SLOVENSKI STANDARD

SIST EN 55016-1-1:2007/A2:2008

01-junij-2008

Specifikacija za merilne naprave in metode za merjenje radijskih motenj in odpornosti - 1-1. del: Merilne naprave za merjenje radijskih motenj in odpornosti - Merilne naprave (CISPR 16-1-1:2006/A2:2007)

Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus

Anforderungen an Geräte und Einrichtungen sowie Festlegung der Verfahren zur Messung der hochfrequenten Störaussendung (Funkstörungen) und Störfestigkeit - Teil 1-1: Geräte und Einrichtungen zur Messung der hochfrequenten Störaussendung (Funkstörungen) und Störfestigkeit - Messgeräte

Spécifications des méthodes et des appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques - Partie 1-1: Appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques - Appareils de mesuree

Ta slovenski standard je istoveten z: EN 55016-1-1:2007/A2:2008

ICS:

17.220.20	Merjenje elektriļ nih in magnetnih veliļ in	Measurement of electrical and magnetic quantities
33.100.20	Imunost	Immunity

SIST EN 55016-1-1:2007/A2:2008 en,fr,de

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 55016-1-1/A2

February 2008

ICS 33.100.10

English version

Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus

(CISPR 16-1-1:2006/A2:2007)

Spécifications des méthodes et des appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques - Partie 1-1: Appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques - Appareils de mesure (CISPR 16-1-1:2006/A2:2007)

Anforderungen an Geräte und Einrichtungen sowie Festlegung der Verfahren zur Messung der hochfrequenten Störaussendung (Funkstörungen) und Störfestigkeit - Teil 1-1: Geräte und Einrichtungen zur Messung der hochfrequenten Störaussendung (Funkstörungen) und Störfestigkeit - Messgeräte (CISPR 16-1-1:2006/A2:2007)

This amendment A2 modifies the European Standard EN 55016-1-1:2007; it was approved by CENELEC on 2008-02-01. 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: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document CISPR/A/737/FDIS, future amendment 2 to CISPR 16-1-1:2006, prepared by CISPR SC A, Radio-interference measurements and statistical methods, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A2 to EN 55016-1-1:2007 on 2008-02-01.

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)	2008-11-01
– latest date by which the national standards conflicting with the amendment have to be withdrawn	(dow)	2011-02-01

Endorsement notice

The text of amendment 2:2007 to the International Standard CISPR 16-1-1:2006 was approved by CENELEC as an amendment to the European Standard without any modification.

CISPR 16-1-1

Edition 2.0 2007-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

AMENDMENT 2
AMENDEMENT 2

Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring apparatus

Spécifications des méthodes et des appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques – Partie 1-1: Appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques – Appareils de mesure

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

PRICE CODE
CODE PRIX H

ICS 33.100.10

ISBN 2-8318-9219-8

FOREWORD

This amendment has been prepared by subcommittee A of CISPR: Radio-interference measurements and statistical methods.

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

FDIS	Report on voting
CISPR/A/737/FDIS	CISPR/A/751/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.

Page 3

Contents

Replace the title of Clause 7 with the following new title:

7 Measuring receivers with rms-average detector for the frequency range 9 kHz to 18 GHz

Replace the title of Annex A with the following new title:

Annex A (normative) Determination of response to repeated pulses of quasi-peak and rms-average measuring receivers (Subclauses 3.2, 4.4.2, 7.3.2 and 7.5.2)

Add to the list of tables the titles of the new tables as follows:

Table 15 – VSWR requirements of input impedance

Table 16 – Bandwidth requirements

Table 17 – Minimum pulse repetition rate without overload

Table 18 – Relative pulse response of rms-average and quasi-peak measuring receivers

Table 19 – Pulse response of rms-average receiver

Table 20 – Maximum reading of rms-average measuring receivers for a pulse-modulated sine-wave input in comparison with the response to a continuous sine-wave having the same amplitude

Page 11

1 Scope

Replace, in existing item d), "r.m.s. measuring receiver" by "rms-average measuring receiver".

Page 13

3 Terms and definitions

Add the following new definitions:

3.10
weighting (of e.g. impulsive disturbance)
the pulse-repetition-frequency (PRF) dependent conversion (mostly reduction) of a peak-detected impulse voltage level to an indication that corresponds to the interference effect on radio reception

– For the analogue receiver, the psychophysical annoyance of the interference is a subjective quantity (audible or visual, usually not a certain number of misunderstandings of a spoken text).
– For the digital receiver, the interference effect is an objective quantity that may be defined by the critical bit error ratio (BER) (or bit error probability (BEP)) for which perfect error correction can still occur or by another, objective and reproducible parameter.

3.10.1
weighting characteristic
the peak voltage level as a function of PRF for a constant effect on a specific radiocommunication system, i.e., the disturbance is weighted by the radiocommunication system itself

3.10.2
weighting function or weighting curve
the relationship between input peak voltage level and PRF for constant level indication of a measuring receiver with a weighting detector, i.e. the curve of response of a measuring receiver to repeated pulses

3.10.3
weighting factor
the value in dB of the weighting function relative to a reference PRF or relative to the peak value

3.10.4
weighting detector
detector which provides an agreed weighting function

3.10.5
weighted disturbance measurement
measurement of disturbance using a weighting detector

Page 55

7 Measuring receivers with rms detector for the frequency range 9 kHz to 18 GHz

Replace the existing title and text of Clause 7 with the following:

7 Measuring receivers with rms-average detector for the frequency range 9 kHz to 18 GHz

7.1 General

RMS-average weighting receivers employ a weighting detector that is a combination of the rms detector (for pulse repetition frequencies above a corner frequency f_c) and the average detector (for pulse repetition frequencies below the corner frequency f_c), thus achieving a pulse response curve with the following characteristics: 10 dB/decade above the corner frequency and 20 dB/decade below the corner frequency.

Spectrum analyzers that meet the requirements of this clause can be used for compliance measurements.

7.2 Input impedance

The input circuit of measuring receivers shall be unbalanced. For receiver control settings within the CISPR indicating range, the input impedance shall be nominally 50 Ω with a VSWR not to exceed the values in Table 15.

Table 15 – VSWR requirements of input impedance

Frequency range	RF attenuation dB	VSWR
9 kHz to 1 GHz	0	2,0 to 1
9 kHz to 1 GHz	10	1,2 to 1
1 GHz to 18 GHz	0	3,0 to 1
1 GHz to 18 GHz	10	2,0 to 1

Symmetric input impedance in the frequency range 9 kHz to 30 MHz: to permit symmetrical measurements, a balanced input transformer is used. The preferred input impedance for the frequency range 9 kHz to 150 kHz is 600 Ω. This symmetric input impedance may be incorporated either in the relevant symmetrical artificial network necessary to couple to the receiver or optionally in the measuring receiver.

7.3 Fundamental characteristics

7.3.1 Bandwidth

The bandwidths shall lie within the values of Table 16.

Table 16 – Bandwidth requirements

Frequency range	Bandwidth
9 kHz to 150 kHz (band A)	200 Hz (B_6)
150 kHz to 30 MHz (band B)	9 kHz (B_6)
30 MHz to 1 000 MHz (bands C and D)	120 kHz (B_6)
1 GHz to 18 GHz (band E)	1 MHz (B_{imp})
NOTE The chosen value in band E is defined as the impulse bandwidth of the measuring receiver with a tolerance of ± 10 %.	

7.3.2 Overload factor

Above the corner frequency f_c, specified below, the overload factor for circuits preceding the detector at a pulse repetition rate of n Hz shall be $1{,}27(B_3/n)^{1/2}$, with B_3 in Hz. Below the corner frequency the overload factor at a pulse repetition rate of n Hz shall be above the value $1{,}27(B_3/f_c)^{1/2}(f_c/n)$.

NOTE 1 "Corner frequency" is the pulse repetition frequency above which the rms-average detector behaves like an rms detector and below which the rms-average detector has the slope of a linear average detector.

The minimum pulse repetition rate without overload shall conform to the values given in Table 17.

Table 17 – Minimum pulse repetition rate without overload

Frequency range of measuring receiver	Corner frequency f_c	Minimum pulse repetition rate	Ratio peak/rms -average indications
	kHz	Hz	dB
9 kHz to 150 kHz (band A)	0,01	5	19
0,15 MHz to 30 MHz (band B)	0,01	5	35,5
30 MHz to 1 000 MHz (bands C and D)	0,1	31,6	40,6
1 GHz to 18 GHz (band E)	1	316	40

NOTE 2 With this type of detector it will not, in general, be possible to provide sufficient overload factor to prevent non-linear operation of the instrument at very low pulse repetition rates for short pulses in bands C/D and E (the response to a short single pulse is only theoretically defined in these bands).

NOTE 3 Annex A describes the calculation for the overload factor for the rms detector. Annex B describes the determination of the pulse generator spectrum. Annex C describes the accurate measurement of the output levels of nanosecond pulse generators.

NOTE 4 For band E, the test may be made with a pulse-modulated sine-wave signal, with an occupied bandwidth of e.g. 2 MHz. Clause E.6 gives the specification of an applicable test signal.

7.4 Sine-wave voltage accuracy

The accuracy of measurement of sine-wave voltages shall be better than ± 2 dB (± 2,5 dB above 1 GHz) when supplied with a sine-wave signal at 50 Ω resistive source impedance.