

when making measurements involving the use of radiated fields.

**10. Artificial antenna**— Where stated, the tests shall be carried out using a 50 ohms non-reactive, non-radiating load or the test fixture described in clause 9 of this Part.

**11. Normal and extreme test conditions**— Type approval tests shall be carried out under normal and extreme test conditions, unless otherwise stated.

**12. Test power source**—(1) Where stated, the battery of the equipment shall be replaced by a test power source capable of producing normal and extreme test voltages as specified in clauses 14 and 15(2) of this Part.

(2) For type approval tests, three sets of batteries shall be submitted.

**13. Normal test conditions**—Normal temperature and humidity conditions for tests shall be any convenient combination of temperature and humidity within the following ranges:

Temperature: +15°C to +35°C

Relative Humidity: 20% to 75%

**14. Normal test voltage**—The normal test voltage shall be determined in each case, and shall be the voltage corresponding to the voltage that the battery gives under normal temperature and humidity at a load equal to that of the equipment.

**15. Extreme test conditions**—(1) Extreme temperatures

For tests at extreme temperatures, measurements shall be made in accordance with the procedure specified in clause 16 of this Part at the lower and upper temperature of -20°C and +55°C.

(2) Extreme test voltages

(a) The upper extreme test voltage shall be determined in each case, and shall be the voltage corresponding to the voltage that the battery gives at the upper extreme temperature with a load equal to that of the equipment.

(b) The lower extreme test voltage shall be determined in each case and shall be the voltage corresponding to the voltage that the battery gives under the extreme lower temperature with a load equal to that of the equipment, after 48 hours of operation.

**16. Procedure for tests at extreme temperatures**—(1) The equipment shall be switched off during the temperature stabilisation period.

(2) Before tests are carried out, the equipment shall have obtained thermal balance in the test chamber, and have been switched on for a period of 5 minutes.

**17. Environmental tests**—(1) Before environmental tests are commenced, a test of the equipment to the other requirements of this Schedule shall be carried out. Where electrical tests are required, these shall be done with the normal test voltage.

(2) The term performance check as used in this performance standard shall be taken to mean a check of the output power, frequencies and modulation of the equipment.

(3) The following tests shall be made under environmental conditions as detailed in Annex VI to Recommendation T/R 34-01,

“Environmental Testing of Maritime Radio Equipment”: published by the Conference of European Postal and Telecommunications Administrations (CEPT).

(a) Vibration, Paragraph 4

(b) Dry Heat Cycle, Paragraph 5.1

(c) Damp Heat Cycle, Paragraph 6

(d) Low Temperature Cycle, Paragraph 7.1 with the exception that the lower temperature shall be -40°C

(e) Corrosion Tests, Paragraphs 10.1 & 10.2

(4) The equipment shall be placed in an atmosphere of +70°C for one hour. It shall then be immersed in water at +20°C to a depth of 10cm, measured from the highest point of the equipment to the surface of the water, excluding the antenna when extended, for a period of one hour.

(5) The equipment shall be subjected to an external water pressure of 100 kPa for 5 minutes.

(6) The equipment shall be dropped three times into water, with the antenna extended if applicable, from a height of 20 metres.

(7) On completion of the tests in sub-clauses (3), (4), (5) and (6) of this clause, the equipment shall not show any signs of external significant damage or harmful penetration of water and shall meet the requirements of this Schedule.

**18. Frequencies**—(1) When activated, the EPIRB shall continuously and simultaneously transmit on the frequencies 121.5 MHz and 243 MHz.

(2) The frequency error is the difference between the measured carrier frequency and its nominal value.

(3) The carrier frequency shall be measured with the equipment placed in the test fixture or connected to the artificial antenna. The measurement shall be made using the test power source described in clause 12.

(4) The frequency error, both under normal and extreme test conditions or at any intermediate condition, shall not exceed  $\pm 3.5$  kHz for the frequency 121.5 MHz and  $\pm 7.0$  kHz for the frequency 243 MHz.

**19. Class of emission**—(1) The radio frequency transmission shall be amplitude modulated with full carrier and both sidebands (A3X).

The emission shall consist of a signal obtained by amplitude modulation of the carrier frequencies with downward audio-frequency sweep within a range of not less than 700 Hz between 1600 Hz and 300 Hz and with a sweep repetition rate of 2 to 4 times per second.

(2) The signal may include information of the identity of the ship. If included, this information should be transmitted automatically, and should not occupy a substantial part of the transmission time.

**20. Modulation characteristics**—(1) The depth of modulation is the ratio:

$$\frac{A - B}{A + B}$$

A and B are respectively the maximum and minimum values of the envelope curve.

(2) Modulation duty cycle is the ratio of the positive modulation peak duration to the period of the instantaneous fundamental audio modulating frequency, observed at the half-amplitude points on the modulation envelope.

(3) The depth of modulation and the modulation duty-cycle shall be measured with an oscilloscope, with the EPIRB placed in the test fixture or connected to the artificial antenna.

(a) The depth of modulation shall be at least 85%

(b) The duty-cycle shall be between 50% and 70%.

**21. Radiation characteristics**—(1) The radiation from the antenna shall be vertically polarised.

(2) The radiation shall be substantially omnidirectional in the horizontal plane.

(3) The radiation from the equipment floating in water, shall predominate at small angles of elevation.

(4) The conditions specified in subclauses (1), (2), and (3) of this clause may be satisfied with a vertical ship antenna having an electrical length of between one quarter and five eighths of the wavelength at the operating frequencies.

**22. Radiated peak envelope power**—(1) The peak envelope power is the average power during one radio frequency cycle