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ANSI S3.5-1997
Revision of
ANSI S3.5-1969 (R 1986)

American National Standard

Methods for Calculation of the Speech Intelligibility Index

Secretariat
Acoustical Society of America

Approved 6 June 1997
American National Standards Institute, Inc.

Abstract

This Standard defines a method for computing a physical measure that is highly correlated with the intelligibility of speech as evaluated by speech perception tests given a group of talkers and listeners. This measure is called the Speech Intelligibility Index, or SII. The SII is calculated from acoustical measurements of speech and noise. This standard is **not** a substitute for ANSI S3.2-1989 (R 1995) *American National Standard Method for Measuring the Intelligibility of Speech over Communication Systems.*

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Foreword

[This Foreword is for information only and is not an integral part of ANSI S3.5-1997 *American National Standard Methods for Calculation of the Speech Intelligibility Index.*]

This Standard defines a method for computing a physical measure that is highly correlated with the intelligibility of speech under a variety of adverse listening conditions, such as noise, filtering, and reverberation. It is a major revision of ANSI S3.5-1969 (R 1986), *American National Standard Methods for the Calculation of the Articulation Index*. The most important changes in the present version of the Standard relate to the need to provide a general framework into which various methods for determining the input variables of the Speech Intelligibility Index model (e.g., the equivalent speech spectrum level, the equivalent noise spectrum level, and the equivalent hearing threshold level) can be incorporated. For some applications these methods already exist (e.g., the modulation transfer function for determining the apparent speech-to-noise ratio in reverberation), while others still may be developed in future revisions of this Standard. In addition, the generality of the Standard has been extended to include various measurement points (e.g., free-field for architectural acoustics or eardrum for telephony). The other changes of the Standard are due to new data which have been accumulated since 1969 for various parameters and procedures used in the calculations. These new data include spread of masking, standard speech spectrum level, and relative importance of various frequencies to speech intelligibility. Finally, the name has been changed from the Articulation Index to the Speech Intelligibility Index (SII). In this Standard, *speech intelligibility* refers to how well an individual understands speech.

It should be noted that SII should **not** be used as a substitute for determining speech intelligibility as described in ANSI S3.2-1989 (R 1995), *American National Standard Method for Measuring the Intelligibility of Speech over Communication Systems*.

This Standard was developed under the jurisdiction of Accredited Standards Committee S3, Bioacoustics, which has the following scope:

> *Standards, specifications, methods of measurement and test, and terminology, in the fields of psychological and physiological acoustics, including aspects of general acoustics, shock and vibration which pertain to biological safety, tolerance, and comfort.*

At the time this standard was submitted to Accredited Standards Committee S3, Bioacoustics, for final approval, the membership was as follows:

T. Frank, *Chair*
R.F. Burkard, *Vice Chair*
A. Brenig, *Secretary*

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	R.F. Burkard (*Alt.*)
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