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BSI Standards Publication

# Electroacoustics — Simulators of human head and ear

Part 7: Head and torso simulator for the measurement of air-conduction hearing aids

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# National foreword

This Published Document is the UK implementation of IEC/TS 60318-7:2017. It supersedes DD IEC/TS 60318-7:2011, which is withdrawn

The UK participation in its preparation was entrusted to Technical Committee EPL/29, Electroacoustics.

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.


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# TECHNICAL SPECIFICATION

colour inside

## Electroacoustics – Simulators of human head and ear – Part 7: Head and torso simulator for the measurement of air-conduction hearing aids

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# ELECTROACOUSTICS – SIMULATORS OF HUMAN HEAD AND EAR –

## Part 7: Head and torso simulator for the measurement of air-conduction hearing aids

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 60318-7, which is a Technical Specification, has been prepared by IEC technical committee 29: Electroacoustics.

This publication contains attached files in the form of 3D PDF files. These files are intended to be used as a complement and do not form an integral part of the publication.

This second edition cancels and replaces the first edition published in 2011. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) the document is based on the designs of three different commonly used types of manikins;
b) the cross sections of the head and torso and pinna simulators of the previous edition are replaced by maximum and minimum values of their geometric dimensions;
c) the diffuse field frequency response of the manikin is added;
d) the usable frequency range is extended to 100 Hz to 16 000 Hz;
e) in addition to the cylindrical ear canal extension a tapered ear canal extension is added;
f) design examples of one anatomically shaped manikin and of two different geometrically shaped manikins are given in the annexes;
g) the relationship between tolerance interval, corresponding acceptance interval and the maximum permitted uncertainty of measurement are given in an annex;
h) 3D representations of three different types of pinna simulators are given in an annex.

The text of this technical specification is based on the following documents:

| Enquiry draft | Report on voting |
|---|---|
| 29/907/DTS | 29/921A/RVDTS |

Full information on the voting for the approval of this technical specification 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.

A list of all parts of 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 "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.

A bilingual version of this publication may be issued at a later date.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

# ELECTROACOUSTICS – SIMULATORS OF HUMAN HEAD AND EAR –

# Part 7: Head and torso simulator for the measurement of air-conduction hearing aids

## 1 Scope

This document, which is a Technical Specification, describes a head and torso simulator, or manikin, intended for the measurement of air-conduction hearing aids in the frequency range from 100 Hz to 16 000 Hz.

The manikin described in this document is intended for airborne acoustic measurements only. It is not suitable for measurements which depend upon vibration transmission paths such as bone conduction, or for measurements requiring the simulation of bone or tissue.

This document specifies the manikin in terms of both its geometrical dimensions and its acoustical properties. Only manikins compliant with both sets of specifications are in conformance with this document.

WARNING – It is acknowledged that devices conforming to this document are used as the basis for applications extending beyond this scope, for example the measurement of sound sources close to the ear or of hearing protection devices. In such cases, it is recommended that any necessary design variations are documented, and that a statistical analysis of the measurement data is carried out to determine the level of repeatability that can be achieved. It will also be necessary to assess the relevance of the measurements made with the head and torso simulator to the application in question.

## 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 60118-8, *Electroacoustics – Hearing aids – Part 8: Methods of measurement of performance characteristics of hearing aids under simulated* in situ *working conditions*

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

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

ISO/IEC Guide 98-4, *Uncertainty of measurement – Role of measurement uncertainty in conformity assessment*

ISO 3:1973, *Preferred numbers – Series of preferred numbers*