

automatic gain control threshold is 40 dB above  $1\mu\text{V}$ . The audio-frequency gain controls shall be adjusted to give an output of 50 mW with a 2182 kHz input signal of Class A2 at a level of 30 dB above  $1\mu\text{V}$  and the wanted signal shall then be removed.

(2) The simultaneous application of any two "interfering" signals, one of Class A1 and the other of Class A2, shall not produce an output exceeding 50 mW. Both interfering signals shall be of level 80 dB above  $1\mu\text{V}$ , and neither shall have a carrier frequency within 30 kHz of that of the wanted signal, or shall be of such frequency as to produce an output greater than 20 dB below the standard output when modulated and applied alone. Tests shall include selected frequencies which would produce interfering sum and difference third order, fifth order, etc., intermodulation products.

**12. Tuning Drift and Stability**—The requirements of clause 5 of this Part of this Schedule shall be met within five minutes of first switching on. Thereafter they shall be met—

(a) At all ambient temperatures between  $-10^{\circ}\text{C}$  and  $+40^{\circ}\text{C}$ ; and

(b) Irrespective of variations in supply voltage within the limits specified in clause 2 (6) of this Part of this Schedule.

**13. Non-linear Distortion**—With the radio-frequency or intermediate-frequency gain controls or both adjusted for maximum gain, the audio-frequency gain controls shall be adjusted to give an output of 100 mW with a Class A2 test signal of frequency 2182 kHz at a level of 60 dB above  $1\mu\text{V}$ . An increase of modulation depth to 80 percent shall produce an output of not less than 500 mW measured across a resistance equal to the modulus of the speaker impedance at 1000 Hz.

The total harmonic distortion shall not then exceed 15 percent.

**14. Fidelity**—(1) When a Class A2 test signal of frequency 2182 kHz is applied to the receiver, the response shall be such that the audio-frequency output shall lie within a range of 8 dB as the modulation frequency of the signal is varied continuously from 250 to 3000 Hz, the level and modulation depth of the input signal being kept constant. For this test, the input signal may have any level and modulation depth, provided the output of the receiver does not exceed 50 mW. The response shall fall by at least 6 dB per octave for modulation frequencies above 3000 Hz.

(2) An optional secondary output may be provided to operate a radio-telephone automatic alarm. This output shall be constant to within 6 dB at the 2 alarm-signal tone frequencies, 1,300 Hz and 2,200 Hz, as the manual gain control is turned down to reduce the output level of noise or speech. At all settings of this control and irrespective of the adjustment of the preset control of audio-frequency gain required by clause 2 (3) (b) of this Part of this Schedule the intelligibility of speech reception must be maintained.

(3) The maximum response frequencies of the filters, if used, shall be within  $\pm 1.5$  percent of the nominal frequencies of 1300 and 2200 Hz. The discrimination should not exceed 3 dB at frequencies within 3 percent of the maximum response frequency.

**15. Radiation**—The receiver shall not in normal service produce a field exceeding  $0.1\mu\text{V}/\text{metre}$  at a distance of 1 nautical mile. This shall normally be regarded as satisfactory if the following requirements are met:

The receiver shall be placed centrally in a screened earthed enclosure of dimensions at least 1.8 m. cube. The earth terminal of the receiver shall be connected to the inside of the screen.

The aerial terminal shall be connected through an unscreened four-turn rectangular search coil (of dimensions 30 cm. square) and an unscreened lead to a resistive measuring instrument mounted outside the enclosure, having, its other terminal earthed. The receiver shall be energised.

The power measured by the measuring instrument shall not exceed  $4 \times 10^{-10}$  watts, irrespective of the resistance of the measuring instrument or the adjustment of the receiver.

At the discretion of the testing officer, the search coil may be moved during the test in any way, provided it does not approach within 15 cm. of the receiver case; or it may be short-circuited.

**16. Protective Arrangements**—(1) All parts and wiring shall be protected from accidental access, and shall be isolated automatically from all sources of high voltage when the means of protection are removed. The term "high voltage" shall be taken to apply to all circuits in which the direct and alternating voltages (other than radio-frequency voltages) combine to give instantaneous voltages greater than 50 volts.

(2) The receiver shall incorporate a fuse or fuses.

(3) Provision shall be made for protecting the receiver and muting its output when the fishing boat's own radiotelephone transmitter is radiating on 2182 kHz.

(4) The receiver shall be capable of withstanding for 15 minutes without damage 30 volts r.m.s. applied to its aerial terminals via a dummy aerial in accordance with clause 4 (2) of this Part of this Schedule, at any frequency in the maritime mobile bands between 100 kHz and 25 MHz.

**17. Construction**—In all respects the mechanical and electrical construction and the finish of the receiver shall conform to good standards of engineering practice, and the receiver shall be suitable for use on board fishing boats at sea.

**18. Additional Safeguards to be Incorporated Where the Equipment Includes Semiconductor Devices**—(1) Where semiconductor devices are incorporated in the equipment, the following requirements shall be met:

(a) Under all conditions of service referred to in clause 3 of this Part of this Schedule, the maker's maximum ratings for each type of semiconductor device shall not in any respect be disregarded. In particular, the makers recommended maximum junction temperature shall never be exceeded.

(b) The semiconductor devices shall be effectively protected from damage if the power supply is subject to transient voltage changes:

(c) When the receiver is operated from a battery of secondary cells, the semiconductor devices shall not be damaged by a sustained increase in power supply voltage of 25 percent relative to the nominal battery voltage:

(d) Means shall be incorporated for the protection of semiconductor devices from damage due to the accidental reversal of power supply polarity.

(2) Although it is not practicable to specify the intensity of r.f. fields which may be encountered, attention is drawn to the need for screening and filtering to protect the Semiconductor devices from damage due to r.f. energy.

## FOURTEENTH SCHEDULE

### *Climatic and Durability Tests for Fishing Boat Radio Equipment*

#### PART I

Interpretation

In this Schedule—

(a) References to Class B equipment shall be construed as references to equipment appropriate for use only below deck or in a deck-house or other similar compartment:

(b) References to Class X equipment shall be construed as references to equipment appropriate for use or storage in the open or in an open boat.

#### PART II

### *Climatic and Durability Testing of Marine Radio Equipment*