

GENERAL

§ 2.1501 Introduction.

The procedure described herein sets forth uniform methods for testing Class A, B and S Emergency Position Indicating Radiobeacons (EPIRBs) for compliance with the applicable portions of the FCC Rules and Regulations. Other methods and test results may be used provided they are fully documented and deemed by the Commission to yield results equivalent to the procedures set forth in this section.

§ 2.1503 Test environment.

(a) *Measurement sites.* Radiated emission tests for peak effective radiated power (PERP), spurious emissions and power in the test mode are to be performed on an open field test site as shown in Figure 1. The site is to be located on level ground with an obstruction-free, 60 m by 52 m, elliptical area. The site is to be equipped with an antenna mast capable of adjustment from 1 to 4 m. The center of a metal ground plane at least one wavelength in diameter at 121.5 MHz (2.47 m) is to be located 30 m from the receiving antenna. The ground plane is to have provisions for mounting removable quarter-wave verticle elements to produce a monopole antenna at both 121.5 and 243 MHz with the VSWR of less than 1.5.

NOTE: It is desirable that the level of radiated ambient EME at the test site be at least 6 dB below the FCC limits applicable to the EPIRB. It is, of course, not always possible to meet this condition. If the ambient field strength at some frequencies within the specified measurement ranges is too high, it is recommended that one or more of the following corrective steps be employed:

- (1) Perform measurements in critical frequency bands during hours when broadcast and other radio stations are off-the-air and ambients from industrial equipment are lower.
- (2) Insofar as is possible, orient the axis of an open area test site to discriminate against strong ambient signals.
- (3) Vary the bandwidth of the measuring instrument to separate ambient EME from emissions from the EPIRB.

(b) *Temperature.* Except as otherwise noted, the ambient temperature during testing is to be within the range of 4 to 35 °C (40 to 95 °F).

§ 2.1505 Test instrumentation and equipment.

(a) *Receiver (field intensity meter).* A calibrated field intensity meter (FIM) with a frequency range of 30 to 1000 MHz is required for measuring radiated emission levels. This instrument should be capable of making peak measurements with a bandwidth of 100 kHz.

(b) *Spectrum analyzer.* Spectral measurements are to be made with a spectrum analyzer with a minimum resolution bandwidth no greater than 10 Hz. The video filter, if used, should have a bandwidth wide enough so as to not affect peak readings. A linear video output is desirable for performing measurements of modulation characteristics.

(c) *Storage oscilloscope.* Measurements of modulation characteristics are to be made using a calibrated storage oscilloscope. This instrument is to be DC coupled and capable of manually triggered single sweeps.

(d) *Frequency counter.* A frequency counter with an accuracy of at least 5 parts per million is required for measuring the carrier frequency.

(e) *Signal generator.* A calibrated signal generator with an output of at least 75 mW at 121.5 and 243 MHz is required for generating a reference signal for site calibration.

(f) *Antenna.* Radiated emissions are to be measured with calibrated, tuned, half-wave dipole antennas covering the frequency range of 30 to 1000 MHz.

(g) *Temperature chamber.* Tests which call for subjecting the EPIRB to temperature levels other than the ambient temperature are to be performed in a temperature test chamber which can be adjusted to stable temperatures from -20 to +55 °C. This chamber is to be of sufficient size to accommodate the EPIRB under test.

(h) *Vibration table.* A vibration table capable of vibrating the EPIRB with a sinusoidal motion is required. The table must be capable of varying the frequency of vibration either linearly or logarithmically over a range of 4 to 33 Hz with maximum peak amplitudes of up to 2.5 mm.

(i) *Salt fog chamber.* A chamber capable of producing salt fog at a temperature of 35 °C for 48 hours is required.