



SLOVENSKI STANDARD

SIST EN 55022:1995/A2:1997

01-november-1997

Limits and methods of measurement of radio disturbance characteristics of information technology equipment - Amendment A2 (CISPR 22:1993/A2:1996)

Limits and methods of measurement of radio disturbance characteristics of information technology equipment

Grenzwerte und Meßverfahren für Funkstörungen von Einrichtungen der Informationstechnik

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Limites et méthodes de mesure des caractéristiques de perturbations radioélectriques produites par les appareils de traitement de l'information

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Ta slovenski standard je istoveten z: **EN 55022:1994/A2:1997**

ICS:

33.100.10	Emisija	Emission
35.020	Informacijska tehnika in tehnologija na splošno	Information technology (IT) in general

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en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 55022/A2

August 1997

UDC 681.3:621.391.82
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Descriptors: Radio interference, information technology equipment, methods of measurement, characteristic

English version

**Limits and methods of measurement of radio disturbance
characteristics of information technology equipment
(CISPR 22:1993/A2:1996, modified)**

Limites et méthodes de mesure des
caractéristiques de perturbations
radioélectriques produites par les
appareils de traitement de l'information
(CISPR 22:1993/A2:1996, modifiée)

Grenzwerte und Meßverfahren für
Funkstörungen von Einrichtungen
der Informationstechnik
(CISPR 22:1993/A2:1996, modifiziert)

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This amendment A2 modifies the European Standard EN 55022:1994; it was approved by CENELEC on 1997-03-11. 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

Foreword

The text of amendment 2:1996 to the International Standard CISPR 22:1993, prepared by CISPR SC G, Interference relating to information technology equipment, 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 A2 to EN 55022:1994 on 1997-03-11.

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) 1997-12-01
 - latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1998-12-31
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Endorsement notice

The text of amendment 2:1996 to the International Standard CISPR 22:1993 was approved by CENELEC as an amendment to the European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS**9.1 EUT configuration**

2nd paragraph: delete the second sentence "The number of additional ... with respect to the limit."

3rd paragraph: delete the second sentence "The number of additional ... with respect to the limit."

9.2 Operation of the equipment under test (EUT)

Add before the 1st paragraph:

"The operational conditions of the EUT shall be determined by the manufacturer according to the typical use of the EUT with respect to the expected highest level of emission. The determined operational mode and the rationale for the conditions shall be stated in the test report."
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Delete subclauses 9.2.1, 9.2.2 and 9.2.3

10.4 Equipment set up for conducted disturbance measurements

Add after the 2nd paragraph:

"In case of dispute tests shall be carried out as originally performed."

11.4 Equipment set up for radiated disturbance tests

2nd paragraph: replace in the last sentence "12 mm" by "15 cm".

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COMMISSION
ÉLECTROTECHNIQUE
INTERNATIONALE

CISPR 22

1993

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

AMENDEMENT 2
AMENDMENT 2

1996-08

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

Amendement 2

**Limites et méthodes de mesure
des caractéristiques de perturbations
radioélectriques produites par les appareils
de traitement de l'information**

[SIST EN 55022:1995/A2:1997](https://standards.iteh.ai/catalog/standards/sist/5ee1e524-62c2-475f-b5b5-0512cc6c748/sist-en-55022-1995-a2-1997)

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Amendment 2

**Limits and methods of measurement of
radio disturbance characteristics of
information technology equipment**

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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P

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FOREWORD

This amendment has been prepared by CISPR sub-committee G: Interference relating to information technology equipment.

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

DIS	Report on voting
CISPR/G/96/DIS	CISPR/G/105/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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3 Definitions

Replace definition 3.2 by the following:

3.2 equipment under test (EUT): A representative ITE or functionally interactive group of ITE (i.e. system) which includes one or more host unit(s) and is used for evaluation purposes.

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9.1 EUT configuration

[SIST EN 55022:1995/A2:1997](https://standards.iteh.ai/catalog/standards/sist/5ee1e524-62c2-475f-b5b5-0382c6bc748/sist-en-55022-1995-a2-1997)

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[0382c6bc748/sist-en-55022-1995-a2-1997](https://standards.iteh.ai/catalog/standards/sist/5ee1e524-62c2-475f-b5b5-0382c6bc748/sist-en-55022-1995-a2-1997)

Replace the first paragraph of this subclause by the following:

Where not specified herein, the EUT shall be configured, installed, arranged and operated in a manner consistent with typical applications. Interface cables/loads/devices shall be connected to at least one of each type of interface port of the EUT, and where practical, each cable shall be terminated in a device typical of actual usage.

Where there are multiple interface ports of the same type, additional interconnecting cables/loads/devices may have to be added to the EUT depending upon the results of preliminary tests. The number of additional cables should be limited to the condition where the addition of another cable does not decrease the margin a significant amount (e.g. 2 dB) with respect to the limit. The rationale for the selection of the configuration and loading of ports shall be included in the test report.

Add, after the seventh paragraph, the following new paragraph:

Equipment which is populated with multiple modules (drawer, plug-in card, board, etc.) shall be tested with a mix and number representative of that used in a typical installation. The number of additional boards or plug-in card actually used should be limited to the number for which the addition of another board or card does not decrease the margin a significant amount (e.g. 2 dB) with respect to the limit. The rationale used for selecting the number and type of modules should be stated in the test report.

A system that consists of a number of separate units shall be configured to form a minimum representative configuration. The number and mix of units included in the test configuration shall normally be representative of that used in a typical installation. The rationale used for selecting units should be stated in the test report.

Examples of a minimum representative configuration follow.

For a personal computer or a personal computer peripheral, the minimum configuration consists of the following device grouped and tested together.

- a) Personal computer
- b) Keyboard
- c) Visual display unit
- d) External peripheral for each of two different types of available I/O protocols, e.g., serial, parallel, etc.
- e) If the EUT has a dedicated port for a special-purpose device e.g. a mouse or joystick, that device shall be part of the minimum configuration.

NOTE - Items a), b) and/or c) may, in some systems, be assembled in the same chassis. In no instance may items a), b), c) mouse or joystick controls, be used as a replacement for item d).

For a point of sale terminal, the minimum system consists of the following devices (to the extent applicable) grouped and tested together.

- a) Active processor (till)
- b) Cash drawer
- c) Keyboard(s)
- d) Display units (operator and customer)
- e) Typical peripheral (bar code scanner)
- f) Handheld device (bar code scanner)

Add, after the ninth paragraph, on page 23, the following new paragraph:

A unit of equipment which forms part of a system distributed over a wide area (e.g. data processing terminals or workstations, or private branch telecommunication exchanges, etc.), and which in itself may be a sub-system, may be tested independently of the host unit or system. Distributed networks, e.g. a local area network, may be simulated on the test site by lengths of cable and actual peripherals or remote network communications simulators located at a distance sufficient to ensure that they do not contribute to the measured level.

Add, after the last paragraph the following new subclause 9.1.1:

9.1.1 Determination of maximum emission configuration(s)

Initial testing shall identify the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test set-up which is representative of typical system configurations. The identification of the frequency of highest disturbance with respect to the limit shall be found by investigating disturbances at a number of significant frequencies, to give confidence that the probable

frequency of maximum disturbance has been found and that the associated cable, EUT configurations and mode of operation has been identified.

For initial testing, the EUT shall be set up in accordance with figures 4 through 14. The distances between the EUT and peripherals are set according to the figures.

Final measurements shall be conducted as in clauses 10 and 11 for terminal disturbance voltage and disturbance field strength measurements, respectively.

Renumber the existing subclause 9.1.1 as 9.1.2 and modify the title as follows:

9.1.2 EUT configuration with groundplane

Add, after subclause 9.1.2, the following new subclause 9.2:

9.2 Operation of the equipment under test (EUT)

The EUT shall be operated at the rated (nominal) operating voltage and typical load conditions (mechanical or electrical) for which it is designed. Actual loads should be used whenever possible. If a simulator is used, it shall represent the actual load with respect to its radio frequency and functional characteristics.

The test programs or other means of exercising the equipment should ensure that various parts of a system are exercised in a manner that permits detection of all system disturbances. For example, in a computer system, tape and disk drives should be put through a read-write-erase sequence, various portions of memories should be addressed. Any mechanical activities should be performed and visual display units should be operated as in 9.2.1

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9.2.1 Operation of visual display units

If the EUT includes a visual display or monitor, the following operating rules shall be used.

- Set the contrast control to maximum.
- Set the brightness control to maximum or at raster extinction if raster extinction occurs at less than maximum brightness.
- For color monitors, use white letters on a black background to represent all colors.
- Select the worse case of positive or negative video if both alternatives are available.
- Set character size and number of characters per line so that typically the greatest number of characters per screen is displayed.
- For monitors with graphics capabilities, a pattern consisting of all scrolling H's should be displayed. For monitors with text only capability, a pattern consisting of random text shall be displayed. If neither of the above apply, use a typical display.

The EUT shall be operated in the operating mode that generates the greatest level of emission while satisfying the above operating rules.

9.2.2 Operation of facsimile devices

Facsimile devices shall be tested in idle state transmit and receive modes using the facsimile receivers test chart specified by the CCITT*, in the most detailed image mode of the EUT.

NOTE – It may be necessary to repeat the test pattern many times in order to obtain the full disturbance potential of the facsimile devices.

9.2.3 Operation of telephone sets

Telephone sets capable of transmitting voice information by digital signals shall be tested in idle state transmit and receive modes with the receiving condition of the standard speech data for the telephony specified by the CCITT*.

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10.2 Artificial mains network (AMN)

Add, on page 25, the following new item e):

- e) When testing equipment with multiple mains cords, those mains cords not under test may be connected to a multiple outlet, which in turn shall be connected to an artificial mains network (AMN) different than the AMN used for the mains cord under test.

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10.3 Groundplane

[SIST EN 55022:1995/A2:1997](https://standards.iteh.ai/catalog/standards/sist/5e524-62c2-475f-b5b5-03ff2c6bc748/sist-en-55022-1995-a2-1997)

Add, to the first paragraph, the following new sentence:

If the measurement is made in an open area test site or in a screened enclosure, the distance of 0,4 m may be referred to the horizontal metal groundplane.

Add, after 10.3, the following two new subclauses 10.4 and 10.5:

10.4 Equipment set-up for conducted disturbance measurements

The EUT shall be configured and operated in accordance with the requirements of clause 9 and set up in accordance with figures 4 through 9 for tabletop equipment, floor-standing equipment and combined floor-standing and tabletop equipment. Figures 13 and 14 display the set-up for floor-standing equipment using overhead cables.

Tabletop EUT's shall be placed upon a nonmetallic table 0,8 m above the horizontal metal reference plane (see 10.3). The tabletop EUT shall be placed 40 cm from a vertical groundplane which is connected to the horizontal metal groundplane (see figures 4 through 6), or alternatively, shall be placed 40 cm above the horizontal metal groundplane (see figure 7). Where an alternative set-up is used (40 cm above the horizontal groundplane), this fact should be recorded in the test report.

* International Telegraph and Telephone Consultative Committee.