



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

GB/T 7341.3-2024

**Electroacoustics - Audiometric equipment - Part 3: Test signals
of short duration**

电声学 测听设备 第3部分：短时程测试信号

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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 for standardization documents" Drafting is required. This document is Part 3 of GB/T 7341. GB/T 7341 has published the following parts.

Electroacoustic audiometric equipment Part

1 Scope

GB/T 7341.3-2024 specifies the short duration test signals used in audiometric equipment, the tone bursts, clicks and chirps on which auditory brainstem response and other electrophysiological hearing tests depend. These signals are what makes objective hearing assessment possible in newborns and in anyone who cannot respond, and their specification is delicate: a short signal is spectrally broad, so the shorter it is the less frequency-specific the threshold it measures, and the level of a transient cannot be stated in the same way as that of a continuous tone. The standard sets the characteristics of the signals, their waveform, duration, rise and fall, spectral content and repetition rate, the reference equivalent threshold levels against which they are calibrated for each transducer type, the calibration methods and the acoustic couplers and ear simulators used, the tolerances on the delivered signal, and the requirements on the equipment that generates them. It took effect on 23 August 2024.

This document describes the method of describing the physical characteristics of

short-duration audiometric reference signals and short-duration test signals using electrical waveforms and the corresponding measurements method. This document ensures that short-duration signals are specified and measured in the same way and that equipment using such signals is calibrated using specified methods. allow. This document does not describe the use of short-duration test signals.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document. ISO 389

3 Short-term test signals (GB/T 7341.3); Audiometer Part

4.Equipment for extended high-frequency audiometry (GB/T 7341.4); Electroacoustic audiometry equipment Part

5.Instruments for measuring ear acoustic impedance/admittance (GB/T 7341.5). - This document replaces GB/T 7341.3-1998 "Audiometer Part

3.Short-duration auditory test signals for audiometry and neuro-otology" Compared with GB/T 7341.3-1998, in addition to structural adjustments and editorial changes, the main technical changes are as follows: Changed the "short-term signal", "short sound", "short pure tone", "dense wave signal", "sparse wave signal", "short sound stimulation signal initial The terms and definitions of "wave", "duration of the initial wave of the short stimulus signal" and "peak-to-peak equivalent signal level" (see 3.1, 3.2, 3.3, 3.9, 3.10, 3.12,

3.16 of the.1998 edition and 3.1, 3.5, 3.2, 3.8, 3.9, 3.6,

3.7 and 3.10); Added "Instantaneous frequency", "Warp", "Upper warbling", "Broadband warbling", "Octave warbling", "Alternate polarity signal" and The term and definition of "root mean square signal level" (see 3.4, 3.5, 3.6, 3.7, 3.8, 3.11, 3.17); Changed some contents of "Reference Signal" (see Chapter 5, Chapter 4 of the.1998 edition); - Added "Schematic diagram of electrical reference short tone", "Time domain diagram of electrical reference short tone" and "Time domain characteristics of electrical reference broadband warbling tone" Schematic diagram of (see Figures 1, 4 and 5); "Using hearing level to determine signal level" (see Chapter 6 of the.1998 edition) has been deleted. - This document is equivalent to IEC 606453.2020 "Electroacoustic audiometric equipment Part

3.Short-term test signals". Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed and coordinated by the National Electroacoustics Standardization Technical Committee (SAC/TC 23). This

document was drafted by: The Sixth Medical Center of PLA General Hospital, China Institute of Metrology, Institute of Acoustics, Chinese Academy of Sciences, The Third Research Institute of China Electronics Technology Group Corporation and Shenzhen Tiansuo Metrology and Testing Co., Ltd. The main drafters of this document are. Ji Fei, Zhong Bo, Chen Aiting, Yang Shiming, Yu Liming, Wu Qian, Han Lumeng, Xu Huan, Li Xiaodong, Wu Xin, Cui Jian, Zhang Guoqing. The previous versions of this document and the documents it replaces are as follows: First published in 1987 as GB/T 7341-1987, first revised in 1998; - This is the second revision. -

With the development of the field of hearing testing for the purpose of hearing diagnosis, hearing protection and rehabilitation, the application scope of audiometric equipment is expanding. Furthermore, audiometric equipment is essentially a collection of functional units that can be specified separately. The performance of audiometric equipment using these functional units. GB/T 7341 "Electroacoustics - Audiometric Equipment" is intended to consist of seven parts. Part

1. Pure Tone Audiometers. The purpose is to specify general requirements for audiometers and test methods using psychoacoustics. Specific requirements for pure tone audiometers designed by comparison with standard reference hearing threshold levels. Part

2. Speech Audiometry Equipment. It is intended to test the hearing of a given subject using speech as a test stimulus. The calibration method can give basically the same results. The output level produced by the earphone and bone vibrator is given with its specifications and calibration. method. Part

3. Short-term test signals. The purpose is to specify the use of electrical waveforms to describe short-term audiometric reference signals and short-term test signals. The physical characteristics of the signal and the corresponding measurement methods are used to ensure that short-term signals are specified and measured in the same way and that the specified A certain method is used to calibrate equipment using this signal. Part

4. Equipment for extended high-frequency audiometry. The purpose is to ensure that different types of equipment can perform extended high-frequency audiometry on a given human ear. When the frequency was measured, it gave basically the same results. Part

5. Instruments for measuring acoustic impedance/admittance of the ear. The purpose is to specify the characteristics of three types of instruments for measuring acoustic impedance/admittance of the ear. The facilities and conditions provided for these instruments, as well as the test methods used for acceptance testing and to guide routine calibration, ensure compliance with this document. The consistency of various instruments under comparable test conditions. Part

6. Instruments for measuring otoacoustic emissions. The purpose is to ensure that different types of instruments are used to measure the otoacoustic emissions of the human external auditory canal caused by pulsed probe tones. or pure tone evoked otoacoustic emissions

are designed to measure the consistency of the results under similar test conditions. Part

7. Instruments for measuring auditory brainstem responses. The purpose is to ensure that different types of instruments are designed for measuring auditory brainstem responses caused by short-term acoustic and/or vibration. The results of the test under similar test conditions were obtained by using an instrument that induces auditory evoked potentials in the inner ear, auditory nerve, and brainstem by using dynamic stimulation. Consistency. This document includes requirements for reference signals and other short-duration test signals. Common tests using these signals include recording auditory brain. This document describes reference signals to provide baseline values for calibration and to be used when there is no clear reason to use an alternative. This document also describes the measurement methods for short-term acoustic and vibration signals. Electroacoustic audiometry equipment Part

4 Electroacoustic head simulator and ear simulator Part

4. Occluded ear simulator for measuring insert earphones (Electroacoustics-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) IEC 60318

5 Electroacoustic head simulator and ear simulator Part

5. Measurement of hearing aids and insertion coupling to the human ear
Electroacoustics-Simulators of human head and ear-Part

5.2 cm³ coupler for the measurement of hearing aids and earphones coupled to the ear by means of ear inserts)

GB/T 25498.5-2017 Electroacoustic head simulator and ear simulator Part

5. Measurement of hearing aids and hearing aids coupled to the human ear by insertion 2 cm³ coupler for headphones (IEC 60318-5:2006, IDT) IEC 60318

6 Reference threshold of hearing for test signals of short duration)

GB/T 4854.6-2014 Reference zero level for acoustic calibration of audiometric equipment Part

6. Reference hearing threshold for short-duration test signals (ISO 3896:2007, IDT) IEC 60318