SLOVENSKI STANDARD
SIST HD 483.1 S2:1999

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Sound system equipment - Part 1: General (IEC 60268-1:1985 + A1:1988)

Sound system equipment -- Part 1: General

Elektroakustische Geräte -- Teil 1: Allgemeines

Equipements pour systèmes électroacoustiques -- Partie 1: Généralités

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SOUND SYSTEM EQUIPMENT
PART 1: GENERAL

Equipements pour systèmes électroacoustiques
Première partie: Généralités

Elektroakustische Geräte
Teil 1: Allgemeines

BODY OF THE HD

The Harmonization Document consists of:

- IEC 268-1 (1985) ed 2 + Amdt 1 (1988); IEC/TC 84, not appended

This Harmonization Document was approved by CENELEC on 1989-08-01.

The English and French versions of this Harmonization Document are provided by the text of the IEC publication and the German version is the official translation of the IEC text.

According to the CENELEC Internal Regulations the CENELEC member National Committees are bound:

to announce the existence of this Harmonization Document at national level by or before 1990-03-01

to publish their new harmonized national standard by or before 1990-09-01

to withdraw all conflicting national standards by or before 1990-09-01.

Harmonized national standards are listed on the HD information sheet, which is available from the CENELEC National Committees or from the CENELEC Central Secretariat.

The CENELEC National Committees are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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Equipements pour systèmes électroacoustiques

Première partie : Généralités

Sound system equipment

Part 1: General

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SOUND SYSTEM EQUIPMENT

Part 1: General

FOREWORD

1) The formal decisions or agreements of the I E C on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the I E C expresses the wish that all National Committees should adopt the text of the I E C recommendations for their national rules in so far as national conditions will permit. Any divergence between the I E C recommendations and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by I E C Technical Committee No. 84: Equipment and Systems in the Field of Audio, Video and Audiovisual Engineering, (formerly Sub-Committee 29B: Audio Engineering).

This second edition replaces the first edition of I E C Publication 268-1 (1968) as well as its first supplement, Publication 268-1A (1970), its second supplement, Publication 268-1B (1972) and its third supplement, Publication 268-1C (1982).

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

Six Months' Rule	Report on Voting
29B(CO)103	29B(CO)112

Further information can be found in the Report on Voting indicated in the table above.

The following I E C publications are quoted in this standard:

Publications Nos. 27: Letter Symbols to be Used in Electrical Technology.
65 (1976): Safety Requirements for Mains Operated Electronic and Related Apparatus for Household and Similar General Use.
68: Basic Environmental Testing Procedures.
225 (1966): Octave, Half-octave and Third-octave Band Filters Intended for the Analysis of Sounds and Vibrations.
263 (1982): Scales and Sizes for Plotting Frequency Characteristics and Polar Diagrams.
417 (1973): Graphical Symbols for Use on Equipment. Index, Survey and Compilation of the Single Sheets.
617: Graphical Symbols for Diagrams.
651 (1979): Sound Level Meters.

Other publication quoted:

ISO Standard 266 (1975): Acoustics — Preferred Frequencies for Measurements.

SOUND SYSTEM EQUIPMENT

Part 1: General

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1. Scope

This standard applies to sound systems of any kind, and to the parts of which they are composed or which are used as auxiliaries to such systems.

This standard deals with the determination of the performance of sound system equipment, the comparison of these types of equipment and the determination of their proper practical application, by listing the characteristics which are useful for their specification and laying down uniform methods of measurements for these characteristics.

The standard is confined to a description of the different characteristics and the relevant methods of measurement; it does not in general specify performance (except in Part 10).

The complete standard consists of the following parts, in which the characteristics of various parts of sound systems and their methods of measurement are specified; some parts include preferred values:

— Part 1: General.
(Uniform characteristics and methods of measurement)

— Part 2: Explanation of General Terms.
(Explanation of general terms and calculation methods)

— Part 3: Sound System Amplifiers.
(Amplifiers forming part of a sound system for professional and domestic applications)

— Part 4: Microphones.
(Microphones in professional and domestic applications)

— Part 5: Loudspeakers.
(Loudspeakers in professional and domestic applications, treated as entirely passive elements)

— Part 6: Auxiliary Passive Elements.
(Attenuators, transformers, filters and equalizers, applied as separate units to be combined with other separate sound system units)

— Part 7: Headphones and Headsets.
(Headphones and headsets intended to be used on the human ear)

— Part 8: Automatic Gain Control Devices.
(Limiters and compressors)

— Part 9: Artificial Reverberation, Time Delay and Frequency Shift Equipment.
(Devices commonly employed to achieve special effects in sound systems)

— Part 10: Programme Level Meters
(Peak programme meters and vu-indicators)

— Part 11: Connectors for the Interconnection of Sound System Components.

(Application of connectors for the interconnection between parts of a sound system)

— Part 12: Circular Connectors for Broadcast and Similar Use.
(Application of connectors for the interconnection between parts of a broadcast or similar professional system)

— Part 13: Listening Test on Loudspeakers.
(Listening tests and objective methods for rating the quality of the transmission systems)

— Part 14: Circular and Elliptical Loudspeakers; Outer Frame Diameters and Mounting Dimensions.
(Dimensional characteristics of single moving-coil (dynamic) loudspeakers)

— Part 15: Preferred Matching Values for the Interconnection of Sound System Components.
(Preferred electrical values for the correct interconnection of sound system components)

2. Units and system of measurement

The International System of Units (SI units) as given in I E C Publication 27: Letter Symbols to be Used in Electrical Technology, is used exclusively in this standard.

3. Frequencies of measurement

If measurements are to be made at discrete frequencies, then these shall be the frequencies specified as preferred frequencies for acoustical measurements in ISO Standard 266, reproduced in Table I. If a measurement relates to a reference frequency, then, in the absence of a clear reason to the contrary, this shall be the standard reference frequency of 1 000 Hz.

If a measurement is to be made using only one signal frequency, the signal frequency shall be the chosen reference frequency. If measurements are to be made at a number of different frequencies, the chosen reference frequency shall be included, the other frequencies being so chosen that the results of the measurements give an adequate representation of the behaviour of the characteristics over the whole of the effective frequency range.

If measurements are to be made in frequency bands of constant relative bandwidth, preference shall be given to the one-octave and one-third octave bands mentioned in Sub-clause 6.2.3.

4. Quantities to be specified and their accuracy

Unless otherwise stated, the values of voltage, current, sound pressure, etc., mentioned in this standard are assumed to be r.m.s. quantities. For most purposes it is sufficient to measure electrical quantities with an accuracy of ± 0.15 dB and acoustical quantities with an accuracy of ± 1 dB. The accuracy of measurement required depends only on the purpose for which the results are to be used.

5. Marking and symbols for marking

5.1 *Marking*

Terminals and controls shall be adequately marked to give information regarding their function, characteristics and polarity.

The marking shall be such that it must be possible to adjust the controls and to identify their positions with sufficient accuracy in connection with the information given in the user instructions.

5.2 *Symbols for marking*

Marking should preferably be composed of letter symbols, signs, numbers and colours, which are internationally intelligible. Reference is made to I E C Publication 27, I E C Publication 617: Graphical Symbols for Diagrams, and I E C Publication 417: Graphical Symbols for Use on Equipment. Index, Survey and Compilation of the Single Sheets.

Markings not included in the above-mentioned standards shall be clearly explained in the user instructions.

6. Filters, weighting curves and meters for noise specification and measurement

A specification of noise or signal-to-noise ratio shall refer to noise measured by one of the following methods:

6.1 *Wide-band measurement*

The filter shall be a band-pass filter having a frequency response within the limits shown in Figure 5, page 24. (This is identical to the wide-band filter specification in CCIR Recommendation 468-3.)

A band-pass filter which has a substantially constant transmission factor between 22.4 Hz and 22.4 kHz, decreasing outside this frequency band at the rates specified for octave-band filters having mid-band frequencies of 31.5 Hz and 16 000 Hz specified in I E C Publication 225: Octave, Half-octave and Third-octave Band Filters intended for the Analysis of Sound and Vibrations, has a response falling within the limits of this specification.

Note. — Care should be taken when there may be strong signals just above or below the band-limits since in this case the results will depend, to some degree, on the individual frequency response of the filter actually used.

6.2 *Weighted measurements*

6.2.1 *Noise (A-weighting) or signal-to-noise (A-weighting) ratio*

The filter used shall have A-weighting characteristics with tolerances type 1 as specified for sound level measurements in I E C Publication 651: Sound Level Meters. The meter shall be a true r.m.s. meter as described in Publication 651 for sound level meters type 1; the dynamic characteristic designated "S" shall be used.

Note. — A-weighted measurements are particularly appropriate where the noise output from the equipment in the absence of a programme is concerned.

6.2.2 *Noise (psophometric) or signal-to-noise (psophometric) ratio*

The filter and meter used shall have the characteristics described in Appendix A, which are identical to those specified in CCIR Recommendation 468-3.

Notes 1. — The word "psophometric" may be abbreviated to "ps" (see CCITT Recommendation J.16) if no confusion may arise.

2. — Psophometric measurements are particularly appropriate where the disturbing effect of the noise output from the system in the presence of a programme is concerned.

6.2.3 *Octave/third-octave band measurements*

The filters shall have characteristics as specified for octave or third-octave band filters in I E C Publication 225. The meter shall be a true r.m.s. meter as described in I E C Publication 651 for sound level meters, type 1. When measuring in narrow bands, particularly at low frequencies, it is recommended that the instruments should confirm dynamically to the characteristics designated "S" for the sound level meter.

7. Simulated programme signal

A signal, whose mean power spectral density closely resembles the average of the mean power spectral densities of a wide range of programme material, including both speech and music of several kinds, is stationary weighted Gaussian noise without amplitude limiting, the weighted power spectrum being in accordance with Table II and Figure 1, page 22, when measured with third-octave filters in accordance with I E C Publication 225.

Such a signal may be obtained from a pink-noise source by means of the filter circuit shown in Figure 2, page 22.

Measurements made with narrow-band signals shall, if appropriate, be made with the relative level in each frequency band corresponding to that indicated in Table II and Figure 1. (Measurements and characteristics related to the use of this signal, especially for amplifiers and loudspeakers, are under consideration.)

Note. — It should be noted that the power level of the signal measured over the full frequency range is approximately 12.5 dB higher than the indicated zero relative level, which is measured over ⅓ octave.

8. Climatic conditions

Measurements and mechanical checks may be carried out at any combination of temperature, humidity and air pressure within the following limits:

— Ambient temperature: 15 °C to 35 °C, preferably at 20 °C
— Relative humidity: 25% to 75%
— Air pressure: 86 kPa to 106 kPa (860 mbar to 1 060 mbar)

If the manufacturer finds it necessary to specify climatic conditions differing from the above these should be chosen from I E C Publication 68: Basic Environmental Testing Procedures, and the measurements shall be made under these specified conditions.

The conditions mentioned above represent those under which the equipment is required to meet its specification. Over a wider range the equipment may operate but not meet all of its specifications and it may be permissible to store the equipment under much more extreme conditions.

For a more complete discussion of these concepts, reference is made to I E C Publication 68.