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Standard Guide for Measuring Outdoor Sound Received from a Nearby Fixed Source[1]

This standard is issued under the fixed designation E 1780; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

This is one of a series of standards and guidelines for measurement and evaluation of community noise. Also in preparation is a standard method for preparing a measurement plan and a guide to determine the validity and significance of outdoor noise measurement data. Techniques and precautions in this guide are not fixed or mandatory and cannot replace the judgment of acoustical professionals. Rather, this guide is a summary of processes found to be productive and useful in ensuring that meaningful information will be gathered in an efficient manner about fixed sources of noise in a community as they each may exist. Others in this series include Guide E 1014, which covers manual A-Weighted measurements of outdoor noise using a simple meter, and Test Method E 1503. ANSI 12.18 provides a method of obtaining repeatable sound pressure level measurements of the sound emitted by a source. This document differs in that atmospheric and ground effects are not controlled. Thus, the results may not repeat if atmospheric conditions or ground conditions between the source and the measurement position change. This guide provides only a method of accurately documenting the sound levels occurring at the measurement position at the time of measurement.

1. Scope

1.1 This guide covers the measurement of outdoor sound due to a fixed sound source such as a siren, stationary pump, power plant, or music amphitheater. Procedures characterize the location, sound level, spectral content, and temporal characteristics of that sound source at the time of measurement. Users should be aware that wind and temperature gradients can cause significant variations in sound levels beyond 300 m (1000 ft). With appropriate caution, the use of measurements resulting from this guide include but are not limited to:

1.1.1 Assessing compliance with applicable regulations,

1.1.2 Monitoring the effectiveness of a noise reduction plan,

1.1.3 Verifying the effectiveness of measures for mitigation of noise impact,

1.1.4 Validating sound prediction models, and

1.1.5 Obtaining source data for use in sound prediction models.

1.2 This guide may be used according to Guide E 1779 and specified in the measurement plan.

1.2.1 This guide can also be used to conduct measurements without a plan provided an operator/observer whose qualifications are satisfactory to both the performing organization and the user of the results is present at all times during the measurements and who complies with the applicable requirements of this guide, including record keeping.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

C 634 Terminology Relating to Environmental Acoustics[2]

E 1014 Guide for Measurement of Outdoor A-Weighted Sound Levels[2]

E 1503 Test Method for Conducting Outdoor Sound Level Measurements Using a Digital Statistical Analysis System[2]

E 1779 Guide for Preparing a Measurement Plan for Conducting Outdoor Sound Measurements[2]

2.2 *ANSI Standards:*[3]

S1.4 Specification for Sound Level Meters

S1.11 Octave-band and Fractional Octave-band Analog and

[1] This guide is under the jurisdiction of ASTM Committee E33 on Environmental Acoustics and is the direct responsibility of Subcommittee E33.09 on Community Noise.

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[2] *Annual Book of ASTM Standards*, Vol 04.06.

[3] Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

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