

ICS 17.140
CCS A 59



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

GB/T 31004.1-2014

**Acoustics -- Measurement of sound insulation in buildings and
of building elements using sound intensity -- Part 1: Laboratory
measurements**

(English Translation)

Issued on: September 3, 2014

Implemented on: February 1, 2015

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Foreword...	3
1 Scope...	5
2 Normative references...	5
3 Terms and definitions...	6
4 Instrumentation...	10
5 Test arrangement...	11
6 Test procedure...	11
7 Expression of results...	16
8 Test report...	17
Annex A...	18
Annex B...	19
Bibliography...	21

Foreword

GB/T 31004 Acoustics - Measurement of sound insulation in buildings and of building elements using sound intensity consists of the following parts.

- Part 1. Laboratory measurements;
- Part 2. Site measurements;
- Part 3. Laboratory measurements at low frequencies.

This Part is the first part of GB/T 31004.

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

This Part uses translation method to make it identical with ISO 15186-1:2000 Acoustics - Measurement of sound insulation in buildings and of building elements using sound intensity - Part 1. Laboratory measurements.

The Chinese documents which have consistency with the international normative reference in this Part are as follows.

- GB/T 15173-2010 Electroacoustics - Sound calibrators (IEC 60942:2003, IDT);

- GB/T 16404-1996 Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1. Measurement at discrete points (eqv ISO 9614-1:1993);
- GB/T 17561-1998 Instruments for the measurement of sound intensity - Measurement with pairs of pressure sensing microphones (IEC 61043:1993, IDT).

This Part was proposed by Chinese Academy of Sciences.

This Part shall be under the jurisdiction of National Technical Committee on Acoustics of Standardization Administration of China.

The drafting organizations of this Part. Institute of Acoustics, Chinese Academy of Sciences, South China University of Technology, Hefei University of Technology, Tongji University, China Building Research Institute, China First Automobile Technology Co., Ltd., Beijing Institute of Labor Protection Science, Wuxi Jixing Automotive Acoustic Components Science Co., Ltd., Yunnan Design Institute.

Acoustics - Measurement of sound insulation in buildings and of building elements using sound intensity - Part 1. Laboratory measurements

1 Scope

This Part of GB/T 31004 specifies a sound intensity method to determine the sound reduction index and the element-normalized level difference of building elements. The method can be used as an alternative to GB/T 19889.3 and GB/T

19889.10 respectively. One important use is when the traditional GB/T 19889.3 fails because of high flanking transmission.

The reproducibility of this intensity method is estimated to be equal to or better than that of GB/T 19889.3.

NOTE Some information about the accuracy with which this Part can reproduce the sound reduction index measured according to GB/T 19889.3 is given in Annex A.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 19889.1-2005 Acoustics - Stationary audible warning devices used outdoors - Part 1. Field measurements for determination of sound emission quantities

GB/T 19889.3-2005 Acoustics - Measurement of sound insulation in buildings and of building elements - Part 3. Laboratory measurements of airborne sound insulation of building elements - Part 3. Laboratory measurements of airborne sound insulation of building elements

GB/T 19889.10-2006 Acoustics - Measurement of sound insulation in buildings and of building elements - Part 10. Laboratory measurements of airborne sound insulation of small building elements

ISO 9614-1.1993 Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1. Measurements at discrete points

Bibliography

[1] GB/T 6881.1-2002, Acoustics - Determination of sound power levels of noise sources using sound pressure - Precision methods for reverberation rooms.

[2] GB/T 31004.3-2014, Acoustics - Measurement of sound insulation in buildings and of building elements using sound intensity - Part 3. Laboratory measurements at low frequencies.

[3] GB/T 50121-2005, Rating standard of sound insulation in buildings.

[4] ISO 717-1, Acoustics - Rating of sound insulation in buildings and of building elements - Part 1. Airborne sound insulation.

[5] ISO 3741, Acoustics - Determination of sound power levels of noise

sources using sound pressure - Precision methods for reverberation rooms.

[6] ISO 9614-2, Acoustics - Determination of sound power levels of noise

sources using sound intensity - Measurement by scanning.

[7] ISO 15186-3, Acoustics - Measurement of sound insulation in buildings

and of building elements using sound intensity - Part 3. Laboratory

measurements at low frequencies.

.....