SVENSK STANDARD SS-EN 60945

Fastställd	Utgåva	Sida	Ingår i
2003-01-29	4	1 (1+91)	SEK Område 80

Svenska Elektriska Kommissionen, SEK

Marin navigerings- och radiokommunikationsutrustning – Allmänna fordringar – Provningsmetoder och erforderliga provningsresultat

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

Som svensk standard gäller europastandarden EN 60945:2002. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60945:2002.

Nationellt förord

Europastandarden EN 60945:2002

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC

– **IEC 60945, Fourth edition, 2002 - Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare utgiven svensk standard SS-EN 60945, utgåva 3, 1997, gäller ej fr o m 2005-10-01.

ICS 47.020.70

Denna standard är fastställd av Svenska Elektriska Kommissionen, SEK,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

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Stora delar av arbetet sker internationellt

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Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD **EN 60945**

NORME EUROPÉENNE

EUROPÄISCHE NORM October 2002

ICS 47.020.70 Supersedes EN 60945:1997

English version

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

(IEC 60945:2002)

Matériels et systèmes de navigation et de radiocommunication maritimes - Spécifications générales - Méthodes d'essai et résultats exigibles (CEI 60945:2002)

Navigations- und Funkkommunikationsgeräte und -systeme für die Seeschifffahrt - Allgemeine Anforderungen - Prüfverfahren und geforderte Prüfergebnisse (IEC 60945:2002)

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 60945:2002 E

Foreword

The text of document 80/345/FDIS, future edition 4 of IEC 60945, 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 60945 on 2002-10-01.

This European Standard supersedes EN 60945:1997.

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)	2003-07-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2005-10-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annexes A and ZA are normative and annexes B to G are informative.
Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60945:2002 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 60068-2-32	NOTE	Harmonized as EN 60068-2-32:1993 (not modified).
IEC 60068-3-4	NOTE	Harmonized as EN 60068-3-4:2002 (not modified).
IEC 60073	NOTE	Harmonized as EN 60073:1996 (not modified).
IEC 60300-1	NOTE	Harmonized as EN 60300-1:1993 (not modified).
IEC 60721-2-1	NOTE	Harmonized as HD 478.2.1 S1:1989 (not modified).
IEC 60721-2-4	NOTE	Harmonized as HD 478.2.4 S1:1989 (not modified).
IEC 60721-3-6	NOTE	Harmonized as EN 60721-3-6:1993 + A2:1997 (not modified).
IEC 61162 (Series)	NOTE	Harmonized as EN 61162 (Series) (not modified).
IEC 61209	NOTE	Harmonized as EN 61209:1999 (not modified).
IEC 61508-1	NOTE	Harmonized as EN 61508-1:2001 (not modified).

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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 60050-161	1990	International Electrotechnical	-	-
A1	1997	Vocabulary (IEV)	-	-
A2	1998	Chapter 161: Electromagnetic compatibility	-	-
IEC 60068-2-1	1990	Environmental testing	EN 60068-2-1	1993
A1	1993	Part 2: Tests - Tests A: Cold	A1	1993
A2	1994		A2	1994
IEC 60068-2-2	1974	Part 2: Tests - Tests B: Dry heat	EN 60068-2-2 [1)]	1993
A1	1993		A1	1993
A2	1994		A2	1994
IEC 60068-2-5	1975	Part 2: Tests - Test Sa: Simulated solar radiation at ground level	EN 60068-2-5	1999
IEC 60068-2-6	1995	Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995
+ corr. March	1995			
IEC 60068-2-9	1975	Part 2: Tests - Guidance for solar radiation testing	EN 60068-2-9	1999
+ A1	1984			
A1/corr. August	1989			
IEC 60068-2-30	1980	Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)	EN 60068-2-30	1999
+ A1	1985			
IEC 60068-2-48	1982	Part 2: Tests - Guidance on the application of the tests of IEC 60068 to simulate the effects of storage	EN 60068-2-48	1999
IEC 60068-2-52	1996	Part 2: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)	-	-
corr. July	1996			
IEC 60071-2	1996	Insulation co-ordination Part 2: Application guide	EN 60071-2	1997

[1)] EN 60068-2-2 includes supplement A:1976 to IEC 60068-2-2.

Publication	Year	Title	EN/HD	Year
IEC 60092-101 A1 A1/corr. November	1994 1995 1996	Electrical installations in ships Part 101: Definitions and general requirements	-	-
IEC 60417	Series	Graphical symbols for use on equipment	EN 60417	Series
IEC 60529 A1	1989 1999	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May A1	1991 1993 2000
IEC 60533	1999	Electrical and electronic installations in ships - Electromagnetic compatibility	-	-
IEC 60651 A1	1979 1993	Sound level meters	EN 60651 A1	1994 1994
IEC 61000-4-2	1995	Electromagnetic compatibility (EMC) Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	1995
IEC 61000-4-3 (mod)	1995	Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	1996 [2)]
IEC 61000-4-4	1995	Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	1995
IEC 61000-4-5	1995	Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	1995
IEC 61000-4-6	1996	Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	1996
IEC 61000-4-8	1993	Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8	1993
IEC 61000-4-11	1994	Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	1994
CISPR 16-1	1999	Specification for radio disturbance and immunity measuring apparatus and methods Part 1: Radio disturbance and immunity measuring apparatus	-	-

[2)] EN 61000-4-3:1996 is superseded by EN 61000-4-3:2002, which is based on IEC 61000-4-3:2002.

Publication	Year	Title	EN/HD	Year
ISO 694	2000	Ships and marine technology - Positioning of magnetic compasses in ships	EN ISO 694	2001
ISO 3791	1976	Office machines and data processing equipment - Keyboard layouts for numeric applications	-	-
IMO SOLAS	1997	International Convention for the Safety of Life at Sea (SOLAS)	-	-
IMO Torremolinos Protocol	1993	Modification of the Torremolinos International Convention for the Safety of Fishing Vessels:1977	-	-
IMO MSC/ Circular 794	1997	Standard Marine Communication Phrases (SMCPs)	-	-
IMO Resolution A.694	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.803	1995	Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling	-	-
IMO Resolution A.813	1995	General requirements for electromagnetic compatibility (EMC) for all electrical and electronic ship's equipment	-	-
ITU-T Recommendation E.161	1993	Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network	-	-

CONTENTS

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS –

General requirements – Methods of testing and required test results

1 Scope

This International Standard assists in meeting a requirement of the International Convention for Safety of Life at Sea (SOLAS), adopted by the International Maritime Organization (IMO), that the radio equipment defined in chapters III and IV, and the navigation equipment defined in chapter V of the Convention, be type-approved by administrations to conform with performance standards not inferior to those adopted by the IMO. (Administrations are defined by the IMO as governments of the states whose flags the ships are entitled to fly.)

The performance standard for general requirements for shipborne radio equipment and electronic navigation aids that has been adopted by the IMO is given in IMO Resolution A.694 and is reproduced in this standard as annex A, which forms the basis for this standard. Reference is made, where appropriate, to IMO Resolutions A.694 and A.813 and all subclauses whose wording is identical to that in the resolutions are printed in italics.

This standard specifies minimum performance requirements, methods of testing and required test results for general requirements which can be applied to those characteristics common to all equipment described hereunder:

a) shipborne radio equipment forming part of the global maritime distress and safety system required by the International Convention for Safety of Life at Sea (SOLAS) as amended, and by the Torremolinos International Convention for the Safety of Fishing Vessels as amended;

b) shipborne navigational equipment required by the International Convention for Safety of Life at Sea (SOLAS) as amended, and by the Torremolinos International Convention for the Safety of Fishing Vessels as amended, and to other navigational aids, where appropriate; and

c) for EMC only, all other bridge-mounted equipment, equipment in close proximity to receiving antennas, and equipment capable of interfering with safe navigation of the ship and with radio-communications (see IMO Resolution A.813).

NOTE For EMC, this standard is in the IEC category “product family”.

The requirements of this standard are not intended to prevent the use of new techniques in equipment and systems, provided the facilities offered are not inferior to those stated.

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 60050-161:1990, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*
Amendment 1 (1997)
Amendment 2 (1998)

IEC 60068-2-1:1990, *Environmental testing – Part 2: Tests – Tests A: Cold*
Amendment 1 (1993)
Amendment 2 (1994)

IEC 60068-2-2:1974, *Environmental testing – Part 2: Tests – Tests B: Dry heat*
Amendment 1 (1993)
Amendment 2 (1994)

IEC 60068-2-5:1975, *Environmental testing – Part 2: Test Sa: Simulated solar radiation at ground level*

IEC 60068-2-6:1995, *Environmental testing – Part 2: Test Fc: Vibration (sinusoidal)*
Corrigendum 1 (1995)

IEC 60068-2-9:1975, *Environmental testing – Part 2: Guidance for solar radiation testing*
Amendment 1 (1984) Corrigendum 1 (1989)

IEC 60068-2-30:1980, *Environmental testing – Part 2: Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)*
Amendment 1 (1985)

IEC 60068-2-48:1982, *Environmental testing – Part 2: Guidance on the application of the tests of IEC 60068 to simulate the effects of storage*

IEC 60068-2-52:1996, *Environmental testing – Part 2: Test Kb: Salt mist, cyclic (sodium chloride solution)*
Corrigendum 1 (1996)

IEC 60071-2:1996, *Insulation co-ordination – Part 2: Application guide*

IEC 60092-101:1994, *Electrical installations in ships – Part 101: Definitions and general requirements*
Amendment 1 (1995)
Corrigendum 1 (1996)

IEC 60417(all parts), *Graphical symbols for use on equipment*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*
Amendment 1 (1999)

IEC 60533:1999, *Electrical and electronic installations in ships – Electromagnetic compatibility*

IEC 60651:1979, *Sound level meters*
Amendment 1 (1993)

IEC 61000-4-2:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 2: Electrostatic discharge immunity test* – Basic EMC publication

IEC 61000-4-3:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 3: Radiated, radio frequency, electromagnetic field immunity test*

IEC 61000-4-4:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 4: Electrical fast transient/burst immunity test* – Basic EMC publication

IEC 61000-4-5:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 5: Surge immunity test*

IEC 61000-4-6:1996, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 6: Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-8:1993, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 8: Power frequency magnetic field immunity test* – Basic EMC publication

IEC 61000-4-11:1994, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 11: Voltage dips, short interruptions and voltage variations immunity tests*

CISPR 16-1:1999, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1: Radio disturbance and immunity measuring apparatus*

ISO 694:2000, *Ships and marine technology – Positioning of magnetic compasses in ships*

ISO 3791:1976, *Office machines and data processing equipment – Keyboard layouts for numeric applications*

IMO Convention for Safety of Life at Sea (SOLAS):1997

IMO Torremolinos Convention for the Safety of Fishing Vessels, 1977, as modified by the Torremolinos Protocol of 1993

IMO MSC/Circ.794 IMO Standard Marine Communication Phrases (SMCPs):1997

IMO Resolution A.694:1991, *General requirements for shipborne radio equipment forming part of the global maritime distress and safety system and for electronic navigational aids*

IMO Resolution A.803:1995, *Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling*

IMO Resolution A.813:1995, *General requirements for electromagnetic compatibility (EMC) for all electrical and electronic ship's equipment*

ITU-T Recommendation E.161:1993, *Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network*

NOTE A bibliography of informative references is given at the end of this standard.