

the semiconductor devices are incorporated in the equipment, the following requirements shall be met:

(a) Under all conditions of service referred to in subclauses (2) and (3) of clause 2 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 maker's 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 device 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 the 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 semiconductor devices from damage due to r.f. energy.

### PART III

#### Radiotelephone Loudspeaker Watchkeeping Receiver

**1. Scope of Specification**—This specification covers the minimum performance of a receiver for use in fishing boats for watchkeeping on the international radiotelephone distress and calling frequency of 2182 kHz and, as such, may form the basis for type-testing.

**2. General**—(1) The receiver shall be fixed in tune, and shall be suitable for the reception of emissions of Class A2 and Class A3 except when the ship's own radiotelephone transmitter is radiating on 2182 kHz.

(2) (a) A manual-control labelled "RANGE" shall be provided for the adjustment of radio-frequency or intermediate-frequency gain or both. The range of control shall be not less than 17 dB, and shall not exceed 23 dB:

(b) A preset control, not available at the exterior of the receiver, shall be provided for the adjustment of radio-frequency or intermediate-frequency gain or both. The range of control shall be not less than 20 dB, and shall not exceed 30 dB.

(3) (a) A manual control labelled "VOLUME" shall be provided for the adjustment of audio-frequency gain, and its range shall be not less than 17 dB, and shall not exceed 23 dB:

(b) A preset control, not available at the exterior of the receiver, shall be provided for the adjustment of audio-frequency gain. The range of control shall be not less than 13 dB, and shall not exceed 17 dB.

(4) With the exception of the controls specified in subclauses (2) (a) and (3) (a) of this clause and a receiver on/off switch, no other control shall be available at the exterior of the receiver.

(5) The receiver shall include a loudspeaker.

(6) (a) When the receiver is operated from a ship's main supply, the requirements of this specification shall be met for a range of supply voltage variations of plus and minus 10 percent relative to the nominal mains voltage:

(b) When the receiver is operated from a battery of secondary cells, the requirements of this specification shall be met for a range of supply voltage variations of plus 5 percent and minus 10 percent relative to the nominal battery voltage.

(7) The receiver shall not cause the fishing boat's mains to be earthed.

**3. Climatic and Durability Tests**—The receiver shall comply

with the "Climatic and Durability Testing of Marine Radio Equipment for Class B equipment.

**4. Method of Test**—(1) A Class A2 test signal shall, unless otherwise specified, be modulated 30 percent at 1000 Hz.

(2) The dummy aerial employed for testing shall be a 10 ohm non-inductive resistor in series with a capacitor, having any and every value between 100 and 250 pF.

(3) The level of the open-circuit voltage of the signal generator shall be regarded as the signal applied to the receiver under test.

**5. Selectivity**—The selectivity preceding the detector shall satisfy the requirements set out in the table following the clause. Measurements shall be made with the automatic gain control inoperative. At no stage shall the receiver be permitted to overload.

Frequency (kHz)	Discrimination (dB Relative to Maximum Response)
2,178.5 to 2,185.5 inclusive	Not more than 6
Below 2,172 and above 2,192	At least 30
Below 2,162 and above 2,202	At least 60
Below 2,142 and above 2,222	At least 80

**6. Sensitivity and Signal/Noise Ratio**—(1) It shall be possible to adjust, by means of the radio-frequency or intermediate-frequency gain controls or both, the a.g.c. threshold between the limits of 20 dB and 55 dB above 1 $\mu$ V.

(2) With a Class A2 test signal at a level corresponding to the a.g.c. threshold, it shall be possible to vary the audio-frequency output over the range 1 to 100 mW by the adjustment of the audio-frequency gain controls.

(3) With a Class A2 test signal at 20 dB above 1 $\mu$ V and the a.g.c. threshold adjusted to 20 dB above 1 $\mu$ V, the signal/noise ratio shall be at least 10 dB.

**7. A.G.C. Threshold**—"a.g.c. threshold" shall be defined as the input level of a Class A2 test signal at which a 1 dB change of output results from a 2 dB change of input.

**8. Automatic Gain-control**—(1) The receiver shall be fitted with an automatic gain control capable of efficient operation on Classes A2 and A3 signals.

(2) With a Class A2 test signal at 20 dB above 1 $\mu$ V, the a.g.c. threshold adjusted to 20 dB above 1 $\mu$ V, and the audio-frequency gain controls adjusted to give an audio-frequency output of 50 mW, then—

(a) An increase in input level of 30 dB shall result in a signal/noise ratio of at least 30 dB;

(b) An increase in input level of 80 dB shall not increase the output level by more than 10 dB.

**9. Blocking**—With a wanted signal of Class A2 of frequency 2182 kHz, at a level of 60 dB above 1 $\mu$ V, the a.g.c. threshold adjusted to any value between the limits 20 dB and 55 dB above 1 $\mu$ V and the audio-frequency gain controls adjusted to give an audio-frequency output of 50 mW, the audio-frequency output shall not change by more than 3 dB when a signal of Class A1 and of frequency of 2142 kHz or 2222 kHz is applied to the receiver at a level of 100 dB above 1 $\mu$ V.

**10. Cross Modulation**—(1) The receiver shall be adjusted with the a.g.c. threshold at any value between the limits 20 dB and 55 dB above 1 $\mu$ V, to give an output of 50 mW with an input signal of Class A2 at a level of 60 dB above 1 $\mu$ V and of frequency 2182 kHz. The modulation only of this signal shall then be switched off.

(2) The simultaneous application of a Class A2 input signal at a level of 100 dB above 1 $\mu$ V and of frequency 2142 kHz or 2222 kHz shall not produce an output of more than 50 $\mu$ W.

**11. (1)** For this test, the radio-frequency or intermediate-frequency gain controls or both shall be adjusted so that the