

## Federal Communications Commission

## § 80.209

Types of stations	Classes of emission
156–162 MHz <sup>2 20</sup> .....	F1B, F2B, F2C, F3C, F1D, F2D.
DSC .....	G2B.
216–220 MHz <sup>3</sup> .....	F1B, F2B, F2C, F3C.
Radiotelephony:	
1615–27500 kHz <sup>18 19</sup> .....	H3E, J3E, R3E.
72–76 MHz .....	A3E, F3E, G3E.
156–470 MHz .....	G3E.
Radiodetermination:	
2.4–9.6 GHz .....	PON.
Distress, Urgency and Safety <sup>6 9</sup>	
2182 kHz <sup>10 11</sup> .....	A2B, A3B, H2B, H3E, J2B, J3E.
121.500 MHz .....	A3E, AEX, N0N.
123.100 MHz .....	A3E.
156.750 and 156.800 MHz <sup>13</sup> .....	G3E, G3N.
243.000 MHz .....	A3E, A3X, N0N.
406.0–406.1 MHz .....	G1D.

<sup>1</sup> Excludes distress, EPIRBs, survival craft, and automatic link establishment.

<sup>2</sup> Frequencies used for public correspondence and in Alaska 156.425 MHz. See §§ 80.371(c), 80.373(f) and 80.385(b). Transmitters approved before January 1, 1994, for G3E emissions will be authorized indefinitely for F2C, F3C, F1D and F2D emissions. Transmitters approved on or after January 1, 1994, will be authorized for F2C, F3C, F1D or F2D emissions only if they are approved specifically for each emission designator.

<sup>3</sup> Frequencies used in the Automated Maritime Telecommunications System (AMTS). See § 80.385(b).

<sup>4</sup> Types of emission are determined by the INMARSAT Organization.

<sup>5</sup> [Reserved]

<sup>6</sup> G3D emission must be used only by one-board stations for maneuvering or navigation.

<sup>7</sup> Frequencies used for cable repair operations. See § 80.375(b).

<sup>8</sup> For direction finding requirements see § 80.375.

<sup>9</sup> Includes distress emissions used by ship, coast, EPIRBs and survival craft stations.

<sup>10</sup> On 2182 kHz A1B, A2B, H2B and J2B emissions indicate transmission of the auto alarm signals.

<sup>11</sup> Ships on domestic voyages must use J3E emission only.

<sup>12</sup> For frequencies 154.585 MHz, 159.480 MHz, 160.725 MHz, 160.785 MHz, 454.000 MHz and 459.000 MHz, authorized for offshore radiolocation and related telecommand operations.

<sup>13</sup> [Reserved]

<sup>14</sup> NB–DP operations which are not in accordance with ITU–R Recommendations M.625 or M.476 are permitted to utilize any modulation, so long as emissions are within the limits set forth in § 80.211(f).

<sup>15</sup> J2B is permitted only on 2000–27500 kHz.

<sup>16</sup> J2D is permitted only on 2000–27500 kHz, and ship stations employing J2D emissions shall at no time use a peak envelope power in excess of 1.5 kW per channel.

<sup>17</sup> J2B and J2D are permitted provided they do not cause harmful interference to A1A.

<sup>18</sup> Coast stations employing J2D emissions shall at no time use a peak envelope power in excess of 10 kW per channel.

<sup>19</sup> J2D is permitted only on 2000–27500 kHz.

<sup>20</sup> If a station uses another type of digital emission, it must comply with the emission mask requirements of § 90.210 of this chapter, except that Automatic Identification System (AIS) transmissions do not have to comply with the emission mask requirements of § 90.210 of this chapter.

[51 FR 31213, Sept. 2, 1986]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 80.207, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at [www.fdsys.gov](http://www.fdsys.gov).

### § 80.209 Transmitter frequency tolerances.

(a) The frequency tolerance requirements applicable to transmitters in the

maritime services are shown in the following table. Tolerances are given as parts in 10<sup>6</sup> unless shown in Hz.

Frequency bands and categories of stations	Tolerances <sup>1</sup>
(1) Band 100–525 kHz:	
(i) Coast stations:	
For single sideband emissions .....	20 Hz.
For transmitters with narrow-band direct printing and data emissions .....	10 Hz <sup>2</sup>
For transmitters with digital selective calling emissions .....	10 Hz.
For all other emissions .....	100.
(ii) Ship stations:	
For transmitters with narrow-band direct printing and data emissions .....	20 Hz.
For transmitters with digital selective calling emissions .....	10 Hz <sup>2</sup>
For all other transmitters .....	10 Hz.
(iii) Ship stations for emergency only:	
For all emissions .....	20 Hz.
(iv) Survival craft stations:	
For all emissions .....	20 Hz.
(v) Radiodetermination stations:	
For all emissions .....	100.

Frequency bands and categories of stations	Tolerances <sup>1</sup>
(2) Band 1600–4000 kHz:	
(i) Coast stations and Alaska fixed stations:	
For single sideband and facsimile .....	20 Hz.
For narrow-band direct printing and data emissions .....	10 Hz. <sup>2</sup>
For transmitters with digital selective calling emissions .....	10 Hz. <sup>2</sup>
For all other emissions .....	50 Hz.
(ii) Ship stations:	
For transmitters with narrow-band direct printing and data emissions .....	10 Hz. <sup>2</sup>
For transmitters with digital selective calling emissions .....	10 Hz. <sup>3</sup>
For all other transmitters .....	20 Hz.
(iii) Survival craft stations:	20 Hz.
(iv) Radiodetermination stations:	
With power 200W or less .....	20.
With power above 200W .....	10.
(3) Band 4000–27500 kHz:	
(i) Coast stations and Alaska fixed stations:	
For single sideband and facsimile emissions .....	20 Hz.
For narrow-band direct printing and data emissions .....	10 Hz. <sup>2</sup>
For digital selective calling emissions .....	10 Hz.
For Morse telegraphy emissions .....	10.
For all other emissions .....	15 Hz.
(ii) Ship stations:	
For transmitters with narrow-band direct printing and data emissions .....	10 Hz. <sup>2</sup>
For transmitters with digital selective calling emissions .....	10 Hz. <sup>3</sup>
For all other transmitters .....	20 Hz.
(iii) Survival craft stations:	50 Hz.
(4) Band 72–76 MHz:	
(i) Fixed stations:	
Operating in the 72.0–73.0 and 75.4–76.0 MHz bands .....	5.
Operating in the 73.74.6 MHz band .....	50.
(5) Band 156–162 MHz:	
(i) Coast stations:	
For carriers licensed to operate with a carrier power:	
Below 3 watts .....	10.
3 to 100 watts .....	5. <sup>7</sup>
(ii) Ship stations .....	10. <sup>4</sup>
(iii) Survival craft stations operating on 121.500 MHz .....	50.
(iv) EPIRBs:	
Operating on 121.500 and 243.000 MHz .....	50.
Operating on 156.750 and 156.800 MHz. <sup>6</sup> .....	10.
(6) Band 216–220 MHz:	
(i) Coast stations:	
For all emissions .....	5.
(ii) Ship stations:	
For all emissions .....	5.
(7) Band 400–466 MHz:	
(i) EPIRBs operating on 406–406.1 MHz .....	5.
(ii) On-board stations .....	5.
(iii) Radiolocation and telecommand stations. ....	5.
(8) Band 1626.5–1646.5 MHz:	
(i) Ship earth stations .....	5.

<sup>1</sup> Transmitters authorized prior to January 2, 1990, with frequency tolerances equal to or better than those required after this date will continue to be authorized in the maritime services provided they retain approval and comply with the applicable standards in this part.

<sup>2</sup> The frequency tolerance for narrow-band direct printing and data transmitters installed before January 2, 1992, is 15 Hz for coast stations and 20 Hz for ship stations. The frequency tolerance for narrow-band direct printing and data transmitters approved or installed after January 1, 1992, is 10 Hz.

<sup>3</sup> [Reserved]

<sup>4</sup> For transmitters in the radiolocation and associated telecommand service operating on 154.584 MHz, 159.480 MHz, 160.725 MHz and 160.785 MHz the frequency tolerance is 15 parts in 10 <sup>6</sup>.

<sup>5</sup> [Reserved]

<sup>6</sup> [Reserved]

<sup>7</sup> For transmitters operated at private coast stations with antenna heights less than 6 meters (20 feet) above ground and output power of 25 watts or less the frequency tolerance is 10 parts in 10 <sup>6</sup>.

(b) When pulse modulation is used in land and ship radar stations operating in the bands above 2.4 GHz the frequency at which maximum emission occurs must be within the authorized bandwidth and must not be closer than

1.5/T MHz to the upper and lower limits of the authorized bandwidth where “T” is the pulse duration in microseconds. In the band 14.00–14.05 GHz the center frequency must not vary more than 10 MHz from 14.025 GHz.

(c) For stations in the maritime radiodetermination service, other than ship radar stations, the authorized frequency tolerance will be specified on the license when it is not specified in this part.

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#### § 80.211 Emission limitations.

The emissions must be attenuated according to the following schedule.

(a) The mean power when using emissions H3E, J3E and R3E:

(1) On any frequency removed from the assigned frequency by more than 50 percent up to and including 150 percent of the authorized bandwidth:

at least 25 dB for transmitters installed before February 1, 1992,

at least 28 dB for transmitters installed on or after February 1, 1992;

(2) On any frequency removed from the assigned frequency by more than 150 percent up to and including 250 percent of the authorized bandwidth: At least 35 dB; and

(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 plus  $10\log_{10}$  (mean power in watts) dB.

(b) For transmitters operating in the band 1626.5–1646.5 MHz. In any 4 kHz band the mean power of emissions shall be attenuated below the mean output power of the transmitter as follows:

(1) Where the center frequency is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: At least 25 dB;

(2) Where the center frequency is removed from the assigned frequency by more than 100 percent up to 250 percent of the authorized bandwidth: At least 35 dB; and

(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 plus  $10\log_{10}$  (mean power in watts) dB.

(c) In any 4 kHz band the peak power of spurious emissions and noise at the

input to the transmit antenna must be attenuated below the peak output power of the station as follows:

(1) 125 dB at 1525.0 MHz, increasing linearly to 90 dB at 1612.5 MHz;

(2) 90 dB at 1612.5 MHz increasing linearly to 60 dB at 1624.0 MHz;

(3) 90 dB from 1624.0 MHz to 1650.0 MHz, except at frequencies near the transmitted carrier where the requirements of paragraphs (b)(1) through (3) of this section, apply;

(4) 60 dB at 1650.0 MHz decreasing linearly to 90 dB at 1662.5 MHz;

(5) 90 dB at 1662.5 MHz decreasing linearly to 125 dB at 1752.5 MHz; and

(6) 125 dB outside above range, except for harmonics which must comply with (b)(3) of this section.

(d) The mean power of emissions from radiotelephone survival craft transmitters, 9 GHz search and rescue transponders, and radiotelegraph survival craft transmitters must be attenuated below the mean output power of the transmitter as follows:

(1) On any frequency removed from the assigned frequency by more than 50 percent, up to and including 100 percent of the authorized bandwidth: At least 25 dB;

(2) On any frequency removed from the assigned frequency by more than 100 percent of the authorized bandwidth: at least 30 dB.

(e) The mean power of EPIRBs operating on 121.500 MHz, 243.000 MHz and 406.0–406.1 MHz must be as follows:

(1) On any frequency removed from the assigned frequency by more than 50 percent, up to and including 100 percent of the authorized bandwidth: At least 25 dB;

(2) On any frequency removed from the assigned frequency by more than 100 percent: at least 30 dB.

(f) The mean power when using emissions other than those in paragraphs (a), (b), (c) and (d) of this section:

(1) On any frequency removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: At least 25 dB;

(2) On any frequency removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: At least 35 dB; and