

**§ 2.101**

**§ 2.101 Frequency and wavelength bands.**

(a) The radio spectrum shall be subdivided into nine frequency bands, which shall be designated by progressive whole numbers in accordance with the following table. As the unit of frequency is the hertz (Hz), frequencies shall be expressed:

(1) In kilohertz (kHz), up to and including 3 000 kHz;

(2) In megahertz (MHz), above 3 MHz, up to and including 3 000 MHz;

(3) In gigahertz (GHz), above 3 GHz, up to and including 3 000 GHz.

(b) However, where adherence to these provisions would introduce serious difficulties, for example in connection with the notification and registration of frequencies, the lists of frequencies and related matters, reasonable departures may be made.

Band number	Symbols	Frequency range (lower limit exclusive, upper limit inclusive)	Corresponding metric subdivision	Metric abbreviations for the bands
4	VLF	3 to 30 kHz	Myriametric waves	B.Mam
5	LF	30 to 300 kHz	Kilometric waves	B.km
6	MF	300 to 3 000 kHz	Hectometric waves	B.hm
7	HF	3 to 30 MHz	Decametric waves	B.dam
8	VHF	30 to 300 MHz	Metric waves	B.m
9	UHF	300 to 3 000 MHz	Decimetric waves	B.dm
10	SHF	3 to 30 GHz	Centimetric waves	B.cm
11	EHF	30 to 300 GHz	Millimetric waves	B.mm
12		300 to 3 000 GHz	Decimillimetric waves	

**Note 1:** "Band N" (N = band number) extends from  $0.3 \times 10^N$  Hz to  $3 \times 10^N$  Hz.

**Note 2:** Prefix: k = kilo ( $10^3$ ), M = mega ( $10^6$ ), G = giga ( $10^9$ ).

(c) In communications between administrations and the ITU, no names, symbols or abbreviations should be used for the various frequency bands other than those specified in this section.

[70 FR 46583, Aug. 10, 2005; 70 FR 53074, Sept. 7, 2005]

**§ 2.102 Assignment of frequencies.**

(a) Except as otherwise provided in this section, the assignment of frequencies and bands of frequencies to all stations and classes of stations and the licensing and authorizing of the use of all such frequencies between 9 kHz and 275 GHz, and the actual use of such frequencies for radiocommunication or for any other purpose, including the transfer of energy by radio, shall be in accordance with the Table of Frequency Allocations in § 2.106.

(b) On the condition that harmful interference will not be caused to services operating in accordance with the Table of Frequency Allocations the following exceptions to paragraph (a) of this section may be authorized:

(1) In individual cases the Commission may, without rule making proceedings, authorize on a temporary basis only, the use of frequencies not in accordance with the Table of Fre-

quency Allocations for projects of short duration or emergencies where the Commission finds that important or exceptional circumstances require such utilization. Such authorizations are not intended to develop a service to be operated on frequencies other than those allocated such service.

(2) A station for the development of techniques or equipment to be employed by services set forth in column 5 of the Table of Frequency Allocations may be authorized the use of frequencies allocated to those services or classes of stations.

(3) Experimental stations, pursuant to part 5 of this chapter, may be authorized the use of any frequency or frequency band not exclusively allocated to the passive services (including the radio astronomy service).

(4) In the event a band is reallocated so as to delete its availability for use by a particular service, the Commission may provide for the further interim use of the band by stations in that service for a temporary, specific period of time.

(c) Non-Federal stations may be authorized to use Federal frequencies in the bands above 25 MHz if the Commission finds, after consultations with the

appropriate Federal agency or agencies, that such use is necessary for coordination of Federal and non-Federal activities: Provided, however, that:

(1) Non-Federal operation on Federal frequencies shall conform with the conditions agreed upon by the Commission and NTIA (the more important of which are contained in paragraphs (c)(2), (c)(3), and (c)(4) of this section);

(2) Such operations shall be in accordance with NTIA rules governing the service to which the frequencies involved are allocated;

(3) Such operations shall not cause harmful interference to Federal stations and, should harmful interference result, that the interfering non-Federal operation shall immediately terminate; and

(4) Non-Federal operation has been certified as necessary by the Federal agency involved and this certification has been furnished, in writing, to the non-Federal licensee with which communication is required.

(d) Aircraft stations may communicate with stations of the maritime mobile service. They shall then conform to those provisions of the international *Radio Regulations* which relate to the maritime mobile service. For this purpose aircraft stations should use the frequencies allocated to the maritime mobile service. However, having regard to interference which may be caused by aircraft stations at high altitudes, maritime mobile frequencies in the bands above 30 MHz shall not be used by aircraft stations in any specific area without the prior agreement of all administrations of the area in which interference is likely to be caused. In particular, aircraft stations operating in Region 1 should not use frequencies in the bands above 30 MHz allocated to the maritime mobile service by virtue of any agreement between administrations in that Region.

(e) Non-Federal services operating on frequencies in the band 25–50 MHz must recognize that it is shared with various services of other countries; that harmful interference may be caused by skywave signals received from distant stations of all services of the United States and other countries radiating power on frequencies in this band; and that no protection from such harmful

interference generally can be expected. Persons desiring to avoid such harmful interference should consider operation on available frequencies higher in the radio spectrum not generally subject to this type of difficulty.

(f) The stations of a service shall use frequencies so separated from the limits of a band allocated to that service as not to cause harmful interference to allocated services in immediately adjoining frequency bands.

(g) In the bands above 25 MHz which are allocated to the non-Federal land mobile service, fixed stations may be authorized on the following conditions:

(1) That such stations are authorized in the service shown in Column 5 of the Table of Frequency Allocations in the band in question;

(2) That harmful interference will not be caused to services operating in accordance with the Table of Frequency Allocations.

(h) Special provisions regarding the use of spectrum allocated to the fixed and land mobile services below 25 MHz by non-Federal stations.

(1) Only in the following circumstances will authority be extended to stations in the fixed service to operate on frequencies below 25 MHz.

(i) With respect to aeronautical fixed stations, only when a showing can be made that more suitable facilities are not available.

(ii) With respect to fixed stations, except aeronautical fixed stations, only to:

(A) Provide communication circuits in emergency and/or disaster situations, where safety of life and property are concerned;

(B) Provide standby and/or backup facilities to satellite and cable circuits used for international public correspondence;

(C) Provide standby and/or backup communications circuits to regular domestic communication circuits which have been disrupted by disasters and/or emergencies;

(D) Provide communication circuits wholly within the State of Alaska and the United States insular areas in the Pacific; and

(E) Provide communication circuits to support operations which are highly important to the national interest and

## § 2.103

## 47 CFR Ch. I (10–1–09 Edition)

where other means of telecommunication are unavailable.

(2) Only in the following circumstances will authority be extended to stations in the land mobile service to operate below 25 MHz.

(i) Provide communication circuits in emergency and/or disaster situations, where safety of life and property are concerned;

(ii) Provide standby and/or backup communications circuits to regular domestic communication circuits which have been disrupted by disasters and/or emergencies;

(iii) Provide communication circuits wholly within the State of Alaska and the United States insular areas in the Pacific; and

(iv) Provide communication circuits to support operations which are highly important to the national interest and where other means of telecommunication are unavailable.

(3) Except in the State of Alaska and the United States Pacific insular areas, the Commission does not intend to seek international protection for assignments made pursuant to paragraphs (h) (1)(ii) and (2) of this section; this results in the following constraints upon the circuits/assignments.

(i) The Commission will not accept responsibility for protection of the circuits from harmful interference caused by foreign operations.

(ii) In the event that a complaint of harmful interference resulting from operation of these circuits is received from a foreign source, the offending circuit(s) must cease operation on the particular frequency concerned.

(iii) In order to accommodate the situations described in paragraphs (h)(3) (i) and (ii) of this section, equipments shall be capable of transmitting and receiving on any frequency in the bands assigned to the particular operation and capable of immediate change among the frequencies.

[49 FR 2373, Jan. 19, 1984, 70 FR 46585, Aug. 10, 2005]

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

(a) Federal stations may be authorized to use non-Federal frequencies in the bands above 25 MHz (except the 763–775 MHz and 793–805 MHz public safety

bands) if the Commission finds that such use is necessary for coordination of Federal and non-Federal activities: Provided, however, that:

(1) Federal operation on non-Federal frequencies shall conform with the conditions agreed upon by the Commission and NTIA (the more important of which are contained in paragraphs (a)(2), (a)(3) and (a)(4) of this section);

(2) Such operations shall be in accordance with Commission rules governing the service to which the frequencies involved are allocated;

(3) Such operations shall not cause harmful interference to non-Federal stations and, should harmful interference result, that the interfering Federal operation shall immediately terminate; and

(4) Federal operation has been certified as necessary by the non-Federal licensees involved and this certification has been furnished, in writing, to the Federal agency with which communication is required.

(b) Federal stations may be authorized to use channels in the 769–775 MHz, 799–805 MHz and 4940–4990 MHz public safety bands with non-Federal entities if the Commission finds such use necessary; where:

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

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

(3) Federal 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 NTIA; and

(4) Interoperability, shared or joint-use systems are the subject of a mutual agreement between the Federal and non-Federal 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.

(c) Federal stations may be authorized to use channels in the 763–768 MHz and 793–798 MHz public safety bands with non-Federal entities where:

(1) The Federal entity obtains the prior approval of the Public Safety Broadband Licensee (and such approval