Homeland Security

Science and Technology

Office for Interoperability and Compatibility

Project 25 Compliance Assessment Bulletin

Project 25 Compliance Assessment Program

Laboratory Equipment Requirements

P25-CAB-LAB_EQP_REQ

August 2016

Notice of Disclaimer and Limitation of Liability

The Project 25 Compliance Assessment Program (P25 CAP) provides equipment purchasers with demonstrated evidence of a product's compliance with a select group of requirements within the suite of P25 standards. The test procedures used to validate these requirements are also part of the P25 suite of standards. 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 user's needs. P25 CAP-mandated tests only demonstrate product compliance with the test procedures 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 1 (For PC)	12/12/2014	Final release version for public comment (PC) approved on December 12, 2014. Posted for PC on March 19, 2015.
Draft 2 (For PC)	6/30/2015	Incorporates public comment-resolution candidates. Posted again for Posted for PC the week of June 30, 2015.
2016 Release	8/17/2016	Addresses March and July 2015 public comments. Posted for general use on August 17, 2016.

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1 Introduction

The Department of Homeland Security (DHS) Office for Interoperability and Compatibility (OIC) 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 purchase meets 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 P25 CAP laboratories. All equipment suppliers that participate in the P25 CAP must use 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.

1.1 Scope

This Compliance Assessment Bulletin identifies several basic personnel, facility and test tool requirements for becoming a DHS-recognized laboratory for P25 CAP testing.

1.2 Effective Date

This Compliance Assessment Bulletin becomes effective on August 17, 2016.

1.3 Normative References

[1] ISO/IEC 17011:2004, *Conformity assessment — General requirements for accreditation bodies accrediting conformity assessment bodies.*

[2] ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories.*

[3] ISO/IEC 17050-1:2004, *Conformity assessment — Supplier's declaration of conformity — Part 1 General requirements.*

[4] ISO/IEC 17050-2:2004, *Conformity assessment — Supplier's declaration of conformity — Part 2 Supporting documentation.*

1.4 Informative References

[5] P25-CAB-LAB_BASE_REQ, *Project 25 Compliance Assessment Program Baseline Laboratory Requirements*.[1]

[6] P25-CAB-LAB_REC_AGREEMENT, *Project 25 Compliance Assessment Program Laboratory Recognition Conditions and Criteria Agreement*.[1]

[1] See https://www.dhs.gov/science-and-technology/p25-cap for the latest document version.

[7] P25-CAB-STR_REQ, *Project 25 Compliance Assessment Program Summary Test Report Requirements*.[1]

[8] P25-CAB-SDOC_REQ, *Project 25 Compliance Assessment Program Supplier's Declaration of Compliance Requirements*.[1]

[9] *Charter for the Project 25 Compliance Assessment Program*.[1]

1.5 Terms and Definitions

1.5.1 Accreditation Body

(Specific to the P25 CAP.) An authoritative body complying with ISO/IEC 17011 that assesses and accredits a laboratory against standards and requirements. An accreditation body is authorized by DHS to assess laboratory competence to conduct all of the test cases or a subset of test cases defined in the applicable Compliance Assessment Bulletins. The accreditation process ensures the acceptability of a laboratory's P25 CAP testing practices.

1.5.2 Compliance Assessment Bulletin

Published by DHS, a Compliance Assessment Bulletin contains the policies and procedures by which the P25 CAP operates. The scope of a Compliance Assessment Bulletin can range from P25 CAP policy to guidance, covering issues such as specific test methods to use for a particular P25 interface or guidelines for the creation of a Supplier's Declaration of Compliance (SDOC) and Summary Test Report (STR) documents.

1.5.3 Equipment Supplier

The Original Equipment Manufacturer (OEM) or an authorized agent of the OEM.

1.5.4 P25 Compliance Test Method

A normative test procedure defined for compliance testing of a given interface. These test procedures are typically broken down into the following categories:

a) Performance (e.g., Measurement Methods and Performance Recommendations);

b) Conformance; and

c) Interoperability.

The test methods used in the P25 CAP are chosen from P25-approved standards that are customarily drawn from the TIA-102[2] suite of standards. The intention is for the suite to contain performance, conformance and interoperability test standards for each interface or major service. A variety of test methods are contained within each test standard. Many, but not all, of these test methods will be included in the minimal set of tests required for compliance demonstration in the P25 CAP.

1.5.5 Scope of Accreditation

[2] The Telecommunications Industry Association (TIA) refers to the P25 suite of standards as, "TIA-102 Land Mobile Communications Standards (APCO/Project 25)."

The type of testing for which a laboratory demonstrates competence. The Compliance Assessment Bulletins published by DHS contain the particular test methods. The Scope of Accreditation lists the actual test methods for which the laboratory demonstrated competency.

NOTE: The Scope of Accreditation need not include all of the test methods contained in the aforementioned Compliance Assessment Bulletins; a laboratory can be accredited for a subset of test methods.

1.5.6 Summary Test Report (STR)

A report summarizing the results of a particular set of P25 Compliance Test Methods defined within the relevant Compliance Assessment Bulletins. Suppliers submit STRs along with Supplier's Declaration of Compliance (SDOC) documents by email to P25CAP@hq.dhs.gov for DHS review and approval of eligibility for grant procurement. Once approved, STRs can be viewed publicly with their associated SDOC documents at the dhs.gov/science-and-technology/p25-cap website. More information on the STR is contained in P25-CAB-STR_REQ [7].

1.5.7 Supplier's Declaration of Compliance (SDOC)

A formal declaration of compliance created in accordance with ISO/IEC 17050 for a particular set of P25 Compliance Test Methods defined within the relevant Compliance Assessment Bulletins. An authorized representative of the Equipment Supplier signs the SDOC. More information on the SDOC is contained in P25-CAB-SDOC_REQ [8].

1.5.8 Test Case

A particular section that defines a unique test procedure within a compliance test methods document.

2 General Requirements

All of the test methods that are required within a particular Scope of Accreditation shall be available at the laboratory.

2.1 Personnel

Staff shall be adequately trained for each test method or test case that they are responsible for or perform. Staff shall demonstrate proper programming, configuration, understanding and operation of the equipment under test and test equipment.

NOTE: Laboratory personnel may rely upon engineering support from the Equipment Supplier to demonstrate proper programming of equipment under test.

2.2 Accommodation and Environmental Conditions

The facility shall meet the minimum facility requirements specified in the test method standard. When specified in the standards, environmental conditions such as temperature, humidity and barometric pressure shall be recorded at the time of the test. These records (measurements) shall be traceable to

the International System of Units (SI) through NIST or an internationally recognized national metrology institute that is a signatory to the International Committee for Weights and Measures (CIPM) Mutual Recognition Arrangement.

2.3 Test Methods and Method Validation

It is the responsibility of each laboratory to validate each test method or test case in its own facility using the applicable equipment contained in that facility.

3 P25 CAP Test Equipment Requirements for Laboratory Accreditation

The P25 CAP includes evaluation requirements in addition to ISO/IEC 17025 concerning test equipment.

3.1 Process for P25 CAP Accreditation

To initiate the P25 CAP laboratory accreditation process, an applicant laboratory selects a DHS-authorized accreditation body to receive the submission requirements necessary to launch an on-site assessment. Refer to [5] for an online listing of DHS-authorized accreditation bodies and complete information about the accreditation process and DHS recognition requirements for a P25 CAP test laboratory.

3.2 Equipment Requirements for Accreditation

3.2.1 Test Equipment and Test System Availability

Test equipment and test systems shall be available that can perform the test case or test method as specified by the applicable standard.

3.2.2 Test Method Requirements

All test equipment and systems shall meet the requirements of the selected test method, including the normative standards referenced therein. This shall be demonstrated through product literature or actual measurements.

3.2.3 Proper Operating Conditions

The laboratory shall maintain procedures for determining the proper operating condition of the hardware or software test tools. Test tools require assessment if their use could affect the quality or outcome of the test. As applicable, refer to:

- Section 3.2.5 COTS Test Tool Requirements;
- Section 3.2.6 MOTS Test Tool Requirements;
- Section 3.2.7 Custom Test Tool Requirements; or
- Section 3.2.8 Open Source/Freeware/Free Test Tool Requirements.

3.2.4 Reference Procedures for Establishing Test Tool Requirements

When applicable to a given test tool requirements procedure (Sections 3.2.5 to 3.2.8), refer to Section 3.2.4.1 to 3.2.4.7.

3.2.4.1 Requirements Analysis

a) Process

When applicable to a given test tool requirements procedure (Sections 3.2.5 to 3.2.8), the laboratory shall establish requirements for the test tools in use.

b) Record

Example recorded outcomes of the requirements analysis process include:

- The requirements allocated to the elements of the test tools and their interfaces are defined.
- Requirements are analyzed for correctness and testability.
- The impact of requirements on the operating environment are understood.
- Consistency and traceability are established between the element requirements and system requirements.
- Prioritization for implementing the requirements is defined.
- The requirements are approved and updated as needed.
- Changes to the requirements are evaluated for cost, schedule and technical impact.
- The requirements are baselined and communicated to all affected parties.

3.2.4.2 Detailed Design

a) Process

When applicable to a given test tool requirements procedure (Sections 3.2.5 to 3.2.8), the laboratory shall provide a design for the test tool that implements and can be verified against the requirements, and is sufficiently detailed to permit construction of the tool.

b) Record

Example recorded outcomes of the detailed design process include:

- A detailed design of each component is developed that describes the units to be built.
- Internal and external interfaces of each unit are defined.
- Consistency and traceability are established between the detailed design and the requirements.

3.2.4.3 Design Review

a) Process

When applicable to a given test tool requirements procedure (Sections 3.2.5 to 3.2.8), the laboratory shall provide an assessment of the documented requirements for the test tool as developed by the creator and the design process used by the creator.

b) Record

Example recorded outcomes of the design review process include:

- A gap analysis based on the requirements of the tool creator is analyzed against the requirements of the laboratory.
- The design process used by the creator of the tool is reviewed against normal tool development processes for thoroughness.

3.2.4.4 Justification

a) Process

When applicable to a given test tool requirements procedure (Sections 3.2.5 to 3.2.8), the laboratory shall provide a method for understanding the benefits and tradeoffs of the use of the test tool given its intended use.

b) Record

Example recorded outcome of the justification process includes:

A justification document is developed, which details the pros and cons of using the test tool given the context in which it will be used.

3.2.4.5 Qualification Testing

a) Process

When applicable to a given test tool requirements procedure (Sections 3.2.5 to 3.2.8), the laboratory shall perform qualification testing to confirm that the integrated product meets its defined requirements.

b) Record

Example recorded outcomes of the qualification testing process include:

- Criteria for the integrated tool are developed that demonstrate compliance with the requirements.
- Integrated tool is verified using the defined criteria.
- Test results are recorded.
- A regression strategy is developed and applied for re-testing the integrated tool when a change in tool components is made.

3.2.4.6 Configuration Management

a) Process

When applicable to a given test tool requirements procedure (Sections 3.2.5 to 3.2.8), the laboratory shall establish and maintain the integrity of the items of a process or project and make them available to concerned parties.

b) Record

Example recorded outcomes of the configuration management process include:

- A configuration management strategy is developed.
- Items generated by the process or project are identified, defined and baselined.
- Modifications and releases of the items are controlled.
- Modifications and releases are made available to affected parties.
- The status of the items and modifications are recorded and reported.
- The completeness and consistency of the items is ensured.
- Storage, handling and delivery of the items are controlled.

3.2.4.7 Validation

a) Process

When applicable to a given test tool requirements procedure (Sections 3.2.5 to 3.2.8), the laboratory shall confirm that the requirements for a specific intended use of the work product are fulfilled.

b) Record

Example recorded outcomes of the validation process include:

- A validation strategy is developed and implemented.
- Criteria for validation of all required work products are identified.
- Required validation activities are performed.
- Problems are identified and recorded.
- Evidence is provided that the work products as developed are suitable for their intended use.
- Reports and results of the validation activities are made available to the customer and other involved parties.

3.2.5 COTS Test Tool Requirements

a) Definition

A commercial off-the-shelf (COTS) test tool is hardware and/or software that is commercially available, leased, licensed or sold to the general public and requires no special modification or maintenance over its life cycle.

b) Associated Processes and Records

Procedures for establishing COTS test tool requirements shall include:

1) Requirements Analysis (see Section 3.2.4.2).

2) Qualification Testing (see Section 3.2.4.5).

3.2.6 MOTS Test Tool Requirements

a) Definition

A modified off-the shelf (MOTS) test tool is hardware and/or software that is, in its original form, commercially available (leased, licensed or sold) or is available for free (under an open source license agreement or is freely available) to the general public, but some component of the tool has been modified or customized (i.e., custom code written) for the tool to meet its intended use.

b) Associated Processes and Records

Apply the following procedures only to the modified or customized portion of a COTS (Section 4.5.5) or a free open-source (Section 4.5.8) test tool. Procedures for establishing MOTS test tool requirements shall include:

1) Requirements Analysis (see Section 3.2.4.1).

2) Detailed Design (see Section 3.2.4.2).

3) Qualification Testing (see Section 3.2.4.5).

4) Configuration Management (see Section 3.2.4.6).

5) Validation (see Section 3.2.4.7).

3.2.7 Custom Test Tool Requirements

a) Definition

A custom test tool is hardware and/or software that is developed specifically for an organization either internally or by an outside contractor. A custom test tool is neither commercially available nor available via an open source license agreement.

b) Associated Processes and Records

Procedures for establishing custom test tool requirements shall include:

1) Requirements Analysis (see Section 3.2.4.1).

2) Detailed Design (see Section 3.2.4.2).

3) Qualification Testing (see Section 3.2.4.5).

4) Configuration Management (see Section 3.2.4.6).

5) Validation (see Section 3.2.4.7).

3.2.8 Open Source/Freeware/Free Test Tool Requirements

a) Definition

An open source, freeware or free test tool is hardware and/or software that is available to the general public under an open source license agreement or is freely available to the general public unencumbered by any license agreement.

a) Associated Processes and Records

Procedures for establishing open source/freeware/free test tool requirements shall include:

1) Requirements Analysis (see Section 3.2.4.1).
2) If the test tool is modified or customized, Detailed Design (see Section 3.2.4.2).
3) Design Review (see Section 3.2.4.3).
4) Justification (see Section 3.2.4.4).
5) Qualification Testing (see Section 3.2.4.5).
6) Validation (see Section 3.2.4.7).

3.2.9 Test Tool and Equipment Configuration Requirements

All test tools and equipment under test shall be configured in accordance with the selected test method standard. If an alternative method is employed, laboratory personnel shall provide the rationale for its use and explain how the results obtained using the alternative method compare with the method specified by the standard. If a test method offers optional procedures, the laboratory shall indicate which option was used.

If modifications to the equipment under test are required to achieve a pass verdict, they shall be clearly indicated in the test report.

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