

## **Subpart Y – Regulations Governing the Licensing and Use of Frequencies in the 4940-4990 MHz Public Safety Band**

### 90.1201 Scope

This subpart sets out the regulations governing the licensing and operation of devices operating in the 4940-4990 MHz public safety band. It includes eligibility requirements, and operation and technical standards for stations authorized in this band. The rules in this subpart are to be read in conjunction with the applicable requirements contained elsewhere in this part; however, in case of conflict, the provisions of this subpart shall govern with respect to licensing and operation in the frequency band.

### 90.1203 Eligibility

(a) Any entity satisfying the eligibility requirements of §90.20(a)(1) is authorized to operate devices in the 4940-4990 MHz band. Federal Government agencies and other parties not eligible for licensing under §90.20(a)(1) may be authorized to use devices in this band under a memorandum of understanding or other agreements in accordance with the provisions of §2.103(b) and §90.421(a) of the Commission's rules. [Corresponding changes to §2.103(b) are also required.]

(b) Public safety agencies will be licensed to use the entire 4940-4990 MHz band within their jurisdictions. In order to support situations in which neighboring public safety agencies respond to assist in law enforcement, fire or rescue efforts, users are allowed to operate outside their own jurisdictions pursuant to agreement with other authorized public safety eligible agencies. In this regard, agreements shall include written memorandums of understanding between neighboring jurisdictions as well as ad hoc, verbal authorizations provided during emergency incidents.

### 90.1205 Limitations on use

(1) This band shall be used primarily for mobile, base and temporary fixed stations. Permanent fixed, point-to-point stations shall be authorized only on a secondary basis to mobile, base and temporary fixed facilities. Unattended and continuous operation of such transmitters will be permitted.

(2) Aeronautical use of the 4940-4950 MHz portion of the band is permitted within a licensee's jurisdiction. In addition to compliance with all other rules associated with this subpart, devices must comply with the following restrictions

(i) Directional antennas of no less than 15 dBi shall be employed; furthermore the antenna must at all times during operation point in the direction of the associated ground base station

(ii) Operations are limited to aircraft that are regularly flown at altitudes below 1.6 km (1 mi) above the earth's surface

(iii) The transmitters must remain off when not locked on the associated ground base station.

(3) Each transmitter utilized for operation under this subpart and each transmitter marketed as set forth under §2.803 of this chapter must be of a type that has been certificated for use under this part.

90.1207 Licensing and Frequency coordination requirements

(1) Any entity eligible under §90.20(a)(1) may apply for a license to operate in the 4940-4990 MHz band. Licenses for non-aeronautical mobile, base and temporary fixed use will be issued for the entire 4940-4990 MHz band. Licenses for aeronautical use will be issued for the 4940-4950 MHz sub-band.

(2) All Licensees will cooperate to minimize interference and maximize use of the spectrum.

[Explanatory note: The localized nature of operations at 4.9 GHz minimize the need for regional planning like that performed for wide area 700 and 800 MHz systems. However, it would be helpful for public safety users in a region to develop guidelines of which channels will be used for fixed hotspots and which will be used for ad-hoc incident command. This is similar to the planning public safety entities do for sharing of mutual aid channels. The Commission could charge the 800 MHz regional plan convenors with this responsibility. Given the dire need for this spectrum, and the fact that all Public Safety users could be licensed for the entire band, it is unnecessary for the Commission to review these guidelines. For ad-hoc use at an incident scene, it may also be appropriate for users to designate the lead entity at a given incident as the party responsible to coordinate channel usage to minimize on-scene interference.]

90. 1209 Band Plan

This section sets forth the band plan for the 4940-4990 MHz public safety bands.

(a) The following channel center frequencies are designated for use by public safety. These channels are allowed to be aggregated for channel bandwidths of 5, 10, 15 or 20 MHz.

Frequency (MHz)	Channel Nos.
4940.5	1a
4941.5	1b
4942.5	1c
4943.5	1d
4944.5	1e
4947.5	2
4952.5	3
4957.5	4
4962.5	5
4967.5	6
4972.5	7
4977.5	8
4982.5	9
4985.5	10a
4986.5	10b
4987.5	10c
4988.5	10d
4989.5	10e

90.1211 Transmitting power limits

The transmitting power of stations operating in the 4940-4990 MHz band must not exceed the maximum limits in this section.

(a) The peak transmit power should not exceed:

Channel Bandwidth (MHz)	Peak Transmit Power (dBm)
1	20
5	27
10	30
15	31.8
20	33

If transmitting antennas of directional gain greater than 9 dBi are used, the peak transmit power should be reduced by the amount in dB that the directional gain of the antenna exceeds 9 dBi. However, point-to-point or multipoint-to-point operation (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the transmitter output power. For point-to-point or multipoint-to-point (both fixed and temporary-fixed) transmitters that employ a directional antenna greater than 26 dBi, a 1 dB reduction in peak transmit power for each 1 dB of antenna gain in excess of 26 dBi shall be required.

(b) The peak transmit power must be measured over any 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 conforming to the definitions in this paragraph for the emission in question.

(c) Notwithstanding the power levels specified above, the transmit power of each device shall be automatically controlled to within 2 dB of the power that will provide the required signal quality for reliable communications.

(d) All transmitters must be capable of reducing the transmit power to 0 dBm (1 milliwatt) or less.

90.1213 Emission limitations

Transmitters designed to operate in the 4940-4990 MHz band must meet the emissions limitations in this section.

(a) The power spectral density measured in the bandwidth specified by §90.1213(b) must be the greater of -53 dBm/MHz or  $30 + 10 \log (P) - 10 \log (B) - \text{Attenuation } (f) \text{ dBm/MHz}$  on any frequency removed from the carrier frequency by  $f$  MHz as shown in the following schedules, where P is the transmitter power in watts and B is channel bandwidth in MHz:

(1) For transmitters with 1 MHz channel bandwidths:

Frequency offset ( $f$ ) (MHz)	Attenuation (dB)
$f < 0.35$	0
$0.35 \leq f < 0.51$	$175*f-245/4$
$0.51 \leq f < 0.75$	$(300*f+71)/8$
$0.75 \leq f < 1.25$	$8*f+31$
$1.25 \leq f < 1.8$	$(240*f+151)/11$
$1.8 \leq f$	53

(2) For transmitters with 5 MHz channel bandwidths:

Frequency offset ( $f$ ) (MHz)	Attenuation (dB)
$f < 2$	0
$2 \leq f < 2.6$	$(140*f-280)/3$
$2.6 \leq f < 3.5$	$10*f+2$
$3.5 \leq f < 6$	$1.6*f+31.4$
$6 \leq f < 7.5$	$8*f-7$
$7.5 \leq f$	53

(3) For transmitters with 10 MHz channel bandwidths:

Frequency offset ( $f$ ) (MHz)	Attenuation (dB)
$f < 4$	0
$4 \leq f < 5.5$	$(56*f-224)/3$
$5.5 \leq f < 7$	$6*f-5$
$7 \leq f < 11$	$f+30$
$11 \leq f < 16$	$2.4*f+14.6$
$16 \leq f$	53

(4) For transmitters with 15 MHz channel bandwidths:

Frequency offset ( $f$ ) (MHz)	Attenuation (dB)
$f < 6$	0
$6 \leq f < 8$	$14*f-84$
$8 \leq f < 10.5$	$(18*f-4)/5$
$10.5 \leq f < 16$	$(8*f+323)/11$
$16 \leq f < 25$	$(4*f+59)/3$
$25 \leq f$	53

(5) For transmitters with 20 MHz channel:

Frequency offset ( $f$ ) (MHz)	Attenuation (dB)
$f < 8$	0
$8 \leq f < 10.5$	$11.2*f-89.6$
$10.5 \leq f < 13.5$	$(6*f-7)/2$
$13.5 \leq f < 20$	$(8*f+373)/13$
$20 \leq f < 35$	$0.8*f+25$
$35 \leq f$	53

(b) The power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements are made using an RMS detector using a measurement bandwidth of:

Channel Bandwidth (MHz)	Measurement Bandwidth (kHz)
1	30
5	30
10	100
15	100
20	100

90.1215 Frequency Stability

Manufacturers are required to specify normal operating conditions of temperature, shock and vibration and maintenance interval. The frequency stability of the transmitter should be such that the transmitted spectral products are less than the out-of-band emissions limits as specified in this subpart under normal operating conditions as specified by the manufacturer.

90.1217 Radio Astronomy Coordination

(a) In order to protect Radio Astronomy primary use of the 4990-5000 MHz band, all applicants must coordinate use of the 4940-4990 MHz when operations are within the coordination zones as specified in footnote US 311 of §2.106.

(b) All Public Safety licensees shall use reasonable efforts to minimize impact to secondary Radio Astronomy use of the 4950-4990 MHz sub-band when operations are within the coordination zones as specified in footnote US 311 of §2.106.

## Sections associated with Draft rules:

### § 2.103 Government use of non-Government frequencies.

b) Government stations may be authorized to use channels in the 764-776 MHz and 794-806 MHz public safety bands with non-Government entities if the Commission finds such use necessary; where:

(1) The stations are used for interoperability or part of a Government/non-Government shared or joint-use system;

(2) The Government entity obtains the approval of the non-Government (State/local government) licensee(s) or applicant(s) involved;

(3) Government operation is in accordance with the Commission's Rules governing operation of this band and conforms with any conditions agreed upon by the Commission and the National Telecommunications and Information Administration; and

(4) Interoperability, shared or joint-use systems are the subject of a mutual agreement between the Government and non-Government entities. This section does not preclude other arrangements or agreements as permitted under part 90 of the rules. See 47 CFR 90.179 and 90.421 of this chapter.

### §2.106 Table of Allocations

US311

### §2.803 Marketing of radio frequency devices prior to equipment authorization.

(a) Except as provided elsewhere in this section, no person shall sell or lease, or offer for sale or lease (including advertising for sale or lease), or import, ship, or distribute for the purpose of selling or leasing or offering for sale or lease, any radio frequency device unless:

(1) In the case of a device subject to certification, such device has been authorized by the Commission in accordance with the rules in this chapter and is properly identified and labelled as required by Sec. 2.925 and other relevant sections in this chapter; or

(2) In the case of a device that is not required to have a grant of equipment authorization issued by the Commission, but which must comply with the specified technical standards prior to use, such device also complies with all applicable administrative (including verification of the equipment or authorization under a Declaration of Conformity, where required), technical, labelling and identification requirements specified in this chapter.

(b) The provisions of paragraph (a) of this section do not prohibit conditional sales contracts between manufacturers and wholesalers or retailers where delivery is contingent upon compliance with the applicable equipment authorization and technical requirements, nor do they prohibit agreements between such parties to produce new products, manufactured in accordance with designated specifications.

(c) Notwithstanding the provisions of paragraphs (a), (b), (d) and (f) of this section, a radio frequency device may be advertised or displayed, e.g., at a trade show or exhibition, prior to equipment authorization or, for devices not subject to the equipment authorization requirements, prior to a determination of compliance with the applicable technical requirements provided that the advertising contains, and the display is accompanied by, a conspicuous notice worded as follows:

This device has not been authorized as required by the rules of the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, or sold or leased, until authorization is obtained.

(1) If the product being displayed is a prototype of a product that has been properly authorized and the prototype, itself, is not authorized due to differences between the prototype and the authorized product, the following disclaimer notice may be used in lieu of the notice stated in paragraph (c) introductory text of this section:

Prototype. Not for sale.

(2) Except as provided elsewhere in this chapter, devices displayed under the provisions of paragraphs (c) introductory text, and (c)(1) of this section may not be activated or operated.

(d) Notwithstanding the provisions of paragraph (a) of this section, the offer for sale solely to business, commercial, industrial, scientific or medical users (but not an offer for sale to other parties or to end users located in a residential environment) of a radio frequency device that is in the conceptual, developmental, design or pre-production stage is permitted prior to equipment authorization or, for devices not subject to the equipment authorization requirements, prior to a determination of compliance with the applicable technical requirements provided that the prospective buyer is advised in writing at the time of the offer for sale that the equipment is subject to the FCC rules and that the equipment will comply with the appropriate rules before delivery to the buyer or to centers of distribution. If a product is marketed in compliance with the provisions of this paragraph, the product does not need to be labelled with the statement in paragraph (c) of this section.

(e)(1) Notwithstanding the provisions of paragraph (a) of this section, prior to equipment authorization or determination of compliance with the applicable technical requirements any radio frequency device may be operated, but not marketed, for the following purposes and under the following conditions:

(i) Compliance testing;

(ii) Demonstrations at a trade show provided the notice contained in paragraph (c) of this section is displayed in a conspicuous location on, or immediately adjacent to, the device;

(iii) Demonstrations at an exhibition conducted at a business, commercial, industrial, scientific, or medical location, but excluding locations in a residential environment, provided the notice contained in paragraphs (c) or (d) of this section, as appropriate, is displayed in a conspicuous location on, or immediately adjacent to, the device;

(iv) Evaluation of product performance and determination of customer acceptability, provided such operation takes place at the manufacturer's facilities during developmental, design, or pre-production states; or

(v) Evaluation of product performance and determination of customer acceptability where customer acceptability of a radio frequency device cannot be determined at the manufacturer's facilities because of size or unique capability of the device, provided the device is operated at a business, commercial, industrial, scientific, or medical user's site, but not at a residential site, during the development, design or pre-production stages. A product operated under this provision shall be labelled, in a conspicuous location, with the notice in paragraph (c) of this section.

(2) For the purpose of paragraphs (e)(1)(iv) and (e)(1)(v) of this section, the term manufacturer's facilities includes the facilities of the party responsible for compliance with the regulations and the manufacturer's premises, as well as the facilities of other entities working under the authorization of the responsible party in connection with the development and manufacture, but not marketing, of the equipment.

(e)(3) The provisions of paragraphs (e)(1)(i), (e)(1)(ii), (e)(1)(iii), (e)(1)(iv), and (e)(1)(v) of this section do not eliminate any requirements for station licenses for products that normally require a license to operate, as specified elsewhere in this chapter.

(i) Manufacturers should note that station licenses are not required for some products, e.g., products operating under part 15 of this chapter and certain products operating under part 95 of this chapter.

(ii) Instead of obtaining a special temporary authorization or an experimental license, a manufacturer may operate its product for demonstration or evaluation purposes under the authority of a local FCC licensed service provider. However, the licensee must grant permission to the manufacturer to operate in this manner. Further, the licensee continues to remain responsible for complying with all of the operating conditions and requirements associated with its license.

(4) Marketing, as used in this section, includes sale or lease, or offering for sale or lease, including advertising for sale or lease, or importation, shipment, or distribution for the purpose of selling or leasing or offering for sale or lease.

(5) Products operating under the provisions of this paragraph (e) shall not be recognized to have any vested or recognizable right to continued use of any frequency. Operation is subject to the conditions that no harmful interference is caused and that any interference received must be accepted. Operation shall be required to cease upon notification by a Commission representative that the device is causing harmful interference and shall not resume until the condition causing the harmful interference is corrected.

(f) For radio frequency devices subject to verification and sold solely to business, commercial, industrial, scientific, and medical users (excluding products sold to other parties or for operation in a residential environment), parties responsible for verification of the devices shall have the option of ensuring compliance with the applicable technical specifications of this chapter at each end user's location after installation, provided that the purchase or lease agreement includes a proviso that such a determination of compliance be made and is the responsibility of the party responsible for verification of the equipment. If the purchase or lease agreement contains this proviso and the responsible party has the product measured to ensure compliance at the end user's location, the product does not need to be labelled with the statement in paragraph (c) of this section.

(g) The provisions in paragraphs (b) through (f) of this section apply only to devices that are designed to comply with, and to the best of the responsible party's knowledge will, upon testing, comply with all applicable requirements in this chapter. The provisions in paragraphs (b) through (f) of this section do not apply to radio frequency devices that could not be authorized or legally operated under the current rules. Such devices shall not be operated, advertised, displayed, offered for sale or lease, sold or leased, or otherwise marketed absent a license issued under part 5 of this chapter or a special temporary authorization issued by the Commission.

(h) The provisions in subpart K of this part continue to apply to imported radio frequency devices.

## **§90.20 Public Safety Pool.**

(a) Eligibility. The following are eligible to hold authorizations in the Public Safety Pool.

(1) Any territory, possession, state, city, county, town or similar governmental entity is eligible to hold authorizations in the Public Safety Pool to operate radio stations for transmission of communications essential to official activities of the licensee, including:(i) A district and an authority, but not including a school district or authority or a park district or authority except as provided for in Sec. 90.242;

(ii) A governmental institution authorized by law to provide its own police protection;

(iii) Persons or entities engaged in the provision of basic or advanced life support services on an ongoing basis are eligible to hold authorization to operate stations for transmission of communications essential for the delivery or rendition of emergency medical services for the provision of basic or advanced life support. Applications submitted by persons or organizations (governmental or otherwise) other than the governmental body having jurisdiction over the state's emergency medical service plans must be accompanied by a statement prepared by the governmental body having jurisdiction over the state's emergency medical services plan indicating that the applicant is included in the state's emergency plan or otherwise supporting the application;

(iv) Governmental entities and governmental agencies for their own medical activities; and

(v) Governmental entities and governmental agencies for providing medical services communications to other eligible persons through direct participation in and direct operational control of the system, such as through central dispatch service.

## **§ 90.421 Operation of mobile station units not under the control of the licensee.**

Mobile stations, as defined in Sec. 90.7, include vehicular-mounted and hand-held units. Such units may be operated by persons other than the licensee, as provided for below, when necessary for the licensee to meet its requirements in connection with the activities for which it is licensed. If the number of such units, together with units operated by the licensee, exceeds the number of mobile units authorized to the licensee, license modification is required. The licensee is responsible for taking necessary precautions to prevent unauthorized operation of such units not under its control.

(a) Public Safety Pool.

(1) Mobile units licensed in the Public Safety Pool may be installed in any vehicle which in an emergency would require cooperation and coordination with the licensee, and in any vehicle used in the performance, under contract, of official activities of the licensee. This provision does not permit the installation of radio units in non-emergency vehicles that are not performing governmental functions under contract but with which the licensee might wish to communicate.

(2) Mobile units licensed under Sec. 90.20(a)(2)(iii) may be installed in a vehicle or be hand-carried for use by any person with whom cooperation or coordinations is required for medical services activities.

(3) On the Interoperability Channels in the 700 MHz Public Safety Band (See Sec. 90.531(b)(1)), hand-held and vehicular transmitters may be operated by any licensee holding a license in the 700 MHz Public Safety Band or by any licensee holding a license for any other public safety frequency pursuant to part 90 of the Commission's rules. Therefore, individual licenses are not required for hand-held and vehicular transmitters in the 700 MHz Band.