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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 55014-1/A1

May 2009

ICS 33.100.10

English version

**Electromagnetic compatibility -
Requirements for household appliances,
electric tools and similar apparatus -
Part 1: Emission
(CISPR 14-1:2005/A1:2008)**

Compatibilité électromagnétique -
Exigences pour les appareils
électrodomestiques, outillages électriques
et appareils analogues -
Partie 1: Emission
(CISPR 14-1:2005/A1:2008)

Elektromagnetische Verträglichkeit -
Anforderungen an Haushaltgeräte,
Elektrowerkzeuge
und ähnliche Elektrogeräte -
Teil 1: Störaussendung
(CISPR 14-1:2005/A1:2008)

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SIST EN 55014-1:2007/A1:2009

This amendment A1 modifies the European Standard EN 55014-1:2006; it was approved by CENELEC on 2009-04-22. 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document CISPR/F/491/FDIS, future amendment 1 to CISPR 14-1:2005, prepared by CISPR SC F, Interference relating to household appliances, tools, lighting equipment and similar apparatus, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 55014-1:2006 on 2009-04-22.

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) 2010-02-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2012-05-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of amendment 1:2008 to the International Standard CISPR 14-1:2005 was approved by CENELEC as an amendment to the European Standard without any modification.

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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

Addition to Annex ZA of EN 55014-1:2006:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-20	2003	Electromagnetic compatibility (EMC) - Part 4-20: Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguides	EN 61000-4-20	2003
CISPR 16-1-4 A1	2007 2007	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-4: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Radiated disturbances	EN 55016-1-4 A1	2007 2008
CISPR 16-2-3	2006	Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-3: Methods of measurement of disturbances and immunity - Radiated disturbance measurements	EN 55016-2-3	2006
CISPR 16-4-2	2003	Specification for radio disturbance and immunity measuring apparatus and methods - Part 4-2: Uncertainties, statistics and limit modelling - Uncertainty in EMC measurements	EN 55016-4-2	2004

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CISPR 14-1

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

AMENDMENT 1
AMENDEMENT 1

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**Electromagnetic compatibility – Requirements for household appliances,
electric tools and similar apparatus –**
Part 1: Emission

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**Compatibilité électromagnétique – Exigences pour les appareils
électrodomestiques, outillages électriques et appareils analogues –**
Partie 1: Emission

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

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ICS 33.100.10

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FOREWORD

This amendment has been prepared by CISPR subcommittee F: Interference relating to household appliances tools, lighting equipment and similar apparatus.

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

FDIS	Report on voting
CISPR/F/491/FDIS	CISPR/F/502/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.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

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CONTENTS

Replace the existing title of subclause 8.4 by the following:

8.4 Non-compliance

Add the titles of Clauses 9 and 10 as follows:

9 Methods of measurement of radiated emission (30 MHz to 1 000 MHz)

10 Measurement uncertainty

Add the following new Tables 4, 5, and 6 :

Table 4 – General margin to the limit for statistical evaluation

Table 5 – Factor k for the application of the non-central t -distribution

Table 6 – Application of the binomial distribution

Foreword

Delete the following sentence: “This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.”

1 Scope

1.1 *Add, to the second paragraph, the following sentence:*

Both mains powered appliances and battery powered appliances are included.

Insert, at the end of NOTE 1, the following new item:

- arc welding equipment: CISPR 11.

2 Normative references

Add the following new references:

IEC 61000-4-20:2003, *Electromagnetic compatibility (EMC) – Part 4-20: Testing and measurement techniques – Emission and immunity testing in transverse electromagnetic (TEM) waveguides*

CISPR 16-1-4:2007, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-4: Radio disturbance and immunity measuring apparatus – Ancillary equipment – Radiated disturbances*
Amendment 1 (2007)

CISPR 16-2-3:2006, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-3: Methods of measurement of disturbances and immunity – Radiated disturbance measurements*

CISPR 16-4-2:2003, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements*

3 Definitions

3.13 battery box

Replace the existing definition with the following:

compartment which is separate from the toy or appliance and in which the batteries are placed

Add the following new definitions after definition 3.23

3.24 clock frequency

the fundamental frequency of any signal used in the device excluding those which are solely used inside integrated circuits (IC).

NOTE High frequencies are often generated inside of integrated circuits (IC) by phase-locked-loop (PLL) circuits from lower clock oscillator frequencies outside the IC.

3.25

battery-operated appliance

appliance which is operated only from batteries and has no provision for performing its intended function when connected to the mains, either directly or via a power supply.

NOTE 1 Toys are not considered to be appliances.

NOTE 2 An appliance which has provision for charging but cannot perform its intended function during charging is considered to be a battery-operated appliance.

3.26

mains-operated appliance

all appliances which are not battery-operated appliances

NOTE Toys are not considered to be appliances.

4 Limits of disturbance

Replace the text immediately preceding subclause 4.1 with the following new text:

Radio disturbance measurements below 148,5 kHz and above 1 000 MHz do not need to be carried out.

4.1 Continuous disturbance

Replace subclauses 4.1.2 and 4.1.3 by the following:

4.1.2 Frequency range 30 MHz to 1 000 MHz

4.1.2.1 Disturbance power measurement in the frequency range 30 MHz to 300 MHz

The limits of the disturbance power are given in Table 2a. Disturbance power is measured in accordance with Clause 6, at all terminals.

Table 2a – Disturbance power limits for the frequency range 30 MHz to 300 MHz

1	Household and similar appliances		Tools					
	2	3	4	5	6	7	8	9
Frequency range			Rated motor power not exceeding 700 W		Rated motor power above 700 W and not exceeding 1 000 W		Rated motor power above 1 000 W	
(MHz)	dB (pW) Quasi-peak	dB (pW) Average ^a	dB (pW) Quasi-peak	dB (pW) Average ^a	dB (pW) Quasi-peak	dB (pW) Average ^a	dB (pW) Quasi-peak	dB (pW) Average ^a
30 to 300	Increasing linearly with the frequency from:							
	45 to 55	35 to 45	45 to 55	35 to 45	49 to 59	39 to 49	55 to 65	45 to 55
^a If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.								

Table 2b – Margin when performing disturbance power measurement in the frequency range 30 MHz to 300 MHz

1	Household and similar appliances		Tools					
	2	3	4	5	6	7	8	9
Frequency range			Rated motor power not exceeding 700 W		Rated motor power above 700 W and not exceeding 1 000 W		Rated motor power above 1 000 W	
(MHz)	dB (pW) Quasi-peak	dB (pW) Average	dB (pW) Quasi-peak	dB (pW) Average	dB (pW) Quasi-peak	dB (pW) Average	dB (pW) Quasi-peak	dB (pW) Average
Increasing linearly with the frequency from:								
200 to 300	0 to 10 dB	-	0 to 10 dB	-	0 to 10 dB	-	0 to 10 dB	-

NOTE 1 This table only applies if specified in 4.1.2.3.2.

NOTE 2 The measured result at a particular frequency shall be less than the relevant limit minus the corresponding margin (at that frequency).

4.1.2.2 Radiated disturbances measurement in the frequency range 30 MHz to 1 000 MHz

The limits of radiated disturbances are given in Table 3. Radiated disturbances are measured in accordance with the standards and testing methods given in Table 3.

Table 3 – Radiated disturbance limits and testing methods for the frequency range 30 MHz to 1 000 MHz

Testing method	Standard	Frequency range MHz	Limit dB μ V/m Quasi-peak	Remark
OATS ^a or SAC ^{b d}	CISPR 16-2-3	30 – 230	30	Measurement distance 10 m
		230 – 300	37	
		300 – 1 000	37	
FAR ^e	CISPR 16-2-3	30 – 230	42 to 35 ^f	Measurement distance 3 m
		230 – 1 000	42	
TEM-Waveguide ^c	IEC 61000-4-20	30 – 230	30	–
		230 – 1 000	37	

NOTE The lower limit is applicable at the transition frequency.

^a OATS = open area test site

^b SAC = semi-anechoic chamber

^c The TEM-waveguide is limited to devices without cables attached and with a maximum size according to subclause 6.1 of IEC 61000-4-20 (The largest dimension of the enclosure at 1 GHz measuring frequency is one wavelength, 300 mm at 1 GHz)

^d Measurements may be made at closer distance, down to 3 m. An inverse proportionality factor of 20 dB per decade shall be used to normalize the measured data to the specified distance for determining compliance.

^e FAR = fully anechoic room. All equipment, including floor-standing equipment, shall be measured within the test volume as described in Figure 6 of CISPR 16-2-3.

^f Decreasing linearly with the logarithm of the frequency.

In any situation where it is necessary to verify the original measurement, the measuring method and measuring distance originally chosen shall be used in order to ensure consistency of the results.