

# TECHNICAL SPECIFICATION



Electroacoustics – Instruments for the measurement of sound intensity –  
Electromagnetic and electrostatic compatibility requirements and test  
procedures

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IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

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INTERNATIONAL  
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## CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references .....	5
3 Terms and definitions .....	6
4 Electromagnetic and electrostatic compatibility requirements .....	6
4.1 General .....	6
4.2 Emission limits .....	7
4.3 Electrostatic discharges .....	7
4.4 Immunity to power- and radio-frequency fields and conducted disturbances .....	7
5 Test procedures .....	9
5.1 General .....	9
5.2 Emission measurements.....	9
5.3 Tests for electrostatic discharge.....	10
5.4 Tests for immunity to power- and radio-frequency fields and conducted disturbances.....	10
6 Information to be included in the instruction manual .....	11
Annex A (informative) Radio-frequency emission limits .....	12
Bibliography.....	13
Table A.1 – Limits for radiated disturbance of Class B information technology equipment (ITE) at a measuring distance of 10 m .....	12
Table A.2 – Limits for conducted disturbance at the mains ports of Class B ITE.....	12

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# ELECTROACOUSTICS – INSTRUMENTS FOR THE MEASUREMENT OF SOUND INTENSITY – ELECTROMAGNETIC AND ELECTROSTATIC COMPATIBILITY REQUIREMENTS AND TEST PROCEDURES

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**IEC TS 62370 edition 1.1 contains the first edition (2004-05) [documents 29/540/DTS and 29/544A/RVC] and its amendment 1 (2017-03) [documents 29/916/DTS and 29/939/RVDTS].**

**In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.**

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 62370, which is a technical specification, has been prepared by IEC technical committee 29: Electroacoustics.

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

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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## **ELECTROACOUSTICS – INSTRUMENTS FOR THE MEASUREMENT OF SOUND INTENSITY – ELECTROMAGNETIC AND ELECTROSTATIC COMPATIBILITY REQUIREMENTS AND TEST PROCEDURES**

### **1 Scope**

**1.1** This Technical Specification specifies requirements for instruments that measure sound intensity using pairs of pressure sensing microphones with respect to their immunity to power- and radio-frequency fields and to electrostatic discharge, and the permitted radio-frequency emissions, together with test procedures to verify conformance. Sound intensity measuring instruments are available in many different configurations and may be powered by batteries or from external power supply systems. The technical requirements in this Technical Specification apply to all configurations of instruments for the measurement of sound intensity.

**1.2** The electromagnetic and electrostatic compatibility requirements are equally applicable for sound intensity measuring instruments used in residential, commercial and light-industrial environments, or industrial sites. The requirements of this Technical Specification are additional to those contained in IEC 61043 and do not alter any of the specifications contained therein. The requirements do not apply retrospectively to sound intensity measuring instruments complying with IEC 61043 prior to the publication of this Technical Specification.

NOTE 1 Compliance with this Technical Specification does not insure that the sound intensity measuring system is immune to interference from all electromagnetic sources.

NOTE 2 These requirements are the first attempt at defining electromagnetic and electrostatic compatibility requirements for sound intensity measuring systems. Requirements can be changed later when wider experience has been gained if found necessary.

### **2 Normative references**

[IEC TS 62370:2004](#)

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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 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 2: Electrostatic discharge immunity test*

IEC 61000-4-3:2002, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*  
Amendment 1 (2002)

IEC 61000-4-20:2010, *Electromagnetic compatibility (EMC) – Part 4-20: Testing and measurement techniques – Emission and immunity testing in transverse electromagnetic (TEM) waveguides*

IEC 61000-6-1:1997, *Electromagnetic compatibility (EMC) – Part 6: Generic standards – Section 1: Immunity for residential, commercial and light-industrial environments*

IEC 61000-6-2:1999, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments*

CISPR/IEC 61000-6-3:1996, *Electromagnetic compatibility (EMC) – Part 6: Generic standards – Section 3: Emission standard for residential, commercial and light-industrial environments*

IEC 61043, *Electroacoustics – Instruments for the measurement of sound intensity – Measurement with pairs of pressure sensing microphones*

CISPR 22:2003, *Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement*

### 3 Terms and definitions

For the purpose of this document, the following definitions apply in addition to those specified in IEC 61000-4-2, IEC 61000-4-3, IEC 61000-6-1, IEC 61000-6-2 and CISPR 61000-6-3.

#### 3.1

##### **reference orientation (of a sound intensity measuring system)**

orientation of a sound intensity measuring system with respect to the principal direction of an emitter or receiver of radio frequency fields

#### 3.2

##### **group X sound intensity measuring system**

self-contained instrument which includes sound intensity measuring facilities according to this Technical Specification and which specifies internal battery power for the normal mode of operation, requiring no external connections to other apparatus to operate the instrument

#### 3.3

##### **group Y sound intensity measuring system**

self contained instrument which includes sound intensity measuring facilities according to this Technical Specification and which specifies connection to a public power supply system for the normal mode of operation, requiring no external connections to other apparatus to operate the instrument.

#### 3.4

##### **group Z sound intensity measuring system**

instrument that includes sound intensity measuring facilities according to this Technical Specification requiring two or more items of equipment to be connected together by some means for the normal mode of operation, with operation either from batteries or from a public power supply

## 4 Electromagnetic and electrostatic compatibility requirements

### 4.1 General

**4.1.1** This clause specifies requirements for sound intensity measuring systems with respect to their immunity to power- and radio-frequency electromagnetic fields and to electrostatic discharge, and the permitted radio-frequency emissions, together with Clause 5 which specifies test procedures to demonstrate conformance to the specifications of this Technical Specification. Sound intensity measuring systems are available in many different configurations and may be powered by batteries or from external power supply systems.

For conformance with these requirements, a probe and a processing system shall be tested together, and the system this comprises shall be specified with all necessary cables and accessories. The technical requirements in this clause are for three sound intensity measuring system configurations: first, Group X, for self-contained instruments that are designed primarily for battery operation; second, Group Y, for self-contained instruments that incorporate sound intensity measuring facilities according to this Technical Specification and that are operated from public power supply systems; third, Group Z, for sound intensity measuring systems that are formed by interconnection of two or more items of equipment (for the purposes of EMC testing, the probe is not a separate item of equipment).

**4.1.2** The electromagnetic and electrostatic compatibility requirements are equally applicable for sound intensity measuring systems used in residential, commercial and light-industrial environments, or industrial sites. The requirements of this clause are additional to those contained in IEC 61043 and do not alter any of the specifications for sound intensity measuring systems or parts thereof contained therein.

## **4.2 Emission limits**

**4.2.1** The upper limits on radio-frequency emissions from any apparatus are defined for compatibility with many different standards with the limits laid down in Table 1 of CISPR 61000-6-3:1996, forming the basic requirements for sound intensity measuring systems in groups X, Y or Z. These are summarized in Annex A.

**4.2.2** Sound intensity measuring systems in groups Y or Z powered from a public power supply system shall also comply with the limits for disturbance to the public supply system specified in CISPR 22 for Class B equipment. For sound intensity measuring systems, the requirements are summarized in Annex A.

**4.2.3** The instruction manual shall state the configuration of, the mode of operation of, and the connecting devices (if any) to, the instrument that produce the greatest radio-frequency emissions.

## **4.3 Electrostatic discharges**

**4.3.1** Sound intensity measuring systems in groups X, Y or Z shall withstand electrostatic discharges of specified magnitudes. The requirements are those specified in 1.4 of Table 1 in IEC 61000-6-1:1997 and are summarized as follows:

- contact discharges up to 4 kV and air discharges up to 8 kV with both positive and negative voltages. The polarity of the electrostatic voltage is with respect to earth ground.

**4.3.2** Clause 5 of IEC 61000-6-1 specifies performance criterion B during and after electrostatic discharge tests, given as follows:

"The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended".

The term "apparatus" means any sound intensity measuring system conforming to this Technical Specification.

NOTE An example of a permissible loss of performance could be the display of the apparatus becoming unreadable during the execution of discharges, but returning to full operation following completion of the discharges.

**4.3.3** After each and every electrostatic discharge test is complete, the sound intensity measuring system shall be fully operational and in a configuration identical to that established before the start of the electrostatic discharge tests. Previously stored data (if any) shall remain unchanged.

## **4.4 Immunity to power- and radio-frequency fields and conducted disturbances**

**4.4.1** Sound intensity measuring systems in groups X, Y and Z shall exhibit a minimum degree of immunity over a range of power- and radio- frequencies and field strengths. The requirements are those specified in 1.1 of Table 1 in IEC 61000-6-1:1997 and 1.2 of Table 1