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Australian STANDARD

Acoustics—Declared noise emission values of information technology and telecommunications equipment

STANDARDS Australia

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Association of Australasian Acoustical Consultants
Australian Acoustical Society
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Bureau of Steel Manufacturers of Australia
Department of Defence (Australian Government)
Engineers Australia
University of Sydney

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Acoustics—Declared noise emission values of information technology and telecommunications equipment

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Revised and redesignated as AS ISO 9296:2019.

Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee EV-010, Acoustics Community Noise, to supersede AS 3757—1990, *Acoustics—Declared noise emission values of computers and business equipment.*

The objective of this Standard is to provide acoustical noise emission data for information technology and telecommunications equipment (ITT equipment) to allow users, planners, manufacturers and authorities to compare noise emissions from different products, for installation acoustic planning and workplace noise immission requirements.

It specifies —

(a) for a batch of equipment, the method for determining the following values:

  (i) the declared mean A-weighted sound power level, LWA,m;

  (ii) the declared mean A-weighted emission sound pressure level, LpA,m;

  (iii) the statistical adder for verification, Kv; and

  (iv) the statistical upper limit A-weighted sound power level, LWA,c;

(b) how acoustical and product information is to be published electronically or in hard-copy format in technical documents or other product literature supplied to users by the manufacturer or declarer;

(c) the method for verifying the noise emission values that are declared by the manufacturer or declarer.

This Standard is identical with, and has been reproduced from, ISO 9296-2017, *Acoustics — Declared noise emission values of information technology and telecommunications equipment*.

As this document has been reproduced from an International Standard, the following applies:

(i) In the source text “this International Standard” should read “this Australian Standard”.

(ii) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html

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

This second edition cancels and replaces the first edition (ISO 9296:1988), which has been technically revised, and in addition contains the following changes*:*

— the Normative references clause has been updated and certain references moved to the Bibliography;

— a new Annex A has been added;

— a Bibliography has been added.

Introduction

Information on acoustical noise emission of information technology and telecommunications equipment (ITT equipment) is needed by users, planners, manufacturers and authorities. This information is required for comparison of the noise emissions from different products and for installation acoustics planning and may be used for workplace noise immission requirements.

In order for equipment noise emission data to be useful, uniform methods are necessary for the following purposes:

— Measurement of noise emission values

ISO 7779 specifies procedures for determining sound power level based on ISO 3741[1] ISO 3744[2] and ISO 3745[3] (reverberation test room or hemi-anechoic room) and emission sound pressure level based on ISO 11201.[7]

— Determination of the noise emission values to be declared

ISO 4871[4] gives guidelines for the preparation of standards for deriving noise emission values for declaration purposes, and the ISO 7574 series[5,6] gives statistical methods for such determination. This document is based on the above-mentioned International Standards.

— Presentation of declared noise emission values

For the presentation of declared noise emission values, it is of prime importance to declare A-weighted sound power levels, L_{WA}. It is recognized, however, that users still desire information on A-weighted emission sound pressure levels, L_{pA}. Therefore, this document provides methods for declaration of both quantities. In the preparation of this document, divergent opinions have been found between various national and international organisations as to the most useful way of presenting noise emission values. In order to avoid any misunderstanding between presentation of sound power levels (re 1 pW) in decibels and emission sound pressure levels (re 20 µPa) in decibels, this document expresses sound power level values to be declared in bels and emission sound pressure level values in decibels, to alleviate the divergent opinions mentioned.

As an option, methods for determination and presentation of subjective characteristics of noise emission are presented in Annex C.

— Verification of declared noise emission values

ISO 7574-4[6] gives methods for the verification of a declared noise emission value. In this document, the procedure is restricted to verifying the statistical upper limit A-weighted sound power level, $L_{WA,c}$, only.

For continuity with ISO 9296:1988 and current practice, this document specifies bels as the unit for declaring sound power levels. It should be noted, however, that the decision has been made to change the unit to decibels in the next edition, and users of this document should begin to prepare for this transition.

Australian Standard®

Acoustics—Declared noise emission values of information technology and telecommunications equipment

1 Scope

This document is applicable to information technology and telecommunications equipment.

It specifies:

a) for a batch of equipment, the method for determining the following values:

- the declared mean A-weighted sound power level, $L_{WA,m}$;
- the declared mean A-weighted emission sound pressure level, $L_{pA,m}$;
- the statistical adder for verification, K_v;
- the statistical upper limit A-weighted sound power level, $L_{WA,c}$;

b) how acoustical and product information is to be published electronically or in hard-copy format in technical documents or other product literature supplied to users by the manufacturer or declarer;

c) the method for verifying the noise emission values that are declared by the manufacturer or declarer.

NOTE The terms "manufacturer" and "declarer" are used in this document to represent any entity that provides product noise emission information. For instance, a product supplier or importer who does not manufacture the hardware, but offers noise emissions information, is also referred to a manufacturer or a declarer as applicable, in this document.

The uniform methods in this document use the noise emission data obtained in accordance with ISO 7779, and the declaration and verification procedures detailed in ISO 4871[4] and ISO 7574-4.[6]

The basic noise emission values to be declared are the declared mean A-weighted sound power levels, $L_{WA,m}$. Optionally, the declared mean A-weighted emission sound pressure levels at the operator or bystander positions, $L_{pA,m}$, can be declared. These are arithmetic mean values based upon measurements on a random sample of equipment of the batch, in accordance with ISO 7779.

For verification purposes, an additional quantity is required to be declared: the statistical adder for verification, K_v. This is a quantity that is added to the declared mean A-weighted sound power level, $L_{WA,m}$, and used in the verification section of this document to provide a consistent and predictable probability of acceptance for the batch of equipment.

The declared mean A-weighted sound power level for the batch of equipment permits comparison of noise emissions between different products and permits predictions of installation or work-place noise immission levels, as described in ECMA TR/27.[9]

Although the most useful quantity for calculating immission levels due to one or more noise sources is the A-weighted sound power level of the individual source(s), the A-weighted emission sound pressure level may also be useful in estimating the immission level in the immediate vicinity of an isolated piece of equipment.

To avoid confusion between sound power levels and emission sound pressure levels, the declared mean A-weighted sound power level, $L_{WA,m}$, is expressed in bels (B) and the declared mean A-weighted emission sound pressure level, $L_{pA,m}$, is expressed in decibels (dB).