

shall normally be regarded as satisfied if the following requirements are met:

- (i) The receiver shall be placed centrally in a screened earthed enclosure of dimensions at least 1.8 m cube:
- (ii) The earth terminal of the receiver shall be connected to the inside of the screen:
- (iii) 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:
- (iv) The receiver shall be energised and headphones connected:
- (v) 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.

**(8) Testing Device—**

(a) For the purposes of regularly testing the equipment, it shall include a generator pre-tuned to a frequency within  $\pm 3$  of 500 kHz and a manual key of a non-locking type. With their aid, it shall be possible to inject into the receiver an alarm signal of the following characteristics:

Class of Signal	Equivalent Input Level*
Class A1	Within the range 37 to 43 dB above 1 $\mu$ V.

\*Equivalent to this voltage in series with the dummy aerial.

(b) The method of injection shall be such that this test signal will not operate the alarm when the aerial itself is disconnected:

(c) In addition, it shall be possible to increase the input level of this signal by approximately 20 dB with the aid of a non-locking switch:

(d) Means shall be provided whereby this test can be carried out with the automatic keying device†.

**(9) Monitoring Facilities—**

(a) The receiver shall have provision for headphone and loudspeaker reception of Class A2 signals, and shall meet the requirements of paragraphs (b) and (c) of this subclause with a Class A2 input signal at a frequency of 500 kHz, at any and every input level in the range 40 to 120 dB above 1  $\mu$ V:

(b) For the purpose of headphone reception, the receiver shall be capable of producing an output of at least 1 mW into a resistance substantially equal to the modulus of the impedance of the headphones at 1000 Hz:

(c) For the purpose of loudspeaker reception, the receiver shall be capable of producing an output of at least 50 mW into a resistance substantially equal to the modulus of the impedance of the loudspeaker at 1000 Hz:

(d) The loudspeaker shall be rendered inoperative when reception is by headphone:

(e) Manual control of audio-frequency gain, effective on both headphone and loudspeaker reception, shall be provided:

(f) The adjustment of any control provided to meet the requirements of paragraph (e) of this subclause and the connection or disconnection of the headphones and the loudspeaker shall not affect the performance of the automatic alarm.

**6. Selector—**

(1) **Timing Limits—**The selector, in conjunction with the receiver, shall—

- (a) Accept—

- (i) Dashes of from 3.5 seconds' to 6.0 seconds' duration:
- (ii) Spaces between dashes of from not more than 0.01 second to 1.5 seconds' duration; and
- (b) Reject—
  - (i) Dashes of 3.4 seconds' or less duration:
  - (ii) Dashes of 6.2 seconds' or greater duration:
  - (iii) Spaces between dashes of 1.6 seconds' or greater duration.

Timing controls, where provided, shall be preset controls not available at the exterior of the equipment.

(2) Operation—Only after correct registration of a chosen number of consecutive dashes of the alarm signal shall the selector actuate the audible alarms. The chosen number of consecutive dashes shall be either three or four. Correct registration of the fourth consecutive dash may include any time of duration of the fourth dash greater than 3.5 seconds.

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

**8. Additional Safeguards to be Incorporated if the Equipment Includes Semiconductor Devices—**If semiconductor devices are incorporated in the equipment, the following requirements shall be met:

(a) The maker's maximum ratings for each type of semiconductor device used shall not in any respect be disregarded. In particular, the semiconductor devices shall be such that, under all conditions of service referred to in clause 3 of this Schedule, the maker's recommended maximum junction temperature is never exceeded:

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

(c) When the equipment 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 the semiconductor devices from damage due to r.f. energy.

**9. Field Tests—**(1) General—The equipment shall be installed and operated for 28 days in an area where signal interference on 500 kHz is known to be severe. The aerial used for these tests shall be similar to a ship's normal medium-frequency aerial.

(2) Response to Test Alarm Signals—To test the reliability of operation of the equipment under practical interference conditions, a test alarm signal of carrier frequency 500 kHz and of Class A1 or A2 shall be injected once per hour. The response of the equipment to these test shall be to the satisfaction of the type-testing authority.

(3) False Alarms—During the test period specified in subclause (1) of this clause, the equipment shall not respond to signals other than the alarm signal or locally generated test alarm signals, provided the received signals do not in fact constitute a signal falling within the tolerance limits indicated in clause 6 (1) of this Schedule.

**10. Tests—General—**(1) The laboratory tests shall normally be carried out at the manufacturer's works, but may be carried out at a place specified by the type-testing authority. In the former case, the manufacturer shall have available all the apparatus required for the laboratory tests. In the latter case, the manufacturer shall be responsible for packing and