

**800 MHz Trunked Regional Public Safety Radio System
Standards, Protocols, Procedures**

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Sub-Section:	1.7a	
Procedure Title:	Subscriber Radio Standards	
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1. Purpose or Objective

To set the minimum technical and performance standards for subscriber radios allowed to operate on the Regional Public Safety Radio System. To establish a policy avoiding premature obsolescence of subscriber radios. To establish procedures for the Radio Board to measure, test, certify and publish a list of subscriber radios which are approved for use on the system.

2. Technical Background:

▪ **Capabilities**

The Backbone System utilizes the digital communications technology specified in the TIA/EIA-102 Series Standards, Interim Standards and Telecommunications Systems Bulletins commonly know as “Project 25”. Project 25 provides for full backward migration and limited forward migration along an evolving continuum of technologies, frequency bands, and services. Project 25 also permits different vendors of subscriber radios and infrastructure to provide value added vendor specific premium features and services. The Initial Network utilizes Project 25 modulation method known as QPSK Narrow Band Simulcast and C4FM Narrow Band Non-simulcast modulation.

▪ **Constraints**

Different subscriber radios from different vendors utilizing different radio operating software will provide a variety of services, features, functionality and performance to the users. Different radios will also interact differently with the infrastructure and could potentially exhibit undesirable operational characteristics. An example of an undesirable performance operational characteristic would be poor simulcast audio recovery resulting in reduced geographic range, garbled audio, etc.

It is also possible that new, unproven radios and/or software may exhibit performance and functionality characteristics that are destructive to the overall performance, capacity and/or security of the Backbone System. An example of destructive functionality characteristics would be a radio

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which does not provide for site access roaming priority tables and results in indiscriminate roaming scattering users to different RF subsystems and sites.

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3. Operational Context:

Participants utilizing the system need access to radios that will meet their operational needs for the lowest cost. It is anticipated that radios capable of operation on the system will be available from multiple and different vendors over the life of the system. Users need the flexibility and knowledge to optimally choose from the available “universe” of radios available in the marketplace, and at the same time be discouraged from purchasing and using radios which would be operationally undesirable or problematic. Users will be prohibited from using radios which are destructive to the system.

4. Recommended Protocol/ Standard:

All subscriber radios meeting the applicable TIA/EIA Series 102 “APCO Project 25” Standards, and which DO NOT exhibit operational, performance, financial or other characteristics that substantially and measurably negatively impact the system or its users, will be approved for use on the system. Before a new radio is approved for use on the system it shall undergo a testing procedure with a working sample radio operated on the system. Members of a radio Test Team shall be appointed by the Radio Board and shall be responsible to conduct actual radio tests. Once sample radios are obtained, the testing process should be completed as quickly and efficiently as practical so as to not delay the availability of new radios to users.

5. Recommended Procedure:

5.1 Certification of subscriber radios for operation on the system

1. Identification of the radio proposed for use on the system. Radios or pre-production radios may be submitted for testing by any authorized user. Radio equipment manufacturers should work closely with an authorized user who is considering purchasing the proposed radio.
2. Review of technical specifications to determine basic compliance with the TIA/EIA Series 102 Standards.
3. Test the radio following the test procedure in appendix; note impacts from the radio, user and system perspectives and document findings. Depending on proposed use testing may include but not be limited to: subjective audio quality, coverage, ergonomics/ease of use, interoperability, roaming/site access, scanning, site affiliation, registration/de-registration, inhibit, call types, encryption, etc.
4. Review documentation including programming manuals, user manuals, maintenance manuals and training materials.
5. Compile an assessment report indicating if the radio is approved for use on the system and if there are any limitations or other constraints.

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6. Upon completion of the testing process by the Test Team, the testing methods and results will be reviewed by the Interoperability Committee. The Interoperability Committee may conduct additional or repeat tests if the results are inconclusive or if there are questions regarding the severity of potential negative impacts.
7. The final test report and any additional testing conducted by the Interoperability Committee will be submitted to the Radio Advisory Board for final action.

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5.2 De-certification of subscriber radios for operation on the system

5.2.1 De-certification due to a problem with previously certified radio

If a previously certified subscriber radio type begins to exhibit characteristics that are harmful to the operation of other users on the system these radios will be retested and certification reviewed. The subscriber unit test procedures will be reviewed and updated to insure proper testing of characteristic exhibited.

If it a problem brought about by the use of a new feature in the radio that feature will discontinue to be used until satisfactorily repaired by the vendor and tested to be operating properly.

5.2.2 De-certification due to upgrade in system that obsoletes previously certified subscriber radio types

6. Management

The Executive Director of the Radio Board is responsible for managing this procedure including maintaining all testing and certification records, managing radio equipment manufacturer initiated submittals, and coordinating activities of the Test Team. The Radio Board will maintain and make available on its Web site, a list of all radios approved for use on the system along with any limitations on use of the radio.