

**Subpart Q—Service and Technical Rules  
for the 70/80/90 GHz Bands**

- 101.1501 Services areas.
- 101.1505 Segmentation plan.
- 101.1507 Permissible operations.
- 101.1511 Regulatory status and eligibility.
- 101.1513 License term and renewal expectancy.
- 101.1523 Sharing and coordination among non-government licensees and between non-government and government services.
- 101.1525 RF safety.
- 101.1527 Canadian and Mexican coordination.

AUTHORITY: 47 U.S.C. 154, 303.

SOURCE: 61 FR 26677, May 28, 1996, unless otherwise noted.

**Subpart A—General****§ 101.1 Scope and authority.**

(a) Part 1 of the Commission's rules contains the general rules of practice and procedure applicable to proceedings before the Commission and for the filing of applications for radio station licenses in the fixed microwave services.

(b) The purpose of the rules in this part is to prescribe the manner in which portions of the radio spectrum may be made available for private operational, common carrier, 24 GHz Service and Local Multipoint Distribution Service fixed, microwave operations that require transmitting facilities on land or in specified offshore coastal areas within the continental shelf.

(c) The rules in this part are issued pursuant to the authority contained in Titles I through III of the Communications Act of 1934, as amended, which vest authority in the Federal Communications Commission to regulate common carriers of interstate and foreign communications, to regulate radio transmissions and issue licenses for radio stations, and to regulate all interstate and foreign communications by wire and radio necessary to the accomplishment of the purposes of the Act.

[61 FR 26677, May 28, 1996, as amended at 62 FR 23163, Apr. 29, 1997; 63 FR 68981, Dec. 14, 1998; 65 FR 59357, Oct. 5, 2000]

**§ 101.3 Definitions.**

As used in this part:

*24 GHz Service.* A fixed point-to-point, point-to-multipoint, and multipoint-to-multipoint radio system in the 24.25–24.45 GHz band and in the 25.05–25.25 GHz band consisting of a fixed main (nodal) station and a number of fixed user terminals. This service may encompass any digital fixed service.

*Antenna power gain.* The ratio of the maximum radiation intensity to that of an isotropic (omnidirectional) radiator in the far field of its main (forward direction) lobe.

*Antenna power input.* The radio frequency peak or RMS power, as the case may be, supplied to the antenna from the antenna transmission line and its associated impedance matching network.

*Antenna structure.* The antenna, its supporting structure and anything attached to it.

*Assigned frequency.* The center of the frequency band assigned to a station.

*Assigned frequency bandwidth.* The frequency band within which the emission of a station is authorized; the width of the band equals the necessary bandwidth plus twice the absolute value of the frequency tolerance.

*Authorized bandwidth.* The maximum bandwidth authorized to be used by a station as specified in the station license. (See § 2.202 of this chapter)

*Authorized frequency.* The frequency, or frequency range, assigned to a station by the Commission and specified in the instrument of authorization.

*Authorized power.* The maximum power a station is permitted to use. This power is specified by the Commission in the station's authorization.

*Automatic Transmitter Power Control (ATPC).* ATPC is a feature of a digital microwave radio system that adjusts the transmitter output power. ATPC allows the transmitter to operate at less than maximum power for most of the time. In a radio employing ATPC, the transmit power is reduced during normal operation conditions. When the receiver detects a reduction in signal level, a control signal is sent to the far end transmitter, instructing it to increase the power output to compensate for the signal reduction. The power

output is limited to the licensed (maximum) transmit power. Guidelines for use of ATPC are set forth in the TIA Telecommunications Systems Bulletin TSB 10, “Interference Criteria for Microwave Systems (TSB 10).”

*Bandwidth occupied by an emission.* The band of frequencies comprising 99 percent of the total radiated power extended to include any discrete frequency on which the power is at least 0.25 percent of the total radiated power.

*Bit rate.* The rate of transmission of information in binary (two state) form in bits per unit time.

*Carrier.* In a frequency stabilized system, the sinusoidal component of a modulated wave whose frequency is independent of the modulating wave; or the output of a transmitter when the modulating wave is made zero; or a wave generated at a point in the transmitting system and subsequently modulated by the signal; or a wave generated locally at the receiving terminal which when combined with the side bands in a suitable detector, produces the modulating wave.

*Carrier frequency.* The output of a transmitter when the modulating wave is made zero.

*Central office.* A landline termination center used for switching and interconnection of public message communication circuits.

*Common carrier fixed point-to-point microwave service.* A common carrier public radio service rendered on microwave frequencies by fixed and temporary fixed stations between points that lie within the United States or between points to its possessions or to points in Canada or Mexico.

*Communication common carrier.* Any person engaged in rendering communication service for hire to the public.

*Control point.* An operating position at which an operator responsible for the operation of the transmitter is stationed and which is under the control and supervision of the licensee.

*Control station.* A fixed station, the transmissions of which are used to control automatically the emissions or operations of a radio station, or a remote base station transmitter.

*Coordination area.* The area associated with a station outside of which

another station sharing the same or adjacent frequency band neither causes nor is subject to interfering emissions greater than a permissible level.

*Coordination contour.* The line enclosing the coordination area.

*Coordination distance.* The distance on a given azimuth from a station beyond which another station neither causes nor is subject to interfering emissions greater than a permissible level.

*Digital Electronic Message Nodal Station.* A fixed point-to-multipoint radio station in a Digital Electronic Message Service providing two-way communication with Digital Electronic Message User Stations.

*Digital Electronic Message Service.* A two-way end-to-end fixed radio service utilizing digital termination systems for the exchange of digital information in the frequency bands 10,550–10,680 MHz, 18,820–18,920 MHz, and 19,160–19,260 MHz. This service may also make use of point-to-point microwave facilities, satellite facilities or other communications media to interconnect digital termination systems to comprise a network.

*Digital Electronic Message User Station.* Any one of the fixed microwave radio stations located at users’ premises, lying within the coverage area of a Digital Electronic Message Nodal Station, and providing two-way digital communications with the Digital Electronic Message Nodal Station.

*Digital modulation.* The process by which some characteristic (frequency, phase, amplitude or combinations thereof) of a carrier frequency is varied in accordance with a digital signal, e.g., one consisting of coded pulses or states.

*Drop point.* A term used in the point-to-point microwave radio service to designate a terminal point where service is rendered to a subscriber.

*Earth station.* A station located either on the Earth’s surface or within the major portion of Earth’s atmosphere and intended for communication:

- (1) With one or more space stations; or
- (2) With one or more stations of the same kind by means of one or more reflecting satellites or other objects in space.

*Effective Radiated Power (ERP).* The product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction.

*Equivalent Isotropically Radiated Power (EIRP).* The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

*Exchange.* A unit of a communication company or companies for the administration of communication service in a specified area, which usually embraces a city, town, or village and its environs, and consisting of one or more central offices, together with the associated plant, used in furnishing communication service in that area.

*Exchange area.* The geographic area included within the boundaries of an exchange.

*Fixed satellite earth station.* An earth station intended to be used at a specified fixed point.

*Fixed relay station.* A fixed station associated with one or more stations, established to receive radio signals directed to it and to retransmit them automatically on a fixed service frequency.

*Fixed service.* A radio communications service between specified fixed points.

*Fixed station.* A station in the fixed service.

*Frequency tolerance.* The maximum permissible departure by the center frequency of the frequency band occupied by an emission from the assigned frequency or, by the characteristic frequency of an emission from the reference frequency.

NOTE: The frequency tolerance is expressed as a percentage or in Hertz.

*General communication.* Two-way voice communication, through a base station, between:

- (1) A common carrier land mobile or airborne station and a landline telephone station connected to a public message landline telephone system;
- (2) Two common carrier land mobile stations;
- (3) Two common carrier airborne stations;
- (4) A common carrier land mobile station and a common carrier airborne station.

*Harmful interference.* Interference that endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radiocommunication service operating in accordance with these regulations.

*Internodal link.* A point-to-point communications link used to provide communications between nodal stations or to interconnect nodal stations to other communications media.

*Landing area.* A landing area means any locality, either of land or water, including airports and intermediate landing fields, which is used, or approved for use for the landing and take-off of aircraft, whether or not facilities are provided for the shelter, servicing, or repair of aircraft, or for receiving or discharging passengers or cargo.

*Local Multipoint Distribution Service Backbone Link.* A point-to-point radio service link in a Local Multipoint Distribution Service System that is used to interconnect Local Multipoint Distribution Service Hub Stations with each other or with the public switched telephone network.

*Local Multipoint Distribution Service Hub Station.* A fixed point-to-point or point-to-multipoint radio station in a Local Multipoint Distribution Service System that provides one-way or two-way communication with Local Multipoint Distribution Service Subscriber Stations.

*Local Multipoint Distribution Service Subscriber Station.* Any one of the fixed microwave radio stations located at users' premises, lying within the coverage area of a Local Multipoint Distribution Service Hub Station, capable of receiving one-way communications from or providing two-way communications with the Local Multipoint Distribution Service Hub Station.

*Local Multipoint Distribution Service System.* A fixed point-to-point or point-to-multipoint radio system consisting of Local Multipoint Distribution Service Hub Stations and their associated Local Multipoint Distribution Service Subscriber Stations.

*Local television transmission service.* A public radio communication service for the transmission of television material and related communications.

*Long haul system.* A microwave system licensed under this part in which the longest radio circuit of tandem radio paths exceeds 402 kilometers.

*Master station.* A station in a multiple address radio system that controls, activates or interrogates four or more remote stations. Master stations performing such functions may also receive transmissions from remote stations.

*Message center.* The point at which messages from members of the public are accepted by the carrier for transmission to the addressee.

*Microwave frequencies.* As used in this part, this term refers to frequencies of 890 MHz and above.

*Microwave link.* A link is defined as a simplex communications circuit between two points utilizing a single frequency/polarization assignment. A duplex communications circuit would require two links, one link in each direction.

*Miscellaneous common carriers.* Communications common carriers that are not engaged in the business of providing either a public landline message telephone service or public message telegraph service.

*Mobile earth station.* An earth station intended to be used while in motion or during halts at unspecified points.

*Mobile service.* A radio communication service between mobile and land stations or between mobile stations.

*Mobile station.* A station in the mobile service intended to be used while in motion or during halts at unspecified points.

*Multichannel Video Distribution and Data Service (MVDDS).* A fixed microwave service licensed in the 12.2–12.7 GHz band that provides various wireless services. Mobile and aeronautical operations are prohibited.

*Multiple address system (MAS).* A point-to-multipoint or point-to-point radio communications system used for either one-way or two-way transmissions that operates in the 928/952/956 MHz, the 928/959 MHz or the 932/941 MHz bands in accordance with §101.147.

*National Spatial Reference System.* The National Spatial Reference System (NSRS) is the name given to all Geodetic Control information contained in the National Geodetic Survey (NGS)

Data Base. This includes: A, B, First, Second, and Third Order horizontal and vertical control observed by NGS as well as data submitted by other agencies (i.e., USGS, BLM, States, Counties, Cities, and private surveying organizations).

*Necessary bandwidth.* For a given class of emission, the width of the frequency band that is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions. The necessary bandwidth may be calculated using the formulas in §2.202 of this chapter.

*Nodal station.* The central or controlling stations in a microwave radio system operating on point-to-multipoint or multipoint-to-multipoint frequencies with one or more user stations or internodal links.

*Occupied bandwidth.* The width of a frequency bandwidth such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage, B/2 of the total mean power of a given emission. Unless otherwise specified by the CCIR for the appropriate class of emission, the value of B/2 should be taken as 0.5%.

NOTE: The percentage of the total power outside the occupied bandwidth is represented by B.

*Operational fixed station.* A private fixed station not open to public correspondence.

*Passive repeater.* A re-radiation device associated with a transmitting/receiving antenna system that re-directs intercepted radiofrequency energy. For example, it may consist of reflector(s) or back-to-back parabolic or horn antennas.

*Path length.* The total distance of a path from the transmit to the receive antenna, inclusive of all passive repeaters, if any.

*Periscope antenna system.* An antenna system which involves the use of a passive reflector to deflect radiation from or to a directional transmitting or receiving antenna which is oriented vertically or near vertically.

*Prior coordination.* A bilateral process conducted prior to filing applications which includes the distribution of the technical parameters of a proposed

radio system to potentially affected parties for their evaluation and timely response.

*Private carrier.* An entity licensed in the private service and authorized to provide communications service to other private service eligibles on a commercial basis.

*Private line service.* A service whereby facilities for communication between two or more designated points are set aside for the exclusive use or availability for use of a particular customer and authorized users during stated periods of time.

*Private operational fixed point-to-point microwave service.* A private radio service rendered by fixed and temporary fixed stations on microwave frequencies for the exclusive use or availability for use of the licensee or other eligible entities for communication between two or more designated points. Service may be provided between points within the United States, points within United States possessions, or between the United States and points in Canada or Mexico.

*Public correspondence.* Any telecommunication which the offices and stations must, by reason of their being at the disposal of the public, accept for transmission.

*Public message service.* A service whereby facilities are offered to the public for communication between all points served by a carrier or by interconnected carriers on a non-exclusive message by message basis, contemplating a separate connection for each occasion of use.

*Radio station.* A separate transmitter or a group of transmitters under simultaneous common control, including the accessory equipment required for carrying on a radiocommunication service.

*Radiocommunication.* Telecommunication by means of radio waves.

*Rated power output.* The maximum radio frequency power output capability (peak or average power) of a transmitter, under optimum conditions of adjustment and operation, specified by its manufacturer.

*Record communication.* Any transmission of intelligence which is reduced to visual record form at the point of reception.

*Reference frequency.* A frequency having a fixed and specified position with respect to the assigned frequency. The displacement of this frequency with respect to the assigned frequency has the same absolute value and sign that the displacement of the characteristic frequency has with respect to the centre of the frequency band occupied by the emission.

*Relay station.* A fixed station used for the reception and retransmission of the signals of another station or stations.

*Remote station.* A fixed station in a multiple address radio system that transmits one-way to one or more central receive sites, controls a master station, or is controlled, activated or interrogated by, and may respond to, a master station.

*Repeater station.* A fixed station established for the automatic retransmission of radiocommunications received from one or more mobile stations and directed to a specified location; for public mobile radio operations, a fixed station that automatically retransmits the mobile communications and/or transmitter information about the base station, along a fixed point-to-point link between the base station and the central station.

*Secondary operations.* Radio communications which may not cause interference to operations authorized on a primary basis and which are not protected from interference from these primary operations.

*Short haul system.* A microwave system licensed under this part in which the longest radio circuit of tandem radio paths does not exceed 402 kilometers.

*Signal booster.* A device at a fixed location which automatically receives, amplifies, and retransmits on a one-way or two-way basis, the signals received from base, fixed, mobile, and portable stations, with no change in frequency or authorized bandwidth. A signal booster may be either narrowband (Class A), in which case the booster amplifies only those discrete frequencies intended to be retransmitted, or broadband (Class B), in which case all signals within the passband of the signal booster filter are amplified.

## § 101.4

*Signaling communication.* One-way communications from a base station to a mobile or fixed receiver, or to multipoint mobile or fixed receivers by audible or subaudible means, for the purpose of actuating a signaling device in the receiver(s) or communicating information to the receiver(s), whether or not the information is to be retained in record form.

*Standby transmitter.* A transmitter installed and maintained for use in lieu of the main transmitter only during periods when the main transmitter is out of service for maintenance or repair.

*Symbol rate.* Modulation rate in bauds. This rate may be higher than the transmitted bit rate as in the case of coded pulses or lower as in the case of multilevel transmission.

*Telegraphy.* A form of telecommunication which is concerned in any process providing transmission and reproduction at a distance of documentary matter, such as written or printed matter or fixed images, or the reproduction at a distance of any kind of information in such a form. Unless otherwise specified, telegraphy means a form of telecommunication for the transmission of written matter by the use of signal code.

*Telemetering.* The use of telecommunication for automatic indicating or recording measurements at a distance from the measuring instrument.

*Telephony.* A form of telecommunication set up for the transmission of speech, or in some cases, other sounds.

*Television.* A form of telecommunication for transmission of transient images of fixed or moving objects.

*Temporary fixed station.* A station established in a non-permanent mode (temporary) at a specified location for a short period of time, ranging up to one year. Temporary-fixed operations are itinerant in nature, and are not to be confused with mobile-type operations.

*Universal Licensing System (ULS).* The consolidated database, application filing system and processing system for all Wireless Telecommunications Services. The ULS offers Wireless Telecommunications Bureau (WTB) applicants and the general public electronic

## 47 CFR Ch. I (10–1–06 Edition)

filing of all applications requests, and full public access to all WTB licensing data.

*User or subscriber station.* The station(s) in a microwave radio system operating at the users' premises on point-to-multipoint or multipoint-to-multipoint frequencies and communicating with one or more nodal stations.

*Video entertainment material.* The transmission of a video signal (e.g. United States Standard Monochrome or National Television Systems Committee 525-line television) and an associated audio signal which is designed primarily to amuse or entertain, such as movies and games.

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### Subpart B—Applications and Licenses

#### GENERAL FILING REQUIREMENTS

#### § 101.4 Transition plan.

(a) All systems subject to parts 21 and 94 of this chapter in effect as of July 31, 1996, which are licensed or which are proposed in an application on file, as of July 31, 1996, are subject to the requirements under part 21 or part 94 of this chapter as contained in the CFR edition revised as of October 1, 1995 and amended in the FEDERAL REGISTER through July 31, 1996, as applicable, indefinitely.

(b) For purposes of this section, a "system" shall include:

- (1) The originally licensed system;
- (2) Any modification to the original system involving a change in antenna azimuth, antenna beam width, channel loading, emission, station location, antenna height, authorized power, or authorized frequencies;
- (3) Additional links constructed to complete an integrated communications network; or
- (4) Operationally connecting new facilities and/or frequencies.

(c) All radio frequency devices authorized pursuant to part 2 of this