

TABLE E–7—MAXIMUM ERP (WATTS) FOR CONTROL TRANSMITTERS

| Distance to protected TV station in kilometers (miles) | Antenna height above average terrain in meters (feet) | | | | | | | | |
|--|---|----------|----------|----------|----------|-----------|-----------|-----------|-----------|
| | 30 (100) | 46 (150) | 61 (200) | 76 (250) | 91 (300) | 107 (350) | 122 (400) | 137 (450) | 152 (500) |
| 108 (67) | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 106 (66) | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 750 |
| 105 (65) | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 825 | 650 | 600 |
| 103 (64) | 1000 | 1000 | 1000 | 1000 | 1000 | 775 | 625 | 500 | 400 |
| 101 (63) | 1000 | 1000 | 1000 | 1000 | 440 | 400 | 350 | 320 | 300 |
| 100 (62) | 1000 | 1000 | 1000 | 525 | 375 | 250 | 200 | 150 | 125 |
| 98 (61) | 1000 | 700 | 450 | 250 | 200 | 125 | 100 | 75 | 50 |
| 97 (60) | 1000 | 425 | 225 | 125 | 100 | 75 | 50 | ..... | ..... |

See § 22.627(b)(2). This table applies to control transmitters in the Boston, Chicago, Cleveland, Detroit, Los Angeles, New York-Northeastern New Jersey, Philadelphia, Pittsburgh and Washington, DC urban areas. This table is for antenna heights of 152 meters (500 feet) or less above average terrain. For antenna heights between those in the table, use the next higher antenna height. For distances between those in the table, use the next lower distance.

[59 FR 59507, Nov. 17, 1994; 60 FR 9890, Feb. 22, 1995, as amended at 63 FR 68946, Dec. 14, 1998]

470–512 MHZ TRUNKED MOBILE OPERATION

§ 22.651 470–512 MHz channels for trunked mobile operation.

The following channels are allocated for assignment to transmitters providing trunked public mobile service within the specified urban areas. All channels have a bandwidth of 20 kHz and are designated by their center frequencies in MegaHertz.

| Houston | | | |
|------------------------------|-------|----------|----------|
| 488.0125 | ..... | 491.0125 | 488.0875 |
| 488.0375 | ..... | 491.0375 | 488.1125 |
| 488.0625 | ..... | 491.0625 | 488.1375 |
| New York-Northern New Jersey | | | |
| 473.0125 | ..... | 479.0125 | 473.1625 |
| 473.0375 | ..... | 479.0375 | 473.1875 |
| 473.0625 | ..... | 479.0625 | 473.2125 |
| 473.0875 | ..... | 479.0875 | 473.2375 |
| 473.1125 | ..... | 479.1125 | 473.2625 |
| 473.1375 | ..... | 479.1375 | 473.2875 |

[59 FR 59507, Nov. 17, 1994; 60 FR 9891, Feb. 22, 1995]

§ 22.653 Eligibility.

Only licensees already authorized to provide trunked mobile service or their successors in interest are eligible to apply for additional use of these channels for trunked mobile service, and then only in the urban areas already authorized.

§ 22.657 Transmitter locations.

The purpose of the rules in paragraphs (a) and (b) of this section is to define the areas in which the 470–512 MHz channels are allocated for public mobile use. The purpose of the rules in

paragraphs (c) through (f) of this section is to reduce the likelihood that interference to television reception from public mobile operations on these channels will occur. The protected TV station locations specified in paragraphs (d), (e)(1) and (f) of this section are the locations of record as of September 1974, and these do not change even though the TV stations may have been subsequently relocated.

(a) *Base transmitter locations.* Base transmitter locations must be within 80 kilometers (50 miles) of the designated locations in this paragraph. Mobile transmitters must not be operated at locations more than 129 kilometers (80 miles) from the designated locations in this paragraph. Note: All coordinates are referenced to North American Datum 1983 (NAD83).

| Urban area | N. latitude | W. longitude |
|--------------------|-------------|--------------|
| Houston, TX | 29°45'26.8" | 95°21'37.8" |
| New York, NY-NE NJ | 40°45'06.4" | 73°59'37.5" |

(b) *Mobile area of operation.* Mobile transmitters must not be operated at locations more than 48 kilometers (30 miles) from all associated base stations.

(c) *Protection from intermodulation interference.* Base transmitter locations must be at least 1.6 kilometers (1 mile) from the current main transmitter locations of all TV stations transmitting on TV channels separated by 2, 3, 4, 5, 7, or 8 TV channels from the TV channel containing the frequencies on which the base station will transmit. This requirement is intended to reduce

the likelihood of intermodulation interference.

(d) Adjacent channel protection from mobile transmitters. Base transmitter locations must be at least 145 kilometers (90 miles) from the applicable protected TV station locations specified in this paragraph. This requirement is intended to provide a 0 dB minimum desired to undesired signal strength ratio at the Grade B contour of an adjacent channel TV station. Note: All coordinates are referenced to North American Datum 1983 (NAD83).

| Control transmitter frequency range | Protected TV station location | TV channel |
|-------------------------------------|--|------------|
| 470–476 MHz. | Lancaster, PA, 40°15'45.3" N. Lat. 76°27'47.9" W. Long.. | (15) |
| 476–482 MHz. | Scranton, PA, 41°10'58.3" N. Lat. 75°52'19.7" W. Long.. | (16) |

(e) *Co-channel protection from mobile transmitters.* Base transmitter locations must be at least the distance specified in paragraph (e)(2) of this section from the applicable protected TV station locations specified in paragraph (e)(1) of this section. This requirement is intended to provide a 40 dB minimum desired to undesired signal strength ratio at the Grade B contour of a co-channel TV station.

(1) The protected TV station locations are as follows (all coordinates are referenced to North American Datum 1983 (NAD83)):

| Control transmitter frequency range | Protected TV station location |
|-------------------------------------|--|
| 470–476 MHz. | Washington, DC, 38°57'17.4" N. Lat. 77°00'15.9" W. Long. |
| 476–482 MHz. | Lancaster, PA, 40°15'45.3" N. Lat. 76°27'47.9" W. Long. |

(2) The required minimum distance depends upon the effective radiated power (ERP) of the most powerful mobile transmitter(s) in the system:

| Mobile unit ERP (watts) | Minimum distance | |
|-------------------------|------------------|-------|
| | Kilometers | Miles |
| 60 | 193 | (120) |
| 50 | 185 | (115) |
| 25 | 177 | (110) |
| 10 | 169 | (105) |
| 5 | 161 | (100) |

(f) *Co-channel protection from base transmitters with high antennas.* This paragraph applies only to base transmitter locations in the New York-Northeastern New Jersey urban area that utilize an antenna height of more than 152 meters (500 feet) above average terrain. The distance between the location of such a base transmitter and the applicable protected TV station location specified in this paragraph must equal or exceed the sum of the distance from the base transmitter location to the radio horizon in the direction of the specified location and 89 kilometers (55 miles—representing the distance from the main transmitter location of the TV station to its Grade B contour in the direction of the base transmitter). The distance to the radio horizon is calculated as follows:

$$d = \sqrt{17 \times h}$$

Where d is the distance to the radio horizon in kilometers h is the height of the antenna center of radiation above ground level in meters

NOTE: All coordinates are referenced to North American Datum 1983 (NAD83):

| Control transmitter frequency range | Protected TV station location |
|-------------------------------------|--|
| 470–476 MHz. | Washington, DC, 38°57'17.4" N. Lat. 77°00'15.9" W. Long. |
| 476–482 MHz. | Lancaster, PA, 40°15'45.3" N. Lat. 76°27'47.9" W. Long. |

(g) The FCC may waive specific distance separation requirements of paragraphs (d) through (f) of this section if the applicant submits an engineering analysis which demonstrates that terrain effects and/or operation with less effective radiated power would satisfy the applicable minimum desired to undesired signal strength ratios at the Grade B contours of the protected TV stations. For this purpose, the Grade B contour of a TV station is deemed to be a circle with a 89 kilometer (55 mile) radius, centered on the protected TV station location, and along which the median TV signal field strength is 64 dBµV/m. In any showing intended to demonstrate compliance with the minimum desired to undesired signal ratio requirements of this section, all predicted field strengths must have been

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determined using the UHF TV propagation curves contained in part 73 of this chapter.

[59 FR 59507, Nov. 17, 1994, as amended at 63 FR 68947, Dec. 14, 1998]

§ 22.659 Effective radiated power limits.

The purpose of the rules in this section, which limit effective radiated power (ERP), is to reduce the likelihood that interference to television reception from public mobile operations on these channels will occur. The protected TV station locations specified in this section are the locations of record as of September 1974, and these do not change even though the TV stations may have been subsequently relocated.

(a) *Maximum ERP.* The ERP of base transmitters must not exceed 100 Watts under any circumstances. The ERP of mobile transmitters must not exceed 60 Watts under any circumstances.

(b) *Co-channel protection from base transmitters.* The ERP of base transmitters in the New York-Northeastern New Jersey urban area must not exceed the limits in the tables referenced in paragraphs (b)(2) and (b)(3) of this section. The limits depend upon the height above average terrain of the base transmitter antenna and the distance between the base transmitter and the nearest protected TV station location in paragraph (b)(1) of this section.

(1) The protected TV station locations are as follows (all coordinates are referenced to North American Datum 1983 (NAD83)):

| Control transmitter frequency range | Protected TV station location |
|-------------------------------------|--|
| 470–476 MHz. | Washington, DC, 38°57'17.4" N. Lat. 77°00'15.9" W. Long. |
| 476–482 MHz. | Lancaster, PA, 40°15'45.3" N. Lat. 76°27'47.9" W. Long. |

(2) Tables E-8 and E-9 of this section apply to base transmitters in the New York-Northeastern New Jersey urban area that transmit on channels in the 476–482 MHz range.

(3) Tables E-10 and E-11 of this section apply to base transmitters in the New York-Northeastern New Jersey urban area that transmit on channels in the 470–476 MHz range.

(c) *Adjacent channel protection from base transmitters.* The ERP of base transmitters must not exceed the limits in Table E-12 of this section. The limits depend upon the height above average terrain of the base transmitter antenna and the distance between the base transmitter and the nearest protected TV station location specified in paragraph (c)(1) of this section.

(1) The protected TV station locations are as follows (all coordinates are referenced to North American Datum 1983 (NAD83)):

| Control transmitter frequency range | Protected TV station location | TV channel |
|-------------------------------------|--|------------|
| 470–476 MHz | Hanover, NH, 43°42'30.3" N. Lat. 72°09'14.3" W. Long | (15) |
| 476–482 MHz | Lancaster, PA, 40°15'45.3" N. Lat. 76°27'47.9" W. Long | (15) |
| 482–488 MHz | Scranton, PA, 41°10'58.3" N. Lat. 75°52'19.7" W. Long | (16) |
| | Hanover, NH, 43°42'30.3" N. Lat. 72°09'14.3" W. Long | (15) |

NOTE: Coordinates are referenced to North American Datum 1983 (NAD83).

(2) Table E-12 of this section applies to base transmitters in the New York-Northeastern New Jersey urban area.

TABLE E-8—MAXIMUM ERP (WATTS) FOR BASE TRANSMITTERS (HAAT 152 METERS OR LESS)

| Distance to protected TV station in kilometers (miles) | Antenna height above average terrain in meters (feet) | | | | | | | | | |
|--|---|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|
| | 15 (50) | 30 (100) | 46 (150) | 61 (200) | 76 (250) | 91 (300) | 107 (350) | 122 (400) | 137 (450) | 152 (500) |
| 209 (130) | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 201 (125) | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 850 | 750 | 725 |
| 193 (120) | 1000 | 1000 | 1000 | 1000 | 900 | 750 | 675 | 600 | 550 | 500 |
| 185 (115) | 1000 | 1000 | 800 | 725 | 600 | 525 | 475 | 425 | 375 | 350 |
| 177 (110) | 850 | 700 | 600 | 500 | 425 | 375 | 325 | 300 | 275 | 225 |
| 169 (105) | 600 | 475 | 400 | 325 | 275 | 250 | 225 | 200 | 175 | 150 |
| 161 (100) | 400 | 325 | 275 | 225 | 175 | 150 | 140 | 125 | 110 | 100 |