SLOVENSKI STANDARD
oSIST prEN IEC 60268-24:2023

01-maj-2023

Oprema zvokovnega sistema - 24. del: Naglavne in ušesne slušalk - karakteristike aktivnega odpravljanja zvočnega hrupa

Sound system equipment - Part 24: Headphones and earphones - active acoustic noise cancelling characteristics

Equipements pour systèmes électroacoustiques - Partie 24: Casques et écouteurs - Caractéristiques d'annulation active du bruit acoustique

Ta slovenski standard je istoveten z: **prEN IEC 60268-24:2023**

ICS:

33.160.50 Pribor Accessories

oSIST prEN IEC 60268-24:2023 **en,fr,de**

100/3880/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 60268-24 ED1**	
DATE OF CIRCULATION: **2023-03-17**	CLOSING DATE FOR VOTING: **2023-06-09**
SUPERSEDES DOCUMENTS: **100/3778/CD, 100/3822/CC**	

IEC TA 20 : ANALOGUE AND DIGITAL AUDIO

SECRETARIAT: Japan	SECRETARY: Mr Nobukazu Suzuki
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 100	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of

- any relevant patent rights of which they are aware and to provide supporting documentation,
- any relevant “in some countries” clauses to be included should this proposal proceed. Recipients are reminded that the enquiry stage is the final stage for submitting "in some countries" clauses. See AC/22/2007.

TITLE:

SOUND SYSTEM EQUIPMENT – Part 24: Headphones and earphones – active acoustic noise cancelling characteristics

PROPOSED STABILITY DATE: 2026

NOTE FROM TC/SC OFFICERS:

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

SOUND SYSTEM EQUIPMENT –

Part 24: HEADPHONES AND EARPHONES - ACTIVE ACOUSTIC NOISE CANCELLING CHARACTERISTICS

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60268-24 has been prepared by Technical Area 20 Analogue and digital audio, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The National Committees are requested to note that for this document the stability date is 20XX..

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

INTRODUCTION

This document specifies both methods of measurement and reporting of data for noise cancelling characteristics on active acoustic noise cancelling headphones and earphones.

Active acoustic noise cancelling headphones and earphones are commonly used to reduce the environmental acoustic noise to which the ear is exposed.

However, to date, there is no international standard for evaluating the noise cancelling performance of active acoustic noise cancelling headphones and earphones. Manufacturers currently measuring noise cancelling performance use only proprietary methods, and the resulting metrics are neither uniform nor comparable.

This standard provides measurement methods and metrics for the noise cancelling performance of active acoustic noise cancelling headphones and earphones. The resulting measured and calculated values enable comparison of performance data obtained in different locations.

SOUND SYSTEM EQUIPMENT –

Part 24: HEADPHONES AND EARPHONES - ACTIVE ACOUSTIC NOISE CANCELLING CHARACTERISTICS

1 Scope

This document is applicable to active acoustic noise cancelling headphones and earphones which have the function of reducing the noise heard by the user by the output sound from the transducer generated by the environment noise detection microphone and the noise reduction signal processing circuit.

This document specifies the terms and definitions of this type of headphones or earphones, the characteristics to be specified, and the measurement and evaluation methods.

The noise detection microphones are mounted in the body, on the surface, or on an accessory of the headphones or earphones. Signal processing circuits are analogue and digital electronic circuits.

This document does not deal with equipment intended for hearing protection.

The noise cancelling characteristic measurement methods may be applied to headphones and earphones having no active noise cancelling function.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60268-1:1985, *Sound system equipment. Part 1: General*

IEC 61672-1:2013, *Electroacoustics - Sound level meters - Part 1: Specifications*

IEC 61260-1:2014, *Electroacoustics - Octave-band and fractional-octave-band filters - Part 1: Specifications*

IEC 60068-1:2013, *Environmental testing - Part 1: General and guidance*

IEC 60050-702:1992, *International Electrotechnical Vocabulary - Chapter 702: Oscillations, signals and related devices*

IEC 60268-7:2010, *Sound system equipment - Part 7: Headphones and earphones*

IEC 60318-4:2010, *Electroacoustics – Simulators of human head and ear –Part4: Occluded-ear simulator for the measurement of earphones coupled to the ear by means of ear inserts*

ANSI/ASA S12.42:2010, *Methods for the Measurement of Insertion Loss of Hearing Protection Devices in Continuous or Impulsive Noise Using Microphone-in-Real-Ear or Acoustic Test Fixture Procedures*

IEC 60318-7:2022, *Electroacoustics – Simulators of human head and ear –Part 7: Head and torso simulator for the measurement of air-conduction hearing aids*

ISO 532-1:2017, *Acoustics - Method for calculating loudness - Part1:Zwicker method*

ISO 3741:2010, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for reverberation test rooms*

ISO 4869-1:2018, *Acoustics - Hearing protectors - Part 1: Subjective method for the measurement of sound attenuation*

ISO TR 4869-3:1989, *Acoustics - Hearing protectors - Part 3: Simplified method for the measurement of insertion loss of ear-muff type protectors for quality inspection purpose*

3 Terms and definitions

For the purposes of this document, the following terms and definitions including those of IEC 60268-7, IEC 60318-4 and IEC 60318-7 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

.

3.1
active noise cancelation
characteristics of reducing the noise level in the user's ear canal by the output sound from the driver generated by the noise detection microphone and the signal processing circuit (hereinafter referred to as ANC).

3.2
noise cancelling headphones
headphones or earphones that have the characteristics of active noise cancelling (hereinafter referred to as ANC headphones).

3.3
head and torso simulator
HATS
simulator of a median adult human head and part of the torso extending in total from the top of the head to the waist and designed to simulate the sound pick-up characteristics and acoustic diffraction.

Note 1 to entry: The head simulator includes two pinna simulators, and at least one occluded-ear simulator. [SOURCE: IEC TS 60318-7:2017]

3.4
acoustic test fixture
ATF
inanimate device that approximates certain physical characteristics and dimensions of a representative human head, pinnae, and ear canal and is used for measuring the insertion loss of environmental noise by a headphone

[Source: ANSI/ASA S12.42, modified by replacing 'of a hearing protection device' by 'of environmental noise by a headphone']

3.5
passive insertion loss (dB)
the insertion loss determined from the difference between the sound pressure levels with and without the ANC headphones attached to the HATS or ATF, measured in the condition of ANC function turned off.

3.6
active insertion loss (dB)
the insertion loss determined from the difference between the sound pressure levels with and without the ANC function on where ANC headphones attached to the HATS or ATF.

3.7
total insertion loss (dB)
the insertion loss determined from the difference between the sound pressure levels with and without the ANC headphones attached to the HATS or ATF, measured in the condition of ANC function turned on.

3.8
perceptual passive noise attenuation ratio
the single ratio value of loudness with the ANC headphones attached to the HATS or ATF to that without the ANC headphones attached to the HATS or ATF, measured in the condition of ANC function turned off.

3.9
perceptual active noise cancellation ratio
the single ratio value of loudness when the ANC function is on to that when the ANC function is off, where ANC headphones attached to the HATS or ATF.

3.10
perceptual total noise suppression ratio
the single ratio value of loudness with the ANC headphones attached to the HATS or ATF to that without the ANC headphones attached to the HATS or ATF, measured in the condition of ANC function turned on.

4 Measurement method for noise cancelling characteristics

4.1 Characteristics to be specified

The noise cancelling characteristics are specified by measuring: the sound pressure level for the open ear of the HATS or ATF, without the headphone fitted, $L_{\mathrm{OPEN}}(f)$ (dB); the sound pressure level of the HATS or ATF ear simulator with the headphones fitted to the HATS or ATF, but with the ANC turned OFF, $L_{\mathrm{ANC-OFF}}(f)$ (dB); and the sound pressure level of the HATS or ATF ear simulator with the headphones fitted to the HATS or ATF, but with the ANC turned ON, $L_{\mathrm{ANC-ON}}(f)$ (dB). All three quantities measured in the same sound field at the same specified sound pressure level.