

AHRI Standard 275

2018 Standard for Application of Outdoor Unitary Equipment A-weighted Sound Power Ratings



AIR-CONDITIONING, HEATING,
& REFRIGERATION INSTITUTE

we make life better®

2311 Wilson Boulevard, Suite 400
Arlington, VA 22201, USA
www.ahrinet.org
PH 703.524.8800
FX 703.562.1942

IMPORTANT

SAFETY DISCLAIMER

AHRI does not set safety standards and does not certify or guarantee the safety of any products, components or systems designed, tested, rated, installed or operated in accordance with this standard/guideline. It is strongly recommended that products be designed, constructed, assembled, installed and operated in accordance with nationally recognized safety standards and code requirements appropriate for products covered by this standard/guideline.

AHRI uses its best efforts to develop standards/guidelines employing state-of-the-art and accepted industry practices. AHRI does not certify or guarantee that any tests conducted under its standards/guidelines will be non-hazardous or free from risk.

Note:

This Standard supersedes ANSI/AHRI Standard 275-2010.

This version of the standard differs from that of 2010 in the following ways:

- The 2015 Edition of AHRI Standard 270 is now used for the rating.
- Expanded the scope to include the list of the products covered by AHRI Standard 270: Air-source Unitary Heat Pumps, Heat Pump Pool Heaters, Unitary Air-conditioners and Variable Refrigerant Flow (VRF) System.

Note: Although this standard is meant as an application for equipment rated per AHRI Standard 270, other standards that provide rating(s) similar to AHRI Standard 270 may be able to use the methodology, techniques and procedures described within this standard.

TABLE OF CONTENTS

SECTION	PAGE
Section 1. Purpose	1
Section 2. Scope	1
Section 3. Definitions	1
Section 4. Procedure for Estimating A-weighted Sound Pressure Level(s).....	2
Section 5. Voluntary Conformance	11

TABLES

TABLE	PAGE
Table 1. Application Factors for Estimating A-weighted Sound Pressure Level(s) (Equipment Location Factor)	3
Table 2. Application Factors for Estimating A-weighted Sound Pressure Level(s) (Barrier Shielding Factor).....	4
Table 3. Application Factors for Estimating A-weighted Sound Pressure Level(s) (Sound Path Factor).....	6
Table 4. Distance Factor	6
Table 5. Calculation Procedures for Estimating A-weighted Sound Pressure Level	7
Table 6. Values Used to Combine Sound Levels for Multi-unit Installations	8
Table 7. Estimated A-weighted Sound Pressure Level for Figure 11 Installation Example	8
Table 8. Estimated A-weighted Sound Pressure Level for Figure 12 Installation Example	9
Table 9. Estimated A-weighted Sound Pressure Level for Figure 13 Installation Example	10
Table 10. Estimated A-weighted Sound Pressure Level for Figure 14 Installation Example	10

FIGURES

FIGURES	PAGE
Figure 1. On Ground or Roof – Single Reflective Surface.	3
Figure 2. On Side of Building – Single Reflective Surface.	3
Figure 3. On Ground or Roof – Two Adjacent Reflective Surfaces	3
Figure 4. On Side of Building – Two Adjacent Reflective Surfaces.	3
Figure 5. On Ground, Roof or Side of Building Wall - Between Two Opposite Reflecting Surfaces.....	4

TABLE OF CONTENTS (Continued)

FIGURE		PAGE
Figure 6.	Corner of Building (Top View)	5
Figure 7.	Corner of Flat Roof and Wall (Plan View).....	5
Figure 8.	Parapet around Flat Roof (Plan View).....	5
Figure 9.	Heavy Continuous Wall (Plan View)	6
Figure 10.	Sound Paths According to Table 3	6
Figure 11.	Example 1: Installation with No Barriers and One Reflective Surface (Top View).....	8
Figure 12.	Example 2: Installation with Barriers (Top View)	9
Figure 13.	Example 3: Installation with Two Reflective Surfaces (Top View).....	9
Figure 14.	Example 4: Installation with Multiple Units (Top View).....	10

APPENDICES

APPENDIX		PAGE
Appendix A.	References – Normative.....	12
Appendix B.	References - Informative.....	12
Appendix C.	Recommended Practices - Informative.....	13

APPLICATION OF OUTDOOR UNITARY EQUIPMENT A-WEIGHTED SOUND POWER RATINGS

Section 1. Purpose

1.1 Purpose. The purpose of this standard is to establish for outdoor unitary equipment: definitions, procedures for estimating A-weighted Sound Pressure Levels from the A-weighted Sound Power Ratings, and recommended application practices.

1.1.1 Intent. This standard is intended for the guidance of the industry, including manufacturers, engineers, installers, contractors and users.

1.1.2 Review and Amendment. This standard is subject to review and amendment as technology advances.

Section 2. Scope

2.1 Scope. This standard applies to the outdoor sections of factory-made air-conditioning and heat pump equipment as defined in the following AHRI standards, when rated in accordance with AHRI Standard 270.

2.1.1 AHRI Standard 210/240, *Unitary Air-conditioning and Air-source Heat Pump Equipment*;

2.1.2 AHRI Standard 340/360, *Commercial and Industrial Unitary Air-conditioning and Heat Pump Equipment* (cooling capacity ratings of equal to or less than 40.0 kW);

2.1.3 AHRI Standard 1230, *Variable Refrigerant Flow (VRF) Multi-split Air-conditioning and Heat Pump Equipment* (cooling capacity ratings of equal to or less than 40.0 kW);

2.1.4 ANSI/AHRI Standards 1160 (I-P) and 1161 (SI), *Heat Pump Pool Heaters*.

Section 3. Definitions

All terms in this document will follow the standard industry definitions in the *ASHRAE Terminology* website (<https://www.ashrae.org/resources--publications/free-resources/ashrae-terminology>) unless otherwise defined in this section.

3.1 Published Rating. A statement of the assigned values of those performance characteristics, under stated rating conditions, by which a unit may be chosen to fit its application. These values apply to all units of like nominal size and type (identification) produced by the same manufacturer. As used herein, the term Published Rating includes the rating of all performance characteristics shown on the unit or published in specifications, advertising or other literature controlled by the manufacturer, at stated rating conditions.

3.1.1 Application Rating. A rating based on tests performed at application Rating Conditions (other than Standard Rating Conditions).

3.1.2 Standard Rating. A rating based on tests performed at Standard Rating Conditions.

3.2 Rating Conditions. Any set of operating conditions under which a single level of performance results, and which cause only that level of performance to occur.

3.2.1 Standard Rating Conditions. Rating Conditions used as the basis of comparison for performance characteristics.