

# INTERNATIONAL STANDARD

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**Global maritime distress and safety system (GMDSS)  
Part 2: COSPAS-SARSAT EPIRB – Satellite emergency position indicating radio  
beacon operating on 406 MHz – Operational and performance requirements,  
methods of testing and required test results**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

PRICE CODE

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS) –****Part 2: COSPAS-SARSAT EPIRB – Satellite emergency position  
indicating radio beacon operating on 406 MHz –  
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.
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International Standard IEC 61097-2 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 2002, of which it constitutes a technical revision.

The significant changes in this edition include revised characteristics for the low duty cycle light in 3.3.3 c), together with a revised test in 5.3.3.3, to allow the use of white LEDs. Requirements for retro-reflecting material and the lanyard have been clarified in 3.3 noting the ever decreasing size of EPIRBs, and requirements for equipment manuals and labelling clarified in 3.11 and 3.12. Battery life requirements have been clarified in 4.6.2.

The test methods have been generally revised to align with the latest editions of COSPAS-SARSAT T.001 and T.007 and IEC 60945. An extra test requirement for a drop onto a hard

surface has been added, together with further frequency bands for the measurement of spurious emissions to protect aeronautical communications.

Annex B, which reproduced some COSPAS-SARSAT material has been deleted and replaced with a new annex giving requirements for EPIRBs associated with navigation devices.

Annex C, concerning EPIRBs without a float free mechanism, has been expanded and Annex D, concerning the homing device, includes a new radiated power test “off ground plane” and clarification to the measurement of spurious emissions.

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

CDV	Report on voting
80/480/CDV	80/514/RVC

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 Directive 1, Part 2.

A list of all parts of the IEC 61097 series, 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 website 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 2: COSPAS-SARSAT EPIRB – Satellite emergency position indicating radio beacon operating on 406 MHz – Operational and performance requirements, methods of testing and required test results

#### 1 Scope

This part of IEC 61097 specifies the minimum performance requirements, technical characteristics and type-testing requirements of the satellite emergency position-indicating radio beacon used in the COSPAS-SARSAT satellite system (satellite EPIRB), as required by Regulation IV/7.1.6 of the 1988 amendments to the 1974 International Convention for 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 takes precedence.

This standard incorporates the performance standards of IMO Resolution A.810(19), the International Telecommunication Union (ITU) Radio Regulations as well as the technical characteristics for such transmitters contained in Recommendation ITU-R M.633, and takes account of the general requirements contained in IMO Resolution A.694(17). This standard further takes account of IMO Resolution A.696(17) concerning the type approval of satellite EPIRBs.

This standard also includes minimum performance standards for a non-float-free satellite EPIRB without float-free release mechanism (see Annex C).

NOTE 1 Although a number of the requirements and tests may be similar this standard is not intended to be used with 406 MHz Ship Security Alert System (SSAS) Beacons.

All texts of this standard, whose wording is identical to that in the IMO SOLAS Convention 1974 as amended and Resolutions A.662(16), A.694(17), A.702(17) and A.810(19) and Recommendation ITU-R M.633 will be printed in italics and the Resolution/Recommendation and paragraph number indicated between brackets.

NOTE 2 Classes of satellite EPIRB's considered in this document are:

- Class 1: Float-free (–40 °C to +55 °C). The float-free release mechanism (A.662(16)) should be capable of operating throughout the temperature range of –30 °C to +65 °C.

This class is not required by IMO Resolutions but may be applied at the discretion of each Administration.

- Class 2: Float-free (–20 °C to +55 °C). The float-free release mechanism (A.662(16)) should be capable of operating throughout the temperature range of –30 °C to +65 °C.

NOTE 3 Non float-free, satellite EPIRB's in both classes are considered in Annex C.

NOTE 4 All classes include a 121,5 MHz homing device, described in Annex D.

NOTE 5 All classes may include beacon position data, obtained from a navigation device internal or external to the satellite EPIRB as described in Annex B.

NOTE 6 User experience of COSPAS-SARSAT satellite EPIRB operation leading to some clarification of IMO performance standards, and providing some useful information for satellite EPIRB users is included in Annex E.

## 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, *Marine navigation and radiocommunication equipment and systems – General Requirements – Methods of testing and required test results*

IEC 61108-1, *Maritime navigation and radiocommunication equipment and systems – Global Navigation Satellite Systems (GNSS) – Part 1: Global Positioning System (GPS) – Receiver equipment – Performance standards, methods of testing and required test results*

ISO 15734:2001, *Ships and marine technology – Hydrostatic release units*

IMO Resolution A.658(16):1989, *Use and fitting of retro-reflective materials on life-saving appliances*

IMO Resolution A.662(16):1989, *Performance standards for float-free release and activation arrangements for emergency radio 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 Resolution A.696(17):1991, *Type approval of satellite emergency position-indicating radio beacons (EPIRBs) operating in the COSPAS-SARSAT system*

IMO Resolution A.702(17):1991, *Radio maintenance guidelines for the global maritime distress and safety system (GMDSS) related to sea areas A3 and A4*

IMO Resolution A.810(19):1995, *Performance standards for float-free satellite emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz, as amended by IMO Resolution MSC.56(66) and IMO Resolution MSC.120(74)*

IMO Resolution MSC.48(66):1996, *International life-saving appliance code*

IMO Resolution MSC.81(70):1998, *Revised recommendation on testing of life-saving appliances, as amended by IMO Resolution MSC.200(80)*

ITU-R Recommendation M.585, *Assignment and use of maritime mobile service identities*

ITU-R Recommendation M.633, *Transmission characteristics of a satellite emergency position-indicating radio beacon (satellite EPIRB) system operating through a satellite system in the 406 MHz band*

ITU-R Recommendation M.690, *Technical characteristics of emergency position indicating radio beacons (EPIRBs) operating on the carrier frequencies of 121,5 MHz and 243 MHz*

COSPAS-SARSAT

C/S T.001, *Specification for COSPAS-SARSAT 406 MHz Distress Beacons*

C/S T.007, *COSPAS-SARSAT 406 MHz Distress Beacon Type Approval Standard (as applicable to satellite EPIRBs)*

C/S T.012, as amended, *COSPAS-SARSAT 406 MHz Frequency Management Plan*

*IMO Safety of Life at Sea (SOLAS) Convention 1974, as amended.*

United Nations *Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Fourth Revised Edition, PART III, Section 38.3 (ST/SG/AC.10/11/Rev.4).*