(B) The identifying information provided for the device; and

(C) Any evidence supporting the wireless provider's belief that the device was erroneously identified.

(ii) *DCFO response.* Upon receipt of a request from a wireless provider, the DCFO should review the qualifying request and determine whether the device in question was erroneously identified and either confirm the validity of the identifying information contained in the qualifying request or acknowledge the error and direct the carrier to restore service to the device.

(iii) *Restoration of service.* In the event the DCFO directs the wireless provider to reverse the disabling, the wireless provider must, within two business days, restore service to the device and reverse any actions taken to prevent the device from accessing other wireless provider networks.

(iv) *Wireless provider action in absence of timely DCFO response.* In the event the DCFO does not respond to a request from a wireless provider for review of a qualifying request within two business days, the wireless provider may proceed with reversing the disabling action.

(v) *Notice of reversals.* The DCFO must provide notice to the Contraband Ombudsperson of the number of erroneously disabled devices on a quarterly basis at the end of any quarter during which a device disabling was reversed.

(d) *Notification to Managed Access System (MAS) operators of wireless provider technical changes*—(1) *Notification requirements.* CMRS licensees leasing spectrum to MAS operators must provide 90 days' advance notice to MAS operators of the following network changes occurring within 15 miles of the correctional facility, unless parties modify notification arrangements through mutual agreement:

(i) Adding a new frequency band to service offerings;

(ii) Deploying a new air interface technology or changing an existing air interface technology; and/or

(iii) Adding, relocating, or removing a site.

(2) *Good faith negotiations.* CMRS licensee lessors and MAS operator lessees must negotiate in good faith to reach an agreement for notification for other types of network adjustments not covered by the notice requirement set forth in paragraph (d)(1) of this section and for the parties' treatment of confidential information contained in notifications required pursuant to this section and/or negotiated between the parties.

(3) *Emergency network changes exception.* CMRS licensees leasing spectrum to managed access systems (MAS) operators are not required to provide 90 days' advance notice to MAS operators of network technical changes occurring within 15 miles of the correctional facility that are required due to emergency and disaster preparedness. CMRS licensees must provide notice of these technical changes immediately after the exigency.

[82 FR 22761, May 18, 2017, as amended at 86 FR 44638, Aug. 13, 2021]

PART 22—PUBLIC MOBILE SERVICES

Subpart A—Scope and Authority

Sec.

Subpart B—Licensing Requirements and Procedures

APPLICATIONS AND NOTIFICATIONS

COMPETITIVE BIDDING PROCEDURES

AUTHORITY: 47 U.S.C. 154, 222, 303, 309, and 332.

SOURCE: 59 FR 59507, Nov. 17, 1994, unless otherwise noted.

Subpart A—Scope and Authority

§ 22.1 Basis and purpose.

This section contains a concise general statement of the basis and purpose of the rules in this part, pursuant to 5 U.S.C. 553(c).

(a) *Basis.* These rules are issued pursuant to the Communications Act of 1934, as amended, 47 U.S.C. 151 *et. seq.*

(b) *Purpose.* The purpose of these rules is to establish the requirements

and conditions under which radio stations may be licensed and used in the Public Mobile Services.

[59 FR 59507, Nov. 17, 1994, as amended at 70 FR 19307, Apr. 13, 2005]

§ 22.3 [Reserved]

§ 22.5 Citizenship.

The rules in this section implement section 310 of the Communications Act of 1934, as amended (47 U.S.C. § 310), in regard to the citizenship of licensees in the Public Mobile Services.

(a) *Foreign governments.* The FCC will not grant an authorization in the Public Mobile Services to any foreign government or any representative thereof.

(b) *Alien ownership or control.* The FCC will not grant an authorization in the Public Mobile Services to:

(1) Any alien or the representative of any alien;

(2) Any corporation organized under the laws of any foreign government;

(3) Any corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof, or by any corporation organized under the laws of a foreign country;

(4) Any corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof, or by any corporation organized under the laws of a foreign country, if the FCC finds that the public interest will be served by the refusal or revocation of such license.

[59 FR 59507, Nov. 17, 1994, as amended at 61 FR 55580, Oct. 28, 1996]

§ 22.7 General eligibility.

Any entity, other than those precluded by section 310 of the Communications Act of 1934, as amended, 47 U.S.C. 310, is eligible to hold a license under this part. Applications are granted only if the applicant is legally, financially, technically and otherwise qualified to render the proposed service.

[70 FR 19307, Apr. 13, 2005]

§ 22.9 Operation of certificated signal boosters.

Individuals and non-individuals may operate certificated Consumer Signal Boosters on frequencies regulated under this part provided that such operation complies with all applicable rules under this part and § 20.21 of this chapter. Failure to comply with all applicable rules voids the authority to operate a signal booster.

[78 FR 21563, Apr. 11, 2013]

§ 22.99 Definitions.

Terms used in this part have the following meanings:

Air-Ground Radiotelephone Service. A radio service in which licensees are authorized to offer and provide radio telecommunications service for hire to subscribers in aircraft.

Airborne station. A mobile station in the Air-Ground Radiotelephone Service authorized for use on aircraft while in flight or on the ground.

Antenna structure. A structure comprising an antenna, the tower or other structure that exists solely to support antennas, and any surmounting appurtenances (attachments such as beacons or lightning rods).

Antenna. A device that converts radio frequency electrical energy to radiated electromagnetic energy and vice versa; in a transmitting station, the device from which radio waves are emitted.

Authorized bandwidth. The necessary or occupied bandwidth of an emission, whichever is more.

Authorized spectrum. The spectral width of that portion of the electromagnetic spectrum within which the emission power of the authorized transmitter(s) must be contained, in accordance with the rules in this part. The authorized spectrum comprises one channel bandwidth or the bandwidths of two or more contiguous channels.

Auxiliary test transmitter. A fixed transmitter used to test Public Mobile systems.

Base transmitter. A stationary transmitter that provides radio telecommunications service to mobile and/or fixed receivers, including those associated with mobile stations.

Blanketing interference. Disturbance in consumer receivers located in the

immediate vicinity of a transmitter, caused by currents directly induced into the consumer receiver's circuitry by the relatively high field strength of the transmitter.

Cardinal radials. Eight imaginary straight lines extending radially on the ground from an antenna location in the following azimuths with respect to true North: 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°.

Carrier frequency. The frequency of the unmodulated electrical wave at the output of an amplitude modulated (AM), frequency modulated (FM) or phase modulated (PM) transmitter.

Cell. The service area of an individual transmitter location in a cellular system.

Cellular Geographic Service Area (CGSA). The licensed geographic area within which a Cellular system is entitled to protection and adverse effects are recognized, for the purpose of determining whether a petitioner has standing, in the Cellular Radiotelephone Service, and within which the Cellular licensee is permitted to transmit, or consent to allow other Cellular licensees to transmit, electromagnetic energy and signals on the assigned channel block, in order to provide Cellular service. *See* § 22.911.

Cellular Market Area (CMA). A standard geographic area used by the FCC for administrative convenience in the licensing of Cellular systems; a more recent term for ''Cellular market'' (and includes Metropolitan Statistical Areas (MSAs) and Rural Service Areas (RSAs)). *See* § 22.909.

Cellular markets. This term is obsolescent. *See* definition for ''Cellular Market Area (CMA).''

Cellular Radiotelephone Service. A radio service in which licensees are authorized to offer and provide cellular service for hire to the general public. This service was formerly titled Domestic Public Cellular Radio Telecommunications Service.

Cellular repeater. In the Cellular Radiotelephone Service, a stationary transmitter or device that automatically re-radiates the transmissions of base transmitters at a particular cell site and mobile stations communicating with those base transmitters, with or without channel translation.

Cellular service. Radio telecommunication services provided using a cellular system.

Cellular system. An automated high-capacity system of one or more multichannel base stations designed to provide radio telecommunication services to mobile stations over a wide area in a spectrally efficient manner. Cellular systems employ techniques such as automatic hand-off between base stations of communications in progress to enable channels to be re-used at relatively short distances.

Center frequency. The frequency of the middle of the bandwidth of a channel.

Central office transmitter. A fixed transmitter in the Rural Radiotelephone Service that provides service to rural subscriber stations.

CGSA. See *Cellular Geographic Service Area.*

Channel. The portion of the electromagnetic spectrum assigned by the FCC for one emission. In certain circumstances, however, more than one emission may be transmitted on a channel.

Channel bandwidth. The spectral width of a channel, as specified in this part, within which 99% of the emission power must be contained.

Channel block. A group of channels that are assigned together, not individually.

Channel pair. Two channels that are assigned together, not individually. In this part, channel pairs are indicated by an ellipsis between the center frequencies.

Communications channel. In the Cellular Radiotelephone and Air-Ground Radiotelephone Services, a channel used to carry subscriber communications.

Construction period. The period between the date of grant of an authorization and the date of required commencement of service.

Control channel. In the Cellular Radiotelephone Service and the Air-Ground Radiotelephone Service, a channel used to transmit information necessary to establish or maintain communications. In the other Public Mobile Services, a channel that may be assigned to a control transmitter.

Control point. A location where the operation of a public mobile station is supervised and controlled by the licensee of that station.

Control transmitter. A fixed transmitter in the Public Mobile Services that transmits control signals to one or more base or fixed stations for the purpose of controlling the operation of the base or fixed stations, and/or transmits subscriber communications to one or more base or fixed stations that retransmit them to subscribers.

Dead spots. Small areas within a service area where the field strength is lower than the minimum level for reliable service. Service within dead spots is presumed.

Dispatch service. A radiotelephone service comprising communications between a dispatcher and one or more mobile units. These communications normally do not exceed one minute in duration and are transmitted directly through a base station, without passing through mobile telephone switching facilities.

Effective radiated power (ERP). The effective radiated power of a transmitter (with antenna, transmission line, duplexers etc.) is the power that would be necessary at the input terminals of a reference half-wave dipole antenna in order to produce the same maximum field intensity. ERP is usually calculated by multiplying the measured transmitter output power by the specified antenna system gain, relative to a half-wave dipole, in the direction of interest.

Emission. The electromagnetic energy radiated from an antenna.

Emission designator. An internationally accepted symbol for describing an emission in terms of its bandwidth and the characteristics of its modulation, if any. See § 2.201 of this chapter for details.

Emission mask. The design limits imposed, as a condition or certification, on the mean power of emissions as a function of frequency both within the authorized bandwidth and in the adjacent spectrum.

Equivalent isotropically radiated power (EIRP). The equivalent isotropically radiated power of a transmitter (with antenna, transmission line, duplexers etc.) is the power that would be necessary at the input terminals of a reference isotropic radiator in order to produce the same maximum field intensity. An isotropic radiator is a theoretical lossless point source of radiation with unity gain in all directions. EIRP is usually calculated by multiplying the measured transmitter output power by the specified antenna system gain, relative to an isotropic radiator, in the direction of interest.

Extension. In the Cellular Radiotelephone Service, an area within the service area boundary (calculated using the methodology of § 22.911) of a Cellular system but outside the licensed Cellular Geographic Service Area boundary. *See* §§ 22.911 and 22.912.

Facsimile service. Transmission of still images from one place to another by means of radio.

Fill-in transmitters. Transmitters added to a station, in the same area and transmitting on the same channel or channel block as previously authorized transmitters, that do not expand the existing service area, but are established for the purpose of improving reception in dead spots.

Fixed transmitter. A stationary transmitter that communicates with other stationary transmitters.

Frequency. The number of cycles occurring per second of an electrical or electromagnetic wave; a number representing a specific point in the electromagnetic spectrum.

Ground station. In the Air-Ground Radiotelephone Service, a stationary transmitter that provides service to airborne mobile stations.

Gulf of Mexico Service Area (GMSA). The cellular market comprising the water area of the Gulf of Mexico bounded on the West, North and East by the coastline. Coastline, for this purpose, means the line of ordinary low water along that portion of the coast which is in direct contact with the open sea, and the line marking the seaward limit of inland waters. Inland waters include bays, historic inland waters and waters circumscribed by a fringe of islands within the immediate vicinity of the shoreline.

Height above average terrain (HAAT). The height of an antenna above the average elevation of the surrounding area.

In-building radiation systems. Supplementary systems comprising low power transmitters, receivers, indoor antennas and/or leaky coaxial cable radiators, designed to improve service reliability inside buildings or structures located within the service areas of stations in the Public Mobile Services.

Initial cellular applications. Applications for authority to construct and operate a new cellular system, excluding applications for interim operating authority.

Interfering contour. The locus of points surrounding a transmitter where the predicted median field strength of the signal from that transmitter is the maximum field strength that is not considered to cause interference at the service contour of another transmitter.

Interoffice transmitter. A fixed transmitter in the Rural Radiotelephone Service that communicates with other interoffice transmitters for the purpose of interconnecting rural central offices.

Mobile station. One or more transmitters that are capable of operation while in motion.

Necessary bandwidth. The calculated spectral width of an emission. Calculations are made using procedures set forth in part 2 of this chapter. The bandwidth so calculated is considered to be the minimum necessary to convey information at the desired rate with the desired accuracy.

Occupied bandwidth. The measured spectral width of an emission. The measurement determines occupied bandwidth as the difference between upper and lower frequencies where 0.5% of the emission power is above the upper frequency and 0.5% of the emission power is below the lower frequency.

Offshore central transmitter. A fixed transmitter in the Offshore Radiotelephone Service that provides service to offshore subscriber stations.

Offshore Radiotelephone Service. A radio service in which licensees are authorized to offer and provide radio telecommunication services for hire to subscribers on structures in the offshore coastal waters of the Gulf of Mexico.

Offshore subscriber station. One or more fixed and/or mobile transmitters in the Offshore Radiotelephone Service that receive service from offshore central transmitters.

Pager. A small radio receiver designed to be carried by a person and to give an aural, visual or tactile indication when activated by the reception of a radio signal containing its specific code. It may also reproduce sounds and/or display messages that were also transmitted. Some pagers also transmit a radio signal acknowledging that a message has been received.

Paging geographic area authorization. An authorization conveying the exclusive right to establish and expand one or more stations throughout a paging geographic area or, in the case of a partitioned geographic area, throughout a specified portion of a paging geographic area, on a specified channel allocated for assignment in the Paging and Radiotelephone Service. These are subject to the conditions that no interference may be caused to existing co-channel stations operated by other licensees within the paging geographic area and that no interference may be caused to existing or proposed co-channel stations of other licensees in adjoining paging geographic areas.

Paging geographic areas. Standard geographic areas used by the FCC for administrative convenience in the licensing of stations to operate on channels allocated for assignment in the Paging and Radiotelephone Service. *See* § 22.503(b).

Paging and Radiotelephone Service. A radio service in which common carriers are authorized to offer and provide paging and radiotelephone service for hire to the general public. This service was formerly titled Public Land Mobile Service.

Paging service. Transmission of coded radio signals for the purpose of activating specific pagers; such transmissions may include messages and/or sounds.

Power spectral density (PSD). The power of an emission in the frequency domain, such as in terms of ERP or EIRP, stated per unit bandwidth, *e.g.*, watts/MHz.

Public Mobile Services. Radio services in which licensees are authorized to

offer and provide mobile and related fixed radio telecommunication services for hire to the public.

Radio telecommunication services. Communication services provided by the use of radio, including radiotelephone, radiotelegraph, paging and facsimile service.

Radiotelegraph service. Transmission of messages from one place to another by means of radio.

Radiotelephone service. Transmission of sound from one place to another by means of radio.

Repeater. A fixed transmitter that retransmits the signals of other stations.

Roamer. A mobile station receiving service from a station or system in the Public Mobile Services other than one to which it is a subscriber.

Rural Radiotelephone Service. A radio service in which licensees are authorized to offer and provide radio telecommunication services for hire to subscribers in areas where it is not feasible to provide communication services by wire or other means.

Rural subscriber station. One or more fixed transmitters in the Rural Radiotelephone Service that receive service from central office transmitters.

Service area. The geographic area considered by the FCC to be reliably served by a station in the Public Mobile Services.

Service contour. The locus of points surrounding a transmitter where the predicted median field strength of the signal from that transmitter is the minimum field strength that is considered sufficient to provide reliable service to mobile stations.

Service to subscribers. Service to at least one subscriber that is not affiliated with, controlled by or related to the providing carrier.

Signal booster. A stationary device that automatically reradiates signals from base transmitters without channel translation, for the purpose of improving the reliability of existing service by increasing the signal strength in dead spots.

Station. A station equipped to engage in radio communication or radio transmission of energy (47 U.S.C. 153(k)).

Telecommunications common carrier. An individual, partnership, association, joint-stock company, trust or corporation engaged in rendering radio telecommunications services to the general public for hire.

Temporary fixed station. One or more fixed transmitters that normally do not remain at any particular location for longer than 6 months.

Universal licensing system. The Universal Licensing System (ULS) is the consolidated database, application filing system, and processing system for all Wireless Radio Services. ULS supports electronic filing of all applications and related documents by applicants and licensees in the Wireless Radio Services, and provides public access to licensing information.

Unserved Area. With regard to a channel block allocated for assignment in the Cellular Radiotelephone Service: Geographic area in the District of Columbia, or any State, Territory or Possession of the United States of America that is not within any Cellular Geographic Service Area of any Cellular system authorized to transmit on that channel block. With regard to a channel allocated for assignment in the Paging and Radiotelephone service: Geographic area within the District of Columbia, or any State, Territory or possession of the United States of America that is not within the service contour of any base transmitter in any station authorized to transmit on that channel.

[59 FR 59507, Nov. 17, 1994, as amended at 61 FR 31050, June 19, 1996; 61 FR 54098, Oct. 17, 1996; 62 FR 11628, Mar. 12, 1997; 63 FR 36603, July 7, 1998; 63 FR 68943, Dec. 14, 1998; 67 FR 9609, Mar. 4, 2002; 70 FR 19307, Apr. 13, 2005; 79 FR 72150, Dec. 5, 2014; 82 FR 17581, Apr. 12, 2017]

Subpart B—Licensing Requirements and Procedures

APPLICATIONS AND NOTIFICATIONS

§ 22.107 General application requirements.

In general, applications for authorizations, assignments of authorizations, or consent to transfer of control of licensees in the Public Mobile Services must:

(a) Demonstrate the applicant's qualifications to hold an authorization in the Public Mobile services;

(b) State how a grant would serve the public interest, convenience, and necessity;

(c) Contain all information required by FCC rules or application forms;

(d) Propose operation of a facility in compliance with all rules governing the Public Mobile service;

(e) Be amended as necessary to remain substantially accurate and complete in all significant respects, in accordance with the provisions of §1.65 of this chapter; and,

(f) Be signed in accordance with §1.743 of this chapter.

§ 22.131 Procedures for mutually exclusive applications.

Two or more pending applications are mutually exclusive if the grant of one application would effectively preclude the grant of one or more of the others under Commission rules governing the Public Mobile Services involved. The Commission uses the general procedures in this section for processing mutually exclusive applications in the Public Mobile Services. Additional specific procedures are prescribed in the subparts of this part governing the individual Public Mobile Services (see §§22.509, 22.717, and 22.949) and in part 1 of this chapter.

(a) *Separate applications.* Any applicant that files an application knowing that it will be mutually exclusive with one or more applications should not include in the mutually exclusive application a request for other channels or facilities that would not, by themselves, render the application mutually exclusive with those other applications. Instead, the request for such other channels or facilities should be filed in a separate application.

(b) *Filing groups.* Pending mutually exclusive applications are processed in filing groups. Mutually exclusive applications in a filing group are given concurrent consideration. The Commission may dismiss as defective (pursuant to §1.945 of this chapter) any mutually exclusive application(s) whose filing date is outside of the date range for inclusion in the filing group. The types of filing groups used in day-to-day application processing are specified in paragraph (c)(3) of this section. A filing group is one of the following types:

(1) *Same-day filing group.* A same-day filing group comprises all mutually exclusive applications whose filing date is the same day, which is normally the filing date of the first-filed application(s).

(2) *Thirty-day notice and cut-off filing group.* A 30-day notice and cut-off filing group comprises mutually exclusive applications whose filing date is no later than thirty (30) days after the date of the Public Notice listing the first-filed application(s) (according to the filing dates) as acceptable for filing.

(3) *Window filing group.* A window filing group comprises mutually exclusive applications whose filing date is within an announced filing window. An announced filing window is a period of time between and including two specific dates, which are the first and last dates on which applications (or amendments) for a particular purpose may be accepted for filing. In the case of a one-day window, the two dates are the same. The dates are made known to the public in advance.

(c) *Procedures.* Generally, the Commission may grant one application in a filing group of mutually exclusive applications and dismiss the other application(s) in the filing that are excluded by that grant, pursuant to §1.945 of this chapter.

(1) *Selection methods.* In selecting the application to grant, the Commission will use competitive bidding.

(2) *Dismissal of applications.* The Commission may dismiss any application in a filing group that is defective or otherwise subject to dismissal under §1.945 of this chapter, either before or after employing selection procedures.

(3) *Type of filing group used.* Except as otherwise provided in this part, the type of filing group used in the processing of two or more mutually exclusive applications depends upon the purpose(s) of the applications.

(i) If any mutually exclusive application filed on the earliest filing date is an application for modification and none of the mutually exclusive applications is a timely-filed application for renewal, a same-day filing group is used.

(ii) If all of the mutually exclusive applications filed on the earliest filing

date are applications for initial authorization, a 30-day notice and cut-off filing group is used.

(4) *Disposition*. If there is only one application in any type of filing group, the Commission may grant that application and dismiss without prejudice any mutually exclusive applications not in the filing group. If there is more than one mutually exclusive application in a filing group, the Commission disposes of these applications as follows:

(i) *Applications in a 30-day notice and cut-off filing group*. (A) If all of the mutually exclusive applications in a 30-day notice and cut-off filing group are applications for initial authorization, the FCC administers competitive bidding procedures in accordance with §§ 22.201 through 22.227 and subpart Q of part 1 of this chapter, as applicable. After such procedures, the application of the successful bidder may be granted and the other applications may be dismissed without prejudice.

(B) If any of the mutually exclusive applications in a 30-day notice and cut-off filing group is an application for modification, the Commission may attempt to resolve the mutual exclusivity by facilitating a settlement between the applicants. If a settlement is not reached within a reasonable time, the FCC may designate all applications in the filing group for comparative consideration in a hearing. In this event, the result of the hearing disposes all of the applications in the filing group.

(ii) *Applications in a same-day filing group*. If there are two or more mutually exclusive applications in a same-day filing group, the Commission may attempt to resolve the mutual exclusivity by facilitating a settlement between the applicants. If a settlement is not reached within a reasonable time, the Commission may designate all applications in the filing group for comparative consideration in a hearing. In this event, the result of the hearing disposes of all of the applications in the filing group.

(iii) *Applications in a window filing group*. Applications in a window filing group are processed in accordance with the procedures for a 30-day notice and cut-off filing group in paragraph (c)(4)(ii) of this section.

(d) *Terminology*. For the purposes of this section, terms have the following meanings:

(1) The *filing date* of an application is the date on which that application was received in a condition acceptable for filing or the date on which the most recently filed major amendment to that application was received, whichever is later, excluding major amendments in the following circumstances:

(i) The major amendment reflects only a change in ownership or control found by the Commission to be in the public interest;

(ii) The major amendment as received is defective or otherwise found unacceptable for filing; or

(iii) The application being amended has been designated for hearing and the Commission or the presiding officer accepts the major amendment.

(2) An *application for initial authorization* is:

(i) Any application requesting an authorization for a new system or station;

(ii) Any application requesting authorization for an existing station to operate on an additional channel, unless the additional channel is for paired two-way radiotelephone operation, is in the same frequency range as the existing channel(s), and will be operationally integrated with the existing channel(s) such as by trunking;

(iii) Any application requesting authorization for a new transmitter at a location more than 2 kilometers (1.2 miles) from any existing transmitters of the applicant licensee on the requested channel or channel block; or

(iv) Any application to expand the Cellular Geographic Service Area of an existing Cellular system. *See* § 22.911.

(v) Any ''short-form'' application (filed on FCC Form 175) requesting a new paging geographic area authorization.

[59 FR 59954, Nov. 21, 1994, as amended at 62 FR 11629, Mar. 12, 1997; 63 FR 68943, Dec. 14, 1998; 79 FR 72150, Dec. 5, 2014; 82 FR 41547, Sept. 1, 2017]

§ 22.143 Construction prior to grant of application.

Applicants may construct facilities in the Public Mobile services prior to grant of their applications, subject to the provisions of this section, but must not operate such facilities until the FCC grants an authorization. If the conditions stated in this section are not met, applicants must not begin to construct facilities in the Public Mobile Services.

(a) *When applicants may begin construction.* An applicant may begin construction of a facility 35 days after the date of the Public Notice listing the application for that facility as acceptable for filing.

(b) *Notification to stop.* If the FCC for any reason determines that construction should not be started or should be stopped while an application is pending, and so notifies the applicant, orally (followed by written confirmation) or in writing, the applicant must not begin construction or, if construction has begun, must stop construction immediately.

(c) *Assumption of risk.* Applicants that begin construction pursuant to this section before receiving an authorization do so at their own risk and have no recourse against the United States for any losses resulting from:

(1) Applications that are not granted;

(2) Errors or delays in issuing Public Notices;

(3) Having to alter, relocate or dismantle the facility; or

(4) Incurring whatever costs may be necessary to bring the facility into compliance with applicable laws, or FCC rules and orders.

(d) *Conditions.* Except as indicated, all pre-grant construction is subject to the following conditions:

(1) The application is not mutually exclusive with any other application, except for successful bidders and tentative selectees in the Cellular Radiotelephone Service;

(2) No petitions to deny the application have been filed;

(3) The application does not include a request for a waiver of one or more FCC rules;

(4) For any construction or alteration that would exceed the requirements of §17.7 of this chapter, the licensee has notified the appropriate Regional Office of the Federal Aviation Administration (FAA Form 7460–1), secured a valid FAA determination of ''no hazard,'' and received antenna height clearance and obstruction marking and lighting specifications (FCC Form 854R) from the FCC for the proposed construction or alteration.

(5) The applicant has indicated in the application that the proposed facility would not have a significant environmental effect, in accordance with §§1.1301 through 1.1319 of this chapter; and,

(6) Under applicable international agreements and rules in this part, individual coordination of the proposed channel assignment(s) with a foreign administration is not required.

[59 FR 59507, Nov. 17, 1994, as amended at 70 FR 19308, Apr. 13, 2005; 77 FR 3954, Jan. 26, 2012; 79 FR 72151, Dec. 5, 2014]

§ 22.150 Standard pre-filing technical coordination procedure.

For operations on certain channels in the Public Mobile Services, carriers must attempt to coordinate the proposed use of spectrum with other spectrum users prior to filing an application for authority to operate a station. Rules requiring this procedure for specific channels and types of stations are contained in the subparts governing the individual Public Mobile Services.

(a) Coordination comprises two steps—notification and response. Each step may be accomplished orally or in writing.

(b) Notification must include relevant technical details of the proposal. At minimum, this should include the following:

(1) Geographical coordinates of the antenna site(s).

(2) Transmitting and receiving channels to be added or changed.

(3) Transmitting power, emission type and polarization.

(4) Transmitting antenna pattern and maximum gain.

(5) Transmitting antenna height above ground level.

(c) Applicants and licensees receiving notification must respond promptly, even if no channel usage conflicts are anticipated. If any notified party fails

to respond within 30 days, the applicant may file the application without a response from that party.

(d) The 30-day period begins on the date the notification is submitted to the Commission via the ULS. If the notification is by mail, this date may be ascertained by:

(1) The return receipt on certified mail,

(2) The enclosure of a card to be dated and returned by the party being notified, or

(3) A reasonable estimate of the time required for the mail to reach its destination. In this case, the date when the 30-day period will expire must be stated in the notification.

(e) All channel usage conflicts discovered during the coordination process should be resolved prior to filing of the application. If the applicant is unable or unwilling to resolve a particular conflict, the application may be accepted for filing if it contains a statement describing the unresolved conflict and a brief explanation of the reasons why a resolution was not achieved.

(f) If a number of changes in the technical parameters of a proposed facility become necessary during the course of the coordination process, an attempt should be made to minimize the number of separate notifications. If the changes are incorporated into a completely revised notice, the items that were changed from the previous notice should be identified.

(g) In situations where subsequent changes are not numerous or complex, the party receiving the changed notification should make an effort to respond in less than 30 days. If the applicant believes a shorter response time is reasonable and appropriate, it should so indicate in the notice and suggest a response date.

(h) If a subsequent change in the technical parameters of a proposed facility could not affect the facilities of one or more of the parties that received an initial notification, the applicant is not required to coordinate that change with these parties. However, these parties must be advised of the change and of the opinion that coordination is not required.

[59 FR 59507, Nov. 17, 1994, as amended at 63 FR 68944, Dec. 14, 1998]

§ 22.165 Additional transmitters for existing systems.

A licensee may operate additional transmitters at additional locations on the same channel or channel block as its existing system without obtaining prior Commission approval provided:

(a) *International coordination.* The locations and/or technical parameters of the additional transmitters are such that individual coordination of the channel assignment(s) with a foreign administration, under applicable international agreements and rules in this part, is not required.

(b) *Antenna structure registration.* Certain antenna structures must be registered with the Commission prior to construction or alteration. Registration requirements are contained in part 17 of this chapter.

(c) *Environmental.* The additional transmitters must not have a significant environmental effect as defined by §§ 1.1301 through 1.1319 of this chapter.

(d) *Paging and Radiotelephone Service.* The provisions in this paragraph apply for stations in the Paging and Radiotelephone Service.

(1) The interfering contours of the additional transmitter(s) must be totally encompassed by the composite interfering contour of the existing station (or stations under common control of the applicant) on the same channel, except that this limitation does not apply to nationwide network paging stations or in-building radiation systems.

(2) [Reserved]

(3) The additional transmitters must not operate on control channels in the 72–76 MHz, 470–512 MHz, 928 MHz, 932 MHz, 941 MHz or 959 MHz frequency ranges.

(e) *Cellular Radiotelephone Service.* The service area boundaries (SABs) of the additional transmitters, as calculated by the method set forth in § 22.911(a), must not cause an expansion of the Cellular Geographic Service Area (CGSA), and must not extend outside the CGSA boundary into Unserved Area unless such extension is less than

130 contiguous square kilometers (50 contiguous square miles). The licensee must seek prior approval (using FCC Form 601) regarding any transmitters to be added under this section that would cause an expansion of the CGSA, or an SAB extension of 130 contiguous square kilometers (50 contiguous square miles) or more, into Unserved Area. *See* §§ 22.912, 22.953.

(f) *Air-ground Radiotelephone Service.* Ground stations may be added to Commercial Aviation air-ground systems at previously established ground station locations, pursuant to § 22.859, subject to compliance with the applicable technical rules. This section does not apply to General Aviation air-ground stations.

(g) *Rural Radiotelephone Service.* A ''service area'' and ''interfering contours'' must be determined using the same method as for stations in the Paging and Radiotelephone Service. The service area and interfering contours so determined for the additional transmitter(s) must be totally encompassed by the similarly determined composite service area contour and predicted interfering contour, respectively, of the existing station on the same channel. This section does not apply to Basic Exchange Telecommunications Radio Systems.

(h) *Offshore Radiotelephone Service.* This section does not apply to stations in the Offshore Radiotelephone Service.

(i) *Provision of information upon request.* Upon request by the FCC, licensees must supply administrative or technical information concerning the additional transmitters. At the time transmitters are added pursuant to this section, licensees must make a record of the pertinent technical and administrative information so that such information is readily available. See § 22.303.

[59 FR 59507, Nov. 17, 1994; 59 FR 64856, Dec. 16, 1994, as amended at 62 FR 11629, Mar. 12, 1997; 63 FR 68944, Dec. 14, 1998; 64 FR 53240, Oct. 1, 1999; 67 FR 77190, Dec. 17, 2002; 78 FR 25174, Apr. 29, 2013; 79 FR 72151, Dec. 5, 2014]

§ 22.169 International coordination.

Operation of systems and channel assignments under this part are subject to the applicable provisions and requirements of treaties and other international agreements between the United States government and the governments of Canada and Mexico.

[82 FR 17582, Apr. 12, 2017]

COMPETITIVE BIDDING PROCEDURES

SOURCE: 62 FR 11629, Mar. 12, 1997, unless otherwise noted.

§ 22.201 Paging geographic area authorizations are subject to competitive bidding.

Mutually exclusive initial applications for paging geographic area licenses are subject to competitive bidding. The general competitive bidding procedures set forth in part 1, subpart Q of this chapter will apply unless otherwise provided in this subpart and part 90 of this chapter.

[67 FR 45366, July 9, 2002]

§§ 22.203–22.211 [Reserved]

§ 22.213 Filing of long-form applications.

After an auction, the Commission will not accept long form applications for paging geographic authorizations from anyone other than the auction winners and parties seeking partitioned authorizations pursuant to agreements with auction winners under § 22.221.

[67 FR 45366, July 9, 2002]

§ 22.215 [Reserved]

§ 22.217 Bidding credit for small businesses.

A winning bidder that qualifies as a small business, as defined in § 22.223(b)(1), or a consortium of small businesses may use a bidding credit of thirty-five (35) percent to lower the cost of its winning bid. A winning bidder that qualifies as a small business, as defined in § 22.223(b)(2), or consortium of small businesses may use a bidding credit of twenty-five (25) percent to lower the cost of its winning bid.

[68 FR 42998, July 21, 2003]

§ 22.221 Eligibility for partitioned licenses.

If partitioned licenses are being applied for in conjunction with a license(s) to be awarded through competitive bidding procedures—

(a) The applicable procedures for filing short-form applications and for submitting upfront payments and down payments contained in this chapter shall be followed by the applicant, who must disclose as part of its short-form application all parties to agreement(s) with or among other entities to partition the license pursuant to this section, if won at auction (*see* 47 CFR 1.2105(a)(2)(viii));

(b) Each party to an agreement to partition the authorization must file a long-form application (FCC Form 601) for its respective, mutually agreed-upon geographic area together with the application for the remainder of the MEA or EA filed by the auction winner.

(c) If the partitioned authorization is being applied for as a partial assignment of the MEA or EA authorization following grant of the initial authorization, request for authorization for partial assignment of an authorization shall be made pursuant to § 1.948 of this part.

[59 FR 59507, Nov. 17, 1994, as amended at 64 FR 33781, June 24, 1999]

§ 22.223 Designated entities.

(a) *Scope.* The definitions in this section apply to §§ 22.201 through 22.227, unless otherwise specified in those sections.

(b) A small business is an entity that either:

(1) Together with its affiliates and controlling interests has average gross revenues that are not more than $3 million for the preceding three years; or

(2) Together with its affiliates and controlling interests has average gross revenues that are not more than $15 million for the preceding three years.

[68 FR 42998, July 21, 2003]

§ 22.225 Certifications, disclosures, records maintenance, and definitions.

(a) *Records maintenance.* All winning bidders qualifying as small businesses shall maintain at their principal place of business an updated file of ownership, revenue, and asset information, including any documents necessary to establish small businesses under § 22.223. Licensees (and their successors-in-interest) shall maintain such files for the term of the license. Applicants that do not obtain the license(s) for which they applied shall maintain such files until the grant of such license(s) is final, or one year from the date of the filing of their short-form application (FCC Form 175), whichever is earlier.

(b) *Definition.* The term small business used in this section is defined in § 22.223.

[67 FR 45367, July 9, 2002, as amended at 68 FR 42998, July 21, 2003]

§ 22.227 Petitions to deny and limitations on settlements.

(a) Procedures regarding petitions to deny long-form applications in the paging service will be governed by § 1.939 of this chapter.

(b) The consideration that an individual or an entity will be permitted to receive for agreeing to withdraw an application or petition to deny will be limited by the provisions set forth in § 1.935 of this chapter.

[67 FR 45367, July 9, 2002]

§ 22.229 Designated entities.

(a) *Eligibility for small business provisions.* (1) A very small business is an entity that, together with its controlling interests and affiliates, has average annual gross revenues not exceeding $3 million for the preceding three years.

(2) A small business is an entity that, together with its controlling interests and affiliates, has average annual gross revenues not exceeding $15 million for the preceding three years.

(3) An entrepreneur is an entity that, together with its controlling interests and affiliates, has average annual gross revenues not exceeding $40 million for the preceding three years.

(b) *Bidding credits.* A winning bidder that qualifies as a very small business, as defined in this section, or a consortium of very small businesses may use the bidding credit specified in §1.2110(f)(2)(i) of this chapter. A winning bidder that qualifies as a small business, as defined in this section, or a consortium of small businesses may use the bidding credit specified in §1.2110(f)(2)(ii) of this chapter. A winning bidder that qualifies as an entrepreneur, as defined in this section, or a consortium of entrepreneurs may use the bidding credit specified in §1.2110(f)(2)(iii) of this chapter.

[67 FR 11434, Mar. 14, 2002, as amended at 68 FR 42998, July 21, 2003]

Subpart C—Operational and Technical Requirements

OPERATIONAL REQUIREMENTS

§ 22.301 [Reserved]

§ 22.303 [Reserved]

§ 22.305 Operator and maintenance requirements.

FCC operator permits and licenses are not required to operate, repair or maintain equipment authorized in the Public Mobile Services. Station licensees are responsible for the proper operation and maintenance of their stations, and for compliance with FCC rules.

§ 22.307 Operation during emergency.

Licensees of stations in the Public Mobile services may, during a period of emergency in which normal communications facilities are disrupted as a result of hurricane, flood, earthquake or other natural disaster, civil unrest, widespread vandalism, national emergencies or emergencies declared by Executive Order of the President, use their stations to temporarily provide emergency communications services in a manner or configuration not normally allowed by this part, provided that such operations comply with the provisions of this section.

(a) *Technical limitations.* Public Mobile stations providing temporary emergency communications service must not transmit:

(1) On channels other than those authorized for normal operations.

(2) With power in excess of that authorized for normal operations;

(3) Emission types other than those authorized for normal operations.

(b) *Discontinuance.* Temporary emergency use of Public Mobile stations must be discontinued as soon as normal communication facilities are restored. The FCC may, at any time, order the discontinuance of any such emergency communication services.

§ 22.313 Station identification.

The licensee of each station in the Public Mobile Services must ensure that the transmissions of that station are identified in accordance with the requirements of this section.

(a) Station identification is not required for transmission by:

(1) Stations in the Cellular Radiotelephone Service;

(2) General aviation ground stations in the Air-ground Radiotelephone Service;

(3) [Reserved]

(4) Stations using Basic Exchange Telephone Radio Systems in the Rural Radiotelephone Service;

(5) [Reserved]

(6) Stations operating pursuant to paging geographic area authorizations.

(b) For all other stations in the Public Mobile Services, station identification must be transmitted each hour within five minutes of the hour, or upon completion of the first transmission after the hour. Transmission of station identification may be temporarily delayed to avoid interrupting the continuity of any public communication in progress, provided that station identification is transmitted at the conclusion of that public communication.

(c) Station identification must be transmitted by telephony using the English language or by telegraphy using the international Morse code, and in a form that can be received using equipment appropriate for the modulation type employed, and understood without the use of unscrambling devices, except that, alternatively, station identification may be transmitted digitally, provided that the licensee

provides the Commission with information sufficient to decode the digital transmission to ascertain the call sign. Station identification comprises transmission of the call sign assigned by the Commission to the station, however, the following may be used in lieu of the call sign.

(1) For transmission from subscriber operated transmitters, the telephone number or other designation assigned by the carrier, provided that a written record of such designations is maintained by the carrier;

(2) For general aviation airborne mobile stations in the Air-Ground Radiotelephone Service, the official FAA registration number of the aircraft;

(3) For stations in the Paging and Radiotelephone Service, a call sign assigned to another station within the same system.

[59 FR 59507, Nov. 17, 1994, as amended at 59 FR 59955, Nov. 21, 1994; 62 FR 11633, Mar. 12, 1997; 70 FR 19308, Apr. 13, 2005]

§ 22.321 [Reserved]

§ 22.325 [Reserved]

TECHNICAL REQUIREMENTS

§ 22.351 Channel assignment policy.

The channels allocated for use in the Public Mobile Services are listed in the applicable subparts of this part. Channels and channel blocks are assigned in such a manner as to facilitate the rendition of service on an interference-free basis in each service area. Except as otherwise provided in this part, each channel or channel block is assigned exclusively to one licensee in each service area. All applicants for, and licensees of, stations in the Public Mobile Services shall cooperate in the selection and use of channels in order to minimize interference and obtain the most efficient use of the allocated spectrum.

[70 FR 19308, Apr. 13, 2005]

§ 22.352 Protection from interference.

Public Mobile Service stations operating in accordance with applicable FCC rules and the terms and conditions of their authorizations are normally considered to be non-interfering. If the FCC determines, however, that interference that significantly interrupts or degrades a radio service is being caused, it may, in accordance with the provisions of sections 303(f) and 316 of the Communications Act of 1934, as amended, (47 U.S.C. 303(f), 316), require modifications to any Public Mobile station as necessary to eliminate such interference.

(a) *Failure to operate as authorized.* Any licensee causing interference to the service of other stations by failing to operate its station in full accordance with its authorization and applicable FCC rules shall discontinue all transmissions, except those necessary for the immediate safety of life or property, until it can bring its station into full compliance with the authorization and rules.

(b) *Intermodulation interference.* Licensees should attempt to resolve such interference by technical means.

(c) *Situations in which no protection is afforded.* Except as provided elsewhere in this part, no protection from interference is afforded in the following situations:

(1) *Interference to base receivers from base or fixed transmitters.* Licensees should attempt to resolve such interference by technical means or operating arrangements.

(2) *Inteference to mobile receivers from mobile transmitters.* No protection is provided against mobile-to-mobile interference.

(3) *Interference to base receivers from mobile transmitters.* No protection is provided against mobile-to-base interference.

(4) *Interference to fixed stations.* Licensees should attempt to resolve such interference by technical means or operating arrangements.

(5) *Anomalous or infrequent propagation modes.* No protection is provided against interference caused by tropospheric and ionospheric propagation of signals.

(6) *Facilities for which the Commission is not notified.* No protection is provided against interference to the service of any additional or modified transmitter operating pursuant to §1.929 or §22.165, unless and until the licensee modifies its authorization using FCC Form 601.

(7) *In-building radiation systems.* No protection is provided against interference to the service of in-building radiation systems (see § 22.383).

[59 FR 59507, Nov. 17, 1994, as amended at 62 FR 11633, Mar. 12, 1997; 63 FR 68944, Dec. 14, 1998; 70 FR 19308, Apr. 13, 2005]

§ 22.353 Blanketing interference.

Licensees of Public Mobile Services stations are responsible for resolving cases of blanketing interference in accordance with the provisions of this section.

(a) Except as provided in paragraph (c) of this section, licensees must resolve any cases of blanketing interference in their area of responsibility caused by operation of their transmitter(s) during a one-year period following commencement of service from new or modified transmitter(s). Interference must be resolved promptly at no cost to the complainant.

(b) The area of responsibility is that area in the immediate vicinity of the transmitting antenna of stations where the field strength of the electromagnetic radiation from such stations equals or exceeds 115 dBμV/m. To determine the radial distance to the boundary of this area, the following formula must be used:

$$d = 0.394 \times \sqrt{p}$$

where d is the radial distance to the boundary, in kilometers

p is the radial effective radiated power, in kilowatts

The maximum effective radiated power in the pertinent direction, without consideration of the antenna's vertical radiation pattern or height, must be used in the formula.

(c) Licensees are not required to resolve blanketing interference to mobile receivers or non-RF devices or blanketing interference occurring as a result of malfunctioning or mistuned receivers, improperly installed consumer antenna systems, or the use of high gain antennas or antenna booster amplifiers by consumers.

(d) Licensees that install transmitting antennas at a location where there are already one or more transmitting antennas are responsible for resolving any new cases of blanketing interference in accordance with this section.

(e) Two or more licensees that concurrently install transmitting antennas at the same location are jointly responsible for resolving blanketing interference cases, unless the FCC can readily determine which station is causing the interference, in which case the licensee of that station is held fully responsible.

(f) After the one year period of responsibility to resolve blanketing interference, licensees must provide upon request technical information to complainants on remedies for blanketing interference.

§ 22.355 Frequency tolerance.

Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C–1 of this section.

TABLE C–1—FREQUENCY TOLERANCE FOR TRANSMITTERS IN THE PUBLIC MOBILE SERVICES

Frequency range (MHz)	Base, fixed (ppm)	Mobile >3 watts (ppm)	Mobile ≤3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

[61 FR 54099, Oct. 17, 1996]

§ 22.357 Emission types.

Any authorized station in the Public Mobile Services may transmit emissions of any type(s) that comply with the applicable emission rule, *i.e.* § 22.359, § 22.861 or § 22.917.

[70 FR 19308, Apr. 13, 2005]

§ 22.359 Emission limitations.

The rules in this section govern the spectral characteristics of emissions in the Public Mobile Services, except for the Air-Ground Radiotelephone Service (see § 22.861, instead) and the Cellular Radiotelephone Service (see § 22.917, instead).

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 30 kHz or more. In the 60 kHz bands immediately outside and adjacent to the authorized frequency range or channel, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 30 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) *Alternative out of band emission limit.* Licensees in the Public Mobile Services may establish an alternative out of band emission limit to be used at specified frequencies (band edges) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) *Interference caused by out of band emissions.* If any emission from a transmitter operating in any of the Public Mobile Services results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

[70 FR 19308, Apr. 13, 2005]

§ 22.365 Antenna structures; air navigation safety.

Licensees that own their antenna structures must not allow these antenna structures to become a hazard to air navigation. In general, antenna structure owners are responsible for registering antenna structures with the FCC if required by part 17 of this chapter, and for installing and maintaining any required marking and lighting. However, in the event of default of this responsibility by an antenna structure owner, each FCC permittee or licensee authorized to use an affected antenna structure will be held responsible by the FCC for ensuring that the antenna structure continues to meet the requirements of part 17 of this chapter. See §17.6 of this chapter.

(a) *Marking and lighting.* Antenna structures must be marked, lighted and maintained in accordance with part 17 of this chapter and all applicable rules and requirements of the Federal Aviation Administration.

(b) *Maintenance contracts.* Antenna structure owners (or licensees and permittees, in the event of default by an antenna structure owner) may enter into contracts with other entities to monitor and carry out necessary maintenance of antenna structures. Antenna structure owners (or licensees and permittees, in the event of default by an antenna structure owner) that make such contractual arrangements continue to be responsible for the maintenance of antenna structures in regard to air navigation safety.

[61 FR 4365, Feb. 6, 1996]

§ 22.377 Certification of transmitters.

Transmitters used in the Public Mobile Services, including those used with signal boosters, in-building radiation systems and cellular repeaters, must be certificated for use in the radio services regulated under this part. Transmitters must be certificated when the station is ready for service, not necessarily at the time of filing an application. The FCC may list as certificated only transmitters that are capable of meeting all technical requirements of the rules governing the service in which they will operate. The procedure for obtaining certification is set forth in part 2 of this chapter.

[78 FR 25174, Apr. 29, 2013]

§ 22.379 RF exposure.

Licensees and manufacturers shall ensure compliance with the Commission's radio frequency exposure requirements in §§ 1.1307(b), 2.1091, and 2.1093 of this chapter, as appropriate. Applications for equipment authorization of mobile or portable devices operating under this section must contain a statement confirming compliance with these requirements. Technical information showing the basis for this statement must be submitted to the Commission upon request.

[85 FR 18150, Apr. 1, 2020]

§ 22.383 In-building radiation systems.

Licensees may install and operate in-building radiation systems without applying for authorization or notifying the FCC, provided that the locations of the in-building radiation systems are within the protected service area of the licensee's authorized transmitter(s) on the same channel or channel block.

Subpart D [Reserved]

Subpart E—Paging and Radiotelephone Service

§ 22.501 Scope.

The rules in this subpart govern the licensing and operation of public mobile paging and radiotelephone stations. The licensing and operation of these stations are also subject to rules elsewhere in this part that apply generally to the Public Mobile Services. However, in case of conflict, the rules in this subpart govern.

§ 22.503 Paging geographic area authorizations.

The FCC considers applications for and issues paging geographic area authorizations in the Paging and Radiotelephone Service in accordance with the rules in this section. Each paging geographic area authorization contains conditions requiring compliance with paragraphs (h) and (i) of this section.

(a) *Channels.* The FCC may issue a paging geographic area authorization for any channel listed in § 22.531 of this part or for any channel pair listed in § 22.561 of this part.

(b) *Paging geographic areas.* The paging geographic areas are as follows:

(1) The Nationwide paging geographic area comprises the District of Columbia and all States, Territories and possessions of the United States of America.

(2) Major Economic Areas (MEAs) and Economic Areas (EAs) are defined below. EAs are defined by the Department of Commerce, Bureau of Economic Analysis. *See* Final Redefinition of the MEA Economic Areas, 60 FR 13114 (March 10, 1995). MEAs are based on EAs. In addition to the Department of Commerce's 172 EAs, the FCC shall separately license Guam and the Northern Mariana Islands, Puerto Rico and the United States Virgin Islands, and American Samoa, which have been assigned FCC-created EA numbers 173–175, respectively, and MEA numbers 49–51, respectively.

(3) The 51 MEAs are composed of one or more EAs as defined in the following table:

MEAs	EAs
1 (Boston)	1–3.
2 (New York City)	4–7, 10.
3 (Buffalo)	8.
4 (Philadelphia)	11–12.
5 (Washington)	13–14.
6 (Richmond)	15–17, 20.
7 (Charlotte-Greensboro-Greenville-Raleigh).	18–19, 21–26, 41–42, 46.
8 (Atlanta)	27–28, 37–40, 43.
9 (Jacksonville)	29, 35.
10 (Tampa-St. Petersburg-Orlando).	30, 33–34.
11 (Miami)	31–32.
12 (Pittsburgh)	9, 52–53.
13 (Cincinnati-Dayton)	48–50.
14 (Columbus)	51.
15 (Cleveland)	54–55.
16 (Detroit)	56–58, 61–62.
17 (Milwaukee)	59–60, 63, 104–105, 108.
18 (Chicago)	64–66, 68, 97, 101.
19 (Indianapolis)	67.
20 (Minneapolis-St. Paul)	106–107, 109–114, 116.
21 (Des Moines-Quad Cities)	100, 102–103, 117.
22 (Knoxville)	44–45.
23 (Louisville-Lexington-Evansville).	47, 69–70, 72.
24 (Birmingham)	36, 74, 78–79.
25 (Nashville)	71.
26 (Memphis-Jackson)	73, 75–77.
27 (New Orleans-Baton Rouge).	80–85.
28 (Little Rock)	90–92, 95.
29 (Kansas City)	93, 99, 123.
30 (St. Louis)	94, 96, 98.
31 (Houston)	86–87, 131.
32 (Dallas-Fort Worth)	88–89, 127–130, 135, 137–138.
33 (Denver)	115, 140–143.
34 (Omaha)	118–121.
35 (Wichita)	122.

MEAs	EAs
36 (Tulsa)	124.
37 (Oklahoma City)	125–126.
38 (San Antonio)	132–134.
39 (El Paso-Albuquerque)	136, 139, 155–157.
40 (Phoenix)	154, 158–159.
41 (Spokane-Billings)	144–147, 168.
42 (Salt Lake City)	148–150, 152.
43 (San Francisco-Oakland-San Jose).	151, 162–165.
44 (Los Angeles-San Diego)	153, 160–161.
45 (Portland)	166–167.
46 (Seattle)	169–170.
47 (Alaska)	171.
48 (Hawaii)	172.
49 (Guam and the Northern Mariana Islands).	173.
50 (Puerto Rico and U.S. Virgin Islands).	174.
51 (American Samoa)	175.

(c) *Availability.* The FCC may determine whether to issue a paging geographic area authorization for any specific channel or channel pair in any specific paging geographic area. The FCC may replace existing site specific authorizations for facilities on a channel or channel pair located in a paging geographic area with a paging geographic area authorization for that channel or channel pair, if in its sole discretion, the FCC determines that the public interest would be served by such replacement.

(d) *Filing windows.* The FCC accepts applications for paging geographic area authorizations only during filing windows. The FCC issues Public Notices announcing in advance the dates of the filing windows, and the specific paging geographic areas and channels for which applications may be accepted.

(e) *One grant per geographic area.* The FCC may grant one and only one application for a paging geographic area authorization for any specific channel or channel pair in any specific paging geographic area defined in paragraph (b) of this section. Selection from among mutually exclusive applications for a paging geographic area authorization will be made in accordance with the procedures in §§22.131 and 22.200 through 22.299. If after the selection process but prior to filing a ''long form'' application, a successful bidder decides to partition the paging geographic area, the FCC may require and accept multiple ''long form'' applications from the consortium members.

(f) *Exclusive right to expand.* During the term of a paging geographic area authorization, the FCC does not accept, from anyone other than the paging geographic area licensee, any major application for authorization to operate a facility that would serve unserved area within the paging geographic area specified in that paging geographic area authorization, on the channel specified in that paging geographic area authorization, unless any extension of the interfering contour of the proposed facility falls:

(1) Within the composite interfering contour of another licensee; or,

(2) Into unserved area and the paging geographic area licensee consents to such extension.

(g) *Subsequent applications not accepted.* During the term of a paging geographic area authorization, the FCC does not accept any application for authorization relating to a facility that is or would be located within the paging geographic area specified in that paging geographic area authorization, on the channel specified in that paging geographic area authorization, except in the following situations:

(1) FCC grant of an application authorizing the construction of the facility could have a significant environmental effect as defined by §1.1307 of this chapter. *See* §22.115(a)(5).

(2) Specific international coordination procedures are required, prior to assignment of a channel to the facility, pursuant to a treaty or other agreement between the United States government and the government of Canada or Mexico. *See* §22.169.

(3) The paging geographic area licensee or another licensee of a system within the paging geographic area applies to assign its authorization or for FCC consent to a transfer of control.

(h) *Adjacent geographic area coordination required.* Before constructing a facility for which the interfering contour (as defined in §22.537 or §22.567 of this part, as appropriate for the channel involved) would extend into another paging geographic area, a paging geographic area licensee must obtain the consent of the relevant co-channel paging geographic area licensee, if any, into whose area the interfering contour would extend. Licensees are expected to cooperate fully and in good faith attempt to resolve potential interference

problems before bringing matters to the FCC. In the event that there is no co-channel paging geographic area licensee from whom to obtain consent in the area into which the interfering contour would extend, the facility may be constructed and operated subject to the condition that, at such time as the FCC issues a paging geographic area authorization for that adjacent geographic area, either consent must be obtained or the facility modified or eliminated such that the interfering contour no longer extends into the adjacent geographic area.

(i) *Protection of existing service.* All facilities constructed and operated pursuant to a paging geographic area authorization must provide co-channel interference protection in accordance with §22.537 or §22.567, as appropriate for the channel involved, to all authorized co-channel facilities of exclusive licensees within the paging geographic area. Non-exclusive licensees on the thirty-five exclusive 929 MHz channels are not entitled to exclusive status, and will continue to operate under the sharing arrangements established with the exclusive licensees and other non-exclusive licensees that were in effect prior to February 19, 1997. MEA, EA, and nationwide geographic area licensees have the right to share with non-exclusive licensees on the thirty-five exclusive 929 MHz channels on a non-interfering basis.

(j) *Site location restriction.* The transmitting antenna of each facility constructed and operated pursuant to a paging geographic area authorization must be located within the paging geographic area specified in the authorization.

(k) *Coverage requirements.* Failure by an MEA or EA licensee to meet either the coverage requirements in paragraphs (k)(1) and (k)(2) of this section, or alternatively, the substantial service requirement in paragraph (k)(3) of this section, will result in automatic termination of authorizations for those facilities that were not authorized, constructed, and operating at the time the geographic area authorization was granted. MEA and EA licensees have the burden of showing when their facilities were authorized, constructed, and operating, and should retain necessary records of these sites until coverage requirements are fulfilled. For the purpose of this paragraph, to ''cover'' area means to include geographic area within the composite of the service contour(s) determined by the methods of §22.537 or §22.567 as appropriate for the particular channel involved. Licensees may determine the population of geographic areas included within their service contours using either the 1990 census or the 2000 census, but not both.

(1) No later than three years after the initial grant of an MEA or EA geographic area authorization, the licensee must construct or otherwise acquire and operate sufficient facilities to cover one third of the population in the paging geographic area. The licensee must notify the FCC at the end of the three-year period pursuant to §1.946 of this chapter, either that it has satisfied this requirement or that it plans to satisfy the alternative requirement to provide substantial service in accordance with paragraph (k)(3) of this section.

(2) No later than five years after the initial grant of an MEA or EA geographic area authorization, the licensee must construct or otherwise acquire and operate sufficient facilities to cover two thirds of the population in the paging geographic area. The licensee must notify the FCC at the end of the five year period pursuant to §1.946 of this chapter, either that it has satisfied this requirement or that it has satisfied the alternative requirement to provide substantial service in accordance with paragraph (k)(3) of this section.

(3) As an alternative to the coverage requirements of paragraphs (k)(1) and (k)(2) of this section, the paging geographic area licensee may demonstrate that, no later than five years after the initial grant of its paging geographic area authorization, it provides substantial service to the paging geographic area. ''Substantial service'' means service that is sound, favorable, and substantially above a level of mediocre service that would barely warrant renewal.

[62 FR 11633, Mar. 12, 1997, as amended at 63 FR 68945, Dec. 14, 1998; 64 FR 33782, June 24, 1999]

§ 22.507 Number of transmitters per station.

This section concerns the number of transmitters licensed under each station authorization in the Paging and Radiotelephone Service, other than paging geographic area authorizations.

(a) *Operationally related transmitters.* Each station must have at least one transmitter. There is no limit to the number of transmitters that a station may comprise. However, transmitters within a station should be operationally related and/or should serve the same general geographical area. Operationally related transmitters are those that operate together as a system (*e.g.*, trunked systems, simulcast systems), rather than independently.

(b) *Split of large systems.* The FCC may split wide-area systems into two or more stations for administrative convenience. Except for nationwide paging and other operationally related transmitters, transmitters that are widely separated geographically are not licensed under a single authorization.

(c) *Consolidation of separate stations.* The FCC may consolidate site-specific contiguous authorizations upon request (FCC Form 601) of the licensee, if appropriate under paragraph (a) of this section. Paging licensees may include remote, stand-alone transmitters under the single system-wide authorization, if the remote, stand-alone transmitter is linked to the system via a control/repeater facility or by satellite. Including a remote, stand-alone transmitter in a system-wide authorization does not alter the limitations provided under §22.503(f) on entities other than the paging geographic area licensee. In the alternative, paging licensees may maintain separate site-specific authorizations for stand-alone or remote transmitters. The earliest expiration date of the authorizations that make up the single system-wide authorization will determine the expiration date for the system-wide authorization. Licensees must file timely renewal applications for site-specific authorizations included in a single system-wide authorization request until the request is approved. Renewal of the system-wide authorization will be subject to §1.949 of this chapter.

(d) *Replacement of site-by-site authorizations with single authorization.* After a paging geographic area authorization for a channel has been issued, the FCC may, on its own motion, replace the authorization(s) of any other licensee (for facilities located within that paging geographic area on that channel) with a single replacement authorization.

[62 FR 11634, Mar. 12, 1997, as amended at 63 FR 68945, Dec. 14, 1998; 64 FR 33784, June 24, 1999]

§ 22.509 Procedures for mutually exclusive applications in the Paging and Radiotelephone Service.

Mutually exclusive applications in the Paging and Radiotelephone Service, including those that are mutually exclusive with applications in the Rural Radiotelephone Service, are processed in accordance with §22.131 and with this section.

(a) Applications in the Paging and Radiotelephone Service may be mutually exclusive with applications in the Rural Radiotelephone Service if they seek authorization to operate facilities on the same channel in the same area, or the technical proposals are otherwise in conflict. See §22.567.

(b) A modification application in either service filed on the earliest filing date may cause all later-filed mutually exclusive applications of any type in either service to be ''cut off'' (excluded from a same-day filing group) and dismissed, pursuant to §22.131(c)(3)(ii) and §22.131(c)(4).

[59 FR 59956, Nov. 21, 1994, as amended at 61 FR 54099, Oct. 17, 1996; 64 FR 33784, June 24, 1999]

§ 22.511 Construction period for the Paging and Radiotelephone Service.

The construction period for stations in the Paging and Radiotelephone Service is one year.

§ 22.513 Partitioning and disaggregation.

MEA and EA licensees may apply to partition their authorized geographic service area or disaggregate their authorized spectrum at any time following grant of their geographic area authorizations. Nationwide geographic area licensees may apply to partition

their authorized geographic service area or disaggregate their authorized spectrum at any time as of August 23, 1999.

(a) *Application required.* Parties seeking approval for partitioning and/or disaggregation shall apply for partial assignment of a license pursuant to § 1.948 of this chapter.

(b) *Partitioning.* In the case of partitioning, requests for authorization for partial assignment of a license must include, as attachments, a description of the partitioned service area and a calculation of the population of the partitioned service area and the authorized geographic service area. The partitioned service area shall be defined by 120 sets of geographic coordinates at points at every 3 degrees azimuth from a point within the partitioned service area along the partitioned service area boundary unless either an FCC-recognized service area is used (e.g., MEA or EA) or county lines are followed. The geographical coordinates must be specified in degrees, minutes, and seconds to the nearest second latitude and longitude, and must be based upon the 1983 North American Datum (NAD83). In the case where FCC-recognized service areas or county lines are used, applicants need only list the specific area(s) through use of FCC designations or county names that constitute the partitioned area.

(c) *Disaggregation.* Spectrum may be disaggregated in any amount.

(d) *Combined partitioning and disaggregation.* Licensees may apply for partial assignment of authorizations that propose combinations of partitioning and disaggregation.

(e) *License term.* The license term for a partitioned license area and for disaggregated spectrum shall be the remainder of the original licensee's license term as provided for in § 1.955 of this chapter.

[64 FR 33784, June 24, 1999, as amended at 82 FR 41547, Sept. 1, 2017]

§ 22.515 Permissible communications paths.

Mobile stations may communicate only with and through base stations. Base stations may communicate only with mobile stations and receivers on land or surface vessels.

§ 22.527 Signal boosters.

Licensees may install and operate signal boosters on channels listed in § 22.531 only in accordance with the provisions of § 22.165 governing additional transmitters for existing systems. Licensees must not allow any signal booster that they operate to cause interference to the service or operation of any other authorized stations or systems.

[61 FR 31051, June 19, 1996]

§ 22.529 Application requirements for the Paging and Radiotelephone Service.

In addition to information required by subparts B and D of this part, applications for authorization in the Paging and Radiotelephone Service contain required information as described in the instructions to the form. Site coordinates must be referenced to NAD83 and be correct to + −1 second.

(a) *Administrative information.* The following information, associated with Form 601, is required as indicated. Each application of any type, including applications for paging geographic area authorizations, must contain one and only one Schedule A.

(1) The purpose of the filing is required for each application of any type.

(2) The geographic area designator, channel and geographic area name are required only for each application for a paging geographic area authorization.

(3) The FCC control point number, if any, the location (street address, city or town, state), the telephone number and an indication of the desired database action are required only for each application proposing to add or delete a control point.

(4) The FCC location number, file number and location (street address, city or town, state) of authorized facilities that have not been constructed are required only for each application requesting an extension of time to construct those facilities.

(b) *Technical data.* The following data, associated with FCC Form 601, are required as indicated for each application. Applications for a paging geographic area authorization must not

contain Schedule B. Other type of applications may contain as many Schedule Bs as are necessary for the intended purpose.

(1) For each transmitting antenna site to be added, deleted or modified, the following are required: an indication of the desired database action, the Commission location number, if any, the street address or other description of the transmitting antenna site, the city, county and state, the geographic coordinates (latitude and longitude), correct to ±1 second, of the transmitting antenna site (NAD83), and in the case of a proposed relocation of a transmitting antenna, the Commission location number and geographic coordinates, correct to ±1 second, of the transmitting antenna site (NAD83) to which the geographic coordinates of the current location are referenced.

(2) For each transmitting antenna site to be added, deleted or modified, the following supplementary information is required: An indication as to whether or not the transmitting antenna site is within 200 kilometers (124 miles) of the U.S.-Mexico border, and an indication as to whether or not the transmitting antenna site is North of Line A or East of Line C. Line A and Line C are defined in §2.1 of this chapter. For each adjacent geographic area within 200 kilometers (124 miles) of each transmitting antenna site to be added, deleted or modified, the geographic area designator and name, and the shortest distance (in kilometers) to the boundary of that geographic area.

(3) The height (in meters) above average terrain of the center of radiation of the antenna, the beamwidth of the main lobe of the horizontal radiation pattern of the electric field of the antenna, the height (in meters) to the tip of the antenna above ground level, a polar plot of the horizontal gain pattern of the antenna, the antenna gain in the maximum lobe and the electric field polarization of the wave emitted by the antenna when installed as proposed.

(i) The center frequency of the requested channel, the transmitter classification (e.g. base, fixed mobile), the designator for any non-standard emission type to be used, including bandwidth and modulation type, and the maximum effective radiated power.

(ii) For each of the eight cardinal radials, the antenna height above the average elevation along the radial, and the effective radiated power of each transmitter in the direction of the radial.

(iii) For each transmitter proposed to transmit on a channel reserved for point-to-multipoint operation involving transmission to four or more points of communications (i.e. base transmitters), the following is required for each point of communication: an indication of the desired database action, the location (city or town, state), and the geographical coordinates (latitude and longitude, NAD 83).

(c) Upon request by an applicant, licensee, or the Commission, a part 22 applicant or licensee of whom the request is made shall furnish the antenna type, model, and the name of the antenna manufacturer to the requesting party within ten (10) days of receiving written notification.

[62 FR 11635, Mar. 12, 1997, as amended at 63 FR 68945, Dec. 14, 1998; 64 FR 53240, Oct. 1, 1999]

PAGING OPERATION

§ 22.531 Channels for paging operation.

The following channels are allocated for assignment to base transmitters that provide paging service, either individually or collectively under a paging geographic area authorization. Unless otherwise indicated, all channels have a bandwidth of 20 kHz and are designated by their center frequencies in MegaHertz.

Low VHF Channels			
35.20	35.46	43.20	43.46
35.22	35.50	43.22	43.50
35.24	35.54	43.24	43.54
35.26	35.56	43.26	43.56
35.30	35.58	43.30	43.58
35.34	35.60	43.34	43.60
35.38	35.62	43.38	43.62
35.42	35.66	43.42	43.66
High VHF Channels			
152.24	152.84	158.10	158.70
UHF Channels			
931.0125	931.2625	931.5125	931.7625
931.0375	931.2875	931.5375	931.7875
931.0625	931.3125	931.5625	931.8125
931.0875	931.3375	931.5875	931.8375

931.1125	931.3625	931.6125	931.8625
931.1375	931.3875	931.6375	931.8875
931.1625	931.4125	931.6625	931.9125
931.1875	931.4375	931.6875	931.9375
931.2125	931.4625	931.7125	931.9625
931.2375	931.4875	931.7375	931.9875

(a)–(b) [Reserved]

(c) Upon application using FCC Form 601, common carriers may be authorized to provide one-way paging service using the leased subcarrier facilities of broadcast stations licensed under part 73 of this chapter.

(d) Occasionally in case law and other formal and informal documents, the low VHF channels have been referred to as ''lowband'' channels, and the high VHF channels have been referred to as ''guardband'' channels.

(e) Pursuant to the U.S.-Canada Interim Coordination Considerations for 929–932 MHz, as amended, only the following UHF channels may be assigned in the continental United States North of Line A or in the State of Alaska East of Line C, within the indicated longitudes:

(1) From longitude W.73° to longitude W.75° and from longitude W.78° to longitude W.81°:

931.0125	931.1125	931.1875	931.2625
931.0375	931.1375	931.2125	931.8625
931.0625	931.1625	931.2375	

(2) From longitude W.81° to longitude W.85°:

931.0125	931.2125	931.3875	931.5875
931.0375	931.2375	931.4125	931.6125
931.0625	931.2625	931.4625	931.6375
931.1125	931.2875	931.4875	931.8625
931.1375	931.3125	931.5125	
931.1625	931.3375	931.5375	
931.1875	931.3625	931.5625	

(3) Longitudes other than specified in paragraphs (e)(1) and (e)(2) of this section:

931.0125	931.1625	931.2875	931.4125
931.0375	931.1875	931.3125	931.4625
931.0625	931.2125	931.3375	931.8625
931.1125	931.2375	931.3625	
931.1375	931.2625	931.3875	

(4) At any longitude, with authorization condition requiring coordinated, shared use and equal access by licensees in both countries:

931.4375	931.8875	931.9125	931.9375

(f) For the purpose of issuing paging geographic authorizations, the paging geographic areas used for UHF channels are the MEAs, and the paging geographic areas used for the low and high VHF channels are the EAs (see § 22.503(b)).

[59 FR 59507, Nov. 17, 1994, as amended at 59 FR 59954, Nov. 21, 1994; 62 FR 11635, Mar. 12, 1997; 63 FR 68945, Dec. 14, 1998; 64 FR 33784, June 24, 1999; 70 FR 19309, Apr. 13, 2005]

§ 22.535 Effective radiated power limits.

The effective radiated power (ERP) of transmitters operating on the channels listed in § 22.531 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)
35–36	600
43–44	500
152–159	1400
931–932	3500

(b) *Basic power limit.* Except as provided in paragraph (d) of this section, the ERP of transmitters on the VHF channels must not exceed 500 Watts.

(c) *Height-power limit.* Except as provided in paragraph (d) of this section, the ERP of transmitters on the VHF channels must not exceed the amount that would result in an average distance to the service contour of 32.2 kilometers (20 miles). The average distance to the service contour is calculated by taking the arithmetic mean of the distances determined using the procedures specified in § 22.537 for the eight cardinal radial directions, excluding cardinal radial directions for which 90% or more of the distance so calculated is over water.

(d) *Encompassed interfering contour areas.* Transmitters are exempt from the basic power and height-power limits of this section if the area within their interfering contours is totally encompassed by the interfering contours of operating co-channel base transmitters controlled by the same licensee. For the purpose of this paragraph, operating transmitters are authorized transmitters that are providing service to subscribers.

(e) *Adjacent channel protection.* The ERP of transmitters must not exceed 500 Watts if they:

(1) Transmit on a channel in the 152–159 MHz frequency range and are located less than 5 kilometers (3.1 miles) from any station licensed in the Private Radio Services that receives on an adjacent channel; or,

(2) Transmit on channel 158.10 or 158.70 MHz and are located less than 5 kilometers (3.1 miles) from any station licensed in the Public Mobile Services that receives on either of the following adjacent channels: 158.07 MHz or 158.67 MHz.

(f) *Signal boosters.* The effective radiated power of signal boosters must not exceed 5 watts ERP under any normal operating condition.

[59 FR 59507, Nov. 17, 1994, as amended at 61 FR 31051, June 19, 1996]

§ 22.537 Technical channel assignment criteria.

The rules in this section establish technical assignment criteria for the channels listed in § 22.531. These criteria permit channel assignments to be made in a manner such that reception by public paging receivers of signals from base transmitters, within the service area of such base transmitters, is protected from interference caused by the operation of independent co-channel base transmitters.

(a) *Contour overlap.* The FCC may grant an application requesting assignment of a channel to a proposed base transmitter only if:

(1) The interfering contour of the proposed transmitter does not overlap the service contour of any protected co-channel transmitter controlled by a carrier other than the applicant, unless that carrier has agreed in writing to accept any interference that may result from operation of the proposed transmitter; and,

(2) The service contour of the proposed transmitter does not overlap the interfering contour of any protected co-channel transmitter controlled by a carrier other than the applicant, unless the applicant agrees to accept any interference that may result from operation of the protected co-channel transmitter; and,

(3) The area and/or population to which service would be provided by the proposed transmitter is substantial, and service gained would exceed that lost as a result of agreements to accept interference.

(b) *Protected transmitter.* For the purposes of this section, protected transmitters are authorized transmitters for which there is a current FCC public record and transmitters proposed in prior-filed pending applications.

(c) *VHF service contour.* For paging stations transmitting on the VHF channels, the distance from the transmitting antenna to the service contour along each cardinal radial is calculated as follows:

$$d = 1.243 \times h^{0.40} \times p^{0.20}$$

where d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

(1) Whenever the actual HAAT is less than 30 meters (98 feet), 30 must be used as the value for h in the above formula.

(2) The value used for p in the above formula must not be less than 27 dB less than the maximum ERP in any direction or 0.1 Watt, whichever is more.

(3) The distance from the transmitting antenna to the service contour along any radial other than the eight cardinal radials is routinely calculated by linear interpolation of distance as a function of angle. However, in resolving petitions to deny, the FCC may calculate the distance to the service contour using the formula in paragraph (c) of this section with actual HAAT and ERP data for the inter-station radial and additional radials above and below the inter-station radial at 2.5° intervals.

(d) *VHF interfering contour.* For paging stations transmitting on the VHF channels, the distance from the transmitting antenna to the interfering contour along each cardinal radial is calculated as follows:

$$d = 6.509 \times h^{0.28} \times p^{0.17}$$

where d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

(1) Whenever the actual HAAT is less than 30 meters (98 feet), 30 must be used as the value for h in the above formula.

(2) The value used for p in the above formula must not be less than 27 dB

less than the maximum ERP in any direction or 0.1 Watt, whichever is more.

(3) The distance from the transmitting antenna to the interfering contour along any radial other than the eight cardinal radials is routinely calculated by linear interpolation of distance as a function of angle. In resolving petitions to deny, however, the FCC may calculate the distance to the interfering contour using the formula in paragraph (d) of this section with actual HAAT and ERP data for the inter-station radial and additional radials above and below the inter-station radial at 2.5° intervals.

(e) *931 MHz service contour.* For paging stations transmitting on the 931 MHz channels, the service contour is a circle, centered on the transmitting antenna, with a radius determined from Table E–1 of this section.

TABLE E—1–931 MHZ PAGING SERVICE RADII

Service radius km (miles)	Effective radiated power (Watts)					
Antenna HAAT meters (feet)	0–125	126–250	251–500	501–1000	1001–1860	1861–3500
0–177 (0–581)	32.2 (20)	32.2 (20)	32.2 (20)	32.2 (20)	32.2 (20)	32.2 (20)
178–305 (582–1001)	32.2 (20)	32.2 (20)	32.2 (20)	32.2 (20)	37.0 (23)	41.8 (26)
306–427 (1002–1401)	32.2 (20)	32.2 (20)	37.0 (23)	41.8 (26)	56.3 (35)	56.3 (35)
428–610 (1402–2001)	32.2 (20)	37.0 (23)	41.8 (26)	56.3 (35)	56.3 (35)	56.3 (35)
611–861 (2002–2825)	37.0 (23)	41.8 (26)	41.8 (26)	56.3 (35)	83.7 (52)	83.7 (52)
862–1219 (2826–3999)	41.8 (26)	56.3 (35)	56.3 (35)	83.7 (52)	83.7 (52)	83.7 (52)
1220 + (4000 +)	56.3 (35)	56.3 (35)	83.7 (52)	83.7 (52)	83.7 (52)	83.7 (52)

(f) *931 MHz interfering contour.* For paging stations transmitting on the 931 MHz channels, the interfering contour is a circle, centered on the transmitting antenna, with a radius determined from Table E–2 of this section.

TABLE E—2–931 MHZ PAGING INTERFERING RADII

Interfering radius km (miles)	Effective radiated power (Watts)					
Antenna HAAT meters (feet)	0–125	126–250	251–500	501–1000	1001–1860	1861–3500
0–177 (0–581)	80.5 (50)	80.5 (50)	80.5 (50)	80.5 (50)	80.5 (50)	80.5 (50)
178–305 (582–1001)	80.5 (50)	80.5 (50)	80.5 (50)	80.5 (50)	88.5 (55)	96.6 (60)
306–427 (1002–1401)	80.5 (50)	80.5 (50)	88.5 (55)	96.6 (60)	130.4 (81)	130.4 (81)
428–610 (1402–2001)	80.5 (50)	88.5 (55)	96.6 (60)	130.4 (81)	130.4 (81)	130.4 (81)
611–861 (2002–2825)	88.5 (55)	96.6 (60)	96.6 (60)	130.4 (81)	191.5 (119)	191.5 (119)
862–1219 (2826–3999)	96.6 (60)	130.4 (81)	130.4 (81)	191.5 (119)	191.5 (119)	191.5 (119)
1220 + (4000 +)	130.4 (81)	130.4 (81)	191.5 (119)	191.5 (119)	191.5 (119)	191.5 (119)

(g) *In-building radiation systems.* The locations of in-building radiation systems must be within the service contour(s) of the licensee's authorized transmitter(s) on the same channel. In-building radiation systems are not protected facilities, and therefore do not have service or interfering contours.

(h) *Signal boosters on 931 MHz channels.* For the purpose of compliance with § 22.165 and notwithstanding paragraphs (e) and (f) of this section, signal boosters operating on the 931 MHz channels with an antenna HAAT not exceeding 30 meters (98 feet) are deemed to have as a service contour a

circle with a radius of 1.0 kilometer (0.6 mile) and as an interfering contour a circle with a radius of 10 kilometers (6.2 miles).

[59 FR 59507, Nov. 17, 1994, as amended at 61 FR 31051, June 19, 1996]

§ 22.559 Paging application requirements.

In addition to information required by subparts B and D and § 22.529, applications for authorization to operate a paging transmitter on the channels listed in § 22.531, other than applications for a paging geographic area authorization, must contain the applicable supplementary information described in this section.

(a) *Interference exhibit.* Except as provided in paragraph (b) of this section, an exhibit demonstrating compliance with § 22.537 with regard to protected transmitters is required for applications to operate a transmitter on the VHF channels. This exhibit must:

(1) Identify each protected transmitter located within 109 kilometers (68 miles) of the proposed transmitter in directions in which the distance to the interfering contour is 76.5 kilometers (47.5 miles) or less, and within 178 kilometers (111 miles) of the proposed transmitter in directions in which the distance to the interfering contour exceeds 76.5 kilometers (47.5 miles).

(2) For each protected transmitter identified, show the results of distance calculations indicating that there would be no overlap of service and interfering contours, or alternatively, indicate that the licensee of or applicant for the protected transmitter and/or the applicant, as required, have agreed in writing to accept any interference resulting from operation of the proposed transmitter.

(b) *Encompassment exhibit.* An exhibit showing that the area within the interfering contour of the proposed transmitter would be totally encompassed by interfering contours of operating co-channel base transmitters controlled by the applicant is required for applications to operate a transmitter with ERP exceeding the basic power and height-power limits of § 22.535. For VHF transmitters, this encompassment exhibit may substitute for the interference exhibit required in paragraph (a) of this section.

[59 FR 59507, Nov. 17, 1994, as amended at 62 FR 11636, Mar. 12, 1997]

One-way or Two-way Mobile Operation

§ 22.561 Channels for one-way or two-way mobile operation.

The following channels are allocated for paired assignment to transmitters that provide (or support other transmitters that provide) one-way or two-way public land mobile service, either individually or collectively under a paging geographic area authorization. The paging geographic areas used for these channels are the EAs (*see* § 22.503(b)(3)). These channels may be assigned for use by mobile or base transmitters as indicated, and or by fixed transmitters (including control, repeater or other fixed transmitters). The mobile channels may also be assigned for use by base or fixed transmitters under certain circumstances (*see* § 22.567(h)). Unless otherwise indicated, all channels have a bandwidth of 20 kHz and are designated by their center frequencies in MegaHertz.

Base	Mobile	Base	Mobile
VHF Channels			
152.03	158.49	152.57	157.83
152.06	158.52	152.60	157.86
152.09	158.55	152.63	157.89
152.12	158.58	152.66	157.92
152.15	158.61	152.69	157.95
152.18	158.64	152.72	157.98
152.21	158.67	152.75	158.01
152.51	157.77	152.78	158.04
152.54	157.80	152.81	158.07
UHF Channels			
454.025	459.025	454.350	459.350
454.050	459.050	454.375	459.375
454.075	459.075	454.400	459.400
454.100	459.100	454.425	459.425
454.125	459.125	454.450	459.450
454.150	459.150	454.475	459.475
454.175	459.175	454.500	459.500
454.200	459.200	454.525	459.525
454.225	459.225	454.550	459.550
454.250	459.250	454.575	459.575
454.275	459.275	454.600	459.600
454.300	459.300	454.625	459.625
454.325	459.325	454.650	459.650

[59 FR 59507, Nov. 17, 1994; 60 FR 9889, Feb. 22, 1995, as amended at 62 FR 11636, Mar. 12, 1997]

§ 22.565 Transmitting power limits.

The transmitting power of base, mobile and fixed transmitters operating on the channels listed in § 22.561 must not exceed the limits in this section.

(a) *Maximum ERP.* The effective radiated power (ERP) of base and fixed transmitters must not exceed the applicable limits in this paragraph under any circumstances.

Frequency range (MHz)	Maximum ERP (watts)
152–153	1400
157–159	150
454–455	3500
459–460	150

(b) *Basic power limit.* Except as provided in paragraph (d) of this section, the ERP of base transmitters must not exceed 500 Watts.

(c) *Height-power limits.* Except as provided in paragraph (d) of this section, the ERP of base transmitters must not exceed the amount that would result in an average distance to the service contour of 41.6 kilometers (26 miles) for VHF channels or 30.7 kilometers (19 miles) for UHF channels. The average distance to the service contour is calculated by taking the arithmetic mean of the distances determined using the procedures specified in § 22.567 for the eight cardinal radial directions, excluding cardinal radial directions for which 90% or more of the distance so calculated is over water.

(d) *Encompassed interfering contour areas.* Base transmitters are exempt from the basic power and height-power limits of this section if the area within their interfering contours is totally encompassed by the interfering contours of operating co-channel based transmitters controlled by the same licensee. For the purpose of this paragraph, operating transmitters are authorized transmitters that are providing service to subscribers.

(e) *Adjacent channel protection.* The ERP of base and fixed transmitters must not exceed 500 Watts if they transmit on channel 454.025 MHz and are located less than 7 kilometers (4.3 miles) from any Private Radio Services station receiving on adjacent channel 454.0000 MHz.

(f) *Mobile transmitters.* The transmitter output power of mobile transmitters must not exceed 60 watts.

[59 FR 59507, Nov. 17, 1994, as amended at 70 FR 19309, Apr. 13, 2005]

§ 22.567 Technical channel assignment criteria.

The rules in this section establish technical assignment criteria for the channels listed in § 22.561. The criteria in paragraphs (a) through (f) of this section permit channel assignments to be made in a manner such that reception by public mobile receivers of signals from base transmitters, within the service area of such base transmitters, is protected from interference caused by the operation of independent co-channel base and fixed transmitters in the Paging and Radiotelephone Service and central office stations, including Basic Exchange Telephone Radio Systems (BETRS), in the Rural Radiotelephone Service. Additional criteria in paragraph (g) of this section permit channel assignments to be made in a manner such that BETRS communications are protected from interference caused by the operation of independent co-channel base and fixed transmitters in the Paging and Radiotelephone Service and other central office stations in the Rural Radiotelephone Service. Separate criteria in paragraph (h) of this section apply only to assignment of the channels designated in § 22.561 as mobile channels to base and fixed transmitters, and permit these channel assignments to be made in a manner such that reception by public base and fixed receivers of signals from associated mobile and fixed transmitters is protected from interference caused by the operation of independent co-channel base and fixed transmitters.

(a) *Contour overlap.* The FCC may grant an application requesting assignment of a channel to a proposed base, fixed or central office station transmitter only if:

(1) The interfering contour of the proposed transmitter does not overlap the service contour of any protected co-channel transmitter controlled by a carrier other than the applicant, unless that carrier has agreed in writing to

accept any interference that may result from operation of the proposed transmitter; and

(2) The service contour of the proposed transmitter does not overlap the interfering contour of any protected co-channel transmitter controlled by a carrier other than the applicant, unless the application contains a statement that the applicant agrees to accept any interference that may result from operation of the protected co-channel transmitter; and

(3) The area and/or population to which service would be provided by the proposed transmitter is substantial, and service gained would exceed that lost as a result of agreements to accept interference.

(b) *Protected transmitter.* For the purposes of this section, protected transmitters are authorized transmitters for which there is a current FCC public record and transmitters proposed in prior-filed pending applications, in the Paging and Radiotelephone Service and the Rural Radiotelephone Service.

(c) *VHF service contour.* For base stations transmitting on the VHF channels, the radial distance from the transmitting antenna to the service contour along each cardinal radial is calculated as follows:

$$d = 1.609 \times h^{0.40} \times p^{0.20}$$

where:

d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

(1) Whenever the actual HAAT is less than 30 meters (98 feet), 30 must be used as the value for h in the above formula.

(2) The value used for p in the above formula must not be less than 27 dB less than the maximum ERP in any direction, or 0.1 Watt, whichever is more.

(3) The distance from the transmitting antenna to the service contour along any radial other than the eight cardinal radials is routinely calculated by linear interpolation of distance as a function of angle. However, in resolving petitions to deny, the FCC may calculate the distance to the service contour using the formula in paragraph (c) of this section with actual HAAT and ERP data for the inter-station radial and additional radials above and below the inter-station radial at 2.5° intervals.

(d) *VHF interfering contour.* For base and fixed stations transmitting on the VHF channels, the radial distance from the transmitting antenna to the interfering contour along each cardinal radial is calculated as follows:

(1) If the radial antenna HAAT is less than 150 meters:

$$d = 8.577 \times h^{0.24} \times p^{0.19}$$

where:

d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

Whenever the actual HAAT is less than 30 meters (98 feet), 30 must be used as the value for h in the above formula.

(2) If the radial antenna HAAT is 150 meters or more:

$$d = 12.306 \times h^{0.23} \times p^{0.14}$$

where:

d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

(3) The value used for p in the above formulas must not be less than 27 dB less than the maximum ERP in any direction, or 0.1 Watt, whichever is more.

(4) The distance from the transmitting antenna to the interfering contour along any radial other than the eight cardinal radials is routinely calculated by linear interpolation of distance as a function of angle. However, in resolving petitions to deny, the FCC may calculate the distance to the interfering contour using the appropriate formula in paragraph (d) of this section with actual HAAT and ERP data for the inter-station radial and additional radials above and below the inter-station radial at 2.5° intervals.

(e) *UHF service contour.* For base stations transmitting on the UHF channels, the radial distance from the transmitting antenna to the service contour along each cardinal radial is calculated as follows:

$$d = 1.726 \times h^{0.35} \times p^{0.18}$$

where:

d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

(1) Whenever the actual HAAT is less than 30 meters (98 feet), 30 must be used as the value for h in the above formula.

(2) The value used for p in the above formula must not be less than 27 dB less than the maximum ERP in any direction, or 0.1 Watt, whichever is more.

(3) The distance from the transmitting antenna to the service contour along any radial other than the eight cardinal radials is routinely calculated by linear interpolation of distance as a function of angle. However, in resolving petitions to deny, the FCC may calculate the distance to the service contour using the formula in paragraph (e) of this section with actual HAAT and ERP data for the inter-station radial and addition radials above and below the below the inter-station radial at 2.5° intervals.

(f) *UHF interfering contour.* For base and fixed stations transmitting on the UHF channels, the radial distance from the transmitting antenna to the interfering contour along each cardinal radial is calculated as follows:

(1) If the radial antenna HAAT is less than 150 meters:

$$d = 9.471 \times h^{0.23} \times p^{0.15}$$

where:

d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

Whenever the actual HAAT is less than 30 meters (98 feet), 30 must be used as the value for h in the above formula.

(2) If the radial antenna HAAT is 150 meters or more:

$$d = 6.336 \times h^{0.31} \times p^{0.15}$$

where:

d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

(3) The value used for p in the above formula must not be less than 27 dB less than the maximum ERP in any direction, or 0.1 Watt, whichever is more.

(4) The distance from the transmitting antenna to the interfering contour along any radial other than the eight cardinal radials is routinely calculated by linear interpolation of distance as a function of angle. However, in resolving petitions to deny, the FCC may calculate the distance to the interfering contour using the appropriate formula in paragraph (f) of this section with actual HAAT and ERP data for the inter-station radial and additional radials above and below the inter-station radial at 2.5° intervals.

(g) *Protection for BETRS.* In applying the provisions of paragraph (a) of this section, if either or both of the transmitters involved is a BETRS central office station, the following contour substitutions must be used:

(1) The service contour of the BETRS central office station(s) is a circle, centered on the central office station antenna, with a radius of 40 kilometers (25 miles).

(2) The interfering contour of any station of any type, when determining whether it would overlap the service contour of a BETRS central office station, is calculated as follows:

$$d = 36.364 \times h^{0.2} \times p^{0.1}$$

where:

d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

Whenever the actual HAAT is less than 30 meters (98 feet), 30 must be used as the value for h in the above formula. The value used for p in the above formula must not be less than 27 dB less than the maximum ERP in any direction, or 0.1 Watt, whichever is more.

(h) *Assignment of mobile channels to base or fixed transmitters.* Mobile channels may be assigned to base or fixed transmitters if the following criteria are met:

(1) The paired base channel, as designated in § 22.561, is assigned to base transmitters in the same geographical area operated by the same licensee.

(2) The authorization is granted subject to the condition that no interference be caused to fixed receivers in use on or prior to the date of the grant.

§ 22.571 Responsibility for mobile stations.

Mobile stations that are subscribers in good standing to a two-way service in the Paging and Radiotelephone Service, when receiving service from that station, are considered to be operating under the authorization of that station. Licensees are responsible for

exercising effective operational control over mobile stations receiving service through their stations. Mobile stations that are subscribers in good standing to a two-way service in the Paging and Radiotelephone Service, while receiving service from a different station, are considered to be operating under the authorization of such different station. The licensee of such different station is responsible, during such temporary period, for exercising effective operational control over such mobile stations as if they were subscribers to it.

§ 22.573 Use of base transmitters as repeaters.

As an additional function, base transmitters may be used as repeaters. Licensees must be able to turn the base transmitter on or off from the control point regardless of whether a subscriber-operated transmitter is transmitting.

§ 22.575 Use of mobile channel for remote control of station functions.

Carriers may remotely control station functions (e.g. shut down or reactivate base transmitters, turn aviation obstruction warning lights on or off, etc.) using a control transmitter operating on a mobile channel, subject to the conditions in this section and in § 22.567(h).

(a) The control transmitter must be capable of overriding transmissions from subscriber-operated transmitters if necessary. Subscriber-operated transmitters must not be capable of being used to deliberately or accidentally prevent the licensee from controlling the station.

(b) The licensee must implement measures designed to prevent station functions from being controlled by persons not authorized by the licensee to control the station.

(c) The control transmitter location must be within the composite service contour of the licensee's authorized station on the paired base channel.

§ 22.579 Operation of mobile transmitters across U.S.-Canada border.

Mobile stations licensed by Canada may receive two-way service while in the United States from stations licensed under this part, after authorization has been granted by the FCC. Mobile stations that normally operate under the authority of base stations licensed under this part may receive two-way service while in Canada from stations licensed under this part or by Canada, upon authorization by Canada.

§ 22.589 One-way or two-way application requirements.

In addition to information required by subparts B and D and § 22.529, applications for authorization to operate a paging transmitter on the channels listed in § 22.531, other than applications for a paging geographic area authorization, must contain the applicable supplementary information described in this section.

(a) *Interference exhibit.* Except as provided in paragraph (b) of this section, an exhibit demonstrating compliance with § 22.567 with regard to protected transmitters is required. This exhibit must:

(1) For UHF channels, identify each protected transmitter located within 108 kilometers (67 miles) of the proposed transmitter in directions in which the distance to the interfering contour is 76.4 kilometers (47.5 miles) or less, and within 178 kilometers (111 miles) of the proposed transmitter in directions in which the distance to the interfering contour exceeds 76.4 kilometers (47.5 miles); and identify each protected Basic Exchange Telephone Radio System central office transmitter in the Rural Radiotelephone Service within 231 kilometers (144 miles),

(2) For VHF channels, identify each protected transmitter located within 135 kilometers (84 miles) of the proposed transmitter in directions in which the distance to the interfering contour is 93.3 kilometers (58 miles) or less, and within 178 kilometers (111 miles) of the proposed transmitter in directions in which the distance to the interfering contour exceeds 93.3 kilometers (58 miles).

(3) For each protected transmitter identified, show the results of distance calculations indicating that there would be no overlap of service and interfering contours, or alternatively, indicate that the licensee of or applicant for the protected transmitter and/

or the applicant, as required, have agreed in writing to accept any interference resulting from operation of the proposed transmitter.

(b) *Encompassment exhibit.* An exhibit showing that the area within the interfering contour of the proposed transmitter would be totally encompassed by interfering contours of operating co-channel base transmitters controlled by the applicant is required for applications to operate a transmitter with ERP exceeding the basic power and height-power limits of § 22.565. This encompassment exhibit may substitute for the interference exhibit required in paragraph (a) of this section.

[59 FR 59507, Nov. 17, 1994, as amended at 62 FR 11636, Mar. 12, 1997]

POINT-TO-POINT OPERATION

§ 22.591 Channels for point-to-point operation.

The following channels are allocated for assignment to fixed transmitters that support other transmitters that provide public mobile service. Unless otherwise indicated, all channels have a bandwidth of 20 kHz and are designated by their center frequencies in MegaHertz.

VHF Channels

72.02	72.36	72.80	75.66
72.04	72.38	72.82	75.68
72.06	72.40	72.84	75.70
72.08	72.42	72.86	75.72
72.10	72.46	72.88	75.74
72.12	72.50	72.90	75.76
72.14	72.54	72.92	75.78
72.16	72.58	72.94	75.80
72.18	72.62	72.96	75.82
72.20	72.64	72.98	75.84
72.22	72.66	75.42	75.86
72.24	72.68	75.46	75.88
72.26	72.70	75.50	75.90
72.28	72.72	75.54	75.92
72.30	72.74	75.58	75.94
72.32	72.76	75.62	75.96
72.34	72.78	75.64	75.98
72.10	72.46	72.88	75.74
72.12	72.50	72.90	75.76
72.14	72.54	72.92	75.78
72.16	72.58	72.94	75.80
72.18	72.62	72.96	75.82
72.20	72.64	72.98	75.84
72.22	72.66	75.42	75.86
72.24	72.68	75.46	75.88
72.26	72.70	75.50	75.90
72.28	72.72	75.54	75.92
72.30	72.74	75.58	75.94
72.32	72.76	75.62	75.96
72.34	72.78	75.64	75.98

UHF Channels—State of Hawaii

488.250	491.250	489.750	492.750
488.750	491.750	490.250	493.250
489.250	492.250	490.750	493.750

(a) The 72–76 MHz channels may be used in point-to-multipoint configurations. The 72–76 MHz channels are also allocated for assignment in the Private Radio Services (see part 90 of this chapter).

(b) [Reserved]

(c) Channels in the frequency ranges 488.250–490.750 and 491.250–493.750 MHz may be assigned only to inter-island fixed stations located in the State of Hawaii.

[59 FR 59507, Nov. 17, 1994; 60 FR 9889, Feb. 22, 1995, as amended at 70 FR 19309, Apr. 13, 2005; 78 FR 25174, Apr. 29, 2013]

§ 22.593 Effective radiated power limits.

The effective radiated power of fixed stations operating on the channels listed in § 22.591 must not exceed 150 Watts. The equivalent isotropically radiated power of existing fixed microwave stations (2110–2130 and 2160–2180 MHz) licensed under this part (pursuant to former rules) must not exceed the applicable limits set forth in § 101.113 of this chapter.

[70 FR 19309, Apr. 13, 2005]

§ 22.601 Existing microwave stations licensed under this part.

Existing microwave stations (2110–2130 and 2160–2180 MHz) licensed under this part (pursuant to former rules) are subject to the transition rules in § 22.602. No new microwave systems will be authorized under this part.

(a) *Coordination required.* Before filing applications for authority to modify existing stations on these channels or major amendments to such applications, carriers must coordinate the planned channel usage, using the procedure outlined in § 22.150, with affected parties in this radio service and the Point-to-Point Microwave Service and the Multipoint Distribution Service. Affected parties are licensees and other applicants with previously filed pending applications whose stations could affect or be affected by the proposed

modification of the existing station in terms of interference.

(b) *System parameters.* In designing a system modification, the applicant must select sites, equipment and channels that will avoid harmful interference to other users. All parties must cooperate fully and make reasonable efforts to resolve technical problems and conflicts that may inhibit the most effective and efficient use of the radio spectrum; however, a party receiving notification is not obligated to suggest changes or re-design a proposal in cases involving conflicts. The applicant must identify in the application all parties with which the technical proposal was coordinated. In the event that technical problems are not resolved or if an affected party does not respond to coordination efforts within 30 days after notification, an explanation must be contained in the application. Where technical conflicts are resolved by an agreement between the parties that requires special procedures to reduce the likelihood of harmful interference (such as the use of artificial site shielding), or would result in a reduction of quality or capacity of either system, the details thereof must be contained in the application.

(c) *Bandwidth.* Applicants must request the minimum emission bandwidth necessary. The FCC does not authorize bandwidths larger than 800 kHz under this part.

[59 FR 59507, Nov. 17, 1994, as amended at 70 FR 19309, Apr. 13, 2005]

§ 22.602 Transition of the 2110–2130 and 2160–2180 MHz channels to emerging technologies.

The 2110–2130 and 2160–2180 MHz microwave channels formerly listed in § 22.591 have been re-allocated for use by emerging technologies (ET) services. No new systems will be authorized under this part. The rules in this section provide for a transition period during which existing Paging and Radiotelephone Service (PARS) licensees using these channels may relocate operations to other media or to other fixed channels, including those in other microwave bands. For PARS licensees relocating operations to other microwave bands, authorization must be obtained under part 101 of this chapter.

(a) Licensees proposing to implement ET services may negotiate with PARS licensees authorized to use these channels, for the purpose of agreeing to terms under which the PARS licensees would—

(1) Relocate their operations to other fixed microwave bands or other media, or alternatively,

(2) Accept a sharing arrangement with the ET licensee that may result in an otherwise impermissible level of interference to the PARS operations.

(b) [Reserved]

(c) Relocation of fixed microwave licensees in the 2110–2130 MHz and 2160–2180 MHz bands will be subject to mandatory negotiations only. A separate mandatory negotiation period will commence for each fixed microwave licensee when an ET licensee informs that fixed microwave licensee in writing of its desire to negotiate. Mandatory negotiation periods are defined as follows:

(1) Non-public safety incumbents will have a two-year mandatory negotiation period; and

(2) Public safety incumbents will have a three-year mandatory negotiation period.

(d) The mandatory negotiation period is triggered at the option of the ET licensee. Once mandatory negotiations have begun, a PARS licensee may not refuse to negotiate and all parties are required to negotiate in good faith. Good faith requires each party to provide information to the other that is reasonably necessary to facilitate the relocation process. In evaluating claims that a party has not negotiated in good faith, the FCC will consider, *inter alia,* the following factors:

(1) Whether the ET licensee has made a *bona fide* offer to relocate the PARS licensee to comparable facilities in accordance with Section 101.75(b) of this chapter;

(2) If the PARS licensee has demanded a premium, the type of premium requested (*e.g.*, whether the premium is directly related to relocation, such as system-wide relocations and analog-to-digital conversions, versus other types of premiums), and whether the value of the premium as compared

to the cost of providing comparable facilities is disproportionate (*i.e.*, whether there is a lack of proportion or relation between the two);

(3) What steps the parties have taken to determine the actual cost of relocation to comparable facilities;

(4) Whether either party has withheld information requested by the other party that is necessary to estimate relocation costs or to facilitate the relocation process. Any party alleging a violation of our good faith requirement must attach an independent estimate of the relocation costs in question to any documentation filed with the Commission in support of its claim. An independent cost estimate must include a specification for the comparable facility and a statement of the costs associated with providing that facility to the incumbent licensee.

(e) *Involuntary period.* After the end of the mandatory negotiation period, ET licensees may initiate involuntary relocation procedures under the Commission's rules. ET licensees are obligated to pay to relocate only the specific microwave links to which their systems pose an interference problem. Under involuntary relocation, a PARS licensee is required to relocate, provided that:

(1) The ET applicant, provider, licensee or representative guarantees payment of relocation costs, including all engineering, equipment, site and FCC fees, as well as any legitimate and prudent transaction expenses incurred by the PARS licensee that are directly attributable to an involuntary relocation, subject to a cap of two percent of the hard costs involved. Hard costs are defined as the actual costs associated with providing a replacement system, such as equipment and engineering expenses. ET licensees are not required to pay PARS licensees for internal resources devoted to the relocation process. ET licensees are not required to pay for transaction costs incurred by PARS licensees during the voluntary or mandatory periods once the involuntary period is initiated or for fees that cannot be legitimately tied to the provision of comparable facilities;

(2) The ET applicant, provider, licensee or representative completes all activities necessary for implementing the replacement facilities, including engineering and cost analysis of the relocation procedure and, if radio facilities are involved, identifying and obtaining, on the incumbents behalf, new channels and frequency coordination; and,

(3) The ET applicant, provider, licensee or representative builds the replacement system and tests it for comparability with the existing 2 GHz system.

(f) *Comparable Facilities.* The replacement system provided to an incumbent during an involuntary relocation must be at least equivalent to the existing PARS system with respect to the following three factors:

(1) *Throughput.* Communications throughput is the amount of information transferred within a system in a given amount of time. If analog facilities are being replaced with analog, the ET licensee is required to provide the PARS licensee with an equivalent number of 4 kHz voice channels. If digital facilities are being replaced with digital, the ET licensee must provide the PARS licensee with equivalent data loading bits per second (bps). ET licensees must provide PARS licensees with enough throughput to satisfy the PARS licensee's system use at the time of relocation, not match the total capacity of the PARS system.

(2) *Reliability.* System reliability is the degree to which information is transferred accurately within a system. ET licensees must provide PARS licensees with reliability equal to the overall reliability of their system. For digital data systems, reliability is measured by the percent of time the bit error rate (BER) exceeds a desired value, and for analog or digital voice transmissions, it is measured by the percent of time that audio signal quality meets an established threshold. If an analog voice system is replaced with a digital voice system, only the resulting frequency response, harmonic distortion, signal-to-noise ratio and its reliability will be considered in determining comparable reliability.

(3) *Operating Costs.* Operating costs are the cost to operate and maintain the PARS system. ET licensees must compensate PARS licensees for any increased recurring costs associated with

the replacement facilities (e.g. additional rental payments, increased utility fees) for five years after relocation. ET licensees may satisfy this obligation by making a lump-sum payment based on present value using current interest rates. Additionally, the maintenance costs to the PARS licensee must be equivalent to the 2 GHz system in order for the replacement system to be considered comparable.

(g) The PARS licensee is not required to relocate until the alternative facilities are available to it for a reasonable time to make adjustments, determine comparability, and ensure a seamless handoff.

(h) [Reserved]

(i) After April 25, 1996, all major modifications and extensions to existing PARS systems operating on channels in the 2110–2130 and 2160–2180 MHz bands will be authorized on a secondary basis to future ET operations. All other modifications will render the modified PARS license secondary to future ET operations unless the incumbent affirmatively justifies primary status and the incumbent PARS licensee establishes that the modification would not add to the relocation costs of ET licensees. Incumbent PARS licensees will maintain primary status for the following technical changes:

(1) Decreases in power;

(2) Minor changes (increases or decreases) in antenna height;

(3) Minor location changes (up to two seconds);

(4) Any data correction which does not involve a change in the location of an existing facility;

(5) Reductions in authorized bandwidth;

(6) Minor changes (increases or decreases) in structure height;

(7) Changes (increases or decreases) in ground elevation that do not affect centerline height;

(8) Minor equipment changes.

(j) *Sunset.* PARS licensees will maintain primary status in the 2110–2130 MHz and 2160–2180 MHz bands unless and until an ET licensee requires use of the spectrum. ET licensees are not required to pay relocation costs after the relocation rules sunset (*i.e.*, for the 2110–2130 MHz and 2160–2180 MHz bands, ten years after the first ET license is issued in the respective band). Once the relocation rules sunset, an ET licensee may require the incumbent to cease operations, provided that the ET licensee intends to turn on a system within interference range of the incumbent, as determined by TIA TSB 10–F or any standard successor. ET licensee notification to the affected PARS licensee must be in writing and must provide the incumbent with no less than six months to vacate the spectrum. After the six-month notice period has expired, the PARS licensee must turn its license back into the Commission, unless the parties have entered into an agreement which allows the PARS licensee to continue to operate on a mutually agreed upon basis. If the parties cannot agree on a schedule or an alternative arrangement, requests for extension will be accepted and reviewed on a case-by-case basis. The Commission will grant such extensions only if the incumbent can demonstrate that:

(1) It cannot relocate within the six-month period (*e.g.*, because no alternative spectrum or other reasonable option is available), and;

(2) The public interest would be harmed if the incumbent is forced to terminate operations (*e.g.*, if public safety communications services would be disrupted).

(k) *Reimbursement and relocation expenses in the 2110–2130 MHz and 2160–2180 MHz bands.* Whenever an ET licensee in the 2110–2130 MHz and 2160–2180 MHz band relocates a paired PARS link with one path in the 2110–2130 MHz band and the paired path in the 2160–2180 MHz band, the ET license will be entitled to reimbursement pursuant to the procedures described in §§ 27.1160 through 27.1174 of this chapter.

[61 FR 29689, June 12, 1996, as amended at 70 FR 19309, Apr. 13, 2005; 71 FR 29834, May 24, 2006]

§ 22.603 488–494 MHz fixed service in Hawaii.

Before filing applications for authorization of inter-island control and/or repeater stations, applicants must coordinate the planned channel usage with existing licensees and other applicants with previously filed applications, using the procedure outlined in § 22.150. Applicants and licensees shall

cooperate fully and make reasonable efforts to resolve any channel usage conflicts. In situations where technical solutions to such conflicts cannot be devised, the FCC may select a channel or channels to assign or may designate the application(s) for hearing. To be acceptable for filing, applications and major technical amendments must contain a certification that coordination has been completed and an exhibit listing the name(s) of the licensees and applicants with which the planned channel usage has been coordinated.

POINT-TO-MULTIPOINT OPERATION

§ 22.621 Channels for point-to-multipoint operation.

The following channels are allocated for assignment to transmitters utilized within point-to-multipoint systems that support transmitters that provide public mobile service. Unless otherwise indicated, all channels have a bandwidth of 20 kHz and are designated by their center frequencies in MegaHertz. No new licenses will be issued for any 900 MHz frequencies in this section. See part 101, subpart O of this chapter for treatment of incumbents and for new licensing procedures. Incumbents under part 22 are subject to the restrictions of part 101, subpart O of this chapter but may make permissible modifications, transfers, assignments, or renew their licenses using procedures, forms, fees, and filing requirements of part 22.

Public Mobile Pool

(25 kHz bandwidth)

928.8625	959.8625	928.9375	959.9375
928.8875	959.8875	928.9625	959.9625
928.9125	959.9125	928.9875	959.9875

(12.5 kHz bandwidth)

928.85625	959.85625	928.93125	959.93125
928.86875	959.86875	928.94375	959.94375
928.88125	959.88125	928.95625	959.95625
928.89375	959.89375	928.96875	959.96875
928.90625	959.90625	928.98125	959.98125
928.91875	959.91875	928.99375	959.99375

Private Radio General Access Pool

(25 kHz bandwidth)

956.2625	956.3125	956.3625	956.4125
956.2875	956.3375	956.3875	956.4375
928.0125	952.0125	928.1875	952.1875
928.0375	952.0375	928.2125	952.2125
928.0625	952.0625	928.2375	952.2375
928.0875	952.0875	928.2625	952.2625
928.1125	952.1125	928.2875	952.2875
928.1375	952.1375	928.3125	952.3125
928.1625	952.1625	928.3375	952.3375

(12.5 kHz bandwidth)

956.25625	956.30625	956.35625	956.40625
956.26875	956.31875	956.36875	956.41875
956.28125	956.33125	956.38125	956.43125
956.29375	956.34375	956.39375	956.44375
928.00625	952.00625	928.18125	952.18125
928.01875	952.01875	928.19375	952.19375
928.03125	952.03125	928.20625	952.20625
928.04375	952.04375	928.21875	952.21875
928.05625	952.05625	928.23125	952.23125
928.06875	952.06875	928.24375	952.24375
928.08125	952.08125	928.25625	952.25625
928.09375	952.09375	928.26875	952.26875
928.10625	952.10625	928.28125	952.28125
928.11875	952.11875	928.29375	952.29375
928.13125	952.13125	928.30625	952.30625
928.14375	952.14375	928.31875	952.31875
928.15625	952.15625	928.33125	952.33125
928.16875	952.16875	928.34375	952.34375

Private Radio Power Pool

(25 kHz bandwidth)

928.3625	952.3625	928.6125	952.6125
928.3875	952.3875	928.6375	952.6375
928.4125	952.4125	928.6625	952.6625
928.4375	952.4375	928.6875	952.6875
928.4625	952.4625	928.7125	952.7125
928.4875	952.4875	928.7375	952.7375
928.5125	952.5125	928.7625	952.7625
928.5375	952.5375	928.7875	952.7875
928.5625	952.5625	928.8125	952.8125
928.5875	952.5875	928.8375	952.8375

(12.5 kHz bandwidth)

928.35625	952.35625	928.60625	952.60625
928.36875	952.36875	928.61875	952.61875
928.38125	952.38125	928.63125	952.63125
928.39375	952.39375	928.64375	952.64375
928.40625	952.40625	928.65625	952.65625
928.41875	952.41875	928.66875	952.66875
928.43125	952.43125	928.68125	952.68125
928.44375	952.44375	928.69375	952.69375
928.45625	952.45625	928.70625	952.70625
928.46875	952.46875	928.71875	952.71875
928.48125	952.48125	928.73125	952.73125
928.49375	952.49375	928.74375	952.74375
928.50625	952.50625	928.75625	952.75625
928.51875	952.51875	928.76875	952.76875
928.53125	952.53125	928.78125	952.78125
928.54375	952.54375	928.79375	952.79375
928.55625	952.55625	928.80625	952.80625
928.56875	952.56875	928.81875	952.81875
928.58125	952.58125	928.83125	952.83125
928.59375	952.59375	928.84375	952.84375

Public, Private, Government Shared Pool

(12.5 kHz bandwidth)

932.00625	941.00625	932.25625	941.25625
932.01875	941.01875	932.26875	941.26875
932.03125	941.03125	932.28125	941.28125
932.04375	941.04375	932.29375	941.29375
932.05625	941.05625	932.30625	941.30625
932.06875	941.06875	932.31875	941.31875
932.08125	941.08125	932.33125	941.33125
932.09375	941.09375	932.34375	941.34375
932.10625	941.10625	932.35625	941.35625
932.11875	941.11875	932.36875	941.36875
932.13125	941.13125	932.38125	941.38125
932.14375	941.14375	932.39375	941.39375
932.15625	941.15625	932.40625	941.40625
932.16875	941.16875	932.41875	941.41875
932.18125	941.18125	932.43125	941.43125
932.19375	941.19375	932.44375	941.44375
932.20625	941.20625	932.45625	941.45625
932.21875	941.21875	932.46875	941.46875
932.23125	941.23125	932.48125	941.48125
932.24375	941.24375	932.49375	941.49375

UHF Channels in Specified Urban Areas

Boston

470.0125	473.0125	482.0125	485.0125
470.0375	473.0375	482.0375	485.0375
470.0625	473.0625	482.0625	485.0625
470.0875	473.0875	482.0875	485.0875
470.1125	473.1125	482.1125	485.1125
470.1375	473.1375	482.1375	485.1375
470.1625	473.1625	482.1625	485.1625
470.1875	473.1875	482.1875	485.1875
470.2125	473.2125	482.2125	485.2125
470.2375	473.2375	482.2375	485.2375
470.2625	473.2625	482.2625	485.2625
470.2875	473.2875	482.2875	485.2875

Chicago, Cleveland

470.0125	473.0125	476.0125	479.0125
470.0375	473.0375	476.0375	479.0375
470.0625	473.0625	476.0625	479.0625
470.0875	473.0875	476.0875	479.0875
470.1125	473.1125	476.1125	479.1125
470.1375	473.1375	476.1375	479.1375
470.1625	473.1625	476.1625	479.1625
470.1875	473.1875	476.1875	479.1875
470.2125	473.2125	476.2125	479.2125
470.2375	473.2375	476.2375	479.2375
470.2625	473.2625	476.2625	479.2625
470.2875	473.2875	476.2875	479.2875

New York-Northeastern New Jersey

470.0125	470.1625	476.0125	476.1625
470.0375	470.1875	476.0375	476.1875
470.0625	470.2125	476.0625	476.2125
470.0875	470.2375	476.0875	476.2375
470.1125	470.2625	476.1125	476.2625
470.1375	470.2875	476.1375	476.2875

Dallas-Forth Worth

482.0125	482.1625	485.0125	485.1625
482.0375	482.1875	485.0375	485.1875
482.0625	482.2125	485.0625	485.2125
482.0875	482.2375	485.0875	485.2375
482.1125	482.2625	485.1125	485.2625
482.1375	482.2875	485.1375	485.2875

Detroit

476.0125	479.0125	482.0125	485.0125
476.0375	479.0375	482.0375	485.0375
476.0625	479.0625	482.0625	485.0625
476.0875	479.0875	482.0875	485.0875
476.1125	479.1125	482.1125	485.1125
476.1375	479.1375	482.1375	485.1375
476.1625	479.1625	482.1625	485.1625
476.1875	479.1875	482.1875	485.1875
476.2125	479.2125	482.2125	485.2125
476.2375	479.2375	482.2375	485.2375
476.2625	479.2625	482.2625	485.2625
476.2875	479.2875	482.2875	485.2875

Houston

488.1625	491.1625	488.2375	491.2375
488.1875	491.1875	488.2625	491.2625
488.2125	491.2125	488.2875	491.2875

Los Angeles

470.0125	473.0125	506.0625	509.0625
470.0375	473.0375	506.0875	509.0875
506.0125	509.0125	506.1125	509.1125
506.0375	509.0375		

Miami

470.0125	470.1625	473.0125	473.1625
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

Philadelphia

500.0125	503.0125	506.0125	509.0125
500.0375	503.0375	506.0375	509.0375
500.0625	503.0625	506.0625	509.0625
500.0875	503.0875	506.0875	509.0875
500.1125	503.1125	506.1125	509.1125
500.1375	503.1375	506.1375	509.1375
500.1625	503.1625	506.1625	509.1625
500.1875	503.1875	506.1875	509.1875
500.2125	503.2125	506.2125	509.2125
500.2375	503.2375	506.2375	509.2375
500.2625	503.2625	506.2625	509.2625
500.2875	503.2875	506.2875	509.2875

Pittsburgh

470.0125	470.1625	473.0125	473.1625
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 frequency 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″	18°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 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
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 receiption 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.
476–482 MHz ..	Oxford, OH, 39°30′26.2″ N. Lat. 84°44′8.8″
482–488 MHz ..	W. Long.
488–494 MHz ..	Washington, DC, 38°57′17.4″ N. Lat.
494–500 MHz ..	77°00′15.9″ W. Long.
500–506 MHz ..	Champaign, IL, 40°04′11.1″ N. Lat.
506–512 MHz ..	87°54′45.1″ W. Long.
	Madison, WI, 43°03′01.0″ N. Lat. 89°29′15.4″ W. Long.
	Parkersburg, WV, 39°20′50.3″ N. Lat. 81°33′55.5″ W. Long.
	Fort Wayne, IN, 41°05′35.2″ N. Lat. 85°10′41.9″ W. Long.
	Lancaster, PA, 40°15′45.3″ N. Lat. 76°27′47.9″ W. Long.
	South Bend, IN, 41°36′26.2″ N. Lat. 86°27′48.1″ W. Long.
	Philadelphia, PA, 40°02′30.4″ N. Lat. 75°14′22.6″ W. Long.
	None.
	Johnstown, PA, 40°19′47.3″ N. Lat. 78°53′44.1″ W. Long.
	Washington, DC, 38°57′49.4″ N. Lat. 77°06′16.9″ W. Long.
	Waterbury, CT, 41°31′2.3″ N. Lat. 73°00′58.4″ W. Long.

(ii) Table E–3 and E–4 apply to control transmitters in the New York-Northeastern New Jersey and Cleveland urban areas that transmit on channels in the 476–482 MHz range and to control transmitters in the Detroit urban area that transmit on channels in the 482–488 MHz range.

(iii) Tables E–5 and E–6 apply to all control transmitters except those to which Tables E–3 and E–4 apply.

(2) *Adjacent channel protection.* The ERP of control transmitters must not exceed the limits in Table E–7. 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 listed in this paragraph. 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)
	Madison, WI, 43°03′01.0″ N. Lat. 89°29′15.4″ W. Long..	(15)
	Champaign, IL, 40°04′11.1″ N. Lat. 87°54′45.1″ W. Long..	(15)
	San Diego, CA, 32°41′48.2″ N. Lat. 116°56′13.1″ W. Long..	(15)
	Lancaster, PA, 40°15′45.3″ N. Lat. 76°27′47.9″ W. Long..	(15)
	Parkersburg, WV, 39°20′50.3″ N. Lat. 81°33′55.5″ W. Long..	(15)
476–482 MHz.	South Bend, IN, 41°36′26.2″ N. Lat. 86°27′48.1″ W. Long..	(16)
	Pittsburgh, PA, 40°26′46.2″ N. Lat. 79°57′50.2″ W. Long..	(16)
	Mt. Pleasant, MI, 43°34′24.1″ N. Lat. 84°46′21.1″ W. Long..	(14)
	Scranton, PA, 41°10′58.3″ N. Lat. 75°52′19.7″ W. Long..	(16)
482–488 MHz.	Hanover, NH, 43°42′30.3″ N. Lat. 72°09′14.3″ W. Long..	(15)
	Fort Wayne, IN, 41°05′35.2″ N. Lat. 85°10′41.9″ W. Long..	(15)
488–494 MHz.	Salisbury, MD, 38°24′15.4″ N. Lat. 75°34′43.7″ W. Long..	(16)
494–500 MHz.	Philadelphia, PA, 40°02′30.4″ N. Lat. 75°14′22.6″ W. Long..	(17)

Control transmitter frequency range	Protected TV station location	TV channel
500–506 MHz.	Washington, DC, 38°57′17.4″ N. Lat. 77°00′15.9″ W. Long..	(20)
506–512 MHz.	Harrisburg, PA, 40°20′44.3″ N. Lat. 76°52′07.9″ W. Long..	(21)

(c) *Los Angeles area.* This paragraph applies only to control transmitters in the Los Angeles urban area that utilize an antenna height of 457 or more meters (1500 or more feet) above mean sea level. The ERP of such transmitters must not exceed the following limits:

Antenna height AMSL in meters (feet)	ERP (Watts)
457 (1500) to 610 (2000)	155
611 (2001) to 762 (2500)	100
763 (2501) to 914 (3000)	70
915 (3001) to 1067 (3500)	50
1068 (3501) to 1219 (4000)	40
1220 (4001) to 1372 (4500)	30
1373 (4501) and above	25

TABLE E–3—MAXIMUM ERP (WATTS) FOR CONTROL 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
153 (95)	275	225	175	125	110	95	80	70	60	50
145 (90)	175	125	100	75	50	.....	.....	.....	.....	.....

See § 22.627(b)(1)(ii). 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.

TABLE E–4—MAXIMUM ERP (WATTS) FOR CONTROL TRANSMITTERS (HAAT MORE THAN 152 METERS)

Distance to protected TV station in kilometers (miles)	Antenna height above average terrain in meters (feet)					
	152 (500)	305 (1000)	457 (1500)	610 (2000)	762 (2500)	914 (3000)
209 (130)	1000	447	219	117	71	46
193 (120)	500	209	95	50	30	19
177 (110)	225	91	35	19	11	8
161 (100)	100	30	10	5	3	2
153 (95)	50	13	5	3	2	1

See § 22.627(b)(1)(ii). This table is for antenna heights of more than 152 meters (500 feet) above average terrain. For intermediate values of height and/or distance, use linear interpolation to obtain the maximum permitted ERP.

TABLE E–5—MAXIMUM ERP (WATTS) FOR CONTROL 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)
261 (162)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
257 (160)	1000	1000	1000	1000	1000	1000	1000	1000	1000	800
249 (155)	1000	1000	1000	1000	1000	875	775	700	625	575
241 (150)	1000	1000	950	775	725	625	550	500	450	400
233 (145)	850	750	650	575	500	440	400	350	320	300
225 (140)	600	575	465	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

See § 22.627(b)(1)(iii). This table applies 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.

TABLE E–6—MAXIMUM ERP (WATTS) FOR CONTROL TRANSMITTERS (HAAT MORE THAN 152 METERS)

Distance to protected TV station in kilometers (miles)	Antenna height above average terrain in meters (feet)					
	152 (500)	305 (1000)	457 (1500)	610 (2000)	762 (2500)	914 (3000)
261 (162)	1000	501	282	170	110	71
241 (150)	400	209	110	60	36	23
225 (140)	225	102	50	28	16	10
209 (130)	100	48	21	11	7	5
193 (120)	50	19	9	5	3	2

See § 22.627(b)(1)(iii). This table is for antenna heights of more than 152 meters (500 feet) above average terrain. For intermediate values of height and/or distance, use linear interpolation to obtain the maximum permitted ERP.

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	491.0875
488.0375	491.0375	488.1125	491.1125
488.0625	491.0625	488.1375	491.1375

New York-Northern New Jersey

473.0125	479.0125	473.1625	479.1625
473.0375	479.0375	473.1875	479.1875
473.0625	479.0625	473.2125	479.2125
473.0875	479.0875	473.2375	479.2375
473.1125	479.1125	473.2625	479.2625
473.1375	479.1375	473.2875	479.2875

[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 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)

Control transmitter frequency range	Protected TV station location	TV channel
	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
153 (95)	275	225	175	125	110	95	80	70	60	50
145 (90)	175	125	100	75	50	.....	.....	.....	.....	.....

See § 22.659(b)(2). 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.

TABLE E–9—MAXIMUM ERP (WATTS) FOR BASE TRANSMITTERS (HAAT MORE THAN 152 METERS)

Distance to protected TV station in kilometers (miles)	Antenna height above average terrain in meters (feet)					
	152 (500)	305 (1000)	457 (1500)	610 (2000)	762 (2500)	914 (3000)
209 (130)	1000	447	219	117	71	46
193 (120)	500	209	95	50	30	19
177 (110)	225	91	35	19	11	8
161 (100)	100	30	10	5	3	2
153 (95)	50	13	5	3	2	1

See § 22.659(b)(2). This table is for antenna heights of more than 152 meters (500 feet) above average terrain. For intermediate values of height and/or distance, use linear interpolation to obtain the maximum permitted ERP.

TABLE E–10—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)
261 (162)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
257 (160)	1000	1000	1000	1000	1000	1000	1000	1000	1000	800
249 (155)	1000	1000	1000	1000	1000	875	775	700	625	575
241 (150)	1000	1000	950	775	725	625	550	500	450	400
233 (145)	850	750	650	575	500	440	400	350	320	300
225 (140)	600	575	465	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

See § 22.659(b)(3). This table applies 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.

TABLE E–11—MAXIMUM ERP (WATTS) FOR BASE TRANSMITTERS (HAAT MORE THAN 152 METERS)

Distance to protected TV station in kilometers (miles)	Antenna height above average terrain in meters (feet)					
	152 (500)	305 (1000)	457 (1500)	610 (2000)	762 (2500)	914 (3000)
261 (162)	1000	501	282	170	110	71
241 (150)	400	209	110	60	36	23
225 (140)	225	102	50	28	16	10

TABLE E–11—MAXIMUM ERP (WATTS) FOR BASE TRANSMITTERS (HAAT MORE THAN 152 METERS)—Continued

Distance to protected TV station in kilometers (miles)	Antenna height above average terrain in meters (feet)					
	152 (500)	305 (1000)	457 (1500)	610 (2000)	762 (2500)	914 (3000)
209 (130)	100	48	21	11	7	5
193 (120)	50	19	9	5	3	2

See § 22.659(b)(3). This table is for antenna heights of more than 152 meters (500 feet) above average terrain. For intermediate values of height and/or distance, use linear interpolation to obtain the maximum permitted ERP.

TABLE E–12—MAXIMUM ERP (WATTS) FOR BASE 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 § 22.659(c)(2). This table applies to base transmitters in the New York-Northeastern New Jersey 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, as amended at 63 FR 68947, Dec. 14, 1998]

Subpart F—Rural Radiotelephone Service

§ 22.701 Scope.

The rules in this subpart govern the licensing and operation of stations and systems in the Rural Radiotelephone Service. The licensing and operation of these stations and systems is also subject to rules elsewhere in this part that apply generally to the Public Mobile Services. In case of conflict, however, the rules in this subpart govern.

§ 22.702 Eligibility.

Existing and proposed communications common carriers are eligible to hold authorizations to operate conventional central office, interoffice and rural stations in the Rural Radiotelephone Service. Subscribers are also eligible to hold authorizations to operate rural subscriber stations in the Rural Radiotelephone Service.

[69 FR 75170, Dec. 15, 2004]

§ 22.703 Separate rural subscriber station authorization not required.

A separate authorization is not required for rural subscriber stations for which the effective radiated power does not exceed 60 Watts and for which FAA notification of construction or alteration of the antenna structure is not required (see criteria in § 17.7 of this chapter). Authority to operate such rural subscriber stations is conferred by the authorization of the central office or base station from which they receive service.

§ 22.705 Rural radiotelephone system configuration.

Stations in the Rural Radiotelephone Service are authorized to communicate as follows:

(a) Rural subscriber stations are authorized to communicate with and through the central office station(s) with which they are associated. However, where the establishment of a central office station in this service is not feasible, rural subscriber stations may be authorized to communicate with and through a base station in the Paging and Radiotelephone Service.

(b) Central office stations may communicate only with rural subscriber stations.

(c) Interoffice stations may communicate only with other interoffice stations.

§ 22.709 Rural radiotelephone service application requirements.

In addition to information required by Subparts B and D of this part, FCC Form 601 applications for authorization to operate a station in the Rural Radiotelephone Service must contain the applicable supplementary information described in this section.

(a) *Interoffice stations.* Applications for authority to operate a new interoffice station or to add transmitters or points of communications to an existing interoffice station must contain an exhibit demonstrating that the requested facilities would be used only for interconnecting central office stations and explaining why the use of alternative existing radio or wire facilities is not feasible.

(b) *Technical information required.* For each transmitter in the Rural Radiotelephone Service, the following information is required by FCC Form 601:

(1) Location description: city; county; state; geographic coordinates correct to ±1 second, the datum used (NAD83), site elevation above mean sea level, proximity to adjacent market boundaries and international borders;

(2) Antenna height to tip above ground level, the height of the center of radiation of the antenna above the average terrain, the height of the antenna center of radiation above the average elevation of the terrain along each of the 8 cardinal radials, antenna gain in the maximum lobe, the beamwidth of the maximum lobe of the antenna, a polar plot of the horizontal gain pattern of the antenna, the electric field polarization of the wave emitted by the antenna when installed as proposed;

(3) The center frequency of each channel requested, the maximum effective radiated power, the effective radiated power in each of the cardinal radial directions, any non-standard emission types to be used, including bandwidth and modulation type, the transmitter classification (e.g. central office), and the locations and call signs, if any, of any fixed points of communication.

(c) *No landline facilities.* Each application for a central office station must contain an exhibit showing that it is impracticable to provide the required communication service by means of landline facilities.

(d) *Interference exhibit.* Applications for central office, interoffice and relay stations must include an exhibit identifying co-channel facilities and demonstrating, in accordance with § 22.715 that the proposed station, if authorized, would not cause interference to the service of those co-channel facilities. This exhibit must:

(1) For UHF channels, identify each protected transmitter located within 108 kilometers (67 miles) of the proposed transmitter in directions in which the distance to the interfering contour is 76.4 kilometers (47.5 miles) or less, and within 178 kilometers (111 miles) of the proposed transmitter in directions in which the distance to the interfering contour exceeds 76.4 kilometers (47.5 miles); and identify each protected Basic Exchange Telephone Radio System central office transmitter in the rural Radiotelephone Service within 231 kilometers (144 miles).

(2) For VHF channels, identify each protected transmitter located within 135 kilometers (84 miles) of the proposed transmitter in directions in which the distance to the interfering contour is 93.3 kilometers (58 miles) or less, and within 178 kilometers (111 miles) of the proposed transmitter in directions in which the distance to the interfering contour exceeds 93.3 kilometers (58 miles).

(3) For each protected transmitter identified, show the results of distance calculations indicating that there would be no overlap of service and interfering contours, or alternatively, indicate that the licensee of or applicant for the protected transmitter and/or the applicant, as required, have agreed in writing to accept any interference resulting from operation of the proposed transmitter.

(e) *Blocking probability.* Applications for authority to operate basic exchange telephone radio systems (BETRS) that request more than two channel pairs must include an exhibit containing calculations showing that the number of

channels requested is the minimum necessary to achieve the required grade of service (in terms of blocking probability), and that there will be adequate spectrum available in the area to meet realistic estimates of current and future demand for paging, two-way mobile and rural radiotelephone services (see §22.719(c)). Applications for authority to operate new conventional rural radiotelephone systems that request more than two channel pairs must include a statement explaining why BETRS technology is not being proposed.

(f) *Antenna Information.* Upon request by an applicant, licensee, or the Commission, a part 22 applicant or licensee of whom the request is made shall furnish the antenna type, model, and the name of the antenna manufacturer to the requesting party within ten (10) days of receiving written notification.

[59 FR 59507, Nov. 17, 1994, as amended at 59 FR 59954, Nov. 21, 1994; 63 FR 68948, Dec. 14, 1998; 64 FR 53240, Oct. 1, 1999]

§ 22.711 Provision of information to applicants.

Licensees in the Rural Radio Service must, upon request by a *bona-fide* prospective applicant, provide to such applicant the information required by §22.709 regarding the portion of the licensee's operations that potentially could affect, or be affected by, the prospective applicant's proposed station, if such information is not already on file with the FCC. This information must be provided to the *bona-fide* prospective applicant no later than 30 days after receipt of the information request.

[59 FR 59954, Nov. 21, 1994]

§ 22.713 Construction period for rural radiotelephone stations.

The construction period for stations in the Rural Radiotelephone Service is 12 months.

§ 22.715 Technical channel assignment criteria for rural radiotelephone stations.

Channels are assigned in the Rural Radiotelephone Service using the procedures in §22.567.

§ 22.717 Procedure for mutually exclusive applications in the Rural Radiotelephone Service.

Mutually exclusive applications in the Rural Radiotelephone Service, including those that are mutually exclusive with applications in the Paging and Radiotelephone Service, are processed in accordance with §22.131 and with this section.

(a) Applications in the Rural Radiotelephone Service may be mutually exclusive with applications in the Paging and Radiotelephone Service if they seek authorization to operate facilities on the same channel in the same area, or the technical proposals are otherwise in conflict. See §22.567.

(b) A modification application in either service filed on the earliest filing date may cause all later-filed mutually exclusive applications of any type in either service to be ''cut off'' (excluded from a same-day filing group) and dismissed, pursuant to §22.131(c)(3)(ii) and §22.131(c)(4).

[59 FR 59956, Nov. 21, 1994, as amended at 62 FR 11636, Mar. 12, 1997]

§ 22.719 Additional channel policy for rural radiotelephone stations.

The rules in this section govern the processing of applications for central office stations that request a rural radiotelephone channel pair when the applicant has applied for or been granted an authorization for other rural radiotelephone channel pairs in the same area. The general policy of the FCC is to promote effective use of the spectrum by encouraging the use of spectrum-efficient technologies (i.e. BETRS) and by assigning the minimum number of channels necessary to provide service.

(a) *Transmitters in same area.* Any central office station transmitter on any channel pair listed in §22.725 is considered to be in the same area as another central office station transmitter on any other channel pair listed in §22.725 if the transmitting antennas are located within 10 kilometers (6.2 miles) of each other.

(b) *Initial channel pairs.* The FCC does not assign more than two channel pairs for new central office stations, unless there are more than eight rural subscriber stations to be served. Stations

are considered to be new if there are no authorized transmitters on any channel listed in § 22.725 controlled by the applicant in the same geographic area.

(c) *Additional channel pairs.* Applications for central office station transmitters to be located in the same area as an authorized central office station controlled by the applicant, but to operate on a different channel pair(s) are considered as requests for additional channel pair(s) for the authorized central office station. The FCC may grant applications for additional channel pairs provided that the need for each additional channel pair (after the first two) is established and fully justified in terms of achieving the required grade of service (blocking probability), and the applicant demonstrates that there will still be adequate spectrum available in the area to meet realistic estimates of current and future demand for paging, two-way mobile and rural radiotelephone services. In the case of conventional rural radiotelephone central office stations, an explanation must be provided as to why BETRS technology is not being used instead of additional channel pairs.

CONVENTIONAL RURAL RADIOTELEPHONE STATIONS

§ 22.721 Geographic area authorizations.

Eligible persons may apply for a paging geographic area authorization in the Rural Radiotelephone Service, on the channel pairs listed in § 22.725, by following the procedures and requirements set forth in § 22.503 for paging geographic area authorizations.

[62 FR 11636, Mar. 12, 1997]

§ 22.723 Secondary site-by-site authorizations.

Authorizations for new facilities (including new sites and additional channel pairs for existing sites) in the Rural Radiotelephone Service (including BETRS facilities) may be granted after May 12, 1997 only on the condition that such authorizations shall be secondary to any existing or future co-channel paging geographic area authorization in the Paging and Radiotelephone Service or the Rural Radiotelephone Service. If the paging geographic area licensee notifies the Rural Radiotelephone Service licensee that operation of a co-channel secondary facility must be discontinued because it may cause interference to existing or planned facilities, the Rural Radiotelephone Service licensee must discontinue operation of that facility on the particular channel pair involved no later than six months after such notice.

[62 FR 11636, Mar. 12, 1997]

§ 22.725 Channels for conventional rural radiotelephone stations and basic exchange telephone radio systems.

The following channels are allocated for paired assignment to transmitters that provide conventional rural radiotelephone service and to transmitters in basic exchange telephone radio systems. These channels may be assigned for use by central office or rural subscriber stations as indicated, and interoffice stations. These channels may be assigned also for use by relay stations in systems where it would be impractical to provide rural radiotelephone service without the use of relay stations. All channels have a bandwidth of 20 kHz and are designated by their center frequencies in MegaHertz.

Central office	Rural subscriber	Central office	Rural subscriber
VHF Channels			
152.03	158.49	152.57	157.83
152.06	158.52	152.60	157.86
152.09	158.55	152.63	157.89
152.12	158.58	152.66	157.92
152.15	158.61	152.69	157.95
152.18	158.64	152.72	157.98
152.21	158.67	152.75	158.01
152.51	157.77	152.78	158.04
152.54	157.80	152.81	158.07
UHF Channels			
454.025	459.025	454.350	459.350
454.050	459.050	454.375	459.375
454.075	459.075	454.400	459.400
454.100	459.100	454.425	459.425
454.125	459.125	454.450	459.450
454.150	459.150	454.475	459.475
454.175	459.175	454.500	459.500
454.200	459.200	454.525	459.525
454.225	459.225	454.550	459.550
454.250	459.250	454.575	459.575
454.275	459.275	454.600	459.600

Central office	Rural subscriber	Central office	Rural subscriber
454.300	459.300	454.625	459.625
454.325	459.325	454.650	459.650

(a) The channels listed in this section are also allocated for assignment in the Paging and Radiotelephone Service.

(b) In Puerto Rico and the Virgin Islands, channels in the 154.04–154.46 MHz and 161.40–161.85 MHz frequency ranges may be assigned to transmitters providing rural radiotelephone service; channels in these ranges are also allocated for assignment in the International Fixed Public and Aeronautical Fixed radio services.

[59 FR 59507, Nov. 17, 1994; 60 FR 9891, Feb. 22, 1995, as amended at 70 FR 19309, Apr. 13, 2005]

§ 22.727 Power limits for conventional rural radiotelephone transmitters.

The transmitting power of transmitters operating on the channels listed in § 22.725 must not exceed the limits in this section.

(a) *Maximum ERP*. The effective radiated power (ERP) of central office and rural subscriber station transmitters must not exceed the applicable limits in this paragraph under any circumstances.

Frequency range (MHz)	Maximum ERP (watts)
152–153	1400
157–159	150
454–455	3500
459–460	150

(b) *Basic power limit*. Except as provided in paragraph (d) of this section, the ERP of central office station transmitters must not exceed 500 Watts.

(c) *Height-power limits*. Except as provided in paragraph (d) of this section, the ERP of central office station transmitters must not exceed the amount that would result in an average distance to the ''service contour'' of 41.6 kilometers (26 miles) for VHF channels or 30.7 kilometers (19 miles) for UHF channels. The average distance to the ''service contour'' is calculated by taking the arithmetic mean of the distances determined using the procedures specified in § 22.567 for the eight cardinal radial directions, excluding cardinal radial directions for which 90% or more of the distance so calculated is over water.

(d) *Encompassed interfering contour areas*. Central office station transmitters are exempt from the basic power and height-power limits of this section if the area within their interfering contours is totally encompassed by the interfering contours of operating co-channel central office station transmitters controlled by the same licensee. For the purpose of this paragraph, operating transmitters are authorized transmitters that are providing service to subscribers.

(e) *Adjacent channel protection*. The ERP of central office station transmitters must not exceed 500 Watts if they transmit on channel 454.025 MHz and are located less than 7 kilometers (4.3 miles) from any Private Radio Services station receiving on adjacent channel 454.000 MHz.

[59 FR 59507, Nov. 17, 1994, as amended at 70 FR 19309, Apr. 13, 2005]

§ 22.731 Emission limitations.

Upon application for multichannel operation, the FCC may authorize emission bandwidths wider than those specified in § 22.357, provided that spectrum utilization is equal to or better than that achieved by single channel operation.

§ 22.733 Priority of service.

Within the Rural Radiotelephone Service, the channels listed in § 22.725 are intended primarily for use in rendition of public message service between rural subscriber and central office stations and to provide radio trunking facilities between central offices. The channels may also be used, however, for the rendition of private leased-line communication service provided that such usage would not reduce or impair the extent or quality of communication service that would be available, in the absence of private leased-line service, to the general public receiving or subsequently requesting public message service from a central office.

§ 22.737 Temporary fixed stations.

The FCC may, upon proper application therefor, authorize the construction and operation of temporary fixed

stations. Temporary fixed stations are to be used as rural subscriber, interoffice, or central office stations when those stations are unavailable or when service from those stations is disrupted by storms or emergencies.

(a) *Six month limitation.* If it is necessary for a temporary fixed station to remain at the same location for more than six months, the licensee of that station must apply for authorization to operate the station at the specific location at least 30 days before the end of the six month period.

(b) *International communications.* Communications between the United States and Canada or Mexico must not be carried using a temporary fixed station without prior authorization from the FCC. Licensees desiring to carry such communications should apply sufficiently in advance to allow for the time necessary to coordinate with Canada or Mexico.

BASIC EXCHANGE TELEPHONE RADIO SYSTEMS

§ 22.757 Channels for basic exchange telephone radio systems.

The channels listed in § 22.725 are also allocated for paired assignment to transmitters in basic exchange telephone radio systems.

[70 FR 19309, Apr. 13, 2005]

§ 22.759 Power limit for BETRS.

The effective radiated power of central office and rural subscriber station transmitters used in basic exchange telephone radio systems must not exceed the limits in this section.

(a) *Maximum ERP.* The effective radiated power (ERP) of central office and rural subscriber station transmitters in BETRS must not exceed the applicable limits in this paragraph under any circumstances.

Frequency range (MHz)	Maximum ERP (watts)
152–153	1400
157–159	150
454–455	3500
459–460	150

(b) *Height-power limit.* The ERP of central office stations in BETRS must not exceed the amount calculated as follows:

$ERP_w = 557{,}418 \div h_m 2$

where ERP_w is the effective radiated power in Watts

h_m is the average (eight cardinal radial) antenna height above average terrain in meters

Subpart G—Air-Ground Radiotelephone Service

§ 22.801 Scope.

The rules in this subpart govern the licensing and operation of air-ground stations and systems. The licensing and operation of these stations and systems is also subject to rules elsewhere in this part and in part 1 of this chapter that generally apply to the Public Mobile Services. In case of conflict, however, the rules in this subpart govern.

[70 FR 19309, Apr. 13, 2005]

GENERAL AVIATION AIR-GROUND STATIONS

§ 22.805 Channels for general aviation air-ground service.

The following channels are allocated for the provision of radiotelephone service to airborne mobile subscribers in general aviation aircraft. These channels have a bandwidth of 20 kHz and are designated by their center frequencies in MegaHertz.

SIGNALLING CHANNEL PAIR

Ground	Airborne mobile
454.675	459.675

COMMUNICATION CHANNEL PAIRS

Ground	Airborne mobile
454.700	459.700
454.725	459.725
454.750	459.750
454.775	459.775
454.800	459.800
454.825	459.825
454.850	459.850
454.875	459.875
454.900	459.900
454.925	459.925
454.950	459.950
454.975	459.975

(a) Channel 454.675 MHz is assigned to each and every ground station, to be used only for automatically alerting

airborne mobile stations of incoming calls.

(b) All airborne mobile channels are assigned for use by each and every airborne mobile station.

§ 22.807 General aviation air-ground application requirements.

In addition to the information required by subparts B and D of this part, FCC Form 601 applications for authorization to operate a general aviation air-ground station must contain the applicable supplementary information described in this section.

(a) *Administrative information.* The following information is required by FCC Form 601.

(1) The number of transmitter sites for which authorization is requested.

(2) The call sign(s) of other facilities in the same area that are ultimately controlled by the real party in interest to the application.

(b) *Technical information required.* For each transmitter in the Rural Radiotelephone Service, the following information is required by FCC Form 601:

(1) Location description, city, county, state, geographic coordinates (NAD83) correct to ±1 second, site elevation above mean sea level, proximity to adjacent market boundaries and international borders;

(2) Antenna height to tip above ground level, antenna gain in the maximum lobe, the electric field polarization of the wave emitted by the antenna when installed as proposed;

(3) The center frequency of each channel requested, the maximum effective radiated power, any non-standard emission types to be used, including bandwidth and modulation type and the transmitter classification (e.g. ground or signaling).

[59 FR 59507, Nov. 17, 1994, as amended at 59 FR 59954, Nov. 21, 1994; 63 FR 68948, Dec. 14, 1998; 64 FR 53240, Oct. 1, 1999. Redesignated and amended at 70 FR 19309, Apr. 13, 2005]

§ 22.809 Transmitting power limits.

The transmitting power of ground and airborne mobile transmitters operating on the channels listed in § 22.805 must not exceed the limits in this section.

(a) *Ground station transmitters.* The effective radiated power of ground stations must not exceed 100 Watts and must not be less than 50 Watts, except as provided in § 22.811.

(b) *Airborne mobile transmitters.* The transmitter power output of airborne mobile transmitters must not exceed 25 Watts and must not be less than 4 Watts.

§ 22.813 Technical channel pair assignment criteria.

The rules in this section establish technical assignment criteria for the channel pairs listed in § 22.805. These criteria are intended to provide substantial service volumes over areas that have significant local and regional general aviation activity, while maintaining the continuous nationwide in-route coverage of the original geographical layout.

(a) *Distance separation for co-channel ground stations.* The FCC may grant an application requesting assignment of a communication channel pair to a proposed ground transmitter only if the proposed antenna location is at least 800 kilometers (497 miles) from the antenna location of the nearest co-channel ground transmitter in the United States, its territories and possessions; and 1000 kilometers (621 miles) from the antenna location of the nearest co-channel ground transmitter in Canada.

(b) *Dispersion.* The FCC may grant an application requesting assignment of a communication channel pair to a proposed ground transmitter only if there are no more than five different communication channel pairs already assigned to ground transmitters with antenna locations within a 320 kilometer (199 mile) radius of the proposed antenna location.

§ 22.815 Construction period for general aviation ground stations.

The construction period (see § 1.946 of this chapter) for general aviation ground stations is 12 months.

[70 FR 19310, Apr. 13, 2005]

§ 22.817 Additional channel policies.

The rules in this section govern the processing of applications for authority to operate a ground station transmitter on any ground station communication channel listed in § 22.805 when the applicant has applied or been

granted an authorization for other ground station communication channels in the same area. The general policy of the FCC is to assign one ground station communication channel in an area to a carrier per application cycle, up to a maximum of six ground station communication channels per area. That is, a carrier must apply for one ground station communication channel, receive the authorization, construct the station, and notify the FCC of commencement of service before applying for an additional ground station communication channel in that area.

(a) *Air-ground transmitters in same area.* Any transmitter on any of the ground station channels listed in § 22.805 is considered to be in the same area as another transmitter on any ground station channel listed in § 22.805 if it is located less than 350 kilometers (217 miles) from that transmitter.

(b) *Initial channel.* The FCC will not assign more than one ground station communication channel for new ground stations. Ground stations are considered to be new if there are no authorized ground station transmitters on any channel listed in § 22.805 controlled by the applicant in the same area.

(c) *Additional channel.* Applications for ground transmitters to be located in the same area as an authorized ground station controlled by the applicant, but to operate on a different ground station communication channel, are considered as requesting an additional channel for the authorized station.

(d) *Amendment of pending application.* If the FCC receives and accepts for filing an application for a ground station transmitter to be located in the same area as a ground station transmitter proposed in a pending application previously filed by the applicant, but on a different ground station communication channel, the subsequent application is treated as a major amendment to change the technical proposal of the prior application. The filing date of any application so amended is the date the FCC received the subsequent application.

(e) *Dismissal of premature applications for additional channel.* If the FCC receives an application requesting an additional ground station communication channel for an authorized ground station prior to receiving notification that the station is providing service to subscribers on the authorized channel(s), the FCC may dismiss that application without prejudice.

(f) *Dismissal of applications for seventh channel.* If the FCC receives an application requesting an additional ground station communication channel for an authorized ground station which would, if granted, result in that station being assigned more than six ground station communication channels in the same area, the FCC may dismiss that application without prejudice.

Commercial Aviation Air-Ground Systems

§ 22.853 Eligibility to hold interest in licenses limited to 3 MHz of spectrum.

No individual or entity may hold, directly or indirectly, a controlling interest in licenses authorizing the use of more than three megahertz of spectrum (either shared or exclusive) in the 800 MHz commercial aviation Air-Ground Radiotelephone Service frequency bands (see § 22.857). Individuals and entities with either *de jure* or *de facto* control of a licensee in these bands will be considered to have a controlling interest in its license(s). For purposes of this rule, the definitions of ''controlling interests'' and ''affiliate'' set forth in paragraphs (c)(2) and (c)(5) of § 1.2110 of this chapter shall apply.

[70 FR 19310, Apr. 13, 2005]

§ 22.857 Channel plan for commercial aviation air-ground systems.

The 849–851 MHz and 894–896 MHz frequency bands are designated for paired nationwide exclusive assignment to the licensee or licensees of systems providing radio telecommunications service, including voice and/or data service, to persons on board aircraft. Air-ground systems operating in these frequency bands are referred to in this part as ''commercial aviation'' systems.

[70 FR 19310, Apr. 13, 2005]

§ 22.859 Incumbent commercial aviation air-ground systems.

This section contains rules concerning continued operation of commercial aviation air-ground systems that were originally authorized prior to January 1, 2004 to provide radiotelephone service using narrowband (6 kHz) channels, and that have been providing service continuously since the original commencement of service (hereinafter ''incumbent systems'').

(a) An incumbent system may continue to operate under its authorization, for the remaining term of such authorization, subject to the terms and conditions attached thereto. Wherever such technical and operational conditions differ from technical and operational rules in this subpart, those conditions shall govern its operations.

(b) Notwithstanding any other provision in this chapter, the licensee of an incumbent system shall not be entitled to an expectation of renewal of said authorization.

(c) During the period that an incumbent system continues to operate and provide service pursuant to paragraph (a) of this section, air-ground systems of licensees holding a new authorization for the spectrum within which the incumbent system operates must not cause interference to the incumbent system. Protection from interference requires that the signals of the new systems must not exceed a ground station received power of −130 dBm within a 6 kHz receive bandwidth, calculated assuming a 0 dBi vertically polarized receive antenna.

[70 FR 19310, Apr. 13, 2005]

§ 22.861 Emission limitations.

The rules in this section govern the spectral characteristics of emissions for commercial aviation systems in the Air-Ground Radiotelephone Service. Commercial aviation air-ground systems may use any type of emission or technology that complies with the technical rules in this subpart.

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.*, 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) *Alternative out of band emission limit.* The licensee(s) of commercial aviation air-ground systems, together with affected licensees of Cellular Radiotelephone Service systems operating in the spectrum immediately below and adjacent to the commercial aviation air-ground bands, may establish an alternative out of band emission limit to be used at the 849 MHz and 894 MHz band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) *Interference caused by out of band emissions.* If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

[70 FR 19310, Apr. 13, 2005]

§ 22.863 Frequency stability.

The frequency stability of equipment used under this subpart shall be sufficient to ensure that, after accounting for Doppler frequency shifts, the occupied bandwidth of the fundamental

emissions remains within the authorized frequency bands of operation.

[70 FR 19310, Apr. 13, 2005]

§ 22.867 Effective radiated power limits.

The effective radiated power (ERP) of ground and airborne stations operating on the frequency ranges listed in § 22.857 must not exceed the limits in this section.

(a) The peak ERP of airborne mobile station transmitters must not exceed 12 Watts.

(b) The peak ERP of ground station transmitters must not exceed 500 Watts.

[70 FR 19310, Apr. 13, 2005]

§ 22.873 Construction requirements for commercial aviation air-ground systems.

Licensees authorized to use more than one megahertz (1 MHz) of the 800 MHz commercial aviation air-ground spectrum allocation (see § 22.857) must make a showing of ''substantial service'' as set forth in this section. Failure by any such licensee to meet this requirement will result in forfeiture of the license and the licensee will be ineligible to regain it. Licensees authorized to use one megahertz or less of the 800 MHz commercial aviation air-ground spectrum allocation are not subject to the requirements in this section.

(a) ''Substantial service'' is defined as service that is sound, favorable, and substantially above a level of mediocre service that just might minimally warrant renewal.

(b) Each commercial aviation air-ground system subject to the requirements of this section must demonstrate substantial service within 5 years after grant of the authorization. Substantial service may be demonstrated by, but is not limited to, either of the following ''safe harbor'' provisions:

(1) Construction and operation of 20 ground stations, with at least one ground station located in each of the 10 Federal Aviation Administration regions; or,

(2) Provision of service to the airspace of 25 of the 50 busiest airports (as measured by annual passenger boardings).

[70 FR 19310, Apr. 13, 2005]

§ 22.877 Unacceptable interference to part 90 non-cellular 800 MHz licensees from commercial aviation air-ground systems.

The definition of unacceptable interference to non-cellular part 90 licensees in the 800 MHz band from commercial aviation air-ground systems is the same as the definition set forth in § 22.970 which is applicable to Cellular Radiotelephone Service systems.

[70 FR 19311, Apr. 13, 2005]

§ 22.878 Obligation to abate unacceptable interference.

This section applies only to commercial aviation ground stations transmitting in the 849–851 MHz band, other than commercial aviation ground stations operating under the authority of a license originally granted prior to January 1, 2004.

(a) *Strict responsibility.* Any licensee who, knowingly or unknowingly, directly or indirectly, causes or contributes to causing unacceptable interference to a non-cellular part 90 licensee in the 800 MHz band, as defined in § 22.877, shall be strictly accountable to abate the interference, with full cooperation and utmost diligence, in the shortest time practicable. Interfering licensees shall consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in § 22.879. This strict responsibility obligation applies to all forms of interference, including out-of-band emissions and intermodulation.

(b) *Joint and Several responsibility.* If two or more licensees, whether in the commercial aviation air-ground radiotelephone service or in the Cellular Radiotelephone Service (see § 22.971), knowingly or unknowingly, directly or indirectly, cause or contribute to causing unacceptable interference to a non-cellular part 90 licensee in the 800 MHz band, as defined in § 22.877, such licensees shall be jointly and severally responsible for abating interference, with full cooperation and utmost diligence, in the shortest practicable time.

(1) This joint and several responsibility rule requires interfering licensees to consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in § 22.879(c). This joint and several responsibility rule applies to all forms of interference, including out-of-band emissions and intermodulation.

(2) Any licensee that can show that its signal does not directly or indirectly cause or contribute to causing unacceptable interference to a non-cellular part 90 licensee in the 800 MHz band, as defined in § 22.877, shall not be held responsible for resolving unacceptable interference. Notwithstanding, any licensee that receives an interference complaint from a public safety/CII licensee shall respond to such complaint consistent with the interference resolution procedures set forth in § 22.879.

[70 FR 19411, Apr. 13, 2005]

§ 22.879 Interference resolution procedures.

This section applies only to commercial aviation ground stations transmitting in the 849–851 MHz band, other than commercial aviation ground stations operating under the authority of a license originally granted prior to January 1, 2004.

(a) *Initial notification.* Commercial aviation air-ground system licensees may receive initial notification of interference from non-cellular part 90 licensees in the 800 MHz band pursuant to § 90.674(a) of this chapter.

(1) Commercial aviation air-ground system licensees shall join with part 90 ESMR licensees and Cellular Radiotelephone Service licensees in utilizing an electronic means of receiving the initial notification described in § 90.674(a) of this chapter. See § 22.972.

(2) Commercial aviation air-ground system licensees must respond to the initial notification described in § 90.674(a) of this chapter as soon as possible and no later than 24 hours after receipt of notification from a part 90 public safety/CII licensee. This response time may be extended to 48 hours after receipt from other part 90 non-cellular licensees provided affected communications on these systems are not safety related.

(b) *Interference analysis.* Commercial aviation air-ground system licensees—who receive an initial notification described in § 90.674(a) of this chapter—shall perform a timely analysis of the interference to identify the possible source. Immediate on-site visits may be conducted when necessary to complete timely analysis. Interference analysis must be completed and corrective action initiated within 48 hours of the initial complaint from a part 90 public safety/CII licensee. This response time may be extended to 96 hours after the initial complaint from other part 90 non-cellular licensees provided affected communications on these systems are not safety related. Corrective action may be delayed if the affected licensee agrees in writing (which may be, but is not required to be, recorded via e-mail or other electronic means) to a longer period.

(c) *Mitigation steps.* Any commercial aviation air-ground system that is responsible for causing unacceptable interference to non-cellular part 90 licensees in the 800 MHz band shall take affirmative measures to resolve such interference.

(1) Commercial aviation air-ground system licensees found to contribute to unacceptable interference, as defined in § 22.877, shall resolve such interference in the shortest time practicable. Commercial aviation air-ground system licensees must provide all necessary test apparatus and technical personnel skilled in the operation of such equipment as may be necessary to determine the most appropriate means of timely eliminating the interference. However, the means whereby interference is abated or the technical parameters that may need to be adjusted is left to the discretion of the commercial aviation air-ground system licensee, whose affirmative measures may include, but not be limited to, the following techniques:

(i) Increasing the desired power of the public safety/CII signal;

(ii) Decreasing the power of the commercial aviation air-ground system signal;

(iii) Modifying the commercial aviation air-ground system antenna height;

(iv) Modifying the commercial aviation air-ground system antenna characteristics;

(v) Incorporating filters into the commercial aviation air-ground system transmission equipment;

(vi) Changing commercial aviation air-ground system frequencies; and

(vii) Supplying interference-resistant receivers to the affected public safety/CII licensee(s). If this technique is used, in all circumstances, commercial aviation air-ground system licensees shall be responsible for all costs thereof.

(2) Whenever short-term interference abatement measures prove inadequate, the affected part 90 non-cellular licensee shall, consistent with but not compromising safety, make all necessary concessions to accepting interference until a longer-term remedy can be implemented.

(3) When a part 90 public safety licensee determines that a continuing presence of interference constitutes a clear and imminent danger to life or property, the licensee causing the interference must discontinue the associated operation immediately, until a remedy can be identified and applied. The determination that a continuing presence exists that constitutes a clear and imminent danger to life or property, must be made by written statement that:

(i) Is in the form of a declaration, notarized affidavit, or statement under penalty or perjury, from an officer or executive of the affected public safety licensee;

(ii) Thoroughly describes the basis of the claim of clear and imminent danger;

(iii) Was formulated on the basis of either personal knowledge or belief after due diligence;

(iv) Is not proffered by a contractor or other third party; and,

(v) Has been approved by the Chief of the Public Safety and Homeland Security Bureau or other designated Commission official. Prior to the authorized official making a determination that a clear and imminent danger exists, the associated written statement must be served by hand-delivery or receipted fax on the applicable offending licensee, with a copy transmitted by the fastest available means to the Washington, DC office of the Commission's Public Safety and Homeland Security Bureau.

[70 FR 19311, Apr. 13, 2005, as amended at 71 FR 69038, Nov. 29, 2006]

§ 22.880 Information exchange.

(a) *Prior notification.* Public safety/CII licensees may notify a commercial aviation air-ground system licensee that they wish to receive prior notification of the activation or modification of a commercial aviation air-ground system ground station site in their area. Thereafter, the commercial aviation air-ground system licensee must provide the following information to the public safety/CII licensee at least 10 business days before a new ground station is activated or an existing ground station is modified:

(1) Location;

(2) Effective radiated power;

(3) Antenna manufacturer, model number, height above ground level and up tilt angle, as installed;

(4) Channels available for use.

(b) *Purpose of prior notification.* The prior notification of ground station activation or modification is for informational purposes only: public safety/CII licensees are not afforded the right to accept or reject the activation of a proposed ground station or to unilaterally require changes in its operating parameters. The principal purposes of prior notification are to:

(1) Allow a public safety licensee to advise the commercial aviation air-ground system licensee whether it believes a proposed ground station will generate unacceptable interference;

(2) Permit commercial aviation air-ground system licensee(s) to make voluntary changes in ground station parameters when a public safety licensee alerts them to possible interference; and

(3) Rapidly identify the source if interference is encountered when the ground station is activated.

[70 FR 19312, Apr. 13, 2005]

§ 22.881 Air-Ground Radiotelephone Service subject to competitive bidding.

Mutually exclusive initial applications for general aviation Air-Ground

Radiotelephone Service licenses and mutually exclusive initial applications for commercial Air-Ground Radiotelephone Service licenses are subject to competitive bidding. The general competitive bidding procedures set forth in part 1, subpart Q, of this chapter will apply unless otherwise provided in this subpart.

[70 FR 76417, Dec. 27, 2005]

§ 22.882 Designated entities.

(a) Eligibility for small business provisions in the commercial Air-Ground Radiotelephone Service.

(1) A small business is an entity that, together with its affiliates, its controlling interests and the affiliates of its controlling interests, has average gross revenues that are not more than $40 million for the preceding three years.

(2) A very small business is an entity that, together with its affiliates, its controlling interests and the affiliates of its controlling interests, has average gross revenues that are not more than $15 million for the preceding three years.

(b) Bidding credits in the commercial Air-Ground Radiotelephone Service.

(1) A winning bidder that qualifies as a small business, as defined in this section, or a consortium of small businesses may use a bidding credit of 15 percent, as specified in §1.2110(f)(2)(iii) of this chapter, to lower the cost of its winning bid on a commercial Air-Ground Radiotelephone Service license.

(2) A winning bidder that qualifies as a very small business, as defined in this section, or a consortium of very small businesses may use a bidding credit of 25 percent, as specified in §1.2110(f)(2)(ii) of this chapter, to lower the cost of its winning bid on a commercial Air-Ground Radiotelephone Service license.

[70 FR 76417, Dec. 27, 2005]

Subpart H—Cellular Radiotelephone Service

§ 22.900 Scope.

The rules in this subpart govern the licensing and operation of cellular radiotelephone systems. Licensing and operation of these systems are also subject to rules elsewhere in this part that apply generally to the Public Mobile Services. In case of conflict, however, the rules in this subpart govern.

§ 22.901 Cellular service requirements and limitations.

The licensee of each Cellular system is responsible for ensuring that its Cellular system operates in compliance with this section. Each Cellular system must provide either mobile service, fixed service, or a combination of mobile and fixed service, subject to the requirements, limitations and exceptions in this section. Mobile service provided may be of any type, including two-way radiotelephone, dispatch, one-way or two-way paging, and personal communications services (as defined in part 24 of this chapter). Fixed service is considered to be primary service, as is mobile service. When both mobile and fixed services are provided, they are considered to be co-primary services. In providing Cellular service, each Cellular system may incorporate any technology that meets all applicable technical requirements in this part.

[79 FR 72151, Dec. 5, 2014]

§ 22.905 Channels for cellular service.

The following frequency bands are allocated for assignment to service providers in the Cellular Radiotelephone Service.

(a) Channel Block A: 869–880 MHz paired with 824–835 MHz, and 890–891.5 MHz paired with 845–846.5 MHz.

(b) Channel Block B: 880–890 MHz paired with 835–845 MHz, and 891.5–894 MHz paired with 846.5–849 MHz.

[67 FR 77191, Dec. 17, 2002]

§ 22.907 Coordination of channel usage.

Licensees in the Cellular Radiotelephone Service must coordinate, with the appropriate parties, channel usage at each transmitter location within 121 kilometers (75 miles) of any transmitter locations authorized to other licensees or proposed by other applicants, except those with mutually exclusive applications. Licensees utilizing systems employing a frequency re-use factor of 1 (universal re-use) are exempt from this requirement.

(a) Licensees must cooperate and make reasonable efforts to resolve technical problems that may inhibit effective and efficient use of the cellular radio spectrum; however, licensees are not obligated to suggest extensive changes to or redesign other licensees' cellular systems. Licensees must make reasonable efforts to avoid blocking the growth of other cellular systems that are likely to need additional capacity in the future.

(b) If technical problems are addressed by an agreement or operating agreement between the licensees that would result in a reduction of quality or capacity of either system, the licensees must notify the Commission by updating FCC Form 601.

[59 FR 59507, Nov. 17, 1994, as amended at 63 FR 68951, Dec. 14, 1998; 82 FR 17582, Apr. 12, 2017]

§ 22.909 Cellular markets.

Cellular Market Areas (CMAs) are standard geographic areas used by the FCC for administrative convenience in the licensing of Cellular systems. CMAs comprise Metropolitan Statistical Areas (MSAs) and Rural Service Areas (RSAs). All CMAs and the counties they comprise are listed in: ''Common Carrier Public Mobile Services Information, Cellular MSA/RSA Markets and Counties,'' *Public Notice*, Rep. No. CL–92–40, 7 FCC Rcd 742 (1992).

(a) *MSAs.* Metropolitan Statistical Areas are 306 areas, including New England County Metropolitan Areas and the Gulf of Mexico Service Area (water area of the Gulf of Mexico, border is the coastline), defined by the Office of Management and Budget, as modified by the FCC.

(b) *RSAs.* Rural Service Areas are 428 areas, other than MSAs, established by the FCC.

[59 FR 59507, Nov. 17, 1994, as amended at 79 FR 72151, Dec. 5, 2014]

§ 22.911 Cellular geographic service area.

The Cellular Geographic Service Area (CGSA) of a Cellular system is the geographic area considered by the FCC to be served by the Cellular system and is the area within which cellular systems are entitled to protection and adverse effects for the purpose of determining whether a petitioner has standing are recognized. The CGSA is the composite of the service areas of all of the cells in the system, excluding any Unserved Area (even if it is served on a secondary basis) or area within the CGSA of another Cellular system. The service area of a cell is the area within its service area boundary (SAB). Licensees that use power spectral density (PSD) at cell sites within their licensed geographic area are subject to paragraph (c) of this section; all other licensees are subject to paragraph (a) (or, as applicable, paragraph (b)) of this section. If the calculation under paragraph (a), (b), or (c) of this section (as applicable) yields an SAB extension comprising at least 130 contiguous square kilometers (50 contiguous square miles), the licensee must submit an application for major modification of the CGSA using FCC Form 601. *See also* §§ 22.912, 22.949, and 22.953.

(a) *CGSA determination (non-PSD).* For the purpose of calculating the SABs for cell sites and determining CGSA expansion areas for Cellular base stations that do not operate using PSD (as permitted under § 22.913), the distance to the SAB is calculated as a function of effective radiated power (ERP) and antenna center of radiation height above average terrain (HAAT), height above sea level (HASL), or height above mean sea level (HAMSL).

(1) Except as provided in paragraphs (a)(2) and (b) of this section, the distance from a cell transmitting antenna to its SAB along each cardinal radial is calculated as follows:

$$d = 2.531 \times h^{0.34} \times p^{0.17}$$

where:

d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

(2) The distance from a cell transmitting antenna located in the Gulf of Mexico Service Area (GMSA) to its SAB along each cardinal radial is calculated as follows:

$$d = 6.895 \times h^{0.30} \times p^{0.15}$$

Where:

d is the radial distance in kilometers
h is the radial antenna HAAT in meters
p is the radial ERP in Watts

(3) The value used for h in the formula in paragraph (a)(2) of this section must not be less than 8 meters (26 feet) HASL (or HAMSL, as appropriate for the support structure). The value used for h in the formula in paragraph (a)(1) of this section must not be less than 30 meters (98 feet) HAAT, except that for unserved area applications proposing a cell with an ERP not exceeding 10 Watts, the value for h used in the formula in paragraph (a)(1) of this section to determine the service area boundary for that cell may be less than 30 meters (98 feet) HAAT, but not less than 3 meters (10 feet) HAAT.

(4) The value used for p in the formulas in paragraphs (a)(1) and (a)(2) of this section must not be less than 0.1 Watt or 27 dB less than (1/500 of) the maximum ERP in any direction, whichever is more.

(5) Whenever use of the formula in paragraph (a)(1) of this section pursuant to the exception contained in paragraph (a)(3) of this section results in a calculated distance that is less than 5.4 kilometers (3.4 miles), the radial distance to the service area boundary is deemed to be 5.4 kilometers (3.4 miles).

(6) The distance from a cell transmitting antenna to the SAB along any radial other than the eight cardinal radials is calculated by linear interpolation of distance as a function of angle.

(b) *Alternative CGSA determination (non-PSD).* If a carrier believes that the method described in paragraph (a) of this section produces a CGSA that departs significantly (±20% in the service area of any cell) from the geographic area where reliable cellular service is actually provided, the carrier may submit, as an exhibit to an application for modification of the CGSA using FCC Form 601, a depiction of what the carrier believes the CGSA should be. Such submissions must be accompanied by one or more supporting propagation studies using methods appropriate for the 800–900 MHz frequency range, including all supporting data and calculations, and/or by extensive field strength measurement data. For the purpose of such submissions, cellular service is considered to be provided in all areas, including ''dead spots'', between the transmitter location and the locus of points where the predicted or measured median field strength finally drops to 32 dBμV/m (i.e. does not exceed 32 dBμV/m further out). If, after consideration of such submissions, the FCC finds that adjustment to a CGSA is warranted, the FCC may grant the application.

(1) The alternative CGSA determination must define the CGSA in terms of distances from the cell sites to the 32 dBμV/m contour along the eight cardinal radials, with points in other azimuthal directions determined by the method given in paragraph (a)(6) of this section. The distances used must be representative of the coverage within the eight cardinal radials, as depicted by the alternative CGSA determination.

(2) If an uncalibrated predictive model is used to depict the CGSA, the alternative CGSA determination must identify factors (e.g. terrain roughness or features) that could plausibly account for the difference between actual coverage and that defined by the formula in paragraph (a)(1) of this section. If actual measurements or a measurement-calibrated predictive model are used to depict the CGSA, and this fact is disclosed in the alternative CGSA determination, it is not necessary to offer an explanation of the difference between actual coverage and that defined by the formula in paragraph (a)(1) of this section. If the formula in paragraph (a)(1) of this section is clearly inapplicable for the cell(s) in question (e.g. for microcells), this should be disclosed in the alternative CGSA determination.

(3) The provision for alternative CGSA determinations was made in recognition that the formula in paragraph (a)(1) of this section is a general model that provides a reasonable approximation of coverage in most land areas, but may under-predict or over-predict coverage in specific areas with unusual terrain roughness or features, and may be inapplicable for certain purposes, *e.g.*, cells with a coverage radius of less than 8 kilometers (5 miles). In such cases, alternative methods that utilize more specific models are appropriate. Accordingly, the FCC does not consider use of the formula in paragraph (a)(1) of this section with parameters outside

of the limits in paragraphs (a)(3), (a)(4) and (a)(5) of this section or with data for radials other than the cardinal radials to be a valid alternative method for determining the CGSA of a cellular system.

(c) *CGSA determination (PSD).* (1) For the purpose of calculating the SABs for cell sites and determining CGSA expansion areas for Cellular base stations that operate using PSD (as permitted under § 22.913), the licensee must use a predictive propagation model that is appropriate for the service provided, taking into account terrain and local conditions. The SAB and CGSA boundary must be defined in terms of distances from the cell site to the 32 dBμV/m contour along the eight cardinal radials, with points in other azimuthal directions determined by the method set forth in paragraph (a)(6) of this section. The distances used must be representative of the coverage within the eight cardinal radials.

(2) An application for major modification of the CGSA under this paragraph (c) must include, as an exhibit, a depiction of the CGSA accompanied by one or more supporting propagation studies using methods appropriate for the 800–900 MHz frequency range, including all supporting data and calculations, and/or by extensive field strength measurement data. For the purpose of such submissions, Cellular service is considered to be provided in all areas, including ''dead spots,'' between the transmitter location and the locus of points where the predicted or measured median field strength finally drops to 32 dBμV/m (*i.e.,* does not exceed 32 dBμV/m further out). If, after consideration of such submissions, the FCC finds that adjustment to a CGSA is warranted, the FCC may grant the application.

(d) *Protection afforded.* Cellular systems are entitled to protection only within the CGSA (as determined in accordance with this section) from co-channel and first-adjacent channel interference (*see* § 22.983). Licensees must cooperate in resolving co-channel and first-adjacent channel interference by changing channels used at specific cells or by other technical means.

(e) [Reserved]

[59 FR 59507, Nov. 17, 1994, as amended at 59 FR 59954, Nov. 21, 1994; 63 FR 68951, Dec. 14, 1998; 67 FR 9609, Mar. 4, 2002; 67 FR 77191, Dec. 17, 2002; 68 FR 42295, July 17, 2003; 79 FR 72151, Dec. 5, 2014; 82 FR 17582, Apr. 12, 2017]

§ 22.912 Service area boundary extensions.

This section contains rules governing service area boundary (SAB) extensions. SAB extensions are areas (calculated using the methodology of § 22.911) that extend outside of the licensee's Cellular Geographic Service Area (CGSA) boundary into Unserved Area or into the CGSA of a neighboring co-channel licensee. Service within SAB extensions is not protected from interference or capture under § 22.911(d) unless and until the area within the SAB extension becomes part of the CGSA in compliance with all applicable rules.

(a) *Extensions into Unserved Area.* Subject to paragraph (c) of this section, the licensee of a Cellular system may, at any time, extend its SAB into Unserved Area and provide service on a secondary basis only, provided that the extension area comprises less than 130 contiguous square kilometers (50 contiguous square miles). If more than one licensee of a Cellular system extends into all or a portion of the same Unserved Area under this section, all such licensees may provide service in such Unserved Area on a shared secondary (unprotected) basis only.

(b) *Contract extensions.* The licensee of any Cellular system may, at any time, enter into a contract with an applicant for, or a licensee of, a Cellular system on the same channel block to allow one or more SAB extensions into its CGSA (not into Unserved Area).

(c) *Gulf of Mexico Service Area.* Land-based Cellular system licensees may not extend their SABs into the Gulf of Mexico Exclusive Zone (GMEZ) absent written contractual consent of the co-channel GMEZ licensee. GMEZ licensees may not extend their SABs into the CGSA of a licensee on the same channel block in an adjacent CMA or the Gulf of Mexico Coastal Zone absent written contractual consent of the co-channel licensee.

[79 FR 72151, Dec. 5, 2014]

§ 22.913 Effective radiated power limits.

Licensees in the Cellular Radiotelephone Service are subject to the effective radiated power (ERP) limits and other requirements in this Section. *See also* § 22.169.

(a) *Maximum ERP.* The ERP of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.

(1) Except as described in paragraphs (a)(2), (3), and (4) of this section, the ERP of base stations and repeaters must not exceed—

(i) 500 watts per emission; or

(ii) 400 watts/MHz (PSD) per sector.

(2) Except as described in paragraphs (a)(3) and (4) of this section, for systems operating in areas more than 72 kilometers (45 miles) from international borders that:

(i) Are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census; or

(ii) Extend coverage into Unserved Area on a secondary basis (*see* § 22.949), the ERP of base transmitters and repeaters must not exceed—

(A) 1000 watts per emission; or

(B) 800 watts/MHz (PSD) per sector.

(3) Provided that they also comply with paragraphs (b) and (c) of this section, licensees are permitted to operate their base transmitters and repeaters with an ERP greater than 400 watts/MHz (PSD) per sector, up to a maximum ERP of 1000 watts/MHz (PSD) per sector unless they meet the conditions in paragraph (a)(4) of this section.

(4) Provided that they also comply with paragraphs (b) and (c) of this section, licensees of systems operating in areas more than 72 kilometers (45 miles) from international borders that:

(i) Are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census; or

(ii) Extend coverage into Unserved Area on a secondary basis (*see* § 22.949), are permitted to operate base transmitters and repeaters with an ERP greater than 800 watts/MHz (PSD) per sector, up to a maximum of 2000 watts/MHz (PSD) per sector.

(5) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

(b) *Power flux density (PFD).* Until May 12, 2024, each Cellular base station that operates at the higher ERP limits permitted under paragraphs (a)(3) and (4) of this section must be designed and deployed so as not to exceed a modeled PFD of 3000 microwatts/m^2/MHz over at least 98% of the area within 1 km of the base station antenna, at 1.6 meters above ground level. To ensure its compliance with this requirement, the licensee must perform predictive modeling of the PFD values within at least 1 km of each base station antenna prior to commencing such operations and, thereafter, prior to making any site modifications that may increase the PFD levels around the base station. The modeling tools must take into consideration terrain and other local conditions and must use good engineering practices for the 800 MHz band.

(c) *Advance notification requirement.* At least 30 days but not more than 90 days prior to activating a base station at the higher ERP limits permitted under paragraphs (a)(3) and (4) of this section, the Cellular licensee must provide written advance notice to any public safety licensee authorized in the frequency range 806–816 MHz/851–861 MHz with a base station located within a radius of 113 km of the Cellular base station to be deployed. The written notice shall be required only one time for each such cell site and is for informational purposes only; the public safety licensees are not afforded the right to accept or reject the activation or to unilaterally require changes in the operating parameters. The written notification must include the base station's location, ERP level, height of the transmitting antenna's center of radiation above ground level, and the timeframe for activation, as well as the Cellular licensee's contact information. Additional information shall be provided by the Cellular licensee upon request of a public safety licensee required to be notified under this paragraph (c). *See also* §§ 22.970 through 22.973.

(d) *Power measurement.* Measurement of the ERP of Cellular base transmitters and repeaters must be made using

an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB. Power measurements for base transmitters and repeaters must be made in accordance with either of the following:

(1) A Commission-approved average power technique (*see* FCC Laboratory's Knowledge Database); or

(2) For purposes of this section, peak transmit power must be measured over an interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, *etc.*, so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

(e) *Height-power limit.* The ERP of base transmitters must not exceed the amount that would result in an average distance to the service area boundary of 79.1 kilometers (49 miles) for Cellular systems authorized to serve the Gulf of Mexico MSA and 40.2 kilometers (25 miles) for all other Cellular systems. The average distance to the service area boundary is calculated by taking the arithmetic mean of the distances determined using the procedures specified in §22.911 for the eight cardinal radial directions.

(f) *Exemptions from height-power limit.* Licensees need not comply with the height-power limit in paragraph (e) of this section if either of the following conditions is met:

(1) The proposed operation is coordinated with the licensees of all affected Cellular systems on the same channel block within 121 kilometers (75 miles) and concurrence is obtained; or

(2) The licensee's base transmitter or repeater is operated at the ERP limits (W/MHz) specified above in paragraph (a)(1)(ii), (a)(2)(ii), (a)(3), or (a)(4) of this section.

[82 FR 17582, Apr. 12, 2017]

§22.917 Emission limitations for cellular equipment.

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a reference bandwidth as follows:

(1) In the spectrum below 1 GHz, instrumentation should employ a reference bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy, provided that the measured power is integrated over the full required reference bandwidth (*i.e.*, 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(2) In the spectrum above 1 GHz, instrumentation should employ a reference bandwidth of 1 MHz.

(c) *Alternative out of band emission limit.* Licensees in this service may establish an alternative out of band emission limit to be used at specified band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) *Interference caused by out of band emissions.* If any emission from a transmitter operating in this service results

in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

[67 FR 77191, Dec. 17, 2002, as amended at 82 FR 17583, Apr. 12, 2017]

§ 22.921 [Reserved]

§ 22.923 Cellular system configuration.

Mobile stations communicate with and through base transmitters only. Base transmitters communicate with mobile stations directly or through cellular repeaters. Auxiliary test stations may communicate with base or mobile stations for the purpose of testing equipment.

§ 22.925 Prohibition on airborne operation of cellular telephones.

Cellular telephones installed in or carried aboard airplanes, balloons or any other type of aircraft must not be operated while such aircraft are airborne (not touching the ground). When any aircraft leaves the ground, all cellular telephones on board that aircraft must be turned off. The following notice must be posted on or near each cellular telephone installed in any aircraft:

''The use of cellular telephones while this aircraft is airborne is prohibited by FCC rules, and the violation of this rule could result in suspension of service and/or a fine. The use of cellular telephones while this aircraft is on the ground is subject to FAA regulations.''

§§ 22.927–22.943 [Reserved]

§ 22.946 Construction period for Unserved Area authorizations.

The construction period applicable to new or modified Cellular facilities for which an authorization is granted pursuant to the Unserved Area process is one year, beginning on the date the authorization is granted. To satisfy this requirement, a Cellular system must be providing service to mobile stations operated by subscribers and roamers. The licensee must notify the FCC (FCC Form 601) after the requirements of this section are met. *See* §1.946 of this chapter. *See also* §22.949.

[79 FR 72151, Dec. 5, 2014]

§ 22.948 Geographic partitioning and spectrum disaggregation; spectrum leasing.

Cellular licensees may apply to partition any portion of their licensed Cellular Geographic Service Area (CGSA) or to disaggregate their licensed spectrum at any time following the grant of their authorization(s). Parties seeking approval for partitioning and disaggregation shall request from the FCC an authorization for partial assignment of a license pursuant to §1.948 of this chapter. See also paragraph (d) of this section regarding spectrum leasing.

(a) *Partitioning, disaggregation, or combined partitioning and disaggregation.* Applicants must file FCC Form 603 (''Assignment of Authorization and Transfer of Control'') pursuant to §1.948 of this chapter, as well as GIS map files and a reduced-size PDF map pursuant to §22.953 for both the assignor and assignee.

(b) *Field strength limit.* For purposes of partitioning and disaggregation, Cellular systems must be designed so as to comply with §22.983.

(c) *License term.* The license term for a partitioned license area and for disaggregated spectrum will be the remainder of the original license term.

(d) *Spectrum leasing.* Cellular spectrum leasing is subject to all applicable provisions of subpart X of part 1 of this chapter as well as the provisions of paragraph (a) of this section, except that applicants must file FCC Form 608 (''Application or Notification for Spectrum Leasing Arrangement or Private Commons Arrangement''), not FCC Form 603.

[79 FR 72152, Dec. 5, 2014]

§ 22.949 Unserved Area licensing; minimum coverage requirements.

(a) The Unserved Area licensing process described in this section is on-going and applications may be filed at any time, subject to the following coverage requirements:

(1) Applicants for authority to operate a new Cellular system or expand an existing Cellular Geographic Service Area (CGSA) in Unserved Area must propose a CGSA or CGSA expansion of

at least 130 contiguous square kilometers (50 contiguous square miles) using the methodology of § 22.911.

(2) Applicants for authority to operate a new Cellular system must not propose coverage of water areas only (or water areas and uninhabited islands or reefs only), except for Unserved Area in the Gulf of Mexico Service Area.

(b) There is no limit to the number of Unserved Area applications that may be granted on each channel block of each CMA that is subject to the procedures of this section. Consequently, Unserved Area applications are mutually exclusive only if the proposed CGSAs would overlap. Mutually exclusive applications are processed using the general procedures under § 22.131.

(c) Unserved Area applications under this section may propose a CGSA covering more than one CMA. Each Unserved Area application must request authorization for only one CGSA and must not propose a CGSA overlap with an existing CGSA.

(d) Settlements among some, but not all, applicants with mutually exclusive applications for Unserved Area (partial settlements) under this section are prohibited. Settlements among all applicants with mutually exclusive applications under this section (full settlements) are allowed and must be filed no later than the date that the FCC Form 175 (short-form) is filed.

[79 FR 72152, Dec. 5, 2014]

§ 22.950 Provision of service in the Gulf of Mexico Service Area (GMSA).

The GMSA has been divided into two areas for licensing purposes, the Gulf of Mexico Exclusive Zone (GMEZ) and the Gulf of Mexico Coastal Zone (GMCZ). This section describes these areas and sets forth the process for licensing facilities in these two respective areas within the GMSA.

(a) The GMEZ and GMCZ are defined as follows:

(1) *Gulf of Mexico Exclusive Zone.* The geographical area within the Gulf of Mexico Service Area that lies between the coastline line and the southern demarcation line of the Gulf of Mexico Service Area, excluding the area comprising the Gulf of Mexico Coastal Zone.

(2) *Gulf of Mexico Coastal Zone.* The geographical area within the Gulf of Mexico Service Area that lies between the coast line of Florida and a line extending approximately twelve nautical miles due south from the coastline boundary of the States of Florida and Alabama, and continuing along the west coast of Florida at a distance of twelve nautical miles from the shoreline. The line is defined by Great Circle arcs connecting the following points (geographical coordinates listed as North Latitude, West Longitude) consecutively in the order listed:

(i) 30°16′49″ N 87°31′06″ W
(ii) 30°04′35″ N 87°31′06″ W
(iii) 30°10′56″ N 86°26′53″ W
(iv) 30°03′00″ N 86°00′29″ W
(v) 29°33′00″ N 85°32′49″ W
(vi) 29°23′21″ N 85°02′06″ W
(vii) 29°49′44″ N 83°59′02″ W
(viii) 28°54′00″ N 83°05′33″ W
(ix) 28°34′41″ N 82°53′38″ W
(x) 27°50′39″ N 83°04′27″ W
(xi) 26°24′22″ N 82°23′22″ W
(xii) 25°41′39″ N 81°49′40″ W
(xiii) 24°59′02″ N 81°15′04″ W
(xiv) 24°44′23″ N 81°57′04″ W
(xv) 24°32′37″ N 82°02′01″ W

(b) *Service Area Boundary Calculation.* The service area boundary of a cell site located within the Gulf of Mexico Service Area is calculated pursuant to § 22.911(a)(2). Otherwise, the service area boundary is calculated pursuant to § 22.911(a)(1) or § 22.911(b).

(c) *Gulf of Mexico Exclusive Zone (GMEZ).* GMEZ licensees have an exclusive right to provide Cellular service in the GMEZ, and may add, modify, or remove facilities anywhere within the GMEZ without prior FCC approval. There is no Unserved Area licensing procedure for the GMEZ.

(d) *Gulf of Mexico Coastal Zone (GMCZ).* The GMCZ is subject to the Unserved Area licensing procedures set forth in § 22.949.

[67 FR 9610, Mar. 4, 2002, as amended at 79 FR 72152, Dec. 5, 2014]

§ 22.951 [Reserved]

§ 22.953 Content and form of applications for Cellular Unserved Area authorizations.

Applications for authority to operate a new Cellular system or to modify an

existing Cellular system must comply with the specifications in this section.

(a) *New Systems.* In addition to information required by subpart B of this part and by FCC Form 601, applications for an Unserved Area authorization to operate a Cellular system must comply with all applicable requirements set forth in part 1 of this chapter, including the requirements specified in §§1.913, 1.923, and 1.924, and must include the information listed below. Geographical coordinates must be correct to ±1 second using the NAD 83 datum.

(1) *Exhibit I—Geographic Information System (GIS) map files.* Geographic Information System (GIS) map files must be submitted showing the entire proposed CGSA, the new cell sites (transmitting antenna locations), and the service area boundaries of additional and modified cell sites that extend into Unserved Area being claimed as CGSA. *See* §22.911. The FCC will specify the file format required for the GIS map files, which are to be submitted electronically via the Universal Licensing System (ULS).

(2) *Exhibit II—Reduced-size PDF map.* This map must be 8½ × 11 inches (if possible, a proportional reduction of a 1:500,000 scale map). The map must have a legend, a distance scale, and correctly labeled latitude and longitude lines. The map must be clear and legible. The map must accurately show the entire proposed CGSA, the new cell sites (transmitting antenna locations), the service area boundaries of additional and modified cell sites that extend beyond the CGSA, and the relevant portions of the CMA boundary. *See* §22.911.

(3) *Exhibit III—Technical Information.* In addition, upon request by an applicant, licensee, or the FCC, a Cellular applicant or licensee of whom the request is made shall furnish the antenna type, model, the name of the antenna manufacturer, antenna gain in the maximum lobe, the beam width of the maximum lobe of the antenna, a polar plot of the horizontal gain pattern of the antenna, antenna height to tip above ground level, the height of the center of radiation of the antenna above the average terrain, the maximum effective radiated power, and the electric field polarization of the wave emitted by the antenna when installed as proposed to the requesting party within ten (10) days of receiving written notification.

(4)–(10) [Reserved]

(11) *Additional information.* The FCC may request information not specified in FCC Form 601 or in paragraphs (a)(1) through (a)(3) of this section as necessary to process an application.

(b) *Existing systems—major modifications.* Licensees making major modifications pursuant to §1.929(a) and (b) of this chapter must file FCC Form 601 and comply with the requirements of paragraph (a) of this section.

(c) *Existing systems—minor modifications.* Licensees making minor modifications pursuant to §1.929(k) of this chapter must file FCC Form 601 or FCC Form 603, provided, however, that a resulting reduction in coverage within the CGSA is not subject to this requirement. *See* §1.947(b). *See also* §22.169. If the modification involves a contract SAB extension into or from the Gulf of Mexico Exclusive Zone, it must include a certification that the required written consent has been obtained. *See* §§22.912(c) and 22.950.

[79 FR 72152, Dec. 5, 2014, as amended at 82 FR 17584, Apr. 12, 2017]

§§ 22.955–22.957 [Reserved]

§ 22.959 Rules governing processing of applications for initial systems.

Pending applications for authority to operate the first cellular system on a channel block in an MSA or RSA market continue to be processed under the rules governing the processing of such applications that were in effect when those applications were filed, unless the Commission determines otherwise in a particular case.

§ 22.960 Cellular operations in the Chambers, TX CMA (CMA672–A).

This section applies only to Cellular systems operating on channel block A of the Chambers, Texas CMA (CMA672–A).

(a) The geographic boundary of CMA672–A is deemed to be the Cellular Geographic Service Area (CGSA) boundary. This CGSA boundary is not determined using the methodology of

§ 22.911. The licensee of CMA672–A may not propose an expansion of this CGSA into another CMA unless and until it meets the construction requirement set forth in paragraph (b)(2) of this section.

(b) A licensee that holds the license for CMA672–A must be providing signal coverage and offering service as follows (and in applying these geographic construction benchmarks, the licensee is to count total land area):

(1) To at least 35% of the geographic area of CMA672–A within four years of the grant of such authorization; and

(2) To at least 70% of the geographic area of its license authorization by the end of the license term.

(c) After it has met each of the requirements of paragraphs (b)(1) and (b)(2), respectively, of this section, the licensee that holds the license for CMA672–A must notify the FCC that it has met the requirement by submitting FCC Form 601, including GIS map files and other supporting documents showing compliance with the requirement. *See* § 1.946 of this chapter. *See also* § 22.953.

(d) Failure to meet the construction requirements set forth in paragraphs (b)(1) and (b)(2) of this section by each of the applicable deadlines will result in automatic termination of the license for CMA672–A and its return to the Commission for future re-licensing subject to competitive bidding procedures. The licensee that fails to meet each requirement of this section by the applicable deadline set forth in paragraphs (b)(1) and (b)(2) shall be ineligible to regain the license for CMA672–A.

[79 FR 72153, Dec. 5, 2014]

§ 22.961 Cellular licenses subject to competitive bidding.

(a) The following applications for Cellular licensed area authorizations are subject to competitive bidding:

(1) Mutually exclusive applications for Unserved Area filed after July 26, 1993; and

(2) Mutually exclusive applications for the initial authorization for CMA672–A (Chambers, TX).

(b) The competitive bidding procedures set forth in § 22.229 and the general competitive bidding procedures set forth in subpart Q of part 1 of this chapter will apply.

[79 FR 72153, Dec. 5, 2014]

§§ 22.962–22.969 [Reserved]

§ 22.970 Unacceptable interference to part 90 non-cellular 800 MHz licensees from cellular radiotelephone or part 90–800 MHz cellular systems.

(a) *Definition*. Except as provided in 47 CFR 90.617(k), unacceptable interference to non-cellular part 90 licensees in the 800 MHz band from cellular radiotelephone or part 90–800 MHz cellular systems will be deemed to occur when the below conditions are met:

(1) A transceiver at a site at which interference is encountered:

(i) Is in good repair and operating condition, and is receiving:

(A) A median desired signal of −104 dBm or higher, as measured at the R.F. input of the receiver of a mobile unit; or

(B) A median desired signal of −101 dBm or higher, as measured at the R.F. input of the receiver of a portable *i.e.* hand-held unit; and, either

(ii) Is a voice transceiver:

(A) With manufacturer published performance specifications for the receiver section of the transceiver equal to, or exceeding, the minimum standards set out in paragraph (b) of this section, below; and;

(B) Receiving an undesired signal or signals which cause the measured Carrier to Noise plus interference (C/(I + N)) ratio of the receiver section of said transceiver to be less than 20 dB, or,

(iii) Is a non-voice transceiver receiving an undesired signal or signals which cause the measured bit error rate (BER) (or some comparable specification) of the receiver section of said transceiver to be more than the value reasonably designated by the manufacturer.

(2) Provided, however, that if the receiver section of the mobile or portable voice transceiver does not conform to the standards set out in paragraph (b) of this section, then that transceiver shall be deemed subject to unacceptable interference only at sites where the median desired signal satisfies the applicable threshold measured signal

power in paragraph (a)(1)(i) of this section after an upward adjustment to account for the difference in receiver section performance. The upward adjustment shall be equal to the increase in the desired signal required to restore the receiver section of the subject transceiver to the 20 dB C/(I + N) ratio of paragraph (a)(1)(ii)(B) of this section. The adjusted threshold levels shall then define the minimum measured signal power(s) in lieu of paragraphs (a)(1)(i) of this section at which the licensee using such non-compliant transceiver is entitled to interference protection.

(b) *Minimum receiver requirements.* Voice transceivers capable of operating in the 806–824 MHz portion of the 800 MHz band shall have the following minimum performance specifications in order for the system in which such transceivers are used to claim entitlement to full protection against unacceptable interference (See paragraph (a) (2) of this section).

(1) Voice units intended for mobile use: 75 dB intermodulation rejection ratio; 75 dB adjacent channel rejection ratio; −116 dBm reference sensitivity.

(2) Voice units intended for portable use: 70 dB intermodulation rejection ratio; 70 dB adjacent channel rejection ratio; −116 dBm reference sensitivity.

[69 FR 67834, Nov. 22, 2004, as amended at 70 FR 76707, Dec. 28, 2005]

§ 22.971 Obligation to abate unacceptable interference.

(a) *Strict Responsibility.* Any licensee who, knowingly or unknowingly, directly or indirectly, causes or contributes to causing unacceptable interference to a non-cellular part 90 of this chapter licensee in the 800 MHz band, as defined in § 22.970, shall be strictly accountable to abate the interference, with full cooperation and utmost diligence, in the shortest time practicable. Interfering licensees shall consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in § 22.972(c). This strict responsibility obligation applies to all forms of interference, including out-of-band emissions and intermodulation.

(b) *Joint and several responsibility.* If two or more licensees knowingly or unknowingly, directly or indirectly, cause or contribute to causing unacceptable interference to a non-cellular part 90 of this chapter licensee in the 800 MHz band, as defined in § 22.970, such licensees shall be jointly and severally responsible for abating interference, with full cooperation and utmost diligence, in the shortest practicable time.

(1) This joint and several responsibility rule requires interfering licensees to consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in § 22.972(c). This joint and several responsibility rule applies to all forms of interference, including out-of-band emissions and intermodulation.

(2) Any licensee that can show that its signal does not directly or indirectly, cause or contribute to causing unacceptable interference to a non-cellular part 90 of this chapter licensee in the 800 MHz band, as defined in this chapter, shall not be held responsible for resolving unacceptable interference. Notwithstanding, any licensee that receives an interference complaint from a public safety/CII licensee shall respond to such complaint consistent with the interference resolution procedures set forth in this chapter.

[69 FR 67834, Nov. 22, 2004, as amended at 70 FR 76707, Dec. 28, 2005]

§ 22.972 Interference resolution procedures.

(a) *Initial notification.* (1) Cellular Radiotelephone licensees may receive initial notification of interference from non-cellular part 90 of this chapter licensees in the 800 MHz band pursuant to § 90.674(a) of this chapter.

(2) Cellular Radiotelephone licensees, in conjunction with part 90 ESMR licensees, shall establish an electronic means of receiving the initial notification described in § 90.674(a) of this chapter. The electronic system must be designed so that all appropriate Cellular Radiotelephone licensees and part 90 ESMR licensees can be contacted about the interference incident with a single notification. The electronic system for

receipt of initial notification of interference complaints must be operating no later than February 22, 2005.

(3) Cellular Radiotelephone licensees must respond to the initial notification described in §90.674(a) of this chapter, as soon as possible and no later than 24 hours after receipt of notification from a part 90 public safety/CII licensee. This response time may be extended to 48 hours after receipt from other part 90 non-cellular licensees provided affected communications on these systems are not safety related.

(b) *Interference analysis.* Cellular Radiotelephone licensees—who receive an initial notification described in §90.674(a) of this chapter—shall perform a timely analysis of the interference to identify the possible source. Immediate on-site visits may be conducted when necessary to complete timely analysis. Interference analysis must be completed and corrective action initiated within 48 hours of the initial complaint from a part 90 of this chapter public safety/CII licensee. This response time may be extended to 96 hours after the initial complaint from other part 90 of this chapter non-cellular licensees provided affected communications on these systems are not safety related. Corrective action may be delayed if the affected licensee agrees in writing (which may be, but is not required to be, recorded via e-mail or other electronic means) to a longer period.

(c) *Mitigation steps.* (1) All Cellular Radiotelephone and part 90 of this chapter—800 MHz cellular system licensees who are responsible for causing unacceptable interference shall take all affirmative measures to resolve such interference. Cellular Radiotelephone licensees found to contribute to unacceptable interference, as defined in §22.970, shall resolve such interference in the shortest time practicable. Cellular Radiotelephone licensees and part 90 of this chapter—800 MHz cellular system licensees must provide all necessary test apparatus and technical personnel skilled in the operation of such equipment as may be necessary to determine the most appropriate means of timely eliminating the interference. However, the means whereby interference is abated or the cell parameters that may need to be adjusted is left to the discretion of the Cellular Radiotelephone and/or part 90 of this chapter—800 MHz cellular system licensees, whose affirmative measures may include, but not be limited to, the following techniques:

(i) Increasing the desired power of the public safety/CII signal;

(ii) Decreasing the power of the part 90 ESMR and/or Cellular Radiotelephone system signal;

(iii) Modifying the part 90 ESMR and/or Cellular Radiotelephone system antenna height;

(iv) Modifying the part 90 ESMR and/or Cellular Radiotelephone system antenna characteristics;

(v) Incorporating filters into part 90 ESMR and/or Cellular Radiotelephone transmission equipment;

(vi) Permanently changing part 90 ESMR and/or Cellular Radiotelephone frequencies; and

(vii) Supplying interference-resistant receivers to the affected public safety/CII licensee(s). If this technique is used, in all circumstances, Cellular Radiotelephone and/or part 90 of this chapter ESMR licensees shall be responsible for all costs thereof.

(2) Whenever short-term interference abatement measures prove inadequate, the affected part 90 of this chapter non-cellular licensee shall, consistent with but not compromising safety, make all necessary concessions to accepting interference until a longer-term remedy can be implemented.

(3) *Discontinuing operations when clear imminent danger exists.* When a part 90 of this chapter public safety licensee determines that a continuing presence of interference constitutes a clear and imminent danger to life or property, the licensee causing the interference must discontinue the associated operation immediately, until a remedy can be identified and applied. The determination that a continuing presence exists that constitutes a clear and imminent danger to life or property, must be made by written statement that:

(i) Is in the form of a declaration, notarized affidavit, or statement under penalty or perjury, from an officer or executive of the affected public safety licensee;

(ii) Thoroughly describes the basis of the claim of clear and imminent danger;

(iii) Was formulated on the basis of either personal knowledge or belief after due diligence;

(iv) Is not proffered by a contractor or other third party; and

(v) Has been approved by the Chief of the Public Safety and Homeland Security Bureau or other designated Commission official. Prior to the authorized official making a determination that a clear and imminent danger exists, the associated written statement must be served by hand-delivery or receipted fax on the applicable offending licensee, with a copy transmitted by the fastest available means to the Washington, DC office of the Commission's Public Safety and Homeland Security Bureau.

[69 FR 67834, Nov. 22, 2004, as amended at 70 FR 76707, Dec. 28, 2005; 71 FR 69038, Nov. 29, 2006]

§ 22.973 Information exchange.

(a) *Prior notification.* Public safety/CII licensees may notify a part 90 ESMR or cellular radiotelephone licensee that they wish to receive prior notification of the activation or modification of part 90 ESMR or cellular radiotelephone cell sites in their area. Thereafter, the part 90 ESMR or cellular radiotelephone licensee must provide the following information to the public safety/CII licensee at least 10 business days before a new cell site is activated or an existing cell site is modified:

(1) Location;

(2) Effective radiated power;

(3) Antenna height;

(4) Channels available for use.

(b) *Purpose of prior notification.* The prior coordination of cell sites is for informational purposes only. Public safety/CII licensees are not afforded the right to accept or reject the activation of a proposed cell or to unilaterally require changes in its operating parameters. The principal purposes of notification are to:

(1) Allow a public safety licensee to advise the part 90 of this chapter ESMR or Cellular Radiotelephone licensee whether it believes a proposed cell will generate unacceptable interference;

(2) Permit Cellular Radiotelephone or part 90 of this chapter ESMR licensees to make voluntary changes in cell parameters when a public safety licensee alerts them to possible interference; and

(3) Rapidly identify the source if interference is encountered when the cell is activated.

[69 FR 67834, Nov. 22, 2004]

§ 22.983 Field strength limit.

(a) Subject to paragraphs (b) and (c) of this section, a licensee's predicted or measured median field strength limit must not exceed 40 dBμV/m at any given point along the Cellular Geographic Service Area (CGSA) boundary of a neighboring licensee on the same channel block, unless the affected licensee of the neighboring CGSA on the same channel block agrees to a different field strength. This also applies to CGSAs partitioned pursuant to § 22.948.

(b) *Gulf of Mexico Service Area.* Notwithstanding the field strength limit provision set forth in paragraph (a) of this section, licensees in or adjacent to the Gulf of Mexico Exclusive Zone are subject to § 22.912(c) regarding service area boundary extensions. *See* § 22.912(c).

(c) Cellular licensees shall be subject to all applicable provisions and requirements of treaties and other international agreements between the United States government and the governments of Canada and Mexico, notwithstanding paragraphs (a) and (b) of this section.

[79 FR 72153, Dec. 5, 2014]

Subpart I—Offshore Radiotelephone Service

§ 22.1001 Scope.

The rules in this subpart govern the licensing and operation of offshore radiotelephone stations. The licensing and operation of these stations and systems is also subject to rules elsewhere in this part that apply generally to the public mobile services. However, in case of conflict, the rules in this subpart govern.

§ 22.1003 Eligibility.

Any eligible entity (see § 22.7) may apply for central station license(s) and/or offshore subscriber licenses under this subpart.

[70 FR 19312, Apr. 13, 2005]

§ 22.1005 Priority of service.

Facilities in the Offshore Radiotelephone Service are intended primarily for rendition of public message service between offshore subscriber and central stations. However, they may also be used to render private leased line communication service, provided that such usage does not reduce or impair the extent or quality of communication service which would be available, in the absence of private leased line service, to the general public receiving or subsequently requesting public message service from an offshore central station.

§ 22.1007 Channels for offshore radiotelephone systems.

The channels listed in this section are allocated for paired assignment to transmitters located in the specified geographical zones that provide offshore radiotelephone service. All channels have a bandwidth of 20 kHz and are designated by their center frequencies in MegaHertz.

(a) *Zone A—Southern Louisiana*. The geographical area in Zone A is bounded as follows:

From longitude W.87°45′ on the East to longitude W.94°00′ on the West and from the 4.8 kilometer (3 mile) limit along the Gulf of Mexico shoreline on the North to the limit of the Outer Continental Shelf on the South.

(1) These channels may be assigned for use by offshore central (base/fixed) or subscriber stations (fixed, temporary fixed, surface and/or airborne mobile) as indicated, for voice-grade general communications:

Central	Subscriber	Central	Subscriber
488.025	491.025	488.225	491.225
488.050	491.050	488.250	491.250
488.075	491.075	488.275	491.275
488.100	491.100	488.300	491.300
488.125	491.125	488.325	491.325
488.150	491.150	488.350	491.350
488.175	491.175	488.375	491.375
488.200	491.200	488.400	491.400

(2) These channels may be assigned for use by offshore central (base/fixed) or subscriber stations (fixed, temporary fixed, surface and/or airborne mobile) as indicated, for voice-grade general communications and private line service:

Central	Subscriber	Central	Subscriber
488.425	491.425	488.575	491.575
488.450	491.450	488.600	491.600
488.475	491.475	488.625	491.625
488.500	491.500	488.650	491.650
488.525	491.525	488.675	491.675
488.550	491.550	488.700	491.700

(3) These channels may be assigned for use by relay stations in systems where it would be impractical to provide offshore radiotelephone service without the use of relay stations.

Central	Subscriber	Central	Subscriber
488.725	491.725	488.775	491.775
488.750	491.750	488.800	491.800

(4) These channels may be assigned for use by offshore central (base/fixed) or subscriber stations (fixed, temporary fixed, surface and/or airborne mobile) as indicated, for emergency communications involving protection of life and property.

Central	Subscriber	Central	Subscriber
488.825	491.825	488.875	491.875
488.850	491.850	488.900	491.900

(5) These channels may be assigned for use by offshore central (base/fixed) or subscriber stations (fixed, temporary fixed, surface and/or airborne mobile) as indicated, for emergency auto alarm and voice transmission pertaining to emergency conditions only.

Central	Subscriber
488.950	491.950

(6) These channels may be assigned for use by offshore central (base/fixed) or subscriber stations (fixed, temporary fixed, surface and/or airborne mobile) as indicated, for emergency shut-off remote control telemetry, environmental data acquisition and disseminations, or facsimile transmissions.

Central	Subscriber	Central	Subscriber
489.000	492.000	489.200	492.200

Central	Subscriber	Central	Subscriber
489.025	492.025	489.225	492.225
489.050	492.050	489.250	492.250
489.075	492.075	489.275	492.275
489.100	492.100	489.300	492.300
489.125	492.125	489.325	492.325
489.150	492.150	489.350	492.350
489.175	492.175	489.375	492.375

(7) These channels may be assigned for use by offshore central (base/fixed) or subscriber stations (fixed, temporary fixed, surface and/or airborne mobile) as indicated, for private line service:

Central	Subscriber	Central	Subscriber
489.400	492.400	489.725	492.725
489.425	492.425	489.750	492.750
489.450	492.450	489.775	492.775
489.475	492.475	489.800	492.800
489.500	492.500	489.825	492.825
489.525	492.525	489.850	492.850
489.550	492.550	489.875	492.875
489.575	492.575	489.900	492.900
489.600	492.600	489.925	492.925
489.625	492.625	489.950	492.950
489.650	492.650	489.975	492.975
489.675	492.675	490.000	493.000
489.700	492.700		

(8) *Interstitial channels.* Interstitial channels are those with center frequencies offset by ±12.5 kHz from the listed center frequencies. The FCC may assign interstitial channels to offshore stations in Zone A subject to the following conditions:

(i) Offshore stations transmitting on interstitial channels must be located east of W.92° longitude.

(ii) Operations on interstitial channels are considered to be secondary to operations on channels with the listed center frequencies.

(iii) Offshore stations operating on interstitial channels must be used only for voice grade general communications or to provide for private line service.

NOTE TO PARAGRAPH (a) OF §22.1007: These channels are contained in UHF TV Channel 17.

(b) *Zone B—Southern Louisiana—Texas.* (1) The geographical area in Zone B is bounded as follows:

From longitude W.87°45′ on the East to longitude W.95°00′ on the West and from the 4.8 kilometer (3 mile) limit along the Gulf of Mexico shoreline on the North to the limit of the Outer Continental Shelf on the South.

(2) These channels may be assigned for use by offshore central (base/fixed) or subscriber stations (fixed, temporary fixed, surface and/or airborne mobile) as indicated, for voice-grade general communications and private line service:

Central	Subscriber	Central	Subscriber
485.025	482.025	486.025	483.025
485.050	482.050	486.050	483.050
485.075	482.075	486.075	483.075
485.100	482.100	486.100	483.100
485.125	482.125	486.125	483.125
485.150	482.150	485.150	483.150
485.175	482.175	486.175	483.175
485.200	482.200	486.200	483.200
485.225	482.225	486.225	483.225
485.250	482.250	486.250	483.250
485.275	482.275	486.275	483.275
485.300	482.300	486.300	483.300
485.325	482.325	486.325	483.325
485.350	482.350	486.350	483.350
485.375	482.375	486.375	483.375
485.400	482.400	486.400	483.400
485.425	482.425	486.425	483.425
485.450	482.450	486.450	483.450
485.475	482.475	486.475	483.475
485.500	482.500	486.500	483.500
485.525	482.525	486.525	483.525
485.550	482.550	484.550	483.550
485.575	482.575	486.575	483.575
485.600	482.600	486.600	483.600
485.625	482.625	486.625	483.625
485.650	482.650	486.650	483.650
485.675	482.675	486.675	483.675
485.700	482.700	486.700	483.700
485.725	482.725	486.725	483.725
485.750	482.750	486.750	483.750
485.775	482.775	486.775	483.775
485.800	482.800	486.800	483.800
485.825	482.825	486.825	483.825
485.850	482.850	486.850	483.850
485.875	482.875	486.875	483.875
485.900	482.900	486.900	483.900
485.925	482.925	486.925	483.925
485.950	482.950	486.950	483.950
485.975	482.975	486.975	483.975
486.000	483.000	487.050	480.050

NOTE TO PARAGRAPH (b) OF §22.1007: These channels are contained in UHF TV Channel 16.

(c) *Zone C—Southern Texas.* The geographical area in Zone C is bounded as follows:

Longitude W.94°00′ on the East, the 4.8 kilometer (3 mile) limit on the North and West, a 282 kilometer (175 mile) radius from the reference point at Linares, N.L., Mexico on the Southwest, latitude N.26°00′ on the South, and the limits of the outer continental shelf on the Southeast.

(1) These channels may be assigned for use by offshore central (base/fixed) or subscriber stations (fixed, temporary fixed, surface and/or airborne mobile) as indicated, for emergency

auto alarm and voice transmission pertaining to emergency conditions only.

Central	Subscriber
476.950	479.950

(2) These channels may be assigned for use by offshore central (base/fixed) or subscriber stations (fixed, temporary fixed, surface and/or airborne mobile) as indicated, for voice-grade general communications and private line service:

476.025	479.025
476.050	479.050
476.075	479.075
476.100	479.100
476.125	479.125
476.150	479.150
476.175	479.175
476.200	479.200
476.225	479.225
476.250	479.250
476.275	479.275
476.300	479.300
476.325	479.325
476.350	479.350
476.375	479.375
476.400	479.400
476.425	479.425
476.450	479.450
476.475	479.475
476.500	479.500
476.525	479.525
476.550	479.550
476.575	479.575
476.600	479.600
476.625	479.625
476.650	479.650
476.675	479.675
476.700	479.700
476.725	479.725
476.750	479.750
476.775	479.775
476.800	479.800
476.825	479.825
476.850	479.850
476.875	479.875
476.900	479.900
477.000	480.000
477.025	480.025
477.075	480.075
477.100	480.100
477.125	480.125
477.150	480.150
477.175	480.175
477.200	480.200
477.225	480.225
477.250	480.250
477.275	480.275
477.300	480.300
477.325	480.325
477.350	480.350
477.375	480.375
477.400	480.400
477.425	480.425
477.450	480.450
477.475	480.475
477.500	480.500
477.525	480.525
477.550	480.550
477.575	480.575
477.600	480.600
477.625	480.625
477.650	480.650
477.675	480.675
477.700	480.700
477.725	480.725
477.750	480.750
477.775	480.775
477.800	480.800
477.825	480.825
477.850	480.850
477.875	480.875
477.900	480.900
477.925	480.925
477.950	480.950
477.975	480.975

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

§ 22.1009 Transmitter locations.

The rules in this section establish limitations on the locations from which stations in the Offshore Radiotelephone Service may transmit.

(a) *All stations.* Offshore stations must not transmit from locations outside the boundaries of the appropriate zones specified in § 22.1007. Offshore stations must not transmit from locations within 241 kilometers (150 miles) of any full-service television station that transmits on the TV channel containing the channel on which the offshore station transmits.

(b) *Airborne subscriber stations.* Airborne subscriber stations must not transmit from altitudes exceeding 305 meters (1000 feet) above mean sea level. Airborne mobile stations in Zone A must not transmit from locations within 129 kilometers (80 miles) of Lake Charles, Louisiana. Airborne mobile stations in Zone B must not transmit from locations within 129 kilometers (80 miles) of Lafayette, Louisiana. Airborne mobile stations in Zone C must not transmit from locations within 129 kilometers (80 miles) of Corpus Christi or locations within 129 kilometers (80 miles) of Houston, Texas.

§ 22.1011 Antenna height limitations.

The antenna height of offshore stations must not exceed 61 meters (200

feet) above mean sea level. The antenna height of offshore surface mobile stations must not exceed 10 meters (30 feet) above the waterline.

§ 22.1013 Effective radiated power limitations.

The effective radiated power (ERP) of transmitters in the Offshore Radiotelephone Service must not exceed the limits in this section.

(a) *Maximum power.* The ERP of transmitters in this service must not exceed 1000 Watts under any circumstances.

(b) *Mobile transmitters.* The ERP of mobile transmitters must not exceed 100 Watts. The ERP of mobile transmitters, when located within 32 kilometers (20 miles) of the 4.8 kilometer (3 mile) limit, must not exceed 25 Watts. The ERP of airborne mobile stations must not exceed 1 Watt.

(c) *Protection for TV Reception.* The ERP limitations in this paragraph are intended to reduce the likelihood that interference to television reception from offshore radiotelephone operations will occur.

(1) *Co-channel protection.* The ERP of offshore stations must not exceed the limits in Table I–1 of this section. The limits depend upon the height above mean sea level of the offshore transmitting antenna and the distance between the antenna location of the offshore transmitter and the antenna location of the main transmitter of the nearest full-service television station that transmits on the TV channel containing the channel on which the offshore station transmits.

(2) *Adjacent channel protection.* The ERP of offshore stations located within 128.8 kilometers (80 miles) of the main transmitter antenna of a full service TV station that transmits on a TV channel adjacent to the TV channel which contains the channel on which the offshore station transmits must not exceed the limits in the Table I–2 of § 22.1015. The limits depend upon the height above mean sea level of the offshore transmitting antenna and the distance between the location of the offshore transmitter and the 4.8 kilometer (3 mile) limit.

TABLE I–1—MAXIMUM ERP (WATTS)

Distance	30 meters (100 feet)	45 meters (150 feet)	61 meters (200 feet)
338 km (210 mi)	1000	1000	1000
330 km (205 mi)	1000	900	800
2 km (200 mi)	800	710	630
314 km (195 mi)	590	520	450
306 km (190 mi)	450	400	330
298 km (185 mi)	320	280	240
290 km (180 mi)	250	210	175
282 km (175 mi)	180	150	130
274 km (170 mi)	175	110	100
266 km (165 mi)	95	80	70
258 km (160 mi)	65	55	50
249 km (155 mi)	50	40	35
241 km (150 mi)	35	30	25

§ 22.1015 Repeater operation.

Offshore central stations may be used as repeater stations provided that the licensee is able to maintain control of the station, and in particular, to turn the transmitter off, regardless of whether associated subscriber stations are transmitting at the time.

TABLE I–2—MAXIMUM ERP (WATTS)

Distance from the 4.8 km (3 mi) limit	30 meters (100 feet)	61 meters (200 feet)
6.4 km (4 mi)	25	6
8.0 km (5 mi)	40	10
9.7 km (6 mi)	65	15
11.3 km (7 mi)	100	25
12.9 km (8 mi)	150	35
14.5 km (9 mi)	215	50
16.1 km (10 mi)	295	70
17.7 km (11 mi)	400	100
19.3 km (12 mi)	530	130
20.9 km (13 mi)	685	170
22.5 km (14 mi)	870	215
24.1 km (15 mi)	1000	270
25.7 km (16 mi)	1000	415
27.4 km (17 mi)	1000	505
29.0 km (18 mi)	1000	610
30.6 km (19 mi)	1000	730
32.2 km (20 mi)	1000	865
33.8 km (21 mi)	1000	1000

§ 22.1025 Permissible communications.

Offshore central stations must communicate only with subscriber stations (fixed, temporary-fixed, mobile and airborne). Offshore subscriber stations must normally communicate only with and through offshore central stations. Stations in the Offshore Radiotelephone Service may communicate through relay stations authorized in this service.

§ 22.1031 Temporary fixed stations.

The FCC may, upon proper application therefor, authorize the construction and operation of temporary fixed stations in the Offshore Radiotelephone service to be used only when the service of permanent fixed stations is disrupted by storms or emergencies or is otherwise unavailable.

(a) *Six month limitation.* If it is necessary for a temporary fixed station to remain at the same location for more than six months, the licensee of that station must apply for authorization to operate the station at the specific location at least 30 days before the end of the six month period.

(b) *International communications.* Communications between the United States and Mexico must not be carried using a temporary fixed station without prior authorization from the FCC. Licensees desiring to carry such communications should apply sufficiently in advance to allow for the time necessary to coordinate with Canada or Mexico.

§ 22.1035 Construction period.

The construction period (see § 22.142) for offshore stations is 18 months.

§ 22.1037 Application requirements for offshore stations.

Applications for new Offshore Radiotelephone Service stations must contain an exhibit showing that:

(a) The applicant has notified all licensees of offshore stations located within 321.8 kilometers (200 miles) of the proposed offshore station, by providing the following data, at least 30 days before filing the application:

(1) The name, business address, channel coordinator, and telephone number of the applicant;

(2) The location and geographical coordinates of the proposed station;

(3) The channel and type of emission;

(4) The height and type of antenna;

(5) The bearing of the main lobe of the antenna; and,

(6) The effective radiated power.

(b) The proposed station will not interfere with the primary ORS channels by compliance with the following separations:

(1) Co-channel to a distance of 241.4 kilometers (150 miles).

(2) If interstitial channels are used, adjacent channels (±12.5 kHz) to a distance of 80.5 kilometers (50 miles).

(3) Third order intermodulation channels (±12.5 kHz) to a distance of 32.2 kilometers (20 miles).

(4) If the proposed transmitting antenna site is located west of longitude W.93°40′, and within 32.2 kilometers (20 miles) of the shoreline, and proposed use of the channels listed in § 22.1007(b), no third-order intermodulation interference would be caused to any base or mobile station using the channels between 488 and 494 MHz.

PART 24—PERSONAL COMMUNICATIONS SERVICES

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