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

GB/T 20441.7-2025

**Electroacoustics - Measurement microphones - Part 7: Values
for the difference between free-field and pressure sensitivity
levels of laboratory standard microphones**

电声学 测量传声器 第7部分:实验室标准传声器的自由场灵敏度级和声压灵敏度级
之间的差值

(English Translation)

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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.

This document is Part 7 of GB/T 20441. GB/T 20441 has been published in the following parts.

- Microphones for electroacoustic measurements Part 1: Specifications for laboratory standard microphones;
- Microphones for electroacoustic measurements Part 2: Primary method for sound pressure calibration of laboratory standard microphones using the reciprocity technique;
- Microphones for electroacoustic measurements Part 3: Primary levels for free-field calibration of laboratory standard microphones using the reciprocity technique method;
- Measurement microphones Part 4: Specifications for working standard microphones;

--- Microphones for electroacoustic measurements. Part 5: Comparison method for sound pressure calibration of working standard microphones;

--- Microphones for electroacoustic measurements Part 6: Electrostatic actuators for determining frequency response;

--- Microphones for electroacoustic measurements Part 7: Free-field sensitivity levels and sound pressure sensitivity levels of laboratory standard microphones the difference of

--- Microphones for electroacoustic measurements Part 8: Comparison method for determining the free-field sensitivity of working standard microphones.

This document is equivalent to IEC TS61094-7:2006 "Measurement microphones Part 7: Free-field sensitivity of laboratory standard microphones" the file type was adjusted from IEC technical specifications to my country's national standards.

The following minimal editorial changes were made to this document.

--- To be consistent with the existing series of standards, the standard name is changed to "Electroacoustic Measurement Microphones Part 7: Laboratory Standard Microphones".

The difference between the free field sensitivity level and the sound pressure sensitivity level of the speaker";

---Added references.

Introduction

The measuring microphone is a microphone with electroacoustic performance and mechanical structure that meets the specified requirements and is used in sound pressure measurement standards, sound measurement instruments and automatic sound-based in the control system, an electroacoustic transducer converts acoustic oscillations into electrical signals. The laboratory standard microphone is mainly used to establish the sound pressure level.

Measurement standard; working standard microphone is mainly used as an important part of practical measuring instruments and is widely used in various acoustic measurement fields.

It is widely used in the measurement of environmental noise, machine noise and workplace noise, as well as sound detection under some special conditions. It is also used for electroacoustic equipment and electrical Testing of acoustic device performance characteristics; transfer standard microphones are used to achieve the sound pressure difference between laboratory standard microphones and working standard microphones.

Value passing.

GB/T 20441 "Electroacoustic Measurement Microphones" is intended to define laboratory

standard microphones, transfer standard microphones and working standard microphones.

The performance specifications and structural requirements of the microphones are given, and the calibration methods for the sound pressure sensitivity and free field sensitivity of these measuring microphones are given.

Due to different purposes, GB/T 20441 is intended to consist of 10 parts.

--- Part 1: Laboratory standard microphone specification. The purpose is to determine the electroacoustic performance and mechanical dimensions of laboratory standard microphones.

to standardize the calibration method and achieve comparison between laboratories.

--- Part 2: Primary method for sound pressure calibration of laboratory standard microphones using the reciprocity technique. The purpose is to establish a reproducible and the basis for accurate sound pressure measurements.

--- Part 3: Primary method for free-field calibration of laboratory standard microphones using the reciprocity technique.

This provides the basis for reproducible and accurate sound pressure measurements under these conditions.

--- Part 4: Specification for working standard microphones. The purpose is to determine the electroacoustic performance and mechanical dimensions of working standard microphones so that Used as transfer standards in acoustic measurements or as electroacoustic transducers in practical sound measurement systems.

--- Part 5: Comparison method for sound pressure calibration of working standard microphones. The purpose is to compare with calibrated standard microphones Determine the sound pressure sensitivity of the working standard microphone.

--- Part 6: Electrostatic actuators for determining frequency response. The purpose is to determine the performance and structure of electrostatic actuators to provide A convenient method for determining the sensitivity and frequency response of measurement microphones.

--- Part 7: The difference between the free-field sensitivity level and the sound pressure sensitivity level of the laboratory standard microphone.

These differences are used to determine the free-field sensitivity level of the laboratory standard microphone from the known sound pressure sensitivity level.

--- Part 8: Comparison method for determining the free-field sensitivity of a working standard microphone. The purpose is to compare the free-field sensitivity of a working standard microphone with a calibrated standard microphone.

The free-field sensitivity of the working standard microphone is determined by comparison

with the

--- Part 9: Specification for transfer standard microphones. The purpose is to determine the electroacoustic characteristics and mechanical dimensions of transfer standard microphones so that Used as transfer standards in acoustic measurements and for performance evaluation and calibration of acoustic calibrators and comparison couplers.

--- Part 10: Low-frequency absolute sound pressure calibration of microphones using computable pistonphones. The purpose is to provide the quantity provides a reproducible and accurate measurement standard.

Since the sensitivity of the microphone varies under different sound field conditions, this difference will affect the accuracy of the measurement results.

This difference must be accurately measured and standardized. This document provides key data for accurately measuring the sensitivity of microphones under different environmental conditions.

and calculation methods.

Electroacoustic Measurement Microphones Part 7: Free-field laboratory standard microphones Difference between sensitivity level and sound pressure sensitivity level

1 Scope

This document.

--- A polynomial function is given by least square method based on the data of several laboratories to obtain the IEC 61094-1 standard.

The difference between the free-field sensitivity level and the sound pressure sensitivity level of a given laboratory standard microphone;

--- By adding these differences to the sound pressure sensitivity level, it is possible to determine the laboratory standard sound transmission level at zero incidence in air.

The free-field sensitivity level of the device;

--- Tabular values of polynomial functions are given for a range of frequencies and temperatures;

--- This allows the use of these data when a suitable free-field calibration is not possible.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date