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Australian Standard®

Acoustics—Measurement of high-frequency noise emitted by computer and business equipment

This Australian Standard was prepared by Committee AV/7, Acoustics, Noise from Office and Household Equipment. It was approved on behalf of the Council of Standards Australia on 28 November 1989 and published on 7 May 1990.

The following interests are represented on Committee AV/7:

Association of Consulting Engineers Australia
Australian Acoustical Society
Australian Consumer Association
Australian Environment Council
Australian Electrical and Electronic Manufacturers Association
CSIRO, Division of Applied Physics

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PREFACE

This Standard was prepared by the Standards Australia Committee on Acoustics—Noise from Office and Household Equipment.

It is identical with and has been reproduced from ISO 9295 (1988), Acoustics—Measurement of high-frequency noise emitted by computer and business equipment.

For the purpose of this Australian Standard the ISO test should be modified as follows:

References. The references to other publications should be replaced by references to Australian Standard.

Reference to International Standard	*Australian Standard*
ISO	AS
7779 Acoustics—Measurement of airborne noise emitted by computer and business equipment	3755 Acoustics—Measurement of airborne noise emitted by computer and business equipment

CONTENTS

Acoustics—Measurement of high-frequency noise emitted by computer and business equipment

0 Introduction

Some computer and business equipment emits high-frequency noise which may be broad-band noise (e.g. paper noise of highspeed printing) or narrow-band noise and discrete tones (e.g. switching power supplies and video display units). The measured levels are not frequency-weighted. However, when there are significant contributions in the octave bands having centre frequencies between 125 Hz and 8 kHz, and, in addition, there is a contribution in the 16 kHz band which is broad-band in character, the A-weighted sound power level may be calculated with the contribution of the 16 kHz octave band included. The principal objective of this International Standard is to prescribe methods for measuring the levels and frequencies of tones which are contained within the 16 kHz octave band.

1 Scope and field of application

This International Standard specifies four methods for the determination of the sound power levels of high-frequency noise emitted by computer and business equipment in the frequency range covered by the octave band centred at 16 kHz. They are complementary to the methods described in ISO 7779. The first three methods are based on the reverberation room technique described in clause 5 of ISO 7779 : 1988. The fourth method makes use of a free field over a reflecting plane as described in clause 6 of ISO 7779 : 1988.

The test conditions which prescribe the installation and operation of the equipment are those specified in ISO 7779.

While the four methods described in this International Standard are particularly suitable for computer and business equipment, they may also be applied to other types of equipment. This International Standard specifies methods for the determination of sound power levels in the frequency range covered by the octave band centred at 16 kHz which includes frequencies between 11,2 kHz and 22,4 kHz.

NOTE — The sound power level in the 16 kHz octave band determined according to this International Standard typically is subject to a standard deviation of approximately 3 dB.

A method for the measurement of high-frequency noise is in conformance with this International Standard if it satisfies all the mandatory requirements of one of the four methods described herein and if the information recorded and reported is that specified in clauses 8, 9 and 10, respectively.

2 References

ISO 6926, *Acoustics — Determination of sound power levels of noise sources — Characterization and calibration of reference sound sources*.[1)]

ISO 7779, *Acoustics — Measurement of airborne noise emitted by computer and business equipment*.

3 Requirements for measurements in a reverberation room

3.1 General

Three methods are described using the reverberation room technique of clause 5 of ISO 7779 : 1988. The first and the second methods are usually called “direct” methods because they use directly measured or calculated reverberation times. The third method is a so-called comparison method. A calibrated reference sound source is used from which the sound power levels of the equipment are determined by comparison.

All three methods require a determination of the average sound pressure level in the reverberant field.

As instrumentation and basic measurement techniques are the same for all three methods, they are summarized in 3.2 to 3.6. Additional requirements specific to each method are given separately. For additional information on instrumentation, refer to ISO 7779.

3.2 Instrumentation

The microphone shall have a flat frequency response for randomly incident sound in the 16 kHz octave band. The tolerances shall be within ±2,0 dB in the frequency range 11,4 kHz to 22,8 kHz.

NOTE — To meet this requirement, a microphone with a diameter of 13 mm or less is usually required.

1) To be published.