



# SLOVENSKI STANDARD SIST EN ISO 7779:2002

01-december-2002

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SIST EN 27779:1999

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Acoustics - Measurement of airborne noise emitted by information technology and telecommunications equipment (ISO 7779:1999)

Akustik - Geräuschemissionsmessung an Geräten der Informations- und Telekommunikationstechnik (ISO 7779:1999)

Acoustique - Mesurage du bruit aérien émis par les équipements de technologies de l'information et de télécommunications (ISO 7779:1999)

Ta slovenski standard je istoveten z: EN ISO 7779:2001

## ICS:

17.140.20	Emisija hrupa naprav in opreme	Noise emitted by machines and equipment
35.020	Informacijska tehnika in tehnologija na splošno	Information technology (IT) in general

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 7779**

May 2001

ICS 17.140.20; 35.020

Supersedes EN 27779:1991

English version

Acoustics - Measurement of airborne noise emitted by  
information technology and telecommunications equipment (ISO  
7779:1999)

Acoustique - Mesurage du bruit aérien émis par les  
équipements de technologies de l'information et de  
télécommunications (ISO 7779:1999)

Akustik - Geräuschemissionsmessung an Geräten der  
Informations- und Telekommunikationstechnik (ISO  
7779:1999)

This European Standard was approved by CEN on 11 May 2001.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard 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 Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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### Foreword

The text of the International Standard from Technical Committee ISO/TC 43 "Acoustics" of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 211 "Acoustics", the secretariat of which is held by DS.

This European Standard replaces EN 27779:1991.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2001, and conflicting national standards shall be withdrawn at the latest by November 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

### Endorsement notice

The text of the International Standard ISO 7779:1999 has been approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

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**Annex ZA** (normative)  
**Normative references to international publications  
 with their relevant European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 3741	1999	Acoustics - Determination of sound power levels of noise sources using sound pressure - Precision methods for reverberation rooms	EN ISO 3741	1999
ISO 3744	1994	Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane	EN ISO 3744	1995
ISO 9295	1988	Acoustics - Measurement of high-frequency noise emitted by computer and business equipment	EN 29295	1991
ISO 11201	1995	Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at a work station and at other specified positions - Engineering method in an essentially free field over a reflecting plane	EN ISO 11201	1995
ISO 11203	1995	Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level	EN ISO 11203	1995

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# INTERNATIONAL STANDARD

**ISO  
7779**

Second edition  
1999-08-01

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## **Acoustics — Measurement of airborne noise emitted by information technology and telecommunications equipment**

*Acoustique — Mesurage du bruit aérien émis par les équipements de  
technologies de l'information et de télécommunications*

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Reference number  
ISO 7779:1999(E)

## ISO 7779:1999(E)

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International Organization for Standardization  
Case postale 56 • CH-1211 Genève 20 • Switzerland  
Internet iso@iso.ch

Printed in Switzerland



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7779 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

This second edition of ISO 7779 cancels and replaces the first edition (ISO 7779:1988), which has been technically revised.

Annexes A, B and C form a normative part of this International Standard. Annexes D and E are for information only.

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## Introduction

This International Standard specifies methods for the measurement of airborne noise emitted by information technology and telecommunications equipment. Hitherto, a wide variety of methods have been applied by individual manufacturers and users to satisfy particular equipment or application needs. These diverse practices have, in many cases, made comparison of noise emission difficult. This International Standard simplifies such comparisons and is the basis for the declaration of the noise emission levels of information technology and telecommunications equipment.

In order to ensure accuracy, validity and acceptability, this International Standard is based on the basic International Standards for determining the sound power level and for determining the emission sound pressure level at the operator position(s) and bystander position(s). Furthermore, implementation is simplified by conformance with these International Standards.

In many cases free-field conditions over a reflecting plane are realised by hemi-anechoic rooms. These rooms may be particularly useful during product design to locate and to improve individual contributing noise sources. Reverberation rooms may be more economical for production control and for obtaining sound power levels for noise emission declaration purposes.

The method for measuring the emission sound pressure level at the operator or bystander positions (based on ISO 11201) is specified in a separate clause, as this level is not considered to be primary noise emission declaration information. The measurements can, however, be carried out in conjunction with those for sound power determination in a free field over a reflecting plane.

For comparison of similar equipment, it is essential that the installation conditions and mode of operation are the same. In annex C these parameters are standardized for many categories of equipment.

This International Standard is based on ECMA-74. It was circulated for enquiry under the erroneous number ISO/DIS 14605 in 1993.

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# Acoustics — Measurement of airborne noise emitted by information technology and telecommunications equipment

## 1 Scope

This International Standard specifies procedures for measuring and reporting the noise emission of information technology and telecommunications equipment. This standard is considered part of a *noise test code* for this type of equipment, and is based on *basic noise emission standards* ISO 3741, ISO 3744, ISO 3745 and ISO 11201. The basic emission quantity is the A-weighted sound power level which may be used for comparing equipment of the same type but from different manufacturers, or for comparing different equipment.

Three basic noise emission standards for determining the sound power levels are specified in this International Standard in order to avoid undue restriction on existing facilities and experience. The first basic standard (ISO 3741) specifies comparison measurements in a reverberation room; the other two (ISO 3744 and ISO 3745) specify measurements in an essentially free field over a reflecting plane. Any one of these three basic noise emission standards may be selected and shall then be used exclusively according to this International Standard when determining sound power levels of a machine.

The A-weighted sound power level is supplemented by the A-weighted sound pressure level measured at the operator position(s) or the bystander positions, based on the *basic noise emission standard* ISO 11201. This sound pressure level is not a worker's immission rating level, but it may assist in identifying any potential problems that could cause annoyance, activity interference, or hearing damage to operators and bystanders.

Methods for determining whether the noise emission includes prominent discrete tones or is impulsive in character are specified in annexes D and E respectively.

This International Standard is suitable for type tests and provides methods for manufacturers and testing laboratories to obtain comparable results.

The methods specified in this International Standard allow the determination of noise emission levels for a unit tested individually.

The procedures may be applied to equipment which emits broad-band noise, narrow-band noise and noise which contains discrete-frequency components, or impulsive noise.

The sound power and sound pressure levels obtained may serve noise emission declaration and comparison purposes (see ISO 9296). They are not to be considered as installation noise immission levels; however they may be used for installation planning (see ECMA TR/27).

If sound power levels obtained are determined for a number of units of the same production series, they can be used to determine a statistical value for that production series (ISO 9296).

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3741:1999, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Precision methods for reverberation rooms.*

ISO 3744:1994, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free-field condition over a reflecting plane.*

ISO 3745:1977, *Acoustics — Determination of sound power levels of noise sources — Precision methods for anechoic and semi-anechoic rooms.*

ISO 6926:1990, *Acoustics — Determination of sound power levels of noise sources — Requirements for the performance and calibration of reference sound sources.*

ISO 9295, *Acoustics — Measurement of high-frequency noise emitted by computer and business equipment.*

ISO 9296, *Acoustics — Declared noise emission values of computer and business equipment.*

ISO 10302, *Acoustics — Methods for the measurement of airborne noise emitted by small air-moving devices.*

ISO 11201:1995, *Acoustics — Noise emitted by machinery and equipment — Guidelines for the use of basic standards for the determination of emission sound pressure levels at a work station and at other specified positions.*

ISO 11203, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level.*

IEC 60651, *Sound level meters.*

IEC 60804, *Integrating-averaging sound level meters.*

IEC 60942, *Electroacoustics — Sound calibrators.*

IEC 61260, *Electroacoustics — Octave-band and fractional-octave-band filters.*

ECMA TR/27:1995, *Method for the prediction of installation noise levels.*

## 3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 3744 and ISO 11201 and the following apply.

### 3.1 General definitions

#### 3.1.1

#### **basic noise emission standard (B-type standard)**

procedure for determining the noise emission of machinery and equipment in such a way as to obtain reliable, reproducible results with a degree of accuracy

**3.1.2****noise test code (C-type standard)**

standard that is applicable to a particular class, family or type of machinery or equipment which specifies all the information necessary to carry out efficiently the determination, declaration and verification of the noise emission characteristics under standardized conditions

NOTE This International Standard together with ISO 9295 and ISO 9296 comprise the noise test code for Information Technology and Telecommunications Equipment.

**3.1.3****information technology and telecommunications equipment**

equipment for information processing, and components thereof, used in homes, offices, computer installations, telecommunications installations, or similar environments

**3.1.4****functional unit**

an entity of physical equipment, which has been allocated an identification number, capable of accomplishing a specified task

NOTE 1 A functional unit may be supported by a frame or frames and may be self-enclosed or designed to be attached to another device.

NOTE 2 An end-use enclosure in the form of a rack, populated with sub-assemblies or other functional units, may be considered a functional unit whether or not it has a separate identification number.

**3.1.5****work station**

place in the working environment where an operator performs work

NOTE 1 It does not refer to a computer "workstation", which denotes a high-performance, single-user computer.

NOTE 2 See ISO 11201:1995.

**3.1.6****operating mode**

condition in which the equipment being tested is performing its intended function(s)

**3.1.7****idle mode**

one or more steady-state conditions in which the equipment being tested is energized but is not operating

**3.1.8****floor-standing equipment**

functional unit which is intended to be installed on the floor with or without its own stand

**3.1.9****table-top equipment**

functional unit which has a complete enclosure and which is intended to be installed or used on a table, desk or separate stand

**3.1.10****wall-mounted equipment**

functional unit which is normally mounted against or in a wall and which does not have a stand of its own

**3.1.11****sub-assembly**

functional unit intended to be installed in another unit or assembled with other units in a single enclosure

NOTE The unit may or may not have its own enclosure and identification number.

**3.1.12****rack-mounted equipment**

one or more sub-assemblies installed in an end-use enclosure