

must be reduced below the mean output power (P) by at least $43 + 10\log(P)$ dB measured in a 100 kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

(d) *Authorized bandwidth.* Provided that the ACP requirements of this section are met, applicants may request any authorized bandwidth that does not exceed the channel size.

(e) For operations in the 758–768 MHz and the 788–798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than $76 + 10\log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations.

(2) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than $65 + 10\log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.

(3) On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10\log(P)$ dB.

(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

(f) For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type

that will be used with the equipment in normal operation.

(g) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

[70 FR 21666, Apr. 27, 2005, as amended at 72 FR 48862, Aug. 24, 2007; 79 FR 600, Jan. 6, 2014; 79 FR 39340, July 10, 2014; 79 FR 71326, Dec. 2, 2014]

§ 90.547 Narrowband Interoperability channel capability requirement.

(a) Except as noted in this section, mobile and portable transmitters operating on narrowband channels in the 769–775 MHz and 799–805 MHz frequency bands must be capable of operating on all of the designated nationwide narrowband Interoperability channels pursuant to the standards specified in this part. Provided, however, that the licensee need not program such transmitters to make all interoperability channels accessible to the end user.

(1) Mobile and portable transmitters that are designed to operate only on the Low Power Channels specified in § 90.531 (b)(3) and (4) are exempt from this Interoperability channel requirement.

(2) Mobile and portable transmitters that are designed to operate only in the data mode must be capable of operation on the data Interoperability channels specified in § 90.531(b)(1)(i); but need not be capable of voice operation on other Interoperability channels.

(3) Mobile and portable transmitters that are designed to operate only in the voice mode do not have to operate on the data Interoperability channels specified in § 90.531(b)(1)(i).

(b) Mobile and portable transmitters designed for data are not required to be voice capable, and vice versa.

[67 FR 61005, Sept. 27, 2002, as amended at 72 FR 48863, Aug. 24, 2007; 79 FR 71326, Dec. 2, 2014; 83 FR 30367, June 28, 2018]

§ 90.548 Interoperability Technical Standards.

(a) Transmitters designed after August 11, 2014 to operate on the narrowband interoperability channels in the 769–775 and 799–805 MHz band (*see* § 90.531) shall conform to the following

technical standards (transmitters certified prior to this date are grandfathered):

(1) Transmitters designed for voice operation shall include a 12.5 kilohertz bandwidth mode of operation conforming to the following standards: ANSI/TIA-102.BAAA-A-2003 and ANSI/TIA-102.BABA-2003.

(2) Transmitters designed for data transmission shall include a 12.5 kilohertz bandwidth mode of operation conforming to the following standards: ANSI/TIA-102.BAEA-B-2012, ANSI/TIA-102.BAAA-A-2003, ANSI/TIA-102.BAEB-A-2005, and ANSI/TIA-102.BAEE-B-2010.

(b) The Director of the Federal Register approves these incorporations by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Material incorporated by reference may be inspected at the Federal Communications Commission, 445 12th Street SW., Washington, DC (Reference Information Center) [202-418-0270] or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(1) TIA/EIA, 2500 Wilson Boulevard, Arlington, VA 22201 703-907-7974. These standards are also available from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112; or the American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036, www.ansi.org.

(i) ANSI/TIA-102.BAAA-A-2003, Project 25 FDMA-Common Air Interface, approved September 2003.

(ii) ANSI/TIA-102.BABA-2003, Project 25 Vocoder Description, approved December 2003.

(iii) ANSI/TIA-102.BAEA-B-2012, Project 25 Data Overview—New Technology Standards Project—Digital Radio Technical Standards, approved June 2012.

(iv) ANSI/TIA-102.BAEB-A-2005, Project 25 Packet Data Specification—New Technology Standards Project—Digital Radio Technical Standards, approved March 2005.

(v) ANSI/TIA-102.BAEE-B-2010, Project 25 Radio Management Protocols—New Technology Standards Project—Digital Radio Technical Standards, approved May 2010.

(2) [Reserved]

(c) Transceivers capable of operating on the narrowband Interoperability channels listed in § 90.531(b)(1) shall not be marketed or sold unless the transceiver has previously been certified for interoperability by the Compliance Assessment Program (CAP) administered by the U.S. Department of Homeland Security; provided, however, that this requirement is suspended if the CAP is discontinued. Submission of a 700 MHz narrowband radio for certification will constitute a representation by the manufacturer that the radio will be shown, by testing, to be interoperable across vendors before it is marketed or sold. In the alternative, manufacturers may employ their own protocol for verifying compliance with Project 25 standards and determining that their product is interoperable among vendors. In the event that field experience reveals that a transceiver is not interoperable, the Commission may require the manufacturer thereof to provide evidence of compliance with this section.

(d) Transceivers capable of conventional operations on the narrowband Interoperability channels listed in § 90.531(b)(1) must, at a minimum, include the following feature sets and capabilities while operating in the conventional mode to be validated for compliance with the Project 25 standards consistent with § 2.1033(c)(20) of this chapter and paragraph (c) of this section.

(1) A subscriber unit must be capable of issuing group calls in a conventional system in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 6.1 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.2.4.1, and Test Case 2.4.2.4.1.

(2) Two Project 25 standard squelch modes, Monitor Squelch and Normal Squelch, must be supported in conformance with the following standards:

TIA 102.BAAD-B Conventional Procedures (2015), Section 6.1.1.3 with validation testing according to TIA-102.CABA Conventional Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.3.4.1, Test Case 2.2.1.4.1 (Direct, normal squelch), Test Case 2.4.9.4.1 (Repeated, monitor squelch), and Test Case 2.4.1.4.1 (Repeated, normal squelch).

(3) A subscriber unit must properly implement conventional network access codes values (NAC) of \$293 and \$F7E in conformance with the following standards: TIA-102.BAAC-C Common Air Interface Reserved Values (2011), Section 2.1 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.1.4.1 and Test Case 2.2.8.4.1.

(4) A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using the same output NAC in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.1.4.1, and Test Case 2.4.2.4.1.

(5) A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using a different output NAC in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.3.4.1 and Test Case 2.4.4.4.1.

(6) A fixed conventional repeater must be able to reject (no repeat) all input transmissions with incorrect network access code (NAC) in conformance with the following standard: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.1.4.1, and Test Case 2.4.2.4.1.

(7) A fixed conventional repeater must be able to support the correct implementation of network access code (NAC) values \$F7E and \$F7F in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.5.4.1, Test Case 2.4.6.4.1, and Test Case 2.4.7.4.1.

[79 FR 39340, July 10, 2014, as amended at 79 FR 71326, Dec. 2, 2014; 83 FR 30367, June 28, 2018]

§ 90.549 Transmitter certification.

Transmitters operated in the 758-775 MHz and 788-805 MHz frequency bands must be of a type that have been authorized by the Commission under its certification procedure as required by § 90.203.

[79 FR 600, Jan. 6, 2014]

§ 90.551 Construction requirements.

Each station authorized under this subpart to operate in the 769-775 MHz and 799-805 MHz frequency bands must be constructed and placed into operation within 12 months from the date of grant of the authorization, except for State channels. However, licensees may request a longer construction period, up to but not exceeding 5 years, pursuant to § 90.155(b). State channels are subject to the build-out requirements in § 90.529.

[72 FR 48863, Aug. 24, 2007]

§ 90.553 Encryption.

(a) Encryption is permitted on all but the two nationwide Interoperability calling channels. Radios employing encryption must have a readily accessible switch or other readily accessible control that permits the radio user to disable encryption.

(b) If encryption is employed, then transmitters manufactured after August 11, 2014 must use the Advanced Encryption Standard (AES) specified in ANSI/TIA-102.AAAD-A: Project 25 Digital Land Mobile Radio-Block Encryption Protocol, approved August 20, 2009 Until 2030, manufacturers may also include the Digital Encryption Standard (DES) or Triple Data