



Standard Test Method for Determining A-Weighted Sound Power Level of Central Vacuum Power Units¹

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1. Scope

1.1 This test method calculates the overall A-weighted sound power level emitted by central vacuum power units, intended for operation in domestic applications. This standard applies to the power unit only at the power unit location. To test the sound power level of a central vacuum at the user's location, refer to Test Method [F1334](#).

1.2 A-weighted sound pressure measurements are performed on a mounted central vacuum power unit in a semi-reverberant room. This test method determines sound power by a comparison method for small noise sources, that is, comparison to a broad band reference sound source.

1.3 This test method describes a procedure for determining the A-weighted sound power level of small noise sources. This test method uses a non-special semi-reverberant room.

1.4 Results are expressed as A-weighted sound power level in decibels (referenced to 1 pW).

1.5 The values stated in inch pound units are to be regarded as the standard. The values in parentheses are for information only.

1.6 *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:²

- [C634](#) Terminology Relating to Building and Environmental Acoustics
- [E177](#) Practice for Use of the Terms Precision and Bias in

¹ This test method is under the jurisdiction of ASTM Committee [F11](#) on Vacuum Cleaners and is the direct responsibility of Subcommittee [F11.25](#) on Sound Measurement.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

ASTM Test Methods

[E691](#) Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

[F820](#) Test Method for Measuring Air Performance Characteristics of Central Vacuum Cleaning Systems

[F1334](#) Test Method for Determining A-Weighted Sound Power Level of Vacuum Cleaners

2.2 ANSI Standards:³

[S1.10](#) Method for the Calibration of Microphones

[S1.26](#) Method for the Calculation of the Absorption of Sound by the Atmosphere

[S1.43](#) Specifications for Sound Level Meters, IEC 804 and IEC 61672

[S12.31](#) Precision Methods for the Determination of Sound Power Levels of Broad Band Noise Sources in Reverberant Rooms

[S12.32](#) Precision Methods for Determination of Sound Power Levels for Discrete Frequency and Narrow Band Noise Sources in Reverberant Rooms

[S12.33](#) Engineering Methods for Determination of Sound Power Levels of Noise Sources in a Special Reverberant Test Room

2.3 ISO Standards:³

[ISO 3741](#), [3742](#), and [3743](#) are similar to and may be used in place of ANSI [S12.31](#), [S12.32](#), and [S12.33](#) respectively

2.4 IEC Standard:³

[60704.1](#) Test Code for the Determination of Airborne Acoustical Noise Emitted by Household and Similar Electrical Appliances

3. Terminology

3.1 Unless otherwise indicated, definitions are in accordance with Terminology [C634](#).

3.2 Definitions:

3.2.1 *population, n*—total of all of the units of the particular model or type, or both, of central vacuum power units being tested.

3.2.2 *population sample or sample, n*—three or more units, randomly taken from the population.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.