

(2) U.S. Government transmitters furnished in the performance of a U.S. Government contract if the use of certificated equipment would increase the cost of the contract or if the transmitter will be incorporated in the finished product. However, such equipment must meet the technical standards contained in this subpart.

(3) ELTs verified in accordance with § 87.147(e).

(4) Signal generators when used as radionavigation land test stations (MTF).

(d) Aircraft earth stations must correct their transmit frequencies for Doppler effect relative to the satellite. The transmitted signal may not deviate more than 335 Hz from the desired transmit frequency. (This is a root sum square error which assumes zero error for the received ground earth station signal and includes the AES transmit/receive frequency reference error and the AES automatic frequency control residual errors.) The applicant must attest that the equipment provides adequate Doppler effect compensation and where applicable, that measurements have been made that demonstrate compliance. Submission of data demonstrating compliance is not required unless requested by the Commission.

[63 FR 36607, July 7, 1998, as amended at 69 FR 32881, June 14, 2004]

**§ 87.147 Authorization of equipment.**

(a) Certification may be requested by following the procedures in part 2 of this chapter. Aircraft transmitters must meet the requirements over an ambient temperature range of –20 degrees to + 50 degrees Celsius.

(b) ELTs manufactured after October 1, 1988, must meet the output power characteristics contained in § 87.141(i) when tested in accordance with the Signal Enhancement Test contained in subpart N, part 2 of this chapter. A report of the measurements must be submitted with each application for certification. ELTs that meet the output power characteristics of the section must have a permanent label prominently displayed on the outer casing state, “Meets FCC Rule for improved satellite detection.” This label, however, must not be placed on the equipment without authorization to do so by

the Commission. Application for such authorization may be made either by submission of a new application for certification accompanied by the required fee and all information and test data required by parts 2 and 87 of this chapter or, for ELTs approved prior to October 1, 1988, a letter requesting such authorization, including appropriate test data and a showing that all units produced under the original equipment authorization comply with the requirements of this paragraph without change to the original circuitry.

(c) An applicant for a station license may request certification for an individual transmitter by following the procedure in part 2 of this chapter. Such a transmitter will be individually certified and so noted on the station license.

(d) An applicant for certification of equipment intended for transmission in any of the frequency bands listed in paragraph (d)(3) of this section must notify the FAA of the filing of a certification application. The letter of notification must be mailed to: FAA, Office of Spectrum Policy and Management, ASR–1, 800 Independence Ave., SW., Washington, DC 20591 prior to the filing of the application with the Commission.

(1) The notification must describe the equipment, give the manufacturer’s identification, antenna characteristics, rated output power, emission type and characteristics, the frequency or frequencies of operation, and essential receiver characteristics if protection is required.

(2) The certification application must include a copy of the notification letter to the FAA. The Commission will not act until it receives the FAA’s determination regarding whether it objects to the application for equipment authorization. The FAA should mail its determination to: Office of Engineering and Technology Laboratory, Authorization and Evaluation Division, 7435 Oakland Mills Rd., Columbia, MD 21046. The Commission will consider the FAA determination before taking final action on the application.

(3) The frequency bands are as follows:

90–110 kHz  
190–285 kHz

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325–435 kHz  
 74.800 MHz to 75.200 MHz  
 108.000 MHz to 137.000 MHz  
 328.600 MHz to 335.400 MHz  
 960.000 MHz to 1215.000 MHz  
 1545.000 MHz to 1626.500 MHz  
 1646.500 MHz to 1660.500 MHz  
 5000.000 MHz to 5250.000 MHz  
 14.000 GHz to 14.400 GHz  
 15.400 GHz to 15.700 GHz  
 24.250 GHz to 25.250 GHz  
 31.800 GHz to 33.400 GHz

(e) Verification reports for ELTs capable of operating on the frequency 406.0–406.1 MHz must include sufficient documentation to show that the ELT meets the requirements of § 87.199(a). A letter notifying the FAA of the ELT verification must be mailed to: FAA, Office of Spectrum Policy and Management, ASR-1, 800 Independence Avenue SW., Washington, DC 20591.

(f) Certification may be requested for equipment that has the capability to transmit in the 138–144 MHz, 148–149.9 MHz, or 150.5–150.8 MHz bands as well as frequency bands set forth in § 87.173. The Commission will only certify this equipment for use in the bands regulated by this part.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11721, Mar. 22, 1989; 56 FR 11518, Mar. 19, 1991; 57 FR 45750, Oct. 5, 1992; 58 FR 30127, May 26, 1993; 58 FR 67696, Dec. 22, 1993; 63 FR 36608, July 7, 1998; 69 FR 32881, June 14, 2004]

### § 87.149 Special requirements for automatic link establishment (ALE).

Brief signalling for the purposes of measuring the quality of a radio channel and thereafter establishing communication shall be permitted within the 2 MHz–30 MHz band. Public coast stations licensed under part 80 of this chapter providing high seas service are authorized by rule to use such signalling under the following conditions:

(a) The transmitter power shall not exceed 100 W ERP;

(b) Transmissions must sweep linearly in frequency at a rate of at least 60 kHz per second, occupying any 3 kHz bandwidth for less than 50 milliseconds;

(c) The transmitter shall scan the band no more than four times per hour;

(d) Transmissions within 6 kHz of the following protected frequencies and frequency bands must not exceed 10 µW peak ERP:

#### (1) Protected frequencies (kHz)

2091.0	4188.0	6312.0	12290.0	16420.0
2174.5	4207.5	8257.0	12392.0	16522.0
2182.0	5000.0	8291.0	12520.0	16695.0
2187.5	5167.5	8357.5	12563.0	16750.0
2500.0	5680.0	8364.0	12577.0	16804.5
3023.0	6215.0	8375.0	15000.0	20000.0
4000.0	6268.0	8414.5	16000.0	25000.0
4177.5	6282.0	10000.0		

#### (2) Protected bands (kHz)

4125.0–4128.0  
 8376.25–8386.75  
 13360.0–13410.0  
 25500.0–25670.0

(e) The instantaneous signal, which refers to the peak power that would be measured with the frequency sweep stopped, along with spurious emissions generated from the sweeping signal, must be attenuated below the peak carrier power (in watts) as follows:

(1) On any frequency more than 5 Hz from the instantaneous carrier frequency, at least 3 dB;

(2) On any frequency more than 250 Hz from the instantaneous carrier frequency, at least 40 dB; and

(3) On any frequency more than 7.5 kHz from the instantaneous carrier frequency, at least  $43 + 10\log_{10}$  (peak power in watts) db.

[62 FR 40308, July 28, 1997]

### § 87.151 Special requirements for differential GPS receivers.

(a) The receiver shall achieve a message failure rate less than or equal to one failed message per 1000 full-length (222 bytes) application data messages, while operating over a range from –87 dBm to –1 dBm, provided that the variation in the average received signal power between successive bursts in a given time slot shall not exceed 40 dB. Failed messages include those lost by the VHF data receiver system or which do not pass the cyclic redundancy check (CRC) after application of the forward error correction (FEC).

(b) The aircraft receiving antenna can be horizontally or vertically polarized. Due to the difference in the signal strength of horizontally and vertically polarized components of the broadcast signal, the total aircraft implementation loss is limited to 15 dB for horizontally polarized receiving antennas and 11 dB for vertically polarized receiving antennas.