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**SOUND SYSTEM EQUIPMENT**

**Part 5—LOUDSPEAKERS**

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Associated Chambers of Manufactures of Australia  
Australian Broadcasting Commission  
Australian Broadcasting Control Board  
Consumer Interests  
Department of Defence  
Department of Transport  
Federation of Australian Commercial Broadcasters  
Federation of Australian Commercial Television Stations  
Institution of Radio and Electronics Engineers, Australia  
National Acoustic Laboratories  
Telecom Australia  
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## PREFACE

This standard forms one part of a series on sound system equipment being prepared by the Association's Telecommunications and Electronics Committee on Electro-acoustics and Recording.

In its terminology, definitions and general treatment of the subject, this standard is technically compatible with the recommendations of IEC 268—5. Grateful acknowledgement is made of the assistance received from this source. The format of the standard is, however, considerably different and use has been made of Australian research in the design of loudspeaker drivers and enclosures. The Association is grateful to the people concerned for permission to use their findings.

The purpose of this standard is to provide a common basis for specifying the electrical and electro-acoustic properties of loudspeakers for use in sound systems. The standard is intended to serve as a guide to manufacturers of loudspeakers when stating the performance of their product in relation to its intended use. It prescribes and defines the characteristics of loudspeaker drivers and systems which must be specified in order to adequately describe their electro-acoustic performance. Where applicable, test conditions and methods of measuring these characteristics are specified, thus ensuring that there is no confusion about which characteristic is being described in any literature accompanying the equipment.

The characteristics listed in this standard are described in terms consistent with definitions contained in AS 1127, Part 1—General, and AS 1633, Glossary of Acoustic Terms, which may need to be consulted.

This standard does not consider dimensions of loudspeakers or methods of mounting; these are the subject of Part 4—Dimensions of Loudspeakers, which should be consulted with regard to mechanical interchangeability of loudspeakers.

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STANDARDS ASSOCIATION OF AUSTRALIA

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**Australian Standard Specification  
for  
SOUND SYSTEM EQUIPMENT**

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**Part 1—GENERAL**

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FOREWORD

It should be noted that the characteristics recommended for specification by the manufacturer and the methods of measurement given herein are neither all necessary nor exhaustive for all types of equipment. Selection of characteristics should be made on the basis that the combination of characteristics to which the equipment is required to conform is appropriate to the class of equipment. Devices for special purposes may require more elaborate specifications and more precise measuring methods than those given.

The characteristics defined frequently include rated quantities. These characteristics are included to facilitate communication between manufacturer, or supplier, and purchaser, or user. The use of this standard should facilitate comparison between manufacturer's specification and the purchaser's requirements for particular loudspeakers or systems.

## SECTION 1. SCOPE, APPLICATION AND DEFINITIONS

**1.1 SCOPE.** This Part of this standard applies to loudspeakers used in sound systems or equipment for both professional and domestic use. It defines the characteristics of loudspeakers to be specified by the manufacturer and, where applicable, prescribes relevant measuring methods and conditions. The characteristics described cover various classes of loudspeakers and conditions but not all characteristics must be specified in every case.

Clause 3.17 classifies the individual characteristics into those which must be provided as markings on the loudspeaker, those which must be provided in technical specifications, and those which are optional or apply to specific applications only.

### **1.2 DEFINITIONS.**

**1.2.1 Related Documents.** Terms used in this Part are consistent with definitions contained in—

AS 1127, Sound System Equipment, Part 1—General.

AS 1633, Glossary of Acoustic Terms.

**1.2.2 Loudspeakers.** Unless otherwise stated the term ‘loudspeakers’ shall include both loudspeaker drivers and their mountings or enclosures, which together comprise a loudspeaker system and also loudspeaker systems which comprise one or more loudspeaker drivers and such devices as integral crossover filters, transformers and any other integral passive or active elements.

**1.2.3 Nominal Input Power.** Nominal input power shall mean the square of the true r.m.s. voltage at the input terminals of the loudspeaker divided by the rated impedance defined in Clause 3.3.2.

SECTION 2.  
CONDITIONS FOR OPERATION AND MEASUREMENT

**2.1 GENERAL CONDITIONS.**

**2.1.1 General.** Reference is made to AS 1127, Part 1 concerning:

- Units and system of measurement
- Frequencies of measurement
- Quantities to be specified and their accuracy
- Marking
- Filters, networks and measuring instruments for noise specification and measurement
- Ambient conditions
- Individual specification and type specification
- Graphical presentation
- Scales for graphical presentation.

**2.1.2 Rated and Normal Working Conditions.**

**2.1.2.1 Rated conditions.** The loudspeaker shall be understood to be working under rated conditions when—

- (a) the voltage across the loudspeaker terminals is chosen in accordance with the expression—

$$V^2 = PZ$$

where

$V$  = r.m.s. potential difference across the input terminals, in volts

$P$  = rated input power, in watts (see Clause 3.4.1)

$Z$  = rated impedance, in ohms (see Clause 3.3.2);

- (b) any controls shall be set to the position of minimum attenuation, except where the manufacturer specifies an optimum position;
- (c) unless otherwise specified, the rated conditions shall imply a sinusoidal voltage with a specified frequency equal to the geometric mean of the rated input frequency range as defined in Clause 3.8.1;
- (d) the loudspeaker is working under free-field conditions, as defined in Clause 2.2.1;
- (e) the loudspeaker is mounted in its own enclosure, a specified enclosure or on standard baffle (see Clause 2.2.4.2).

NOTE: In addition to (b) it is desirable, when volume controls are used for balance adjustment between LF, MF and HF drivers, also to measure the performance with these sets to the position for maximum attenuation.

**2.1.2.2 Normal working conditions.** The loudspeaker shall be understood to be working under normal conditions when all the conditions listed in Clause 2.1.2.1 have been met except that—