

**SLOVENSKI**  
**STANDARD**

**SIST EN 55016-1-  
2:2005/A2:2007**

marec 2007

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**Specifikacija merilnih naprav in metod za merjenje radijskih motenj in odpornosti - 1-2. del: Merilne naprave za merjenje radijskih motenj in odpornosti - Pomožna oprema - Motnje po vodnikih - Dopolnilo A2 (CISPR 16-1-2-2003/A2:2006)**

Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-2: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Conducted disturbances (CISPR 16-1-2-2003/A2:2006)

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**Specification for radio disturbance  
and immunity measuring apparatus and methods  
Part 1-2: Radio disturbance and immunity measuring apparatus -  
Ancillary equipment -  
Conducted disturbances  
(CISPR 16-1-2:2003/A2:2006)**

Spécifications des méthodes  
et des appareils de mesure  
des perturbations radioélectriques  
et de l'immunité aux perturbations  
radioélectriques  
Partie 1-2: Appareils de mesure  
des perturbations radioélectriques  
et de l'immunité aux perturbations  
radioélectriques -  
Matériels auxiliaires -  
Perturbations conduites  
(CISPR 16-1-2:2003/A2:2006)

Anforderungen an Geräte  
und Einrichtungen sowie Festlegung  
der Verfahren zur Messung  
der hochfrequenten Störaussendung  
(Funkstörungen) und Störfestigkeit  
Teil 1-2: Geräte und Einrichtungen  
zur Messung der hochfrequenten  
Störaussendung (Funkstörungen)  
und Störfestigkeit -  
Zusatz-/Hilfseinrichtungen -  
Leitungsgeführte Störaussendung  
(CISPR 16-1-2:2003/A2:2006)

This amendment A2 modifies the European Standard EN 55016-1-2:2004; it was approved by CENELEC on 2006-11-01. 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, 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/654/FDIS, future amendment 2 to CISPR 16-1-2:2003, 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 55016-1-2:2004 on 2006-11-01.

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) 2007-08-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2009-11-01

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## Endorsement notice

The text of amendment 2:2006 to the International Standard CISPR 16-1-2:2003 was approved by CENELEC as an amendment to the European Standard without any modification.

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2003

AMENDMENT 2  
2006-07

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

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Amendment 2

**Specification for radio disturbance and immunity  
measuring apparatus and methods –**

**Part 1-2:**

**Radio disturbance and immunity measuring  
apparatus – Ancillary equipment –  
Conducted disturbances**

[SIST EN 55016-1-2:2005/A2:2007](https://standards.iteh.ai/catalog/standards/sist/116efb59-35e8-4217-8f0b-01adaab839fe/sist-en-55016-1-2-2005-a2-2007)

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*This **English-language** version is derived from the original **bilingual** publication by leaving out all French-language pages. Missing page numbers correspond to the French-language pages.*

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PRICE CODE

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## FOREWORD

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

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

FDIS	Report on voting
CISPR/A/654/FDIS	CISPR/A/670/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

*Add the titles of new Annexes H and I as follows:*

Annex H (informative) Rationale for the introduction of a minimum decoupling factor between mains and EUT/receiver ports for the V-AMN

Annex I (informative) Rationale for the introduction of a phase tolerance for the V-AMN input impedance

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## 3 Definitions

*Add, after definition 3.3, the following new definition and renumber existing definitions 3.4 to 3.7 as 3.5 to 3.8 accordingly:*

### 3.4

#### artificial mains network

##### AMN

provides a defined impedance to the EUT at radio frequencies, couples the disturbance voltage to the measuring receiver and decouples the test circuit from the supply mains. There are two basic types of AMN, the V-network (V-AMN) which couples the unsymmetrical voltages, and the delta-network which couples the symmetric and the asymmetric voltages separately. The terms line impedance stabilization network (LISN) and V-AMN are used interchangeably

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## 4 Artificial mains networks

*The correction concerning the title applies to the French text only.*

*Renumber the existing note as Note 1 and add the following new note:*

NOTE 2 This clause specifies impedance and isolation requirements for the AMN including the corresponding measurement methods. Some background and rationale on the AMN related uncertainties is given in 6.2.3 of CISPR 16-4-1 and in CISPR 16-4-2.

### 4.1 Network impedance

*Replace the existing title and text of 4.1 as follows.*

#### 4.1 AMN impedance

The specification of the impedance of an artificial mains network includes magnitude and phase of the impedance measured at an EUT terminal with respect to reference earth, when the receiver port is terminated with 50  $\Omega$ .

The impedance at the EUT terminals of the artificial mains network defines the termination impedance presented to the equipment under test. For this reason, when a disturbance output terminal is not connected to the measuring receiver, it shall be terminated by 50  $\Omega$ . In order to assure accurate termination into 50  $\Omega$  of the receiver port, a 10-dB attenuator shall be used either inside or external to the network, the VSWR of which (seen from either side) shall be less than or equal to 1,2 to 1. The attenuation shall be included in the measurement of the voltage division factor (see 4.10).

The impedance between each conductor (except PE) of the EUT terminal and reference earth shall comply with 4.2, 4.3, 4.4, 4.5 or 4.6 as appropriate for any value of external impedance, including a short circuit connected between the corresponding mains terminal and reference earth. This requirement shall be met at all temperatures which the network may reach under normal conditions for continuous currents up to the specified maximum. The requirement shall also be met for peak currents up to the specified maximum.

Where the phase requirement cannot be met, the measured phase angles may be taken into account in the uncertainty budget according to CISPR 16-4-2. Annex I gives guidelines for the calculation of the uncertainty contribution of the phase if the tolerance is exceeded.

NOTE Since EUT connectors are not optimized for radio frequencies up to 30 MHz, the measurement of the network impedance must be carried out with special measurement adaptors to enable short connections. The NWA's OSM (open/short/matched) calibration is used to characterize the adaptors, taking the insertion loss and the conductor lengths of the adapters into account.

#### 4.2 50 Ω/50 μH + 5 Ω artificial mains V-network (for use in the frequency range 9 kHz to 150 kHz)

Replace the existing text of this subclause as follows.

The AMN shall have the impedance (magnitude and phase) versus frequency characteristic shown in Table 3 and Figure 1a in the relevant frequency range. Tolerances of  $\pm 20\%$  for the magnitude and of  $\pm 11,5^\circ$  for the phase are permitted.

**Table 3 – Magnitudes and phase angles of the V-network (see Figure 1a)**

Frequency MHz	Impedance magnitude Ω	Phase angle Degree
0,009	5,22	26,55
0,015	6,22	38,41
0,020	7,25	44,97
0,025	8,38	49,39
0,030	9,56	52,33
0,040	11,99	55,43
0,050	14,41	56,40
0,060	16,77	56,23
0,070	19,04	55,40
0,080	21,19	54,19
0,090	23,22	52,77
0,100	25,11	51,22
0,150	32,72	43,35

NOTE If this AMN meets the combined impedance requirements of this subclause and 4.3., it can be used in the frequency range 150 kHz to 30 MHz as well.



#### 4.3 50 Ω/50 μH artificial mains V-network (for use in the frequency range 0,15 MHz to 30 MHz)

Replace the existing text of this subclause as follows.

The AMN shall have the impedance (magnitude and phase) versus frequency characteristic shown in Table 4 and Figure 1b in the relevant frequency range. Tolerances of  $\pm 20\%$  for the magnitude and of  $\pm 11,5^\circ$  for the phase are permitted.

**Table 4 – Magnitudes and phase angles of the V-Network (see Figure 1b)**

Frequency MHz	Impedance magnitude Ω	Phase angle Degree
0,15	34,29	46,70
0,17	36,50	43,11
0,20	39,12	38,51
0,25	42,18	32,48
0,30	44,17	27,95
0,35	45,52	24,45
0,40	46,46	21,70
0,50	47,65	17,66
0,60	48,33	14,86
0,70	48,76	12,81
0,80	49,04	11,25
0,90	49,24	10,03
1,00	49,38	9,04
1,20	49,57	7,56
1,50	49,72	6,06
2,00	49,84	4,55
2,50	49,90	3,64
3,00	49,93	3,04
4,00	49,96	2,28
5,00	49,98	1,82
7,00	49,99	1,30
10,00	49,99	0,91
15,00	50,00	0,61
20,00	50,00	0,46
30,00	50,00	0,30