

SLOVENSKI STANDARD

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SIST EN ISO 7779:2002

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Akustika - Merjenje zračnega hrupa informacijske tehnologije in telekomunikacijske opreme (ISO 7779:2010)

Acoustics - Measurement of airborne noise emitted by information technology and telecommunications equipment (ISO 7779:2010)

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Akustik - Geräuschemissionsmessung an Geräten der Informations- und Telekommunikationstechnik (ISO 7779:2010)

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Acoustique - Mesurage du bruit aérien émis par les équipements liés aux technologies de l'information et aux télécommunications (ISO 7779:2010)

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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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en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 7779

August 2010

ICS 17.140.20; 35.020

Supersedes EN ISO 7779:2001

English Version

**Acoustics - Measurement of airborne noise emitted by
information technology and telecommunications equipment (ISO
7779:2010)**

Acoustique - Mesurage du bruit aérien émis par les
équipements liés aux technologies de l'information et aux
télécommunications (ISO 7779:2010)

Akustik - Geräuschemissionsmessung an Geräten der
Informations- und Telekommunikationstechnik (ISO
7779:2010)

This European Standard was approved by CEN on 26 July 2010.

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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 CEN Management Centre has the same status as the official versions.

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Foreword

This document (EN ISO 7779:2010) has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with Technical Committee CEN/TC 211 "Acoustics" the secretariat of which is held by DS.

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 **February 2010**, and conflicting national standards shall be withdrawn at the latest by **February 2010**.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 7779:2001.

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INTERNATIONAL STANDARD

**ISO
7779**

Third edition
2010-08-15

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

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

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ISO 7779:2010(E)

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 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

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

This third edition cancels and replaces the second edition (ISO 7779:1999), which has been technically revised. It also incorporates the amendment, ISO 7779:1999/Amd.1:2003.

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Introduction

This International Standard specifies methods for the measurement of airborne noise emitted by information technology and telecommunications (ITT) 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 ITT equipment.

In order to ensure accuracy, validity and acceptability, this International Standard is based on the basic International Standards for determination of the sound power level and for determination of the emission sound pressure level at the operator position(s) and bystander position(s). Furthermore, implementation is simplified by conformity 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 be the same. In Annex C these parameters are standardized for many categories of equipment.

This International Standard is based on ECMA-74.

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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.

NOTE 1 This International Standard is considered part of a noise test code (see 3.1.2) for this type of equipment, and is based on basic noise emission standards (see 3.1.1) 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 determination of the sound power levels are specified in this International Standard in order to avoid undue restriction on existing facilities and experience. ISO 3741 specifies comparison measurements in a reverberation test room; 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 can be selected and used exclusively in accordance with this International Standard when determining sound power levels of a machine.

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

Methods for determination of 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 functional unit (see 3.1.4) tested individually.

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

The sound power and emission sound pressure levels obtained can serve noise emission declaration and comparison purposes (see ISO 9296).

NOTE 2 The sound power and emission sound pressure levels obtained are not to be considered as installation noise immission levels; however, they can be used for installation planning (see ECMA TR/27^[4]).

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

ISO 7779:2010(E)

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 266, *Acoustics — Preferred frequencies*

ISO 3741, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Precision methods for reverberation test rooms*

ISO 3744, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane*

ISO 3745, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Precision methods for anechoic test rooms and hemi-anechoic test rooms*

ISO 6926, *Acoustics — Requirements for the performance and calibration of reference sound sources used for the determination of sound power levels*

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 11201, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections*

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 60942, *Electroacoustics — Sound calibrators*

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

IEC 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications*

ECMA-74, *Measurement of airborne noise emitted by information technology and telecommunications equipment¹⁾*

3 Terms and definitions

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

3.1 General definitions

3.1.1

basic noise emission standard

B-type standard

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

[ISO 12001:1996^[2], 3.1]

1) Available [viewed 2010-07-13] at: <http://www.ecma-international.org/publications/files/ECMA-ST/ECMA-74.pdf>

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

[ISO 12001:1996^[2], 3.2]

NOTE This International Standard, together with ISO 9295 and ISO 9296, comprise the noise test code for ITT equipment.

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

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

3.1.4**functional unit**

unit of information technology and telecommunications equipment, either with or without its own end-use enclosure, that is tested or intended to be tested in accordance with the procedures of this International Standard

NOTE 1 A functional unit can comprise more than one unit of ITT equipment when such units are to be tested together in accordance with the methods of this International Standard. A functional unit can also comprise one or more units of ITT equipment coupled to one or more units of non-ITT equipment, such as power modules, water pumps, or refrigeration units, when such equipment is necessary for the normal operation of the ITT equipment.

NOTE 2 Functional units of ITT equipment can take on a wide range of forms, including commercially available products, prototype units under development or sub-assemblies and components thereof.

3.1.5**work station****operator position**

position in the vicinity of the equipment under test which is intended for the operator

NOTE 1 Adapted from ISO 11201:2010, 3.11.

NOTE 2 This term does not refer to a computer “workstation”, which denotes a high-performance, single-user computer.

3.1.6**operating mode**

condition in which the equipment under test 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

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