

470.0375	.....	470.1875		473.0375	.....	473.1875
470.0625	.....	470.2125		473.0625	.....	473.2125
470.0875	.....	470.2375		473.0875	.....	473.2375
470.1125	.....	470.2625		473.1125	.....	473.2625
470.1375	.....	470.2875		473.1375	.....	473.2875

San Francisco

482.0125	.....	485.0125		488.0125	.....	491.0125
482.0375	.....	485.0375		488.0375	.....	491.0375
482.0625	.....	485.0625		488.0625	.....	491.0625
482.0875	.....	485.0875		488.0875	.....	491.0875
482.1125	.....	485.1125		488.1125	.....	491.1125
482.1375	.....	485.1375		488.1375	.....	491.1375
482.1625	.....	485.1625		488.1625	.....	491.1625
482.1875	.....	485.1875		488.1875	.....	491.1875
482.2125	.....	485.2125		488.2125	.....	491.2125
482.2375	.....	485.2375		488.2375	.....	491.2375
482.2625	.....	485.2625		488.2625	.....	491.2625
482.2875	.....	485.2875		488.2875	.....	491.2875

Washington, DC

488.0125	.....	491.0125		494.0125	.....	497.0125
488.0375	.....	491.0375		494.0375	.....	497.0375
488.0625	.....	491.0625		494.0625	.....	497.0625
488.0875	.....	491.0875		494.0875	.....	497.0875
488.1125	.....	491.1125		494.1125	.....	497.1125
488.1375	.....	491.1375		494.1375	.....	497.1375
488.1625	.....	491.1625		494.1625	.....	497.1625
488.1875	.....	491.1875		494.1875	.....	497.1875
488.2125	.....	491.2125		494.2125	.....	497.2125
488.2375	.....	491.2375		494.2375	.....	497.2375
488.2625	.....	491.2625		494.2625	.....	497.2625
488.2875	.....	491.2875		494.2875	.....	497.2875

[59 FR 59507, Nov. 17, 1994; 60 FR 9890, Feb. 22, 1995, as amended at 61 FR 54099, Oct. 17, 1996; 65 FR 17448, Apr. 3, 2000]

§ 22.623 System configuration.

This section requires a minimum configuration for point-to-multipoint systems using the channels listed in § 22.621.

(a) *928-960 MHz.* The channels may be assigned, individually or paired, only to fixed transmitters in a system that controls at least four public mobile base transmitters that transmit on the same channel. If a 932-933 MHz channel and a 941-942 MHz channel are assigned as a pair, the 941-942 MHz channel must be assigned only to control transmitters; the 932-933 MHz channel may be assigned to control or fixed relay transmitters.

(b) *470-512 MHz.* These channels may be assigned only individually (unpaired), to control transmitters that directly control at least four public mobile base transmitters that transmit on the same channel. Fixed relay transmitters are not authorized.

(c) *Selection and assignment.* The FCC selects and assigns a channel when granting applications for authorization to operate a new station to transmit in the 470-512, 932-933 and 941-942 MHz fre-

quency ranges. Applicants having a preference may request the assignment of a specific channel or channel pair, but the FCC may in some cases be unable to satisfy such requests.

§ 22.625 Transmitter locations.

This section governs where point-to-multipoint transmitters on the channels listed in § 22.621 may be located.

(a) *928-960 MHz.* In this frequency range, the required minimum distance separation between co-channel fixed transmitters is 113 kilometers (70 miles).

(b) *470-512 MHz.* The purpose of the rule in paragraph (b)(1) 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 (b)(2) and (b)(3) of this section is to reduce the likelihood that interference to television reception from public mobile operations on these channels will occur.

(1) *Control transmitter locations.* Control transmitter locations must be within 80 kilometers (50 miles) of the designated locations in this paragraph.

Urban area	N. latitude	W. longitude
Boston, MA	42°21'24.4"	71°03'22.2"
Chicago, IL	41°52'28.1"	87°38'22.2"
Cleveland, OH	41°29'51.2"	81°41'49.5"
Dallas, TX	32°47'09.5"	96°47'38.0"
Detroit, MI	42°19'48.1"	83°02'56.7"
Houston, TX	29°45'26.8"	95°21'37.8"
Los Angeles, CA	34°03'15.0"	118°14'31.3"
Miami, FL	25°46'38.6"	80°11'31.2"
New York, NY	40°45'6.4"	73°59'37.5"
Philadelphia, PA	39°56'58.4"	75°09'19.6"
Pittsburgh, PA	40°26'19.2"	79°59'59.2"
San Francisco-Oakland, CA	37°46'38.7"	122°24'43.9"
Washington, DC	38°53'51.4"	77°00'31.9"

NOTE: Coordinates are referenced to North American Datum 1983 (NAD 83).

(2) *Protection from intermodulation interference.* Control transmitter locations must be at least 1.6 kilometers (1 mile) from the 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 control station will transmit. This requirement is intended to reduce the likelihood of intermodulation interference.

(3) *Co-channel protection from control transmitters with high antennas.* This paragraph applies only to control transmitters that utilize an antenna

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height of more than 152 meters (500 feet) above average terrain. The distance between the location of such a control transmitter and the applicable protected TV station location specified in this paragraph must equal or exceed the sum of the distance from the control 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 control transmitter). The protected TV station locations in this paragraph are the locations of record as of September 1974, and these do not change even though the TV stations may have been subsequently relocated.

(i) The protected TV station locations are as follows:

Control transmitter frequency range	Protected TV station location
470–476 MHz.	Washington, DC 38°57'17" 77°00'17"
476–482 MHz.	Lancaster, PA 40°15'45" 76°27'49"

(ii) The distance to the radio horizon is calculated using the following formula:

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

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

[59 FR 59507, Nov. 17, 1994, as amended at 63 FR 68946, Dec. 14, 1998, 70 FR 19309, Apr. 13, 2005]

§ 22.627 **Effective radiated power limits.**

The effective radiated power (ERP) of transmitters operating on the channels listed in § 22.621 must not exceed the limits in this section.

(a) *Maximum ERP.* The ERP must not exceed the applicable limits in this paragraph under any circumstances.

Frequency range (MHz)	Maximum ERP (watts)
470–512	1000
928–929	50
932–933	30

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Frequency range (MHz)	Maximum ERP (watts)
941–942	600
952–960	150

(b) *470–512 MHz limits.* The purpose of the rules in paragraphs (b)(1) through (b)(3) 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 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.

(1) *Co-channel protection.* The ERP of control transmitters must not exceed the limits in the tables in paragraphs (b)(1)(ii) and (b)(1)(iii) of this section. The limits depend upon the height above average terrain of the control transmitter antenna and the distance between the control transmitter and the nearest protected TV station location in paragraph (b)(1)(i) of this section.

(i) 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	Jacksonville, IL, 39°45'52.2" N. Lat. 90°30'29.5" W. Long. Mt. Pleasant, MI, 43°34'24.1" N. Lat. 84°46'21.1" W. Long.