

Australian/New Zealand Standard™

**Global maritime distress and safety
system (GMDSS)**

**Part 12: Survival craft portable two-way
VHF radiotelephone apparatus—
Operational and performance
requirements, methods of testing and
required test results
(IEC 61097-12, Ed. 1.0 (1996) MOD)**



AS/NZS 61097.12:2008

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RECONFIRMATION

OF

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NOTES

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee RC-004, Radiocommunications Equipment—General, to supersede AS 4416—1996.

The objective of this Standard is to specify the minimum performance requirements, technical characteristics and methods of testing with required test results of survival craft portable two-way radiotelephone apparatus as required by chapter III of the 1988 amendments to the 1974 International Convention for the Safety of Life at Sea (SOLAS).

This Standard is an adoption with national modifications and has been reproduced from IEC 61097-12, Ed. 1.0 (1996), *Global maritime distress and safety system (GMDSS) Part 12: Survival craft portable two-way VHF radiotelephone apparatus—Operational and performance requirements, methods of testing and required test results*, and has been varied as indicated to take account of Australian/New Zealand conditions.

Variations to IEC 61097-12, Ed. 1.0 (1996) are indicated at the appropriate places throughout this standard. Strike-through (**example**) identifies IEC text, tables and figures that, for the purposes of this Australian/New Zealand Standard, are deleted. Where text, tables or figures are added, each is set in its proper place and identified by shading (**example**). Added figures are not themselves shaded, but are identified by a shaded border.

The terms ‘normative’ and ‘informative’ are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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Any table, figure or text of the International Standard that is struck through is not part of this Standard. Any Australian/New Zealand table, figure or text that is added is part of this Standard and is identified by shading.

1 Scope

This part of IEC 61097 specifies the minimum performance requirements, technical characteristics and methods of testing with required test results of survival craft portable two-way radiotelephone apparatus as required by chapter III of the 1988 amendments to the 1974 International Convention for the Safety of Life at Sea (SOLAS), and which is associated with IEC 60945. When a requirement in this standard is different from IEC 60945, the requirement in this standard shall take precedence.

This standard incorporates the applicable parts of the performance requirements included in IMO Resolution A.809(19) annex 1 and the technical characteristics included in ITU M.489-2 and ITU-R M.542-1, and takes account of the general requirements contained in IMO Resolution A.694(17), and conforms with the ITU Radio Regulations where applicable. **Refer to MSC.149(77) Annex 11.**

NOTE – All text of this standard, whose wording is identical to that in IMO Resolutions A.809(19) and A.694(17) and ITU-RM.489-2 is printed in italics and the Resolution/Recommendation and paragraph numbers are indicated in brackets.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61097. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 61097 are encouraged to investigate the possibility of applying the most recent edition of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*

IEC 60945:1994, *Marine navigational equipment – General requirements – Methods of testing and required test results*

IMO International Convention for the Safety of Life At Sea (SOLAS): 1974, as amended 1988 (GMDSS) – *Chapter III: Life-saving appliances and arrangements*

IMO Resolution A.694(17):1991, *General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids*

IMO Resolution A.809(19): 1995, *Performance standards for survival craft two-way VHF radiotelephone apparatus*

IMO Resolution MSC.149(77), *Revised performance standards for survival craft portable two-way VHF radiotelephone apparatus*

ITU Radio Regulations:1995, *Appendix S3: Table of maximum permitted spurious emissions power levels*

ITU Radio Regulations:1990, *Appendix 18: Table of transmitting frequencies in the band 156 – 174 MHz for stations in the maritime mobile service*

ITU-R M.489-2:1995, *Technical characteristics of radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz*

~~ITU-R M.542-1:1982, *On-board communications by means of portable radiotelephone equipment*~~

3 Performance requirements

3.1 Introduction

Performance requirements described in this clause are specified by referring to IMO Resolutions and ITU Recommendations. In addition to meeting performance requirements in this clause, the equipment shall comply with the technical characteristics contained in clause 4 of this standard.

3.2 General

3.2.1 (A.809(19) 1/2.1)

The equipment shall be portable and capable of being used for on-scene communication between survival craft, between survival craft and ship and between survival craft and rescue unit. It may also be used for on-board communications when capable of operating on appropriate frequencies. Refer to IMO Resolution MSC.149(77).

3.2.2 (A.809(19) 1/2.3)

The equipment shall:

- 1) *be capable of being operated by unskilled personnel;*
- 2) *be capable of being operated by personnel wearing gloves as specified for immersion suits in regulation 32.333 of chapter III of the SOLAS 1974 Convention, as amended;*
- 3) *be capable of single-handed operation except for channel selection;*
- 9) *be of small size and light weight;*
- 10) *be capable of operating in the ambient noise level likely to be encountered on board ships or survival craft;*
- 11) *have provisions for its attachment to the clothing of the user and also be provided with a wrist or neck strap. For safety reasons, the strap should include a suitable weak link to prevent the bearer from being ensnared; and, including the immersion suit; and*
- 12) *be resistant to deterioration by prolonged exposure to sunlight.*

3.2.3 (A.809(19) 1/2.13)

The equipment shall be either of a highly visible yellow/orange colour or marked with a surrounding yellow/orange marking strip.

3.3 General requirements

3.3.1 Composition

(A.809(19) 1/2.2) *The equipment shall comprise at least:*

- 1) *an integral transmitter/receiver including antenna and battery;*
- 2) *an integral control unit including a press-to-transmit switch; and*
- 3) *an internal microphone and loudspeaker.*

3.3.2 Controls and indicators

3.3.2.1 (A.809(19) 1/4.1)

An on/off switch shall be provided with positive visual indication that the radiotelephone is switched on.

3.3.2.2 (A.809(19) 1/4.2)

The receiver shall be provided with a manual volume control by which the audio output may be varied.

3.3.2.3 (A.809(19) 1/4.3)

A squelch (mute) control and channel selection switch shall be provided.

3.3.2.4 (A.809(19) 1/4.4)

Channel selection shall be easily performed and the channels shall be clearly discernible.

3.3.2.5 (A.809(19) 1/4.5)

Channel indication shall be in accordance with appendix 18 of the Radio Regulations.

3.3.2.6 (A.809(19) 1/4.6)

It shall be possible to determine that channel 16 has been selected in all ambient light conditions.

3.3.3 Antenna

(A.809(19) 1/9) The antenna shall be vertically polarized and, as far as practicable, be omnidirectional in the horizontal plane. The antenna shall be suitable for efficient radiation and reception of signals at the operating frequency.

3.3.4 Safety precautions

3.3.4.1 (A.809(19) 1/6)

The equipment shall not be damaged by the effect of open-circuiting or short-circuiting the antenna.

3.3.4.2 (A.809(19) 1/2.3.8)

The equipment shall have no sharp projections which could damage survival craft.

3.3.5 Frequency bands and channels

3.3.5.1 (A.809(19) 1/3.1)

The two-way radiotelephone shall be capable of operation on the frequency 156,800 MHz (VHF CH 16) and on at least one additional channel.

3.3.5.2 (A.809(19) 1/3.2)

All channels fitted shall be for single-frequency voice communication only.

3.3.5.3 (A.809(19) 1/3.3)

The class of emission shall be G3E to comply with appendix 19 of the Radio Regulations.

3.3.6 Marking and identification

(A.809(19) 1/13) In addition to the items specified in resolution A.694(17) on general requirements, as detailed in IEC 60945, the following shall be clearly indicated on the exterior of the equipment:

- 1) *brief operating instructions;*
- 2) *expiry date for the primary batteries.*

3.3.7 Warming-up period

(A.809(19) 1/5) The equipment shall be operational within 5 s of switching on.

3.3.8 Power supply

3.3.8.1 (A.809(19) 1/12.1)

The source of energy shall be integrated in the equipment and may be replaceable by the user. In addition, provision may be made to operate the equipment using an external source of electrical energy.

3.3.8.2 (A.809(19) 1/12.2)

Equipment intended for the source of energy to be user replaceable shall be provided with a dedicated primary battery for use in the event of a distress situation. This battery shall be equipped with a non-replaceable seal to indicate that it has not been used.

3.3.8.3 (A.809(19) 1/12.3)

Equipment intended for the source of energy to be non-user-replaceable shall be provided with a primary battery. The portable two-way radiotelephone equipment shall be equipped with a non-replaceable seal to indicate that it has not been used.

3.3.8.4 (A.809(19) 1/12.4)

The primary battery shall have sufficient capacity to ensure 8 h operation at its highest rated power with a duty cycle of 1:9. The duty cycle is defined as 6 s transmission, 6 s reception above squelch opening level and 48 s reception below squelch opening level.

3.3.8.5 (A.809(19) 1/12.5)

Primary batteries shall have a shelf life of at least 2 years and if intended to be user replaceable shall be of a colour or marking as defined in 3.2.3.

3.3.8.6 (A.809(19) 1/12.6)

~~Primary or secondary~~ Batteries not intended for the use in the event of a distress situation shall be of a colour or marking so that they cannot be confused with batteries intended for such use.

3.4 Environmental requirements

3.4.1 (A.809(19) 1/11)

The equipment shall be so designed as to operate over the temperature range -20°C to $+55^{\circ}\text{C}$. It shall not be damaged in stowage throughout the temperature range -30°C to $+70^{\circ}\text{C}$.

3.4.2 (A.809(19) 1/2.3.4)

The equipment shall withstand drops on to a hard surface from a height of 1 m.

3.4.3 (A.809(19) 1/2.3.5)

The equipment shall be watertight to a depth of 1 m for at least 5 min.

3.4.4 (A.809(19) 1/2.3.6)

The equipment shall maintain watertightness when subjected to a thermal shock of 45°C under conditions of immersion.

3.4.5 (A.809(19) 1/2.3.7)

The equipment shall not be unduly affected by seawater or oil or both.

3.5 Electromagnetic compatibility

The equipment shall comply with the EMC requirements specified in resolution A.694(17), as detailed in IEC 60945.

4 Technical characteristics

4.1 General

The equipment shall be designed to operate satisfactorily with a channel separation of 25 kHz in accordance with appendix 18 of the Radio Regulations.

4.2 Class of emission and modulation characteristics

4.2.1 (M.489-2/1.1.1 and .3)

The class of emission shall be G3E (frequency modulation with a pre-emphasis characteristic of 6 dB/Octave).

4.2.2 (M.489-2/1.1.2)

The necessary bandwidth shall be 16 kHz.

4.3 Transmitter

4.3.1 (M.489-2/1.2.1)

The frequency tolerance for ship station transmitters shall not exceed 10 parts in 10^6 . For practical reasons, the frequency error shall be within $\pm 1,5$ kHz.

4.3.2 (A.809(19) 1/7)

The effective radiated power shall be a minimum of 0,25 W. Where the effective radiated power exceeds 1 W, a power reduction switch to reduce the power to 1 W or less ~~is required~~ should be provided. When this equipment provides for on-board communications, the output power shall not exceed 1 W on these frequencies.

4.3.3

The frequency deviation corresponding to 100% modulation shall approach ± 5 kHz as nearly as practicable.

4.3.4 (M.489-2/1.2.5)

The upper limit of the audiofrequency band shall not exceed 3 kHz.

4.3.5 (M.489-2/1.2.2)

Spurious emissions on discrete frequencies, when measured in a non-reactive load equal to the nominal output impedance of the transmitter shall be in accordance with the provisions of Appendix 8 of the Radio Regulations. The power of any conducted spurious emission on any discrete frequency shall not exceed 0,25 μ W.

4.3.6 (M.489-2/1.2.6)

The cabinet radiated power shall not exceed 25 μ W. In some radio environments, lower values may be required. The equipment shall meet the requirements of IEC 60945 for radiated interference.

4.4 Receiver**4.4.1 (A.809(19) 1/8.1)**

The sensitivity of the receiver shall be equal to or better than 2 μ V e.m.f. for a SINAD ratio of 12 dB at the output.

Note – The test identified in Clause 5.5.3 requires a SINAD ratio, psophametrically weighted, of 20 dB.

4.4.2 (A.809(19) 1/8.2)

The immunity to interference of the receiver shall be such that the wanted signal is not seriously affected by unwanted signals.

4.4.3 (A.809(19)1/10.1)

The audio output shall be sufficient to be heard in the ambient noise level likely to be encountered on board ships or in a survival craft.

4.4.4 (A.809(19) 1/10.2)

In the transmit condition the output of the receiver shall be muted.

4.4.5 (M.489-2/1.3.2)

The adjacent channel selectivity shall be at least 70 dB.

4.4.6 (M.489-2/1.3.3)

The spurious response rejection ratio shall be at least 70 dB.