SVENSK STANDARD

SS-EN IEC 60318-8, utg 1:2023

Fastställd	Sida	Ansvarig kommitté
2023-02-22	1 (37)	SEK TK 29

Elektroakustik – Simulatorer för huvud och öron – Del 8: Akustiskt kopplingsdon för högfrekvensmätning hos hörapparater med öroninsats

Electroacoustics – Simulators of human head and ear – Part 8: Acoustic coupler for high-frequency measurements of hearing aids and earphones coupled to the ear by means of ear inserts

Som svensk standard gäller europastandarden EN IEC 60318-8:2022. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 60318-8:2022.

Nationellt förord

Europastandarden EN IEC 60318-8:2022

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60318-8, First edition, 2022 - Electroacoustics - Simulators of human head and ear - Part 8: Acoustic coupler for high-frequency measurements of hearing aids and earphones coupled to the ear by means of ear inserts**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 17.140.50

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60318-8

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English Version

Electroacoustics - Simulators of human head and ear - Part 8: Acoustic coupler for high-frequency measurements of hearing aids and earphones coupled to the ear by means of ear inserts (IEC 60318-8:2022)

Electroacoustique - Simulateurs de tête et d'oreille humaines - Partie 8: Coupleur acoustique pour les mesurages à hautes fréquences des appareils de correction auditive et des écouteurs couplés à l'oreille par des embouts
(IEC 60318-8:2022)

Akustik - Simulatoren des menschlichen Kopfes und Ohres - Teil 8: Akustischer Kuppler zur Hochfrequenzmessung von Hörgeräten und Kopfhörern die mit dem Ohr mittels Ohreinsätzen gekoppelt sind
(IEC 60318-8:2022)

This European Standard was approved by CENELEC on 2022-05-12. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 60318-8:2022 E

SEK Svensk Elstandard SS-EN IEC 60318-8, utg 1:2023

European foreword

The text of document 29/1111/FDIS, future edition 1 of IEC 60318-8, prepared by IEC/TC 29 "Electroacoustics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60318-8:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-02-12
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-05-12

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Endorsement notice

The text of the International Standard IEC 60318-8:2022 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60318-5 NOTE Harmonized as EN 60318-5

IEC 60318-4 NOTE Harmonized as EN 60318-4

IEC 60118-0 NOTE Harmonized as EN 60118-0

IEC 61094-4 NOTE Harmonized as EN 61094-4

IEC 61094-2:2009 NOTE Harmonized as EN 61094-2:2009 (not modified)

IEC 60318-1:2009 NOTE Harmonized as EN 60318-1:2009 (not modified)

IEC 61094-6 NOTE Harmonized as EN 61094-6

IEC 60318-8

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Electroacoustics – Simulators of human head and ear – Part 8: Acoustic coupler for high-frequency measurements of hearing aids and earphones coupled to the ear by means of ear inserts

Électroacoustique – Simulateurs de tête et d'oreille humaines – Partie 8: Coupleur acoustique pour les mesurages à hautes fréquences des appareils de correction auditive et des écouteurs couplés à l'oreille par des embouts

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTROACOUSTICS – SIMULATORS OF HUMAN HEAD AND EAR –

Part 8: Acoustic coupler for high-frequency measurements of hearing aids and earphones coupled to the ear by means of ear inserts

FOREWORD

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IEC 60318-8 has been prepared by IEC technical committee 29: Electroacoustics. It is an International Standard.

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

Draft	Report on voting
29/1111/FDIS	29/1117/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available

at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 60318 series, published under the general title *Electroacoustics – Simulators of human head and ear*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under 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.

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INTRODUCTION

Advancement in hearing aid design makes it possible to increase the bandwidth of hearing aids up to 16 kHz.

The 2 cm^3 coupler as described in IEC 60318-5 [1][1] is suitable for measurements up to 8 kHz. At frequencies above 8 kHz, high measurement uncertainty will occur in earphone responses, due to acoustic resonances in the coupler.

The occluded-ear simulator as described in IEC 60318-4 [2] simulates the human external ear up to 10 kHz and can be used as an acoustic coupler up to 16 kHz. It is designed with a principal cavity length which produces a half-wavelength resonance of the sound pressure at approximately 13,5 kHz. This resonance, which is also present in a person’s ear canal but more controlled by the tympanic membrane, can also cause measurement uncertainty in earphone responses above 10 kHz.

Accordingly, there is a need for a well-defined and robust acoustic coupler to be used by designers of transducers (receiver, earphone), and by the designer and dispensers of hearing aids when making measurements on earphones in the frequency range 8 kHz to 16 kHz.

The sound pressure developed by an earphone is, in general, not the same in an acoustic coupler as in a person's ear. However, results obtained with an acoustic coupler can be used as a simple and ready means for the exchange of specifications and test data on hearing aids and insert earphones used in audiometry.

This document describes an acoustic coupler for loading a hearing aid or insert earphone with a specified acoustic impedance when testing acoustic performance, in the frequency range up to 16 kHz, as required in IEC 60118-0 [3].

[1] Numbers in square brackets refer to the Bibliography.

ELECTROACOUSTICS – SIMULATORS OF HUMAN HEAD AND EAR –

Part 8: Acoustic coupler for high-frequency measurements of hearing aids and earphones coupled to the ear by means of ear inserts

1 Scope

This part of IEC 60318 describes an acoustic coupler for loading a hearing aid or insert earphone with a specified acoustic impedance when testing its acoustic performance, in the frequency range up to 16 kHz. It is suitable for air-conduction hearing aids and earphones, coupled to the ear by means of ear inserts, earmoulds or similar devices.

The acoustic coupler does not simulate the human ear. However, it has an effective volume of only 0,4 cm^3, which is small enough not to produce significant resonances in the coupler in the frequency range below 16 kHz. Therefore, it will load the earphone with a known acoustic impedance, which allows repeatable measurements with low uncertainty to be obtained on earphones used in extended high-frequency audiometry.

2 Normative references

There are no normative references in this document.