

Australian/New Zealand Standard™

**406 MHz satellite distress beacons**

**Part 2: Personal locator beacons (PLBs)**



## **AS/NZS 4280.2:2017**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee RC-004, Radiocommunications Equipment—Maritime. It was approved on behalf of the Council of Standards Australia on 12 December 2016 and by the New Zealand Standards Approval Board on 20 January 2017. This Standard was published on 28 February 2017.

---

The following are represented on Committee RC-004:

Australian Communications and Media Authority  
Australian Industry Group  
Australian Maritime Safety Authority  
Australian Volunteer Coast Guard Association  
Boating Industries Alliance Australia  
Civil Aviation Safety Authority  
Consumer Electronics Suppliers Association  
Department of Defence (Australian Government)  
Electromagnetic Technical Evaluation Committee  
Maritime New Zealand  
Ministry of Business, Innovation and Employment, New Zealand  
Telecommunications Users Association of New Zealand  
Wireless Institute Australia  
Yachting Australia

---

### **Keeping Standards up-to-date**

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at [www.saiglobal.com](http://www.saiglobal.com) or Standards New Zealand web site at [www.standards.govt.nz](http://www.standards.govt.nz) and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of Standards Australia or the New Zealand Standards Executive at the address shown on the back cover.

---

*This Standard was issued in draft form for comment as DR AS/NZS 4280.2:2016.*

---

# Australian/New Zealand Standard™

## 406 MHz satellite distress beacons

### Part 2: Personal locator beacons (PLBs)

Originated as part of AS/NZS 4280:1995.  
Previous edition AS/NZS 4280.2:2003.  
Third edition 2017.

#### **COPYRIGHT**

© Standards Australia Limited/Standards New Zealand

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Australia) or the Copyright Act 1994 (New Zealand).

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, PO Box 1473, Wellington 6011.

## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee RC-004, Radiocommunications Equipment—Maritime, to supersede AS/NZS 4280.2:2003, *406 MHz satellite distress beacons*, Part 2: *Personal locator beacons (PLBs)*, 12 months from the date of publication. During this period, both standards will operate in parallel, after which it is anticipated that the 2003 edition will be withdrawn.

The objective of this Standard is to provide equipment designers, manufacturers, suppliers and testing facilities of 406 MHz satellite distress beacons, when employed as personal locator beacons, with the minimum radiofrequency and environmental requirements and associated test methods to enable design and confirmation of compliance with radiofrequency spectrum and maritime regulatory requirements in Australia and New Zealand.

The principal differences between this and the previous edition are as follows:

- The registration cards have been updated. Australian coded beacons are now required to have a registration card inserted instead of a registration form.
- Three new climatic and durability tests have been included: a buoyancy test, solar irradiance test and oil resistance test.
- For Australian coded beacons, the description of proof of registration stickers has been changed to an information label.
- Contact details have been updated for Australian and New Zealand authorities and Cospas-Sarsat.

This Standard is Part 2 of the AS/NZS 4280 series, *406 MHz satellite distress beacons*, which is published in parts as follows:

Part 1: Marine emergency position-indicating beacons (EPIRBs)

Part 2: Personal locator beacons (PLBs) (this Standard)

Part 1 is reproduced from IEC 61097-2:2008, *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*. Some variations have been made for Australian and New Zealand conditions.

The NOAA checksum calculation method for 15-character hexadecimal ID (UIN) codes, set out in *Calculations of checksums for 15-character hexadecimal ID (UIN) codes*, has been reproduced in Appendix F.

In Appendix B, Paragraphs B2.8 and B2.9 are extracts from RTCM C11010.2, *RTCM Standard 11010.2 for 406 MHz Satellite Personal Locator Beacons (PLBs)*.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

## CONTENTS

	<i>Page</i>
FOREWORD.....	4
<b>SECTION 1 SCOPE AND GENERAL</b>	
1.1 SCOPE.....	5
1.2 APPLICATION .....	5
1.3 REFERENCED AND RELATED DOCUMENTS.....	5
1.4 DEFINITIONS.....	6
<b>SECTION 2 ENVIRONMENTAL AND OPERATIONAL REQUIREMENTS</b>	
2.1 GENERAL.....	8
2.2 OPERATIONAL REQUIREMENTS.....	9
2.3 BATTERY REQUIREMENTS.....	10
2.4 DIGITAL MESSAGE FORMAT.....	10
2.5 CLIMATIC AND DURABILITY TESTS .....	10
2.6 DOCUMENTATION.....	10
<b>SECTION 3 RADIOFREQUENCY REQUIREMENTS</b>	
3.1 ADJUSTMENT MECHANISMS .....	13
3.2 TRANSMITTER OPERATION ON 406 MHz .....	13
3.3 HOMING TRANSMITTER FOR 406 MHz PERSONAL LOCATOR BEACON .....	13
<b>APPENDICES</b>	
A PROCUREMENT OF COSPAS-SARSAT DOCUMENTS .....	15
B CLIMATIC AND DURABILITY TESTS FOR 406 MHz SATELLITE PLBs .....	16
C NATIONAL REGISTRATION AUTHORITIES.....	19
D BEACON REGISTRATION CARDS.....	20
E RADIOFREQUENCY TESTS FOR THE HOMING TRANSMITTER OF 406 MHz PERSONAL LOCATOR BEACONS.....	21
F NOAA CALCULATIONS OF CHECKSUMS FOR 15-CHARACTER HEXADECIMAL ID (UIN) CODES .....	24

## FOREWORD

To provide the essential requirements for 406 MHz satellite personal locator beacons (PLBs), this Standard includes environmental and operational requirements and radiofrequency requirements for personal beacons. The requirements are made up of specifications, and methods of test for verification of those specifications, which are based on COSPAS-SARSAT requirements.

These specifications are required under relevant legislation by the appropriate national spectrum management authorities and safety authorities in Australia and New Zealand. The authorities may adopt them in part or whole under applicable legislation to support regulation.

The requirements of the national spectrum management authorities are contained in Section 3 and Appendix E. The national safety authorities' requirements are in Section 2 and Appendix B, supported by the information in Appendices C and D. The appendices in both cases contain test or registration requirements.

Appendix A provides contact addresses for the procurement of COSPAS-SARSAT documentation.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

**Australian/New Zealand Standard**  
**406 MHz satellite distress beacons**

Part 2: Personal locator beacons (PLBs)

SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE**

This Standard provides minimum requirements and methods of test for personal locator beacons (PLBs) operating with a nominal frequency in the band 406.000 MHz to 406.100 MHz.

These requirements encompass the physical characteristics of the devices pertaining to multi-environment use, and the performance characteristics for reception through the COSPAS-SARSAT satellite system.

Requirements for the characteristics of homing transmitters incorporated in these devices are also included.

This Standard does not apply to the fitted emergency locating transmitters (ELTs) used in aeronautical applications.

**1.2 APPLICATION**

This Standard is intended for use by equipment designers, manufacturers, suppliers and testing authorities to ensure correct operation of PLBs and their compatibility with COSPAS-SARSAT.

**1.3 REFERENCED AND RELATED DOCUMENTS**

**1.3.1 Referenced documents**

The following documents are referred to in this Standard:

AS/NZS CISPR

22 Information technology equipment—Radio disturbance characteristics—Limits and methods of measurement

IEC

60945 Maritime navigation and radiocommunication equipment and systems—General requirements—Methods of testing and required test results

COSPAS-SARSAT

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

C/S T.007, COSPAS-SARSAT 406 MHz Distress Beacons Type Approval Standard

International Maritime Organisation (IMO)

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

National Oceanic and Atmospheric Administration (NOAA)

Calculations of checksums for 15-character hexadecimal ID (UIN) codes