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STANDARDS

AES standard method for digital audio engineering - Measurement of digital audio equipment

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AES standard method for digital audio engineering — Measurement of digital audio equipment

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Abstract

This standard provides methods for specifying and verifying the performance of medium-to-high performance digital audio equipment. It comprises an exhaustive list of measurements applicable to digital audio equipment.

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Foreword

[This foreword is not a part of *AES standard method for digital audio engineering — Measurement of digital audio equipment*, AES17-1998]

This document has been prepared by the SC-02-01 Working Group on Digital Audio Measurement Techniques of the SC-02 Subcommittee on Digital Audio of the Audio Engineering Society Standards Committee. It is a revision of AES17-1991. With the permission of AESSC, it also had been independently released by ANSI Accredited Standards Committee S4 as ANSI S4.51-1991.

Discussions on the revision project, AES17-R, began in the autumn of 1995. Proposals for revision have been discussed at five subsequent open working group meetings and over the working group reflector, SC_02_01@aessc.aes.org. The call for comment on its draft was published 1997-10-09 on <http://www.aes.org/standards> and was distributed with the *Journal of the Audio Engineering Society*, vol. 45, no. 11.

The following individuals contributed to the preparation of the 1991 edition of this document: Robert Adams, Richard Cabot, Louis Fielder, David Haynes, and Tomlinson Holman. The revision was prepared by R. Cabot based on the working group discussions.

Richard Cabot, Chair, SC-02-01
1998-03

Foreword to 2015 revision

[This foreword is not part of AES17-2015, *AES standard method for digital audio engineering - Measurement of digital audio equipment*.]

This document substantially revises and updates AES17-1998, *AES standard method for digital audio equipment - Measurement of digital audio equipment*. It includes measurements using more up-to-date measurement tools, and includes annexes describing advanced measurement methods for production testing, and frequency-domain and window-width filters.

The members of the writing group that developed this document in draft are: R.C. Cabot, I. Dennis, T. Duffy, J. Emmett, B. Katz, T. Kite, C. Lacinak, T. Lund, J.G. McKnight, H. Morfett-Jones, J. Novick, M. Poimboeuf, B. Putzeys, P. Soper, J. Woodgate, M. Yonge.

Tom Kite, Chair, SC-02-01
2015-07

Foreword to 2020 revision

[This foreword is not part of AES17-2020, *AES standard method for digital audio engineering - Measurement of digital audio equipment*.]

This document clarifies the definition of levels, the units FS and dBFS.

Jayant Datta, Chair, SC-02-01
2020-11

Note on normative language

In AES standards documents, sentences containing the word “shall” are requirements for compliance with the document. Sentences containing the verb “should” are strong suggestions (recommendations). Sentences giving permission use the verb “may”. Sentences expressing a possibility use the verb “can”.

AES standard method for digital audio engineering - Measurement of digital audio equipment

0 Introduction

This standard provides methods for specifying and verifying the performance of medium- to high-performance digital audio equipment.

Many tests are very similar to those used for testing analogue equipment. However, because of the unique requirements of digital audio equipment and the effects of its imperfections, additional tests are needed.

The characteristics of voice-grade digital audio EUTs are sufficiently different from those of high-performance equipment that some of the test levels and frequencies specified in this document may need to be revised for these applications. Low bit-rate coders are an example of EUTs that require additional test techniques. The nature of such coders dictates that the test methods be based on psychoacoustic models which can predict subjective performance. However, the techniques described here should still be informative for such systems.

Another caveat concerns digital EUTs which purposely modify the time-domain characteristics of the audio signal, such as pitch shifters and reverberators. Many of the tests in this standard assume that the frequency spectrum of the output signal is substantially the same as that of the input signal. Also, high-level interfering signals (as would be encountered with reverberators) have not been considered.

1 Scope

This standard specifies basic measurement methods of medium- to high-performance digital audio equipment.

It includes definitions, and measuring conditions and methods applicable to professional equipment.

This standard does not consider:

- measurement of low-quality audio devices,
- measurement of low-bit-rate audio devices ('sub-band' or 'perceptual' coding devices),
- measurement of devices which significantly modify time or frequency characteristics of the signal, such as pitch shifters or reverberators,
- measurement of signals from analogue input to analogue output, beyond the most general,
- EMC and safety related testing.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ITU-R BS.468-4, *Measurement of audio-frequency noise voltage in sound broadcasting*. International Telecommunication Union, Geneva, Switzerland.

IEC 61260-1, *Electroacoustics - Octave-band and fractional-octave-band filters*. International Electrotechnical Commission, Geneva, Switzerland.