must be protected). Since mobiles and portables are able to move and communicate with each other, licensees or coordinators must determine the areas where the mobiles can and cannot roam in order to protect the TV/DTV stations, and advise the mobile operators of these areas and their restrictions.

(iii) In order to protect certain TV/DTV stations and to ensure protection from these stations which may have extremely large contours due to unusual height situations, an additional distance factor must be used by all public safety base, control and mobile stations. For all co-channel and adjacent channel TV/DTV stations which have an HAAT between 350 and 600 meters, public safety stations must add the following DISTANCE FACTOR to the value obtained from the referenced Tables in §90.309 and to the distance for control and mobile stations on adjacent TV/DTV channels (96.5 km).

\[
\text{DISTANCE FACTOR} = \left( \frac{\text{TV/DTV HAAT} - 350}{14} \right) \text{in kilometers, where HAAT is the TV or DTV station antenna height above average terrain obtained from its authorized or proposed facilities, whichever is greater.}
\]

(iv) For all co-channel and adjacent channel TV/DTV stations which have an antenna height above average terrain greater than 600 meters, public safety stations must add 18 kilometers as the DISTANCE FACTOR to the value obtained from the referenced Tables in §90.309 and to the distance for control and mobile stations on adjacent TV/DTV channels (96.5 km).

NOTE TO §90.545: The 88.5 km (55.0 mi) Grade B service contour (64 dB μV/m) is based on a hypothetical TV station operating at an effective radiated power of one megawatt, a transmitting antenna height above average terrain of 610 meters (2,000 feet) and the Commission's R-6602 F(50,50) curves. See §73.699 of this chapter. Maximum facilities for TV stations operating in the UHF band are 5 megawatts effective radiated power at an antenna HAAT of 610 meters (2,000 feet). See §73.614 of this chapter. The equivalent contour for DTV stations is based on a 41 dBμV/m signal strength and the distance to the F(50,90) curve. See §73.625 of this chapter.

§ 90.548 Interoperability Technical Standards.

(a) Transmitters designed after August 11, 2014 to operate on the narrowband interoperability 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.

(1) Mobile and portable transmitters that are designed to operate only on the Low Power Channels specified in §90.331 (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 §90.331(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 §90.331(b)(1)(i).

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

§ 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.

(1) Mobile and portable transmitters that are designed to operate only on the Low Power Channels specified in §90.331 (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 §90.331(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 §90.331(b)(1)(i).

(b) Mobile and portable transmitters designed for data are not required to be voice capable, and vice versa.
§ 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 Encryption Algorithm (TDEA), in addition to but not in place of AES, for compatibility with legacy radios that lack AES capability. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. The standard can also be purchased from TIA/EIA, 2500 Wilson Boulevard, Arlington, VA 22201 703–907–7974; 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.

§ 90.554 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.

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