BS ISO 9296:2017

BSI Standards Publication

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

Documents
Document Sharing Hub

Full document details: BS ISO 9296:2017

National foreword

This British Standard is the UK implementation of ISO 9296:2017. It supersedes BS 7135-3:1989 (dual numbered as ISO 9296:1988), which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EH/1/4, Machinery noise.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2017
Published by BSI Standards Limited 2017

ISBN 978 0 580 84638 0

ICS 35.260; 35.180; 17.140.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2017.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS ISO 9296:2017

INTERNATIONAL STANDARD

ISO 9296

Second edition
2017-08

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

Acoustique — Valeurs déclarées d'émission acoustique des équipements liés aux technologies de l'information et aux télécommunications

Reference number
ISO 9296:2017(E)

Documents
Document Sharing Hub
© ISO 2017

Full document details: BS ISO 9296:2017

COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

© ISO 2017 – All rights reserved

Documents
Document Sharing Hub

Full document details: BS ISO 9296:2017

Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **2**

3 Terms and definitions ... **2**
3.1 General definitions ... 2
3.2 Definitions relating to acoustics ... 3
3.3 Definitions relating to statistics ... 4

4 Conformity requirements ... **5**
4.1 For declaration ... 5
4.2 For verification ... 6

5 Determination of the noise emission values to declare ... **6**
5.1 General ... 6
5.2 Determination of the declared mean A-weighted sound power level, $L_{WA,m}$ ... 6
5.3 Determination of the declared mean A-weighted emission sound pressure level, $L_{pA,m}$ ... 7
5.4 Determination of the statistical adder for verification, K_v ... 7

6 Presentation of declared noise emission values ... **7**
6.1 Required information ... 7
6.2 Additional information ... 8

7 Verification of the statistical upper limit A-weighted sound power level, $L_{WA,c}$ ... **8**
7.1 General ... 8
7.2 Verification of $L_{WA,c}$ for a batch of equipment ... 8

Annex A (normative) **Procedure for determining the statistical adder for verification, K_v** ... **10**

Annex B (informative) **Examples of noise emission declarations** ... **13**

Annex C (informative) **Character of noise** ... **15**

Bibliography ... **16**

© ISO 2017 – All rights reserved

Documents
Document Sharing Hub

Full document details: BS ISO 9296:2017

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.

© ISO 2017 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS ISO 9296:2017

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.

© ISO 2017 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO 9296:2017

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).

© ISO 2017 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO 9296:2017