

at locations north of line A that are within 48 km (30 miles) of the city center. In addition, low power (2 watts or less) base stations may locate within 80 km (50 miles) of the center of Buffalo. The following coordinates shall be used for the centers of these areas (coordinates are referenced to North American Datum 1983 (NAD83)):

- Buffalo, 42°52'52.2" North latitude.
NY, 78°52'20.1" West longitude.
- Cleveland, 41°29'51.2" North latitude.
OH, 81°41'49.5" West longitude.
- Detroit, 42°19'48.1" North latitude.
MI, 83°02'56.7" West longitude.

(d) Mobile operation shall be confined to within 80 km (50 miles) of the centers of Detroit, Cleveland, or Buffalo.

[52 FR 6156, Mar. 2, 1987, as amended at 54 FR 38681, Sept. 20, 1989; 58 FR 31476, June 3, 1993; 58 FR 44957, Aug. 25, 1993; 60 FR 37269, July 19, 1995; 61 FR 6576, Feb. 21, 1996; 62 FR 18929, Apr. 17, 1997; 63 FR 68965, Dec. 14, 1998]

§ 90.275 Selection and assignment of frequencies in the 421–430 MHz band.

Applicants must specify the frequencies in which the proposed system will operate pursuant to a recommendation by a frequency coordinator certified for the pool in which the requested frequency is assigned.

[62 FR 18932, Apr. 17, 1997]

§ 90.279 Power limitations applicable to the 421–430 MHz band.

(a) Base station authorizations in the 421–430 MHz band will be subject to Effective Radiated Power (ERP) and Effective Antenna Height (EAH) limitations as shown in the table below. ERP is defined as the product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction. EAH is calculated by subtracting the Assumed Average Terrain Elevation (AATE) as listed in table 7 of §90.619 from the antenna height above mean sea level.

LIMITS OF EFFECTIVE RADIATED POWER (ERP) CORRESPONDING TO EFFECTIVE ANTENNA HEIGHTS (EAH) OF BASE STATIONS IN THE 421–430 MHz BAND

Effective antenna height (EAH) in meters (feet)	Maximum effective radiated power (ERP) (watts)
0–152 (0–500)	250
Above 152–305 (above 500–1000)	150
Above 305–457 (above 1000–1500)	75
Above 457–610 (above 1500–2000)	40
Above 610–762 (above 2000–2500)	20
Above 762–914 (above 2500–3000)	15
Above 914–1219 (above 3000–4000)	10
Above 1219 (above 4000)	5

(b) The maximum transmitter power output that will be authorized for control stations is 20 watts.

[52 FR 6157, Mar. 2, 1987, as amended at 58 FR 44957, Aug. 25, 1993]

§ 90.281 Restrictions on operational fixed stations in the 421–430 MHz band.

(a) Except for control stations, operational fixed facilities will not be authorized in the 421–430 MHz band. This does not preclude secondary fixed tone signaling and alarm operations authorized in §90.235.

(b) Control stations associated with one or more mobile relay stations will be authorized only on the assigned frequency of the associated mobile station. Use of a mobile service frequency by a control station of a mobile relay system is subject to the condition that harmful interference shall not be caused to stations of licensees authorized to use the frequency for mobile service communications.

[52 FR 6158, Mar. 2, 1987, as amended at 54 FR 38681, Sept. 20, 1989]

§ 90.283 [Reserved]

Subpart L—Authorization in the Band 470–512 MHz (UHF-TV Sharing)

§ 90.301 Scope.

This subpart governs the authorization and use of frequencies by land mobile stations in the band 470–512 MHz on a geographically shared basis with Television Broadcast stations. Under this

special sharing plan, different frequencies are allocated depending on the geographic urban area involved as fully detailed in the following rule sections.

[43 FR 54791, Nov. 22, 1978, as amended at 62 FR 18932, Apr. 17, 1997]

§ 90.303 Availability of frequencies.

(a) Frequencies in the band 470–512 MHz are available for assignment as

described below. Note: coordinates are referenced to the North American Datum 1983 (NAD83).

(b) The following table lists frequency bands that are available for assignment in specific urban areas. The available frequencies are listed in § 90.311 of this part.

Urbanized area	Geographic center		Bands (MHz)	TV channels
	North latitude	West longitude		
Boston, MA	42° 21' 24.4"	71° 03' 23.2"	470–476, 482–488	14, 16
Chicago, IL ¹	41° 52' 28.1"	87° 38' 22.2"	470–476, 476–482	14, 15
Cleveland, OH ²	41° 29' 51.2"	81° 49' 49.5"	470–476, 476–482	14, 15
Dallas/Fort Worth, TX	32° 47' 09.5"	96° 47' 38.0"	482–488	16
Detroit, MI ³	42° 19' 48.1"	83° 02' 56.7"	476–482, 482–488	15, 16
Houston, TX	29° 45' 26.8"	95° 21' 37.8"	488–494	17
Los Angeles, CA ⁴	34° 03' 15.0"	118° 14' 31.3"	470–476, 482–488, 506–512	14, 16, 20
Miami, FL	25° 46' 38.4"	80° 11' 31.2"	470–476	14
New York/NE NJ	40° 45' 06.4"	73° 59' 37.5"	470–476, 476–482, 482–488	14, 15, 16
Philadelphia, PA	39° 56' 58.4"	75° 09' 19.6"	500–506, 506–512	19, 20
Pittsburgh, PA	40° 26' 19.2"	79° 59' 59.2"	470–476, 494–500	14, 18
San Francisco/Oakland, CA ..	37° 46' 38.7"	122° 24' 43.9"	482–488, 488–494	16, 17
Washington, DC/MD/VA	38° 53' 51.4"	77° 00' 31.9"	488–494, 494–500	17, 18

¹ In the Chicago, IL, urbanized area, channel 15 frequencies may be used for paging operations in addition to low power base/mobile usages, where applicable protection requirements for ultrahigh frequency television stations are met.

² Channels 14 and 15 are not available in Cleveland, OH, until further order from the Commission.

³ Channels 15 and 16 are not available in Detroit, MI, until further order from the Commission.

⁴ Channel 16 is available in Los Angeles for use by eligibles in the Public Safety Radio Pool.

(c) The band 482–488 MHz (TV Channel 16) is available for use by eligibles in the Public Safety Radio Pool in the following areas: New York City; Nassau, Suffolk, and Westchester counties in New York State; and Bergen County, New Jersey. All part 90 rules shall apply to said operations, except that:

(1) *Location of stations.* Base stations shall be located in the areas specified in this paragraph (c). Mobile stations may operate throughout the areas specified in this paragraph (c) and may additionally operate in areas not specified in this paragraph (c) provided that the distance from the Empire State Building (40° 44' 54.4" N, 73° 59' 8.4" W) does not exceed 48 kilometers (30 miles).

(2) *Protection criteria.* In order to provide co-channel television protection, the following height and power restrictions are required:

(i) Except as specified in paragraph (c)(2)(ii) of this section, base stations shall be limited to a maximum effective radiated power (ERP) of 225 watts

at an antenna height of 152.5 meters (500 feet) above average terrain (AAT). Adjustment of the permitted power will be allowed provided it is in accordance with the “169 kilometer Distance Separation” entries specified in Table B in 47 CFR 90.309(a) or the “LM/TV Separation 110 miles (177 km)” curve in Figure B in 47 CFR 90.309(b).

(ii) For base stations located west of the Hudson River, Kill Van Kull, and Arthur Kill, the maximum ERP and antenna height shall be limited to the entries specified in Table B in 47 CFR 90.309(a) or in Figure B in 47 CFR 90.309(b) for the actual separation distance between the base station and the transmitter site of WNEP-TV in Scranton, PA (41° 10' 58.0" N, 75° 52' 20.0" W).

(iii) Mobile stations shall be limited to 100 watts ERP in areas of operation extending eastward from the Hudson River and to 10 watts ERP in areas of operation extending westward from the Hudson River.

[69 FR 31907, June 8, 2004]

§ 90.305 Location of stations.

(a) The transmitter site(s) for base station(s), including mobile relay stations, shall be located not more than 80 km. (50 mi.) from the geographic center of the urbanized area listed in § 90.303.

(b) Mobile units shall be operated within 48 km. (30 mi.) of their associated base station or stations. Such units may not be operated aboard aircraft in flight except as provided for in § 90.315(i).

(c) Control stations must be located within the area of operation of the mobile units.

(d) Base and control stations shall be located a minimum of 1.6 km. (1 mi.) from local television stations operating on UHF TV channels separated by 2, 3, 4, 5, 7, and 8 TV channels from the television channel in which the base station will operate.

§ 90.307 Protection criteria.

The tables and figures listed in § 90.309 shall be used to determine the proper power (ERP) and antenna height of the proposed land mobile base station and the proper power (ERP) for the associated control station (control station antenna height shall not exceed 31 m. (100 ft.) above average terrain (AAT)).

(a) Base stations operating on the frequencies available for land mobile use in any listed urbanized area and having an antenna height (AAT) less than 152 m. (500 ft.) shall afford protection to co-channel and adjacent channel television stations in accordance with the values set out in tables A and E of this subpart, except for Channel 15 in New York, NY, and Cleveland, OH, and Channel 16 in Detroit, MI, where protection will be in accordance with the values set forth in tables B and E.

(b) For base stations having antenna heights between 152-914 meters (500-3,000 ft.) above average terrain, the effective radiated power must be reduced below 1 kilowatt in accordance with the values shown in the power reduction graph in Figure A, except for Channel 15 in New York, NY, and Cleveland, OH, and Channel 16 in Detroit, MI, where the effective radiated power must be reduced in accordance with Figure B. For heights of more than 152 m. (500 ft.) above average ter-

rain, the distance to the radio path horizon will be calculated assuming smooth earth. If the distance so determined equals or exceeds the distance to the Grade B contour of a co-channel TV station, (Grade B contour defined in § 73.683(a)) an authorization will not be granted unless it can be shown that actual terrain considerations are such as to provide the desired protection at the Grade B contour, or that the effective radiated power will be further reduced so that, assuming free space attenuation, the desired protection at the Grade B contour will be achieved.

(c) Mobile units and control stations operating on the frequencies available for land mobile use in any given urbanized area shall afford protection to co-channel and adjacent channel television stations in accordance with the values set forth in table C and paragraph (d) of this section except for Channel 15 in New York, NY, and Cleveland, OH, and Channel 16 in Detroit, MI, where protection will be in accordance with the values set forth in table D and paragraph (d) of this section.

(d) The minimum distance between a land mobile base station which has associated mobile units and a protected adjacent channel television station is 145 km (90 miles) .

(e) The television stations to be protected (co-channel, adjacent channel, IM, and IF) in any given urbanized area, in accordance with the provisions of paragraphs (a), (b), (c), and (d) of this section, are identified in the commission's publication "TV stations to be considered in the preparation of Applications for Land Mobile Facilities in the Band 470-512 MHz." The publication is available at the offices of the Federal Communications Commission at Washington, DC or upon the request of interested persons.

[43 FR 54791, Nov. 22, 1978, as amended at 49 FR 36107, Sept. 14, 1984; 58 FR 44957, Aug. 25, 1993]

§ 90.309 Tables and figures.

(a) *Directions for using the tables.* (1) Using the method specified in § 1.958 of this chapter, determine the distances between the proposed land mobile base station and the protected co-channel

television station and between the proposed land mobile base station and the protected adjacent channel television station. If the exact mileage does not appear in table A for protected co-channel television stations (or table B for channel 15 in New York and Cleveland and channel 16 in Detroit) or table E for protected adjacent channel television stations, the next lower mileage separation figure is to be used.

(2) Entering the proper table at the mileage figure found in paragraph (a)(1) of this section, find opposite, a selection of powers that may be used for antenna heights ranging from 15 m (50 ft) to 152.5 m (500 ft) (AAT). If the exact antenna height proposed for the land mobile base station does not appear in the proper table, use the power figure beneath the next greater antenna height.

(3) The lowest power found using the tables mentioned in paragraphs (a)(1) and (a)(2) of this section is the maximum power that may be employed by the proposed land mobile base station.

(4) In determining the average elevation of the terrain, the elevations between 3.2 km (2 mi) and 16 km (10 mi) from the antenna site are employed. Profile graphs shall be drawn for a minimum of eight radials beginning at the antenna site and extending 16 km (10 mi). The radials should be drawn starting with true north. At least one radial should be constructed in the direction of the nearest cochannel and adjacent channel UHF television stations. The profile graph for each radial shall be plotted by contour intervals of from 12.2 m (40 ft) to 30.5 m (100 ft) and,

where the data permits, at least 50 points of elevation (generally uniformly spaced) should be used for each radial. For very rugged terrain 61 m (200 ft) to 122 m (400 ft) contour intervals may be used. Where the terrain is uniform or gently sloping, the smallest contour interval indicated on the topographic chart may be used. The average elevation of the 12.8 km (8-mile) distance between 3.2 km (2 mi) and 16 km (10 mi) from the antenna site should be determined from the profile graph for each radial. This may be obtained by averaging a large number of equally spaced points, by using a planimeter, or by obtaining the median elevation (that exceeded by 50 percent of the distance) in sectors and averaging those values. In the preparation of the profile graphs, the elevation or contour intervals may be taken from U.S. Geological Survey Topographic Maps, U.S. Army Corps of Engineers Maps, or Tennessee Valley Authority Maps. Maps with a scale of 1:250,000 or larger (such as 1:24,000) shall be used. Digital Terrain Data Tapes, provided by the National Cartographic Institute, U.S. Geological Survey, may be utilized in lieu of maps, but the number of data points must be equal to or exceed that special above. If such maps are not published for the area in question, the next best topographic information should be used.

(5) Applicants for base stations in the Miami, FL, urbanized area may, in lieu of calculating the height of average terrain, use 3 m (10 ft) as the average terrain height.

TABLE A—BASE STATION—COCHANNEL FREQUENCIES (50 DB PROTECTION) MAXIMUM EFFECTIVE RADIATED POWER (ERP)¹

Distance in kilometers (miles): ²	Antenna height in meters (feet) (AAT)									
	15 (50)	30.5 (100)	45 (150)	61 (200)	76 (250)	91.5 (300)	106 (350)	122 (400)	137 (450)	152.5 (500)
260 (162)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
257 (160)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	800
249 (155)	1,000	1,000	1,000	1,000	1,000	875	775	700	625	575
241 (150)	1,000	1,000	950	775	725	625	550	500	450	400
233 (145)	850	750	650	575	500	440	400	350	320	300
225 (140)	600	575	475	400	350	300	275	250	230	225
217 (135)	450	400	335	300	255	240	200	185	165	150
209 (130)	350	300	245	200	185	160	145	125	120	100
201 (125)	225	200	170	150	125	110	100	90	80	75
193 (120)	175	150	125	105	90	80	70	60	55	50

¹ The effective radiated power (ERP) and antenna height above average terrain (AAT) shall not exceed the values given in this table.

² At this distance from transmitter site of protected UHF television station.

TABLE B—BASE STATION—COCHANNEL FREQUENCIES (40 dB PROTECTION) MAXIMUM EFFECTIVE RADIATED POWER (ERP)¹

Distance in kilometers (miles): ²	Antenna height in meters (feet) (AAT)									
	15 (50)	30.5 (100)	45 (150)	61 (200)	76 (250)	91.5 (300)	106 (350)	122 (400)	137 (450)	152.5 (500)
209 (130)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
201 (125)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	850	750	725
193 (120)	1,000	1,000	1,000	1,000	900	750	675	600	550	500
185 4(115)	1,000	1,000	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
153 (95)	275	225	175	125	110	95	80	70	60	50
145 (90)	175	125	100	75	50					

¹ The effective radiated power (ERP) and antenna height above average terrain (AAT) shall not exceed the values given in this table.

² At this distance from transmitter site of protected UHF television station.

TABLE C—MOBILE AND CONTROL STATION—DISTANCE BETWEEN ASSOCIATED BASE STATION AND PROTECTED COCHANNEL TV STATION

[50 dB protection]

Effective radiated power (watts) of mobile unit and control station	Distance	
	Kilometers	Miles
200	249	155
150	243	151
100	233	145
50	217	135
25	201	125
10	188	117
5	180	112

TABLE D—MOBILE AND CONTROL STATION—DISTANCE BETWEEN ASSOCIATED LAND MOBILE BASE STATION AND PROTECTED COCHANNEL TV STATION

[40 dB protection]

Effective radiated power (watts) of mobile unit and control station	Distance	
	Kilometers	Miles
200	209	130
150	201	125
100	193	120
50	185	115
25	177	110
10	169	105
5	161	100

TABLE E—BASE STATION ADJACENT CHANNEL FREQUENCIES MAXIMUM EFFECTIVE RADIATED POWER (ERP)¹

Distance in kilometers (miles): ^{2,3}	Antenna height in meters (feet) (AAT)									
	15 (50)	30.5 (100)	45 (150)	61 (200)	76 (250)	91.5 (300)	106 (350)	122 (400)	137 (450)	152.5 (500)
108 (67)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
106 (66)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	750
104 (65)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	825	650	600
103 (64)	1,000	1,000	1,000	1,000	1,000	1,000	775	625	500	400
101 (63)	1,000	1,000	1,000	1,000	1,000	650	450	325	325	225
99 (62)	1,000	1,000	1,000	1,000	525	375	250	200	150	125
98 (61)	1,000	1,000	700	450	250	200	125	100	75	50
96 (60)	1,000	1,000	425	225	125	100	75	50		

¹ The effective radiated power (ERP) and antenna height above average terrain (AAT) shall not exceed the values given in this table.

² At this distance from transmitter site of protected UHF television station.

³ The minimum distance is 145 km (90 miles) where there are mobile units associated with the base station. See sec. 90.307(d).

TABLE "F"—DECIBEL REDUCTION/POWER EQUIVALENTS

dB reduction below 1 kW	ERP permitted (figures rounded)
1	795
2	630
3	500
4	400
5	315

TABLE "F"—DECIBEL REDUCTION/POWER EQUIVALENTS—Continued

dB reduction below 1 kW	ERP permitted (figures rounded)
6	250
7	200
8	160
9	125
10	100

TABLE “F”—DECIBEL REDUCTION/POWER EQUIVALENTS—Continued

dB reduction below 1 kW	ERP permitted (figures rounded)
11	80
12	65
13	50
14	40
15	30
16	25
17	20
18	15
19	12
20	10
21	8
22	6
23	5
24	4
25	3
26	2.5
27	2
28	1.5
29	1.25
30	1

(b) *Directions for Using the Figures.* (1) Determine antenna height above average terrain. (According to §90.309(a)(4).)

(2) Locate this value on the antenna height axis.

(3) Determine the separation between the LM antenna site and the nearest protected co-channel TV station. (According to §73.611.)

(4) Draw a vertical line to intersect the LM/TV separation curve at the distance determined in step 3 above. For distances not shown in the graph use linear interpolation.

(5) From the intersection of the LM/TV separation curve draw a horizontal line to the power reduction scale.

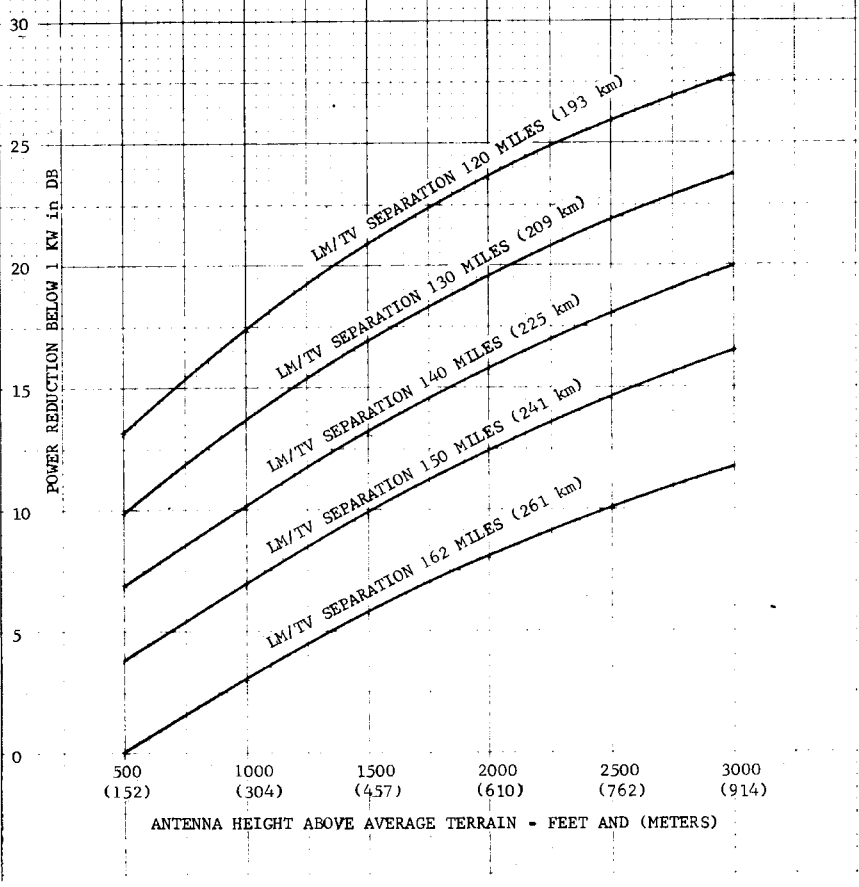
(6) The power reduction in dB determines the reduction below 1 kW that must be achieved.

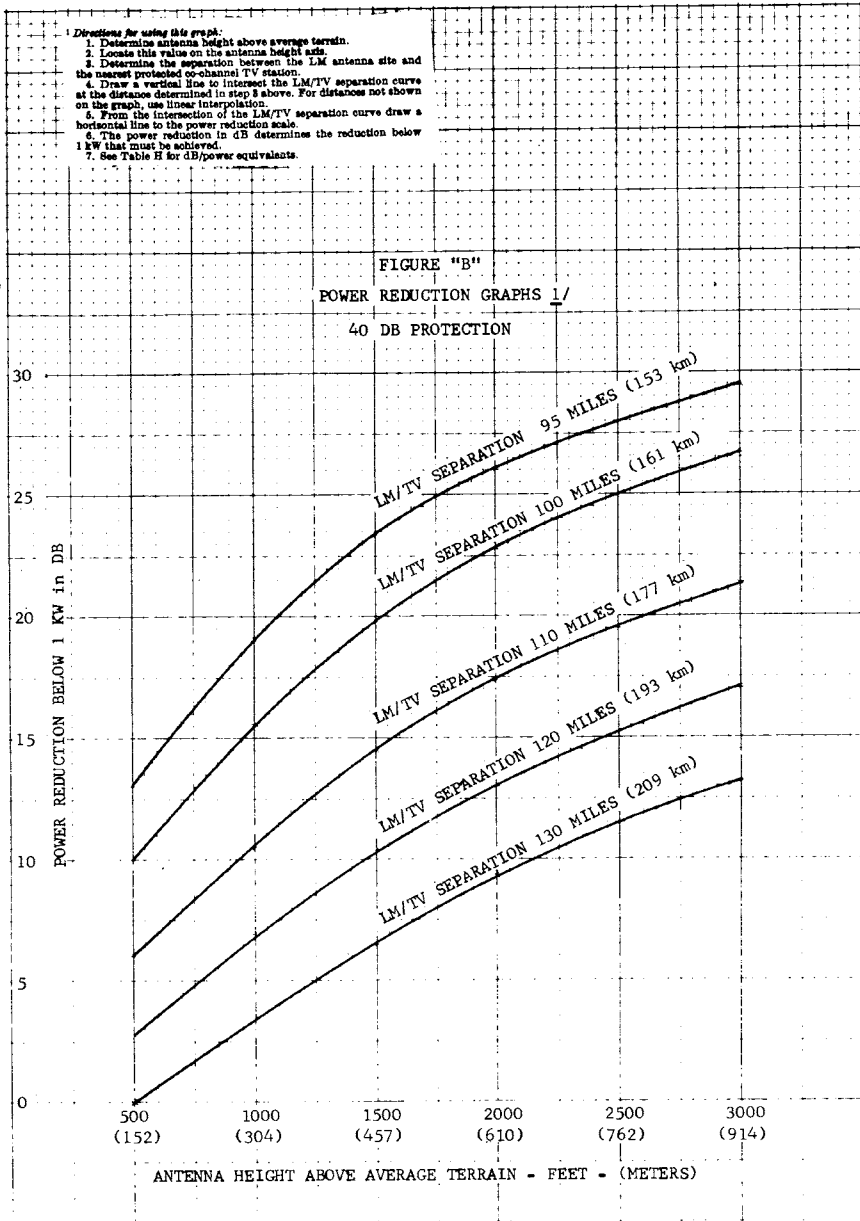
(7) See table F for dB/power equivalents.

- Directions for using this graph:**
1. Determine antenna height above average terrain.
 2. Locate this value on the antenna height axis.
 3. Determine the separation between the LM antenna site and the nearest protected co-channel TV station.
 4. Draw a vertical line to intersect the LM/TV separation curve at the distance determined in step 3 above. For distances not shown on the graph, use linear interpolation.
 5. From the intersection of the LM/TV separation curve draw a horizontal line to the power reduction scale.
 6. The power reduction in dB determines the reduction below 1 kW that must be achieved.
 7. See Table II for dB/power equivalents.

FIGURE "A"

POWER REDUCTION GRAPHS 1/
50 DB PROTECTION





(Section 0.231(d) of the Commission's Rules and secs. 4(i) and 303 of the Communications Act, as amended)

[43 FR 54791, Nov. 22, 1978, as amended at 49 FR 36107, Sept. 14, 1984; 49 FR 49837, Dec. 17, 1984; 58 FR 44958, Aug. 25, 1993; 70 FR 19312, Apr. 13, 2005]

§ 90.311 Frequencies.

(a) Except as provided for in § 90.315 and except for those frequencies allocated to services in part 22 of this chapter (see §§ 22.591, 22.621, 22.651, and 22.1007 of this chapter) the following frequencies in the band 470–512 MHz

may be assigned as indicated in the table below. The first and last assignable frequencies are shown. Assignable frequencies occur in increments of 6.25 kHz. The separation between base and mobile transmit frequencies is 3 MHz for two frequency operation.

Channel Assignment	Urbanized Area	General access pool	
		Base and mobile	Mobile
14	Boston, MA	470.30625 to 472.99375	473.30625 to 475.99375
	Chicago, IL		
	Cleveland, OH		
	Miami, FL		
	New York/N.E. NJ		
	Pittsburgh, PA		
15	Los Angeles, CA	470.05625 to 472.99375	473.05625 to 475.99375
	Chicago, IL	476.30625 to 478.99375	479.30625 to 481.99375
	Cleveland, OH		
16	Detroit, MI	482.30625 to 484.99375	485.30625 to 487.99375
	New York/N.E. NJ		
	Boston, MA		
	Dallas/Fort Worth, TX		
17	Detroit, MI	488.30625 to 490.99375	491.30625 to 493.99375
	San Francisco/Oakland, CA		
	Los Angeles, CA (Use is restricted to Public Safety Pool eligibles).		
	Houston, TX		
18	San Francisco/Oakland, CA	494.30625 to 496.99375	497.30625 to 499.99375
	Washington, DC/MD/VA		
19	Pittsburgh, PA	500.30625 to 502.99375	503.30625 to 505.99375
	Philadelphia, PA		
20	Los Angeles, CA	506.13125 to 508.99375	509.13125 to 511.99375
	Philadelphia, PA	506.30625 to 508.99375	509.30625 to 511.99375

(1) Channel availability in the General Access Pool in any of the urbanized areas referred to in the table depends on whether that channel is presently assigned to one of the following categories of users:

- (i) Public safety (as defined in § 90.20(a));
- (ii) Power and telephone maintenance licensees (as defined in § 90.7);
- (iii) Special industrial licensees (as defined in § 90.7);
- (iv) Business licensees (as defined in § 90.35(a));
- (v) Petroleum, forest products, and manufacturers licensees (as defined in § 90.7);
- (vi) Railroad, motor carrier, and automobile emergency licensees (as defined in § 90.7); and
- (vii) Taxicab licensees (as defined in § 90.7).

(2) If assigned, subsequent authorizations will only be granted to users from the same category. If unassigned, or should a channel subsequently become

unassigned, it will be treated as available in the General Access Pool.

(3) Normally, each channel should be substantially loaded in accordance with the standards set out in § 90.313.

(4) The following frequencies will be authorized a maximum bandwidth of 6 kHz.

Channel	Frequency
14	470.30625 475.99375
15	476.30625 481.99375
16	482.30625 487.99375
17	488.30625 493.99375
18	494.30625 499.99375
19	500.30625 505.99375
20	506.30625 511.99375

(b) [Reserved]

[43 FR 54791, Nov. 22, 1978, as amended at 44 FR 49692, Aug. 24, 1979; 51 FR 4362, Feb. 4, 1986; 60 FR 37272, July 19, 1995; 62 FR 2041, Jan. 15, 1997; 62 FR 18932, Apr. 17, 1997; 64 FR 36270, July 6, 1999]

§ 90.313 Frequency loading criteria.

(a) Except as provided for in paragraph (b) of this section, the maximum channel loading on frequencies in the 470–512 MHz band is as follows:

(1) 50 units for systems eligible in the Public Safety Pool (see § 90.20(a)).

(2) 90 units for systems eligible in the Industrial/Business Pool (see § 90.35(a)).

(b) If a licensee has exclusive use of a frequency, then the loading standards in paragraph (a) of this section, may be exceeded. If it is a shared channel, the loading standards can be exceeded upon submission of a signed statement by all those sharing the channel agreeing to the increase.

(c) A unit is defined as a mobile transmitter-receiver. Loading standards will be applied in terms of the number of units actually in use or to be placed in use within 8 months following authorization. A licensee will be required to show that an assigned frequency pair is at full capacity before it may be assigned a second or additional frequency pair. Channel capacity may be reached either by the requirements of a single licensee or by several users sharing a channel. Until a channel is loaded to capacity it will be available for assignment to other users in the same area. A frequency pair may be re-assigned at distances 64 km. (40 mi.), 32 km. (20 mi.) for Channel 15, Chicago; Channel 20, Philadelphia; and Channel 17, Washington, or more from the location of base stations authorized on that pair without reference to loading at the point of original installation. Following authorization, the licensee shall notify the Commission either during or at the close of the 8 month period of the number of units in operation. In the Industrial Radio Services, if the base station facility is to be used by more than a single licensee, the frequency assigned to it will not be re-assigned for use by another facility within 64 km. (40 mi.) or 32 km. (20 mi.) where applicable for a period of 12 months, *Provided*, That the facility is

constructed within 90 days from the date of the first grant, meets the loading standards to at least 50 percent within 9 months, and meets all loading standards within 12 months.

[43 FR 54791, Nov. 22, 1978, as amended at 47 FR 36649, Aug. 23, 1982; 62 FR 18933, Apr. 17, 1997]

§ 90.315 Special provisions governing use of frequencies in the 476–494 MHz band (TV Channels 15, 16, 17) in the Southern Louisiana-Texas Offshore Zone.

(a) The frequency bands from 490–491 and 493–494 MHz will be available for assignment to stations governed by this part within Zone A. The boundaries of Zone A are from longitude 87°45' on the east to longitude 94°00' on the west, and from the 3-mile limit along the Gulf of Mexico shoreline on the north to the limit of the Outer Continental Shelf on the south. The frequency bands from 484–485 and 476–488 MHz will be available for assignment to stations governed by this part within Zone B. The boundaries of Zone B are from longitude 87°45' on the east to longitude 95°00' on the west and from the 3-mile limit along the Gulf of Mexico shoreline on the north to the limit of the Outer Continental Shelf on the south. The frequency bands from 478–479 and 481–481 MHz will be available for assignment to stations governed by this part within Zone C. The boundaries of Zone C are from longitude 94°00' on the east, the 3-mile limit on the north and west, a 281 km (175 mile) radius from the reference point at Linares, N.L., Mexico on the southwest, latitude 26°00' on the south, and the limits of the Outer Continental Shelf on the southeast. These frequencies may also be assigned to fixed stations located on shore designed to provide communications service within the zone.

(b) Offshore base/mobile, and offshore and shore fixed stations may be authorized.

(c) F2, F3, F4, F9, and A2, A3, A4, and A9 emissions may be authorized.

(d) Offshore stations shall afford co-channel protection to TV stations on

Channels 15, 16 and 17. Station operating parameters shall be in accordance with the values given in table 1 of this section.

TABLE 1—PROTECTION OF COCHANNEL TELEVISION STATIONS BY OFFSHORE STATIONS OPERATING IN THE SOUTHERN LOUISIANA-TEXAS OFFSHORE ZONE (65 dB PROTECTION); MAXIMUM EFFECTIVE RADIATED POWER
[In Watts]

Distance from transmitter to co-channel TV station kilometers (miles)	Antenna Height above sea level meters (feet)		
	30.5 (100)	45 (150)	61 (200)
338 (210)	1,000	1,000	1,000
330 (205)	1,000	900	800
322 (200)	800	710	630
314 (195)	590	520	450
306 (190)	450	400	330
298 (185)	320	280	240
290 (180)	250	210	175
281 (175)	175	150	130
274 (170)	130	110	100
265 (165)	95	80	70
257 (160)	65	55	50
249 (155)	50	40	35
241 (150)	35	30	25

NOTE: To determine the maximum permissible effective radiated power:

(1) As specified in §73.611 determine the distance between the proposed station and the cochannel television station. If the exact distance does not appear in table 1 of this section, the next lower distance separation is to be used.

(2) Opposite this distance figure ERPs are given that may be used for antenna heights of 30.5, 45 or 61 meters (100, 150 or 200 ft) ASL. If the exact antenna height is not shown, the ERP allowed will be that shown for the next higher antenna height.

(e) Shore stations communicating point-to-point with offshore stations will be permitted at least the same ERP as the offshore station, but only in the direction of the offshore station. A directional antenna shall be used and the rearward radiated power from the antenna in a sector $\pm 22\frac{1}{2}^\circ$ from the line joining the shore antenna to the co-channel television station shall not exceed those shown in table 2 of this section.

TABLE 2—MAXIMUM REARWARD EFFECTIVE RADIATED POWER ALLOWED FOR SHORE STATIONS; REARWARD EFFECTIVE RADIATED POWER (IN WATTS) FROM SHORE ANTENNA IN A SECTOR $\langle \pm \rangle 22\frac{1}{2}^\circ$ FROM THE LINE JOINING THE SHORE ANTENNA TO THE COCHANNEL TELEVISION STATION

Distance from transmitter to co-channel television station: kilometers (miles)	Antenna height above ground in meters (feet)					
	30.5 (100)	45 (150)	61 (200)	91.5 (300)	152.5 (500)	228 (750)
298 (185)	320	280	240	190	125	90
290 (180)	250	210	175	125	100	60
281 (175)	175	150	130	100	70	50
274 (170)	130	110	100	75	40	35
265 (165)	95	82	70	50	35	25
257 (160)	65	55	50	40	25	20
249 (155)	50	40	35	30	20	15
241 (150)	35	30	25	20	15	10
233 (145)	25	20	18	15	10	7
225 (140)	18	15	13	10	7	5
217 (135)	13	10	9	7	5	3
209 (130)	10	8	6	5	3	2
201 (125)	7	6	5	4	3	2
193 (120)	5	4	3	3	2	1

NOTE: As an example of the use of tables 1 and 2, assume an offshore station located 290 km (180 mi) from TV Channel 17 located in Bude, Miss. with an antenna height of 30.5 m (100 ft). Table 1 allows this station to operate with 250 W ERP. Now assume the shore station communicating with the offshore station is 48 km (30 mi) from the offshore station and 241 km (150 mi) from Bude, Miss. The shore station antenna height is 152.5 m (500 ft) above ground. The shore station will be allowed the same ERP as the offshore station (250 W) in the direction of the offshore station. Table 2 indicates that the effective radiated power in a sector $\langle \pm \rangle 22\frac{1}{2}^\circ$ from the line joining the shore antenna to Bude, Miss. can only be 15 W. Consequently, a directional antenna must be used whose minimum front-to-back ratio over this 45° sector must be at least 12.2 dB. (250 W forward power to 15 W rearward power is a power ratio of 16.6 or 12.2 dB).

(f) To provide cochannel protection to television stations, no shore station will be allowed closer than 193 km (miles) from the cochannel television station.

(g) To provide adjacent channel protection to television stations, no shore or offshore station shall be allowed within an 128 km (80 mile) distance of the adjacent channel television station.

(h) Mobile stations shall not operate closer to shore than 6.4 km (4 miles) beyond the three mile limit and shall not operate with an ERP in excess of 100

watts with 9.1 m (30 ft) maximum antenna height.

(i) Mobile stations installed in aircraft shall operate 11 km (7 miles) beyond the three mile limit and shall not operate with an ERP in excess of 1 watt or at heights in excess of 305 m (1000 feet) AMSL.

(j) The following frequency bands are available for assignment in all services for use in the Zones as defined in paragraph (a) of this section.

PAIRED FREQUENCIES (MHZ)

Zone	Transmit (or receive)	Receive (or transmit)
A	490.01875–490.98125	493.01875–493.98125
B	484.01875–484.98125	487.01875–487.98125
C	478.01875–478.98125	481.01875–481.98125

Only the first and last assignable frequencies are shown. Frequencies shall be assigned in pairs with 3 MHz spacing between transmit and receive frequencies. Assignable frequency pairs will occur in increments of 6.25 kHz. The following frequencies will be assigned for a maximum authorized bandwidth of 6 kHz: 478.01875, 478.98125, 484.01875, 484.98125, 490.01875, 490.98125, 481.01875, 481.98125, 487.01875, 487.98125, 493.01875, and 493.98125.

(k) Fixed stations operating point-to-point shall be assigned frequencies beginning with 490.025/493.025 MHz (Zone A), 484.025/487.025 MHz (Zone B) and 478.025–481.025 MHz (Zone C) and progressing upwards utilizing available frequencies toward the end of the band. Offshore base/mobile stations shall be assigned frequencies beginning at 490.975/493.975 MHz (Zone A), 484.975/478.975 MHz (Zone B) and 478.975/481.975 MHz (Zone C) and progressing downwards utilizing available frequencies toward the beginning of the band. All frequency assignments are subject to the conditions specified in § 90.173.

[50 FR 12027, Mar. 27, 1985; 50 FR 14389, Apr. 12, 1985, as amended at 58 FR 44959, Aug. 25, 1993; 60 FR 37277, July 19, 1995]

§ 90.317 Fixed ancillary signaling and data transmissions.

(a) Licensees of systems that have exclusive-use status in their respective geographic areas may engage in fixed ancillary signaling and data transmissions, subject to the following requirements:

(1) All such ancillary operations must be on a secondary, non-interference basis to the primary mobile operation of any other licensee.

(2) The output power at the remote site shall not exceed 30 watts.

(3) Any fixed transmitters will not count toward meeting the mobile loading requirements nor be considered in whole or in part as a justification for authorizing additional frequencies in the licensee’s mobile system.

(4) Automatic means must be provided to deactivate the remote transmitter in the event the carrier remains on for a period in excess of three minutes.

(5) Operational fixed stations authorized pursuant to the provisions of this paragraph are exempt from the requirements of §§ 90.425 and 90.429.

(6) If the system is licensed on 470–512 MHz conventional frequencies, and exclusivity has been achieved through the aggregate loading of more than a single co-channel licensee, then a licensee must obtain the concurrence of other co-channel licensees prior to commencing such ancillary operations.

(b) Licensees of systems that do not have exclusive-use status in their respective geographic areas may conduct fixed ancillary signaling and data transmissions only in accordance with the provisions of § 90.235 of this part.

[57 FR 34693, Aug. 6, 1992]

Subpart M—Intelligent Transportation Systems Radio Service

SOURCE: 60 FR 15253, Mar. 23, 1995, unless otherwise noted.

§ 90.350 Scope.

The Intelligent Transportation Systems radio service is for the purpose of integrating radio-based technologies into the nation’s transportation infrastructure and to develop and implement the nation’s intelligent transportation systems. It includes the Location and Monitoring Service (LMS) and Dedicated Short Range Communications Service (DSRCS). Rules as to eligibility for licensing, frequencies available, and any special requirements for