INTERNATIONAL STANDARD

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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 liés aux technologies de l'information et aux télécommunications

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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 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.

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.

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).