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61094-8:2012

AMERICAN NATIONAL  
STANDARD

**Electroacoustics – Measurement microphones –  
Part 8: Methods for determining the free-field  
sensitivity of working standard  
microphones by comparison  
  
(a nationally adopted international standard)**

**Secretariat:**

**Acoustical Society of America**

**Approved on July 12, 2021:**

**American National Standards Institute, Inc.**

**Abstract**

This part of the IEC 61094 series is applicable to working standard microphones meeting the requirements of IEC 61094-4. It describes methods of determining the free-field sensitivity by comparison with a laboratory standard microphone or working standard microphone (where applicable) that has been calibrated according to either: IEC 61094-3; IEC 61094-2 or IEC 61094-5, and where factors given in IEC/TS 61094-7 have been applied; IEC 61094-6; this part of IEC 61094.



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## Foreword

*This Foreword is for information only and is not a part of the American National Standard ANSI/ASA S1.15-2021/Part 8/ IEC 61094-8:2012 American National Standard Electroacoustic - Measurement microphones - Part 8: Methods for determining the free-field sensitivity of working standard microphones by comparison. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the standard.*

This standard is a nationally adopted international standard (NAIS). This standard comprises a part of a group of definitions, standards, and specifications for use in acoustics. It was developed and approved by Accredited Standards Committee S1 Acoustics, under its approved operating procedures. Those procedures have been accredited by the American National Standards Institute (ANSI). The Scope of Accredited Standards Committee S1 is as follows:

*Standards, specifications, methods of measurement and test, and terminology in the field of physical acoustics, including architectural acoustics, electroacoustics, sonics and ultrasonics, and underwater sound, but excluding those aspects which pertain to biological safety, tolerances, and comfort.*

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.

The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.

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In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

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 61094-8 has been prepared by IEC technical committee 29: Electroacoustics.

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

CDV	Report on voting
29/752/CDV	29/759/RVC

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.

Note that in this national adoption, the decimal sign is a comma on the line and international English spelling is used throughout.

A list of all the parts in the IEC 61094 series, published under the general title *Measurement microphones* can be found on the IEC website.

The committee has decided that the contents of this publication 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

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

At the time this Standard was submitted to Accredited Standards Committee S1, Acoustics for approval, the membership was as follows:

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Richard J. Peppin, *Vice-Chair*  
  
Nancy Blair-DeLeon, *Secretary*

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Individual Experts of Accredited Standards Committee S1, Acoustics, were:

William D. Gallagher	Richard L. McKinley	Chad M. Walber
Peter Hanes	Karl Peterman	Lixue Wu
Tomasz R. Letowski	Christopher J. Struck	

Working Group S1/WG 1, Standard Microphones and their Calibration, which assisted Accredited Standards Committee S1, Acoustics, in the development of this standard, had the following membership.

Chad M. Walber, *Chair*  
Christopher J. Struck, *Vice-Chair*

David L. Josephson	Randall P. Wagner	Lixue Wu
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Suggestions for improvements to this standard will be welcomed. They should be sent to Accredited Standards Committee S1, Acoustics, in care of the Standards Secretariat of the Acoustical Society of America, 1305 Walt Whitman Road, Suite 300, Melville, New York 11747. Telephone: + 1 (516) 576-2341; E-mail: [standards@acousticalsociety.org](mailto:standards@acousticalsociety.org).

# American National Standard

## Electroacoustics – Measurement microphones – Part 8: Methods for determining the free-field sensitivity of working standard microphones by comparison

(a nationally adopted international standard)

### 1 Scope

This part of the IEC 61094 series is applicable to working standard microphones meeting the requirements of IEC 61094-4. It describes methods of determining the free-field sensitivity by comparison with a laboratory standard microphone or working standard microphone (where applicable) that has been calibrated according to either:

- IEC 61094-3,
- IEC 61094-2 or IEC 61094-5, and where factors given in IEC/TS 61094-7 have been applied,
- IEC 61094-6,
- this part of IEC 61094.

Methods performed in an acoustical environment that is a good approximation to an ideal free-field (e.g. a high quality free-field chamber), and methods that use post processing of results to minimise the effect of imperfections in the acoustical environment, to simulate free-field conditions, are both covered by this part of IEC 61094. Comparison methods based on the principles described in IEC 61094-3 are also possible but beyond the scope of this part of IEC 61094.

NOTE 1 This part of IEC 61094 is also applicable to laboratory standard microphones meeting the requirements of IEC 61094-1, noting that these microphones also meet the electroacoustic specifications for working standard microphones.

NOTE 2 This part of IEC 61094 is also applicable to combinations of microphone and preamplifier where the determined sensitivity is referred to the unloaded output voltage of the preamplifier.

NOTE 3 Other devices, for example, sound level meters can be calibrated using the principles of this part of IEC 61094, but are not within the scope of this standard.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61094-1 *Electroacoustics - Measurement microphones – Part 1: Specifications for laboratory standard microphones*

IEC 61094-2 *Electroacoustics – Measurement microphones – Part 2: Primary method for pressure calibration of laboratory standard microphones by the reciprocity technique*