

**Sound system equipment - Part 5:
Loudspeakers**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60268-5:2003 sisaldab Euroopa standardi EN 60268-5:2003 ingliskeelset teksti. Käesolev dokument on jõustatud 02.10.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 60268-5:2003 consists of the English text of the European standard EN 60268-5:2003. This document is endorsed on 02.10.2003 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
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EUROPEAN STANDARD

EN 60268-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2003

ICS 33.160.50

Supersedes EN 60268-5:1996 + A2:1996

English version

Sound system equipment
Part 5: Loudspeakers
(IEC 60268-5:2003)

Equipements pour systèmes
électroacoustiques
Part 5: Haut-parleurs
(CEI 60268-5:2003)

Elektroakustische Geräte
Teil 5: Lautsprecher
(IEC 60268-5:2003)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 100/648/FDIS, future edition 3 of IEC 60268-5, prepared by IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60268-5 on 2003-06-01.

This European Standard supersedes EN 60268-5:1996 + A2:1996.

This standard is to be used in conjunction with HD 483.1 S2:1989, HD 483.2 S2:1993 and ISO 3741:1999.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2004-03-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2006-06-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annex ZA is normative and annexes A, B and C are informative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60268-5:2003 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

ISO 3743-1	NOTE	Harmonized as EN ISO 3743-1:1995 (not modified).
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ISO 3743-2	NOTE	Harmonized as EN ISO 3743-2:1996 (not modified).
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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-151	- ¹⁾	International Electrotechnical Vocabulary (IEV) Part 151: Electrical and magnetic devices	-	-
IEC 60263	- ¹⁾	Scales and sizes for plotting frequency characteristics and polar diagrams	-	-
IEC 60268-1	- ¹⁾	Sound system equipment Part 1: General	HD 483.1 S2	1989 ²⁾
IEC 60268-2	- ¹⁾	Part 2: Explanation of general terms and calculation methods	HD 483.2 S2	1993 ²⁾
IEC 60268-3	- ¹⁾	Part 3: Amplifiers	EN 60268-3 + corr. January	2000 ²⁾ 2002 ²⁾
IEC 60268-11	- ¹⁾	Part 11: Application of connectors for the interconnection of sound system components	HD 483.11 S3	1993 ²⁾
IEC 60268-12	- ¹⁾	Part 12: Application of connectors for broadcast and similar use	EN 60268-12	1995 ²⁾
IEC 60268-14	- ¹⁾	Part 14: Circular and elliptical loudspeakers; outer frame diameters and mounting dimensions	-	-
IEC 60651	- ¹⁾	Sound level meters	EN 60651	1994 ²⁾
IEC 61260	- ¹⁾	Electroacoustics - Octave-band and fractional-octave-band filters	EN 61260	1995 ²⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 3741	- ¹⁾	Acoustics - Determination of sound power levels of noise sources using sound pressure - Precision methods for reverberation rooms	EN ISO 3741	1999 ²⁾
ISO 3744	- ¹⁾	Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane	EN ISO 3744	1995 ²⁾
ISO 3745	- ¹⁾	Acoustics - Determination of sound power levels of noise sources - Precision methods for anechoic and semi-anechoic rooms	-	-

INTERNATIONAL STANDARD

**IEC
60268-5**

Third edition
2003-05

Sound system equipment –

**Part 5:
Loudspeakers**

Équipements pour systèmes électroacoustiques –

*Partie 5:
Haut-parleurs*



Reference number
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Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

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INTERNATIONAL STANDARD

IEC
60268-5

Third edition
2003-05

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Part 5: Loudspeakers

Equipements pour systèmes électroacoustiques –

Partie 5: Haut-parleurs

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International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SOUND SYSTEM EQUIPMENT –

Part 5: Loudspeakers

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60268-5 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

This third edition of IEC 60268-5 cancels and replaces the second edition published in 1989, amendment 1 (1993) and amendment 2 (1996). This third edition constitutes a technical revision.

The text of this standard is based on the following documents:

FDIS	Report on voting
100/648/FDIS	100/674/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This standard is to be read in conjunction with IEC 60268-1, IEC 60268-2 and ISO 3741.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual edition of this standard may be issued at a later date.

SOUND SYSTEM EQUIPMENT –

Part 5: Loudspeakers

1 Scope

This standard applies to sound system loudspeakers, treated entirely as passive elements. Loudspeakers with built-in amplifiers are excluded.

NOTE 1 The term “loudspeaker” used in this standard relates to loudspeaker drive units themselves and also to loudspeaker systems, which comprise one or more loudspeaker drive units provided with a baffle, enclosure or horn and such relevant devices as built-in crossover filters, transformers and any other passive element.

The purpose of this standard is to give the characteristics to be specified and the relevant methods of measurement for loudspeakers using sinusoidal or specified noise or impulsive signals.

NOTE 2 The methods of measurement given in this standard have been chosen for their appropriateness to the characteristics.

NOTE 3 If equivalent results can be obtained using other methods of measurement, details of the methods used should be presented with the results.

NOTE 4 The following items are under consideration:

- loudspeakers with built-in amplifiers;
- measurements under conditions other than free-field, half-space free-field and diffuse field;
- measurements with signals other than sinusoidal or noise or impulsive signals.

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.

IEC 60050(151), *International Electrotechnical Vocabulary (IEV) – Part 151: Electrical and magnetic devices*

IEC 60263, *Scales and sizes for plotting frequency characteristics and polar diagrams*

IEC 60268-1, *Sound system equipment – Part 1: General*

IEC 60268-2, *Sound system equipment – Part 2: Explanation of general terms and calculation methods*

IEC 60268-3, *Sound system equipment – Part 3: Amplifiers*

IEC 60268-11, *Sound system equipment – Part 11: Application of connectors for the interconnection of sound system components*

IEC 60268-12, *Sound system equipment – Part 12: Application of connectors for broadcast and similar use*

IEC 60268-14, *Part 14: Circular and elliptical loudspeakers; outer frame diameters and mounting dimensions*

IEC 60651, *Sound level meters*

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

ISO 3741, *Acoustics – Determination of sound power levels of noise sources using sound pressure – Precision methods for reverberation rooms*

ISO 3744, *Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering method in an essentially free field over a reflecting plane*

ISO 3745, *Acoustics – Determination of sound power levels of noise sources – Precision methods for anechoic and semi-anechoic rooms*

3 Conditions for measurement

3.1 General conditions

This standard is to be used in conjunction with IEC 60268-1, IEC 60268-2 and ISO 3741.

3.2 Measuring conditions

3.2.1 General

For convenience in specifying how loudspeakers are to be set up for measurement, normal measuring conditions are defined in this standard. To obtain the correct conditions for measurement, some values (known as “rated conditions”) shall be taken from the manufacturer's specification. These values themselves are not subject to measurement but they constitute the basis for measuring the other characteristics.

The following values and conditions are of this type, and shall be stated by the manufacturer:

- rated impedance;
- rated sinusoidal voltage or power;
- rated noise voltage or power;
- rated frequency range;
- reference plane;
- reference point;
- reference axis.

NOTE A full explanation of the term “rated” is given in IEC 60268-2. See also term 151-04-03 in IEC 60050(151).

3.2.2 Normal measuring conditions

A loudspeaker shall be understood to be working under normal measuring conditions when all the following conditions are fulfilled:

- a) the loudspeaker to be measured is mounted in accordance with Clause 10;
- b) the acoustical environment is specified and is selected from those specified in Clause 5;
- c) the loudspeaker is positioned with respect to the measuring microphone and the walls in accordance with Clause 7;
- d) the loudspeaker is supplied with a specified test signal, in accordance with Clause 4, of a stated voltage U , within the rated frequency range in accordance with 19.1. If required, the input power P can be calculated from the equation: $P = U^2/R$, where R is the rated impedance in accordance with 16.1;
- e) attenuators, if any, are set to their “normal” position as stated by the manufacturer. If other positions are chosen, for example those providing a maximally flat frequency response or maximum attenuation, these shall be specified;
- f) measuring equipment suitable for determining the wanted characteristics is connected in accordance with Clause 8.