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

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**

声学 建筑和建筑构件隔声声强法测量 第3部分：低频段的实验室测量

(English Translation)

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Foreword

GB/T 31004 "Building acoustics and sound insulation of building elements sound intensity measurement" is divided into the following sections.

- Part 1. Laboratory measurements;
- Part 2. Field measurements;
- Part 3. Laboratory measurements of low frequencies.

This section GB/T Part of 331,004.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This section uses the translation method identical with 15186-3 ISO .2002 "Part 3 Acoustics buildings and strong sound insulation of building elements Measurement Score. Laboratory measurements of low frequencies. " Consistency correspondence between this part of international documents and normative references of our files are as follows.

- GB/T 15173-2010 electric acoustic sound calibrator (IEC 60942:2003, IDT);
- GB/Determination of sound power levels of noise sources - Part 1 T 16404-1996 sound intensity method. Measurement (eqv discrete points ISO 9614-1:1993).

This section proposed by the Chinese Academy of Sciences.

The acoustics in part by the National Standardization Technical Committee (SAC/TC17) centralized.

This section is drafted. South China University of Technology, China Academy of Building Research, Chinese Academy of Sciences Institute of Acoustics, Institute of Yunnan Province, no Tin Jixing auto parts Acoustic Technology Co.

1.1 Overview

This section GB/T 31004 specifies the use of low sound intensity measurement frequency sound insulation of building elements and components standardized sound level difference square law. In a typical test facility, the reproducibility of the method was superior to GB/T 19889.3, GB/T 19889.10 and GB/T 31004.1 method. Laboratory test results are more independent of the size of the room and closer to the measured value is greater than the volume in the room when 300m³. This section Standards can be applied to the frequency range of 50Hz ~ 160Hz, but it is mainly used in the frequency range of 50Hz ~ 80Hz.

Note: For building elements having a large thickness of the porous surface of the absorption of the surface layer, the recommended frequency range of 50Hz ~ 80Hz.

This part of GB /31004.1 The main difference between the T comprising.

a) measurement of sound pressure level of the sound source is close to the surface of the test chamber member performed;

Surface b) receiving chamber opposite the building elements are strong absorption, which allows the formation of a room acoustic waveguide in the lowest cut-off frequency it has spread over a number of cross pattern.

Part of the present method of measuring results with the use of GB/T 19889.3 and GB/T 31004.1 measurements combined to eligible Measurement data obtained from 50Hz ~ 5000Hz frequency range.

1.2 Accuracy

On all bands, complex sound intensity method of estimation can now equivalent to or better than the use of GB/T 19889.3-2005 Methods 100Hz when Reproducibility.

By measuring the data in this section with the use of a number of relatively GB/T 19889.3-2005 measurement data are given in Appendix B.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 17561-1998 sound intensity measuring instrument with measurement of sound pressure microphone (IEC 61043:1993, IDT) Laboratory test with suppressed flanking transmission. GB/T 19889.1-2005 Acoustics Measurement of sound insulation buildings and building elements - Part 1 Test facility requirements (ISO 140-1:1997, IDT) GB/T 19889.3-2005 Acoustics Measurement of sound insulation buildings and building elements - Part 3. airborne sound insulation of building elements experiment Chamber

measurements (ISO 140-3:1995, IDT) GB/T 19889.10-2006 buildings and building elements Acoustics Measurement of sound insulation - Part 10. Small airborne sound insulation of building elements Laboratory measurements (ISO 140-10:1991, IDT) IEC 60942 electrical acoustic sound calibrator (Electroacoustics-Soundcalibrators) ISO 9614-1:1993 Acoustics - Determination of partial intensity method of sound power levels of noise sources 1. Measurement at discrete points
(Acoustics-Determinationofsoundpowerlevelsofnoisesourcesusingsoundintensity-Part 1. Measurementatdiscretepoints)