
**Acoustics — Test methods for the
qualification of free-field environments**

*Acoustique — Méthodes d'essai pour la qualification des
environnements en champ libre*



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 26101 was prepared by Technical Committee ISO/TC 43, *Acoustics*.

Introduction

This International Standard 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 International Standard 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 International Standard will be referred to by other International Standards and industry test codes. In such cases, these documents making reference to this International Standard may specify qualification criteria appropriate for the test method and may require specific traverse paths.

Acoustics — Test methods for the qualification of free-field environments

1 Scope

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

1.2 This International Standard 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.

1.3 This International Standard 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 International Standard in order to qualify an anechoic or hemi-anechoic space for a particular measurement.

1.4 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.

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

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.

ISO/IEC 98-3:2008, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*¹⁾

IEC 61260, *Electroacoustics — Octave-band and fractional-octave-band filters*

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.

3.1

free sound field

sound field in a homogeneous, isotropic medium free of boundaries

[ISO/TR 25417:2007^[6], 2.17]

3.2

anechoic space

volume which has been qualified as a sound field in a homogeneous, isotropic medium free of boundaries

1) ISO/IEC Guide 98-3 is published as a reissue of the *Guide to the expression of uncertainty in measurement (GUM)*, 1995.