Science and Technology

Office for Interoperability and Compatibility
Technology Center

Project 25 Compliance Assessment Bulletin

(P25 CAP)

Project 25 Compliance Assessment Bulletin

ISSI/CSSI Interoperability Test Requirements CAB

Revision 2

P25-CAP_ISSI-CSSI Interop REQ CAB-Rev2 (June 2021)

June 2021

CAB – Project 25 Compliance Assessment Bulletin
Interop – Interoperability

P25 CSSI – Project 25 Console Subsystem Interface
P25 ISSI – Project 25 Inter-RF Subsystem Interface
P25 RFSS – Project 25 RF Subsystem
REQ – Test Requirements

Notice of Disclaimer and Limitation of Liability

The Project 25 Compliance Assessment Program (P25 CAP) provides equipment purchasers demonstrated evidence of a product's compliance with a select group of requirements defined in the suite of P25 Standard. Although successful tests will demonstrate P25 compliance for the specific requirements tested, the conclusions drawn from these tests do not apply to every environment or individual users' needs. P25 CAP-mandated tests only demonstrate product compliance with the tested features listed in the Supplier's Declaration of Compliance and, therefore, only attest to a product's compliance with specific requirements within the P25 Standard.

Revision History

Version	Date	Description
Draft	6/20/2014	Revised dates and made minor editorial changes. Changed Responders Knowledgebase links to First Responder Group links.
2016 Release	8/17/2016	Addresses March and July 2015 public comments. Posted for general use on August 17, 2016.
Version 1	10/01/2019	Document only addresses Interoperability testing; TDMA testing and Console testing added to FDMA testing; testing broken into three testing scenarios: ISSI-RFSS, CSSI-RFSS, CSSI-Console. Role Combinations added to testing, updated based on public comments.
Revision 2 – v7.1	6/24/2021 *For email Release*	Includes updates reflecting comments and corrections received in public comment – See consolidated Comments Matrix. This revision adds a new Appendix B in response to request for a more complete list of acronyms and technical term definitions.

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1 Introduction

The Department of Homeland Security (DHS) Science and Technology Directorate's (S&T) Office for Interoperability and Compatibility Technology Center (OIC-TC) Project 25 Compliance Assessment Program (P25 CAP) is a voluntary program that allows P25 equipment suppliers to formally demonstrate their products' compliance with a select group of requirements within the suite of P25 standards. The purpose of the program is to provide emergency response agencies with evidence that the communications equipment they are purchasing meet P25 standards for performance, conformance and interoperability.

The program requires test laboratories to demonstrate their competence through a rigorous and objective assessment process. Such a process promotes the user community's confidence in, and acceptance of, test results from DHS-recognized laboratories. All equipment suppliers that participate in the P25 CAP must use DHS-recognized laboratories to conduct performance, conformance and interoperability tests on their products. P25 equipment suppliers will release Summary Test Report (STR) and Supplier's Declaration of Compliance (SDOC) documents based on the Detailed Test Report (DTR) from the DHS-recognized laboratory(s) that performed the product testing. This documentation will serve to increase the public's confidence in the performance, conformance and interoperability of P25 equipment.

Performance, conformance and interoperability issues are likely to occur in all communications technologies and especially in ones like P25 with protocols that constantly adapt to changing user requirements. Users should seek to address such problems with the supplier first, then with TIA TR8.25, and then within the P25 CAP and, notably, before product launch and deployment. Further, the declaration of compliance-related documents developed by program participants will provide useful technical information about the equipment.

1.1 Scope

Federal grant funding guidance states that grantees using federal funds to purchase P25 equipment should obtain evidence that the equipment has been tested in a manner consistent with P25 CAP. The evidence should show the equipment has been tested based on all of the applicable, published P25 CAP Compliance Assessment Bulletins (CAB) covering performance, conformance and interoperability. The SDOC documents posted to the Project 25 Compliance Assessment Program (P25 CAP) DHS website provides that evidence. This CAB lists interoperability test cases for the P25 Console Subsystem Interface (CSSI) and the P25 Inter-RF Subsystem Interface (ISSI).

1.2 Effective Date

This Compliance Assessment Bulletin became effective on October 1, 2019, this revision supersedes all previous.

Acronym and terminology definitions have moved to Appendix II in this document.

1.3 Normative TIA References

[CACD-D] TIA-102.CACD-D, *Project 25 Inter-RF Subsystem Interface (ISSI) Interoperability Test Procedures for Trunked Voice Operation Involving the ISSI.*

[CABC-C] TIA-102.CABC-C, *Interoperability Testing for Voice Operation in Trunked Systems*

[BACA-B] TIA-102.BACA-B, *Inter-RF Subsystem Interface Messages and Procedures for Voice Services, Mobility Management, and RFSS Capability Polling Services*

1.4 Informative References

[CBBK-B] TSB-102.CBBK-B, *Project 25 Recommended Compliance Assessment Tests - Trunking ISSI Interoperability*

2 Testing of Equipment

Testing is defined for three different types of ISSI/CSSI equipment. The manufacturer shall decide which types of equipment will be tested and test case results submitted to P25 CAP.

2.1 ISSI-RFSS Equipment Testing

This type of testing involves two RFSS that are connected by an ISSI. Mobile subscriber units are used to initiate the test cases and to indicate the pass criterion of the test cases.

The ISSI capability of RFSS-under-test (ISSI-RFSS) shall be tested by connecting the RFSS-under-test to at least one RFSS from a different manufacturer.

RFSS equipment tested for ISSI capability with RFSS equipment from the same manufacturer is acceptable and can be submitted as long as the RFSS manufacturer has previously submitted ISSI test case results with another RFSS manufacturer.

2.2 CSSI-RFSS Equipment Testing

This type of testing involves a RFSS that is connected to a Console by a CSSI. The Console may be either a Console based on Console Subsystem (CSS) equipment or a Console integrated with RFSS equipment. Mobile subscriber units and console subscriber units are used to initiate the test cases and to indicate the pass criterion of the test cases.

The CSSI capability of RFSS-under-test (CSSI-RFSS) shall be tested by connecting the RFSS-under-test to at least one Console from a different manufacturer. The Console may be a Console based on CSS equipment or a Console integrated with RFSS equipment.

RFSS equipment tested for CSSI capability with console equipment from the same manufacturer is acceptable and can be submitted as long as the RFSS manufacturer has previously submitted CSSI test case results with another console manufacturer.

2.3 CSSI-Console Equipment Testing

This type of testing involves a Console that is connected to a RFSS by a CSSI. The Console may be either a Console based on CSS equipment or Console integrated with RFSS equipment. Mobile subscriber units and console subscriber units are used to initiate the test cases and to indicate the pass criterion of the test cases.

The CSSI capability of Console-under-test (CSSI-RFSS) shall be tested by connecting the Console-under-test to at least one RFSS from a different manufacturer. The Console may be a Console based on CSS equipment or a Console integrated with RFSS equipment.

A Console based on CSS equipment, or a Console integrated with RFSS equipment, tested for CSSI capability with RFSS equipment from the same manufacturer is acceptable and can be submitted as long as the console manufacturer has previously submitted CSSI test case results with another RFSS manufacturer.

2.4 Subscribers Involved with ISSI and CSSI Testing

Subscribers are used for ISSI and CSSI testing. The subscribers are being used to initiate the ISSI and CSSI test cases and may provide the PASS CRITERION called out in the test case procedures of [CACD-D].

Subscriber units that are used in ISSI and CSSI interoperability testing shall be able to pass the following test cases defined in [CABC-C] for FDMA and TDMA operation.

Table 1. FDMA Test Case List for Subscribers

Test Case Number	Table 1. FDMA Test Case List for Subscribers
2.2.1.4.1	Valid Registration
2.2.1.4.2	Denied or Refused Registration
2.2.2.4.1	Group Call Granted
2.2.2.4.2	Group call Denied
2.2.3.4.1	Unit-to-Unit Call with Target Availability Check
2.2.3.4.5	Unit-to-Unit Call without Target Availability Check
2.2.3.4.7	Unit-to-Unit Call Denied
2.2.4.4.1	Broadcast Call
2.2.5.4.1	Radio Permitted to Affiliate with New Group
2.2.5.4.2	Radio Denied Affiliation to New Group
2.2.6.4.1	Announcement Group Call
2.2.8.4.1	Emergency Call
2.2.8.4.5	Emergency Call Request Queued
2.2.8.4.6	Emergency Call Request Ruthless Preemption
2.2.10.4.1	Call Privacy for Encrypted Call

Table 2. TDMA Test Case List for Subscribers

Test Case Number	Table 2. TDMA Test Case List for Subscribers
2.2.1.4.1	Valid Registration
2.2.2.4.1	Group Call Granted
2.2.3.4.1	Unit-to-Unit Call with Target Availability Check
2.2.3.4.5	Unit-to-Unit Call without Target Availability Check
2.2.4.4.1	Broadcast Call
2.2.5.4.1	Radio Permitted to Affiliate with New Group
2.2.5.4.2	Radio Denied Affiliation to New Group
2.2.6.4.1	Announcement Group Call
2.2.8.4.1	Emergency Call
2.2.8.4.5	Emergency Call Request Queued
2.2.8.4.6	Emergency Call Request Ruthless Preemption
2.2.10.4.1	Call Privacy for Encrypted Call

2.5 Role Combinations

Each test case has multiple role combinations for the RFSS-Under-Test (RUT) and the Console-Under-Test (CUT). The role combinations are defined in [CACD-D] and detailed in this section. Please have a copy of [CACD-D] available when reviewing this section. Group voice testing will only cover the 'non-roaming' role combinations.

Role combinations are detailed in Table 3 through Table 12. A simple diagram for the role combination is shown below the text description.

For ISSI-RFSS testing, the RFSS-under-Test (RUT) includes test cases for unit registration, unit to unit calls, group registration and numerous types of group calls. The RUT is referred to as the RFSS A-1 in [CACD-D]. The ISSI-RFSS tests are performed with another RFSS connected via the ISSI. This 'another RFSS connected via the ISSI' is referred to as the 'RFSS supporting the testing' (RST) in this document. The RST is referred to as the RFSS B-1 in [CACD-D].

For CSSI-RFSS testing, the RFSS-under-test (RUT) includes test cases for unit to unit calls, group registration and numerous types of group calls. The RUT is referred to as the RFSS A-1 in [CACD-D]. These tests are performed with a Console connected via the CSSI. This 'Console connected via the CSSI' is also known as the 'Console supporting the testing' (CST). The CST is referred to as the RFSS B-1 in [CACD-D].

For CSSI-CSS testing, the Console-under-test (CUT) includes test cases for unit to unit calls, group registration and numerous types of group calls. The CUT is referred to as the RFSS A-1 in [CACD-D]. These tests are performed with another RFSS connected via the CSSI. This 'RFSS connected via the

CSSI' is also known as the 'RFSS supporting the testing' (RST). The RST is referred to as the RFSS B-1 in [CACD-D].

2.5.1 Role Combination Labels

The following acronyms are described here and are used to denote the different Role Combination Description, provided and defined in Tables 3-12, which follow in the section below.

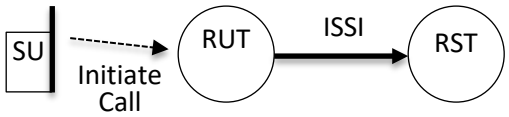
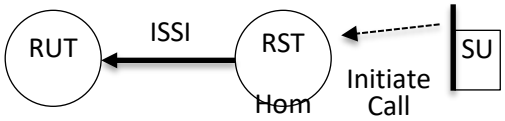
"GCn" – Used in label for role combination used to evaluate P25 Group Call (GC) related services.

"GRn" – Used in label for role combination used to evaluate P25 Group Registration (GR) related services.

"URn" – Used in label for role combination used to evaluate P25 Unit Registration (UR).

"U2Un" – Used in label for role combination used to evaluate P25 Individual or "unit to unit" (U2U) services.

Table 3. Role Combination Descriptions for ISSI-RFSS Talkgroup Call Testing

Role Combination	Table 3. Descriptions for ISSI-RFSS Group Call Combinations	Group Home	Call Initiation
GC5	A subscriber unit (SU) initiates a talkgroup call in the RFSS-under-test (RUT). The RUT is the group Home system for the talkgroup that is used for testing. The RFSS supporting the testing (RST) receives the call from the RUT.	RUT	SU in RUT
			
GC6	A subscriber unit (SU) initiates a talkgroup call in the RFSS supporting the test (RST). The RST is the group Home system for the talkgroup that is used for testing. The RFSS-under-test (RUT) receives the call from the RST.	RST	SU in RST
			
GC7	A subscriber unit (SU) initiates a talkgroup call in the RFSS-under-test (RUT). The RFSS supporting the testing (RST) is the group Home system for the talkgroup that is used for testing. The RST receives the call from the RUT.	RST	SU in RUT

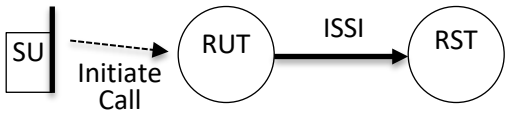
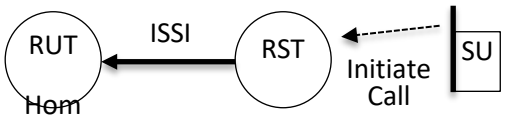
Role Combination	Table 3. Descriptions for ISSI-RFSS Group Call Combinations	Group Home	Call Initiation
			
GC8	A subscriber unit (SU) initiates a talkgroup call in the RFSS supporting the test (RST). The RFSS-under-test (RUT) is the group Home system for the talkgroup that is used for testing. The RUT receives the call from the RST.	RUT	SU in RST
			

Table 4. Role Combination Descriptions for ISSI-RFSS Talkgroup Registration Testing

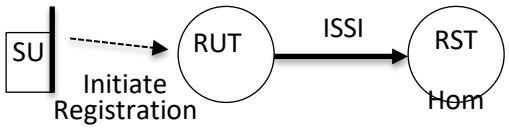
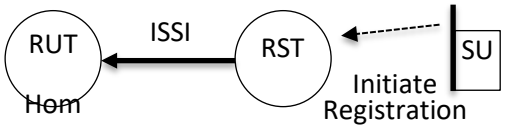
Role Combination	Table 4. Role Combination Descriptions for ISSI-RFSS Talkgroup Registration Testing	Group Home	Registration Initiation
GR1	A subscriber unit (SU) initiates talkgroup registration in the RFSS-under-test (RUT). The RFSS supporting the testing (RST) is the group Home system for the talkgroup that is used for testing. The RST receives the registration from the RUT.	RST	SU in RUT
			
GR2	A subscriber unit (SU) initiates talkgroup registration in the RFSS supporting the test (RST). The RFSS-under-test (RUT) is the group Home system for the talkgroup used for testing. The RUT receives the registration from the RST.	RUT	SU in RST
			

Table 5. Role Combination Descriptions for ISSI-RFSS Individual (Unit to Unit) Call Testing

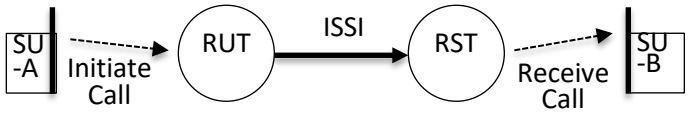
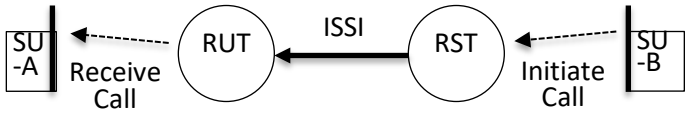
Role Combination	Table 5. Role Combination Descriptions for ISSI-RFSS Individual (Unit to Unit) Call Testing	Calling SU Location	Called SU Location
U2U13	Subscriber unit (SU-A, unit Home to the RST roamed to the RFSS-under-test (RUT) and then unit-to-unit calls subscriber unit (SU-B, unit Home to the RUT) that previously roamed to the RFSS supporting the testing (RST). 	SU in RUT	SU in RST
U2U14	A subscriber unit (SU-B) that has roamed to the RFSS supporting the testing (RST) unit-to-unit calls another subscriber unit (SU-A) that has roamed to the RFSS-under-test (RUT). 	SU in RST	SU in RUT

Table 6. Role Combination Descriptions for ISSI-RFSS Unit Registration (UR) Testing

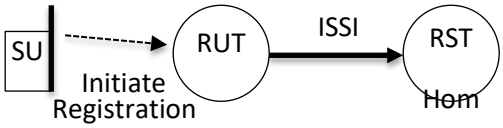
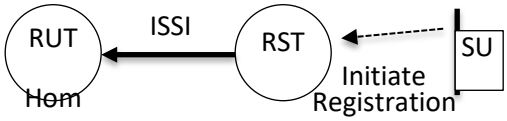
Role Combination	Table 6. Role Combination Descriptions for ISSI-RFSS Unit Registration Testing	SU Location	Unit Home Location
UR1	A subscriber unit (SU) that is (Unit Home) to the RFSS supporting the testing (RST) requests unit registration when the subscriber unit (SU) is located in the RFSS-under-test (RUT). 	RUT	RST
UR2	A subscriber unit (SU) that is Home to the RFSS-under-test (RUT) requests unit registration when the subscriber unit (SU) is located in the RFSS supporting the testing (RST). 	RST	RUT

Table 7. Role Combination Descriptions for CSSI-RFSS Talkgroup Call testing

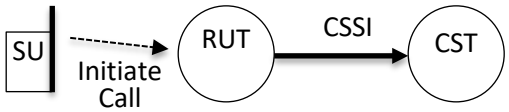
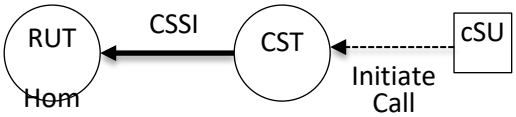
Role Combination	Table 7. Role Combination Descriptions for CSSI-RFSS Talkgroup Call (GC) testing	Group Home	Call Initiation
GC5	A subscriber unit (SU) initiates a talkgroup call in the RFSS-under-test (RUT). The RUT is the Home system for the talkgroup used for testing. The Console supporting the testing (CST) receives the call from the RUT.	RUT	SU in RUT
			
GC8	A console subscriber unit (cSU) initiates a talkgroup call in the Console supporting the test (CST). The RFSS-under-test (RUT) is the group Home system for the talkgroup used for testing. The RUT receives the call from the CST.	RUT	cSU in CST
			

Table 8. Role Combination Descriptions for CSSI-RFSS Talkgroup Registration Testing

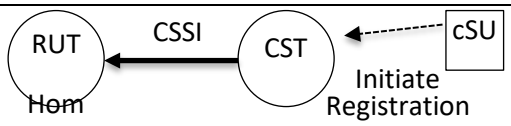
Role Combination	Table 8. Role Combination Descriptions for CSSI-RFSS Talkgroup Registration (GR) Testing	Group Home	Registration Initiation
GR2	A console subscriber unit (cSU) initiates talkgroup registration in the console supporting the test (CST). The RFSS-under-test (RUT) is the group Home system for the talkgroup used for testing. The RUT receives the registration request from the CST.	RUT	cSU in CST
			

Table 9. Role Combination Descriptions for CSSI-RFSS Individual (Unit to Unit) Call Testing

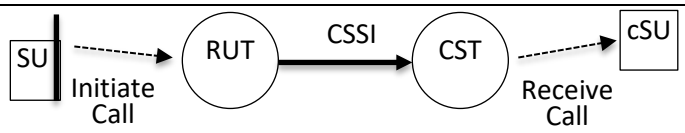
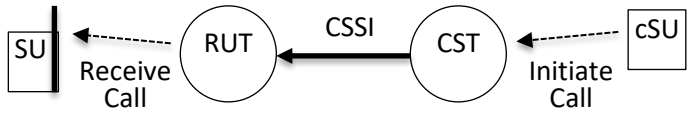
Role Combination	Table 9. Role Combination Descriptions for CSSI-RFSS Individual (U2U) Call Testing	Calling SU Location	Called SU Location
U2U3	A subscriber unit (SU) that is Home to the RFSS-under-test (RUT) unit-to-unit calls a console subscriber unit (cSU) that is home to the Console supporting the testing (CST).	SU in RUT	cSU in CST
			
U2U4	A console subscriber unit (cSU) that is Home to the Console supporting the testing (CST) unit-to-unit calls a subscriber unit (SU) that is home to the RFSS-under-test (RUT).	cSU in CST	SU in RUT
			

Table 10. Role Combination Descriptions for CSSI-Console Talkgroup Call Testing

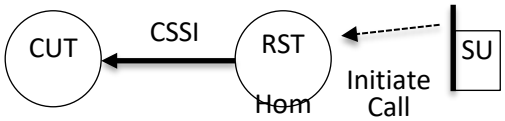
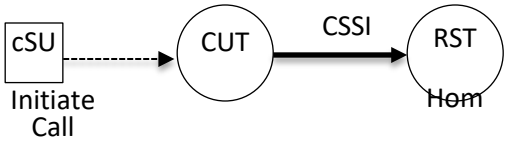
Role Combination	Table 10. Role Combination Descriptions for CSSI-Console Talkgroup Call (GC) Testing	Group Home	Call Initiation
GC6	A subscriber unit (SU) initiates a talkgroup call in the RFSS supporting the test (RST). The RST is the group Home system for the talkgroup used for testing. The Console under test (CUT) receives the call from the RST.	RST	SU in RST
			
GC7	A console subscriber unit (cSU) initiates a talkgroup call in the Console-under-test (CUT). The RFSS supporting the testing (RST) is the group Home system for the talkgroup used for testing. The RST receives the call from the CUT.	RST	cSU in CUT
			

Table 11. Role Combination Descriptions for CSSI-Console Talkgroup Registration Testing

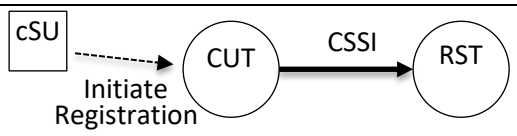
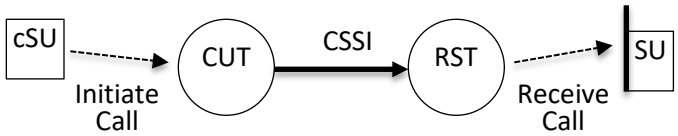
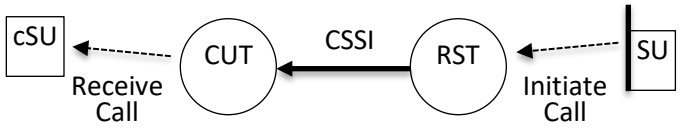
Role Combination	Table 11. Role Combination Descriptions for CSSI-Console Talkgroup Registration (GR) Testing	Group Home	Registration Initiation
GR1	A console subscriber unit (cSU) in the Console-under-test (CUT) requests talkgroup registration in the RFSS supporting the testing (RST). The RST is the group Home system for group registration testing. The RST receives the registration request from the CUT.	RST	cSU in CUT
			

Table 12. Role Combination Descriptions for CSSI-Console Individual (unit to unit) Call Testing

Role Combination	Table 12. Role Combination Descriptions for CSSI-Console to Individual (U2U) Call Testing	Calling SU Location	Called SU Location
U2U3	A subscriber unit (cSU) that is home to the Console-under-test (CUT) unit-to-unit calls a subscriber unit (SU) that is Home to the RFSS supporting the testing (RST).	cSU in CUT	SU in RST
			
U2U4	A subscriber unit (SU) that is home to the RFSS supporting the testing (RST) unit-to-unit calls a console subscriber unit (cSU) that is Home to the Console-under-test (CUT).	SU in RST	cSU in CUT
			

2.6 Testing Details by Test Suite and Test Case

This section defines the role combinations that apply per test case, where RFSS and subscriber test configurations are found in [CACD-D] and the PASS CRITERION for each test case. Most test cases have multiple PASS CRITERIONs that need to be met in order to successfully pass the test case.

Some of the test cases described in the following section have clarifications added by P25 CAP as the test procedures in [CACD-D] are incorrect and are awaiting correction by TIA-TR8.

2.6.1 Test Suite: Unit Registration Using an ISSI

2.6.1.1 Test Case: 2.3.1.5.1 Valid Registration

Role Combinations for ISSI-RFSS test: RFSS tested in the UR1 and UR2 roles.

Test Case Details: The RFSS and SU Configurations for testing Valid Registration in the UR1 and UR2 roles are defined in [CACD-D]; see Figure 27, Table 38, Table 39 and Table 40.

The PASS CRITERION for test step b) of test case 2.3.1.5.1 shall be recorded on the DTR. The STR test case result for test case 2.3.1.5.1 shall be considered a 'pass' when the PASS CRITERION is positively verified.

2.6.1.2 Test Case: 2.3.1.5.2 Denied or Refused Registration

Role Combinations for ISSI-RFSS test: RFSS tested in the UR1 and UR2 roles.

Test Case Details: The RFSS and SU Configurations for testing Denied or Refused Registration in the UR1 and UR2 roles are defined in [CACD-D]; see Figure 27, Table 38, Table 39 and Table 40.

The PASS CRITERION for test step c) of test case 2.3.1.5.2 shall be recorded in the DTR. The STR test case result for test case 2.3.1.5.2 shall be considered a 'pass' when the PASS CRITERION is positively verified.

2.6.1.3 Test Case: 2.3.1.5.6 SU Roamed Procedure

Role Combinations for ISSI-RFSS test: RFSS tested in the UR1 and UR2 roles.

Test Case Details: The RFSS and SU Configurations for testing SU Roamed Procedure in the UR1 and UR2 roles are defined in [CACD-D]; see Figure 27, Table 38, Table 39 and Table 40.

To simulate the physical movement called out in Test Step c) "Physically move, or otherwise simulate the physical movement of SU1 from the coverage area of the Serving RFSS to the coverage area of the SU Home RFSS", the following test case steps are recommended for this test case.

(1) Have two radios identically configured as SU 1, with one located in the RFSS under test and the other in the RFSS supporting the test.

(2) Start with SU 1 turned on in the SU Serving RFSS and the other SU 1 remains turned off in the SU Home RFSS.

(3) [PASS CRITERION] Verifying SU1 has registered in the SU Serving RFSS as either FDMA only or FDMA/TDMA capable.

(4) Turn on SU 1 in the SU Home RFSS.

(5) [PASS CRITERION] Verifying SU1 in the SU Home RFSS has been registered due to registering via the common air interface within the SU Home RFSS. Note: For this step this Pass Criterion is adequate, the second Pass Criterion in Step d) of the TIA procedure requiring the verification "that the Home RFSS considers the Serving RFSS deregistered to SU1" is not necessary and does not need to be performed or recorded.

(6) [PASS CRITERION] Verify that SU1 in the SU Serving RFSS has been deregistered.

(7) Turn off SU 1 in the SU Serving RFSS.

(8) Turn off SU 1 in the SU Home RFSS.

The PASS CRITERION for test step b) (or step 3 from above) and test step d) (or step 5 and 6 from above) of test case 2.3.1.5.6 shall be recorded on the DTR. The STR test case result for test case 2.3.1.5.6 shall be considered a 'pass' when all PASS CRITERIONs are positively verified.

2.6.2 Test Suite: Group Voice Using an ISSI

2.6.2.1 Test Case: 2.3.2.5.2 Group Call Granted - Unconfirmed - No Units Roaming

Role Combinations for ISSI-RFSS test: RFSS tested in the GC5, GC6, GC7 and GC8 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GC5 and GC8 roles.

Role Combinations for CSSI-Console test: Console tested in the GC6 and GC7 roles.

Test Case Details: The RFSS and SU Configurations for testing Group Call Granted - Unconfirmed in the GC5, GC6, GC7 and GC8 roles are defined in [CACD-D]; see Figure 30, Figure 31, Table 120 and Table 122.

The PASS CRITERION for test step b) of test case 2.3.2.5.2 shall be recorded in the DTR. For test step c), the test lab shall coordinate with the manufacturer(s) of 'SU2, 6 and 7' to obtain the 'manufacturer-specific indication' of SU1's 'Talking Party Identification' that is displayed by those three subscriber units. SU1's assigned home Unit ID and the Talking Party Identification of SU1's assigned home Unit ID shown on the display of SU2, 6 and 7 shall be recorded in the DTR. Displays which indicate the SU1's assigned Home Unit ID in decimal, HEX ID or Unit Alias forms are acceptable.

The PASS CRITERION for test step e) of test case 2.3.2.5.2 shall be recorded in the DTR. For test step f), the test lab shall coordinate with the manufacturer(s) of 'SU1, 6 and 7' to obtain the 'manufacturer-specific indication' of SU2's 'Talking Party Identification' that is displayed by those three subscriber units. SU2's assigned home Unit ID and the Talking Party Identification of SU2's assigned home Unit ID shown on the display of SU1, 6 and 7 shall be recorded in the DTR. Displays which indicate the SU1's assigned Home Unit ID in decimal, HEX ID or Unit Alias forms are acceptable. The STR test case result for test case 2.3.2.5.2 shall be considered a 'pass' when all PASS CRITERIONs are positively verified.

2.6.2.2 Test Case: 2.3.2.5.6 Confirmed Group Voice Call Granted After RF Resources Become Available – No Units Roaming

Role Combinations for ISSI-RFSS test: RFSS tested in the GC5, GC6, GC7 and GC8 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GC8 role.

Role Combinations for CSSI-Console test: Console tested in the GC7 role.

Test Case Details: The RFSS and SU Configurations for testing Confirmed Group Voice Call Granted After RF Resources Become Available in the GC5, GC6, GC7 and GC8 roles are defined in [CACD-D]; see Figure 30, Figure 31, Table 120 and Table 122.

The PASS CRITERION for test step e) and test step i) of test case 2.3.2.5.6 shall be recorded on the DTR. The STR test case result for test case 2.3.2.5.6 shall be considered a 'pass' when all PASS CRITERIONs are positively verified.

2.6.2.3 Test Case: 2.3.2.5.7 Group Call denied – All Units Roaming and No Units Roaming

Note: Testing will only include 'No Units Roaming'

Role Combinations for ISSI-RFSS test: GC7 and GC8 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GC8 role.

Role Combinations for CSSI-Console test: Console tested in the GC7 role.

Test Case Details: The RFSS and SU Configurations for testing Group Call Denied in the GC7 and GC8 roles are defined in [CACD-D]; see Figure 30, Figure 31, Table 120 and Table 122.

Due to issues with test case 2.3.2.5.7 (Test Case 7), please make the following changes to the test steps of 2.3.2.5.7 (Test Case 7):

- Test step a) Configure SG Home RFSS so it does not permit a Group Call using Talk Group Alpha instead of Talk Group Charlie.
- Test step b) Asset PTT on SU1 instead of SU4
- Test step c) Verify that attempted Group call has been denied and SUs 2, 3 ,4, 5, 6, 7 cannot hear SU1's message
- Test step d) Release PTT on SU1 instead of SU4
- Test step e) Configure SG Home RFSS to allow Talk Group Alpha calls

The PASS CRITERION for test step c) of test case 2.3.2.5.7 shall be recorded on the DTR. The STR test case result for test case 2.3.2.5.7 shall be considered a 'pass' when the PASS CRITERION is positively verified.

2.6.2.4 Test Case: 2.3.2.5.12 Group Call Interrupt (Dispatcher Audio Takeover) – No Units Roaming

Role Combinations for CSSI-RFSS test: RFSS tested in the GC5 role.

Role Combinations for CSSI-Console test: Console tested in the GC6 role.

Test Case Details: The RFSS and SU Configurations for testing Group Call Interrupt in the GC5 and GC6 roles are defined in [CACD-D]; see Figure 30, Table 120 and Table 122.

The PASS CRITERION for test step b) and test step d) of test case 2.3.2.5.12 shall be recorded on the DTR. The STR test case result for test case 2.3.2.5.12 shall be considered a 'pass' when all PASS CRITERIONs are positively verified.

2.6.3 Test Suite: Unit to Unit Voice Call

2.6.3.1 Test case: 2.3.3.5.1 Unit to Unit Call with Target Availability Check

Role Combinations for ISSI-RFSS test: RFSS tested in the U2U13 and U2U14 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the U2U3 and U2U4 roles.

Role Combinations for CSSI-Console test: Console tested in the U2U3 and U2U4 roles.

Test Case Details: The RFSS and SU Configurations for testing Unit to Unit Call with Target Availability Check in the U2U13 and U2U14 roles are defined in [CACD-D]; see Figure 38 and Table 126. The RFSS and SU Configurations for testing Unit to Unit Call with Target Availability Check in the U2U3 and U2U4 roles are defined in [CACD-D]; see Figure 33 and Table 126.

The PASS CRITERION for test step b), test step d), test step f) and test step h) of test case 2.3.3.5.1 shall be recorded in the DTR. The STR test case result for test case 2.3.3.5.1 shall be considered a 'pass' when all PASS CRITERIONs are positively verified.

2.6.3.2 Test case: 2.3.3.5.5 Unit to Unit Call without Target Availability Check

Role Combinations for ISSI-RFSS test: RFSS tested in the U2U13 and U2U14 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the U2U3 and U2U4 roles.

Role Combinations for CSSI-Console test: Console tested in the U2U3 and U2U4 roles.

Test Case Details: The RFSS and SU Configurations for testing Unit to Unit Call without Target Availability Check in the U2U13 and U2U14 roles are defined in [CACD-D]; see Figure 38 and Table 126. The RFSS and SU Configurations for testing Unit to Unit Call without Target Availability Check in the U2U3 and U2U4 roles are defined in [CACD-D]; see Figure 33 and Table 126.

The PASS CRITERION for test step b), test step d) and test step f) of test case 2.3.3.5.5 shall be recorded in the DTR. The STR test case result for test case 2.3.3.5.5 shall be considered a 'pass' when all PASS CRITERIONs are positively verified.

2.6.3.3 Test Case: 2.3.3.5.7 Unit to Unit Call Denied

Role Combinations for ISSI-RFSS test: RFSS tested in the U2U13 and U2U14 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the U2U3 and U2U4 roles.

Role Combinations for CSSI-Console test: Console tested in the U2U3 and U2U4 roles.

Test Case Details: The RFSS and SU Configurations for testing Unit to Unit Call Denied in the U2U13 and U2U14 roles are defined in [CACD-D]; see Figure 38 and Table 126. The RFSS and SU Configurations for testing Unit to Unit Call Denied in the U2U3 and U2U4 roles are defined in [CACD-D]; see Figure 33 and Table 126.

The PASS CRITERION for test step b) of test case 2.3.3.5.7 shall be recorded in the DTR. The STR test case result for test case 2.3.3.5.7 shall be considered a 'pass' when the PASS CRITERION is positively verified.

2.6.4 Test Suite: Broadcast Voice Call Using an ISSI

2.6.4.1 Test case: 2.3.4.5.2 Broadcast Call Granted – No Units Roaming

Role Combinations for ISSI-RFSS test: RFSS tested in the GC5, GC6, GC7 and GC8 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GC5 and GC8 roles.

Role Combinations for CSSI-Console test: Console tested in the GC6 and GC7 roles.

Test Case Details: The RFSS and SU Configurations for testing Broadcast Voice Call in the GC5, GC6, GC7 and GC8 roles are defined in [CACD-D]; see Figure 42, Table 120 and Table 122.

The PASS CRITERION for test step b) and test step d) of test case 2.3.4.5.2 shall be recorded in the DTR. The STR test case result for test case 2.3.4.5.2 shall be considered a 'pass' when all PASS CRITERIONs are positively verified.

2.6.5 Test Suite: Talk Group Registration Using an ISSI

2.6.5.1 Test Case: 2.3.5.5.2 Subscriber Unit Permitted to Affiliate with New Talk Group - No Units Roaming

Role Combinations for ISSI-RFSS test: RFSS tested in the GR1 and GR2 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GR2 role.

Role Combinations for CSSI-Console test: Console tested in the GR1 role.

Test Case Details: The RFSS and SU Configurations for testing Subscriber Unit Permitted to Affiliate with New Talk Group in the GR1 and GR2 roles are defined in [CACD-D]; see Figure 43, Table 128 and Table 129.

The PASS CRITERION for test step b), test step d), test step f) of test case 2.3.5.5.2 and test step i) shall be recorded in the DTR. The STR test case result for test case 2.3.5.5.2 shall be considered a 'pass' when the PASS CRITERION is positively verified.

2.6.5.2 Test Case: 2.3.5.5.4 Subscriber Unit Denied Affiliation with New Talk Group - No Units Roaming

Role Combinations for ISSI-RFSS test: RFSS tested in the GR1 and GR2 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GR2 role.

Role Combinations for CSSI-Console test: Console tested in the GR1 role.

Test Case Details: The RFSS and SU Configurations for testing Subscriber Unit Denied Affiliation with New Talk Group in the GR1 and GR2 roles are defined in [CACD-D]; see Figure 43, Table 128 and Table 129.

The PASS CRITERION for test step b) of test case 2.3.5.5.4 shall be recorded in the DTR. The STR test case result for test case 2.3.5.5.4 shall be considered a 'pass' when the PASS CRITERION is positively verified.

2.6.6 Test Suite: Announcement Group Call

2.6.6.1 Test Case: 2.3.6.5.2 Announcement Group Call Granted – No Units Roaming

Role Combinations for ISSI-RFSS test: RFSS tested in the GC5, GC6, GC7 and GC8 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GC5 and GC8 roles.

Role Combinations for CSSI-Console test: Console tested in the GC6 and GC7 roles.

Test Case Details: The RFSS and SU Configurations for testing Announcement Group Call in the GC5, GC6, GC7 and GC8 roles are defined in [CACD-D]; see Figure 46, Figure 47, Table 120 and Table 122.

The PASS CRITERION for test step b), test step d) and test step f) of test case 2.3.6.5.2 shall be recorded in the DTR. The STR test case result for test case 2.3.6.5.2 shall be considered a 'pass' when all PASS CRITERIONs are positively verified.

2.6.7 Test Suite: Emergency Group Call Using an ISSI

2.6.7.1 Test Case: 2.3.8.5.2 Emergency Group Call - No Units Roaming

Role Combinations for ISSI-RFSS test: RFSS tested in the GC5, GC6, GC7 and GC8 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GC8 role.

Role Combinations for CSSI-Console test: Console tested in the GC7 role.

Test Case Details: The RFSS and SU Configurations for testing Emergency Group Call in the GC5, GC6, GC7 and GC8 roles are defined in [CACD-D]; see Figure 50, Figure 51, and Tables 93, 97, 99, 120 and 122.

IMPORTANT NOTE REGARDING GC6 Role for this Test Case, this document assumes the following: Table 93 in the TIA document CACD-D indicates SU3-4 as being Home to RFSS B-1 and Table 97 in CACD-D correctly indicates SU3 is Home to RFSS B-1 for GC-6. For Table 99 in this document includes the correction to SU3-4 for GC6 for the SU3 "No Roaming" case. This change has been accepted by TR8.19 to be reflected in the next CACD document revision.

The PASS CRITERION for test step b), test step d) and test step e) of test case 2.3.8.5.2 shall be recorded in the DTR. In addition to the pass criteria in test step e), the test lab shall coordinate with the manufacturer(s) of SU1, SU6 and SU7 and the two RFSS manufacturers involved with testing to obtain and record in the DTR the 'manufacturer-specific indication/method' of the Emergency

Status for SU6's transmission. The DTR shall record whether the Unit Home RFSS for SU1 and SU7 RFSS maintains or does not maintain the Emergency Status of the call. The DTR shall record whether the Unit Home RFSS for SU6 maintains or does not maintain the Emergency Status of the call and whether emergency status based on SU6's transmission is displayed by SU1 and SU7. The STR test case result for test case 2.3.8.5.2 shall be considered a 'pass' when all PASS CRITERIONs are positively verified.

2.6.7.2 Test Case: 2.3.8.5.6 Emergency Group Call Request Queued - No Units roaming

Role Combinations for ISSI-RFSS test: RFSS tested in the GC5, GC6, GC7 and GC8 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GC8 role.

Role Combinations for CSSI-Console test: Console tested in the GC7 role.

Test Case Details: The RFSS and SU Configurations for testing Emergency Group Call Request Queued in the GC5, GC6, GC7 and GC8 roles are defined in [CACD-D]; see Figure 50, Figure 51, Table 120 and Table 122.

The PASS CRITERION for test step f), test step j), test step n), test step p) and test step s) of test case 2.3.8.5.6 shall be recorded in the DTR. The STR test case result for test case 2.3.8.5.6 shall be considered a 'pass' when all PASS CRITERIONs are positively verified. See Important Note regarding GC6 role in section 2.6.7.1, which applies to this test case as well.

2.6.7.3 Test Case: 2.3.8.5.8 Emergency Group Call Ruthless Preemption - No units roaming

Role Combinations for ISSI-RFSS test: RFSS tested in the GC5, GC6, GC7 and GC8 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GC8 role.

Role Combinations for CSSI-Console test: Console tested in the GC7 role.

Test Case Details: The RFSS and SU Configurations for testing Emergency Group Call Ruthless Preemption in the GC7 and GC8 roles are defined in [CACD-D]; see Figure 51, Table 120 and Table 122.

The PASS CRITERION for test step f), test step k), test step l), and test step p) of test case 2.3.8.5.8 shall be recorded in the DTR. The STR test case result for test case 2.3.8.5.8 shall be considered a 'pass' when all PASS CRITERIONs are positively verified.

This document notes the Test step j) 'Release PTT on SU1 to relinquish the talk group ALPHA traffic channel assignment' should be moved after test step n). This correction has been accepted by TR8.19 and will be included in next revision of the CACD document. See Important Note regarding GC6 role in section 2.6.7.1, which applies to this test case as well.

2.6.8 Test Suite: Encryption

2.6.8.1 Test Case: 2.3.10.5.1 Call Privacy for Encrypted Call

Role Combinations for ISSI-RFSS test: RFSS tested in the GC5, GC6, GC7 and GC8 roles.

Role Combinations for CSSI-RFSS test: RFSS tested in the GC5 and GC8 roles.

Role Combinations for CSSI-Console test: Console tested in the GC6 and GC7 roles.

Test Case Details: The RFSS and SU Configurations for testing Call Privacy for Encrypted Call in the GC5, GC6, GC7 and GC8 roles are defined in [CACD-D]; see Figure 30, Figure 31, Table 120 and Table 122.

The PASS CRITERION for test step b) of test case 2.3.10.5.1 shall be recorded in the DTR. The STR test case result for test case 2.3.10.5.1 shall be considered a 'pass' when the PASS CRITERION is positively verified.

3 ISSI Testing Requirements for RFSS

3.1 Test Scope

[BACA-B] defines the G reference point as the interface between RFSSs. The G reference point is also referred to as the ISSI. This section requires testing over a single ISSI segment between 2 RFSSs.

The table below identifies the possible ISSI connection types when connecting 2 RFSSs over a single segment. Either ISSI connection type is valid for P25 CAP compliance testing and reporting test case results. While test case results shall be reported for at least one connection type, both connection types may be tested and reported.

Table 13 Connection Types and Identifiers - ISSI

ISSI Connection Type	WACN IDs	SYSTEM IDs
Inter-WACN	Different	Does not Matter
Inter-System	Same	Different

3.2 RFSS Test Requirements for FDMA Voice Services over ISSI

The RFSS-under-test shall be tested for interoperability in accordance with [CACD-D] and with additional test details found in Section 2 of this document.

Mobile subscriber units used for testing shall comply with Section 2.4 of this document. Subscriber units used for testing shall be capable of displaying the Talking Party Identification. These test cases have test steps with a PASS CRITERION asking that the Talking Party Identification of the transmitting subscriber unit be verified on the displays of the receiving subscriber units used during the test.

The RFSS-under-test shall be tested using the test suites / test cases shown in Table 14. If the RFSS supporting the testing was not capable of supporting a test case, and therefore the test case was not performed, the testing limitation shall be noted (Not Tested) in the STR and on the SDOC for the RFSS-under-test.

FDMA voice services testing of the ISSI shall use a full rate vocoder for the SU that initiates testing in the RFSS under test or the RFSS supporting the testing. A full rate vocoder shall be used by the ISSI. The SU that receives the call from either the RFSS under test or the RFSS that supports the test shall receive a full rate vocoder transmission.

P25 CAP has defined certain test cases as 'Required PASS' test cases. 'Required PASS' means that the test case results shall be a PASS if the equipment is to be considered P25 CAP Compliant. Only P25 CAP Compliant equipment will be posted as 'Approved (Grant Eligible) Equipment on the P25 CAP webpage. These test cases have been noted with double asterisk (**) in Table 14.

There is a 'unit to unit call with availability check' test case and a 'unit to unit call without availability check' test case. One of these two test cases shall have a 'PASS" test case result. The manufacturer can choose which test case or test both. These two test cases are noted with a triple asterisk (***) in Table 14. The 'test suites/test cases' are found in [CACD-D].

Table 14. RFSS FDMA Interoperability Test Cases over ISSI

Test Suite Test Case	**Table 14. RFSS FDMA Interoperability Test Cases over ISSI**
2.3.1	**Unit Registration**[1]
2.3.1.5.1	** Valid Registration
2.3.1.5.2	** Denied or Refused Registration
2.3.1.5.6	** SU Roamed Procedure (from serving to home)
2.3.2	**Group Voice Call**[2]
2.3.2.5.2	Group Call Granted – Unconfirmed – No Units Roaming
2.3.2.5.6	** Confirmed Group Call Granted after RF Resources Become Available – No Units Roaming
2.3.2.5.7	** Group Call Denied – ~~All Units Roaming and~~ No Units Roaming[3]
2.3.3	**Unit-to-Unit Voice Call**[4]
2.3.3.5.1	*** Unit-to-Unit Call with Target Availability Check
2.3.3.5.5	*** Unit-to-Unit Call without Target Availability Check
2.3.3.5.7	** Unit-to-Unit Call Denied
2.3.4	**Broadcast Call**[2]
2.3.4.5.2	** Broadcast Call Granted – No Units Roaming

[1] Test cases in test suite shall be run utilizing role combinations UR1 and UR2

[2] Test cases in the test suite shall be run utilizing role combinations GC5, GC6, GC7 and GC8 except for test case 2.3.2.5.7; see footnote 3

[3] Test case shall be run utilizing role combinations GC7 and GC8

[4] Test cases in the test suite shall be run utilizing role combinations U2U13 and U2U14

Test Suite Test Case	**Table 14. RFSS FDMA Interoperability Test Cases over ISSI**
2.3.5	**Talk Group Registration**[5]
2.3.5.5.2	** Subscriber Unit Permitted to Affiliate with New Talk Group – No Units Roaming
2.3.5.5.4	** Subscriber Unit Denied Affiliation to New Group – No Units Roaming
2.3.6	**Announcement Group Call**[2]
2.3.6.5.2	** Announcement Group Call – No Units Roaming
2.3.8	**Emergency Group Call**[2]
2.3.8.5.2	** Emergency Group Call – No Units Roaming
2.3.8.5.6	** Emergency Group Call request queued – No Units Roaming
2.3.8.5.8	** Emergency call request ruthless preemption – No Units Roaming
2.3.10.5	**Encryption**[2]
2.3.10.5.1	** Call Privacy for Encrypted Call

3.3 RFSS Test requirements for TDMA Voice Services over ISSI

The RFSS-under-test shall be tested for interoperability in accordance with [CACD-D] and with additional test details found in Section 2 of this document.

Mobile subscriber units used for testing shall comply with Section 2.4 of this document. Subscriber units used for testing shall be capable of displaying the Talking Party Identification. These test cases have test steps with a PASS CRITERION asking that the Talking Party Identification of the transmitting subscriber unit be verified on the displays of the receiving subscriber units used during the test.

The RFSS-under-test shall be tested using the test suites / test cases shown in Table 15. If the RFSS supporting the testing was not capable of supporting a test case, and therefore the test case was not performed, the testing limitation shall be noted (Not Tested) in the STR and on the SDOC for RFSS-under-test.

TDMA voice services testing of the ISSI shall use a half rate vocoder for the SU that initiates testing for the RFSS under test or the RFSS supporting the testing. A half rate vocoder shall be used by the ISSI. The SU that receives the call from either the RFSS under test or the RFSS that supports the test shall receive a half rate vocoder transmission. P25 CAP has defined certain test cases as 'Required PASS' test cases. 'Required PASS' means that the test case results shall be a PASS if the equipment is to be considered P25 CAP Compliant. Only P25 CAP Compliant equipment will be posted as 'Approved (Grant Eligible) Equipment on the P25 CAP webpage. These test cases have been noted with double asterisk (**) in Table 15.

[5] Test cases in the test suite shall be run utilizing role combinations GR1 and GR2

There is a 'unit to unit call with availability check' test case and a 'unit to unit call without availability check' test case. One of these two test cases shall have a 'PASS" test case result. The manufacturer can choose which test case or test both. These two test cases are noted with a triple asterisk (***) in Table 15. The 'test suites/test cases' are found in [CACD-D].

Table 15. RFSS TDMA Interoperability Test Cases over ISSI

Test Suite Test Case	**Table 15. RFSS TDMA Interoperability Test Cases over ISSI**
2.3.1	**Unit Registration[1]**
2.3.1.5.1	** Valid Registration
2.3.2	**Group Voice Call[2]**
2.3.2.5.2	Group Call Granted – Unconfirmed – No Units Roaming
2.3.2.5.6	** Confirmed Group Call Granted after RF Resources Become Available – No Units Roaming
2.3.3	**Unit-to-Unit Voice Call[4]**
2.3.3.5.1	*** Unit-to-Unit Call with Target Availability Check
2.3.3.5.5	*** Unit-to-Unit Call without Target Availability Check
2.3.4	**Broadcast Call[2]**
2.3.4.5.2	** Broadcast Call Granted – No Units Roaming
2.3.5	**Talk Group Registration[5]**
2.3.5.5.2	** Subscriber Unit Permitted to Affiliate with New Talk Group – No Units Roaming
2.3.6	**Announcement Group Call[2]**
2.3.6.5.2	** Announcement Group Call – No Units Roaming
2.3.8	**Emergency Group Call[2]**
2.3.8.5.2	** Emergency Group Call – No Units Roaming
2.3.8.5.6	** Emergency Group Call request queued – No Units Roaming
2.3.8.5.8	** Emergency call request ruthless preemption – No Units Roaming
2.3.10.5	**Encryption[2]**
2.3.10.5.1	** Call Privacy for Encrypted Call

4 CSSI Testing Requirements for RFSS

4.1 Test Scope

[BACA-B] defines the Ec reference point as the interface between RFSS equipment and Console equipment. 'Console equipment' may be either be a console based on CSS equipment or a console integrated with RFSS equipment. The term 'Console' will be used when referring to requirements for both types of consoles. The Ec reference point is also referred to as the CSSI.

This section requires testing over a single CSSI segment between RFSS equipment and Console equipment. The table below identifies the possible CSSI connection types when connecting RFSS equipment and Console equipment over a single segment. Any one of the three CSSI connection types is valid for P25 CAP compliance testing and reporting test case results. While test case results shall be reported for at least one connection type, all connection types may be tested and reported.

Connection Types and Identifiers - CSSI

CSSI Connection Type	WACN IDs	SYSTEM IDs	RFSS IDs
Inter-WACN	Different	Does not Matter	Does not Matter
Inter-System	Same	Different	Does not Matter
Intra-System	Same	Same	Different

4.2 RFSS Test Requirements for FDMA Voice Services over CSSI

RFSS-under-test shall be tested for interoperability in accordance with [CACD-D] and with additional test details found in Section 2 of this document.

Mobile subscriber units and console subscriber units used for testing shall comply with Section 2.4 of this document. Subscriber units used for testing shall be capable of displaying the Talking Party Identification. These test cases have test steps with a PASS CRITERION asking that the Talking Party Identification of the transmitting subscriber unit be verified on the displays of the receiving subscriber units used during the test.

The RFSS-under-test shall be tested using the test suites / test cases shown in Table 17. If the Console supporting the testing was not capable of supporting a test case, and therefore the test case was not performed, the testing limitation shall be noted (Not Tested) in the STR and on the SDOC for the RFSS-under-test.

FDMA voice services testing of the CSSI shall use a full rate vocoder for the SU that initiates testing in the RFSS under test or the cSU that initiates testing in the RFSS/Console supporting the test. A full rate vocoder shall be used by the CSSI. The SU that receives the call in the RFSS under test or the cSU that receives the call in RFSS/Console that supports the test shall receive a full rate vocoder transmission.

P25 CAP has defined certain test cases as 'Required PASS' test cases. 'Required PASS' means that the test case results shall be a PASS if the equipment is to be considered P25 CAP Compliant. Only P25 CAP Compliant equipment will be posted as 'Approved (Grant Eligible) Equipment on the P25 CAP webpage. These test cases have been noted with double asterisk (**) in Table 17.

There is a 'unit to unit call with availability check' test case and a 'unit to unit call without availability check' test case. One of these two test cases shall have a 'PASS" test case result. The manufacturer can choose which test case or test both. These two test cases are noted with a triple asterisk (***) in Table 17. The 'test suites/test cases' are found in [CACD-D].

Table 17. RFSS FDMA Interoperability Test Cases over CSSI

Test Suite Test Case	**Table 17. RFSS FDMA Interoperability Test Cases over CSSI**
2.3.2	**Group Voice Call**[6]
2.3.2.5.2	Group Call Granted – Unconfirmed – No Units Roaming
2.3.2.5.6	** Confirmed Group Voice Call Granted After RF Resources Become Available - No Units Roaming[7]
2.3.2.5.7	** Group Call Denied – No Units Roaming[8]
2.3.2.5.12	** Group call interrupt (Dispatcher Audio Takeover) – No Units Roaming[8]
2.3.3	**Unit-to-Unit Voice Call**[9]
2.3.3.5.1	*** Unit-to-Unit Call with Target Availability Check
2.3.3.5.5	*** Unit-to-Unit Call without Target Availability Check
2.3.3.5.7	** Unit-to-Unit Call Denied
2.3.4	**Broadcast Call**[6]
2.3.4.5.2	** Broadcast Call Granted – No Units Roaming
2.3.5	**Talk Group Registration**[10]
2.3.5.5.2	** Subscriber Unit Permitted to Affiliate with New Talk Group – No Units Roaming
2.3.5.5.4	** Subscriber Unit Denied Affiliation to New Group – No Units Roaming
2.3.6	**Announcement Group Call**[6]
2.3.6.5.2	** Announcement Group Call – No Units Roaming
2.3.8	**Emergency Group Call**[6]
2.3.8.5.2	** Emergency Group Call – No Units Roaming
2.3.8.5.6	** Emergency Group Call request queued – No Units Roaming[7]
2.3.8.5.8	** Emergency call request ruthless preemption – No Units Roaming[7]
2.3.10	**Encryption**[6]
2.3.10.5.1	Call Privacy for Encrypted Call

[6] Test cases in the test suite in shall be run utilizing role combinations GC5 and GC8 except for test cases 2.3.2.5.7 and 2.3.2.5.12; see footnote 8

[7] GC5 is not applicable when the equipment supporting the test is a CSS because a CSS has no RF resources.

[8] Test case 2.3.2.5.7 shall be run utilizing role combination GC8; test case 2.3.2.5.12 shall be run utilizing role combination GC5.

[9] Test cases in the test suite shall be run utilizing role combinations U2U3 and U2U4. When testing with the U2U3 role and a CSS, it is acceptable to have the RFSS under test be the group home.

[10] Test cases in the test suite shall be run utilizing role combination GR2

4.3 RFSS Test Requirements for TDMA Voice Services over CSSI

The RFSS-under-test shall be tested for interoperability in accordance with [CACD-D] and with additional test details found in Section 2 of this document.

Mobile subscriber units and console subscriber units used for testing shall comply with Section 2.4 of this document. Subscriber units used for testing shall be capable of displaying the Talking Party Identification. These test cases have test steps with a PASS CRITERION asking that the Talking Party Identification of the transmitting subscriber unit be verified on the displays of the receiving subscriber units used during the test.

The RFSS-under-test shall be tested using the test suites / test cases shown in Table 18. If the Console equipment supporting the testing was not capable of supporting a test case, and therefore the test case was not performed, the testing limitation shall be noted (Not Tested) in the STR and on the SDOC for the RFSS-under-test.

TDMA voice services testing of the CSSI shall use a half rate vocoder for the SU that initiates testing in the RFSS under test or the cSU that initiates testing in the RFSS/Console supporting the test. A half rate vocoder shall be used by the CSSI. The SU that receives the call in the RFSS under test or the cSU that receives the call in RFSS/Console that supports the test shall receive a half rate vocoder transmission. P25 CAP has defined certain test cases as 'Required PASS' test cases. 'Required PASS' means that the test case results shall be a PASS if the equipment is to be considered P25 CAP Compliant. Only P25 CAP Compliant equipment will be posted as 'Approved (Grant Eligible) Equipment on the P25 CAP webpage. These test cases have been noted with double asterisk (**) in Table 18.

There is a 'unit to unit call with availability check' test case and a 'unit to unit call without availability check' test case. One of these two test cases shall have a 'PASS" test case result. The manufacturer can choose which test case or test both. These two test cases are noted with a triple asterisk (***) in Table 18. The 'test suites/test cases' are found in [CACD-D].

Table 18. RFSS TDMA Interoperability Test Cases over CSSI

Test Suite Test Case	**Table 18. RFSS TDMA Interoperability Test Cases over CSSI**
2.3.2	**Group Voice Call[6]**
2.3.2.5.2	Group Call Granted – Unconfirmed – No Units Roaming
2.3.2.5.6	** Confirmed Group Voice Call Granted After RF Resources Become Available - No Units Roaming[7]

Test Suite Test Case	**Table 18. RFSS TDMA Interoperability Test Cases over CSSI**
2.3.2.5.12	** Group call interrupt (Dispatcher Audio Takeover) – No Units Roaming[8]
2.3.3	**Unit-to-Unit Voice Call[9]**
2.3.3.5.1	*** Unit-to-Unit Call with Target Availability Check
2.3.3.5.5	*** Unit-to-Unit Call without Target Availability Check
2.3.4	**Broadcast Voice Call[6]**
2.3.4.5.2	** Broadcast Call Granted – No Units Roaming
2.3.5	**Talk Group Registration[10]**
2.3.5.5.2	** Subscriber Unit Permitted to Affiliate with New Talk Group – No Units Roaming
2.3.6	**Announcement Group Call[6]**
2.3.6.5.2	** Announcement Group Call – No Units Roaming
2.3.8	**Emergency Group Call[6]**
2.3.8.5.2	** Emergency Group Call – No Units Roaming
2.3.8.5.6	** Emergency Group Call request queued – No Units Roaming[7]
2.3.8.5.8	** Emergency call request ruthless preemption – No Units Roaming[7]
2.3.10	**Encryption[6]**
2.3.10.5.1	** Call Privacy for Encrypted Call

5 CSSI Testing Requirements for Consoles

5.1 Test Scope

[BACA-B] defines the Ec reference point as the interface between Console equipment and RFSS equipment. 'Console equipment' may be either be a console based on CSS equipment or a console integrated with RFSS equipment. The term 'Console' will be used when referring to requirements for both types of consoles. The Ec reference point is also referred to as the CSSI.

This section requires testing over a CSSI segment between a Console Subsystem (CSS) equipment and a single RFSS. The table below identifies the possible CSSI connection types when connecting Console equipment and RFSS equipment over a single segment. Any one of the three CSSI connection types is valid for P25 CAP compliance testing and reporting test case results. While test case results shall be reported for at least one connection type, all connection types may be tested and reported.

Connection Types and Identifiers - CSSI

CSSI Connection Type	WACN IDs	SYSTEM IDs	RFSS IDs
Inter-WACN	Different	Does not Matter	Does not Matter
Inter-System	Same	Different	Does not Matter
Intra-System	Same	Same	Different

5.2 Console Test Requirements for FDMA Voice Services over CSSI

The Console-under-test shall be tested for interoperability in accordance with [CACD-D] and with additional test details found in Section 2 of this document.

Mobile subscriber units and console subscriber units used for testing shall comply with Section 2.4 of this document. Subscriber units used for testing shall be capable of displaying the Talking Party Identification. These test cases have test steps with a PASS CRITERION asking that the Talking Party Identification of the transmitting subscriber unit be verified on the displays of the receiving subscriber units used during the test.

The Console-Under-Test (CUT) shall be tested using the test suites / test cases shown in Table 20. If the RFSS supporting the testing was not capable of supporting a test case, and therefore the test case was not performed, the testing limitation shall be noted (Not Tested) in the STR and on the SDOC for the Console-under-test.

FDMA voice services testing of the CSSI shall use a full rate vocoder for the cSU that initiates testing in the CUT or the SU that initiates testing in the RFSS supporting the test. A full rate vocoder shall be used by the CSSI. The cSU that receives the call in the Console under test or the SU that receives the call in RFSS that supports the test shall receive a full rate vocoder transmission. P25 CAP has defined certain test cases as 'Required PASS' test cases. 'Required PASS' means that the test case results shall be a PASS if the equipment is to be considered P25 CAP Compliant. Only P25 CAP Compliant equipment will be posted as 'Approved (Grant Eligible) Equipment on the P25 CAP webpage. These test cases have been noted with double asterisk (**) in Table 20.

There is a 'unit to unit call with availability check' test case and a 'unit to unit call without availability check' test case. One of these two test cases shall have a 'PASS" test case result. The manufacturer can choose which test case or test both. These two test cases are noted with a triple asterisk (***) in Table 20.

The 'test suites/test cases' are found in [CACD-D].

Table 20. Console FDMA Interoperability Test Cases over CSSI

Test Suite Test Case	**Table 20. Console FDMA Interoperability Test Cases over CSSI**
2.3.2	**Group Voice Call**[11]
2.3.2.5.2	Group Call Granted – Unconfirmed – No Units Roaming
2.3.2.5.6	** Confirmed Group Voice Call Granted After RF Resources Become Available - No Units Roaming[12]
2.3.2.5.7	** Group Call Denied – No Units Roaming[13]
2.3.2.5.12	** Group call interrupt (Dispatcher Audio Takeover) – No Units Roaming[14]
2.3.3	**Unit-to-Unit Voice Call**[9]
2.3.3.5.1	*** Unit-to-Unit Call with Target Availability Check
2.3.3.5.5	*** Unit-to-Unit Call without Target Availability Check
2.3.3.5.7	** Unit-to-Unit Call Denied
2.3.4	**Broadcast Call**[11]
2.3.4.5.2	** Broadcast Call Granted – No Units Roaming
2.3.5	**Talk Group Registration**[15]
2.3.5.5.2	** Subscriber Unit Permitted to Affiliate with New Talk Group – No Units Roaming
2.3.5.5.4	** Subscriber Unit Denied Affiliation to New Group – No Units Roaming
2.3.6	**Announcement Group Call**[11]
2.3.6.5.2	** Announcement Group Call – No Units Roaming
2.3.8	**Emergency Group Call**[11]
2.3.8.5.2	** Emergency Group Call – No Units Roaming
2.3.8.5.6	** Emergency Group Call request queued – No Units Roaming[12]
2.3.8.5.8	** Emergency call request ruthless preemption – No Units Roaming[12]
2.3.10	**Encryption**[11]
2.3.10.5.1	** Call Privacy for Encrypted Call

[11] Test cases in the test suite shall be run utilizing role combinations GC6 and GC7 except for test cases 2.3.2.5.7 and 2.3.2.5.12; for test case 2.3.2.5.7 see footnote 13 and for test case 2.3.2.5.12 see footnote 14.

[12] GC6 is not applicable when the equipment under test is a CSS because as CSS has no RF resources.

[13] Test case shall be run utilizing role combination GC7

[14] GC5 only applies for CSSI-RFSS testing and GC6 only applies for CSSI-Console testing.

[15] Test cases in the test suite shall be run utilizing role combination GR1.

5.3 Console Test Requirements for TDMA Voice Services over CSSI

The Console-under-test shall be tested for interoperability in accordance with [CACD-D] and with additional test details found in Section 2 of this document.

Mobile subscriber units and console subscriber units used for testing shall comply with Section 2.4 of this document. Subscriber units used for testing shall be capable of displaying the Talking Party Identification. These test cases have test steps with a PASS CRITERION asking that the Talking Party Identification of the transmitting subscriber unit be verified on the displays of the receiving subscriber units used during the test.

The Console-under-test shall be tested using the test suites / test cases shown in Table 21. If the RFSS supporting the testing was not capable of supporting a test case, and therefore the test case was not performed, the testing limitation shall be noted (Not Tested) in the STR and on the SDOC for the Console-under-test.

TDMA voice services testing of the CSSI shall use a half rate vocoder for the cSU that initiates testing in the Console under test or the SU that initiates testing in the RFSS supporting the test. A half rate vocoder shall be used by the CSSI. The cSU that receives the call in the Console under test or the SU that receives the call in RFSS that supports the test shall receive a half rate vocoder transmission. P25 CAP has defined certain test cases as 'Required PASS' test cases. 'Required PASS' means that the test case results shall be a PASS if the equipment is to be considered P25 CAP Compliant. Only P25 CAP Compliant equipment will be posted as 'Approved (Grant Eligible) Equipment on the P25 CAP webpage. These test cases have been noted with double asterisk (**) in Table 21.

There is a 'unit to unit call with availability check' test case and a 'unit to unit call without availability check' test case. One of these two test cases shall have a 'PASS" test case result. The manufacturer can choose which test case or test both. These two test cases are noted with a triple asterisk (***) in Table 21. The 'test suites/test cases' are found in [CACD-D].

Table 21. Console TDMA Interoperability Test Cases over CSSI

Test Suite Test Case	**Table 21. Console TDMA Interoperability Test Cases over CSSI**
2.3.2	**Group Voice Call**[11]
2.3.2.5.2	Group Call Granted – Unconfirmed – No Units Roaming
2.3.2.5.6	** Confirmed Group Voice Call Granted After RF Resources Become Available - No Units Roaming[12]
2.3.2.5.12	** Group call interrupt (Dispatcher Audio Takeover) – No Units Roaming[14]
2.3.3	**Unit-to-Unit Voice Call**[9]
2.3.3.5.1	*** Unit-to-Unit Call with Target Availability Check
2.3.3.5.5	*** Unit-to-Unit Call without Target Availability Check
2.3.4	**Broadcast Voice Call**[11]
2.3.4.5.2	** Broadcast Call Granted – No Units Roaming

Test Suite Test Case	**Table 21. Console TDMA Interoperability Test Cases over CSSI**
2.3.5	**Talk Group Registration**[15]
2.3.5.5.2	** Subscriber Unit Permitted to Affiliate with New Talk Group – No Units Roaming
2.3.6	**Announcement Group Call**[11]
2.3.6.5.2	** Announcement Group Call – No Units Roaming
2.3.8	**Emergency Group Call**[11]
2.3.8.5.2	** Emergency Group Call – No Units Roaming
2.3.8.5.6	** Emergency Group Call request queued – No Units Roaming[12]
2.3.8.5.8	** Emergency call request ruthless preemption – No Units Roaming[12]
2.3.10	**Encryption**[11]
2.3.10.5.1	** Call Privacy for Encrypted Call

6 Waivers

DHS S&T will accept requests for 'Required PASS' test cases waivers when the manufacturer has not developed the ISSI functionality to support the test case and the manufacturer does not offer a similar non-P25 feature in place of the P25 Standard feature. The manufacturer is required to submit the waiver request via email to P25CAP@hq.dhs.gov. The email shall list the requested test cases to be waived, the reason for the waiver request and manufacturer attestation the manufacturer does not offer a similar non-P25 feature in place of the P25 Standard feature.

Once the waiver has been provided, the manufacturer may submit the SDOC and STR for the equipment indicating 'Unsupported' status for the test cases that were waived. After the SDOC and STR are submitted, reviewed and accepted by DHS S&T, the SDOC will be posted on the P25 CAP website and the STR be made available to email requests.

Appendix I Important Notifications

The following sections in this Appendix in Notifications to our P25 manufacturers, users and stakeholders which are temporary and/or informative in nature. At such time this material is expired or no longer applicable, the content will be deleted in a future revision of this document.

The topics addressed in this section are:

- Notification of Policy Change: Temporary Suspension of ISSI/CSSI Conformance Testing Requirement
- Notification of Document Changes Forthcoming: New ISSI/CSSI SDoC/STR Reports
- Notification of Scope Change: Adding Emergency Call Cancel, Emergency Alarm Cancel in future P25 CAP ISSI Interoperability Testing

A. Notification: Temporary Suspension of the ISSI/CSSI Conformance Testing Requirement

As most practitioners are aware, the long-standing policy in Project 25 Compliance Assessment of wireline protocol-based devices is the successful completion of *both* Interoperability and Conformance compliance assessment testing. As of the date of this document, the P25 ISSI/CSSI suspends the requirement for the completion of ISSI/CSSI Conformance testing. This will be clearly noted in updated P25 CAP reporting documents.

The Compliance Assessment Program will accept either an ICC Test Tool[16] based approach or approach using the *Alternate Conformance Method* as clarified in both the revised Conformance CAB and ICC Test Tool CAB documents.[17]

The suspension of the P25 CAP ISSI/CSSI Conformance testing requirement shall be in effect for six months after the announced[18] availability of ISSI/CSSI Conformance testing to any interested P25 equipment supplier. Should an equipment provider who is listed on the P25 CAP approved (Grant Eligible) still not complete conformance testing upon the expiration of the six-month timeframe, the listing will be removed from the DHS website until conformance testing is successfully completed and STR including acceptable conformance testing results is submitted and approved.

B. Notification: New SDoC/STR Reports

Based upon the P25 CAP STR optimization project, a number of changes will be implemented into the P25 ISSI/CSSI Interoperability Summary Test Report (STR) format and approach. These

[16] Term "ICC Test Tool" refers to P25 ISSI/CSSI Conformance Test Tool

[17] See *P25 CAP ISSI/CSSI Conformance Test Requirements CAB (Dec 2020)* document, section 2.6.

[18] Date of public announcement by DHS S&T P25 CAP of ISSI/CSSI Conformance Testing program readiness

updates will include a clear reference to the suspension of conformance requirements, as outlined above. For the best outcome, the P25 CAP team will partner with the first testing lab team to create a clear, streamlined, secured and easy to use data entry vehicle. The implications of this change are updates for all ISSI/CSSI Interoperability STR and SDOC templates and requirements documents currently in place. These will be removed from circulation and replaced as part of the STR/SDoC optimization and ISSI/CSSI testing launch efforts.

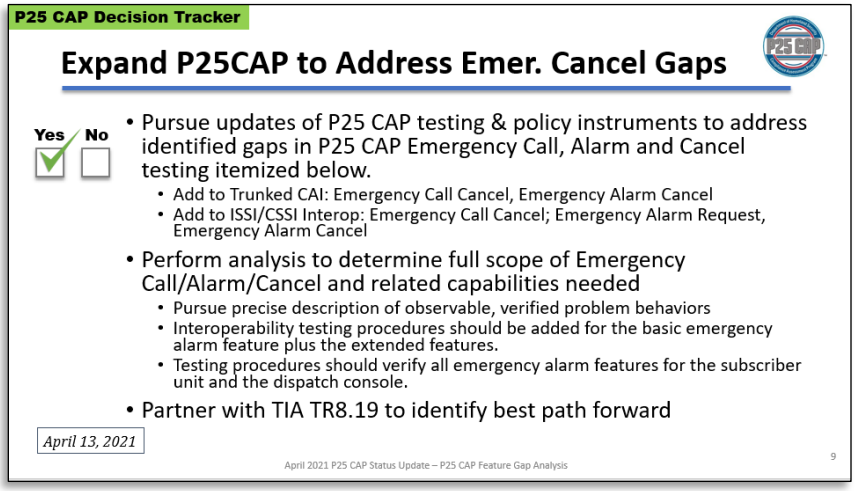
C. Notification: P25 CAP Pursuing Addition of Emergency Call Cancel, Emergency Alarm Cancel to ISSI Interoperability Testing

The following section is provided for transparency, planning and informational purposes only.

As announced at the P25 CAP Status Update public webinar on April 15, 2021[19], a clear and compelling conclusion which emerged from the in-depth P25 CAP Feature Gap Analysis performed is the need to add the full suites Emergency Cancel functionality, this includes both *Emergency Call* and *Emergency Alarm* Cancellation messaging to ISSI Interoperability Testing.

Engineering level detail, nomenclature and additional scope guidance will be developed, this is a notification to enable and encourage planning for resources and engineering support which will be required in P25 Test Labs and engineering teams.

A high-level capture of the consensus decision and plan of action has also been excerpted at left. The P25 CAP team looks forward to partnering with P25 ISSI manufacturers, users, experts and stakeholders to establish a scope and approach that helps address any concerns or issues in the operational environment related to this issue. As noted in public facing material at right, the P25 CAP team will partner and work with the TIA TR8.19 committee to determine best way to develop necessary TIA Test Cases, and just to clarify, the P25 CAP team will not be authoring these outside the TIA process.



[19] Excerpted from: P25 CAP April 15 Status Update - Gap Analysis - Emer. Cancel (4-15-21).pdf

Appendix II – Acronyms, Definitions and Terminology

Because this Project 25 Compliance Assessment ISSI/CSSI Interoperability Test Requirements CAB revision is an advanced engineering document, this content assumes an advanced understanding of P25 and familiarity with basic acronyms and terminology. The content also assumes familiarity with common Public Safety vernacular and universally familiar acronyms that are well-known by technical Public Safety audiences so those are not included. This list also does not include acronyms associated familiar government oversight agencies and programs.

The information below is provided for informational purposes only. Project 25 Compliance Assessment testing practitioners should refer to the appropriate TIA document for normative, engineering definitions.

AES	**Advanced Encryption Standard (AES)** – Method of 256-bit encryption used in Project 25 and is used for both digital voice and data encryption.
Base Repeater (BR)	**Base Repeater (BR)** (aka *Base Station, Fixed Station (FS), Repeater*) – Refers to device which uses a pair of frequencies such that Inbound transmissions can be instantaneously Repeated, thereby expanding coverage.
Base Station	**Base Station** (aka *Base Repeater*), See *Base Repeater*
CAB	**Compliance Assessment Bulletin (CAB)** – The CAB is a type of guidance document developed by the P25 Compliance Assessment Program and which establishes test scope, policies and requirements.
CAI	**Common Air Interface (CAI)** – Project 25 term referring to the common, standards-based Air Link.
CAP (P25 CAP)	**(P25) Compliance Assessment Program (P25 CAP)** – This term refers to the Project 25 Compliance Assessment Program.
Console Subscriber Unit (cSU)	**Console or Console Subscriber Unit (cSU)** – The term "cSU" is used in the Test Case documents to refer to a P25 Dispatch Console Operator Position using a specific P25 Unit ID and/or associated Talkgroup to support P25CAP test procedures. This is a subtle difference from the generic term "Console," which has the capability to monitor and support multiple talkgroups simultaneously making it too ambiguous in the P25 CAP test context. A cSU could reference either operation on a Native or CSS Consoles. *See Native Console, CSS Console.*

Console Subsystem (CSS)	**Console Subsystem (CSS)** – A trunked subsystem which supports only Consoles and is connected to an RFSS using the CSSI interface. The standard allows a CSS to connect using a WACN-System ID which is either the same or different to the trunked RFSS it is connected to over the CSSI. *See CSSI, cSU.*
Control Channel	**Control Channel (CCH)** – The trunking system component which automatically controls multiple and simultaneous Talkgroup and Individual Call operations. The CCH uses a separate dedicated paired channel at every logical RF site on a P25 trunked network. When not on an active call, radios continuously listen to the Control Channel.
CSS Console	**Console based on CSS equipment** – A console that is based on console subsystem equipment and does not have any connection to RF sites.
CSSI	**Console Subsystem Interface (CSSI)** – This trunked P25 wireline interface standard enables the interoperability and interconnection among Dispatch Consoles (cSUs) operating across disparate P25 trunked networks and Console Subsystems. The P25 CSSI has the flexibility to support connectivity among the same or different WACN or System IDs. Because the P25 CSSI wireline interface is primarily deployed in third-party Console Subsystem implementations, the CSSI has become a key enabler for P25 Network operators to improve their procurement and advanced technology options. See *CSS*, *cSU, ISSI.*
Console Subsystem (CSS)	**Console Subsystem (CSS)** – A trunked subsystem which supports only Consoles and is connected to an RFSS using the CSSI interface. The standard allows a CSS to connect using a WACN-System ID which is either the same or different to the trunked RFSS it is connected to over the CSSI. *See CSSI, cSU.*
Control Channel	**Control Channel (CCH)** – The trunking system component which automatically controls multiple and simultaneous Talkgroup and Individual Call operations. The CCH uses a separate dedicated paired channel at every logical RF site on a P25 trunked network. When not on an active call, radios continuously listen to the Control Channel.
CSS Console	**Console based on CSS equipment** – A console that is based on console subsystem equipment and does not have any connection to RF sites.

CSSI

Console Subsystem Interface (CSSI) – This trunked P25 wireline interface standard enables the interoperability and interconnection among Dispatch Consoles (cSUs) operating across disparate P25 trunked networks and Console Subsystems. The P25 CSSI has the flexibility to support connectivity among the same or different WACN or System IDs. Because the P25 CSSI wireline interface is primarily deployed in third-party Console Subsystem implementations, the CSSI has become a key enabler for P25 Network operators to improve their procurement and advanced technology options. See *CSS*, *cSU, ISSI.*

CST

Console Supporting the Testing (CST) – The Console equipment used in the testing of the RFSS-under-test and is connected to the RFSS-under-test via a CSSI.

CUT

Console Under Test (CUT) – This is a term unique to this ISSI/CSSI Interop CAB document which refers to a Console which is being tested for Compliance or "under Test."

Dispatch Console

Dispatch Console , (aka *Dispatch Console Operator Position*, *Console, Dispatch Op,*) – This term refers to the specialized equipment which provides capabilities to dispatch Telecommunicator personnel. A wireline Console includes specialized speakers, microphones and GUI, enabling intricate call controls. Many interchangeable terms are used to describe this critical PS component.

DTR

P25 CAP Detailed Test Report (DTR) – The Project 25 Compliance Assessment Program Test Labs utilized DTR documents which provide detailed test results of P25 CAP testing used as basis for P25 equipment STRs. P25 CAP engineers review these for accurate data capture in resulting STR submissions. *See STRs*.

Encryption

See *AES*

FDMA

FDMA (Frequency Division Multiple Access) – In the P25 environment, the term *FDMA* refers to the access method for Phase 1 Trunking. Phase 1 FDMA uses a Full-Rate Vocoder and supports one talk or data path per working traffic channel. *See TDMA, Full Rate vocoder.*

Full-Rate (FR)	**Full-Rate (FR)** – This term refers to the type of vocoder. A vocoder converts a voice audio into a digital stream of 1s and 0s. A full bit rate vocoder is used in P25 Phase 1 FDMA and is described as "full" because it used all of the available bits, enabling only one voice path per RF traffic channel on a trunked system. See *FDMA, Half-Rate*.
Group Voice (Call)	See *TalkGroup*
Half Rate (HR)	**Half-Rate (HR)** – This term refers to the type of vocoder. A vocoder converts a voice audio into a digital stream of 1s and 0s. A half bit rate vocoder is used in P25 Phase 2 TDMA and is described as "half" because it uses half of the available bits, enabling TWO voice paths per RF traffic channel on a trunked system. This enables a doubling of the voice efficiency. See *TDMA, Full-Rate*.
HEX	**Hexadecimal (HEX)** – Abbreviation to denote a field using Hexadecimal, rather than regular decimal values.
Home System (SU)	**Home System (SU)** – The Home and Serving System designations are essential to the ISSI/CSSI interface functionality. All Console and Subscriber Units Home to a System use that System's WACN-SYS ID combination as part of the Subscriber Unit ID (SUID). A SUID can have only one Home System.
Home System (TG)	**Home System for Talkgroup** – All Talkgroups Home to a P25 System use that System's WACN-SYS ID combination as part of the full identity of the Talkgroup. A talkgroup can have only one Home System. Also called the *Group Home.*
ICC Test Tool	**ISSI/CSSI Conformance Test Tool (ICC Test Tool)** – An ICC Test Tool as defined in the ICC Test Tool CAB is a robust, easy to use P25 RFSS-emulation based software subsystem capable of accurately and thoroughly as which assessing conformance to the intricate messaging and procedures in the P25 TIA-102 BACA (ISSI/CSSI) wireline interface protocol standard.
Individual (Unit to Unit) Call	**Individual (Unit to Unit) Call** – This service operating on P25 Trunked RFSS(s) allows two Subscriber Units (mSU/cSUs) to communicate directly without utilizing a trunked Talkgroup.
ID	Identifier **(ID)** – Term which refers to any digital numerical identifier. In PS Comms lingo, typically just the term "ID" is used.

Radio Disable (Inhibit), Re-Enable (Un-Inhibit)	**Radio Inhibit/Un-Inhibit** – In the event of that a Subscriber Unit is discovered to be lost, stolen or unauthorized, a radio system manager can initiate a single Inhibit command which renders the target Subscriber totally unresponsive and impenetrable, even with invasive methods; this is often referred to as "bricking" the radio. This function is especially crucial to prevent potential compromise of sensitive, secured Law Enforcement operations. A properly authorized Un-Inhibit command returns the device to full operation. Requires digital signaling.
Inter-System (ID)	**Inter-System ID** – This term refers to the ISSI/CSSI connectivity scenarios in which the RFSSs being connected together have different System IDs, but same WACN IDs.
Inter-WACN (ID)	**Inter-WACN** – This term refers to the ISSI/CSSI connectivity scenarios in which the RFSSs being connected together have different WACN IDs, and can therefore have different System IDs as well.
ISSI	**Inter-RF Subsystem Interface (P25 ISSI)** – This trunked P25 wireline interface standard enables roaming and interconnected services across disparate P25 trunked Wide Area networks (RFSSs). The P25 ISSI has the flexibility to connect multiple P25 trunked systems which have the same or different WACN or System IDs. See *CSSI.*
ISSI/CSSI	**ISSI/CSSI** – The combined acronym "ISSI/CSSI" is used as a shorthand and refers to any aspects that apply identically and equally to the ISSI and CSSI interfaces. *See ISSI, CSSI.*
MFID	**Manufacturer Identifier** – Identifier used to identify a manufacturer.
Mobile Subscriber Unit (mSU)	**Mobile Subscriber Unit (mSU)** – The term "mSU" is a term used in the P25 TIA-102 standards documents to refer to a Subscriber Unit (SU), such as a vehicular, "Mobile" or a handheld, "Portable" end user radio devices. A Subscriber mSU is defined as an element operating over a P25 Common Air Interface and in context of Trunked ISSI, is assigned a P25 Unit ID.
Native Console	**Native Console** – The Consoles or cSUs can be connected to a P25 Trunked system FNE which also supports RF Site connections; these cSUs, referred to as "Native Consoles," can be local or remoted from central Fixed Network Equipment (FNE). *See cSU, CSS, CSSI, ISSI.*

Registration (trunked)	**(Trunked) Registration** – Trunked protocol procedure which checks provisioning of Unit ID, and TG among other parameters.
RFSS ID	**RF Subsystem Identifier (RFSS ID)** – A P25 trunked Radio Frequency Subsystem (RFSS) 8-bit numerical Identifier used to identify P25 RFSSs.
RST	**RFSS Supporting the Testing (RST)** – This term is used to refers to the RFSS supporting the testing and is referred to as RFSS B-1 in the TIA CACD-D procedures document. The RST/RFSS B-1 is connected to the (RUT/RFSS A-1) over an ISSI/CSSI connection.
RUT	**RFSS Under Test (RUT) –** RFSS Under Test (RUT) refers to the RFSS equipment connected via an ISSI or CSSI that is being evaluated. In the TIA CACD-D test procedures this is referred to as RFSS A-1.
SDOC	**Suppliers' Declaration of Compliance (SDOC)**, pronounced ("ES dok") – This is an abbreviation for one of two primary documents used to convey testing information to the P25 Compliance Assessment Program.
Serving System	**Serving System** – The Home and Serving System designations are essential to the ISSI/CSSI interface functionality. A Serving System is any RFSS which is supporting a Subscriber which is "visiting" or "foreign," which means it affiliates with a different WACN-SYS ID, and must be assigned a WUID. See *Home System*
SME	**Subject Matter Expert (SME)** – In the context of the ICC Test Tool topic, this term refers to a P25 Engineer with advanced background and knowledge on real-time protocols and P25 trunked system operations, services and capabilities.
STR	**P25 CAP Summary Test Report (STR)** – This is an abbreviation for one of two primary documents used to convey testing information to the P25 Compliance Assessment Program.
Subscriber Unit (SU or mSU)	**Subscriber Unit (SU)** (aka *Radio*, *Subscriber, Portable, Mobile*) – Proper technical term for an end user radio unit, usually a Mobile or Portable Radio. Another common type is called a Control Station or Consolette. See *mSU.*
System ID (SYS ID)	**System ID (SYS ID)** – When combined with the WACN, the System ID is a 12-bit hexadecimal identifier and is a key part of the unique Identifier assigned to every Project 25 trunking system. See *WACN.*

TAC	**Target Availability Check (TAC)** – This term refers to a messaging sequence in the Trunked Unit to Unit Call. Unit to Unit Calls in the P25 Standard support three varieties of TAC handling.
Talkgroup	**(P25) Talkgroup** – A Project 25 trunked Talkgroup is a primary type of PS radio Talk Path. Multiple trunked Talkgroups operate simultaneously and independently utilizing a pool of RF channels which is controlled by a Control Channel (CCH). Radio users affiliated to the TG can hear all transmission on the selected TG regardless of the RF Site they are using at the time.
Talkgroup Affiliation	**Talkgroup Affiliation** – A process initiated upon selection or change of Talkgroup, the network uses Talkgroup Affiliation to attach or associate a Registered Subscriber Unit to the selected Talkgroup (TG). Once affiliated, all PTTs from subscriber unit will transmit only on that Talkgroup. A radio can only be affiliated and transmit to one TalkGroup at a time but can listen to multiple Talkgroups when in Scan Mode.
TDMA ("Phase 2")	**P25 Time Division Multiple Access (TDMA**) aka P25 Phase 2 TDMA – TDMA in P25 is a trunked access method which enables two talks path per working channel and increases bit rate from 9600 to 12 kbps, enables 6.25 kHz equivalent efficiency. See *FDMA, Half-Rate.*
TG ID	**Talkgroup ID (TG ID)** – Numerical Identifier (number) which is digital ID for the TalkGroups operating on a P25 trunked network. Must be unique within system and is used in conjunction with WACN-SysID. See *TalkGroup*
TIA-102	**Telecommunications Industry Association (TIA)** – The accredited standards body which facilitates the development of Project 25 standards on behalf of Public Safety. See *Project 25.*
Unit ID (P25)	**P25 Unit ID** (Identifier) – Numerical Identifier used to uniquely identify SUBSCRIBER UNITS on a P25 trunked network. Just like a phone number, a Unit ID must be perfectly unique within a system (RFSS) to function correctly.
Vocoder	**Vocoder** – A radio component which is a speech analyzer and synthesizer required for secure radio communication, where voice has to be digitized, encrypted and then transmitted on a narrow, voice-bandwidth channel. Project 25 supports full/half AMBE and full rate IMBE vocoders.

WACN (ID) **Wide Area Carrier Number (WACN ID)**, pronounced ("*WACK-en*") – When combined with the System ID, the hexadecimal WACN identifier is part of the unique Identifier assigned to every Project 25 Trunked System. *See SysID*