

within 15 seconds of a sustained failure to rotate, but shall not be actuated should the mechanism fail to rotate for a period shorter than three seconds. However, where this mechanism is energised directly from a battery, the audible alarms shall be actuated within 15 seconds of a failure of the mechanism to rotate.

(5) The equipment shall not require manual resetting unless the audible alarms have been actuated.

(6) (a) The equipment shall include a manual resetting device so that the selector unit can be reset after registering a signal falling within the tolerance limits indicated in clause 6 (1) of this Schedule:

(b) The equipment shall include a non-locking device whereby the bridge bell and the radio officer's cabin bell can be disconnected without affecting the operation of the radio-room bell:

(c) The power circuit provided to operate the audible alarms, as required by subclause (2) of this clause shall be controlled by the switch which brings the equipment into operation:

(d) No other switch shall be fitted for the purpose of deenergising the audible alarms once they have been actuated:

(e) The control for each of the devices referred to in paragraphs (a) to (c) of this subclause shall be clearly labelled to show its purpose.

(7) It is recognised that certain requirements of this clause cannot be met if there is a failure of the reserve source of energy itself.

**5. Receiver**—(1) General (a) The receiver shall be suitable for the reception of emissions of Class A1, and of Classes A2 and B having a note frequency between 400 and 1400 Hz, the carrier wave being in the frequency range 496 to 504 kHz:

(b) Apart from preset controls required for the initial adjustment of the receiver by the manufacturer or installer, no tuning controls shall be provided. Gain controls which affect the operation of the automatic alarm equipment as such shall, where provided, be preset controls not available at the exterior of the equipment.

(2) Method of Test:

(a) When Class A2 signals are employed for testing, they shall, unless otherwise specified, be modulated to a depth of 70 percent at 1000 Hz:

(b) 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 300 and 750 pF:

(c) Input signal levels, unless otherwise specified, refer to the input injected in series with the dummy aerial.

(3) Selectivity—(a) The radio-frequency response of the receiver shall be uniform to within 3 dB in the frequency band 496 to 504 kHz:

(b) The discrimination at all frequencies below 487 kHz and above 513 kHz shall be at least 40 dB relative to the response at 500 kHz:

(c) The equipment shall respond reliably to a test alarm signal of frequency 500 kHz and of Class A1 or Class A2, at all input level of 42 dB above 1 $\mu$ V, in the presence of another signal having the following characteristics:

Class of Emission	Modulation Frequency	Modulation Depth	Carrier Frequency	Input Level (dB above 1 $\mu$ V)
A1 A2	Any audio frequency in the range 50 to 1,400 Hz	70%	Below 475 kHz and Above 525 kHz	120 dB

(4) Sensitivity and Control of Gain—(a) The sensitivity of the equipment is to be measured as the minimum input level of a test alarm signal on 500 kHz which reliably operates the selector, and shall be such that the selector will be operated by

injection of a signal from the testing device described in subclause (8) of this clause:

(b) In order that the equipment shall distinguish an alarm signal in the presence of interfering signals, automatic control of receiver gain shall be provided:

(c) (i) The automatic gain control shall steadily reduce the sensitivity of the equipment during the periods when the selector is continuously operated. The rate of reduction may be permitted to vary with sensitivity between the limits 7.5 to 15 dB per minute for a range of sensitivity of 40 to 70 dB above 1 $\mu$ V. The rate of change of sensitivity shall not lie outside the specified rates, however much the input level of an applied signal is above the minimum necessary to operate the selector:

(ii) The automatic gain control shall steadily increase the sensitivity of the equipment during the periods when the selector is not operated to a maximum value of between 35 and 40 dB above 1 $\mu$ V. The rate of increase may be permitted to vary with sensitivity between the limits 30 to 60 dB per minute for a range sensitivity of 40 to 70 dB above 1 $\mu$ V. The rate of change of sensitivity shall not be outside the specified rates, however much the input level of an applied signal is below the value corresponding to the threshold of selector release:

(iii) The automatic gain control shall meet the following performance test:

*Method of Simulating Morse Interference*—Morse interference shall be simulated by continuous keying of a test signal of frequency 500 kHz and input level 100 dB above 1 $\mu$ V, with a mark-to-space ratio of 19 to 1. The variation of frequency of interruption of this test signal shall be obtained by varying the speed of its transmission.

*Performance of Automatic Gain Control*—With the speed of transmission of the test signal arranged so that there are three interruptions per second, the sensitivity of the receiver shall not be reduced below the value necessary for the reception of a signal of input level 40 dB above 1 $\mu$ V. With the speed of transmission of the test signal arranged so that there are three interruptions in two seconds, the sensitivity of the receiver shall be progressively reduced during a period of 15 minutes to a value such that a signal of at least 70 dB above 1 $\mu$ V is required to operate the selector:

(d) In addition to the automatic gain control hereinbefore specified, a preset manual control of receiver gain may be provided. The range of sensitivity variation provided by this control shall be not more than 10 dB.

(5) Overload—Reliable registration of a test alarm signal of any frequency between 496 and 504 kHz and at an input level of 50 dB above 1 $\mu$ V shall take place in the presence of an interfering signal. The interfering signal shall be of any frequency in the range 496 to 504 kHz, at an input level of 120 dB above 1 $\mu$ V, either unmodulated or modulated to a depth of 70 percent by any audio-frequency in the range 400 to 1400 Hz, and keyed at not less than 15 w.p.m. and not more than 40 w.p.m.

(6) Intermodulation—The simultaneous application of any two signals, whose frequency difference or sum falls in the range 496 to 504 kHz, shall not operate the selector. One of these signals shall be a continuous carrier wave and the other shall be a continuous carrier wave modulated to a depth of 70 percent by any audio-frequency in the range 400 to 1400 Hz. Each signal shall be at an input level of 120 dB above 1 $\mu$ V, and neither signal shall fall within the range 475 to 525 kHz.

(7) Radiation—

(a) This subclause is not applicable when the testing device prescribed in subclause (8) of this clause is being operated:

(b) The receiver shall not, in normal service, produce a field exceeding 0.1  $\mu$ V/metre at a distance of 1 nautical mile. This