

CEA Bulletin

Recommended Loudspeaker Safety Practices

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(Formulated under the cognizance of the CEA's **R1 Product Safety & Compliance Committee**.)

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FOREWORD

The current version of this bulletin was developed under the auspices of the Consumer Electronics Association (CEA) R1 Product Safety & Compliance Committee.

This document is intended to provide a guide to manufacturers wishing to test their loudspeaker products and components for the existence of specific safety concerns. Loudspeaker specifications and tests that relate to specific safety issues are provided for consideration but may not be inclusive. Accordingly, this document cannot be used as the ultimate standard for loudspeaker safety. These guidelines should be used in conjunction with the manufacturer's own safety specifications and testing program or may form the basis of a safety specifications and testing program if none is actively in place.

In addition to the guidelines themselves, this document contains background information on loudspeaker safety. For example, the reasons for some of the test conditions are given.

Loudspeaker performance is not covered in this document since this is covered in; EIA-426, Loudspeaker Optimum Amplifier Standard, the international standard IEC-60268-5, Sound System Equipment – Part 5: Loudspeakers, and in other documents.

The general approach used in this document is a systems approach. That is, the function of the entire system is the primary concern rather than the hazard potential of individual components or materials. However, some specifications and testing recommendations for individual components are included as a matter of course, as they relate to safety and quality control issues.

Many tests given in this document may be inherently hazardous and thus adequate safeguards for testing personnel and property should be employed while conducting such tests.

In using this document as a guide for determining the potential hazard of loudspeaker products, please note that all sections are interrelated and thus the whole document should be used in concert. For Example: Section 5 indicates that goods in shipment are exposed to temperatures between +65°C (150°F) and -30 °C (-22°F) and relative humidity as high as 95%. These extremes should be considered when choosing materials that are given the flammability tests described in Section 6.1.

The first draft of this document was written by the EIA/CEG/R-1 Product Safety Committee in 1987. The second draft was revised and expanded by the combined efforts of the EIA/CEG/R-1 Product Safety Committee and the National Sound & Communications Association (NSCA) Product Safety Group in 1994 and published as an EIA standard. These groups no longer exist in their previous forms, and NSCA was not involved in the latest revision of this bulletin.

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Recommended Loudspeaker Safety Practices

An Industry Guideline

1 Scope

This document applies to any loudspeaker assembly that is:

- a) Designed to produce acoustic energy for any communications or entertainment purpose. The acoustic energy is radiated into an *air* medium, indoors or outdoors.
- b) For consumer, commercial, or professional use.
- c) For use with internal or external sources of amplification. For internal amplification, see Section 14.

Tests described within this document are to be performed on products that have the same physical properties of materials and the same mechanical characteristics as the product to be marketed.

This document applies to a loudspeaker assembly designed to handle 15 watts continuous and over, however a manufacturer may use this document for testing a speaker(s) rated less than 15 watts.

The units of measure used in this document are primarily ISO metric and generally followed with parenthetical approximate equivalents in U.S. units. This document deviates from this format where the referenced source for the measurement is specified in U.S. units only.

2 References

2.1 References

The following documents contain information that is useful in understanding this bulletin. Some of the standards listed contain provisions that, through reference in this text, constitute provisions of this bulletin. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this bulletin are encouraged to investigate the possibility of applying the most recent editions of the reference standards listed. Regional or national deviations of the standards listed below may exist and should be consulted if the product is to target a particular foreign market.

- ANSI Z535.4-2002 Product Safety Signs and Labels
- ANSI/UL 1419-2005, Standard for Professional Video and Audio Equipment.
- ANSI/UL 1480-2005, Standard for Speakers for Fire Alarm, Emergency, and Commercial and Professional Use.
- ANSI/UL 60065-2003, Standard for Audio, Video and Similar Electronic Apparatus – Safety Requirements
- ANSI/UL 723-96 (ASTM E-84-2001) Test for Surface Burning Characteristics of Building Materials