

ANSI/CTA Standard

**Testing and Measurement Methods
for Mobile Loudspeaker Systems**

ANSI/CTA-2031 R-2014

(Formerly ANSI/CEA-2031 R-2014)

September 2008



**Consumer
Technology
Association**

NOTICE

Consumer Technology Association (CTA)TM Standards, Bulletins and other technical publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for his particular need. Existence of such Standards, Bulletins and other technical publications shall not in any respect preclude any member or nonmember of the Consumer Technology Association from manufacturing or selling products not conforming to such Standards, Bulletins or other technical publications, nor shall the existence of such Standards, Bulletins and other technical publications preclude their voluntary use by those other than Consumer Technology Association members, whether the standard is to be used either domestically or internationally.

Standards, Bulletins and other technical publications are adopted by the Consumer Technology Association in accordance with the American National Standards Institute (ANSI) patent policy. By such action, the Consumer Technology Association does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the Standard, Bulletin or other technical publication.

This document does not purport to address all safety problems associated with its use or all applicable regulatory requirements. It is the responsibility of the user of this document to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before its use.

This document is copyrighted by the Consumer Technology Association and may not be reproduced, in whole or part, without written permission. Federal copyright law prohibits unauthorized reproduction of this document by any means. Organizations may obtain permission to reproduce a limited number of copies by entering into a license agreement. Requests to reproduce text, data, charts, figures or other material should be made to the Consumer Technology Association.

(Formulated under the cognizance of the **CTA R6 Portable, Handheld and In-Vehicle Electronics Committee.**)

Published by
©CONSUMER TECHNOLOGY ASSOCIATION 2015
Technology & Standards Department
www.CTA.tech

All rights reserved

FOREWORD

This standard was developed by the Consumer Electronics Association's Mobile Electronics Committee (R6).

CONTENTS

1 Scope.....	1
2 References.....	1
2.1 Normative References.....	1
2.1.1 Normative Reference List	1
2.1.2 Normative Reference Acquisition	1
2.2 Informative References	1
2.2.1 Informative Reference List.....	1
2.2.2 Informative Reference Acquisition	2
2.3 Acronyms and Symbols.....	2
3 General Test Conditions.....	2
4 RMS Power Handling Testing	2
4.1 Measurements.....	2
4.2 High-Frequency Drivers	2
4.2.1 Power-Handling.....	2
4.2.1.1 Test Conditions and Equipment.....	2
4.2.1.2 Displacement Limit	3
4.2.1.3 Statistical Study	3
4.3 Low-Frequency Drivers.....	3
4.3.1 Power-Handling.....	3
4.3.1.1 Test Conditions and Equipment.....	3
4.3.1.2 Displacement Limit	3
4.3.1.3 Statistical Study	3
4.3.2 Enclosure Specifications	3
4.3.2.1 Additional Power-Handling Information	3
5 Associated Amplifier Power	3
6 Sensitivity	3
7 Nominal Impedance, Zmin, Range	4
8 Speaker Size	4
9 Frequency Response.....	5
9.1 Free-Field Measurements	5
9.2 Near-Field Measurements	5
9.3 Ground Plane Measurements.....	7
9.4 Operable Bandwidth / Sensitivity Determination	9
9.5 Specification of Frequency Response Limits.....	9
10 Maximum Linear One-Way Excursion.....	9
11 Rating	9
11.1 Primary Ratings and Disclosures	10
11.2 Secondary Ratings and Disclosures	10

Tables

Table 1 Maximum Microphone-Diaphragm Separation Distance.....	6
Table 2 Minimum Required Distance between DUT & Acoustically Reflective Boundaries (Walls) ..	8

Figures

Figure 1 Minimum Spacing for Indoor Near Field Testing.....	6
Figure 2 Basic Ground Plane Measurement Set-Up for Subwoofer System with Driver & Port Located on Same Face of Enclosure (Side Fiew)	7
Figure 3 Ground Plane Measurement Set-up for a Subwoofer System with Driver & Port Located on Opposing Faces of Enclosure (Cut-away view from above)	8

Testing and Measurement Methods for Mobile Loudspeaker Systems

1 Scope

CEA-2031 defines test procedures for rating the performance and physical size of mobile loudspeakers, and requirements for reporting these characteristics. CEA-2031, when used in conjunction with CEA-2006-A, Testing & Measurement Methods for Mobile Audio Amplifiers, enables consumers to select mobile loudspeakers with power handling capabilities that are appropriate for the power output characteristics of their mobile amplifiers.

2 References

2.1 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 in Section 2.1.1.

2.1.1 Normative Reference List

ANSI/CEA-426-B R-2005, Loudspeakers, Optimum Amplifier Power

CEA-2006-A, Testing & Measurement Methods for Mobile Audio Amplifiers, November, 2005

IEC 60268-5 – Ed. 3, Sound system equipment - Part 5: Loudspeakers, 2003

2.1.2 Normative Reference Acquisition

ANSI/CEA and IEC Standards:

- Global Engineering Documents, World Headquarters, 15 Inverness Way East, Englewood, CO USA 80112-5776; Phone 800-854-7179; Fax 303-397-2740; Internet <http://global.ihs.com>; Email global@ihs.com

2.2 Informative References

The following documents contain information that is useful in understanding this standard.

2.2.1 Informative Reference List

AES2-1984 (r2003), Specification of Loudspeaker Components Used in Professional Audio and Sound Reinforcement