

This document contains a compilation of all Comment Matrix submissions for the v3DRAFT of the Inter-Inter-Radio Frequency Subsystem Interface-Console Subsystem Interface Test Tool (ICC Test Tool) document released 11/17/20. The two columns on the right describe actions taken to resolve issues and additional detail in the “Author’s Explanation” column. Text in *(blue italics)* describes specific changes made to resolve any issues. Those interested may request the ICC Test Tool v3-Final change capture document by sending an email request to P25CAP@hq.dhs.gov. Our sincere thanks to all reviewers who took the time to provide feedback.

Prepared by document author, Cynthia Wenzel Cole, P25 CAP

Date: 12/31/2020

Document Title: *P25 CAP ISSI/CSSI Conformance Test Tool Verification Compliance Assessment Bulletin, Draft v3.0 (11-17-20)*

Comment Date: 12/11/2020

Commenter Name or Company: State of Iowa, Chris Maiers

#	Reviewer Comments	Doc Action	Author’s Explanation
IA-1	<p>Is the depiction of a CSSI connection accurate in Figure 1?</p> <p>It is unclear as to why this is labeled as B’. Is it trying to convey some sort of dependency with RFSS B? It may make more sense to list this as a different subsystem such as Subsystem C or as it being a console of a different manufacturer.</p> <p>Recommended Action: Verify listing for the P25 Console Subsystem B’</p>	<p><i>(Add clarifying language)</i></p>	<p><i>This is an excellent point: a CSSI connected to a CSS is for the purpose of connecting a third-party console, as a native console would not require use of the CSSI.</i></p> <p>Resolution – Edit Fig. 1 to add “3rd Party”, add clarification to Section 5.5 as below.</p> <p><i>(The CSSI in this configuration are used to connect a third-party Console Subsystems.)</i></p>
IA-2	<p>Section 1.3.1 paragraph 2, sentence 2 should be revised.</p> <p>Suggest adding: While end user equipment (EUE) may give some visual or audible confirmation of a feature working, additional equipment may still be necessary under certain conditions to verify proper functionality and configuration of the EUE. In addition, the test equipment may also be needed to verify messages being exchanged between the various RFSSs and EUE.</p>	<p><i>(Add clarifying language to convey item)</i></p> <p>Also Added to Section 2.6 Conf. CAB)</p>	<p>Resolution – Added to text below to Section 1.3.1, paragraph 2.</p> <p><i>(While interoperability testing involves monitoring the visual and audible behaviors of end user subscriber radios and consoles, additional equipment may be necessary to fully verify functionality in a wider variety of configurations and end user scenarios.</i></p> <p><i>The Compliance Assessment Program recognizes the need to continue improving the scope and robustness of ISSI/CSSI interoperability testing and is exploring additional approaches and methods to more readily reveal potential end user interoperability issues and obstacles.)</i></p>

#	Reviewer Comments	Doc Action	Author's Explanation
IA-3a	<p>Section 1.6.2</p> <p>The Tool as described will have limitations in the limited potential to simulate different implementations of standards interacting across an ISSI/CSSI. For instance, a Test Tool that operates in emulation mode only cannot be used on active ISSI/CSSI implementations in a passive mode.</p>	<p><i>(Add in new section addressing this issue)</i></p>	<p>Resolution – Added section 1.7 Alternate Conformance Testing Approaches which includes this language.</p> <p>Resolution – Added to section 2.6 “Alternate Conformance Test Methods” to ISSI/CSSI Conformance Test Requirements CAB and all Dec. 2020 revision Conformance Test Case documents clarifying this change.</p>
IA-3b	<p>Section 1.6.2</p> <p>The conformance test tool will not necessarily ensure that different manufacturer implementations of P25 standards will interoperate in a real deployment.</p>	<p><i>(Add bullet to convey this item)</i></p>	<p>Resolution – Added bullet below to list of tool considerations and challenges in section 1.6.3</p> <p><i>(Conformance Does Not Guarantee Interoperability – The conformance test tool will not necessarily ensure that different manufacturer implementations of P25 standards will interoperate in real deployments)</i></p>
IA-3c	<p>Section 1.6.2</p> <p>Any emulated RFSS or CSS should resemble real, functioning systems and configurations as much as possible.</p>	<p><i>(Add this comment)</i></p>	<p>Resolution – Edit last paragraph in 1.6.2 to read: <i>(It should be noted that while a full emulation of an RFSS or CSS is not required to perform this function, any emulated RFSS or CSS should resemble real, functioning systems and configurations as much as possible.)</i></p>
IA-3d	<p>Section 1.6.2</p> <p>Additionally, system users or administrators may need to conduct some form of testing if their configuration differs from those tested and functionality is lacking. In this instance, a wireline monitor may be the best method for testing conformity if conducted with appropriate subject matter experts under controlled conditions.</p>	<p><i>(Add section to address this key issue)</i></p>	<p>Resolution – Added section 1.7 Alternate Conformance Testing Approaches which includes this language.</p> <p>Resolution – Added to section 2.6 “Alternate Conformance Test Methods” to ISSI/CSSI Conformance Test Requirements CAB and all Dec. 2020 revision Conformance Test Case documents clarifying this change.</p>
IA-4	<p>Section 1.6.3 heading for list should not convey it as being all-inclusive</p> <p>Consider editing statement to read “<i>These considerations and challenges include but are not limited to....</i>”</p> <p>This will allow the document to acknowledge that the list may not be all-inclusive now or in the future.</p>	<p><i>(Make change as suggested)</i></p>	<p>Resolution – Sentence edited in Section 1.6.3 to read: <i>(Although functionality may vary by ICC Test Tool solution provider to address market requirements, suggested, typical ICC Test Tool commercial products include, but are not limited to, the capabilities and functions listed below.)</i></p>

Document Title: P25 CAP ISSI/CSSI Conformance Test Tool Verification Compliance Assessment
Bulletin, Draft v3.0 (11-17-20)

Comment Date: 12/11/20

Commenter Name or Company: DOI, Ken Monington, Test Engineer

#	Comment	Action	Explanation
DOI -1	<p>The following statements are inconsistent with each other:</p> <p>2.1 "This approach for validation of the ISSI/CSSI test tools requires submission of a detailed test report showing administration of applicable P25 Test Cases and Pass/Fail documents."</p> <p>4.3.1.2 States that the detailed test results are shared only with the manufacturer and not with DHS/APCO/CAP/Valid8.</p> <p>4.4.3 "The DTRs are made available to the Test Tool Developer, but are not part of the submission for Compliance Assessment. "</p>	<p><i>(Delete sentence in 2.1)</i></p>	<p>Deleted from 2.1 to resolve:</p> <p>This approach for validation of the ISSI/CSSI test tools requires submission of a detailed test report showing administration of applicable P25 Test Cases and Pass/Fail documents.</p>
DOI -2	<p>Another distinction between ICC test tool verification and CAP certification of equipment is the version information. Section 4.3.1.2 of the CAB states:</p> <p><i>"The Verification Test Plan package shall provide detailed information that includes FNE/System Base station and Test Subscriber feature support documentation, along with identifying information such as product type, manufacture, brand name, model series, model number, software version, submitted STR/SDOC to reference and, importantly, which test cases are "[S]" are Supported by the product."</i></p> <p>We expect to provide just RFSS 1, etc. instead of (detailed) product information.</p>	<p><i>(Made edits to sentence in 4.3.1.2, as shown at right)</i></p>	<p>Changed 4.3.1.2 as below to resolve:</p> <p><i>(The Verification Test Plan package shall provide detailed information that indicates which ISSI/CSSI Conformance test cases are "[S]" are Supported by the Test RFSSs, and which test cases are "[U]" Unsupported by the RFSS test equipment.</i></p> <p><i>It is acceptable to use Test "RFSS-A" and "RFSS-B" to obscure original manufacturers, if deemed necessary.)</i></p>

#	Comment	Action	Explanation
DOI -3	Internally, we plan to track product information, e.g., software version, on a test-by-test basis for test tool verification. A manufacturer may have one version that supports one feature and another version that supports a different feature. This should apply to ICC Test Tool under test, test CSSs and test RFSSs.	<i>(Add content to 3.3.2 (Lab responsibilities) as shown at right)</i>	Resolution: Add below to Section 3.3.2 to resolve: <i>(In order to implement software fixes during testing it is expected that multiple versions are subjected to verification testing. The Test Lab is expected to internally track versions by test cases performed and impacted to ensure any necessary regression testing is performed. This applies to ICC Test Tool under test, test CSSs and test RFSSs.</i> <i>P25CAP recognizes that a full scope of regression testing for all features for each software change may not be necessary, the Test Lab is expected to show due diligence on this key issue.)</i>
DOI -4	Regarding sentence in 4.4.3. DTRs and Wireshark captures may be made available to the Test Tool Developer when a manufacturer disagrees with the test results.	<i>(Made edits to sentence in 4.4.3, as shown at right)</i>	Resolution: Edit Section 4.4.3 to address this item: <i>(In Step 4c, the Test Tool Developer receives the test report information from the Test Labs performing the Test Tool verification testing, which contain the detailed Pass/Fail test result performance of the Test Tool (only) for each Test Case. These reports are not part of the submission for Compliance Assessment.)</i>
DOI -5	The CAB should not include any references to an NDA. An NDA may or may not be agreed to between a test lab and a manufacturer, and an NDA is between those parties; therefore, a statement that DTRs should remain private under an NDA is beyond the scope of the CAB.	<i>(Removed references to Test Lab NDA)</i>	Resolution: References in 4.3.1.2 and 4.4.2 deleted
DOI -6	Last sentence of section 1.3.3: "... meet for comparison against the pass/fail criteria." This statement can be simplified to "meet the pass/fail criteria."	<i>(Made edits to sentence as suggested)</i>	Resolution: Insert copy edit as suggested.
DOI -7	Section 2.2 refers to a "loopback" mode. We call these tests "self-tests" because Valid8 must create the correct response and not just play back the received message. You do not need to change this if other people believe loopback mode is a better name.	<i>(Edit to change to "Self-Test" mode as suggested)</i>	Resolution: Edits to Section 2.2 change "loopback" to "self-test" where it appears.
DOI -8	Appendix – Glossary, Individual Call entry: I do not agree with the characterization in the definition that an "no other units can hear other units' Individual Call audio," this is simply not true. If a customer wants privacy, then they should encrypt the call using an approved encryption algorithm, e.g., AES-256. Please clarify this item	<i>(Edit definition to clarify)</i>	Resolution: Deleted reference to privacy, now reads: <i>(A P25 Individual Call operating on a Trunked Network allows any two P25 units to communicate directly between two radio units, rather than utilizing a trunked Talkgroup.)</i>

Document Title: P25 CAP ISSI/CSSI Conformance Test Tool Verification Compliance Assessment Bulletin, Draft v3.0 (11-17-20)

Comment Date: 12-15-20

Commenter Name or Company: MSI (Andy Davis) [6]

#	Comment	Action	Explanation
MSI -1	<p>Notice of Disclaimer, page ii states: <i>“The test procedures used to validate these requirements are <u>also part of the P25 suite of standards</u>”</i></p> <p>For ISSI/CSSI Conformance testing this is not entirely true. We suggest using language similar to the Executive Summary excerpt below: <i>“in accordance with P25 CAP ISSI and CSSI Conformance Test Cases and Pass/Fail documents”</i></p>	<i>(Use correct version of Notice of Disclaimer)</i>	Resolution: <i>More current Notice does not contain sentence in question as this was addressed previously. Great catch, thank you!</i>
MSI -2	<p>Document References. Page vi References 1-4 do not appear at the link provided. Note: It seems that final versions of these reference documents should be published prior to publication of this CAB. Are these documents finalized and if so, where can they be found?</p>	<i>(Update List of References to include publicly available, current versions)</i>	<p><i>You are correct, all underlying references need to be finalized before this document can be published.</i></p> <p><i>References and new filenames added to this document.</i></p>

#	Comment	Action	Explanation
MSI -3	<p>Referencing Section 1.6</p> <p>The language in this section (and in other sections) implies the document requirements and processes may be used for any type of Conformance Test Tool. There are also many sections in this document that clearly limit the requirements and processes to a Conformance Test Tool that simulates an ISSI/CSSI endpoint and makes automatic pass/fail conclusions for a limited set of Conformance Tests.</p> <p>In the public review of the previous version of this document, MSI comment 3a asked about whether CAP would allow this Test Tool Verification CAB to be used for evaluation and recognition of wireline monitor/analyzer type conformance testing tools. MSI noted that such tools are useful for conformance testing live ISSI/CSSI links for labs or customers.</p> <p>Referring to: “P25CAP ICCTT Comments Matrix - ALL (7-31-20) - FINAL.pdf”, the author response to the previous MSI comment 3a provided text that was intended for this revision but has not been included in this revision.</p> <p>MSI suggests the resolution text of previous MSI comment 3a be added to this document and possibly to the Conformance Test requirements CAB.</p>	<p><i>(Add section to address issue raised.</i></p> <p><i>**Added this content to Conformance CAB also**)</i></p>	<p><i>This item which is adjunct to the Test Tool Verification topic was left unaddressed in the previous draft in order to meet aggressive release deadlines.</i></p> <p><i>This issue among others raised has been captured in a new section, excerpted below, but too long to include here. Please see document for all content addressing this item.</i></p> <p>Resolution Section 1.7 “Alternate Conformance Testing Approaches” added. The first sentence excerpted below:</p> <p><i>(Recognizing the many challenges associated with Test Tool verification approach outlined above, the P25 Compliance Assessment Program will consider ISSI/CSSI Conformance testing approaches which do not rely upon the use of a CAP-verified ISSI/CSSI Test Tool product, the subject of this Bulletin.)</i></p> <p>Resolution – Added to section 2.6 “Alternate Conformance Test Methods” to ISSI/CSSI Conformance Test Requirements CAB and all Dec. 2020 revision Conformance Test Case documents clarifying this change.</p>
MSI -4a	<p>3.1 ICC Test Tool Testing Requirements and Assumptions</p> <p>Bullet 2 states:</p> <p>“All Features Must Be Assessed by P25 SME Using a Protocol Analyzer”.</p> <p>4a. Where are the qualifications of a P25 SME defined?</p>	<p><i>(Add footnote and clarification)</i></p>	<p>4a Resolution: Changed “P25 SME” to P25 Test Engineer in text, illustrations and ALT Text. SME reference kept only when describing Manual Protocol Analysis process.</p> <p>4a Resolution: Section 3.1 Bullet 2: add footnote on P25 Test Engineer to read:</p> <p><i>([N] Refer to Section 1.3 for a general description of the qualifications.)</i></p> <p>4a Resolution: Clarify section 1.3 to read:</p> <p><i>(As required by the Lab Accreditation process the P25 Test Engineer) is trained on the configuration and operation of the equipment, has knowledge of the standard, is capable of executing the test, is capable of operating the test equipment, and is familiar with the pass/fail criteria that determine if the captured messages, message sequence and message content meet for comparison against the pass/fail criteria.</i></p>

#	Comment	Action	Explanation
MSI -4b	<p>4b. Alternatively to question a)</p> <p>Should documentation to be submitted to CAP show that the messages and content captured support the Pass/Fail conclusion of the tool under test? It seems this would allow CAP to determine if the tool under test is making the correct pass/fail decisions rather than an SME?</p>		<p>4b Resolution: Add report requirement to Process section 4.5.1 as follows:</p> <p><i>(Documentation required for Compliance Assessment must include the Manual Protocol Analyzer/SME Test Results including messages and content captured as needed to verify the more intricate behaviors. This allows P25 CAP experts to verify the correct Pass/Fail decisions are being made by the Tool.)</i></p>
MSI -5	<p>Appendix A, table 9 defines “Home System.” This description adequately covers the concept of a Home system Individual ID (SUID). The description does not adequately describe the concept of a Home system for Talkgroup identities.</p> <p>We suggest something like the following:</p> <p>“All Talkgroups Home to a 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.”.</p>	<p><i>(Update description as suggested)</i></p>	<p>MSI 5 Resolution: Update Appendix A Home System definition to read as below</p> <p><i>(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.)</i></p>

Document Title: P25 CAP ISSI/CSSI Conformance Test Tool Verification Compliance Assessment Bulletin, Draft v3.0 (11-17-20)

Comment Date: December 1, 2020

P25CAP Submission Date: December 10, 2020

Commenter Name or Company: Randy Richmond, Zetron, Inc.

#	Comment	Action	Explanation
Z-1	<p>Section 1.3.1 P25 Interoperability Testing.</p> <p>It seems relevant to include an explanation in this section that Interoperability testing is accomplished by connecting manufacturer equipment to both ends of the interface, and using this equipment to stimulate traffic and observe resulting behavior. And that Interoperability Testing does not typically involve (a passive examination of) the messages exchanged over the interface.</p>	<p><i>(Added clarifying content as suggested.)</i></p>	<p><i>Excellent clarification.</i></p> <p>Add to Section 1.3.1 to Resolve:</p> <p><i>(It may be important to understand that Interoperability Testing is typically “end to end” testing. In the P25 Wireline Interface context, this is accomplished by connecting CSS or RFSS equipment to both ends of the interface, and using this equipment to stimulate traffic and carefully observe resulting behavior of the network, stations and devices.)</i></p>
Z-2	<p>Section 1.3.2 P25 Performance Testing.</p> <p>It seems that the only performance testing applies to wireless interfaces, and there are no performance tests for the wireline interfaces. Thus, it seems that performance testing is outside the scope of ISSI/CSSI testing. Perhaps this should be mentioned.</p>	<p><i>(Added clarifying content as suggested.)</i></p>	<p><i>Excellent clarification.</i></p> <p>Add to Section 1.3.2 to Resolve:</p> <p><i>(P25 Performance testing is established for the wireless CAI domain, and is currently outside the scope of wireline interface testing. It is included here for a comprehensive view of P25 CAP.)</i></p>
Z-3	<p>Section 2.1 Manual, Independent Assessment Using Protocol Analyzer.</p> <p>In the 5th line of the 1st paragraph, there is what appears to be a foot note numeral after the word “equipment”. This foot note should be superscript, rather than normal font.</p>	<p><i>(Fixed Format Error)</i></p>	
Z-4	<p>Section 2.1 Manual, Independent Assessment Using Protocol Analyzer.</p> <p>The third paragraph starting “In the examples that follow” appears to be a duplicate of the second sentence of the preceding paragraph.</p>	<p><i>(Deleted duplicate content)</i></p>	

#	Comment	Action	Explanation
Z-5	<p>3.1.2 Verification Assumes Compliance with Underlying IP Protocols.</p> <p>This statement exists in the 2nd paragraph, “<i>verifying conformance to the SIP/RTP standards is beyond the scope of P25 CAP and ISSI/CSSI Test Tool Verification testing.</i>”</p> <p>It seems to us that unless products do (not) conform to the relevant IETF standards, the result is the same as not conforming to the P25 standard itself – products will not comply nor be interoperable.</p> <p>Is DHS CAP relying on Interoperability Testing to catch IETF SIP/RTP compliance issues? If so, perhaps it should be stated in this section.</p>	<p><i>(Edit content in Section 3.1.2)</i></p>	<p>We have been struggling to get the nuanced intent of this section correct. Note the first paragraph adds important context.</p> <p>Resolution: Delete sentence in the 2nd paragraph:</p> <p>“Therefore, verifying conformance to the SIP/RTP standards is beyond the scope of P25 CAP and ISSI/CSSI Test Tool Verification testing.”</p> <p>Add the following:</p> <p><i>(In summary, it would not be practical to for DHS P25 CAP to rely solely upon P25 CAP testing to flag underlying IETF SIP/RTP compliance issues.</i></p> <p><i>P25 depends upon proper implementation of underlying protocols, however with so many SIP/RTP compliant variations, the tested ISSI protocols could be completely compliant with SIP/RTP and still not be compliant to P25. It is these inconsistencies the Conformance Tests still needs accurately assess and Pass or Fail in compliance with the P25 Standard.)</i></p>

Document Title: P25 CAP ISSI/CSSI Conformance Test Tool Verification Compliance Assessment Bulletin, Draft v3.0 (11-17-20)

Comment Date: 12/15/2020

Commenter Name or Company: Valid8.com Inc. [1]

#	Comment	Action	Explanation
1	<p>Pages 24, 26, 29 of the document says the test tool simulates RFSS 1. This does not match the defined test case references [1]. [2]. [3] which indicate in section 2.2 of all those references that the test tool is referenced as RFSS 2. Why is the test tool not referenced (in) the same way?</p>	<p><i>(Find & Replace, copy edit all references to RFSS 1 & RFSS2)</i></p>	<p>Resolution: Updated all technical illustrations, ALT TEXT embedded descriptions, captions and document content to address this item.</p>