

**SLOVENSKI**  
**STANDARD**

**SIST EN 55016-2-3:2005/A1:2005**

november 2005

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**Specifikacija za merilne naprave in metode za merjenje radijskih motenj in odpornosti – 2-3. del: Metode za merjenje radijskih motenj in odpornosti – Merjenje sevanih motenj (CISPR 16-2-3:2003/A1:2005)**

Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-3: Methods of measurement of disturbances and immunity – Radiated disturbance measurements (CISPR 16-2-3:2003/A1:2005)

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ICS 17.240; 33.100.20

Referenčna številka  
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**Specification for radio disturbance and immunity  
measuring apparatus and methods  
Part 2-3: Methods of measurement of disturbances and immunity -  
Radiated disturbance measurements  
(CISPR 16-2-3:2003/A1:2005)**

Spécifications des méthodes et des  
appareils de mesure des perturbations  
radioélectriques et de l'immunité  
aux perturbations radioélectriques  
Partie 2-3: Méthodes de mesure  
des perturbations et de l'immunité -  
Mesures des perturbations rayonnées  
(CISPR 16-2-3:2003/A1:2005)

Anforderungen an Geräte und  
Einrichtungen sowie Festlegung  
der Verfahren zur Messung der  
hochfrequenten Störaussendung  
(Funkstörungen) und Störfestigkeit  
Teil 2-3: Verfahren zur Messung  
der hochfrequenten Störaussendung  
(Funkstörungen) und Störfestigkeit -  
Messung der gestrahlten Störaussendung  
(CISPR 16-2-3:2003/A1:2005)

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This amendment A1 modifies the European Standard EN 55016-2-3:2004; it was approved by CENELEC on 2005-06-01. 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, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, 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 document CISPR/A/573/FDIS, future amendment 1 to CISPR 16-2-3:2003, 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 A1 to EN 55016-2-3:2004 on 2005-06-01.

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) 2006-03-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2008-06-01

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## Endorsement notice

The text of amendment 1:2005 to the International Standard CISPR 16-2-3:2003 was approved by CENELEC as an amendment to the European Standard without any modification.

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COMMISSION  
ÉLECTROTECHNIQUE  
INTERNATIONALE

**CISPR**  
**16-2-3**

2003

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

AMENDEMENT 1  
AMENDMENT 1  
2005-05

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

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Amendement 1

**Spécifications des méthodes et des appareils  
de mesure des perturbations radioélectriques et  
de l'immunité aux perturbations radioélectriques –**

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**Partie 2-3:**

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**Méthodes de mesure des perturbations et  
de l'immunité – Mesures des perturbations  
rayonnées**

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Amendment 1

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

**Part 2-3:**

**Methods of measurement of disturbances and  
immunity – Radiated disturbance measurements**

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Commission Electrotechnique Internationale  
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Международная Электротехническая Комиссия

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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/573/FDIS	CISPR/A/585/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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### 7.3.2 Measurement distance

*Add, after the first paragraph, the following new paragraph:*

The measurement distance,  $d$ , is the horizontal distance between the periphery of the EUT and the receive antenna reference point (see Figure 13). The EUT encompasses all portions of the EUT, including cable racks and support equipment and a minimum cable length of 30 cm.

*Delete the third sentence (above the note):*

In case of dispute, measurements performed at 3 m shall take precedence.

*Add, below the note, the following new paragraph :*

If measurements are made at a distance other than 3 m (see Note above), the measurement distance shall be greater than or equal to 1 m and less than or equal to 10 m. In such a case, the measurement data is to be adjusted to a 3 m distance, assuming free space propagation. Users are advised that comparison of measurements at different distances and extrapolated will not correlate as well as measurements made at the same distance. Standards or specifications that reference this test method should identify a preferred measurement distance.

### 7.3.3 Set-up of the equipment under test (EUT)

Replace the existing title and text with the following:

### 7.3.3 Set-up and operating conditions of the equipment under test (EUT)

As a general guideline, test setups and operating conditions of the EUT shall be the same as those used below 1 GHz. Whenever possible, the test setup should be representative of the most typical configuration of the EUT (table-top, floor-standing, rack-mounted, wall-mounted, etc.).

The test setup should also consider that absorbers are typically required on the floor between the antenna and EUT for measurements above 1 GHz. Whenever practical, for emission measurements above 1 GHz the EUT should be raised above the height of the absorbers. If it is not possible to raise the entire EUT above the absorbers (i.e. rack-mounted or floor-standing equipment), an attempt should be made to configure the EUT (in a rack or chassis, for example) such that the radiating elements are located above the absorbers. The EUT shall be located in the validated test volume as described in 5.8.2.2 of CISPR 16-1-4. If it is not practical and safe to raise the EUT or its radiating elements above the absorber height, the maximum portion of the EUT that may be located below the highest point of the absorbers is 30 cm (see 7.3.6.1 and Figure 12 below).

The actual EUT configuration and set-up used shall be documented in the test report with photographs or diagrams clearly showing the location of the EUT with respect to the facility floor or turntable surface, absorber placement on the floor (height and location) and receive antenna location.

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Insert, after 7.3.3, the two following new subclauses 7.3.4 and 7.3.5 as follows.

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### 7.3.4 Measurement site

The measurement site shall comply with the requirements described in 8.2 of CISPR 16-1-4.

### 7.3.5 Measurement instrumentation

The measurement instrumentation shall comply with the requirements described in 8.2 of CISPR 16-1-1 and 4.6 of CISPR 16-1-4.

Measurements to verify compliance with a peak limit shall be conducted with the peak measuring spectrum analyzer or receiver using a measurement bandwidth of 1 MHz (impulse bandwidth) as defined in CISPR 16-1-1 (subclause 8.2).

Measurements to verify compliance with an average limit shall be conducted with a peak measuring spectrum analyzer using a measurement bandwidth of 1 MHz (impulse bandwidth) and a reduced video bandwidth, set as defined in CISPR 16-1-1, (subclause 8.2, c)). The value of video bandwidth required for an average measurement shall be less than the lowest spectral component of the input signals to be measured.

NOTE A spectrum analyzer can be used to perform average measurements by setting the display mode to linear and the video bandwidth to a value that is lower than the lowest spectrum component of the input signal to be measured. For example, if the input signal has a 1 kHz pulse repetition frequency (PRF), for a video bandwidth less than 1 kHz, only the DC component of the signal (i.e., the average value) will pass through the video filter.

The use of other types of linear average detectors that comply with these requirements is allowed. In general, the spectrum analyzer shall be set to linear display mode when performing average measurements (i.e. not logarithmic mode). The sweep time of the spectrum analyzer shall be increased, due to the use of narrower video bandwidths, to ensure accurate measurement results. The logarithmic mode is permitted for average measurements when the specification limits assume a logarithmic detector will be used.

### 7.3.4 Measurement procedure

Renumber existing subclause 7.3.4, which now becomes 7.3.6 due to insertion of the above new subclauses 7.3.4 and 7.3.5.

#### 7.3.4.1 Encompassing of the EUT by the measuring antenna

Replace the existing title and text of subclause 7.3.4.1, now renumbered 7.3.6.1, by the following:

#### 7.3.6.1 General description of the radiated field measurement method above 1 GHz

The radiated field measurement method above 1 GHz is based on measurement of the maximum electric field emitted from the EUT as shown in Figure 12.

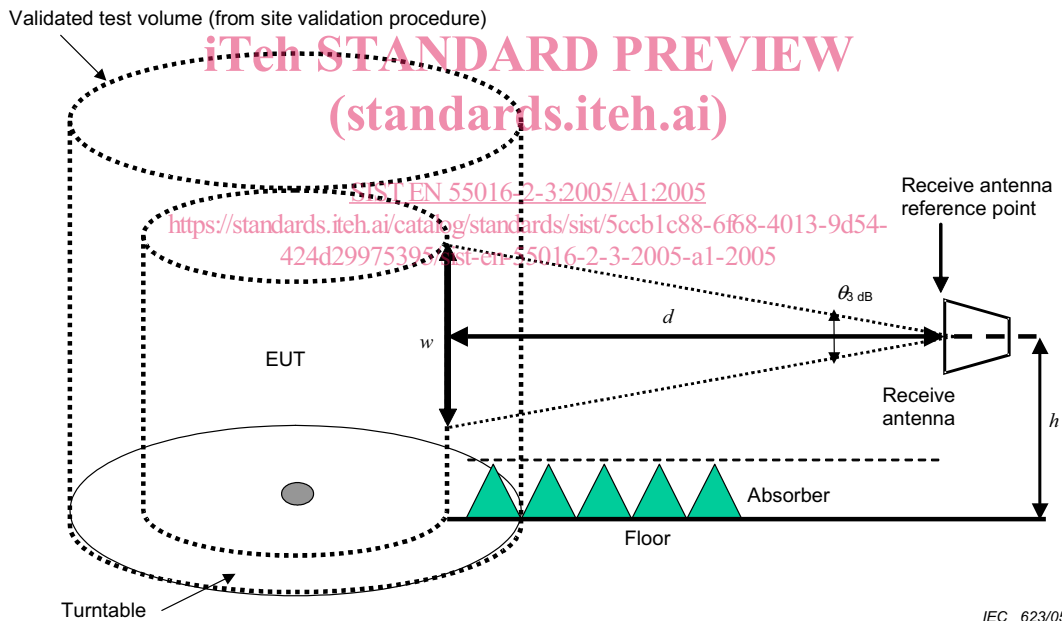


Figure 12 – Measurement method above 1 GHz, receive antenna in vertical polarization



### Definitions referring to Figure 12

**Validated test volume:** The volume validated during the site validation procedure (see 5.8.2.2 of CISPR 16-1-4). Typically, this is the largest diameter EUT that can be used in the test facility.

**EUT:** The smallest diameter cylinder that will fully encompass all portions of the actual EUT, including cable racks and a minimum length of 30 cm of cables. The EUT that is located within this cylinder must be capable of rotating about its centre (typically by a remotely controlled turntable). The EUT must be located within the validated test volume. A maximum of 30 cm of  $w$  (see definition of  $w$  below) may be below the height of absorbers on the floor only when the EUT is floor standing and cannot be raised above the height of the absorbers (see 7.3.3).

$\theta_{3\text{ dB}}$ : The minimum 3 dB beamwidth of the receive antenna at each frequency of interest.  $\theta_{3\text{ dB}}$  is the minimum of both the E-plane and H-plane values at each frequency.  $\theta_{3\text{ dB}}$  may be obtained from manufacturer provided data for the receive antenna.

$d$ : The measurement distance (in meters). This is measured as the horizontal distance between the periphery of the EUT and the reference point of the receive antenna.

$w$ : The dimension of the line tangent to the EUT formed by  $\theta_{3\text{ dB}}$  at the measurement distance  $d$ . Equation (10) shall be used to calculate  $w$  for each actual antenna and measurement distance used. The values of  $w$  shall be included in the test report. This calculation may be based on the manufacturer-provided receive-antenna beamwidth specifications :

$$w = 2 \times d \times \tan(0,5 \times \theta_{3\text{ dB}}) \quad (10)$$

$w$  shall be of the minimum dimension as specified in Table 3

$h$ : The height of the receive antenna, measured from its reference point to the floor.

Table 3 specifies the minimum acceptable dimension of  $w$  ( $w_{\text{min}}$ ). The minimum requirements shown in Table 3 are calculated from equation (10) based on testing at the minimum permissible 1 m measurement distance specified in paragraph 7.3.2 and the values of  $\theta_{3\text{ dB}(\text{min})}$  shown. The selection of measurement distance,  $d$ , and antenna type shall be made such that  $w$  is equal to, or greater than, the values shown in Table 3 at any frequency where the field is measured. At frequencies not shown in Table 3, the limit of  $w_{\text{min}}$  shall be linearly interpolated between the nearest two frequencies listed: