

ANSI/CEA Standard

Standard Method of Measurement
for In-Home Loudspeakers

ANSI/CEA-2034-A

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(Formulated under the cognizance of the CEA **R3 Audio Systems Committee.**)

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FOREWORD

This standard describes an improved method for measuring and reporting the performance of a loudspeaker in a manner that should help consumers better understand the performance of the loudspeaker and convey a reasonably good representation of how it may sound in a room based on its off-axis response and how this response affects the consumer's experience.

Unlike previously published standards, this standard describes how to measure and report the directivity of a loudspeaker, whether it stands by itself or is mounted in or on a wall or ceiling. It also describes how to use this directivity data to estimate the in-room frequency response that more recent research has shown correlates well to subjective listening preferences of consumers.

It describes how to measure and report the maximum on-axis usable sound pressure level of a loudspeaker, and how to measure and report the impedance of a loudspeaker. It also describes how to calculate and report the size of the power amplifier needed for the consumer to get the desired SPL from the loudspeaker.

Finally, it includes a number of informational annexes to help readers gain a more thorough understanding of techniques for acquiring loudspeaker data in both anechoic and non-anechoic environments, as well as methods for using this acquired data to predict loudspeaker performance.

When used properly this standard should assist manufacturers in accurately measuring the capabilities of a full-range loudspeaker system and specifying them to consumers. Using this in conjunction with ANSI/CEA-2010-B – Standard Method of Measurement for Subwoofers, the ANSI/CEA-2034-A full-range loudspeaker ratings should make it easier for the consumer to select, purchase, and enjoy a subwoofer that will complement their main full-range loudspeaker system.

This standard was developed by the Consumer Electronics Association's Audio Systems Committee (CEA R3 Committee).

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Standard Method of Measurement for In-Home Loudspeakers

1 Scope

This standard describes how to determine the frequency response, directivity and maximum output capability of a residential loudspeaker. It is intended to determine the audio performance of a loudspeaker, not the loudspeaker's ability to survive a given input signal.

This standard applies only to loudspeaker systems, and not to raw transducers.

2 Revision History

Added Table of Figures and Tables

Added items to Symbols & Abbreviations

Added section for Compliance Notation

Updated General Test Setup & Conditions

Added section for Frequency Response and Crossover Categories

Added section for Powered Loudspeaker Rating

Added column for voltage to the Required Amplifier Power tables

Added section for Matching a Subwoofer to a Full-Range Loudspeaker System

Incorporated new additions to Consolidated Reporting Requirements section

3 References

3.1 Normative References

The following standards contain provisions that, through reference in this text, constitute normative provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed here.

3.1.1 Normative Reference List

IEC Publication 225, *Octave, Half-Octave, and Third-Octave Band Filters Intended for the Analysis of Sound and Vibration* (1966)

3.1.2 Normative Reference Acquisition

IEC Standards:

International Electrotechnical Commission, IEC Central Office, 3, rue de Varembe

P.O. Box 131, CH - 1211 Geneva 20 – Switzerland; Phone +41 22 919 02 11;

Fax +41 22 919 03 00; Internet <http://www.iec.ch>

3.2 Informative References

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