IEC/TS 60318-7

Edition 1.0 2011-02

TECHNICAL SPECIFICATION

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

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE V

ICS 17.140.50

ISBN 978-2-88912-379-7

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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.

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

Enquiry draft	Report on voting
29/716/DTS	29/729A/RVC

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

A list of all parts of 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 publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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

INTRODUCTION

This technical specification describes a head and torso simulator for hearing aid measurements. It has been developed as a revision of IEC/TR 60959 (1990). The main changes, as compared to the technical report, are the insertion of maximum permitted expanded measurement uncertainties and additional references in the Bibliography. A future IEC Standard which will include additional models of head and torso simulators for hearing aid measurements is planned.

ELECTROACOUSTICS – SIMULATORS OF HUMAN HEAD AND EAR –

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

1 Scope

This part of IEC 60318 describes a head and torso simulator (manikin) intended for the measurement of air-conduction hearing aids in the frequency range from 100 Hz to 10 000 Hz. The device consists of a head mounted on a torso that extends to the waist. The head is equipped with simulated pinnae and with cylindrical cavities having acoustic impedance terminations and microphones located at positions corresponding to those of the eardrums in a median human adult. It has been designed to provide acoustic diffraction similar to that encountered around the median human head and torso.

The device with its present pinna simulator, however, is not suitable for the measurement of all types of hearing aids. For example, most in-the-ear (ITE) and completely-in-the-canal (CIC) hearing aids cannot be measured correctly.

The manikin is specified in terms of both, its geometrical dimensions and its acoustical properties.

NOTE 1 Measurement results obtained with a manikin may differ substantially from similar results obtained on an individual person, due to anatomical variations.

NOTE 2 The median values of the human head and torso were drawn from the population samples described in [5][1].

NOTE 3 It is acknowledged that devices conforming to this part of IEC 60318 are also used as the basis for applications extending beyond this Scope. In such cases it is recommended that any design variations that are necessary are documented, and that a statistical analysis of the measurement data be carried out to determine the level of repeatability that can be achieved. It will also be necessary to consider the relevance of the measurements made with the head and torso simulator to the application in question.

2 Normative references

The following referenced documents are indispensable for the application 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 60318-4, *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*

ISO/IEC Guide 98-3, *Uncertainty of measurement – Part 3: Guide to the expression of uncertainty in measurement* (GUM:1995)

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