

ERP VS. ANTENNA HEIGHT TABLE<sup>2</sup>

Antenna height above average terrain (HAAT), meters	Effective radiated power, watts <sup>1</sup>
Up to 150 .....	500
150 to 225 .....	250
225 to 300 .....	125
300 to 450 .....	60
450 to 600 .....	30
600 to 750 .....	20
750 to 900 .....	15
900 to 1050 .....	10
Above 1050 .....	5

<sup>1</sup> Transmitter PEP shall be used to determine ERP.

<sup>2</sup> These power levels apply to stations used for land mobile, paging, and fixed operations.

(b) The maximum permissible ERP for mobile units is 50 watts. Portable units are considered as mobile units. Licensees operating fixed stations or paging base stations transmitting on frequencies in the 221–222 MHz band may not operate such fixed stations or paging base stations at power levels greater than 50 watts ERP, and may not transmit from antennas that are higher than 7 meters above average terrain, except that transmissions from antennas that are higher than 7 meters above average terrain will be permitted if the effective radiated power of such transmissions is reduced below 50 watts ERP by  $20 \log_{10}(h/7)$  dB, where  $h$  is the height above average terrain (HAAT), in meters.

(c) Base station and fixed station transmissions on base station transmit Channels 196–200 are limited to 2 watts ERP and a maximum antenna HAAT of 6.1 meters (20 ft). Licensees authorized on these channels may operate at power levels above 2 watts ERP or with a maximum antenna HAAT greater than 6.1 meters (20 ft) if:

(1) They obtain the concurrence of all Phase I and Phase II licensees with base stations or fixed stations receiving on base station receive Channels 1–40 and located within 6 km of their base station or fixed station; and

(2) Their base station or fixed station is not located in the United States/Mexico or United States/Canada border areas.

[62 FR 15996, Apr. 3, 1997, as amended at 63 FR 32590, June 12, 1998]

**§ 90.733 Permissible operations.**

(a) Systems authorized in the 220–222 MHz band may be used:

(1)(i) For government and non-government land mobile operations, *i.e.*, for base/mobile and mobile relay transmissions, on a primary basis; or

(ii) For the following operations instead of or in addition to a licensee's land mobile operations: One-way or two-way paging operations on a primary basis by all non-Government Phase II licensees, fixed operations on a primary basis by all non-Government Phase II licensees and all Government licensees, one-way or two-way paging or fixed operations on a primary basis by all non-Government Phase I licensees, except that before a non-Government Phase I licensee may operate one-way or two-way paging or fixed systems on a primary basis instead of or in addition to its land mobile operations, it must meet the following requirements:

(A) A nationwide Phase I licensee must;

(1) Meet its two-year benchmark for the construction of its land mobile system base stations as prescribed in § 90.725(a); and

(2) Provide a new 10-year schedule, as required in § 90.713(b)(3), for the construction of the fixed and/or paging system it intends to construct instead of, or in addition to, its nationwide land mobile system; and

(3) Certify that the financial showings and all other certifications provided in demonstrating its ability to construct and operate its nationwide land mobile system, as required in §§ 90.713 (b), (c) and (d), remain applicable to the nationwide system it intends to construct consisting of fixed and/or paging operations on a primary basis instead of, or in addition to, its land mobile operations; or

(4) In lieu of providing the requirements of paragraph (a)(1)(ii)(A)(3) of this section, provide the financial showings and all other certifications required in §§ 90.713 (b), (c) and (d) to demonstrate its ability to construct and operate a nationwide system consisting of fixed and/or paging operations on a primary basis instead of, or in addition to, its land mobile operations.

(B) A non-nationwide Phase I licensee must first meet the requirement

to construct its land mobile base station and place it in operation, or commence service (in accordance with §90.167) as prescribed in §90.725(f) or §90.727, as applicable.

(2) Only by persons who are eligible for facilities under either this subpart or in the pools included in subpart B or C of this part.

(3) Except for licensees classified as CMRS providers under part 20 of this chapter, only for the transmission of messages or signals permitted in the services in which the participants are eligible.

(b) See §90.720 of this part for permissible operations on mutual aid channels.

(c) For operations requiring less than a 4 kHz bandwidth, more than a single emission may be utilized within the authorized bandwidth. In such cases, the frequency stability requirements of §90.213 do not apply, but the out-of-band emission limits of §90.210(f) must be met.

(d) Licensees, except for licensees authorized on Channels 161 through 170 and 181 through 185, may combine any number of their authorized, contiguous channels (including channels derived from multiple authorizations) to form channels wider than 5 kHz.

(e) In combining authorized, contiguous channels (including channels derived from multiple authorizations) to form channels wider than 5 kHz, the emission limits in §90.210(f) must be met only at the outermost edges of the contiguous channels. Transmitters shall be tested to confirm compliance with this requirement with the transmission located as close to the band edges as permitted by the design of the transmitter. The frequency stability requirements in §90.213 shall apply only to the outermost of the contiguous channels authorized to the licensee. However, the frequency stability employed for transmissions operating inside the outermost contiguous channels must be such that the emission limits in §90.210(f) are met over the temperature and voltage variations prescribed in §2.995 of this chapter.

(f) A Phase I non-nationwide licensee operating a paging base station, or a fixed station transmitting on frequencies in the 220–221 MHz band, may

only operate such stations at the coordinates of the licensee's authorized land mobile base station.

(g) The transmissions of a Phase I non-nationwide licensee's paging base station, or fixed station transmitting on frequencies in the 220–221 MHz band, must meet the requirements of §§90.723(d), (g), (h), and (k), and 90.729, and such a station must operate at the effective radiated power and antenna height-above-average-terrain prescribed in the licensee's land mobile base station authorization.

(h) Licensees using 220–222 MHz spectrum for geophysical telemetry operations are authorized to operate fixed stations on a secondary, non-interference basis to licensees operating in the 220–222 MHz band on a primary basis under the conditions that such licensees:

(1) Provide notification of their operations to co-channel non-nationwide Phase I licensees with an authorized base station, or fixed station transmitting on frequencies in the 220–221 MHz band, located within 45 km of the secondary licensee's station, to co-channel, Phase II EA or Regional licensee authorized to operate in the EA or REAG in which the secondary licensee's station is located, and to co-channel Phase I or Phase II nationwide licensees;

(2) Operate only at temporary locations in accordance with the provisions of §1.931 of this chapter;

(3) Not transmit at a power level greater than one watt ERP;

(4) Not transmit from an antenna higher than 2 meters (6.6 feet) above ground; and

(5) Not operate on Channels 111 through 120, 161 through 170, or 181 through 185.

(i) All licensees constructing and operating base stations or fixed stations on frequencies in the 220–222 MHz band must:

(1) Comply with any rules and international agreements that restrict use of their authorized frequencies, including the provisions of §90.715 relating to U.S./Mexican border areas;

(2) Comply with the provisions of §17.6 of this chapter with regard to antenna structures; and

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(3) Comply with the provisions of §§1.1301 through 1.1319 of this chapter with regard to actions that may or will have a significant impact on the quality of the human environment.

[56 FR 19603, Apr. 29, 1991, as amended at 56 FR 32517, July 17, 1991; 57 FR 32450, July 22, 1992; 59 FR 59967, Nov. 21, 1994; 62 FR 15997, Apr. 3, 1996; 62 FR 18936, Apr. 17, 1997; 63 FR 32591, June 12, 1998; 63 FR 68971, Dec. 14, 1998]

## § 90.735 Station identification.

(a) Except for nationwide systems authorized in the 220–222 MHz band, station identification is required pursuant to § 90.425 of this part.

(b) Trunked systems shall employ an automatic device to transmit the call sign of the base station at 30 minute intervals. The identification shall be made on the lowest frequency in the base station trunked group assigned to the licensee. If this frequency is in use at the time identification is required, the identification may be made at the termination of the communication in progress on this frequency.

(c) Station identification may be by voice or International Morse Code. If the call sign is transmitted in International Morse Code, it must be at a rate of between 15 to 20 words per minute, and by means of tone modulation of the transmitter, with the tone frequency being between 800 and 1000 hertz.

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(d) Digital transmissions may also be identified by digital transmission of the station call sign. A licensee that identifies its station in this manner must provide the Commission, upon its request, information (such as digital codes and algorithms) sufficient to decipher the data transmission to ascertain the call sign transmitted.

[56 FR 19603, Apr. 29, 1991, as amended at 62 FR 15997, Apr. 3, 1997]

## § 90.739 Number of systems authorized in a geographical area.

There is no limit on the number of licenses that may be authorized to a single licensee.

[62 FR 46214, Sept. 2, 1997]

## § 90.741 Urban areas for Phase I nationwide systems.

Licensees of Phase I nationwide systems must construct base stations, or fixed stations transmitting on frequencies in the 220–221 MHz band, in a minimum of 28 of the urban areas listed in the following Table within ten years of initial license grant. A base station, or fixed station, is considered to be within one of the listed urban areas if it is within 60 kilometers (37.3 miles) of the specified coordinates (coordinates are referenced to North American Datum 1983 (NAD83)).

TABLE

Urban area	North latitude	West longitude
New York, New York-Northeastern New Jersey .....	40°45'06.4"	73°59'37.5"
Los Angeles-Long Beach, California .....	34°03'15.0"	118°14'31.3"
Chicago, Illinois-Northwestern Indiana .....	41°52'28.1"	87°38'22.2"
Philadelphia, Pennsylvania/New Jersey .....	39°56'58.4"	75°09'19.6"
Detroit, Michigan .....	42°19'48.1"	83°02'56.7"
Boston, Massachusetts .....	42°21'24.4"	71°03'23.2"
San Francisco-Oakland, California .....	37°46'38.7"	122°24'43.9"
Washington, DC/Maryland/Virginia .....	38°53'51.4"	77°00'31.9"
Dallas-Fort Worth, Texas .....	32°47'09.5"	96°47'38.0"
Houston, Texas .....	29°45'26.8"	95°21'37.8"
St Louis, Missouri/Illinois .....	38°37'45.2"	90°12'22.4"
Miami, Florida .....	25°46'38.4"	80°11'31.2"
Pittsburgh, Pennsylvania .....	40°26'19.2"	79°59'59.2"
Baltimore, Maryland .....	39°17'26.4"	76°36'43.9"
Minneapolis-St Paul, Minnesota .....	44°58'56.9"	93°15'43.8"
Cleveland, Ohio .....	41°29'51.2"	81°41'49.5"
Atlanta, Georgia .....	33°45'10.4"	84°23'36.7"
San Diego, California .....	32°42'53.2"	117°09'24.1"
Denver, Colorado .....	39°44'58.0"	104°59'23.9"
Seattle-Everett, Washington .....	47°36'31.4"	122°20'16.5"
Milwaukee, Wisconsin .....	43°02'19.0"	87°54'15.3"
Tampa, Florida .....	27°56'59.1"	82°27'24.3"
Cincinnati, Ohio/Kentucky .....	39°06'07.2"	84°30'34.8"
Kansas City, Missouri/Kansas .....	39°04'56.0"	94°35'20.8"
Buffalo, New York .....	42°52'52.2"	78°52'20.1"