AS IEC 60645.2—2002
IEC 60645-2:1993

Australian Standard™

Electroacoustics—Audiological equipment

Part 2: Equipment for speech audiometry

[IEC title: Audiometers, Part 2: Equipment for speech audiometry]

Standards Australia

This Australian Standard was prepared by Committee AV-003, Acoustics Human Effects. It was approved on behalf of the Council of Standards Australia on 31 July 2002 and published on 2 September 2002.

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Australian Standard™

Electroacoustics—Audiological equipment

Part 2: Equipment for speech audiometry

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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee AV-003, Acoustics Human Effects to be used as a means to demonstrate compliance with the relevant essential principles in new medical device legislation.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian, rather than an Australian/New Zealand Standard.

This Standard is identical with and has been reproduced from IEC 60645-2:1993, *Audiometers,* Part 2: *Equipment for speech audiometry.*

The objective of this Standard is to specify requirements for audiometers or parts thereof designed to provide a means of presenting speech sounds to a subject in a standardized manner, for example for the measurement of speech recognition.

This Standard provides for the use of the following Australian and Australian/New Zealand Standards as equivalents to particular International Standards referenced herein:

Reference to International Standard		*Australian/New Zealand Standard*	
IEC		AS/NZS	
60373	Mechanical coupler for measurements of bone vibrators	1591	Acoustics—Instrumentation for audiometry
		1591.4	Part 4: A mechanical coupler for calibration of bone vibrators
		AS	
60651	Sound level meters	1259	Acoustics—Sound level meters
		1259.1	Part 1: Non-integrating
ISO			
266	Acoustics—Preferred frequencies for measurements	2533	Acoustics—Preferred frequencies for measurements

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text 'this part of IEC 645' should read 'this Australian Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

CONTENTS

INTRODUCTION

Part 1 of IEC 645 details the requirements for pure-tone audiometers in terms of performance characteristics of component modules. Some of these modules are common to speech audiometers for example the output level control, transducers, etc. This part 2 of IEC 645 specifies the requirements for speech audiometers. However, to avoid duplication, it only makes reference to part 1 of IEC 645-1 where common elements are concerned.

Performance requirements are given for both live voice and recorded speech inputs. Although live voice speech audiometry may not be capable of meeting the object of this standard, it is widely practised, particularly with children, and therefore a specification is included in order to ensure as high a degree of reliability as possible.

This standard does not specify the speech material that is used for test purposes or the required acoustic properties of the test room.

Speech audiometers use earphones, bone vibrators or loudspeakers to present signals to the test subject. In order to relate earphone or bone vibrator listening to sound field listening, the concept of a free-field equivalent output level of an earphone or a bone vibrator as described in IEC 268-7 is used for specification and measurement purposes.

The free-field equivalent output method is fundamental in relating earphone or bone vibrator output level to sound-field measurements and for the comparison of different types of transducers. For audiometric purposes where only earphone measurements with one specific type are made, a requirement may not exist to maintain the free-field earphone relationship. Therefore, in this standard, specifications of the performance characteristics of speech audiometers and relevant calibration and test methods are given with respect to both a free-field equivalent output level method and an uncorrected coupler output level method.

AUSTRALIAN STANDARD

Electroacoustics—Audiological equipment

Part 2:
Equipment for speech audiometry

1 Scope and object

This part of IEC 645 specifies requirements for audiometers or parts thereof designed to provide a means of presenting speech sounds to a subject in a standardized manner, for example for the measurement of speech recognition.

Audiometers are classified into four types: type A instruments provide a wide range of facilities, while type B provides only basic facilities. For both types, the audiometer may be calibrated in terms of a free-field equivalent output level of the earphones and then be designated as type A-E or B-E.

This standard excludes the requirements for speech audiometers provided with frequency response adjustments intended to determine an optimal intelligibility frequency response curve for each subject.

The purpose of this standard is to ensure that tests of hearing using speech as the test stimulus, on a given human ear performed with different audiometers which comply with this standard, shall give substantially the same results for a given calibration method. Two methods of specification, calibration and testing are given for the output levels generated by the earphones and the bone vibrator:

a) a free-field equivalent output level method with audiometers of types A-E and B-E;

b) an uncorrected coupler output level method with audiometers of types A and B.

NOTE - The results will also depend on factors other than the audiometer for example test material, test room, speakers, etc.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 645. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 645 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 225: 1966, *Octave, half-octave and third-octave band filters intended for the analysis of sounds and vibrations*

IEC 268-7: 1984, *Sound system equipment – Part 7: Headphones and headsets*