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AES standard for audio preservation and restoration - Method for estimating life expectancy of compact discs (CD-ROM), based on effects of temperature and relative humidity

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AES standard for
audio preservation and restoration —
Method for estimating life expectancy
of compact discs (CD-ROM),
based on effects of temperature
and relative humidity

Abstract

This standard specifies test methods for estimating the storage life expectancy (LE) of information stored on compact discs (CD-ROM). Only the effects of temperature and relative humidity are considered. Block error rate (BLER) is the measured response and the end-of-life criterion. An Eyring model is developed from accelerated test results. Data are normalized to 25 °C and 50 % relative humidity, and the LE, percent compliance, and confidence intervals at these conditions are calculated.

Contents

Foreword

[This foreword is not a part of *AES standard for audio preservation and restoration — Method for estimating life expectancy of compact discs (CD-ROM), based on effects of temperature and relative humidity,* AES28-1997.]

This standard was prepared by a joint technical commission of the Audio Engineering Society Standards Committee SC-03 Subcommittee on Audio Preservation and Restoration and the American National Standards Committee Subcommittee IT9-5 on Stability of Electronic Imaging Materials. At the time of completion of this draft, the commission had the following members: Peter Z. Adelstein (IT9-5 Chair), George Boston, Jim Burke, Alan Calmes, Tom Cavanagh, Delos A. Eilers, Jean-Marc Fontaine, Gerald Gibson (SC-03 Chair), John Gignac, Stephen P. Johnson, Takashi Kirakawa, Fredrick Kolb, Jr., Fred Layn, John Mattarazzo, Daniel Matukewicz, Charles W. Mayn, Bill Murray, David Peelle, Fernando Podio, Daniel Queen (AESSC Secretary), A. Tulsi Ram (IT9-5 Secretary), Dietrich Schuller, Ted Sheldon, Michael Stamp, Susan Stinson, William Storm (SC-03 Chair Emeritus), Carl Talkington, Ron Uhlig, John Van Bogart, Don Veri, Bob Waelbroeck, Johanna Wellheiser, James Wheeler, Jim Wong, and Joe Wrobel. The commission was co-chaired by Storm and Adelstein.

Gerald Gibson,
Chair, AESSC SC-03 Subcommittee on Audio Preservation and Restoration
1995-09-20

This printing of AES28-1997 incorporates Amendment 1-2001 as shown in the following text. It has been repaginated accordingly but has not been updated to current AES style. All clause, table, and figure numbering has been retained.

Amendment 1-2001

[Amend AES28-1997, *AES standard for audio preservation and restoration — Method for estimating life expectancy of compact discs (CD-ROM), based on effects of temperature and relative humidity* by removing the minus signs in the exponent in the two equations in 6.1, and removing the equation from B.5.]

AES standard
for audio preservation and restoration —
Method for estimating life expectancy of
compact discs (CD-ROM), based on effects of
temperature and relative humidity

1 General

1.1 Scope

This standard specifies test methods for estimating the storage life expectancy of information stored on compact disc (CD-ROM) media, including CD audio, but excluding recordable media. Only the effects of temperature and relative humidity (RH) are considered.

1.2 Purpose

The purpose of this standard is to establish a methodology for estimating the storage life expectancy of information stored on CD-ROMs. This methodology provides a technically and statistically sound procedure for obtaining and evaluating accelerated test data. The methodology deals only with the effects of temperature and humidity on the retrievability of stored information.

1.3 Assumptions

It is assumed that the dominant failure mechanism acting at the usage condition is the same as at the accelerated conditions. Second, it is assumed that the dominant failure mechanism is appropriately modeled by an Eyring acceleration model. Finally, it is assumed that the life expectancy is appropriately modeled by the two-parameter Weibull distribution. The shape parameter of the Weibull distribution is assumed to be independent of the stress level.

2 Normative references

The following standards contain provisions that, through reference in this text, constitute provisions of this document. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent editions of the indicated standards.

ISO/IEC 10149:1989, *Information technology — Data interchange on read-only 120 mm optical data discs (CD-ROM).* Geneva, Switzerland: International Electrotechnical Commission, 1989.