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

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 61108-1:2004 sisaldab Euroopa standardi EN 61108-1:2003 ingliskeelset teksti.	This Estonian standard EVS-EN 61108-1:2004 consists of the English text of the European standard EN 61108-1:2003.
Standard on kinnitatud Eesti Standardikeskuse 22.07.2004 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 22.07.2004 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 31.10.2003.	Date of Availability of the European standard text 31.10.2003.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 47.020.70

Võtmesõnad: gnss, gps, performances, receiver equipment, tests

EUROPEAN STANDARD **EN 61108-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM October 2003

ICS 47.020.70 Supersedes EN 61108-1:1996

English version

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 61108-1:2003)

Matériels et systèmes de navigation et de radiocommunication maritimes – Système mondial de navigation par satellite (GNSS) Partie 1: Système de positionnement par satellite GPS – Matériel de réception – Normes de fonctionnement, méthodes d'essai et résultats d'essai exigibles (CEI 61108-1:2003)

Navigations- und Funkkommunikationsgeräte und -systeme für die Seeschifffahrt – Weltweite Navigations-Satellitensysteme (GNSS) Teil 1: Weltweites Ortungssystem (GPS) – Empfangsanlagen – Funktionsanforderungen, Prüfverfahren und geforderte Prüfergebnisse (IEC 61108-1:2003)

This European Standard was approved by CENELEC on 2003-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 61108-1:2003 E

Foreword

The text of document 80/371/FDIS, future edition 2 of IEC 61108-1, prepared by IEC TC 80, Maritime navigation and radiocommunication equipment and systems, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61108-1 on 2003-10-01.

This European Standard supersedes EN 61108-1:1996.

It includes the following technical changes:

a) it reflects the changes brought about by IMP adopting GPS as part of the carriage requirement on ships defined in SOLAS Chapter V;

b) the new IMO performance standards, resolution MSC.112(73), replaced the previous issue, A.819(19), for new installations on the 1st of July 2002. This second edition of N 61108-1 incorporates revised tests for type approvals to the new performance standard;

c) changes include the need for a data output to the EN 61162 series giving COG SOG and UTC with validity marking, operation during interference conditions and improved failure warnings.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2004-07-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-10-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 61108-1:2003 was approved by CENELEC as a European Standard without any modification.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60721-3-6	1987	Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities Section 6: Ship environment	EN 60721-3-6 [1)]	1993
IEC 60945	- [2)]	Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results	EN 60945	2002 [3)]
IEC 61162	Series	Maritime navigation and radiocommunication equipment and systems - Digital interfaces	EN 61162	Series
IMO Resolution A.529(13)	1983	Accuracy standards for navigation	-	-
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.815(19)	1995	Worldwide radionavigation system	-	-
IMO Resolution MSC.112(73)	2000	Performance standards for shipborne global positioning system (GPS) receiver equipment	-	-

[1)] EN 60721-3-6 includes A1:1991 to IEC 60721-3-6.

[2)] Undated reference.

[3)] Valid edition at date of issue.

Publication	Year	Title	EN/HD	Year
IMO Resolution MSC.114(73)	2000	Performance standards for shipborne DGPS and DGLONASS maritime radio beacon receiver equipment	-	-
ITU-R Recommendation M.823-1	1995	Technical characteristics of differential transmissions for global navigation satellite systems (GNSS) from maritime radio beacons in the frequency band 285 kHz - 325 kHz (283,5 kHz - 315 kHz in Region 1)	-	-
ITU-R Recommendation M.823-2	1997	Techhnical characteristics of differential transmissions for Global Navigation Satellite Systems from maritime radio beacons in the frequency band 283.5 - 315 kHz in Region 1 and 285 - 325 kHz in Regions 2 and 3	-	-
ITU-R Recommendation M.1477	2000	Technical and performance characteristics of current and planned radionavigation-satellite service (space-to-Earth) and aeronautical radio-navigation service receivers to be considered in interference studies in the band 1 559 - 1 610 MHz	-	-
-	2001	Global Positioning System – Standard Positioning Service – Performance Specification (USA Department of Defence)		

INTERNATIONAL STANDARD

IEC 61108-1

Second edition
2003-07

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

Matériels et systèmes de navigation et de radiocommunication maritimes – Système mondial de navigation par satellite (GNSS) –

Partie 1: Système de positionnement par satellite GPS – Matériel de réception – Normes de fonctionnement, méthodes d'essai et résultats d'essai exigibles

Reference number
IEC 61108-1:2003(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site (www.iec.ch)**

- **Catalogue of IEC publications**

  The on-line catalogue on the IEC web site (http://www.iec.ch/searchpub/cur_fut.htm) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

  This summary of recently issued publications (http://www.iec.ch/online_news/justpub/jp_entry.htm) is also available by email. Please contact the Customer Service Centre (see below) for further information.

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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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

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, 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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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 61108-1 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 1996.

This edition of the IEC standard for GPS, compared to the previous edition, includes the following technical changes:

a) it reflects the changes brought about by IMO adopting GPS as part of the carriage requirement on ships defined in SOLAS Chapter V;
b) the new IMO performance standard, resolution MSC.112(73), replaced the previous issue, A.819(19), for new installations on the 1st of July 2002. This second edition of IEC 61108-1 incorporates revised tests for type approvals to the new performance standard;

c) changes include the need for a data output to the IEC 61162 series giving COG SOG and UTC with validity marking, operation during interference conditions and improved failure warnings.

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

FDIS	Report on voting
80/371/FDIS	80/373/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.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this standard may be issued at a later date.

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

1 Scope

This part of IEC 61108 specifies the minimum performance standards, methods of testing and required test results for GPS shipborne receiver equipment, based on IMO Resolution MSC.112(73), which uses the signals from the United States of America, Department of Defence (US DOD), Global Positioning System (GPS) in order to determine position. A description of the GPS SPS is given in the normative reference – GPS, SPS signal specification – USA Department of Defence – 3rd Edition October 2001. This receiver standard applies to phases of the voyage "other waters" as defined in IMO Resolution A.529(13).

All text of this standard, whose meaning is identical to that in IMO Resolution MSC.112(73), is printed in *italics* and the Resolution and paragraph number indicated between brackets i.e. (M.112/A1.2).

The requirements in clause 4 are cross-referenced to the tests in clause 5 and vice versa.

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 60721-3-6:1987, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Ship environment*

IEC 60945, *Maritime navigation and radiocommunication equipment and systems – General requirements – Methods of testing and required test results*

IEC 61162 (all parts), *Maritime navigation and radiocommunication equipment and systems – Digital interfaces*

IMO Resolution A.529(13):1983, *Accuracy standards for navigation*

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.815(19):1995, *Worldwide radionavigation system*

IMO Resolution MSC.112(73):2000, *Performance standards for shipborne global positioning system (GPS) receiver equipment*

IMO Resolution MSC.114(73):2000, *Performance standards for shipborne DGPS and DGLONASS maritime radio beacon receiver equipment*

ITU-R Recommendation M.823-1:1995, *Technical characteristics of differential transmissions for global navigation satellite systems (GNSS) from maritime radio beacons in the frequency band 285 kHz-325 kHz (283,5 kHz-315 kHz in Region 1)*

ITU-R Recommendation M.823-2:1997, *Technical characteristics of differential transmissions for Global Navigation Satellite Systems from maritime radio beacons in the frequency band 283.5-315 kHz in Region 1 and 285-325 kHz in Regions 2 and 3*

ITU-R Recommendation M.1477:2000, *Technical and performance characteristics of current and planned radionavigation-satellite service (space-to-Earth) and aeronautical radio-navigation service receivers to be considered in interference studies in the band 1 559-1 610 MHz*

Global Positioning System – Standard Positioning Service – Performance Specification – USA Department of Defence – 3rd Edition October 2001