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**Pomorska navigacijska in radiokomunikacijska oprema in sistemi - Globalni navigacijski satelitski sistem (GNSS) - 5. del: Satelitski navigacijski sistem BeiDou - Oprema sprejemnika - Tehnične zahteve, preskusne metode in pričakovani rezultati preskušanja (IEC 61108-5:2020)**

Maritime navigation and radiocommunication equipment and systems - Global navigation satellite systems (GNSS) - Part 5: BeiDou navigation satellite system (BDS) - Receiver equipment - Performance requirements, methods of testing and required test results (IEC 61108-5:2020)

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Navigations- und Funkkommunikationsgeräte und -systeme für die Seeschifffahrt - Weltweite Navigations-Satellitensysteme (GNSS) - Teil 5: BeiDou Satellitennavigationssystem (BDS) - Empfangsanlagen - Leistungsanforderungen, Prüfverfahren und geforderte Prüfergebnisse (IEC 61108-5:2020)

Matériels et systèmes de navigation et de radiocommunication maritimes - Système mondial de navigation par satellite (GNSS) - Partie 5: Système de navigation par satellite BeiDou (BDS) - Matériels de réception - Exigences de performances, méthodes d'essai et résultats d'essai exigés (IEC 61108-5:2020)

**Ta slovenski standard je istoveten z: EN IEC 61108-5:2020**

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**ICS:**

47.020.70	Navigacijska in krmilna oprema	Navigation and control equipment
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**SIST EN IEC 61108-5:2020**

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EUROPEAN STANDARD

EN IEC 61108-5

NORME EUROPÉENNE

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May 2020

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Maritime navigation and radiocommunication equipment and systems - Global navigation satellite systems (GNSS) - Part 5: BeiDou navigation satellite system (BDS) - Receiver equipment - Performance requirements, methods of testing and required test results  
(IEC 61108-5:2020)

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**EN IEC 61108-5:2020 (E)****European foreword**

The text of document 80/952/FDIS, future edition 1 of IEC 61108-5, prepared by IEC/TC 80 "Maritime navigation and radiocommunication equipment and systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61108-5:2020.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-01-15
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-04-15

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

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The text of the International Standard IEC 61108-5:2020 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61108 (series)	NOTE	Harmonized as EN 61108 (series)
IEC 61162-460	NOTE	Harmonized as EN IEC 61162-460

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60721-3-6	1987	Classification of environmental conditions. Part 3: Classification of groups of environmental parameters and their severities. Ship environment	EN 60721-3-6	1993
IEC 60945	-	Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results	EN 60945	-
IEC 61108-4	-	Maritime navigation and radiocommunication equipment and systems - Global navigation satellite systems (GNSS) - Part 4: Shipborne DGPS and DGLONASS maritime radio beacon receiver equipment - Performance requirements, methods of testing and required test results	EN 61108-4	-
IEC 61162-1	-	Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 1: Single talker and multiple listeners	EN 61162-1	-
IEC 61162-2	-	Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 2: Single talker and multiple listeners, high-speed transmission	EN 61162-2	-
IEC 61162-450	-	Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 450: Multiple talkers and multiple listeners - Ethernet interconnection	EN IEC 61162-450	-

## EN IEC 61108-5:2020 (E)

IEC 62288	- Maritime navigation and radiocommunication equipment and systems - Presentation of navigation-related information on shipborne navigational displays - General requirements, methods of testing and required test results	-	-
IEC 62923-1	- Maritime navigation and radiocommunication equipment and systems - Bridge alert management - Part 1: Operational and performance requirements, methods of testing and required test results	EN IEC 62923-1	-
IEC 62923-2	- Maritime navigation and radiocommunication equipment and systems - Bridge alert management - Part 2: Alert and cluster identifiers and other additional features	EN IEC 62923-2	-
ITU-R M.823-3	- 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	-	-
IMO 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	-	-
IMO A.915(22)	- Revised maritime policy and requirements for a future Global Navigation Satellite System (GNSS)	-	-
IMO A.1046(27)	- Worldwide radionavigation system	-	-
IMO MSC.379(93)	- Performance standards for shipborne BeiDou satellite navigation system (BDS) receiver equipment	-	-
IMO MSC.401(95)	- Performance standards for multi-system shipborne radionavigation receivers	-	-
RTCM 10402.4	- Recommended standards for differential GNSS (Global Navigation Satellite Systems) service	-	-
BDS-SIS-ICD-B1I-3.0	- BeiDou Navigation Satellite System Signal In Space Interface Control Document Open Service Signal B1I (Version 3.0), China Satellite Navigation Office	-	-

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# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Maritime navigation and radiocommunication equipment and systems –  
Global navigation satellite systems (GNSS) –  
Part 5: BeiDou navigation satellite system (BDS) – Receiver equipment –  
Performance requirements, methods of testing and required test results**

<https://standards.iteh.ai/catalog/standards/sist/2290458b-b7e9-4260-4475-41873181d15c-iec-61108-5-2020>

**Matériels et systèmes de navigation et de radiocommunication maritimes –  
Système mondial de navigation par satellite (GNSS) –  
Partie 5: Système de navigation par satellite BeiDou (BDS) –  
Matériels de réception – Exigences de performances, méthodes d'essai et  
résultats d'essai exigés**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – GLOBAL NAVIGATION SATELLITE SYSTEMS (GNSS) –****Part 5: BeiDou navigation satellite system (BDS) – Receiver equipment – Performance requirements, methods of testing and required test results**

## FOREWORD

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International Standard IEC 61108-5 has been prepared by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
80/952/FDIS	80/955/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

All text of this document, whose meaning is identical to that in IMO resolution MSC.379(93), is printed in italics and the resolution and paragraph numbers are indicated in brackets, i.e. (M.379/A1.2).

A list of all parts in the IEC 61108 series, published under the general title *Maritime navigation and radiocommunication equipment and systems – Global navigation satellite systems (GNSS)*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
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# MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – GLOBAL NAVIGATION SATELLITE SYSTEMS (GNSS) –

## Part 5: BeiDou navigation satellite system (BDS) – Receiver equipment – Performance requirements, methods of testing and required test results

### 1 Scope

This part of IEC 61108 specifies the minimum performance requirements, methods of testing and required test results for BDS shipborne receiver equipment, based on IMO resolution MSC.379(93), which uses the signals from the BeiDou navigation satellite system in order to determine position. It takes account of the general requirements given in IMO resolution A.694(17) and is associated with IEC 60945. When a requirement in this document is different from IEC 60945, the requirement in this document takes precedence. This document also takes account, as appropriate, of requirements for the presentation of navigation-related information on shipborne navigational displays given in IMO resolution MSC.191(79) and is associated with IEC 62288 and MSC.302(87) associated with IEC 62923-1.

This receiver standard applies to navigation in the ocean, coastal, harbour entrances, harbour approaches and restricted waters, as defined in IMO resolution A.915(22) and IMO resolution A.1046(27).

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### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 61108-4, *Maritime navigation and radiocommunication equipment and systems – Global navigation satellite systems (GNSS) – Part 4: Shipborne DGPS and DGLONASS maritime radio beacon receiver equipment – Performance requirements, methods of testing and required test results*

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

IEC 61162-2, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 2: Single talker and multiple listeners, high-speed transmission*

IEC 61162-450, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 450: Multiple talkers and multiple listeners – Ethernet interconnection*

IEC 62288, *Maritime navigation and radiocommunication equipment and systems – Presentation of navigation-related information on shipborne navigational displays – General requirements, methods of testing and required test results*

IEC 62923-1, *Maritime navigation and radiocommunication equipment and systems – Bridge alert management – Part 1: Operational and performance requirements, methods of testing and required test results*

IEC 62923-2, *Maritime navigation and radiocommunication equipment and systems – Bridge alert management – Part 2: Alert and cluster identifiers and other additional features*

ITU-R Recommendation M.823-3, *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*

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*

IMO resolution A.915(22), *Revised maritime policy and requirements for a future Global Navigation Satellite System (GNSS)*

IMO resolution A.1046(27), *Worldwide radionavigation system*

IMO resolution MSC.379(93), *Performance standards for shipborne BeiDou satellite navigation system (BDS) receiver equipment*

IMO resolution MSC.401(95), *Performance standards for multi-system shipborne radionavigation receivers*

RTCM 10402.4, *Recommended standards for differential GNSS (Global Navigation Satellite Systems) service*

BDS-SIS-ICD-B11-3.0, *BeiDou Navigation Satellite System Signal In Space Interface Control Document Open Service Signal B11 (Version 3.0)*, China Satellite Navigation Office

### 3 Terms, definitions and abbreviated terms

For the purposes of this document, the following terms, definitions and abbreviated terms apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.1 Terms and definitions

##### 3.1.1

##### **BeiDou coordinate system**

##### **BDCS**

coordinate system adopted by BDS

Note 1 to entry: The definition of BDCS is in accordance with the specifications of the International earth rotation and reference system service (IERS), and it is consistent with the definition of the China geodetic coordinate system 2000 (CGCS2000). BDCS and CGCS2000 have the same ellipsoid parameters. The origin is located at the Earth's centre of mass. The Z-axis is the direction of the IERS reference pole (IRP). The X-axis is the intersection of the IERS Reference Meridian (IRM) and the plane passing through the origin and normal to the Z-axis. The Y-axis, together with Z-axis and X-axis, constitutes a right-handed orthogonal coordinate system. The length unit is the international system of units (SI) metre.

Note 2 to entry: This note applies to the French language only.

**3.1.2****BDS time****BDT**

time reference which adopts the international system of units (SI) second as the base unit, and accumulates continuously without leap seconds

Note 1 to entry: The start epoch of BDT is 00:00:00 on January 1, 2006 of coordinated universal time (UTC). BDT connects with UTC via UTC (NTSC), and the deviation of BDT to UTC is maintained within 50 ns (modulo 1 s). The leap second information is broadcast in the navigation message.

Note 2 to entry: This note applies to the French language only.

**3.1.3****BeiDou navigation satellite system****BDS**

system independently developed and operated by China and providing position, velocity and time information for users, including open service and authorized service and short messages service

**3.2 Abbreviated terms**

BAM	bridge alert management
CAM	central alert management
COG	course over ground
CW	continuous wave
DBDS	differential BDS
EUT	equipment under test
GNSS	global navigation satellite system
GPS	global positioning system
HAL	horizontal alert limit
HDOP	horizontal dilution of precision
HPL	horizontal protection limit
INS	integrated navigation system
MKD	minimum keyboard display
NB	narrow band
NTSC	National time service centre (Chinese academy of sciences)
OS	open service
PDOP	position dilution of precision
PNT	position, navigation and timing
PVT	position, velocity and time
RAIM	receiver autonomous integrity monitoring
RF	radio frequency
RFCS	radio frequency constellation simulator
RFI	radio frequency interference
SIS	signal in space
SOG	speed over ground
UDRE	user differential range error
UTC	universal time coordinated
WB	wide band

## 4 Minimum performance requirements

### 4.1 Object

*(M.379/A1.2) The BDS Open Service (OS) provides positioning, navigation and timing services, free of direct user charges. The BDS receiver equipment shall be capable of receiving and processing the open service signal.*

*(M.379/A1.3) BDS receiver equipment intended for navigational purposes on ships with a speed not exceeding 70 knots, in addition to the general requirements specified in resolution A.694 (17) and the related standard IEC 60945, shall comply with the following minimum performance requirements.*

*(M.379/A1.4) The standards cover the basic requirements of position fixing, determination of course over ground (COG), speed over ground (SOG) and timing, either for navigation purposes or as input to other functions. The standards do not cover other computational facilities which may be in the equipment nor cover the requirements for other systems that may take input from the BDS receiver.*

### 4.2 BDS receiver equipment

(See 5.6.1)

#### 4.2.1 Minimum facilities

*(M.379/A2.1) The term "BDS receiver equipment" as used in the performance standards includes all the components and units necessary for the system to properly perform its intended functions. The BDS receiver equipment shall include the following minimum facilities:*

- 1) *antenna capable of receiving BDS signals;*
- 2) *BDS receiver and processor;*
- 3) *means of accessing the computed latitude/longitude position;*
- 4) *data control and interface; and*
- 5) *position display and, if required, other forms of output.*

*If BDS forms part of an approved Integrated Navigation System (INS), requirements of facilities 3) 4) and 5) may be provided within the INS.*

If BDS forms part of an approved multi-system PNT, requirements of facilities 3) 4) and 5) may be provided within the multi-system PNT.

Other computational activity, input/output activity or extra display functions which may be provided shall not degrade the performance of the equipment below the minimum performance requirements set out in this document.

#### 4.2.2 Configuration

The BDS receiver equipment may be supplied in one of several configurations to provide the necessary position information. Examples are as follows:

- stand-alone receiver with means of accessing computed position via a keyboard with the positional information suitably displayed;
- BDS black box receiver fed with operational parameters from external devices/remote locations and feeding an integrated system with means of access to the computed position via an appropriate interface, and the positional information available to at least one remote location. With this option, a separate user interface called as MKD shall be provided as a backup.