



IEC 61097-4

Edition 3.0 2012-05

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**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

U

ICS 47.020.70

ISBN 978-2-83220-108-4

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references	6
3 Performance requirements	7
3.1 Overview.....	7
3.2 Non-operational requirements	8
3.2.1 General	8
3.2.2 Warning of radiation hazard.....	8
3.2.3 Power supply changeover.....	8
3.3 Operational requirements for ship earth stations	8
3.3.1 Capabilities	8
3.3.2 Ship station identity.....	8
3.3.3 Distress alerting	8
3.3.4 Position updating.....	9
3.4 Operational requirements for EGC receivers	9
3.4.1 Capabilities	9
3.4.2 General	10
3.4.3 Position and area code updating.....	10
3.4.4 Indication of receipt of priority message	10
3.4.5 Indication of tuning and synchronisation.....	10
3.4.6 Printing selection.....	11
3.4.7 Printing device.....	11
3.5 Performance related requirements from IEC 60945	11
3.6 Other requirements	11
3.7 Long-range identification and tracking	12
3.7.1 General.....	12
3.7.2 Capabilities	12
3.7.3 Functionality.....	13
3.7.4 Communication system.....	14
4 Technical characteristics	14
4.1 Overview.....	14
4.2 Environmental and electromagnetic compatibility requirement.....	14
4.3 Radiated spurious emissions.....	15
5 Methods of testing and required test results	15
5.1 Overview.....	15
5.1.1 General	15
5.1.2 Performance requirements	15
5.1.3 Technical characteristics	16
5.2 Tests of non-operational requirements	16
5.3 Tests of operational requirements for ship earth stations.....	16
5.3.1 Capabilities	16
5.3.2 Ship station identity.....	16
5.3.3 Distress alerting	16
5.3.4 Position updating.....	16
5.4 Tests of operational requirements for EGC receivers.....	17

5.4.1	Capabilities	17
5.4.2	General	17
5.4.3	Position and area code updating.....	17
5.4.4	Indication of receipt of priority message	17
5.4.5	Indication of tuning and synchronisation	17
5.4.6	Printing selection.....	18
5.4.7	Printing device.....	18
5.5	Tests of performance related requirements from IEC 60945	18
5.6	Tests of other requirements.....	18
5.7	Long-range identification and tracking	18
5.7.1	General	18
5.7.2	Capabilities	18
5.7.3	Functionality.....	19
5.7.4	Communication system.....	19
5.8	Tests of technical characteristics.....	20
5.8.1	Inmarsat tests.....	20
5.8.2	Tests for environmental and electromagnetic compatibility	20
Annex A	(normative) Requirements relating to installation	21
Annex B	(normative) Radiated unwanted emissions	22
Annex C	(informative) Inmarsat RTP schedule of tests.....	25
Bibliography	29
Table 1	– Data to be transmitted from the shipborne equipment.....	14
Table 2	– Environmental conditions	15
Table B.1	– Limits of unwanted emissions up to 1 000 MHz	22
Table B.2	– Limits of unwanted emissions above 1 000 MHz	23
Table B.3	– Limits of unwanted emission within the operating band with carrier-on	24
Table C.1	– Phase I Inmarsat-C schedule of tests.....	25
Table C.2	– Phase I EGC receiver schedule of tests	27
Table C.3	– Phase II schedule of tests	28

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

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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

This third edition cancels and replaces the second edition published in 2007. 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 enhanced group call equipment adopted in 2010 as resolution MSC.306(87). The new performance standards incorporate new requirements for an indication of ship's position which has not been updated (3.4.3) and an alarm for paper low condition (3.4.7).

These two requirements are, however, derived from Inmarsat documentation so there is no technical change to equipment;

- a new subclause has been added (3.7) concerning long-range identification and tracking (LRIT) to support IMO performance standards given in resolution MSC.263(84) adopted in 2008;
- references to Inmarsat documentation have been simplified by moving the content of Tables 1, 2, 4 and 5 into a new Annex C;
- the text has been editorially updated to conform to the ISO/IEC Directives.

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

FDIS	Report on voting
80/659/FDIS	80/666/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 stability 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) receivers, for use in the GMDSS and for use for long-range identification and tracking (LRIT). 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.

NOTE 1 The 34th session of the IMO Sub-Committee on Radiocommunications decided that class 2 equipment would be adequate to provide sufficient availability for the reception of maritime safety information for the GMDSS.

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 and LRIT 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), MSC.263(84) and MSC.306(87) 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 Inmarsat Maritime design and installation guidelines (see Bibliography). Those to be found in IMO Resolutions A.807(19), MSC.263(84) and MSC.306(87) 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 MSC.306(87) (see 3.2.1). 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 (Annex C).

NOTE 2 For the purposes of this standard the terms Inmarsat-C, Inmarsat Standard-C, Standard-C refer to the same equipment.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

IEC 61108 (all parts), *Maritime navigation and radiocommunication equipment and systems – Global navigation satellite systems (GNSS)*

IEC 61162-1, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 1: Single talker and multiple listeners*

IMO, *International Convention for the safety of life at sea (SOLAS), 1974 as amended*

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.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 MSC.263(84):2008, *Revised performance standards and functional requirements for the long-range identification and tracking of ships.*

IMO Resolution MSC.306(87):2010, *Revised performance standards for enhanced group call (EGC) equipment*

Inmarsat, *Inmarsat-C System definition manual (SDM) Volume 2 – Part 2, Application Note 2, Position reporting service*

Inmarsat, *Inmarsat-C System definition manual (SDM) Volume 2 – Part 2, Application Note 3, Application developers guide to data reporting and polling*

Inmarsat, *Inmarsat-C System definition manual (SDM) Volume 3 – Part 2, Chapter 2, Mobile earth station technical requirements*

Inmarsat, *Inmarsat-C System definition manual (SDM) Volume 3 – Part 2, Chapter 5, Ship earth station technical requirements*

Inmarsat, *Inmarsat-C System definition manual (SDM) 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*