

1973/46



**THE FISHING BOAT RADIO RULES 1971,
AMENDMENT NO. 1**

DENIS BLUNDELL, Governor-General
ORDER IN COUNCIL

At the Government Buildings at Wellington this 5th day of March 1973

Present:

THE HON. N. E. KIRK PRESIDING IN COUNCIL

PURSUANT to the Shipping and Seamen Act 1952, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following rules.

RULES

1. Title and commencement—(1) These rules may be cited as the Fishing Boat Radio Rules 1971, Amendment No. 1, and shall be read together with and deemed part of the Fishing Boat Radio Rules 1971* (hereinafter referred to as the principal rules).

(2) These rules shall come into force on the date of their notification in the *Gazette*.

2. Interpretation—Rule 2 of the principal rules is hereby amended by adding to the part headed “In relation to emissions and signals” the following paragraphs:

“(d) ‘Class A3A’ means single sideband, reduced carrier, amplitude modulated telephony:

“(e) ‘Class A3H’ means single sideband, full carrier, amplitude modulated telephony:

“(f) ‘Class A3J’ means single sideband, suppressed carrier, amplitude modulated telephony.”

3. Provision for radio installations—The principal rules are hereby further amended by revoking rule 6, and substituting the following rule:

“6. (1) Every fishing boat of Class I or Class II shall be provided with a radiotelephone installation, which shall include the equipment specified in Parts I, II, and III of the Second Schedule to these rules.

“(2) In the case of a radiotelephone installation existing on a fishing boat of Class I or Class II on the 1st day of January 1973, the equipment shall be deemed to comply with the requirements of Part I of the Second Schedule to these rules until 1 January 1982, provided it remains in satisfactory operating condition and the effective range is determined in accordance with rule 12 (3) of these rules.

“(3) Nothing in subclause (1) or subclause (2) of this rule shall require the provision of the loudspeaker watchkeeping receiver described in Part III of the Second Schedule to these rules, provided the radiotelephone watch required by rule 16 of these rules can be maintained on the radiotelephone receiver required by Part I of the Second Schedule to these rules.

“(4) In the case of any class of New Zealand fishing boats which, at the commencement of this rule, are not subject to survey under the provisions of the Act, the provisions of rule 6 hereof shall apply, as if the date of commencement of this rule was the same as the date on which that class of fishing boats becomes subject to survey, and the transitional provisions of the First Schedule to these rules shall extend for a period of 12 months from the last-mentioned date.

“(5) Every radiotelephone installation provided in compliance with this rule shall be firmly secured to the structure of the ship so as not to be displaced by the motion of the ship.”

4. Range of transmitters—Rule 12 of the principal rules is hereby amended by omitting from the proviso to subclause (3) the words “Part I (A) or Part I (B), respectively,” and substituting the words “Part I”.

5. Miscellaneous requirements—Rule 14 of the principal rules is hereby amended by adding the following subclause:

“(5) Where the transmitter is fitted with an indicator of aerial current which does not accurately measure the current in amperes, the installation shall be such that the aerial terminal on the transmitter shall be readily accessible so as to enable the connection of an external current meter.”

6. Exemptions—Rule 19 of the principal rules is hereby amended by adding the following subclause:

“(3) Where these rules require that a particular fitting, material, appliance or apparatus, or type thereof, shall be fitted or carried in a ship, or that any particular provision shall be made, the Secretary may permit any other fitting, material, appliance, or apparatus, or type thereof to be fitted or carried, or any other provision to be made in that ship, if he is satisfied that that other fitting, material, appliance, or apparatus, or type thereof, or provision, is at least as effective as that required by these rules.”

7. Radiotelephone installation—(1) The First Schedule to the principal rules is hereby amended—

(a) By inserting in clause 2, after the word “existing”, the words “or new”:

(b) By omitting from clause 2 the figures “1972”, and substituting the figures “1974”.

(2) The second Schedule to the principal rules is hereby amended by revoking Parts I (A) and I (B), and substituting the Part I set out in the First Schedule to these rules.

(3) Part II of the Second Schedule to the principal rules is hereby amended by omitting from paragraph (b) of subclause (3) of clause 3 the word “separately”.

8. Climatic and durability tests—The principal rules are hereby further amended by revoking the Third Schedule, and substituting the Third Schedule set out in the Second Schedule to these rules.

SCHEDULES

FIRST SCHEDULE Rule 6 (1)

PART I OF SECOND SCHEDULE TO PRINCIPAL RULES

“PART I Rule 6 (1)”

“MAIN RADIOTELEPHONE INSTALLATION FOR CLASS I AND CLASS II FISHING BOATS

1. *Scope*—This Schedule covers the minimum performance of a single-sideband radio transmitter and receiver, suitable for use in fishing boats compulsorily fitted for radiotelephony and, as such, may form the basis for type-testing. This Schedule shall be assumed to cover, in addition to the transmitter and receiver proper, all equipment necessary for their operation but not the source of electrical energy or the aerial system with which the equipment is associated.

2. *Definitions*—

(1) *Frequency Definitions*—(a) *Assigned Frequency*—The assigned frequency is defined as the centre of the frequency band assigned to a station.

(b) *Carrier Frequency*—The carrier frequency is defined as a frequency 1,400 Hz below the assigned frequency. Unless otherwise stated, frequencies given in this Schedule are carrier frequencies.

(2) *Emissions*—

(i) A3H—Amplitude-modulated, single-sideband, radiotelephony: full carrier. For class A3H emission, the power of the carrier shall be between 0dB and 6dB below the peak envelope power:

(ii) A3A—Amplitude-modulated, single-sideband, radiotelephony: reduced carrier. For class A3A emission, the power of the carrier shall be 16 ± 2 dB below the peak envelope power:

(iii) A3J—Amplitude-modulated, single-sideband, radiotelephony: suppressed carrier. For class A3J emission, the power of the carrier shall be 40dB or more below the peak envelope power.

(3) *SINAD*—The SINAD ratio is defined as the ratio of the signal plus noise plus distortion to noise plus distortion expressed in decibels.

3. *Mechanical and Electrical Design*—(1) *General*—

(a) 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 fishing boats at sea:

(b) All parts and wiring in which the direct or alternating voltages or both (other than radio-frequency voltages) combine to give an instantaneous voltage greater than 50 V shall be

FIRST SCHEDULE—*continued*

protected against accidental access, and shall be isolated automatically from all sources of electrical energy when the means of protection are removed. Alternatively, the equipment shall be so constructed that access to such voltages may be gained only using a tool, such as a spanner or screwdriver, and warning labels shall be prominently displayed both within the equipment and on protective covers:

- (c) Means shall be provided for earthing the case of the equipment, but the equipment shall not cause the ship's mains to be earthed:
 - (d) The design shall be such that all parts are readily accessible for maintenance:
 - (e) Provision shall be made for protecting the equipment from the effects of excessive current and voltage:
 - (f) The equipment shall be so designed and constructed as to ensure that failure of a single component will not cause direct-current high-tension voltage to appear at the aerial terminals.
- (2) *Fire Hazards*—Precautions shall be taken against fire. In particular—
- (a) The use of materials which ignite easily or sustain combustion shall be kept to a minimum and, as far as possible, materials of the fire-proof, non-burning, or slow burning types shall be used:
 - (b) Sufficient space shall be provided around heat-producing components to permit adequate cooling and prevent damage to adjacent components. Where necessary, ventilation shall be aided by means of splash-proof louvres or vents.
- (3) *Component Ratings*—All components used in the equipment shall operate within manufacturer's ratings under normal operating conditions; but, in the case of semiconductors, the following conditions apply:
- (a) Under all conditions of service, 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 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 15 percent relative to the Standard Test Voltage:
 - (d) Means shall be incorporated for the protection of the semiconductor devices from damage due to the accidental reversal of power supply polarity:
 - (e) Although it is not practicable to specify the intensity of radio frequency fields which may be encountered, attention is drawn to the need for screening and filtering to protect the semiconductor devices from damage due to radio frequency energy.

FIRST SCHEDULE—*continued*4. *Operational Requirements*—(1) *Class of Emission and Operating Frequencies*—

(a) *Transmitter*—The transmitter shall be capable of A3H operation on 2,182 kHz and shall also be capable of—

(i) For Class I fishing boats, A3H and A3J operation on at least 6 other frequencies:

(ii) For Class II fishing boats, A3H and A3J operation on at least 4 other frequencies,—

as specified by the Director-General of the Post Office, in the Maritime Mobile Bands between 1,605 kHz and 6,525 kHz, except that after the 1st day of January 1978 A3H emissions shall be limited to frequencies below 4 MHz and after the 1st day of January 1982 A3H emissions shall be limited to 2,182 kHz only.

Transmitters for installation in Class I and Class II fishing boats wishing to participate in the Public Correspondence Service shall also provide for transmission of type A3A emissions:

(b) *Receiver*—The receiver shall be capable of receiving A3, A3A, A3H, and A3J signals in the Maritime Mobile Bands within the range 1,605 to 6,525 kHz. This requirement shall be met by spot frequency reception on 2,182 kHz together with facilities for operation on at least 6 other spot frequencies for Class I fishing boats and at least 4 other spot frequencies for Class II fishing boats.

Reception of A3A emissions by a receiver operating in the A3J mode shall be acceptable.

Envelope detection shall be used for reception of 2,182 kHz.

(2) *Frequency Selection*—Single-frequency and two-frequency simplex operation shall be possible.

(3) *Power Supply*—The equipment shall be capable of being operated from the source or sources of electrical energy required by these rules for a radiotelephone installation.

(4) *Receiver Output*—The receiver shall have provision for loud-speaker reception.

(5) *Sideband*—The upper sideband only shall be used.

(6) *Transmitter Controls*—The transmitter shall comply with the following requirements in regard to the number and type of external controls:

(a) Selection of the frequency of 2,182 kHz shall be by not more than 2 controls. For frequencies other than 2,182 kHz, more than 2 controls may be used only in the case of generation of the frequencies by means of an unprogrammed synthesiser or similar device:

(b) Unless aerial tuning is automatic, a fine-tuning control shall be provided to enable the transmitter to be adjusted to maximum output with any practical combination of aerial characteristic and frequency. The range of the control must not permit tuning to any spurious frequency derived from the frequency of operation:

FIRST SCHEDULE—*continued*

- (c) A non-locking control shall be provided to enable radiation of 1 or more frequencies for tuning purposes:
- (d) A power reduction control shall be provided to enable reduced power operation as required by clause 6 (8) of this Schedule:
- (e) The control or controls which select 2,182 kHz shall be clearly and distinctly marked, and a positive indication that 2,182 kHz has been correctly selected shall be given:
- (f) It shall be possible by means of a single control to change from any type of emission to any other type for which the transmitter has been designed to operate, except that on 2,182 kHz selection of the A3H mode shall be automatic. The positions on the switch shall be clearly and distinctly marked:
- (g) A control to switch the equipment on and off (with the exception of heating circuits as provided for in subclause (9) of this clause) shall be provided. This control may have a standby position:
- (h) A special control for the disconnection of heating circuits from the power supply as provided for in subclause (9) of this clause may be provided:
- (i) If additional controls are provided, they shall be for use only for transmission in frequency bands additional to that required in subclause (1) of this clause or for operation of the alarm signal generator specified in Part II (A) of this Schedule or for both purposes.

(7) *Receiver Controls—*

- (a) Selection of the frequency of 2,182 kHz shall be by not more than 2 controls. For frequencies other than 2,182 kHz, more than 2 controls may be used only in the case of selection of the frequencies by means of an unprogrammed synthesiser or similar device:
- (b) The control or controls which select 2,182 kHz shall be clearly and distinctly marked, and a positive indication that 2,182 kHz has been correctly selected shall be given:
- (c) It shall be possible, by means of a single control, to change from reception of any type of emission to any other type for which the equipment has been designed to operate, except that on 2,182 kHz selection of the A3/A3H mode shall be automatic. The positions on the switch shall be clearly and distinctly marked:
- (d) The receiver shall be fitted with a clarifier (a fine-tuning control to adjust slightly the nominal tune frequency of the receiver). The tuning range of the clarifier shall be within 250 ± 50 Hz above and below the setting determined in clause 7 (11) of this Schedule. The rate of adjustment of the clarifier control shall not exceed 3 Hz per degree of rotation. The frequency of the transmitter shall not be affected by operation of the receiver clarifier control, and when the receiver is switched for A3H reception the clarifier shall be disconnected:
- (e) If an externally adjustable aerial tuning control is provided, the receiver shall meet the requirements of this Schedule on any frequency in the Maritime Mobile Bands between 1,605 kHz and 6,525 kHz, irrespective of the setting of this control:

FIRST SCHEDULE—*continued*

- (f) If a device is fitted to reduce the effect of impulsive noise, it shall be fitted with an on-off switch:
 - (g) A manual audio gain control shall be provided:
 - (h) A control to switch the receiver on and off, with a standby position if desired, shall be provided.
- (8) *Size of Controls*—All controls shall be of such size as to permit normal adjustments to be performed by a person wearing thick gloves.
- (9) *Warming-up Period*—
- (a) The equipment shall be operational 1 minute after switching on. It shall meet the requirements of this Schedule after 5 minutes, except as provided in paragraph (b) of this subclause:
 - (b) If the equipment includes parts which require to be heated for longer than 5 minutes in order to operate correctly, for example crystal ovens, then those parts can be allowed a warming-up period of up to 30 minutes from the instant of application of power to them. After this, the rest of the equipment shall be switched on and the requirements of this Schedule shall be met:
 - (c) Where paragraph (b) of this subclause is applicable, the power supplies to the heating circuits shall be arranged so that they can remain operative when other supplies to the equipment or within the equipment are switched off. It shall, however, be possible, for maintenance or emergency purposes, readily to disconnect such circuits from the power supply by an approved method. If a special switch for these circuits is provided on the equipment, the function of the switch shall be clearly indicated, and the operating instructions shall state that the circuits should normally be left connected to the supply voltage; a visual indication that power is connected to such circuits shall be available on the front panel; if necessary, an indicator shall be provided specially for this.
- (10) *Frequency Adjustment*—
- (a) It shall be possible to change the transmitter from operation on any frequency to operation, within the terms of this Schedule, on any other frequency specified in subclause (1) of this clause in a period not exceeding 20 seconds:
 - (b) It shall be possible to change the receiver from operation on any frequency to operation, within the terms of this Schedule, on any other frequency specified in subclause (1) of this clause and reduce the frequency error in the A3J and A3A modes to less than 30 Hz in not more than 30 seconds, except that it shall be possible to set the receiver to 2,182 kHz in not more than 10 seconds.
- (11) *Transmitter Meters*—
- (a) The transmitter shall incorporate an indicator of aerial current. Failure of this indicator shall not disconnect the aerial:
 - (b) Other indicators or meters shall be included, as necessary, to enable the transmitter to be checked and adjusted.

FIRST SCHEDULE—*continued*

(12) *Alarm Signal Generating Device*—The transmitter shall provide facilities for readily using, by approved means, the radiotelephone alarm signal generating device. The performance requirements for this device are listed in Part II (A) of this Schedule.

(13) *Automatic Delay*—If it is necessary to delay the application of power to any part of the transmitter after switching on, the delay shall be provided automatically.

(14) *Facilities for Two-Way Communication*—

- (a) For simplex operation, the equipment shall be capable of being changed rapidly from 'transmit' to 'receive' and vice versa:
- (b) A non-locking switch shall be provided for transmit-receive switching, which, in its normal position, leaves the equipment in the receive condition with the loudspeaker in operation. When the equipment is in the transmit condition, the microphone shall be in circuit and the loudspeaker shall be disconnected automatically.

5. *Standard Test Conditions*—(1) *General*—Standard test conditions are those conditions which shall apply for the purpose of testing the equipment for the minimum requirements of this Schedule. They are identified throughout this Schedule by initial capital letters and are defined in the following subclauses.

(2) *Test Voltage*—The Standard Test Voltage shall be the voltage applied to the primary supply input terminals of the equipment. For lead-acid battery operated equipment, it shall be 2.2 volts per cell, and for equipment operated from a supply other than lead-acid batteries it shall be within plus and minus 2 percent of the value stated by the manufacturer to be the nominal supply voltage.

(3) *Extremes of Supply Voltage*—The equipment shall meet the requirements of this Schedule, unless otherwise stated, for a supply voltage variation of plus 10 percent and minus 15 percent relative to the Standard Test Voltage for equipment operated from a battery of secondary cells, and plus and minus 10 percent relative to the Standard Test Voltage for equipment operated from a supply other than a battery of secondary cells.

(4) *Ambient Air Temperature*—For the duration of the tests, the Standard Ambient Air Temperature shall be between 15°C and 30°C except when otherwise specified herein.

(5) *Climatic and Durability Tests*—Except where otherwise stated herein, the equipment shall meet the requirements of the vibration, dry heat, damp heat, corrosion, and low temperature tests specified in the Third Schedule to these rules.

The following tests shall be included in the performance checks:

- (a) Transmitter Power Output—clause 6 (7):
- (b) Transmitter Frequency Error—clause 6 (2) (a):
- (c) Transmitter Frequency Variation due to Vibration—clause 6 (2) (c)—Vibration test only:
- (d) Transmitter Unwanted Emissions—clause 6 (5):
- (e) Receiver Sensitivity—clause 7 (3):
- (f) Receiver Audio Output—clause 7 (6):
- (g) Receiver Frequency Error—clause 7 (11) (a):
- (h) Receiver Frequency Variation due to Vibration—clause 7 (11) (c).

FIRST SCHEDULE—continued

(6) *Transmitter Modulation*—For standard tests the transmitter shall be modulated to—

(a) A depth of 25 percent for A3H emissions (sideband power of 12dB below the carrier power):

(b) Produce 25 percent of the rated peak envelope power (see clause 6 (1)) for A3A and A3J emissions,—
when a sinusoidal tone of 1,000 Hz (Standard Test Modulation) is applied at the audio input terminals. The total harmonic distortion of the modulating source shall not exceed 1 percent.

(7) *Transmitter Test Load*—The transmitter Standard Test Load shall be a non-reactive resistor in series with a capacitor. The values of the components of the Standard Test Load for each test frequency are given in the following table:

| | |
|-------------------------|--------------------|
| 1,606 kHz and 2,182 kHz | 10 ohms and 200 pF |
| 4,139.5 kHz .. | 20 ohms and 160 pF |
| 6,213.5 kHz .. | 35 ohms and 150 pF |

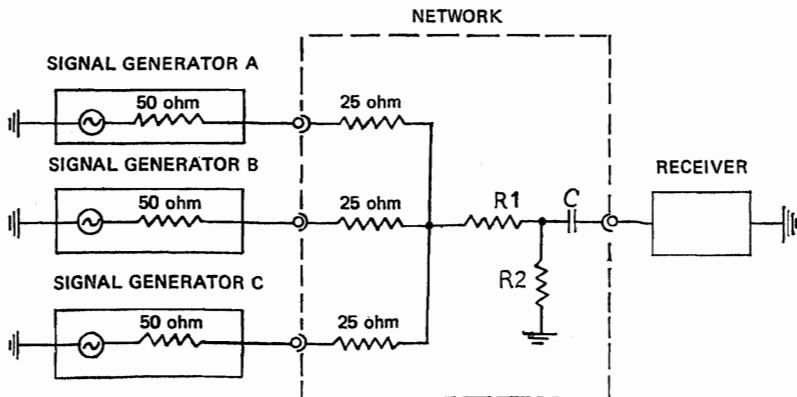
This requirement shall in no way imply that the transmitter should operate satisfactorily into these loads only. The Standard Test Load shall be so designed that the power loss by direct radiation is negligible.

(8) *Receiver Standard Test Signals*—

(a) The Standard Test Signal for use on equipment set for the reception of A3H and A3 emissions shall consist of an A2 signal at the carrier frequency modulated to a depth of 30 percent with a 1,000 Hz tone:

(b) The Standard Test Signal for use on equipment set for the reception of A3A and A3J emissions shall consist of an unmodulated signal (A₀ emission) 1,000 Hz above the carrier frequency.

(9) *Receiver Test Signal Standard Input Network*—The input network is for the application of signals from 1, 2, or 3 signal generators to the input of the receiver, and consists of a screened network as shown below.



FIRST SCHEDULE—*continued*

The values of R1, R2, C, and the network attenuation α for each test frequency are given in the following table:

| Test Frequency | R1 | R2 | C | α |
|-------------------------|--------|--------|--------|----------|
| 1,606 kHz and 2,182 kHz | 70 ohm | 11 ohm | 200 pF | 22 dB |
| 4,139.5 kHz.. .. | 64 ohm | 26 ohm | 160 pF | 18.5 dB |
| 6,213.5 kHz.. .. | 52 ohm | 64 ohm | 150 pF | 15 dB |

If the outputs of less than 3 signal generators are to be applied to the receiver, any unused input shall be terminated with a 50 ohm shielded termination.

(10) *Receiver Power Output*—The Standard Power Output for loud-speaker reception shall be 100 milliwatts measured into a resistance substantially equal to the modulus of the impedance of the loudspeaker at 1,000 Hz, the value of which shall be declared by the manufacturer.

(11) *Standard Test Receiver*—The Standard Test Receiver shall consist of a receiver, suitable for the reception of the relevant class of emission, which complies with clauses 7 (2) and 7 (4) of this Part of this Schedule.

(12) *Test Frequencies*—For the purpose of type-testing, the equipment may be tested on any frequency within the range 1,605 kHz to 6,525 kHz. The normal test frequencies will be 1,606 kHz, 2,182 kHz, 4,139.5 kHz, and 6,213.5 kHz.

6. *Transmitter Performance*—(1) *Power Rating*—The rated peak envelope power of the transmitter shall for the purpose of this Schedule be taken as the maximum peak envelope power of the transmitter as declared by the manufacturer.

The rated peak envelope power of the transmitter shall be not more than 400 watts nor less than 60 watts in the full power condition and not more than 50 watts nor less than 5 watts in the reduced power condition.

(2) *Frequency*—The transmitter shall be operated under Standard Test Conditions, except that A3H and A3A emissions shall be unmodulated. The following conditions shall be met:

(a) *Frequency Error*—The maximum deviation of the output frequency with respect to the nominal carrier or reference frequency, whichever is relevant, shall not exceed ± 100 Hz under any condition of test:

(b) *Short Term Stability*—Over a 15-minute period, at Standard Ambient Temperature and Standard Test Voltage, the difference between the maximum and minimum output frequency shall not exceed 20 Hz:

(c) *Frequency Variation due to Vibration*—During the vibration test (clause 5 (5)), any frequency deviation of the output signal shall be measured using a suitable discriminator and shall not exceed ± 25 Hz.

FIRST SCHEDULE—*continued*

(3) *Overall Modulation Requirement*—The transmitter microphone shall be subjected to a 1,000 Hz sinusoidal sound tone (with less than $2\frac{1}{2}$ percent distortion) at a level, in the plane of the mouthpiece, 94dB above the audio reference level of 2×10^{-5} N/m².

In the A3H mode, the transmitter shall modulate to at least 50 percent (sideband power of 6dB or less below the carrier power).

In the A3J and A3A modes, the measured peak envelope power shall not be more than 6dB below the rated peak envelope power as stated by the manufacturer.

(4) *Transmitter Audio-frequency Response*—The audio-frequency response shall include the close-talking response of the microphone by either suitable acoustic coupling or by adjustment of the level of the signal source replacing the microphone so that it conforms with the measured close-talking response of the microphone.

The audio-frequency response of the microphone and transmitter together shall either—

- (a) Be within plus and minus 7.5dB of a value which rises at the rate of 6dB per octave from 350 to 2,700 Hz; or
- (b) Cover the frequency range 350 to 2,700 Hz with a maximum permissible amplitude variation of 8dB.

In either case, the response relative to the response at 1,000 Hz shall be more than 30dB down at frequencies above 4,000 Hz. During this test the sideband level shall be set low enough to preclude operation of any audio-frequency compression, and the measurement shall be made by observation of the sideband level variation on a spectrum analyser.

(5) *Unwanted Emissions*—

(a) *Definition*—For the purpose of this Schedule, unwanted emissions shall include intermodulation and harmonic products, lower sideband, and spurious emissions:

(b) *Conditions of Test*—The transmitter shall be modulated simultaneously with 2 sinusoidal tones applied to the microphone input terminals at frequencies of 700 Hz and 2,300 Hz, respectively, and at such a level that at Standard Ambient Air Temperature and Standard Test Voltage the following conditions are obtained:

(i) For A3H emissions, at a level such that each tone, if applied separately, would give 25 percent modulation (sideband power of 12dB below the carrier power):

(ii) For A3J and A3A emissions, at a level such that each tone, if applied separately, would give 25 percent of the rated peak envelope power as stated by the manufacturer.

The level of the tones shall then be increased by 14dB.

Following the above procedure, the transmitter shall be operated under Standard Test Conditions with the exception of clause 5 (6) 'Transmitter Modulation'.

(c) *Specified Limits*—The power of any unwanted emission supplied by the transmitter to the antenna transmission line on any discrete frequency shall be in accordance with the following:

FIRST SCHEDULE—*continued*

| Separation, Δ , in kHz Between the Frequency of the Unwanted Emission and the Assigned Frequency | Minimum Attenuation Below Peak Envelope Power (measured) dB |
|---|---|
| $\Delta = 0$ and $\Delta = + 0.7$ | 25 |
| $1.6 < \Delta \leq 4.8$ | 28 |
| $4.8 < \Delta \leq 8.0$ | 38 |
| $8.0 < \Delta$ | 43 |

(6) *Compressor Characteristics*—With the test conditions of subclause (5) (b) of this clause, after increasing the audio frequency input signal by 14dB as a step function, the time taken—

- (a) To reduce the output by 63 percent of the amplitude difference between the initial peak and final value; or
- (b) For the output after the initial peak to reach a level not more than 0.5dB above the final value, whichever is the greater,—shall not exceed 3 milliseconds.

Alternatively the output shall not at any time exceed a value 0.5dB above the final value after the input has been increased by 14dB, in which case the above conditions shall not apply.

If the transient output decreases below the final value, the time taken for the output to increase again to a level not more than 1dB below the final value shall not exceed 100 milliseconds, this time being measured from the time of application of the 14dB level change.

(7) *Power Output*—With the test conditions of subclause (5) (b) of this clause, before and after increasing the audio frequency input signal by 14dB, the measured value of peak envelope power output shall be within the limits + 1dB and - 3dB relative to the rated peak envelope power (subclause (1) of this clause), but not less than 60 watts in the full power condition.

(8) *Reduced Power Operation*—In the reduced power condition, the transmitter shall meet the following requirements at Standard Ambient Air Temperature and Standard Test Voltage:

- (a) Frequency—Subclause (2) of this clause:
- (b) Overall Modulation Requirement—Subclause (3) of this clause:
- (c) Unwanted Emissions—Subclause (5) of this clause:
- (d) Compressor Characteristics—Subclause (6) of this clause:
- (e) Power Output—Subclause (7) of this clause.

(9) *Carrier Level*—

- (a) For Class A3H emission, the power of the carrier shall be between 0 and 6dB below the peak envelope power:
- (b) For Class A3A emission, the power of the carrier shall be 16 ± 2 dB below the peak envelope power:
- (c) For Class A3J emission, the power of the carrier shall be 40dB or more below the peak envelope power.

FIRST SCHEDULE—*continued*(10) *Residual Noise*—

- (a) A3H—The transmitter shall be operated with Standard Test Modulation, and shall be coupled through an attenuator to the Standard Test Receiver tuned to the frequency of the transmitter. The receiver output power shall then be measured with the transmitter in the modulation-on and the modulation-off condition.

The transmitter noise level shall be at least 30dB below the level due to Standard Test Modulation. Due allowance shall be made for the internal noise of the receiver:

(b) A3J and A3A—

- (i) Standard Test Modulation shall be applied to the transmitter:

(ii) The transmitter output shall be coupled via an attenuator to the Standard Test Receiver:

(iii) The receiver shall be tuned to produce a 1,000 Hz tone from the transmitter:

(iv) The level of the transmitter at the receiver input shall be adjusted by means of the attenuator to produce a SINAD ratio of 6dB at the receiver output and the attenuator setting noted:

(v) Modulation shall then be removed from the transmitter:

(vi) The attenuator shall then be adjusted until the transmitter noise-power level at the receiver input is equal to the receiver noise referred to the receiver input terminals.

The ratio of the levels as indicated by attenuator readings under subparagraphs (iv) and (v) of this paragraph shall be not less than 34dB.

(11) *Continuous Operation*—The transmitter shall be modulated in the A3J mode by 2 sinusoidal tones applied to the microphone input terminals at frequencies of 700 Hz and 2,300 Hz, respectively, and at a level such that each tone if applied separately would give 25 percent of the rated peak envelope power. It shall operate at Standard Ambient Air Temperature and Standard Test Voltage under these modulation conditions for a period of 15 minutes without harmful effect and with less than 1dB variation in output power.

(12) *Operation with Aerial Terminals Open-circuited and Short-circuited*—The transmitter, when modulated as required in subclause (11) of this clause, shall be capable of withstanding the effects of open-circuited or short-circuited aerial terminals for a period of 5 minutes. To meet these requirements the operation of a safety device will be permitted, provided it does not occur within 15 seconds of short-circuiting or open-circuiting the aerial terminals. As an alternative, a safety device which operates within 15 seconds will be acceptable, provided it is automatically reset within 60 seconds of removal of the simulated fault condition. A clear indication of the operation of any safety device shall be provided.

7. *Receiver Performance*—(1) *General*—Levels quoted in the following subclauses are values of power in decibels relative to 1 milliwatt (dBm). Any gain control, apart from the audio gain control, shall be set to maximum.

FIRST SCHEDULE—*continued*

The automatic gain control system shall be operative. Where applicable the clarifier shall be set so as to give an audio frequency of 1,000 Hz when the Standard Test Signal is applied. The Standard Input Network shall be used to connect signal generators to the receiver for all tests except under subclause (13) of this clause.

(2) *Selectivity Including De-sensitisation*—The selectivity shall be measured by a 2-signal method in which 2 signal generators 'A' and 'B', are connected through the Standard Input Network to the input of the receiver. With signal generator 'B' switched off in a manner which does not alter its output impedance, the appropriate Standard Test Signal shall be applied to the Standard Input Network from signal generator 'A' at the level required to produce—

(a) For A3H, a SINAD ratio of 12dB at the receiver output when it is adjusted to give Standard Power Output. Signal generator 'B' shall then be switched on and modulated to 30 percent with a 400 Hz tone (A2 emission) and set, alternately, to frequencies—

(i) + 14 kHz:

(ii) - 14 kHz,—

and more removed from signal generator 'A':

(b) For A3J and A3A, a SINAD ratio of 12dB at the receiver output when it is adjusted to give Standard Power Output. Signal generator 'B' shall then be switched on and set, unmodulated, to frequencies—

(i) +2.6 kHz:

(ii) -1.8 kHz,—

and more removed from signal generator 'A'.

When in the above cases, the ratio of the levels of signal generator 'B' to signal generator 'A' is 55dB, either the SINAD ratio (including interference from signal generator 'B') at the output of the receiver shall not be less than 6dB, or the output of the receiver when test signals from both signal generator 'A' and signal generator 'B' are simultaneously applied to its input, shall not fall by more than 3dB below the output obtained when signal generator 'B' is switched off.

(3) *Sensitivity*—The appropriate Standard Test Signal shall be applied to the receiver through the Standard Input Network at sufficient level to give a receiver audio output SINAD ratio of 20dB at the Standard Power Output. For receivers set for the reception of A3H emissions the frequency of the generator of the Standard Test Signal shall then be varied over the range $F_A - 1,400$ Hz to $F_A - 1,800$ Hz, where F_A is the Assigned Frequency.

The level of the Standard Test Signal applied to the Standard Input Network shall not be greater than—

(i) A3H: $(\alpha - 84)$ dBm:

(ii) A3J and A3A: $(\alpha - 90)$ dBm.

(4) *Audio Frequency Response*—

(a) A3H—The appropriate Standard Test Signal shall be applied at a level of $(\alpha - 52)$ dBm to the Standard Input Network. The receiver shall be adjusted to give Standard Power Output. The frequency of the modulating signal shall then be varied and the output power measured.

FIRST SCHEDULE—*continued*

The permitted amplitude variation of the measured output signal power shall be 6dB in the range of 350 Hz to 2,700 Hz.

- (b) A3J—Two signal generators, 'A' and 'B', shall be connected to the Standard Input Network. With signal generator 'B' switched off in a manner which does not alter its output impedance, the appropriate Standard Test Signal shall be applied to the Standard Input Network from signal generator 'A' at a level of $(\alpha - 52)$ dBm. The clarifier shall be adjusted to give an audio frequency output of 1,000 Hz and the receiver shall be adjusted to give Standard Power Output. Signal generator 'B' shall then be switched on and set, unmodulated, to frequencies in the range $F_A - 1,400$ Hz to $F_A + 1,600$ Hz (where F_A is the Assigned Frequency) and at a level 10dB below signal generator 'A'. The receiver output power due to signal generator 'B' shall be measured.

The permitted amplitude variation of the measured output signal power shall be 6dB in the range 350 Hz to 2,700 Hz.

- (5) *Distortion*—The Standard Test Signal at a level of $(\alpha - 25)$ dBm shall be applied to the Standard Input Network, and the receiver shall be adjusted to give 2 watts of audio-frequency output. The total distortion of the audio-frequency output voltage plus noise shall not exceed 10 percent of the audio-frequency output when measured with a distortion factor meter.

- (6) *Audio Output*—The receiver shall produce at least 2 watts of audio-frequency output measured into a resistance substantially equal to the modulus of the impedance of the loudspeaker at 1,000 Hz when the Standard Test Signal is applied to the Standard Input Network at a level of $(\alpha - 82)$ dBm for A3H emissions and $(\alpha - 88)$ dBm for A3A and A3J emissions.

- (7) *Automatic Gain Control*—The automatic gain control shall be such that when the receiver is adjusted to give Standard Power Output with a Standard Test Signal applied to the Standard Input Network of $(\alpha - 89)$ dBm for A3H and $(\alpha - 95)$ dBm for A3J and A3A emissions, an increase in Standard Test Signal level of 60dB in either case does not vary the receiver output by more than 10dB.

- (8) *Blocking*—Two signal generators, 'A' and 'B', shall be connected to the input of the receiver through the Standard Input Network. With signal generator 'B' switched off in a manner which does not alter its output impedance, the appropriate Standard Test Signal shall be applied to the Standard Input Network from signal generator 'A' at a level of $(\alpha - 90)$ dBm, and the receiver adjusted for Standard Power Output. The unmodulated signal from signal generator 'B' shall then be applied at various frequencies to the network input at a level of $(\alpha - 30)$ dBm simultaneously with the signal from signal generator 'A'.

A signal applied from signal generator 'B' at any frequency removed from the frequency of signal generator 'A' by 18 kHz and greater shall not cause the output power of the receiver to change by more than 3dB.

FIRST SCHEDULE—*continued*

(9) *Intermodulation*—Three signal generators, 'A', 'B', and 'C' shall be connected to the input to the receiver through the Standard Input Network. The appropriate Standard Test Signal shall be applied to the Standard Input Network from signal generator 'A' alone, and at the level required to produce a SINAD ratio of 12dB at the receiver output. The receiver shall be adjusted to give Standard Power Output. Signal generators 'B' and 'C' shall then be used to apply the signals given in the following table:

| Mode of Reception | Generator | Modulation Frequency (Type A2 Emission 30 percent Modulated) | Frequency Relative to Signal Generator 'A' kHz | |
|-------------------|-----------|--|--|--------|
| | | | Test 1 | Test 2 |
| A3H | B | Zero | +12 | -12 |
| | C | 400 Hz | +24 | -24 |
| A3J and A3A | B | Zero | +6.5 | -5.5 |
| | C | Zero | +12 | -12 |

The outputs of signal generators 'B' and 'C' shall be at the same level, and shall be increased until the SINAD ratio resulting from signal generator 'A' is reduced to 6dB. In the case of measurements on A3H receivers, the frequency of signal generator 'B' shall be adjusted to produce maximum interference due to modulation products including any beat note that may be present. The ratio of the output of signal generator 'B' (or signal generator 'C') to that of signal generator 'A' measures the intermodulation response. Tests shall be repeated with signal generator 'A' set to produce a signal level + 20 and + 40dB relative to that which produces a 12dB SINAD ratio as shown in the following table:

| Output of Signal Generator 'A' (dB) Relative to the Output at which a 12dB SINAD Ratio is Obtained | Output Voltage Ratio of Signal Generator 'B' (or 'C') to Signal Generator 'A' (dB) |
|--|--|
| 0 | +50 |
| +20 | +40 |
| +40 | +30 |

The intermodulation response shall meet the minimum standard shown in the table.

FIRST SCHEDULE—*continued*

(10) *Cross Modulation*—The cross modulation performance of the receiver shall be measured in the A3J mode of operation. Two signal generators, 'A' and 'B' shall be connected to the input of the receiver through the Standard Input Network. The Standard Test Signal shall then be applied to the Standard Input Network from signal generator 'A' alone and at a level of $(\alpha - 67)$ dBm. The receiver shall be adjusted to produce Standard Power Output and a filter connected at the receiver output shall then be adjusted to reject the 1 kHz tone.

Generator 'B' shall then be 30 percent modulated A2 at 400 Hz and applied at a frequency removed 20 kHz from the frequency of generator 'A' and at a level of $(\alpha - 27)$ dBm.

The total unwanted power in the receiver output due to cross modulation shall be at least 20dB below Standard Power Output.

(11) *Frequency*—Measurements shall be made in the A3J mode of operation. The clarifier shall initially be adjusted at Standard Ambient Air Temperature and Standard Test Voltage so that, with the Standard Test Signal applied, the receiver audio output frequency is 1,000 Hz. The setting of the clarifier control shall not be altered during the subsequent tests. The Standard Test Signal shall be applied throughout the tests and the receiver audio output frequency measured.

The measured frequency shall meet the following requirements:

- (a) *Frequency Error*—The maximum deviation of the audio output frequency from its nominal frequency of 1,000 Hz shall not exceed ± 100 Hz under any condition of test:
- (b) *Short Term Stability*—Over a 15-minute period, at Standard Ambient Air Temperature and Standard Test Voltage, the difference between the maximum and minimum output frequency shall not exceed 20 Hz.
- (c) *Frequency Variation due to Vibration*—During the vibration test (clause 5 (5)), any frequency deviation of the output signal shall be measured using a suitable discriminator and shall not exceed ± 25 Hz.

(12) *Spurious Emissions*—

- (a) *Radiation*—Emission by direct radiation from components and wiring of receivers shall be minimised.
- (b) *Emissions at the Aerial Input Terminals*—The mean power of any emission measured in a termination of 20 ohms in series with 160 pF shall not exceed 20 nanowatts (20×10^{-9} watts) at any frequency.

(13) *Receiver Protection*—The receiver shall be capable of withstanding an e.m.f. of 30 volts r.m.s. applied to its aerial terminals via the Standard Test Loads specified in clause 5 (7) of this Part of this Schedule, at any frequency in the Maritime Mobile Bands between 400 kHz and 27.5 MHz for 15 minutes without damage."

Rule 7 **SECOND SCHEDULE**
NEW THIRD SCHEDULE TO PRINCIPAL RULES

Rule 7 **“THIRD SCHEDULE**
“CLIMATIC AND DURABILITY TESTS

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 deckhouse 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

1. *General*—All marine radio equipment submitted for type tests shall be subject to any or all of the tests herein specified, at the discretion of the type-testing authority.

The type-testing authority may, at discretion, agree to vary the sequence of the tests, and may also waive any of the tests specified where the manufacturer is able to provide evidence that the appropriate requirements of this Schedule are met.

2. *Classification of Marine Equipment*—For the purposes of these tests, marine radio equipment shall be divided into two classes, viz., Class B and Class X, as defined in Part I of this Schedule.

3. *Testing Procedure*—(1) The testing sequence shall be as follows:

| Class | Nature of Test |
|------------|---|
| B, X | Visual inspection and performance test. |
| B, X | Inspection under vibration. |
| X | Bump test. |
| B, X | Dry-heat cycle. |
| B, X | Damp-heat cycle. |
| B, X | Low-temperature cycle. |
| X | Rain test. |
| X | Immersion test. |
| B, X | Corrosion test. |
| X | Mould-growth test. |
| B, X | Visual inspection and performance test. |

(2) The sequence given in subclause (1) of this clause shall be followed at least once.

(3) Unless otherwise specified, power shall be supplied to the equipment only during the periods specified for the electrical tests.

(4) Unless otherwise specified in the relevant performance Schedule, the voltage applied to the equipment during the tests shall be the Standard Test Voltage.

SECOND SCHEDULE—*continued*

(5) Class B equipment shall be subjected to Inspection under Vibration, normal range (clause 5 (2) (a)), and shall not be subjected to Inspection under Vibration, extended range (clause 5 (2) (b)).

(6) For Class X equipment, the manufacturer shall have the option of submitting the equipment either to Inspection under Vibration, normal range (clause 5 (2) (a)), and the Bump Test (clause 5 (3)), or as an alternative inspection under Vibration, extended range (clause 5 (2) (b)).

4. *Performance Checks*—Except where otherwise stated, the term 'performance check', as used in this Schedule, shall be taken to mean a shortened form of the test required by the relevant performance Schedule such as could normally be carried out in 5 to 15 minutes. This time does not include any necessary period of preheating in cases where delayed switching is used. Normally the equipment specification shall contain a clause indicating which tests should be given particular attention during the performance check.

5. *Description of Tests*—

(1) Visual Inspection and Performance Test—

Visual inspection shall be carried out to ensure that the equipment is of sound construction. This is to be followed by the performance test in accordance with the relevant performance Schedule.

(2) Inspection under Vibration—

(a) *Normal Range*—The equipment complete with its chassis covers and shock absorbers (if supplied) shall in its normal operating position be clamped to a vibration table, which shall be vibrated at all frequencies between 0 and $12\frac{1}{2}$ Hz with a total excursion of 3.2 mm. The whole frequency range shall be explored in not less than 8 minutes, during which period the equipment shall be kept working continuously. A performance check shall be carried out during the above test.

The procedure may be repeated with vibrations in 3 mutually perpendicular directions.

(b) *Extended Range*—The equipment complete with its chassis covers and shock absorbers (if supplied) shall in its normal operating position be clamped to a vibration table, which shall be vibrated at all frequencies between—

- (i) 0 and $12\frac{1}{2}$ Hz with a total excursion of 3.2 mm:
- (ii) $12\frac{1}{2}$ Hz and 25 Hz with a total excursion of 0.76 mm:
- (iii) 25 Hz and 50 Hz with a total excursion of 0.2 mm.

Each range of frequencies shall be explored in not less than 8 minutes, during which period the equipment shall be kept working continuously. A performance check shall be carried out during the above test.

The procedure may be repeated with vibrations in 3 mutually perpendicular directions.

(3) Bump Test—

(a) The equipment shall be clamped as described in subclause (2) of this clause:

(b) The equipment shall be subjected to not less than 500 bumps at a fixed rate in the range of 1 to 4 bumps per second with a free drop of at least 25 mm. The surface on which

SECOND SCHEDULE—*continued*

the equipment is mounted shall be subjected to a mean peak-deceleration of 40 g (± 4 g). The test shall be followed by a visual inspection, the equipment not being deemed to have failed if only simple repairs need to be carried out:

(c) A performance check shall follow the foregoing test.

(4) Dry-heat Cycle—

(a) Class B Equipment—

(i) The equipment shall be placed in a chamber which is maintained at a constant temperature of $+55^{\circ}\text{C}$ ($\pm 1^{\circ}\text{C}$) for a period of 2 hours. The equipment shall be kept working continuously. Radiotelegraph transmitters shall be arranged to send morse dots. Double sideband radiotelephone transmitters shall be modulated to a depth of 50 percent, and single sideband radiotelephone transmitters shall be adjusted to produce an output 6dB below rated peak envelope power when set to class of emission A3J and driven by 2 equal level audio frequency tones:

(ii) At the end of the 2 hours, the equipment shall be subjected to a performance check at the controlled temperature:

(b) Class X Equipment—

(i) The equipment shall be placed in a chamber which is maintained at a constant temperature of $+70^{\circ}\text{C}$ ($\pm 1^{\circ}\text{C}$) for a period of 10 hours:

(ii) The chamber shall then be cooled to $+55^{\circ}\text{C}$ ($\pm 1^{\circ}\text{C}$), and the equipment shall be kept working continuously at that temperature for a period of 2 hours. Radiotelegraph transmitters shall be arranged to send morse dots. Double sideband radiotelephone transmitters shall be modulated to a depth of 50 percent, and single sideband radiotelephone transmitters shall be adjusted to produce an output 6dB below rated peak envelope power when set to class of emission A3J and driven by 2 equal level audio frequency tones:

(iii) At the end of the 2 hours, the equipment shall be subjected to a performance check at a temperature of $+55^{\circ}\text{C}$ ($\pm 1^{\circ}\text{C}$):

(c) Class B and Class X Equipment—

At the conclusion of the performance check, the equipment shall be exposed to normal room temperature for at least 3 hours before the damp-heat cycle.

(5) Damp-heat Cycle—

(a) The equipment shall be placed in a chamber which, within a period not exceeding 2 hours, shall be heated from room temperature to $+40^{\circ}\text{C}$ ($\pm 1^{\circ}\text{C}$), and shall be brought to a relative humidity of not less than 95 percent:

(b) The chamber shall be maintained at a temperature of $+40^{\circ}\text{C}$ ($\pm 1^{\circ}\text{C}$) for a minimum period of 12 hours and at a relative humidity of not less than 95 percent:

(c) At the beginning of the last 60 minutes of the above period, fans and any sources of heat provided in the equipment may be switched on:

SECOND SCHEDULE—*continued*

- (d) During the last 30 minutes of the period referred to in paragraph (b) of this subclause, and while the temperature of the chamber is still $+40^{\circ}\text{C}$ ($\pm 1^{\circ}\text{C}$), at a relative humidity of not less than 95 percent, the equipment shall be subjected to a performance check:
- (e) The temperature shall then be allowed to fall below $+25^{\circ}\text{C}$ in not less than 1 hour, while the equipment is enclosed in the chamber, and shall then be exposed to normal room temperature and humidity for a period of 3 to 6 hours before the low-temperature cycle.
- (6) Low-temperature Cycle—
- (a) Class B Equipment—
- (i) The equipment shall be placed in a chamber which is maintained at a temperature of -15°C ($\pm 2^{\circ}\text{C}$), at normal atmospheric pressure, for a minimum period of 12 hours:
- (ii) During the last 30 minutes of that period, the equipment shall be subjected to a performance check at the controlled temperature:
- (b) Class X Equipment—
- (i) The equipment shall be placed in a chamber which is maintained at a temperature of -25°C ($\pm 2^{\circ}\text{C}$), at normal atmospheric pressure, for a minimum period of 12 hours:
- (ii) During the last 30 minutes of that period, the equipment shall be subjected to a performance check at the controlled temperature.
- (7) Rain Test—
- (a) The equipment shall be placed in a chamber fitted with 8 shower-heads, the discharge end of which shall consist of a flat non-corrodible plate 1.6 mm thick, having 36 holes each of 1 mm diameter evenly spaced on concentric circles as follows:
- Sixteen holes on the periphery of a circle of 51 mm diameter; and
- Eight holes on the periphery of a circle of 38 mm diameter; and
- Eight holes on the periphery of a circle of 25 mm diameter; and
- Four holes on the periphery of a circle of 13 mm diameter:
- (b) The shower-heads shall be arranged at a distance of 500 to 800 mm from the equipment in such a manner that spray from 4 of the shower-heads is directed downwards at an angle of 45° at each of the 4 uppermost corners of the equipment. Spray from the other 4 shower-heads shall be directed horizontally at the centre of each area of the 4 sides of the equipment:
- (c) Fresh water at room temperature and at a static pressure of not less than 103 kN/m^2 or more than 172 kN/m^2 shall be sprayed on to the equipment from the 8 shower-heads:

SECOND SCHEDULE—*continued*

- (d) The equipment shall be subjected to the foregoing test for a period of 1 hour,—
- (i) With the control panel in its normal position; and
 - (ii) With the control panel uppermost, if this is not its normal position.

Throughout the test the equipment shall be continuously rotated between 12 and 20 revs/min, about a vertical axis passing through the centre of the equipment:

- (e) A performance check shall be carried out immediately after, but not during, exposure.

(8) Immersion Test—

- (a) The equipment shall be immersed in water, the surface of which is at least 10 cm above the highest point of the equipment, and shall remain immersed for a period of 1 hour:
- (b) Upon its removal from the water, a performance check shall be carried out immediately:
- (c) The equipment shall be inspected for water penetration.

(9) Corrosion Test—

(a) Salt Water—

(i) In addition to Class X equipment, the test shall apply to such components, materials, and finishes of Class B equipment as the type-testing authority may require:

(ii) The equipment shall be placed in a chamber fitted with apparatus capable of spraying in the form of a fine mist, such as would be produced by a spray gun, a salt solution to the following formula:

| | | | | |
|--------------------|-------|-------|------|-------|
| sodium chloride | ..... | ..... | 26.5 | grams |
| magnesium chloride | ..... | ..... | 2.4 | grams |
| magnesium sulphate | ..... | ..... | 3.3 | grams |
| calcium chloride | ..... | ..... | 1.1 | grams |
| potassium chloride | ..... | ..... | 0.73 | grams |
| sodium bicarbonate | ..... | ..... | 0.20 | grams |
| sodium bromide | ..... | ..... | 0.28 | grams |

plus distilled water to make the solution up to 1 litre.

The quantity of each salt shall be subjected to a tolerance of ± 10 percent. The spraying apparatus shall be such that the products of corrosion cannot mix with the salt solution contained in the spray reservoir:

(iii) The equipment shall be sprayed simultaneously on all its external surfaces with the salt solution for a period of 1 hour, and shall be kept working continuously for the last 30 minutes thereof:

(iv) This spraying shall be carried out 4 times with a storage period of 7 days at $+40^{\circ}\text{C}$ ($\pm 1^{\circ}\text{C}$) between the repetitions. The relative humidity during storage shall be between 60 and 80 percent:

(v) At the conclusion of the total period the equipment shall be visually examined. There shall be no undue deterioration or corrosion of the metal parts, finishes, materials, or component parts. The equipment shall then be subjected to

SECOND SCHEDULE—*continued*

a performance check. In the case of hermetically sealed equipments, there shall be no evidence of moisture penetration on opening the cover:

(b) Battery Fumes—

For equipment containing batteries—

(i) Any battery included in the equipment shall be fully charged and shall then be fitted into the equipment. If the arrangements are such that the battery can be charged without being removed from the equipment, the battery shall continue to be charged at the maximum permissible rate for a period of 24 hours:

(ii) The equipment shall then be stored for a period of 4 weeks at a temperature of $+40^{\circ}\text{C}$ ($\pm 1^{\circ}\text{C}$) and at a relative humidity of between 60 and 80 percent:

(iii) At the conclusion of that period, the equipment shall be visually examined. There shall be no undue deterioration or corrosion of the metal parts, finishes, materials, or component parts. The equipment shall then be subjected to a performance check, either with the same or with freshly charged batteries.

(10) Mould-growth Test—

(a) Both the external and internal materials and finishes of the equipment shall be subjected to this test:

(b) The equipment shall be inoculated by spraying with an aqueous suspension of mould spores containing all the following cultures:

Aspergillus Niger:
Aspergillus Amstelodami:
Paecilomyces Varioti:
Stachybotrys Atra:
Penicillium Brevi-compactum:
Penicillium Cyclopium:
Chaetomium Globosum:

(c) The equipment shall then be placed in a mould-growth chamber, the temperature of which shall be maintained at any fixed value within the range of $+31^{\circ}\text{C}$ to $+33^{\circ}\text{C}$, with a tolerance of $\pm 1^{\circ}\text{C}$, at a relative humidity of not less than 95 percent. The period of incubation should be 28 days, after which no mould growth shall be visible to the naked eye.

(11) Visual Inspection and Performance Test—At the conclusion of the foregoing climatic and durability tests, the equipment shall be visually inspected and a performance test to the requirements of the relevant equipment Schedule shall be carried out.”

P. G. MILLEN,
Clerk of the Executive Council.

EXPLANATORY NOTE

This note is not part of the rules, but is intended to indicate their general effect.

These rules provide for the replacement of the double sideband radiotelephone equipment specifications in the principal rules with a single sideband specification.

The rules provide that single sideband equipment will become mandatory for all fishing boats built on or after 1 January 1973 which are required to carry radiotelephone equipment and for existing fishing boats that are fitted with new radiotelephone equipment on or after that date.

Transitional provisions are included to allow the introduction of single sideband equipment and the phasing out of double sideband equipment in existing fishing boats over a period ending 1 January 1982.

The rules also include miscellaneous amendments of a technical nature.

Issued under the authority of the Regulations Act 1936.

Date of notification in *Gazette*: 8 March 1973.

These rules are administered in the Ministry of Transport.