

**SLOVENSKI STANDARD**  
**SIST EN 300 152-1 V1.2.2:2003****01-december-2003**

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HY b] bY`U`U`hYf]gh]`Y]`b`a Yf]`bY`a YtcXY

ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Maritime Emergency Position Indicating Radio Beacons (EPIRBs) intended for use on the frequency 121,5 MHz or the frequencies 121,5 MHz and 243 MHz for homing purposes only; Part 1: Technical characteristics and methods of measurement

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# ETSI EN 300 152-1 V1.2.2 (2000-08)

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*European Standard (Telecommunications series)*

**Electromagnetic compatibility and  
Radio spectrum Matters (ERM);  
Maritime Emergency Position Indicating  
Radio Beacons (EPIRBs) intended for use on the frequency  
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Part 1: Technical characteristics and methods of measurement**

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## Foreword

This European Standard (Telecommunications series) has been prepared by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document is part 1 of a multi-part EN covering the Electromagnetic compatibility and Radio spectrum Matters (ERM); Maritime Emergency Position Indicating Radio Beacons (EPIRBs) intended for use on the frequency 121,5 MHz or the frequencies 121,5 MHz and 243 MHz for homing purposes only, as identified below:

- Part 1: "Technical characteristics and methods of measurement";**
- Part 2: "Harmonized EN under article 3.2 of the R&TTE Directive";
- Part 3: "Harmonized EN under article 3.3e of the R&TTE Directive.

The present document lays down the minimum requirements for maritime Emergency Position Indicating Radio Beacons (EPIRBs) operating on certain frequencies, and incorporates the relevant provisions of the International Telecommunication Union (ITU) radio regulations and the relevant standards of the International Civil Aviation Organization (ICAO). <https://standards.iteh.ai/catalog/standards/sist/8a3fec15-36ce-47ee-a8db-9ee3815ac939/sist-en-300-152-1-v1-2-2-2003>

Every EN prepared by ETSI is a voluntary standard. The present document contains text concerning the type approval of the equipment to which it relates. This text should be considered only as guidance and does not make the present document mandatory.

Annex A to the present document is normative.

National transposition dates	
Date of latest announcement of this EN (doa):	31 October 2000
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 April 2001
Date of withdrawal of any conflicting National Standard (dow):	30 April 2001

## Introduction

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [4] laying down a procedure for the provision of information in the field of technical standards and regulations.



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## 1 Scope

The present document lays down the minimum requirements for maritime Emergency Position Indicating Radio Beacons (EPIRBs) operating on certain frequencies, and incorporates the relevant provisions of the International Telecommunication Union (ITU) radio regulations and the relevant standards of the International Civil Aviation Organization (ICAO).

EPIRBs are defined as stations in the maritime mobile service, the emissions of which are intended to facilitate search and rescue operations.

The EPIRBs described in the present document are intended only for transmission of radio signals on the frequency 121,5 MHz or the frequencies 121,5 MHz and 243 MHz for locating vessels and survival craft in distress.

The present document also applies to EPIRBs intended for very short range man-overboard location applications. For this application, both the radiated power and the length of time of operation are reduced to enable the equipment to be sufficiently small and light to be worn comfortably at all times.

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## 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

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**SIST EN 300 152-1 V1.2.2:2003**
- [1] ITU-R Recommendation M.690-1: "Technical characteristics of emergency position-indicating radio beacons (EPIRBs) operating on the carrier frequencies of 121,5 MHz and 243 MHz".
- [2] ETSI ETR 028: "Radio Equipment and Systems (RES); Uncertainties in the measurement of mobile radio equipment characteristics".
- [3] ETSI ETR 273 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement of radiated methods of measurement (using test sites) and evaluation of the corresponding measurement uncertainties".
- [4] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.

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## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document the following terms and definitions apply:

**EPIRB station:** station in the mobile service, the emissions of which are intended to facilitate search and rescue operations.

**homing device:** 121,5 MHz / 243 MHz beacon primarily intended for transmitting homing signals.

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

$\epsilon$	permittivity
$\sigma$	Conductivity
$\lambda$	wavelength
dB	decibel
div	division
S	Siemens

## 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

EPIRB	Emergency Position Indicating Radio Beacon
ERPEP	Effective Radiated Peak Envelope Power
RF	Radio Frequency

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# 4 General requirements

## 4.1 Construction

The manufacturer shall declare that compliance to the requirements of clause 4 is achieved and shall provide relevant documentation.

In all respects, the mechanical and electrical design and the construction and finish of the equipment shall conform with good engineering practice.

The equipment shall be designed to minimize the risk of internal and external damage during use or stowage.

The exterior of the equipment shall have no sharp edges or projections which could easily damage inflatable rafts or injure personnel.

The general construction and method of operation shall provide a high degree of proof against inadvertent operation due to magnetic influences, handling, stowage and transit, whilst still providing a simple means of operation in an emergency.

The equipment shall be portable, lightweight, and compact and be designed as one integral unit. The Emergency Position-Indicating Radiobeacon (EPIRB) shall derive its energy from a battery forming a part of the equipment and incorporate a permanently attached antenna which may be either fixed length or extendible.

The EPIRB may be fitted with a test facility by which the functioning of the transmitter and battery can be easily tested without the use of any external equipment.

The equipment shall be capable of being used by an unskilled person and only be capable of manual activation and deactivation.

The EPIRB shall be watertight and buoyant.

A substantial part of the equipment shall be of highly visible yellow or orange color to assist visual location.

The equipment shall not be unduly affected by sea water or oil and shall be resistant to deterioration by prolonged exposure to sunlight.

Necessary operating instructions shall be provided with the equipment.

## 4.2 Controls

The equipment shall be initially activated by the use of two simple, but independent mechanical actions, neither of which on its own shall activate the equipment. For equipment relating solely to man-overboard location applications, the second mechanical action may be replaced by an immersion sensor.

The equipment shall not be capable of automatic activation, except in the case of the second operation for man-overboard devices only.

Initial activation shall break a seal which shall not be replaceable by the user. This seal shall not be broken when using the test facility.

After activation it shall be simple to de-activate the equipment.

The switch which operates any test facility (subclause 4.1) shall be so designed that it returns automatically to the off-position when released.

## 4.3 Indicators

The equipment shall be provided with a visual indication that signals are being emitted.

## 4.4 Labelling

The equipment shall be provided with a label, or labels, permanently affixed to the exterior of the equipment, containing the following information:

- frequency or frequencies of operation of the equipment;
- serial number of the equipment;
- type designation of the equipment; [SIST EN 300 152-1 V1.2.2:2003](https://standards.iteh.ai/catalog/standards/sist/8a3fec15-36ce-47ee-a8db-3cc5819ad959/sist-en-300-152-1-v1-2-2-2003)
- adequate instructions to enable the equipment to be activated and de-activated;
- the type of battery as specified by the manufacturer of the EPIRB;
- a warning to the effect that the EPIRB should not be operated except in an emergency;
- the date on which the battery will need to be replaced. Simple means shall be provided for changing this date when the battery is replaced.

## 4.5 Requirements for conformity testing purposes

To assist the testing authority, complete technical and operational documentation shall be provided with the equipment.

## 4.6 Power source

### 4.6.1 Battery requirements

The type of battery and designation specified by the manufacturer for use in the equipment shall be clearly and indelibly marked on the equipment.

The battery shall be clearly and durably marked with the expiry date.

### 4.6.2 Safety precautions

Provisions shall be made for protecting the equipment from damage due to the accidental reversal of polarity of the battery.

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## 5 Technical requirements

### 5.1 EPIRB transmission characteristics

When activated, the EPIRB shall transmit continuously on either the frequency 121,5 MHz or the frequencies 121,5 MHz and 243 MHz.

The class of emission shall be A3X as defined in ITU-R Recommendation M.690-1 [1]. However, the signal may include information of the identity of the ship. If included, this information should be transmitted automatically and shall not occupy more than 20 seconds in every 2 minutes of transmission.

### 5.2 EPIRB power source

#### 5.2.1 Battery requirements

The battery provided as a power source shall be a primary battery and have sufficient capacity to operate the equipment for an uninterrupted period of at least 24 hours, or for man-overboard devices only, at least 6 hours, under all temperature conditions, (subclause 6.6), within the requirements of the present document.

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## 6 General conditions of measurement

### 6.1 Test frequencies

For the purpose of conformity testing, the EPIRB shall be provided with the frequencies specified by the administration of the country in which the test is carried out. In the case of EPIRBs fitted with 121,5 MHz and 243 MHz, two frequencies are applicable and unless otherwise stated, tests shall be carried out on both frequencies.

### 6.2 Test fixture

The test fixture is a radio frequency coupling device with an integral antenna equipment for coupling the integral antenna to a 50  $\Omega$  radio frequency terminal at the working frequencies of the equipment under test. This allows certain measurements to be performed using the conducted measurement methods. Only relative measurements shall be performed and only those at or near frequencies for which the test fixture has been calibrated.

The test fixture normally shall be provided by the manufacturer.

The performance characteristics of the test fixture shall be approved by the testing laboratory and shall conform to the following basic parameters:

- a) the coupling loss shall not be greater than 30 dB;
- b) a coupling loss variation over the frequency range used in the measurement which does not exceed 2 dB;
- c) circuitry associated with the Radio Frequency (RF) coupling shall contain no active or non linear devices;
- d) the VSWR at the 50  $\Omega$  socket shall not be greater than 1,5 over the frequency range of the measurements;
- e) the coupling loss shall be independent of the position of the test fixture and be unaffected by the proximity of surrounding objects or people. The coupling loss shall be reproducible when the equipment under test is removed and replaced;
- f) the coupling loss shall remain substantially constant when the environmental conditions are varied.

Any connections provided on the equipment in order to facilitate relative measurements shall not affect the performance of the equipment, neither in the test fixture nor when making measurements involving the use of radiated fields.