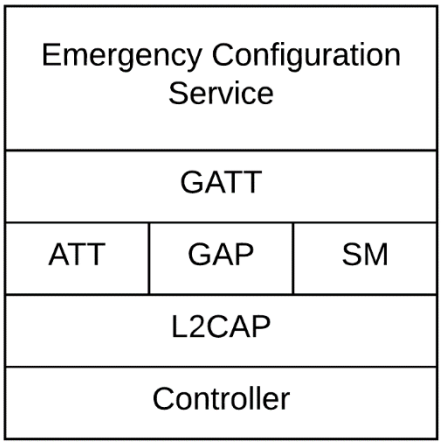

Figure 3.1: Emergency Configuration Service test model

3.2 Test Strategy

The test objectives are to verify functionality of the Emergency Configuration Service (EMCS) 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.

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 has been defined:

- Generic GATT Integrated Tests

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 GGIT tests 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>**
EMCS	Emergency Configuration Service
Identifier Abbreviation	**Role Identifier <IUT role>**
SR	Server Role
Identifier Abbreviation	**Feature Identifier <GGIT test group>**
SGGIT	Server Generic GATT Integrated Tests
Identifier Abbreviation	**Feature Identifier <GGIT class>**
CHA	Characteristic
SER	Service

Table 4.1: EMCS 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 Launch Studio, 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

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

Use GATT TS [5] Section 4.2.1.2 preamble procedure [Set up ATT Bearer over LE].

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	Reference	Properties	Value Length (Octets)	Service Type
EMCS/SR/SGGIT/SER/BV-01-C [Service GGIT – Emergency Configuration]	Emergency Configuration Service	[3] 2.1	-	-	Primary Service
EMCS/SR/SGGIT/CHA/BV-01-C [Characteristic GGIT – Emergency ID]	Emergency ID Characteristic	[3] 3.1	0x02 (Read)	6	-
EMCS/SR/SGGIT/CHA/BV-02-C [Characteristic GGIT – Emergency Text]	Emergency Text Characteristic	[3] 3.2	0x02 (Read)	1-20	-
EMCS/SR/SGGIT/CHA/BV-03-C [Characteristic GGIT – Emergency Text (Read, Write)]	Emergency Text Characteristic	[3] 3.2	0x0A (Read, Write)	1-20	-

Table 4.2: Input for the GGIT Server test procedure

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 Emergency Configuration Service (EMCS) [8].

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.

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

Item	Feature	Test Case(s)
EMCS 3/1	Discoverable as Primary Service	EMCS/SR/SGGIT/SER/BV-01-C
EMCS 3/2	Emergency ID	EMCS/SR/SGGIT/CHA/BV-01-C
EMCS 3/3 AND NOT EMCS 3/4	Emergency Text Characteristic – Read	EMCS/SR/SGGIT/CHA/BV-02-C
EMCS 3/3 AND EMCS 3/4	Emergency Text Characteristic – Read and Write	EMCS/SR/SGGIT/CHA/BV-03-C

Table 5.1: Test case mapping

6 Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
0	1.0.0	2019-07-02	Emergency Configuration Service adopted by the Board of Directors. Prepared for publication.
	p1r00	2023-04-11 – 2023-04-12	TSE 22825 (rating 2): Converted the following test cases to GGIT: EMCS/SR/CW/BV-01-C and EMCS/SR/CR/BV-01-C and -02-C. The new GGIT converted TCID is: EMCS/SR/SGGIT/CHA/BV-03-C. Updated the TCMT accordingly. Added a Publication Number column to the Revision History. Revised the document numbering convention, setting the last release publication of 1.0.0 as p0. Changed section titles for single test cases to Heading 9 per TS template. Performed other editorials to align the document with the latest TS template and updated the scope, references, Test Strategy, test case identification conventions, conformance, Pass/Fail verdict conventions, setup preambles, and TCMT introductory text. Replaced the Bluetooth logo in the footer and updated the copyright page to align with v2 of the DNMD. Deleted draft revision history comments prior to p0.
1	p1	2023-06-29	Approved by BTI on 2023-05-28. Prepared for TCRL 2023-1 publication.

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