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Acoustics — Test methods for the qualification of the acoustic environment —

Part 1: Qualification of free-field environments

Acoustique — Méthodes d'essai pour la qualification de l'environnement acoustique —

Partie 1: Qualification des environnements en champ libre

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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 Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

This first edition of ISO 26101-1 cancels and replaces the second edition of ISO 26101:2017, of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

— The title of the document was changed from "*Acoustics — Test methods for the qualification of free-field environments*" to "*Acoustics — Test methods for the qualification of the acoustic environment — Part 1: Qualification of free-field environments*", so that an additional part, "ISO 26101-2, *Acoustics — Test methods for the qualification of the acoustic environment —Part 2: Determination of the environmental correction*", can be introduced.

A list of all parts in the ISO 26101 series can be found on the ISO website.

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.

Introduction

This document describes the divergence loss method of measurement of performance of an environment designed to provide a free sound field or free sound field over a reflecting plane. An acoustical environment is a free sound field if it has bounding surfaces that absorb all sound energies incident upon them. This is normally achieved using specialized test environments, such as anechoic or hemi-anechoic chambers. In practice, these provide a controlled free sound field for acoustical measurements in a confined space within the facility.

The purpose of this document is to promote uniformity in the method and conditions of measurement when qualifying free sound field environments.

It is expected that the qualification procedures outlined in this document will be referred to by other International Standards and industry test codes. In such cases, these documents making reference to this document may specify qualification criteria appropriate for the test method and may require specific traverse paths.

Acoustics — Test methods for the qualification of the acoustic environment —

Part 1: Qualification of free-field environments

1 Scope

This document specifies methodology for qualifying acoustic spaces as anechoic and hemi-anechoic spaces meeting the requirements of a free sound field.

This document specifies discrete-frequency and broad-band test methods for quantifying the performance of anechoic and hemi-anechoic spaces, defines the qualification procedure for an omni-directional sound source suitable for free-field qualification, gives details of how to present the results and describes uncertainties of measurement.

This document has been developed for qualifying anechoic and hemi-anechoic spaces for a variety of acoustical measurement purposes. It is expected that, over time, various standards and test codes will refer to this document in order to qualify an anechoic or hemi-anechoic space for a particular measurement. Annex D provides guidelines for the specification of test parameters and qualification criteria for referencing documents.

In the absence of specific requirements or criteria, Annex A provides qualification criteria and measurement requirements to qualify anechoic and hemi-anechoic spaces for general purpose acoustical measurements.

This document describes the divergence loss method for measuring the free sound field performance of an acoustic environment.

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/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

IEC 61260-1, *Electroacoustics — Octave-band and fractional-octave-band filters — Part 1: Specifications*

IEC 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications*

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/