

INTERNATIONAL STANDARD

**Global maritime distress and safety system (GMDSS) –
Part 4: INMARSAT-C ship earth station and INMARSAT enhanced group call
(EGC) equipment – Operational and performance requirements, methods of
testing and required test results**

IEC 61097-4:2007

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**GLOBAL MARITIME DISTRESS AND
SAFETY SYSTEM (GMDSS) –****Part 4: INMARSAT-C ship earth station and
INMARSAT enhanced group call (EGC) equipment –
Operational and performance requirements,
methods of testing and required test results**

FOREWORD

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International Standard IEC 61097-4 has been prepared by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems.

This second edition cancels and replaces the first edition published in 1994. This edition constitutes a technical revision.

The main changes with respect to the previous edition are:

- the IMO references and requirements have been updated to the new performance standards for Inmarsat-C ship earth stations adopted in 1995;
- the requirements for interfaces have been updated to the current version of IEC 61162-1;
- the general requirements have been updated to the current version of IEC 60945;

- Annex B concerning radiated unwanted emissions has been updated to current requirements.

The text of this standard is based on the following documents:

FDIS	Report on voting
80/487/FDIS	80/497/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 61097 series, published under the general title *Global maritime distress and safety system (GMDSS)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS) –

Part 4: INMARSAT-C ship earth station and INMARSAT enhanced group call (EGC) equipment – Operational and performance requirements, methods of testing and required test results

1 Scope

This part of IEC 61097 specifies the performance requirements and methods of testing for INMARSAT-C ship earth stations (SES) capable of transmitting and receiving direct printing communications, and for enhanced group call (EGC) equipment, for use in the GMDSS. The available variants are:

- Class 0: An EGC receiver, either stand-alone or an element of a GMDSS installation in accordance with the INMARSAT design and installation guidelines (DIGs) for GMDSS installations.
- Class 1: A basic SES providing shore-to-ship and ship-to-shore message transfer only.
- Class 2: As class 1 but with EGC as an alternative to shore-to-ship transfer using a shared receiver.
- Class 3: As class 1 but with EGC using an independent receiver.

The standard complies with IMO performance requirements stated in the normative references, INMARSAT technical characteristics and test procedures, and IEC 60945 general requirements except where modifications are explicitly stated in this standard. Technical characteristics essential to GMDSS operation as defined by the IMO are identified.

All text of this standard, whose wording is identical to that in IMO SOLAS Convention 1974 as amended in 1988 and Resolutions A.807(19), A.664(16), and A.694(17) is printed in *italics* and reference made to the Resolution/Recommendation and subclause number.

This standard covers equipment construction and testing. Matters relating to installation may also be found in the normative references listed in clause 2. Those to be found in IMO Resolutions A.807(19) and A.664(16) are reproduced in annex A.

Responsibility for type approval of INMARSAT-C and INMARSAT-EGC is vested in INMARSAT by IMO Resolutions A.807(19) and A.664(16). Therefore, this standard does not reproduce INMARSAT test procedures in full, but refers to where they are given in INMARSAT documentation cited in the normative references to this standard.

NOTE For the purposes of this standard the terms INMARSAT-C, INMARSAT Standard-C and Standard-C refer to the same equipment.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60945:2002, *Maritime navigation and radiocommunication equipment and systems – General requirements – Methods of testing and required test results*

ISO 2022, *Information technology – Character code structure and extension techniques*

International Convention for the safety of life at sea (SOLAS), Regulations IV/7, IV/8, IV/9 and IV/10 of the 1988 amendments concerning radiocommunications for the GMDSS

IMO Resolution A.807(19):1995, *Performance Standards for INMARSAT--C ship earth stations capable of transmitting and receiving direct-printing communications as amended by Resolution MSC.68(68) Annex 4*

IMO Resolution A.664(16):1989, *Performance standards for enhanced group call equipment*

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: *NAVTEX Manual*

INMARSAT-C System definition manual (SDM):

- Volume 3, Part 2, Chapter 2, *Mobile earth station technical requirements*
- Volume 3, Part 2, Chapter 5, *Ship earth station technical requirements*
- Volume 3, Part 2, Chapter 8, *Technical requirements for an EGC receiver*

INMARSAT: Recommended test procedures (RTP) for the type approval of INMARSAT-C mobile earth stations

INMARSAT: Design and installation guidelines (DIGs) for INMARSAT-C ship earth stations and enhanced group call receivers

Recommendation ITU-R M.540-2¹⁾:1990, *Operational and technical characteristics for an automated direct-printing telegraph system for promulgation of navigational and meteorological warnings and urgent information to ships*

3 Performance requirements

3.1 Introduction

Subclauses 3.2 through 3.4 of this part of IEC 61097 describe performance requirements directly attributable to IMO Resolutions A.807(19), A.664(16) and A.694(17) as listed in the normative references. Subclause 3.5 is provided to highlight those requirements of IEC 60945 which are not included in the normal INMARSAT requirements for INMARSAT-C SES type approval. Subclause 3.6 describes other requirements, additional to the normal INMARSAT-C type approval requirements, which are required to make the equipment suitable for GMDSS applications.

3.2 Non-operational requirements common to all classes of INMARSAT-C SES and INMARSAT-EGC

3.2.1 General requirements

3.2.1.1 (A.807(19) A1.1/A.664(16) A1.1) *The INMARSAT Standard-C ship earth station installation capable of transmitting and receiving direct-printing communications, and the enhanced group call equipment to be used in the INMARSAT system shall comply with the general requirements set out in Assembly resolution A.694(17) as detailed in IEC 60945.*

1) Formerly CCIR Recommendation 540-2.

3.2.1.2 (A.807(19) 2/A.664(16) 2) *The ship earth station and the EGC equipment shall be type-approved by INMARSAT and shall comply with the environmental conditions specified in its technical requirements for INMARSAT Standard-C ship earth stations except as detailed in IEC 60945.*

3.2.1.3 (A.807(19) 4) *In order to permit a warning of potential radiation hazards to be displayed in appropriate locations, a label shall be attached to the radome indicating the distances external to the radome at which radiation levels of 100 W/m², 25 W/m² and 10 W/m² exist. However, the distances which are within the radome need not be indicated.*

3.2.1.4 (A.807(19) A5.2/A.664(16) A4.2) *Changing from one source of supply to another or any interruption of up to 60 s duration of the supply of electrical energy shall not require the equipment to be manually re-initialized and shall not result in loss of received messages stored in the memory.*

3.3 Operational requirements for all classes of INMARSAT-C SES including those with INMARSAT-EGC

The equipment shall comply with regulations IV/8 through IV/10 of SOLAS 1974, as amended, which prescribe the capabilities of INMARSAT ship earth stations to meet the GMDSS requirements for ships in the various sea areas. The four capabilities are:

3.3.1 (IV/8.1.5.1/IV/9.1.3.3 and IV/10.1.4.3): *Means of initiating the transmission of ship-to-shore distress alerts.*

3.3.2 (IV/10.1.1.1): *Transmitting and receiving distress and safety communications using direct-printing telegraphy.*

3.3.3 (IV/10.1.1.2): *Initiating and receiving distress priority calls.*

3.3.4 (IV/9.3.2/IV/10.1.1.4): *Transmitting and receiving general radiocommunications, using either radiotelephony or direct-printing telegraphy.*

NOTE In the case of this equipment only direct-printing telegraphy applies.

3.3.5 In addition, classes 2 and 3 INMARSAT-C SES shall comply with the operational requirements for INMARSAT-EGC receivers (see 3.4).

Operational requirements common to INMARSAT-C equipment are:

3.3.6 (A.807(19) 3.1): *No control external to the equipment shall be available for alteration of the ship station identity.*

3.3.7 (A.807(19) 3.2): *It shall be possible to initiate and make distress calls from the position from which the ship is normally navigated and from at least one other position designated for distress alerting.*

3.3.7.1 (A.807(19) 3.3): *A distress alert shall be activated only by means of a dedicated distress button. This button shall not be any key of an ITU-T digital input panel or an ISO keyboard provided on the equipment.*

3.3.7.2 (A.807(19) 3.4): *The dedicated distress button shall:*

- 1 *be clearly identified; and*
- 2 *be protected against inadvertent operation.*

3.3.7.3 (A.807(19) 3.5): *The distress alert initiation shall require at least two independent actions.*

3.3.7.4 (A.807(19) 3.6): *The equipment shall indicate the status of the distress alert transmission.*

3.3.7.5 (A.807(19) 3.7): *It shall be possible to interrupt and initiate distress messages at any time.*

3.3.7.6 It shall be possible to select the content of, but not initiate a distress alert using the equipment keyboard or other means, before depressing one of the dedicated buttons to initiate the distress alert. It shall also be possible to activate an undesignated (see Note) distress alert by depressing one of the buttons, at any time.

NOTE Undesignated - unspecified emergency distress alert, i.e. the default setting. All other selectable alerts are "designated".

3.3.7.7 (A.807(19) 3.8): *Facilities shall be provided to automatically update the ship's position and the time at which the position was determined from a suitable electronic position-fixing aid which may be an integral part of the equipment. For equipment which does not have an integral position-fixing aid, such facilities shall include a suitable interface conforming to IEC 61162.*

NOTE As a minimum, the equipment should support the sentences GGA, GLL, GNS, RMC and ZDA according to IEC 61162-1.

3.3.7.8 (A.807(19) 3.9): *Provision shall also be made for manual entry of position information and of the time at which the position was determined.*

3.3.7.9 (A.807(19) 3.10): *An alarm shall be activated when no position data is received from the electronic position-fixing aid or, in the case of manual input, the position information is over 4 hours old. Any position information not updated for more than 24 hours shall be clearly identified."*

3.4 Operational requirements for INMARSAT-EGC receivers including those incorporated in an INMARSAT-C SES

The equipment shall comply with regulations IV/7 and IV/10 of SOLAS 1974, as amended, which prescribe the capabilities of EGC receivers to meet the GMDSS requirements for ships in the various sea areas. The two capabilities are:

3.4.1 (IV/7.1.5): *A radio facility for reception of maritime safety information by the INMARSAT enhanced group calling system.*

3.4.2 (IV/10.1.1.3): *An INMARSAT ship earth station capable of maintaining watch for shore-to-ship distress alerts, including those directed to specifically defined geographical areas.*

Operational requirements common to all EGC receivers are:

3.4.3 (A.664(16) A1.2): *The equipment shall be capable of producing a printed copy of received information. Received EGC messages may be stored, with indication that the message has been received, for later printing, except for the vital messages referred to in 3.2 (3.4.6) and 3.5 (3.4.9) which shall be printed out upon receipt.*

3.4.4 (A.664(16) A1.3): *The enhanced group call installation may be either separate or combined with other installations. Elements of other installations, e.g. the antenna, low noise amplifier and down converter of the ship earth system, may be shared for the reception of enhanced group call messages.*

3.4.5 (A.664(16) A3.1): *Means shall be provided to enter the ship's position and area code manually so that area group calls can be received. Optionally, and additionally, the ship's*