NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 45348-2025

Information technology - Real time locating - Technical specification for sound source locating and imaging system

信息技术 实时定位 声源定位成像系统技术规范

Issued on: February 28, 2025 **Implemented on: September 1, 2025**

Issued by: the State Administration for Market Regulation, Standardization Administration of the People's Republic of China

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Foreword

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1 Scope

GB/T 45348-2025 is the Chinese technical specification for acoustic source localisation and imaging systems: the microphone arrays, usually called acoustic cameras, that locate a sound and overlay it on a video image. They are used to find a leak in a compressed air or gas line, a partial discharge on a switchgear panel, a rattle in a vehicle body or a noise

source on a machine, and the market for them has grown quickly because a leak survey that used to take a day takes an hour. The standard sets the classification, the composition and the functional requirements of such a system, and then the performance requirements that actually distinguish one instrument from another: the frequency range, the angular resolution and localisation accuracy, the dynamic range, the minimum detectable level, the frame rate and the requirements on the video registration, together with the corresponding test methods and the marking and documentation. For a maker or a buyer of acoustic imaging equipment in China, this is the specification a comparison is made against.

This document establishes the system reference architecture of the sound source localization imaging system, specifies the technical requirements, and describes the corresponding test methods. This document is applicable to the design, development and testing of sound source localization imaging systems.

2 Normative references

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Sound source locating and imaging system A software and hardware system used to determine the location of sound sources and display the spatial distribution of the sound field.

Note. For the principle of sound source localization imaging, see Appendix A.

3.2 sound pressure level The ratio of the measured sound pressure to the reference sound pressure.

Note. The calculation formula for sound pressure level Lp is shown in formula (1). Lp = 20lg p0 (1) Where. p

--- measured sound pressure, in microPa (μPa); p0

--- sound pressure, the value is 20μPa; Lp

--- sound pressure level, in decibels (dB).

3.3 Microphone arraymicrophonearray A device consisting of multiple microphones with a certain spatial topology for sampling the spatial characteristics of acoustic signals. [Source: GB/T 36464.1-2020, 3.23, modified]

3.4 Microphone array coordinate systemmicrophonearraycoordinatesystem Taking the center of the microphone array (3.3) as the origin, a three-dimensional space is established on the receiving plane of the microphone array (3.3) and its normal direction. Cartesian

coordinate system.

Note. Appendix B gives a method for establishing the microphone array coordinate system.

3.5 Azimuthangle The horizontal rotation angle of the observed point relative to the positive direction of the x-axis of the microphone array coordinate system (3.4).