
**Acoustics — Determination of sound
power levels of noise from air-
terminal devices, air-terminal units,
dampers and valves by measurement
in a reverberation test room**

*Acoustique — Détermination des niveaux de puissance acoustique du
bruit émis par les bouches d'air, les unités terminales, les registres et
clapets au moyen de mesurages en salle réverbérante*



This document is a preview generated by EKO



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Acoustic test facilities and procedures	2
5 Installation and operation of equipment to be tested	3
5.1 General	3
5.2 Test installation of air-terminal devices, air-terminal units, dampers and valves for measurement of the sound radiated to the reverberation test room	4
5.3 Test installation of air-terminal devices, air-terminal units, dampers and valves for the measurement of the sound radiated to the reverberation test room by the connecting duct	6
5.4 Test installation of air-terminal devices, air-terminal units, dampers and valves for the measurement of the sound radiated to the reverberation test room directly from the equipment under test	7
5.5 Test installation of air-terminal units for the determination of casing radiated noise	8
5.6 Test procedures	9
6 Auxiliary facilities for acoustic testing	10
7 Measurements and calculations	10
8 Measurement uncertainty	11
9 Test report	12
Bibliography	14

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

This third edition cancels and replaces the second edition (ISO 5135:1997), which has been technically revised. The main changes compared to the previous edition are as follows:

- replacement of rescinded and unavailable reference standards (ISO 5219:1984¹⁾ and ISO 5220:1981²⁾) with currently available and up to date standards (ANSI/ASHRAE 70 and ANSI/ASHRAE 130 or EN 12238, EN 12239 and EN 1751);
- a reference to a companion document (ISO 7235) was added to deal with transmission elements and physical elements used in the test setup;
- a clause on uncertainty was added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

1) Withdrawn.

2) Withdrawn.

Introduction

This document defines requirements for acoustic testing of air-terminal devices, air-terminal units, dampers and valves used in air diffusion and air distribution systems in reverberation test rooms. It is based on the use of ISO 3741, which describes the acoustic test facilities, instrumentation and procedures to be used for precision grade determination of sound power levels in octave or one-third-octave bands of a noise source.

Acoustics — Determination of sound power levels of noise from air-terminal devices, air-terminal units, dampers and valves by measurement in a reverberation test room

1 Scope

This document establishes general rules for the acoustic testing of air-terminal devices, air-terminal units, dampers and valves used in air diffusion and air distribution systems in order to determine sound power levels as defined in ISO 3741.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 3741:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Precision methods for reverberation test rooms*

ISO 5167 (all parts), *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full*

ISO 7235, *Acoustics — Laboratory measurement procedures for ducted silencers and air-terminal units — Insertion loss, flow noise and total pressure loss*

ANSI/ASHRAE 70, *Method of Testing the Performance of Air Outlets and Air Inlets*

ANSI/ASHRAE 130, *Laboratory Methods of Testing Air Terminal Units*

EN 1751, *Ventilation for buildings — Air terminal devices — Aerodynamic testing of damper and valves*

EN 12238, *Ventilation for buildings — Air terminal devices — Aerodynamic testing and rating for mixed flow application*

EN 12239, *Ventilation for buildings — Air terminal devices — Aerodynamic testing and rating for displacement flow applications*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>