SLOVENSKI STANDARD
SIST EN 55011:1995/A1:1997

01-november-1997

Limits and methods of measurement of radio disturbance characterics of industrial, scientific and medical (ISM) radio-frequency equipment - Amendment A1 (CISPR 11:1990/A1:1996, modified)

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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/A1:1997**

ICS:

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

SIST EN 55011:1995/A1:1997 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 55011/A1

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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/A1:1996, modified)

Limites et méthodes de mesure des caractéristiques de perturbations radioélectriques des appareils industriels, scientifiques et médicaux (ISM) à fréquence radioélectrique (CISPR 11:1990/A1:1996, modifiée)

Grenzwerte und Meßverfahren für Funkstörungen von industriellen, wissenschaftlichen und medizinischen Hochfrequenzgeräten (ISM-Geräten) (CISPR 11:1990/A1:1996, modifiziert)

This amendment A1 modifies the European Standard EN 55011:1991; it was approved by CENELEC on 1997-02-15. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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
Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 55011:1991/A1:1997 E

Foreword

The text of amendment 1:1996 to the International Standard CISPR 11:1990, prepared by CISPR SC B, Interference relating to industrial, scientific and medical radio-frequency apparatus, together with common modifications prepared by SC 210A, EMC Products, of Technical Committee CENELEC TC 210, EMC, was submitted to the formal vote and was approved by CENELEC as amendment A1 to EN 55011:1991 on 1997-02-15.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-09-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) -

Endorsement notice

The text of amendment 1:1996 to the International Standard CISPR 11:1990 was approved by CENELEC as an amendment to the European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Delete 5.2.2

COMMISSION ELECTROTECHNIQUE INTERNATIONALE
INTERNATIONAL ELECTROTECHNICAL COMMISSION

CISPR 11

1990

AMENDEMENT 1
AMENDMENT 1

1996-03

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

Amendement 1

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

Amendment 1

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

Bureau Central de la Commission Electrotechnique Internationale 3, rue de Varembé Genève, Suisse

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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FOREWORD

This amendment has been prepared by CISPR sub-committee B: Interference relating to industrial, scientific and medical radio-frequency apparatus.

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

FDIS	Reports on voting
CISPR/(CO)28	CISPR/B(CO)30
CISPR/B(CO)31	CISPR/B(CO)32A
CISPR/B(CO)35	CISPR/B/132/RVD

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

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CONTENTS

Add the title of annex E as follows:

Annex E – Safety related service bands

Page 15

5.1.2 *Frequency band 150 kHz to 30 MHz*

Replace the text and table IIA of this subclause by the following:

Limits for mains terminal disturbance voltages in the frequency band 150 kHz to 30 MHz for equipment measured on a test site using the 50 Ω/50 µH CISPR network or the CISPR voltage probe (see 7.2.3 and figure 4) are given in tables IIA and IIB, except for the ITU designated frequency bands listed in table I for which the mains terminal disturbance voltage limits are under consideration.

The need for a mains terminal disturbance voltage limits for class A equipment *in situ* is under consideration.

Table IIA – Mains terminal disturbance voltage limits for class A equipment measured on a test site

Frequency band	Class A equipment limits dB(μV)					
	Group 1		Group 2		Group 2*	
MHz	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0,15–0,50	79	66	100	90	130	120
0,50–5	73	60	86	76	125	115
5–30	73	60	90 decreasing with logarithm of frequency to 70	80 decreasing with logarithm of frequency to 60	115	105

* Mains supply currents in excess of 100 A per phase when using the CISPR voltage probe.

NOTE – Care should be taken to comply with leakage current requirements.

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5.2.2 *Frequency band 150 kHz to 1 GHz*

To relax the limits, amend, on page 19, table V as follows:

Frequency range MHz	Limits with measuring distance 30 m	
	From exterior wall outside the building in which the equipment is situated dB(μV/m)	On a test site dB(μV/m)
–	***	***
47–53,91	30	40
53,91–54,56	30 (40) [1]	40 (50) [1]
54,56–68	30	40
–	***	***

[1] The limit in the frequency band of 53,91 MHz to 54,56 MHz can be relaxed by 10 dB on a national basis.

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5.3 *Provisions for protection of specific safety services*

Replace the title of this subclause by the following:

5.3 *Provisions for protection of safety services*

Insert the following sentence at the beginning of this subclause:

ISM systems should be designed to avoid fundamental operations or radiation of high-level spurious and harmonic signals in bands used for safety-related radio services. A list of these bands is provided in annex E.

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Add, after annex D, the new annex E as follows:

Annex E
Safety related service bands

Frequency MHz	Allocation/use
0,010 – 0,014	Radionavigation (Omega on-board ships and aircraft only)
0,090 – 0,11	Radionavigation (LORAN-C and DECCA)
0,2835 – 0,5265	Aeronautical radionavigation (non-directional beacons)
0,489 – 0,519	Maritime safety information (coastal areas and shipboard only)
1,82 – 1,88	Radionavigation (LORAN-A region 3 only, coastal areas and on-board ships only)
2,1735 – 2,1905	Mobile distress frequency
2,09055 – 2,09105	Emergency position indicating radio beacon (EPIRB)
3,0215 – 3,0275	Aeronautic mobile (search and rescue operations)
4,122 – 4,2105	Mobile distress frequency
5,6785 – 5,6845	Aeronautic mobile (search and rescue operations)
6,212 – 6,314	Mobile distress frequency
8,288 – 8,417	Mobile distress frequency
12,287 – 12,5795	Mobile distress frequency
16,417 – 16,807	Mobile distress frequency
19,68 – 19,681	Maritime safety information (coastal areas and shipboard only)
22,3755 – 22,3765	Maritime safety information (coastal areas and shipboard only)
26,1 – 26,101	Maritime safety information (coastal areas and shipboard only)
74,6 – 75,4	Aeronautical radionavigation (marker beacons)
108 – 137	Aeronautical radionavigation (108-118 MHz VOR, 121,4-123,5 MHz distress frequency SARSAT uplink, 118-137 MHz air traffic control)
156,2 – 156,8375	Maritime mobile distress frequency
242,9 – 243,1	Search and rescue (SARSAT uplink)
328,6 – 335,4	Aeronautical radionavigation (ILS glideslope indicator)
399,9 – 400,05	Radionavigation satellite
406 – 406,1	Search and rescue (emergency position-indicating radiobeacon (EPIRB), SARSAT uplink)
960 – 1238	Aeronautical radionavigation (TACAN), air traffic control beacons
1300 – 1350	Aeronautical radionavigation (long range air search radars)
1544 – 1545	Distress frequency-SARSAT downlink (1530-1544 MHz mobile satellite downlink may be pre-empted for distress purposes)
1545 – 1559	Aeronautical mobile satellite (R)
1559 – 1610	Aeronautical radionavigation (GPS)
1610 – 1625,5	Aeronautical radionavigation (radio altimeters)
1645,5 – 1646,5	Distress frequency-uplink (1626,5-1 645,5 MHz mobile satellite uplink may be pre-empted for distress purposes)
1646,5 – 1660,5	Aeronautical mobile satellite (R)
2700 – 2900	Aeronautical radionavigation (terminal air traffic control radars)
2900 – 3100	Aeroautical radionavigation (radar beacons – coastal areas and shipboard only)
4200 – 4400	Aeronautical radionavigation (altimeters)
5000 – 5250	Aeronautical radionavigation (microwave landing systems)
5350 – 5460	Aeronautical radionavigation (airborn radars and beacons)
5600 – 5650	Terminal doppler weather radar - windshear
9000 – 9200	Aeronautical radionavigation (precision approach radars)
9200 – 9500	Radar transponders for maritime search and rescue. Maritime radar beacons and radionavigation radars. Airborne weather and ground mapping radar for airborne radionavigation, particularly under poor visibility conditions
13250 –13400	Aeronautical radionavigation (doppler navigation radars)

Publications du CISPR

CISPR 10 (1992)	Organisation, règles et procédures du CISPR. Amendement 1 (1995).
CISPR 11 (1990)	Limites et méthodes de mesure des caractéristiques de perturbations électromagnétiques des appareils industriels, scientifiques et médicaux (ISM) à fréquence radioélectrique. Amendement 1 (1996). Amendement 2 (1996)
CISPR 12 (1990)	Limites et méthodes de mesure des caractéristiques de perturbation radioélectrique des véhicules, des bateaux à moteur et des engins entraînés par des moteurs à allumage commandé.
CISPR 13 (1990)	Limites et méthodes de mesure des caractéristiques de perturbation radioélectrique des récepteurs de radiodiffusion et de télévision et équipements associés. Amendement 1 (1992). Amendement 2 (1993). Amendement 3 (1995).
CISPR 14 (1993)	Limites et méthodes de mesure des perturbations radioélectriques produites par les appareils électrodomestiques ou analogues comportant des moteurs ou des dispositifs thermiques, par les outils électriques et par les appareils électriques analogues.
CISPR 15 (1992)	Limites et méthodes de mesure des perturbations radioélectriques produites par les appareils électriques d'éclairage et les appareils analogues.
CISPR 16*: –	Spécifications des méthodes et des appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques.
CISPR 16-1 (1993)	Partie 1: Appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques.
CISPR 17 (1981)	Méthodes de mesure des caractéristiques d'antiparasitage des éléments de réduction des perturbations radioélectriques et des filtres passifs.
CISPR 18: –	Caractéristiques des lignes et des équipements à haute tension relatives aux perturbations radioélectriques.
CISPR 18-1 (1982)	Première partie: Description des phénomènes.
CISPR 18-2 (1986)	Deuxième partie: Méthodes de mesure et procédure d'établissement des limites. Amendement 1 (1993).
CISPR 18-3 (1986)	Troisième partie: Code pratique de réduction du bruit radioélectrique.
CISPR 19 (1983)	Lignes directrices relatives à l'utilisation de la méthode de substitution pour la mesure du rayonnement émis des fours à micro-ondes pour des fréquences au-dessus de 1 GHz.
CISPR 20 (1996)	Limites et méthodes de mesure des caractéristiques d'immunité des récepteurs de radiodiffusion et de télévision et équipements associés.
CISPR 21 (1985)	Perturbations des communications radiotéléphoniques mobiles en présence de bruit impulsif; méthodes d'appréciation de la dégradation, et méthodes pour améliorer le fonctionnement.
CISPR 22 (1993)	Limites et méthodes de mesure des caractéristiques de perturbations radioélectriques produites par les appareils de traitement de l'information. Amendement 1 (1995).

(suite)

* Cette publication remplace les Publications CISPR 1, 1A, 2, 3, 4, 4A, 5 et 6.

CISPR Publications

CISPR 10 (1992)	Organization, rules and procedures of the CISPR. Amendment 1 (1995).
CISPR 11 (1990)	Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment. Amendment 1 (1996). Amendment 2 (1996).
CISPR 12 (1990)	Limits and methods of measurement of radio interference characteristics of vehicles, motor boats and spark-ignited engine-driven devices.
CISPR 13 (1990)	Limits and methods of measurement of radio interference characteristics of sound and television broadcast receivers and associated equipment. Amendment 1 (1992). Amendment 2 (1993). Amendment 3 (1995).
CISPR 14 (1993)	Limits and methods of measurement of radio disturbance characteristics of electric motor-operated and thermal appliances for household and similar purposes, electric tools and similar electric apparatus.
CISPR 15 (1992)	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment.
CISPR 16*: –	Specification for radio disturbance and immunity measuring apparatus and methods.
CISPR 16-1 (1993)	Part 1: Radio disturbance and immunity measuring apparatus.
CISPR 17 (1981)	Methods of measurement of the suppression characteristics of passive radio interference filters and suppression components.
CISPR 18: –	Radio interference characteristics of overhead power lines and high-voltage equipment.
CISPR 18-1 (1982)	Part 1: Description of phenomena.
CISPR 18-2 (1986)	Part 2: Methods of measurement and procedure for determining limits. Amendment 1 (1993).
CISPR 18-3 (1986)	Part 3: Code of practice for minimizing the generation of radio noise.
CISPR 19 (1983)	Guidance on the use of the substitution method for measurements of radiation from microwave ovens for frequencies above 1 GHz.
CISPR 20 (1996)	Limits and methods of measurement of immunity characteristics of sound and television broadcast receivers and associated equipment.
CISPR 21 (1985)	Interference to mobile radiocommunications in the presence of impulsive noise; methods of judging degradation and measures to improve performance.
CISPR 22 (1993)	Limits and methods of measurement of radio disturbance characteristics of information technology equipment. Amendment 1 (1995).

(continued)

* This publication supersedes CISPR Publications 1, 1A, 2, 3, 4, 4A, 5 and 6.