

Australian/New Zealand Standard™

**Acoustics—Audiometric test methods**

**Part 2: Sound field audiometry with  
pure-tone and narrow-band test signals**



AS/NZS ISO 8253.2:2019

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- Accident Compensation Corporation (New Zealand)
- Association of Australasian Acoustical Consultants
- Australian Acoustical Society
- Australian Chamber of Commerce and Industry
- Australian Council of Trade Unions
- Australian Hearing
- Engineers Australia
- Ministry of Health (New Zealand)
- New Zealand Audiological Society
- Worksafe Division, Department of Commerce, Western Australia

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Australian/New Zealand Standard™

## **Acoustics—Audiometric test methods**

### **Part 2: Sound field audiometry with pure-tone and narrow-band test signals**

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## Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee AV-003, Acoustics Human Effects, to supersede AS ISO 8253.2—2009, *Acoustics—Audiometric test methods, Part 2: Sound field audiometry with pure tone and narrow-band test signals*.

The objective of this Standard is to specify relevant test signal characteristics, requirements for free, diffuse, and quasi-free sound fields, and procedures for sound field audiometry using pure tones, frequency-modulated tones or other narrow-band test signals presented by means of one or more loudspeakers. The primary purpose is the determination of hearing threshold levels in the frequency range 125 Hz to 8 000 Hz, but this range can be extended to 20 Hz to 16 000 Hz. This Standard does not include specifications for the use of hand-held loudspeakers. Speech as a test signal is not covered.

The purpose of AS/NZS ISO 8253.2 is to ensure that tests of hearing, using sound field audiometry, give as high a degree of accuracy and reproducibility as possible.

This Standard is identical with, and has been reproduced from, ISO 8253-2:2009, *Acoustics — Audiometric test methods — Part 2: Sound field audiometry with pure-tone and narrow-band test signals*.

As this document has been reproduced from an International Standard, the following applies:

- (a) In the source text “this part of ISO 8253” should read “this Australian/New Zealand Standard”.
- (b) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The term “informative” is used in Standards to define the application of the annexes to which it applies. An “informative” annex is only for information and guidance.

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 8253-2 was prepared by Technical Committee ISO/TC 43, *Acoustics*.

This second edition cancels and replaces the first edition (ISO 8253-2:1992), of which it constitutes a minor revision.

ISO 8253 consists of the following parts, under the general title *Acoustics — Audiometric test methods*:

- *Part 1: Basic pure-tone air and bone conduction threshold audiometry*
- *Part 2: Sound field audiometry with pure-tone and narrow-band test signals*
- *Part 3: Speech audiometry*

## Introduction

ISO 8253-1 covers procedures for the determination of thresholds of hearing using pure tones presented to the subject by means of earphone or bone vibrator.

This part of ISO 8253 covers procedures for the determination of thresholds of hearing in a sound field. In general, sound field testing implies binaural listening to a test signal, presented by means of one or more loudspeakers in a test room. The test signal may be a pure tone, a frequency-modulated tone or a narrow band of noise. The acoustical characteristics of the sound field are determined by the choice of test signal, by the number and acoustical properties of the loudspeakers used, as well as by the acoustical characteristics of the test room.

Sound field audiometry may be used for various purposes, e.g. the evaluation of hearing acuity in young children and the determination of the functional gain of a hearing aid when worn by a particular listener.

# Australian/New Zealand Standard

## Acoustics—Audiometric test methods

### Part 2: Sound field audiometry with pure-tone and narrow-band test signals

#### 1 Scope

This part of ISO 8253 specifies relevant test signal characteristics, requirements for free, diffuse, and quasi-free sound fields, and procedures for sound field audiometry using pure tones, frequency-modulated tones or other narrow-band test signals presented by means of one or more loudspeakers. The primary purpose is the determination of hearing threshold levels in the frequency range 125 Hz to 8 000 Hz, but this range can be extended to 20 Hz to 16 000 Hz.

This part of ISO 8253 does not include specifications for the use of hand-held loudspeakers. Speech as a test signal is not covered.

The purpose of this part of ISO 8253 is to ensure that tests of hearing, using sound field audiometry, give as high a degree of accuracy and reproducibility as possible.

Examples of graphical representations of the results are given in [Annex A](#).

#### 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.

ISO 226, *Acoustics — Normal equal-loudness-level contours*

ISO 266, *Acoustics — Preferred frequencies*

ISO 389-7, *Acoustics — Reference zero for the calibration of audiometric equipment — Part 7: Reference threshold of hearing under free-field and diffuse-field listening conditions*

ISO 8253-1:—<sup>1)</sup>, *Acoustics — Audiometric test methods — Part 1: Basic pure-tone air and bone conduction threshold audiometry*

IEC 60581-7:1986, *High fidelity audio equipment and systems — Minimum performance requirements — Part 7: Loudspeakers*

IEC 60645-1, *Electroacoustics — Audiometric equipment — Part 1: Pure-tone audiometers*

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

#### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

##### 3.1

##### **air conduction**

transmission of signal through the external and middle ear to the inner ear

##### 3.2

##### **otologically normal person**

person in a normal state of health who is free from all signs or symptoms of ear disease and from obstructing wax in the ear canal, and who has no history of undue exposure to noise, exposure to potentially ototoxic drugs, or of familial hearing loss

1) To be published. (Revision of ISO 8253-1:1989)