

at any time in order to permit immediate hand keying of the transmitter.

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

7. 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 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) The semiconductor devices shall not be damaged by a sustained increase in power supply voltage of 25 percent relative to the nominal supply 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 VI

Radiotelegraph Loudspeaker Watchkeeping Receiver

1. Scope of Specification—This specification covers the minimum performance of a receiver for loudspeaker watchkeeping suitable for use in ships compulsorily fitted for Radiotelegraphy and, as such, may form the basis for type-testing.

This specification shall be assumed to cover, in addition to the receiver proper, all equipment necessary for its operation, but not the source of electrical energy or the aerial system with which the receiver is associated.

2. General—(1) The receiver shall be fixed in tune, and shall provide loudspeaker reception of Class A2 emissions on frequencies in the range 496 to 504 kHz.

(2) The loudspeaker watch receiver facilities may be incorporated in a reserve receiver or a radiotelegraph automatic alarm equipment provided the requirements of clause 17 of this Part of this Schedule are met.

(3) All parts and wiring in which the direct and alternating voltages (other than radio-frequency voltages) combine to give an instantaneous voltage greater than 250 volts shall be protected against accidental access, and shall be isolated automatically from all sources of electrical energy when the means of protection are removed.

All parts and wiring in which the direct and alternating voltages (other than radio-frequency voltages) combine to give an instantaneous voltage greater than 50 volts shall be protected against accidental access.

(4) If the receiver is designed for operation only from a battery of secondary cells, the requirements of this specification shall be met for a range of supply voltage variations from plus 5 to minus 10 percent relative to the nominal battery voltage.

If the receiver is designed for operation from a ship's main supply of electrical energy which is not a battery of secondary cells, 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.

(5) The receiver shall be fitted with a manual gain control.

(6) The only controls available at the exterior of the receiver shall be

(a) The manual gain control; and

(b) An on-off switch if required; and

(c) Controls provided under the conditions specified in clause 17 of this Part of this Schedule.

(7) The receiver shall be provided with automatic gain control. The receiver shall be tested with the automatic gain control operative unless otherwise specified.

(8) The receiver shall not cause the ship's mains to be earthed.

3. Climatic and Durability Tests—Except where otherwise stated, the receiver shall meet the requirements of this specification when tested under the conditions specified in the "Climatic and Durability Testing of Marine Radio Equipment" applicable to class B equipment.

4. Standard Output Level—The standard audio-frequency output level shall be 50 mW into a resistance substantially equal to the modulus of the impedance of the loudspeaker at 1000 Hz.

5. Method of Test—(1) A Class A2 test signal shall, unless otherwise specified, be at a frequency of 500 kHz, and shall be modulated 30 percent at 1000 Hz.

(2) The dummy aerial employed for testing shall consist of a 10 ohm non-inductive resistor in series with a capacitor having any and every value between—

(a) 200 and 750 pF; or

(b) 200 and 600 pF if the receiver is combined with a reserve receiver; or

(c) 300 and 750 pF if the receiver is combined with a radiotelegraph automatic alarm equipment.

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

6. Selectivity—The selectivity preceding the final detector shall satisfy the following requirements with the automatic gain control inoperative.

Frequency kHz	Discrimination (db Relative to Maximum Response)
496 to 504	Not more than 3
Below 487 and above 513	At least 40
Below 475 and above 525	At least 80

7. Sensitivity and Signal/Noise Ratio—The standard output level shall be obtainable with a Class A2 input signal at a level of 40 dB above 1µV.

The signal/noise ratio shall be at least 20 dB under these conditions.

8. Automatic Gain Control—When the receiver is adjusted to give the standard output with a Class A2 test signal at a level of 40 dB above 1µV, an increase in input of 50 dB shall not increase the output by more than 10 dB.

9. Blocking—The receiver shall be adjusted for standard output with an input wanted signal of Class A2 at a level of 60 dB above 1µV. The simultaneous application of a Class A1 input signal at a level of 100 dB above 1µV and at a frequency of 480 kHz or 520 kHz shall not cause a change in output exceeding 3 dB.

10. Cross Modulation—The receiver shall be adjusted and an input wanted signal applied as described in clause 9 of this Part of this Schedule and the modulation only of the signal then switched off.

The simultaneous application of a Class A2 input signal of level 90 dB above 1µV and frequency 480 kHz or 520 kHz