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

**GB 3768-1983**

Replacing GB/T 3768-1996

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**Acoustics -- Determination of sound power levels and sound energy  
levels of noise sources using sound pressure -- Survey method using  
an enveloping measurement surface over a reflecting plane**

**(English Translation)**

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### Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 3768-1996 "Determination of acoustical sound pressure noise source power level above the reflective surface using envelope measurement table Surface simple method ", compared with the GB/T 3768-1996 main technical changes are as follows.

- Added terms and definitions (see Chapter 3);
- Increased sound energy level measurement methods (see Chapter 8);
- Refinement of the contents of the measurement uncertainty, increase the calculation of measurement uncertainty (see Chapter 9 and Appendix D);
- Increasing the sound source near the three reflective surface of the hemisphere when measuring the microphone layout (see Appendix B);
- Added meteorological conditions correction (see Appendix D).

This standard uses the translation method identical with ISO 3746:2010 "Acoustics sound pressure method for the determination of noise source sound power level and sound energy level mining A simple method of enveloping the measuring surface with a reflective surface ".

The documents of our country that are consistent with the corresponding international documents that are normative references in this standard are as follows.

- GB/T 3767-2016 Acoustic sound pressure method for the determination of sound power

level and acoustic energy level above the free surface reflection surface above Engineering Act (ISO 3744:2010, IDT)

--- GB/T 6379 (all parts) Accuracy of measurement methods and results (accuracy and accuracy) [ISO 5725 Minute]] this standard proposed by the Chinese Academy of Sciences.

This standard by the National Acoustic Standardization Technical Committee (SAC/TC17) centralized.

This standard was drafted unit. Acoustics Institute of Chinese Academy of Sciences, Shenzhen Zhongya Electrical and Mechanical Industry Co., Ltd., Zhejiang University, Tongji University, Beijing City Institute of Labor Protection, China Institute of Metrology, Anhui Vocational and Technical College, Hefei University of Technology.

## Introduction

This standard is identical with ISO 3746 is ISO 3741 [20] ~ ISO 3747 [23] one of the series of standards, the series of standards for the determination Methods of sound power levels and sound energy levels for machines, equipment and their accessories. The specific application needs to select the most suitable for testing conditions and purposes A method, GB/T 14367-2006 [3] provides a general guide to the choice of method. The choice of measurement method depends on the test set available Application of environmental and sound power level or sound energy level required precision. It is necessary to establish a noise test specification for individual noise sources (see GB/T 19052-2003), in order to select the GB/T 6882-2016 [2] and ISO 3741 [20] to ISO 3747 [23] series of standards allowed Appropriate acoustic measurement surface and microphone array, and given the test unit required installation, loading and operating conditions, resulting in the conditions Sound power level or sound energy level. The sound power emitted by the sound source to the test environment is measured by measuring the mean square of the sound pressure on the closed imaginary surface surrounding the sound source Value calculated, the acoustic energy of a single acoustic event is calculated by the sound power and duration of acoustic radiation.

This standard describes the measurement within the plant or outdoor conditions to meet the three levels specified in GB/T 19052-2003 measurement side law. Ideally, the test sound source should be mounted on the acoustic reflection plane of a large, open space. Often installed on the ground in the plant Sound sources, taking into account the unwanted reflected sound from nearby objects, walls and ceilings, and the correction of residual background noise appearing there.

The method specified in this standard allows determination of A-weighted sound power level and sound energy level.

For measurements requiring higher accuracy, reference may be made to ISO 3744, GB/T

6882-2016 [2] or to GB/T 16404 [9] to [11] the right part is measured. If the relevant provisions of the standard measurement environment is not satisfied, you can refer to GB/T 6882-2016 [2] and ISO 3741 [20] ~ ISO 3747 [23] series of standards, or reference GB/T 16404 [9] to [11] suitable section.

Acoustics sound pressure measurement of sound power level and noise source the acoustic energy level uses the envelope measurement surface above the reflection surface  
Simple method

## 1.1 Overview

This standard specifies the test environment to meet the given conditions, according to the surrounding noise source (machinery or equipment) measured on the surface of the sound pressure level to determine the noise source sound power level or sound energy level method. Using these measurements, the A-weighted sound power level generated by the noise source can be calculated (Or A-weighted sound energy level of the burst and transient noise).

**Note:** Different shape measurement surfaces give different estimates of sound power level for a given source of noise. GB/T 19052-2003 corresponding test procedures are given the details of the measurement surface selection.

## 1.2 Noise and noise source types

The methods specified in this standard apply to all types of noise (steady-state, non-steady-state, ups and downs, bursts of sound as defined in GB/T 19052-2003 Wait).

This standard applies to all types and sizes of sound sources (such as fixed or slow moving equipment, Device, machine, component, accessory, etc.).

**Note:** This standard may not apply to ultra-high or long sound sources, such as chimneys, pipelines, transmission machinery, multi-source industrial equipment. In this case, the test kit Test procedures for bulk acoustic emission provide an alternative.

## 1.3 Measurement Environment

Test environment suitable for measurement according to this standard may be located indoors or outdoors, the noise source is installed in one or more acoustic reflection level Face or near.

## 1.4 Measurement Uncertainty

The uncertainty information of A-weighted sound power level and sound energy level measured according to this standard is given. Uncertainty in line with GB/T 19052-Level 3 accuracy in 2003 (easy level).

## 2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 3785.1-2010 Electroacoustic sound level meter Part 1. Specification (IEC 61672-1:2002, IDT) GB/T 15173-2010 Electroacoustic sound calibrator (IEC 60942:2003, IDT) GB/T 19052-2003 acoustic machinery and equipment emitted noise and noise testing specifications drafting and presentation (ISO 12001:1996, IDT) ISO 3744 Acoustics sound pressure method for the determination of noise source sound power level and sound energy level above the free surface of the reflection surface above the engineering method (Acoustics-Determination of sound power levels and sound energy levels of noise sources using sound pressure-Engineering method for an essentially free field over a reflecting plane)