SLOVENSKI STANDARD
SIST EN 55011:1995

01-april-1995

Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment

Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment

Grenzwerte und Meßverfahren für Funkstörungen von industriellen, wissenschaftlichen und medizinischen Hochfrequenzgeräten (ISM-Geräten)

Limites et méthodes de mesure des caractéristiques de perturbations radioélectriques des appareils industriels, scientifiques et médicaux (ISM) à fréquence radioélectrique

Ta slovenski standard je istoveten z: **EN 55011:1991**

ICS:

33.100.99	Drugi vidiki v zvezi z EMC	Other aspects related to EMC

SIST EN 55011:1995 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 55011

March 1991

UDC 621.391.823.029.5:621.317.361:615.841

Supersedes HD 344 S1:1975

Descriptors: electrical equipment, industrial equipment, medical equipment, radio disturbance, measurement, characteristic, limit

English version

Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment

(CISPR 11:1990, modified)

Limites et méthodes de mesure des caractéristiques de perturbations radioélectriques des appareils industriels, scientifiques et médicaux (ISM) à fréquence radioélectrique (CISPR 11:1990, modifiée)

Grenzwerte und Meßverfahren für Funkstörungen von industriellen, wissenschaftlichen und medizinischen Hochfrequenzgeräten (ISM Geräten) (CISPR 11:1990, modifiziert)

This European Standard was approved by CENELEC on 12 June 1989. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

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

Foreword

This European Standard has been prepared by the CENELEC Subcommittee SC 110A, EMC Products.

The text of the draft was approved by CENELEC as EN 55011 on 12 June 1989.

This European Standard replaces the Harmonization Document HD 344 S1:1975.

When the International Standard CISPR 11:1990 was published, SC 110A decided to replace the text of the draft by an endorsement of this publication with common modifications.

The following dates are applicable:

- latest date of publication of an identical national standard	(dop)	1991-09-15
- latest date of withdrawal of conflicting standards	(dow)	1991-09-15

Endorsement notice

The text of the International Standard CISPR 11:1990 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Replace the title, clauses 1, 2 and 3 by:

Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medial (ISM) radio-frequency equipment

1 Scope and object

1.1 The limits and methods of measurement laid down in this publication apply to industrial, scientific and medical (ISM) equipment as defined in Clause 3, and to spark erosion equipment.

1.2 The assessment of conformity of equipment tested on a test site shall be in accordance with the specifications of Clause 6. For equipment in series production, there shall be 80% confidence that at least 80% of manufactured items comply with the limits given. The statistical assessment procedure is specified in subclause 6.3. For small scale production the application of the statistical assessment may not always be economical. In such cases the assessment procedure contained in subclause 6.2 may be applied. Measurement results obtained for an equipment measured in its place of use and not on a test site shall relate to that installation only, and shall not be considered representative of any other installation and so shall not be used for the purpose of a statistical assessment.

1.3 Procedures are given for the measurement of radio frequency disturbances and limits are laid down within the frequency range 9 kHz to 400 GHz.

1.4 Requirements for lighting apparatus are contained in EN 55015.

2. Definitions

2.1 ISM qualifies equipment or appliances designed to generate and/or use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications and information technology and other applications covered by other CENELEC EMC Standards.

2.2 For the purposes of this publication the definitions contained in IEC 50(161) apply.

2.3 **electromagnetic radiation**: for the purposes of this publication the extended definition contained in IEC 50(161), which includes near field and induction phenomena, shall apply.

2.4 **The boundary of the equipment under test** is defined by an imaginary straight line periphery describing a simple geometric configuration encompassing the equipment under test. All interconnecting cables shall be included within this boundary.

2.5 **low voltage**: a set of voltage levels used for the distribution of electricity and whose upper limit is 1000 V ac rms.

2.6 **frequencies designated for ISM use**: Certain frequencies are designated by the International Telecommunication Union (ITU) for use as fundamental frequencies for ISM equipment.

3. National measures and frequencies designated for ISM use

3.1 The limits have been determined on a probabilistic basis taking into account the likelihood of interference. In cases of interference additional provisions may be required.

3.2 National Authorities may allow the installation and use of Class A apparatus in a domestic establishment or in an establishment connected directly to domestic electricity power supplies, with whatever national measures they consider necessary.

3.3 The frequencies designated for ISM use are listed in table Ia.

In some CENELEC countries different or additional frequencies may be designated for ISM equipment. These frequencies are listed in table Ib.

The limits for terminal voltages and radiation do not apply to these ISM frequencies. If ISM equipment uses fundamental frequencies other than the ITU or nationally designated frequencies the limits for terminal voltage and radiation in this Standard apply also to the fundamental frequencies.

3.4 When ISM equipment cannot be brought in conformity with the limits of Table V, the National Authorities shall be notified by the manufacturer or importer before the equipment is being placed on the market.

For equipment measured on a test site the notification shall be accompanied by the results of the measurements. For equipment measured in situ the user shall inform the National Authorities of the installation of the equipment before it is set into operation.

National Authorities may apply whatever national measures they consider necessary to protect radio communications.

Table Ia: Frequencies designated by ITU for use as fundamental ISM frequencies[1)]

Centre frequency MHz	Frequency range MHz	Maximum radiation limit [3)]	Number of appropriate footnote to the table of frequency allocation to the ITU Radio Regulations
6,780	6,765 - 6,795	Under consideration	524 [2)]
13,560	13,553 - 13,567	Unrestricted	534
27,120	26,957 - 27,283	Unrestricted	546
40,680	40,66 - 40,70	Unrestricted	548
433,920	433,05 - 434,79	Under consideration	661 [2)], 662
2 450	2 400 - 2 500	Unrestricted	752
5 800	5 725 - 5 875	Unrestricted	806
24 125	24 000 - 24 250	Unrestricted	881
61 250	61 000 - 61 500	Under consideration	911 [2)]
122 500	122 000 - 123 000	Under consideration	916 [2)]
245 000	244 000 - 246 000	Under consideration	922 [2)]

1) Resolution No. 63 of the ITU Radio Regulations applies.

2) Use of these frequency bands is subject to special authorization by administrations concerned in agreement with other administrations whose radio communication services might be affected.

3) The term "Unrestricted" applies to the fundamental and all other frequency components falling within the designated band. Special measures to achieve compatibility may be necessary where other equipment satisfying immunity requirements (e.g. EN 55020), is placed close to ISM equipment.

Table Ib: Frequencies designated on a national basis in CENELEC countries for use as fundamental ISM frequencies

Frequency MHz	Maximum radiation limit [1)]	Notes
0,009 - 0,010	unlimited	Germany only
3,370 - 3,410	unlimited	Netherlands only
13,533 - 13,553	110 dB(µV/m) at 100 m	United Kingdom only
13,567 - 13,587	110 dB(µV/m) at 100 m	United Kingdom only
83,996 - 84,004	130 dB(µV/m) at 30 m	United Kingdom only
167,992 - 168,008	130 dB(µV/m) at 30 m	United Kingdom only
886,000 - 906,000	120 dB(µV/m) at 30 m	United Kingdom only

1) Distance measured from the exterior wall outside the building in which the equipment is situated.

NORME INTERNATIONALE
INTERNATIONAL STANDARD

CISPR 11

Deuxième édition
Second edition
1990-09

COMITÉ INTERNATIONAL SPÉCIAL DES PERTURBATIONS RADIOÉLECTRIQUES
INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

Limites et méthodes de mesure des caractéristiques de perturbations électromagnétiques des appareils industriels, scientifiques et médicaux (ISM) à fréquence radioélectrique

Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment

Numéro de référence
Reference number
CISPR 11: 1990

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INTERNATIONAL ELECTROTECHNICAL COMMISSION
INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

LIMITS AND METHODS OF MEASUREMENT OF ELECTROMAGNETIC DISTURBANCE CHARACTERISTICS OF INDUSTRIAL, SCIENTIFIC AND MEDICAL (ISM) RADIO-FREQUENCY EQUIPMENT

FOREWORD

1) The formal decisions of agreements of the CISPR on technical matters, prepared by Sub-Committees on which all the National Committees and other Member Organizations of the CISPR having a special interest therein are represented, express, as nearly as possible, an international consensus on the subjects dealt with.
2) They have the form of recommendations for international use and they are accepted by the National Committees and other Member Organizations of the CISPR in that sense.
3) In order to promote international unification, the CISPR expresses the wish that all National Committees should adopt the text of the CISPR recommendation for their national rules in so far as national conditions will permit. Any divergence between the CISPR recommendations and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This publication was prepared by CISPR Sub-Committee B: Interference from industrial, scientific and medical radio frequency apparatus.

This second edition replaces the first edition published in 1975, its Amendment No. 1 (1976) and CISPR 11 A (1976).

The text of this CISPR publication is based on the following documents:

Six Months' Rule	Reports on Voting
CISPR/B(CO)23	CISPR/B(CO)25 CISPR/B(CO)25A

Full information on the voting for the approval of this publication can be found in the Voting Reports indicated in the above table.

The main content of this publication is based on CISPR Recommendation No. 39/2 given below:

CISPR RECOMMENDATION No. 39/2

Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment

THE CISPR

CONSIDERING

a) that ISM RF equipment is an important source of disturbance;
b) that methods of measuring such disturbances have been prescribed by the CISPR;
c) that certain frequencies are designated by the International Telecommunication Union (ITU) for unrestricted radiation from ISM equipment,

RECOMMENDS

that the latest edition of CISPR 11, including amendments, be used for the application of limits and methods of measurement of ISM equipment.

The following publications are quoted in this standard:

CISPR publications:
Publications Nos.

15 (1985): Limits and methods of measurement of radio interference characteristics of fluorescent lamps and luminaires.

16 (1987): CISPR specification for radio interference measuring apparatus and measurement methods.

19 (1983): Guidance on the use of the substitution method for measurements of radiation from microwave ovens for frequencies above 1 GHz.

20 (1990): Limits and methods of measurement of immunity characteristics of sound and television broadcast receivers and associated equipment.

IEC publications:
Publications Nos.

50(161) (1990): International Electrotechnical Vocabulary (IEV), Chapter 161: Electromagnetic compatibility.

83 (1975): Plugs and socket-outlets for domestic and similar general use. Standards.

150 (1963): Testing and calibration of ultrasonic therapeutic equipment.

801: Electromagnetic compatibility for industrial-process measurement and control equipment.

LIMITS AND METHODS OF MEASUREMENT OF ELECTROMAGNETIC DISTURBANCE CHARACTERISTICS OF INDUSTRIAL, SCIENTIFIC AND MEDICAL (ISM) RADIO-FREQUENCY EQUIPMENT

1. Scope and object

1.1 The limits and methods of measurement laid down in this publication apply to industrial, scientific and medical (ISM) equipment as defined in Clause 2, and to spark erosion equipment.

1.2 The assessment of conformity of equipment tested on a test site shall be in accordance with the specifications of Clause 6. For equipment in series production, there shall be 80% confidence that at least 80% of manufactured items comply with the limits given. The statistical assessment procedure is specified in Sub-clause 6.3. For small scale production the application of the statistical assessment may not always be economical. In such cases the assessment procedure contained in Sub-clause 6.2 may be applied. Measurement results obtained for an equipment measured in its place of use and not on a test site shall relate to that installation only, and shall not be considered representative of any other installation and so shall not be used for the purpose of a statistical assessment.

Note. — The limits have been determined on a probabilistic basis taking into account the likelihood of interference. In cases of interference, additional provisions may be required.

1.3 Procedures are given for the measurement of radio frequency disturbances and limits are laid down within the frequency range 9 kHz to 400 GHz.

1.4 Requirements for lighting apparatus are contained in CISPR 15.

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2.1 ISM qualifies equipment or appliances designed to generate and/or use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications and information technology and other applications covered by other CISPR publications.

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