



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

GB/T 4854.3-2022

**Acoustics - Reference zero for the calibration of audiometric
equipment - Part 3: Reference equivalent threshold vibratory
force levels for pure tones and bone vibrators**

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents"

drafted.

This document is part 3 of GB/T 4854 "Reference zero level for acoustic calibration of audiometric equipment". GB/T 4854 has been released to

Lower part.

--- Part 1. In-ear headphones pure tone benchmark equivalent threshold sound pressure level;

--- Equivalent Threshold Sound Pressure Level of Pure Tone Reference for Acoustic Insertion Headphones (GB/T 16402);

--- Part 3. Bone vibrator pure tone benchmark equivalent threshold vibration force level;

--- Part 4. Reference level for narrowband masking noise;

--- Part 5. Pure tone benchmark equivalent threshold sound pressure level in the frequency range of 8kHz~16kHz;

--- Part 6. Reference hearing thresholds for short-term test signals;

--- Part 7. Benchmark hearing thresholds for free-field and diffuse-field audiometry;

--- Part 8. Pure tone benchmark equivalent threshold sound pressure level for over-ear headphones;

--- Part 9. Determine the preferred test conditions for the benchmark hearing threshold level.

Note. The standard number of Part 2 of GB/T 4854 is GB/T 16402.

This document replaces GB/T 4854.3-1998 "Benchmark Zero Class for Acoustic Calibration Audiometry Equipment Part 3. Bone Vibrator Pure Tone Benchmark, etc.

Compared with GB/T 4854.3-1998, except for structural adjustment and editorial changes,

the main technical changes are as follows.

- Deleted and added some normative references (see Chapter 2, Chapter 2 of the.1998 edition);
- Changed the following definitions. bone vibrator, force coupler, equivalent threshold vibration force level (monaural audiometry), reference equivalent threshold vibration force level, ear plugging effect, masking (process), masking amount, baseline masking level (see Chapter 3,.1998 edition 3.2, 3.4, 3.5, 3.6, 3.8, 3.9, 3.10);
- Changed the title of Chapter 4.Benchmark Equivalent Threshold Vibration Force Level (see Chapter 4, Chapter 4 of the.1998 edition);
- Changed the definition of the baseline masking level (see 5.9, 5.8 of the.1998 edition);
- Increased the interference sound in the bone vibrator (see B.3);
- Added the calibration method of the bone vibrator (see B.4);
- Changed the definition of masked noise source (see B.6, B.5 of the.1998 edition);
- Changed the description of the bone conduction hearing threshold for frequencies below 250Hz (see Appendix D, Appendix D of the.1998 edition).

This document is equivalent to ISO 389-3:2016 "Benchmark zero class for acoustic calibration audiometric equipment Part 3.Bone vibrator pure tone benchmark, etc.

Effective Threshold Vibration Force Level.

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

The benchmark zero level for calibrating audiometry equipment is widely used in hearing diagnosis, hearing intervention, hearing rehabilitation, etc., and is an important basis for audiology.

standard. The various parts of GB/T 4854 and GB/T 16402 stipulate the reference zero level for calibrating audiometric equipment, which consists of 9 parts.

--- Part 1.In-ear headphones pure tone benchmark equivalent threshold sound pressure level. The purpose is to describe the use of in-ear headphones in conjunction with an acoustic coupling cavity

The pure tone reference equivalent threshold sound pressure level at.

--- Part 2. Plug-in earphone pure tone benchmark equivalent threshold sound pressure level (GB/T 16402). The purpose is to describe the

The pure tone reference equivalent threshold sound pressure level when the acoustic coupling cavity is combined.

--- Part 3. Bone vibrator pure tone benchmark equivalent threshold vibration force level. The purpose is to describe the pure tone base of the bone vibrator when used in conjunction with the mastoid

Quasi-equivalent threshold vibration force level.

--- Part 4. Reference level for narrowband masking noise. The purpose is to describe the role of masking and narrowband masking in pure tone audiometry

Noise reference calibration method.

--- Part 5. Pure tone benchmark equivalent threshold sound pressure level in the 8kHz~16kHz frequency range. The purpose is to describe the

Pure tone benchmark equivalent threshold sound pressure level.

--- Part 6. Reference hearing thresholds for short-term test signals. The purpose is to describe the baseline hearing threshold levels of short-duration test signals.

--- Part 7. Benchmark hearing thresholds for free-field and diffuse-field audiometry. The purpose is to describe the benchmark for free-field and diffuse-field audiometry hearing threshold.

--- Part 8. Over-ear headphones pure tone benchmark equivalent threshold sound pressure level. The purpose is to describe the use of over-ear headphones in conjunction with an acoustic coupling cavity

The pure tone reference equivalent threshold sound pressure level at.

--- Part 9. Determine the preferred test conditions for the benchmark hearing threshold level. The purpose is to specify the standard values for establishing the baseline hearing threshold level.

Test conditions for determining the subject's hearing threshold.

In clinical audiology testing programs, it is often necessary to compare a person's hearing threshold levels for air conduction and bone conduction. For this reason, bone conduction sound is

delivered via an electric vibrator placed on the subject's mastoid or forehead.

GB/T 4854.1, GB/T 16402 and GB/T 4854.8 respectively refer to various types of on-ear, plug-in and over-ear headphones

The threshold sound pressure level generated inside the characteristic acoustic coupler defines the reference zero level for air conduction audiometry, that is, the reference equivalent threshold sound pressure level, corresponding to

Hearing thresholds of guided audiometry in young otologic normal persons under electrical excitation. Similarly, this document defines the benchmark zero level for bone conduction audiometry, that is, the benchmark equivalent threshold.

Vibration level. For example, the vibration force level produced by a bone vibrator mounted on a specific force coupler corresponds to a young normal ear under electrical excitation.

Threshold for bone conduction audiometry. During bone conduction audiometry, bone vibrators are often placed on the mastoid or forehead. A standard with different values for each of the two parts, etc.

Effective threshold vibration force level (see Appendix C).

Bone conduction audiometry needs to specify the static force applied by the bone conductor to the subject's head or force coupler and certain geometric characteristics of the end face of the vibrator. this

In addition, since the vibration of the bone vibrator may be heard by non-test ears, masking noise is often applied to it. Therefore, appropriate regulations for masking noise are required.

as a supplement to the baseline equivalent threshold vibration force level. Due to the "clogging effect", the headphones provide noise masking that can cause noise to the non-test ear

The bone conduction hearing threshold decreases, which requires increasing the sound level of masking noise to counteract the occlusion effect.

Calibrating the audiometer with the reference zero level specified in this document will guarantee no hearing loss or purely sensorineural (i.e. outer and middle ear function)

The bone conduction hearing threshold level measured by people with normal) hearing loss can be used with the same person as GB/T 4854.1, GB/T 16402 and GB/T 4854.8

The air conduction hearing threshold level measured by the benchmark zero level is consistent. Of course, due to biological variation in sound transmission through the outer, middle, and head, subjects

It is unlikely that the air conduction thresholds and bone conduction thresholds of any individual among the subjects will agree precisely, but this document will guarantee the average systematic deviation of these subjects

will be reduced to the minimum that can be used.

This document is an ISO estimate based on technical data provided by laboratories in 3