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threat to vehicle radar systems operating in this segment.

(t) Amateur stations transmitting in the 2.5 mm band must not cause harmful interference to, and must accept interference from, stations authorized by the United States Government, the FCC, or other nations in the fixed, inter-satellite, or mobile services.

Note to §97.303: The Table of Frequency Allocations contains the complete, unabridged, and legally binding frequency sharing requirements that pertain to the Amateur Radio Service. See 47 CFR 2.104, 2.105, and 2.106. The United States, Puerto Rico, and the U.S. Virgin Islands are in Region 2 and other U.S. insular areas are in either Region 2 or 3; see appendix 1 to part 97.

[75 FR 27203, May 14, 2010, as amended at 77 FR 5412, Feb. 3, 2012]

§ 97.305 Authorized emission types.

- (a) Except as specified elsewhere in this part, 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.

MF: 160 m Entire band RTTY, data (3). HF: 80 m Entire band RTTY, data (3), (9). 60 m 5.332, 5.348, 5.3585, 5.373 and 5.405 Phone, image (1), (2). 40 m 7.000-7.100 MHz Phone, RTTY, data (3), (9) 40 m 7.007-7.57.100 MHz Phone, image (1), (2), (9), (11) 40 m 7.007-7.25 MHz PTTY, data (3), (9) 40 m 7.105-7.105 MHz PTTY, data (3), (9) 40 m 7.105-7.25 MHz PTTY, data (3), (9) 40 m 7.105-7.105 MHz Phone, image (1), (2) 9 m 14.00-14.15 MHz Phone, image (1), (2) 17 m 18.068-18.110 MHz RTTY, data (3) 17 m 18.068-18.110 MHz Phone, image (1), (2) 15 m 21.0-21.2 MHz PTO, data (3), (9) 12 m 24.99-24.99 MHz Phone, image (1), (2) 12 m 24.89-24.99 MHz Phone, image (1), (2) 10 m <t< th=""><th>Wavelength band</th><th>Frequencies</th><th>Emission types authorized</th><th>Standards see § 97.307(f), para- graph:</th></t<>	Wavelength band	Frequencies	Emission types authorized	Standards see § 97.307(f), para- graph:
HF: 80 m 75 m 60 m 5.332, 5.348, 5.3585,	MF:			
HF: 80 m	160 m	Entire band	RTTY, data	(3).
Rothire band		Entire band	Phone, image	(1), (2).
The color of the				
Sand Sand Sand Sand Sand Sand Sand Sand				
S.373 and 5.405 MHz.				
MHz	60 m		Phone, RTTY, data	(14).
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 7.125-7.100 MHz RTTY, data (3), (9) 40 m 7.125-7.300 MHz RTTY, data (3), (9) 20 m 14.00-14.15 MHz RTTY, data (3). 20 m 14.15-14.35 MHz RTTY, data (3). 17 m 18.068-18.110 MHz RTTY, data (3). 17 m 18.110-18.168 MHz RTTY, data (3). 15 m 21.0-21.2 MHz RTTY, data (3), (9) 15 m 21.0-21.45 MHz RTTY, data (3), (9) 15 m 21.0-21.45 MHz RTTY, data (3), (9) 12 m 24.89-24.93 MHz RTTY, data (3), (9) 10 m 28.3-28.5 MHz Phone, image (1), (2) 10 m 28.5-29.0 MHz Phone, image (1), (2), (10) 10 m 29.0-29.7 MHz Phone, image (1), (2) VHF: 6 m 50.1-51.0 MHz MCW, phone, image, RTTY, d				
40 m 7.075–7.100 MHz 7.100–7.125 MHz 8TTY, data (1), (2), (9), (11) (3), (9) (11) (3), (9) (11) (2) (3), (9) (11) (2) (3), (9) (11) (2) (3), (9) (11) (2) (3), (9) (11) (2) (3), (9) (11) (2) (3), (9) (11) (2) (3), (9) (11) (2) (3), (9) (11) (2) (3), (11) (2) (3), (11) (2) (3), (11) (2) (3), (11) (2) (3), (11) (2) (3), (11) (2) (3), (11) (2), (11) (2) (3), (11) (2),	40 m		RTTY data	(3) (9)
40 m				
40 m				
30 m	40 m	7.125-7.300 MHz		
20 m	30 m	Entire band	RTTY, data	
17 m	20 m	14.00-14.15 MHz	RTTY, data	(3).
17 m				(1), (2).
15 m				
15 m				1 1-11 1-1
12 m				
12 m				
The color of the			,	
10 m				
10 m 10 m 28.5-29.0 MHz 10 m 29.0-29.7 MHz Phone, image (2). (1), (2). VHF: 6 m Do 51.0-54.0 MHz Do 51.0-54.0 MHz McW, phone, image, RTTY, data, test (2), (5), (8). MCW, phone, image, RTTY, data, test (2), (5), (8). (2), (5), (8). 1.25 m Do 222-225 MHz McW, phone, image, RTTY, data, test McW, phone, image, RTTY, data, test McW, phone, image, RTTY, data, test McW, phone, image, RTTY, data, SS, test, mage (2), (6), (8). (13) UHF: 70 cm 33 cm Entire band McW, phone, image, RTTY, data, SS, test, pulse McW, phone,			· ·	
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), (8). 0 m 51.0–54.0 MHz MCW, phone, image, RTTY, data, test (2), (5), (8). 1.25 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 RTTY, data, test MCW, phone, SS, image (2), (6), (8) UHF: 70 cm Sentire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). 23 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). 31 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). 5 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). 5 cm Entire band MCW, phone, im				
VHF: 6 50.1–51.0 MHz MCW, phone, image, RTTY, data (2), (5). 2 m 144.1–148.0 MHz MCW, phone, image, RTTY, data, test (2), (5), (8). 1.25 m 219–220 MHz Data (3) Do 222–225 MHz RTTY, data, test MCW, phone, SS, image (2), (6), (8) UHF: 70 cm Entire band MCW, phone, image, RTTY, data, SS, test (6), (8) 73 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, pulse (7), (8), and (12). 31 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). 5 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). 6 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12).	10 m			
Do 2 m 51.0-54.0 MHz MCW, phone, image, RTTY, data, test (2), (5), (8). 1.25 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 RTTY, data, test MCW, phone, SS, image (2), (6), (8) UHF: 70 cm MCW, phone, image, RTTY, data, SS, test (6), (8) 70 cm Simple states MCW, phone, image, RTTY, data, SS, test (7), (8), and (12). 8 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). 9 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). 9 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). 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). 1 2 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). (7) (8), and (12). (7), (8), and (12).	VHF:		•	,
2 m 144.1–148.0 MHz MCW, phone, image, RTTY, data, test (2), (5), (8) 1.25 m 219–220 MHz Data (13) UHF: RTTY, data, test MCW, phone, SS, image (2), (6), (8) 70 cm Entire band MCW, phone, image, RTTY, data, SS, test (6), (8) 70 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, pulse (7), (8), and (12). 33 cm MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). SHF: MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). 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). 6 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). 6 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). 7 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12).	6 m	50.1–51.0 MHz	MCW, phone, image, RTTY, data	(2), (5).
1.25 m Do 219–220 MHz 222–225 MHz Data RTTY, data, test MCW, phone, SS, image (13) (2), (6), (8) UHF: 70 cm 33 cm 13 cm 13 cm 13 cm 13 cm 13 cm 14 cm 15 cm 12 cm 12 cm 12 cm 15 cm 12 cm 12 cm 12 cm 12 cm 12 cm 14 cm 15 cm 12 cm 15 cm 12 cm 16 cm 16 cm 16 cm 16 cm 17 cm 18 cm 19 cm 12 cm 19 cm 12 cm 19 cm 12 cm 19 cm 12 cm 19 cm 12 cm 19 cm 12 cm 19 cm 19 cm 12 cm 19 cm 19 cm 12 cm 19 c				
Do UHF: 70 cm 33 cm 23 cm 13 cm 5 cm 5 cm 3 cm 1.2 cm 1.2 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse MCW, phone, image, RTTY, data, SS, test, pulse (2), (6), (8)				
UHF: 70 cm Entire band MCW, phone, image, RTTY, data, SS, test				
To cm 33 cm Entire band MCW, phone, image, RTTY, data, SS, test (6), (8). (7), (8), and (12). (7), and (12). (7), and (12). (7), and (12). (7), and (12).		222-225 MHz	RTTY, data, test MCW, phone, SS, image	(2), (6), (8)
33 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (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, pulse (7), (8), and (12). 1.2 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). EHF: MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12).		Entire hand	MCW phone image BTTV data SS test	(6) (9)
23 cm 13 cm SHF: Entire band MCW, phone, image, RTTY, data, SS, test. (7), (8), and (12). 9 cm 5 cm 3 cm 1.2 cm Entire band MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). HCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12). MCW, phone, image, RTTY, data, SS, test, pulse (7), (8), and (12).				
13 cm SHF: 9 cm 5 cm 3 cm 1.2 cm Entire band				
SHF: 9 cm Entire band				
5 cm 3 cm 1.2 cm Entire band	SHF:		, p,ge,, ea.a., ee,, pa	(17, (2), 2.112 (12)
5 cm 3 cm 1.2 cm Entire band	9 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
1.2 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	
EHF:				
		Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
6 mm → Entire band MCW, phone, image, HTTY, data, SS, test, pulse (7), (8), and (12).			NOW I STTV I SO I S	(=) (0) 1 (10)
	6 mm	Entire band	MCW, phone, image, HTTY, data, SS, test, pulse	(/), (8), and (12).

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Wavelength band	Frequencies	Emission types authorized	Standards see § 97.307(f), paragraph:
4 mm 2.5 mm 2 mm 1mm	Entire band Entire band Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12). (7), (8), and (12). (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; 71 FR 66465, Nov. 15, 2006; 75 FR 27204, May 14, 2010; 77 FR 5412, Feb. 3, 2012]

§ 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 $30-225~\mathrm{MHz}$ 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.