

§ 97.305

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gain relative to a dipole or the equivalent calculation in decibels. A half wave dipole antenna will be presumed to have a gain of 0 dBd. Licensees using other antennas must maintain in their station records either manufacturer data on the antenna gain or calculations of the antenna gain. No amateur station shall cause harmful interference to stations authorized in the mobile and fixed services; nor is any amateur station protected from interference due to the operation of any such station.

[54 FR 25857, June 20, 1989; 54 FR 39536, Sept. 27, 1989, as amended at 56 FR 19611, Apr. 29, 1991; 56 FR 23025, May 20, 1991; 56 FR 32518, July 17, 1991; 56 FR 40801, Aug. 16, 1991; 57 FR 40344, Sept. 3, 1992; 60 FR 15687, Mar. 27, 1995; 61 FR 15386, Apr. 8, 1996; 62 FR 9673, Mar. 3, 1997; 63 FR 42280, Aug. 7, 1998; 68 FR 33026, June 3, 2003; 69 FR 3265, Jan. 23, 2004]

§ 97.305 Authorized emission types.

(a) An amateur station may transmit a CW emission on any frequency authorized to the control operator.

(b) A station may transmit a test emission on any frequency authorized to the control operator for brief periods for experimental purposes, except that no pulse modulation emission may be transmitted on any frequency where pulse is not specifically authorized and no SS modulation emission may be transmitted on any frequency where SS is not specifically authorized.

(c) A station may transmit the following emission types on the frequencies indicated, as authorized to the control operator, subject to the standards specified in § 97.307(f) of this part.

Wavelength band	Frequencies	Emission types authorized	Standards see § 97.307(f), paragraph:
MF:			
160 m	Entire band .....	RTTY, data .....	(3).
160 m	Entire band .....	Phone, image .....	(1), (2).
HF:			
80 m	Entire band .....	RTTY, data .....	(3), (9).
75 m	Entire band .....	Phone, image .....	(1), (2).
40 m	7.000–7.100 MHz .....	RTTY, data .....	(3), (9).
40 m	7.075–7.100 MHz .....	Phone, image .....	(1), (2), (9), (11).
40 m	7.100–7.150 MHz .....	RTTY, data .....	(3), (9).
40 m	7.150–7.300 MHz .....	Phone, image .....	(1), (2).
30 m	Entire band .....	RTTY, data .....	(3).
20 m	14.00–14.15 MHz .....	RTTY, data .....	(3).
20 m	14.15–14.35 MHz .....	Phone, image .....	(1), (2).
17 m	18.068–18.110 MHz .....	RTTY, data .....	(3).
17 m	18.110–18.168 MHz .....	Phone, image .....	(1), (2).
15 m	21.0–21.2 MHz .....	RTTY, data .....	(3), (9).
15 m	21.20–21.45 MHz .....	Phone, image .....	(1), (2).
12 m	24.89–24.93 MHz .....	RTTY, data .....	(3).
12 m	24.93–24.99 MHz .....	Phone, image .....	(1), (2).
10 m	28.0–28.3 MHz .....	RTTY, data .....	(4).
10 m	28.3–28.5 MHz .....	Phone, image .....	(1), (2), (10).
10 m	28.5–29.0 MHz .....	Phone, image .....	(1), (2).
10 m	29.0–29.7 MHz .....	Phone, image .....	(2).
VHF:			
6 m	50.1–51.0 MHz .....	MCW, phone, image, RTTY, data .....	(2), (5).
Do	51.0–54.0 MHz .....	MCW, phone, image, RTTY, data, test .....	(2), (5), (8).
2 m	144.1–148.0 MHz .....	MCW, phone, image, RTTY, data, test .....	(2), (5), (8).
1.25 m	219–220 MHz .....	Data .....	(13).
Do	222–225 MHz .....	MCW, phone, image, RTTY, data, test .....	(2), (6), (8).
UHF:			
70 cm	Entire band .....	MCW, phone, image, RTTY, data, SS, test .....	(6), (8).
33 cm	Entire band .....	MCW, phone, image, RTTY, data, SS, test, pulse .....	(7), (8), and (12).
23 cm	Entire band .....	MCW, phone, image, RTTY, data, SS, test .....	(7), (8), and (12).
13 cm	Entire band .....	MCW, phone, image, RTTY, data, SS, test, pulse .....	(7), (8), and (12).
SHF:			
9 cm	Entire band .....	MCW, phone, image, RTTY, data, SS, test, pulse .....	(7), (8), and (12).
5 cm	Entire band .....	MCW, phone, image, RTTY, data, SS, test, pulse .....	(7), (8), and (12).
3 cm	Entire band .....	MCW, phone, image, RTTY, data, SS, test .....	(7), (8), and (12).
1.2 cm	Entire band .....	MCW, phone, image, RTTY, data, SS, test, pulse .....	(7), (8), and (12).
EHF:			
6 mm	Entire band .....	MCW, phone, image, RTTY, data, SS, test, pulse .....	(7), (8), and (12).
4 mm	Entire band .....	MCW, phone, image, RTTY, data, SS, test, pulse .....	(7), (8), and (12).
2.5 mm	Entire band .....	MCW, phone, image, RTTY, data, SS, test, pulse .....	(7), (8), and (12).
2 mm	Entire band .....	MCW, phone, image, RTTY, data, SS, test, pulse .....	(7), (8), and (12).
1mm	Entire band .....	MCW, phone, image, RTTY, data, SS, test, pulse .....	(7), (8), and (12).

Wavelength band	Frequencies	Emission types authorized	Standards see § 97.307(f), paragraph:
—	Above 300 GHz .....	MCW, phone, image, RTTY, data, SS, test, pulse ....	(7), (8), and (12).

[54 FR 25857, June 20, 1989; 54 FR 39536, Sept. 27, 1989; 55 FR 22013, May 30, 1990, as amended at 55 FR 30457, July 26, 1990; 60 FR 15688, Mar. 27, 1995; 64 FR 51471, Sept. 23, 1999]

**§ 97.307 Emission standards.**

(a) No amateur station transmission shall occupy more bandwidth than necessary for the information rate and emission type being transmitted, in accordance with good amateur practice.

(b) Emissions resulting from modulation must be confined to the band or segment available to the control operator. Emissions outside the necessary bandwidth must not cause splatter or keyclick interference to operations on adjacent frequencies.

(c) All spurious emissions from a station transmitter must be reduced to the greatest extent practicable. If any spurious emission, including chassis or power line radiation, causes harmful interference to the reception of another radio station, the licensee of the interfering amateur station is required to take steps to eliminate the interference, in accordance with good engineering practice.

(d) For transmitters installed after January 1, 2003, the mean power of any spurious emission from a station transmitter or external RF power amplifier transmitting on a frequency below 30 MHz must be at least 43 dB below the mean power of the fundamental emission. For transmitters installed on or before January 1, 2003, the mean power of any spurious emission from a station transmitter or external RF power amplifier transmitting on a frequency below 30 MHz must not exceed 50 mW and must be at least 40 dB below the mean power of the fundamental emission. For a transmitter of mean power less than 5 W installed on or before January 1, 2003, the attenuation must be at least 30 dB. A transmitter built before April 15, 1977, or first marketed before January 1, 1978, is exempt from this requirement.

(e) The mean power of any spurious emission from a station transmitter or external RF power amplifier transmitting on a frequency between 30–225 MHz

must be at least 60 dB below the mean power of the fundamental. For a transmitter having a mean power of 25 W or less, the mean power of any spurious emission supplied to the antenna transmission line must not exceed 25 µW and must be at least 40 dB below the mean power of the fundamental emission, but need not be reduced below the power of 10 µW. A transmitter built before April 15, 1977, or first marketed before January 1, 1978, is exempt from this requirement.

(f) The following standards and limitations apply to transmissions on the frequencies specified in § 97.305(c) of this part.

(1) No angle-modulated emission may have a modulation index greater than 1 at the highest modulation frequency.

(2) No non-phone emission shall exceed the bandwidth of a communications quality phone emission of the same modulation type. The total bandwidth of an independent sideband emission (having B as the first symbol), or a multiplexed image and phone emission, shall not exceed that of a communications quality A3E emission.

(3) Only a RTTY or data emission using a specified digital code listed in § 97.309(a) of this part may be transmitted. The symbol rate must not exceed 300 bauds, or for frequency-shift keying, the frequency shift between mark and space must not exceed 1 kHz.

(4) Only a RTTY or data emission using a specified digital code listed in § 97.309(a) of this part may be transmitted. The symbol rate must not exceed 1200 bauds, or for frequency-shift keying, the frequency shift between mark and space must not exceed 1 kHz.

(5) A RTTY, data or multiplexed emission using a specified digital code listed in § 97.309(a) of this part may be transmitted. The symbol rate must not exceed 19.6 kilobauds. A RTTY, data or multiplexed emission using an unspecified digital code under the limitations listed in § 97.309(b) of this part also may