



**NSAI**  
Standards

Irish Standard  
I.S. EN 62459:2011&AC:2015

# Sound system equipment - Electroacoustic transducers - Measurement of suspension parts

**I.S. EN 62459:2011&AC:2015**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

EN 62459:2011/AC:2015

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## National Foreword

I.S. EN 62459:2011&AC:2015 is the adopted Irish version of the European Document EN 62459:2011, Sound system equipment - Electroacoustic transducers - Measurement of suspension parts

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 62459:2011/AC:2015**

January 2016

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ICS 33.160.50

English Version

**Sound system equipment - Electroacoustic transducers -  
Measurement of suspension parts**

Equipements pour systèmes électroacoustiques -  
Transducteurs électroacoustiques - Mesure des pièces de  
suspension

Elektroakustische Geräte - Elektroakustische Wandler -  
Messung der Aufhängungsteile

This corrigendum becomes effective on 25 January 2016 for incorporation in the English language version of the EN.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 62459**

March 2011

ICS 33.160.50

English version

**Sound system equipment -  
Electroacoustic transducers -  
Measurement of suspension parts  
(IEC 62459:2010)**

Equipements pour systèmes  
électroacoustiques -  
Transducteurs électroacoustiques -  
Mesure des pièces de suspension  
(CEI 62459:2010)

Elektroakustische Geräte -  
Elektroakustische Wandler -  
Messung der Aufhängungsteile  
(IEC 62459:2010)

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Comité Européen de Normalisation Electrotechnique  
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**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 100/1625/FDIS, future edition 1 of IEC 62459, 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 62459 on 2011-01-02.

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- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 2011-10-02
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Annex ZA has been added by CENELEC.

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## **Annex ZA** (normative)

### **Normative references to international publications with their corresponding European publications**

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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 60268-1	-	Sound system equipment - Part 1: General	HD 483.1 S2	-

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**IEC 62459**

Edition 1.0 2010-01

# INTERNATIONAL STANDARD



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**Sound system equipment – Electroacoustical transducers – Measurement of  
suspension parts**



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**IEC 62459**

Edition 1.0 2010-01

# INTERNATIONAL STANDARD



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**Sound system equipment – Electroacoustical transducers – Measurement of  
suspension parts**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

PRICE CODE

**R**

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ICS 33.160.50

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### **SOUND SYSTEM EQUIPMENT – ELECTROACOUSTICAL TRANSDUCERS – MEASUREMENT OF SUSPENSION PARTS**

#### FOREWORD

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International Standard IEC 62459 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

This first edition cancels and replaces the IEC/PAS 62459 published in 2006. It constitutes a technical revision. The main changes are listed below:

- descriptions of the methods of measurement are adjusted to the state of the technology;
- addition of Clauses 5 to 13;
- integration of Annex A "Code of practice" at the main part of the standard;
- overall textual review.



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

FDIS	Report on voting
100/1625/FDIS	100/1648/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 publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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## INTRODUCTION

The properties of the suspension parts such as spiders and surrounds have a significant influence on the final sound quality of the loudspeaker. This International Standard defines measurement methods and parameters required for development and quality-assurance by suspension-part manufacturers and loudspeaker manufacturers.

Static and dynamic methods have been developed for measuring the suspension parts at small and high amplitudes. Due to the visco-elastic properties of the suspension material (fabric, rubber, foam, paper) the measurement results depend on the measurement conditions and are not comparable between different methods. For example, the properties measured by static method significantly deviate from the dynamic behaviour of the suspension material when excited by an audio signal. This standard defines the terminology, the characteristics which should be specified and the way the results should be reported. The goal is to improve the reproducibility of the measurement, to simplify the interpretation of the results and to support the communication between manufacturers of suspension parts and complete drive units.

## **SOUND SYSTEM EQUIPMENT – ELECTROACOUSTICAL TRANSDUCERS – MEASUREMENT OF SUSPENSION PARTS**

### **1 Scope**

This International Standard applies to the suspension parts of electroacoustic transducers (for example, loudspeakers). It defines the parameters and measurement method to determine the properties of suspension parts like spiders, surrounds, diaphragms or cones before being assembled in the transducer. The measurement results are needed for engineering design purposes and for quality control. Furthermore, this method is intended to improve the correlation of measurements between suspension-part manufacturers and loudspeaker manufacturers.

The measurement methods provide parameters based on linear and nonlinear modelling of the suspension part and uses both static and dynamic techniques.

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

### **3 Terms and definitions**

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

#### **3.1**

##### **suspension part**

surround of the cone made of rubber, foam, paper and fabric and the spider which is usually made out of impregnated fabric

#### **3.2**

##### **displacement**

$x$

perpendicular direction at the inner rim of the suspension part

#### **3.3**

##### **peak displacement**

$x_{\text{peak}}$

peak value of the displacement occurring during a dynamic measurement at resonance frequency

#### **3.4**

##### **driving force**

$F$

total effect of the restoring force, friction and inertia of both the suspension part and the inner clamping parts at the neck of the suspension

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