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Maritime navigation and radiocommunication equipment and systems – Automatic identification system (AIS) – Part 1: AIS Base Stations – Minimum operational and performance requirements, methods of testing and required test results

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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International Standard IEC 62320-1 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 2007 and its Amendment 1:2008. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- incorporation of the technical characteristics included in Recommendation ITU-R M.1371-5;
- the BCE, BCF and CAB sentences replaced with BCG, BCL and RST;

- comment blocks replaced with TAG blocks;
- scheduled broadcast of Message 26 added;
- Message 27 control added;
- transmitter intermodulation attenuation harmonised with ITU;
- 12,5 kHz channel operation removed;
- transmission of Message 24A, Message 25 and Message 26 added;
- 90 % channel load test with VSI and TAG blocks enabled added.

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

CDV	Report on voting
80/736/CDV	80/746/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 Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability 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- withdrawn,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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Chapter V of the International Convention for the Safety of Life at Sea 1974 (SOLAS) requires mandatory carriage of Automatic Identification System (AIS) equipment on all vessels constructed on or after 01 July 2002. Carriage for other types and sizes of SOLAS Convention vessels was required to be completed not later than 31 December 2004.

SOLAS Chapter V, Regulation 19, states that AIS shall:

a) provide automatically to appropriate equipped shore stations, other ships and aircraft information, including ship's identity, type, position, course, speed, navigational status and other safety-related information;

b) receive automatically such information from similarly fitted ships;

c) monitor and track ships; and

d) exchange data with shore-based facilities.

In addition, the IMO performance standards for AIS state that:

– The AIS should improve the safety of navigation by assisting in the efficient navigation of ships, protection of the environment, and operation of Vessel Traffic Services (VTS), by satisfying the following functional requirements:

  1) in a ship-to-ship mode for collision avoidance;

  2) as a means for littoral States to obtain information about a ship and its cargo; and

  3) as a VTS tool, i.e. ship-to-shore (traffic management).

– The AIS should be capable of providing to ships and to competent authorities, information from the ship, automatically and with the required accuracy and frequency, to facilitate accurate tracking. Transmission of the data should be with the minimum involvement of ship's personnel and with a high level of availability.

The provision of Shore Based AIS is necessary to attain the full benefit of the SOLAS Convention requirements.

This part of IEC 62320 provides the minimum operational and performance requirements, methods of test and the required test results for AIS Base Stations. The testing is divided into three sections, the transceiver tests, the logical tests and the Presentation Interface tests. These are captured in Clauses 8, 9 and 10 respectively. The method used for testing is that the EUT should meet all the tests requirements of Clause 8 before proceeding to Clause 9. Likewise, the unit should meet all of the test requirements before proceeding to Clause 10. Clause 10 has also been prioritised so that the tests are progressive.

Clauses 5 to 7 provide functional requirement information and Clause 8 provides the general test environment for the EUT.

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – AUTOMATIC IDENTIFICATION SYSTEM (AIS) –

Part 1: AIS Base Stations – Minimum operational and performance requirements, methods of testing and required test results

1 Scope

This part of IEC 62320 specifies the minimum operational and performance requirements, methods of testing and required test results for AIS Base Stations, compatible with the performance standards adopted by IMO Resolution MSC.74 (69), Annex 3, Universal AIS. It incorporates the technical characteristics of non-shipborne, fixed station AIS equipment, included in recommendation ITU-R M.1371 and IALA Recommendation A-124. Where applicable, it also takes into account the ITU Radio Regulations. This standard takes into account other associated IEC international standards and existing national standards, as applicable.

This standard is applicable for AIS Base Stations. It does not include specifications for the display of AIS data on shore.

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 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*

IEC 61162-1:2010, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 1: Single talker and multiple listeners*

IEC 61993-2, *Maritime navigation and radiocommunication equipment and systems – Automatic identification systems (AIS) – Part 2: Class A shipborne equipment of the automatic identification system (AIS) – Operational and performance requirements, methods of test and required test results*

IEC 62287-1:2010, *Maritime navigation and radiocommunication equipment and systems – Class B shipborne equipment of the automatic identification system (AIS) – Part 1: Carrier-sense time division multiple access (CSTDMA) techniques*
IEC 62287-1:2010/AMD1:2013

IEC 62320-2, *Maritime navigation and radiocommunication equipment and systems – Automatic identification system (AIS) – Part 2: AIS AtoN Stations – Operational and performance requirements, methods of testing and required test results*

IMO Resolution MSC.74 (69), Annex 3, *Recommendation on performance standards for an universal shipborne automatic identification system (AIS)*

ITU-R Recommendation M.1084-4, *Interim solutions for improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service*

ITU-R Recommendation M.1371, *Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile band*

RTCM 10402 – *RTCM Recommended Standards for Differential GNSS (Global Navigation Satellite Systems) Service*

IALA Recommendation A-124 *on Automatic Identification System (AIS). Shore Station and networking aspects relating to the AIS Service*