

ICS 17.140
CCS A 59



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 16296-1996

**Acoustics -- Audiometric test methods -- Part 1: Pure-tone air
and bone conduction audiometry
(English Translation)**

Issued on: March 15, 2018

Implemented on: October 1, 2018

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China, China National
Standardization Administration**

Table of Contents

Foreword
Introduction
1 Scope
2 Normative references
3 Terms and definitions
4 General questions about audiometry
4.1 Overview
4.2 Calibration reference zero level of audiometry equipment
4.3 Requirements for audiometry equipment
4.4 Qualified testers
4.5 Test time
4.6 Audiometry environment
4.7 Measurement uncertainty
5.1 Preparation of the subject

Foreword

GB/T 16296 "Acoustic Audiometry Method" includes the following three parts.

- Part 1. pure tone air conduction and bone conduction test;
- Part 2. Sound field audiometry with pure tone and narrowband test signals;
- Part 3. Speech audiometry.

This part is the first part of GB/T 16296.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 16403-1996 "Acoustic audiometry method pure tone air conduction and bone conduction hearing threshold basic audiometry".

Compared with GB/T 16403-1996, the main technical changes in this part are as follows.

- Removed the reference standards IEC 373:1971, ISO 389-4:1994, IEC 804:1985 (see 1996 edition);
- Added normative references GB/T 4854.5, GB/T 4854.8, ISO/IEC Guide 98-3 (see Chapter 2);

- Revised the terms and definitions 3.2, 3.3, 3.6, 3.8, 3.10, 3.12, 3.16, 3.21, 3.22 and 3.23 (see 3.2, 3.3, 3.6, 3.8, 3.10, 3.12, 3.16, 3.21, 3.22, 3.23, 1996 editions 3.2, 3.3, 3.6, 3.8, 3.10, 3.12, 3.16, 3.21, 3.22, 3.23);
- Increased measurement uncertainty (see 4.7 and Appendix A);
- Added the general provisions of 6.2.3, 6.2.4, 7.1 and 9.2 (see 6.2.3.1, 6.2.4.1, 6.3.1, 7.1, 9.2.1);
- Revised the relevant content of the audiogram (see Table 1, Table 1 of the 1996 edition);
- Increased requirements for instruments that measure ambient noise (see 11.1);
- Increased the acoustic attenuation values of the plug-in earphones and earmuff headphones in Table 3 (see Table 11.1).
- Change the Appendix A of the 1996 edition to a reference (see References, Appendix A of the 1996 edition).

This section uses the translation method equivalent to ISO 8253-1:2010 "Acoustic audiometry methods Part 1. Pure tone air conduction and bone conduction test law".

The documents of our country that have a consistent correspondence with the international documents referenced in this part are as follows.

- GB/T 3241-2010 Electroacoustic octave and fractional octave filter (IEC 61260:1995, MOD);
- GB/T 3785.1-2010 Electroacoustic sound level meters - Part 1. Specification (IEC 61672-1:2002, IDT);
- GB/T 4854.1-2004 Acoustic calibration of audio-visual equipment - Part 1 - Part 1 Effective threshold sound pressure level (ISO 389-1:1998, IDT);
- GB/T 4854.3-1998 Acoustical calibration of audio-visual equipment - Part 3 - Part 3 Force level (eqvISO 389-3.1994);
- GB/T 4854.5-2008 Acoustic calibration of audio-visual equipment benchmark zero-order part 5. 8kHz ~ 16kHz frequency range Peripheral pure tone reference equivalent threshold sound pressure level (ISO 389-5:2006, IDT);
- GB/T 4854.8-2007 Acoustic calibration of audio-visual equipment - Part 0 - Part 8 Effective threshold sound pressure level (ISO 389-8:2004, IDT);
- GB/T 16402-1996 Acoustic plug-in headphones pure tone reference equivalent threshold sound pressure level (eqvISO 389-2.1994).

This part was proposed by the Chinese Academy of Sciences.

This part is under the jurisdiction of the National Acoustic Standardization Technical

Committee (SAC/TC17).

This section was drafted. Institute of Otorhinolaryngology, General Hospital of Chinese PLA, Institute of Acoustics, Chinese Academy of Sciences, Qingdao Technological University, China Electronics the third institute of the Science and Technology Group Corporation.

Introduction

This section specifies the basic methods and requirements for transmitting pure tone signals to the subject to measure the hearing threshold via headphones and bone vibrators, excluding electrophysiology.

Test Methods.

There are many factors involved in getting a reliable test for a hearing test. GB/T 7341.1-2010 specifies the requirements for audiometers. Correct the inspection, calibration and maintenance of the audiometry instrument in use is important. This section briefly describes the calibration issues. in order to avoid the ambient noise in the listening room masks the test signal, and the ambient noise level should not exceed a certain value, which is a method of transmitting a signal to the subject, ie Use different earphones or bone vibrators. This section gives the maximum ambient noise that should not be exceeded when the measured threshold level is as low as 0 dB.

Allows sound pressure level. The highest ambient noise level allowed to measure other minimum listening thresholds is also given. This section specifies the use of pure tone air conduction and the method of determining the threshold of hearing by the bone conduction test. For screening and listening, only the air conduction audiometry is briefly described.

Audiometry can be performed with the following equipment.

- a) manual audiometer;
- b) automatic recording of the audiometer;
- c) Computer controlled audiometry equipment.

This section gives a method for measuring the hearing threshold for these three types of signal transmission methods. For screening and listening, only the manual or the computer controls the audiometry method of the audiometer. This method of audiometry is suitable for most adults and children. Other methods may also be used Equivalent to the results measured by the methods specified in this section. For young children, the elderly or those who are not physically fit, this section may be required the proposed method steps make some modifications, and this modification may result in inaccurate audiometry results.

Acoustic audiometry

Part 1. Pure tone air conduction and bone conduction test

1 Scope

This part of GB/T 16296 specifies methods, procedures and requirements for the determination of pure tone air conduction and bone conduction hearing threshold. For screening and listening, only Pure tone air conduction test method.

This method may not be suitable for special people, such as young children.

This section does not include methods for listening to the subject's listening level above the threshold level.

This section does not specify speech measurement, electrophysiological audiometry, and audiometry methods and requirements using speakers as sound sources.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 7341.1-2010 Electroacoustic audiometry equipment - Part 1. Pure tone audiometer (IEC 60645-1:2001, IDT) ISO 389-1 - Acoustical calibration of audio-visual equipment - Part 1 . Part 1 (Acoustics-Reference zero for the calibration of audiometric equipment-Part 1. Reference equivalent Threshold sound pressure levels for pure tones and supra-aural earphones) ISO 389-2 - Acoustical calibration of audio-visual equipment - Part 2. Part 2. Plug-in headphone, pure tone reference equivalent threshold sound pressure level (Acoustics-Reference zero for the calibration of audiometric equipment- Part 2: Reference Equivalent threshold sound pressure levels for pure tones and insert earphones) ISO 389-3:1994 Benchmark zero-order for acoustically calibrated audio-visual equipment - Part 3 (Acoustics-Reference zero for the calibration of audiometric equipment-Part 3. Reference equivalent Threshold for levels for pure tones and bone vibrators) ISO 389-5 - Acoustical calibration of audio-visual equipment - Part 5. Part 5. Plain tone equivalents in the frequency range from 8 kHz to 16 kHz Acoustics-Reference zero for the calibration of audiometric equipment-Part 5: Reference Equivalent threshold sound pressure levels for pure tones in the frequency range 8 kHz to 16 kHz) ISO 389-8 - Acoustical calibration of audio-visual equipment - Part 0. Part 8 (Acoustics-Reference zero for the calibration of audiometric equipment-Part 8. Reference equivalent Threshold sound pressure levels for pure tones and circumaural earphones) ISO/IEC Guide 98-3 Measurement Uncertainty Part 3. Guide to Measurement Uncertainty [Uncertainty of measurement-Part 3. Guide to the expression of uncertainty in measurement (GUM.1995)] IEC 61260 electroacoustic