

OPERATIONS MANUAL

UNITARY LARGE EQUIPMENT CERTIFICATION PROGRAM



ULE OM – DECEMBER 2019

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PREFACE

The following manual outlines the procedures and policies of the Performance Certification Program for Unitary Large Equipment (ULE) operated by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI). This manual is to be used in conjunction with the AHRI General Operations Manual (GOM) for AHRI Certification Programs. Where the AHRI GOM and this product-specific manual differ, this product-specific operations manual shall prevail.

The revision of this manual supersedes all previous revisions. The current edition of this manual, as well as the AHRI GOM, can be accessed through the AHRI website, www.ahrinet.org.

The ULE Certification Program by AHRI provides for independent verification of the Unitary Large Equipment manufacturers' stated equipment performance. Safety criteria are not within the scope of this program.

Participation in the program is voluntary. Any manufacturer, regardless of AHRI membership, may obtain approval of Program Ratings and use of the AHRI ULE Certification Mark hereinafter referred to as the "Mark". The Mark is the Participant's public representation that the ratings of randomly selected samples have been verified by an independent laboratory in accordance with test procedures prescribed by this operations manual. A Certification Agreement is executed between the manufacturer and AHRI specifying the conditions under which such Ratings and the Mark may be used. No manufacturer has the right to use Program Ratings or to state that their products have been tested in conformance with the procedures outlined in this Rating Procedure unless and until they have received written authority from AHRI to use the Mark as applied to the specific approved Program Ratings.

This Operations Manual has been prepared to assure that administration of the program is carried out in a uniform manner. It is an amplification of the Certification Agreement signed by licensees and AHRI. General information, procedural details, and copies of forms are included in the Operations Manual. Provisions of the Operations Manual may be amended as provided in the Certification Agreement.

This certification program complies with requirements of the ISO/IEC Standard 17065:2012, *General Requirements for Bodies Operating Product Certification Systems*.

Note:

This manual supersedes the Unitary Large Equipment Operations Manual, January 2018.

**CERTIFICATION PROGRAMS OPERATIONS MANUAL FOR
UNITARY LARGE EQUIPMENT**

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1. Program Overview

1.1 Applicable Rating Standard. It is mandatory for program Participants to comply with the provisions of AHRI Standard 340/360-2015, *Performance Rating of Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment* with modifications outlined in Appendix D of this standard or AHRI Standard 365, *Commercial and Industrial Unitary Air-Conditioning Condensing Units* (Standard), . A copy of the Standard is available for download from the AHRI website, www.ahrinet.org.

1.2 Product Definitions. All terms in this document shall follow the AHRI GOM and the Standard definitions unless otherwise defined in this section.

1.2.1 Unitary Air-Conditioner. One (1) or more factory-made assemblies ordinarily including an evaporator or air cooling coil(s), an air moving device, compressor(s) and refrigerant condenser(s) (air-cooled, evaporative-cooled, and/or water-cooled) combination and may include a heating function.

1.2.2 Air-Source Unitary Heat Pump. One or more factory-made assemblies ordinarily including an indoor air-conditioning coil(s), an air moving device, compressor(s) and outdoor air coil(s), including means to provide heating and may include a cooling function.

1.2.3 Condensing Unit. A factory-made assembly of refrigeration components designed to compress and liquefy a specific refrigerant. It consists of one (1) or more refrigerant compressors, refrigerant condensers (air-cooled, evaporative – cooled, and/or water-cooled), condenser fans and motors (where used) and factory-supplied accessories.

1.2.4 Indoor Unit. A component of a split system central air-conditioner or heat pump that is designed to transfer heat between refrigerant and air, or refrigerant and water, and which consists of an indoor coil, an air movement device, and a temperature sensing control with the integrated controls for the matching Outdoor Unit.

1.2.5 Outdoor Unit. A component of a split system central air-conditioner or heat pump that is designed to transfer heat between refrigerant and air, or refrigerant and water, and which consists of an outdoor coil, compressor(s), an air moving device, and in addition for heat pumps, a heating mode expansion device, reversing valve, and defrost controls.

1.2.6 Single Packaged System. Any Unitary Air-Conditioner or Air-Source Unitary Heat Pump that has the means for air circulation and heat removal, air cleaning, and the controls thereof, in the same cabinet.

1.2.7 Split System. Any Unitary Air-Conditioner or Air-Source Unitary Heat Pump that has one or more of the major assemblies separated from the others.

1.3 Program Scope. This program applies to 50 Hz and 60 Hz Production Models of Unitary Large Equipment, as defined in Section 1.2. The program entails the following (also see Appendix A):

- Unitary Air-Conditioners and Air-Source Unitary Heat Pumps from 65,000 Btu/h to less than 250,000 Btu/h;
 - Single Packaged and Split Systems
 - Air-cooled and water-cooled
- Air-cooled Air-Conditioning Condensing Units from 135,000 Btu/h to less than 250,000 Btu/h;
- Air-Cooled Single Packaged Unitary Air-Conditioners from 250,000 Btu/h to less than 760,000 Btu/h.

1.3.1 Exceptions. New 60 Hz dry charge R-22 production models above 65,000 Btu/h are not within the scope of the certification program in U.S. and Canada.

1.4 Intended Market. The Intended Market for this certification program includes all products defined in Section 1.3 that are sold for use in the U.S. (including U.S. Territories) and Canada. Production models sold for use outside of the Intended Market may be optionally certified. If the Participant does not wish to carry certification of a model sold for use outside the intended market, this product shall carry a separate and unique model number from an existing AHRI certified model number to avoid market confusion.

All production models sold for use in the Intended Market shall be certified in accordance with the AHRI Standard Rating Conditions specified in Section 1.1 of the Applicable Rating Standard. 50 Hz and 60 Hz production models sold for use outside of the intended market, if certified, shall be rated in accordance with Appendix B.

1.5 Basic Model Groups (BMGs). A Participant's listings shall be grouped by BMG. A BMG is a grouping of models of similar performance with similar outdoor condenser and compressor characteristics. The required BMG divisions shall consist of the same:

- Condenser (Outdoor) Air Flow/Water Flow,
- Condenser (Outdoor) Finned Face Area,
- Compressor Nominal Performance,
 - Compressor Performance. Compressors with Total Refrigerating Capacities within $\pm 3\%$ fall in the same BMG; Alternate Compressors shall have capacities within $\pm 3\%$. Total Refrigerating Capacity is determined using AHRI Standard 540-2015 at:
 - Reference rating condition: Refrigeration, High
 - Frequency – 60 Hz
- Compressor Type; and
- Compressor Motor Design.

1.5.1 Optional Additional BMGs. A participant may choose to further subdivide its products into additional BMGs using the following optional characteristics:

- Volts
- Hertz
- Number of Refrigeration Circuits

2. Qualification Process

2.1 Original Equipment Manufacturer (OEM) Applicants. With the additions noted below, the OEM qualification process shall proceed according to the AHRI GOM, Section 4.

STEP 2.1.1 Certification Application Package. In addition to the Application for AHRI Certification, Annual Sales Volume Form, and product-specific ratings and data, noted in the AHRI General Operations Manual, Section 4, STEP 4.1, Applicants shall submit the following documentation to AHRI:

- One test report for each BMG; or when an AEDM is available, one test report for two separate BMGs plus a test report generated using an AEDM for each additional BMG;
- An Applicant requesting AHRI to submit data to CEC, DOE, FTC, and NRCan shall submit third-party authorization, compliance forms and other necessary information; and
- Additional information may be needed to meet EPA ENERGY STAR® program requirements.

Electronic forms shall be obtained from AHRI (available on www.ahrinet.org under the Product-Specific Certification Program.

STEP 2.1.2 Processing Application Package.

STEP 2.1.2.1 Performance Certification Agreement for Original Equipment Manufacturer (OEM Agreement). No further action required beyond that listed in Section 4, STEP 4.2 of the AHRI GOM.

STEP 2.1.2.2 Participation and Licensing Fee Invoice. Payment of the Participation and Licensing Fee is due within 30 calendar days of the invoice issue date. Testing shall not be conducted until the invoice is paid in full. No further action required beyond that listed in Section 4, STEP 4.2 of the AHRI GOM.

STEP 2.1.3 Selection and Acquisition of Test Samples.

STEP 2.1.3.1 Number of Qualification Tests.

- For 65,000 Btu/h to less than 250,000 Btu/h. 30% of an Applicant's BMGs shall be tested, with a minimum of two (2) models. Fractional numbers shall be rounded to the nearest whole number using traditional rounding methods.
- For 250,000 Btu/h to less than 760,000 Btu/h. 20% of an Applicant's BMGs shall be tested, with a minimum of two (2) models. Fractional numbers shall be rounded to the nearest whole number using traditional rounding methods.

STEP 2.1.3.2 Acquisition of Qualification Test Samples/Selection Criteria.

- For 65,000 Btu/h to less than 250,000 Btu/h. Within 60 calendar days of a request from AHRI, the Applicant shall have samples available for selection.
- For 250,000 Btu/h to less than 760,000 Btu/h. Within 90 calendar days of a request from AHRI, the Applicant shall have samples available for selection.

Samples shall be acquired in accordance with Section 3 of this manual. All samples shall be provided with the equipment listed in Section 3.6 of this manual.

STEP 2.1.4 Qualification Testing. AHRI shall supply the Independent Third-party Laboratory Contracted by AHRI (Laboratory) with the Published Ratings. The Laboratory shall conduct the testing of the samples in accordance with the Standard, against the Published Ratings.

STEP 2.1.4.1 Operating Tests. In addition to the Performance Rating tests, the following Operating Tests shall be conducted for all qualification tests:

- Maximum Operating Conditions (MOC)
- Insulation Efficiency
- Low Temperature Operation
- Condensate Disposal

If any of these samples fail any of the Operating Tests, the second sample selected shall pass in order to qualify into the program. If the second sample does not pass, then that model and BMG shall not be entered into the AHRI Directory of Certified Product Performance (Directory) and the Applicant shall cease production and sale of the failed model and BMG in order to qualify into the certification program. A new model shall be selected and tested to continue the qualification process.

STEP 2.1.4.2 Successful Completion of All Qualification Tests. If all qualification tests pass proceed to STEP 2.1.5.

STEP 2.1.4.3 First Sample Qualification Test Failure. Refer to Section 4, STEP 4.4.2 of the AHRI GOM for details regarding the first sample qualification failure options.

STEP 2.1.4.4 Second Sample Qualification Test Failure. Refer to Section 4, STEP 4.4.3 of the AHRI GOM for details regarding the second sample qualification failure options.

STEP 2.1.5 Welcome to the Program. No further action required beyond that listed in Section 4, STEP 4.5 of the AHRI GOM.

2.2 Private Brand Marketer (PBM) Applicants. With the additions noted below, the PBM qualification process shall proceed according to the AHRI GOM, Section 5.

PBM Applicants are not required to undergo qualification testing. PBM product certification is contingent upon the certification of the associated OEM product.

STEP 2.2.1 Certification Application Package. In addition to the Application for AHRI Certification Form noted in the AHRI GOM, Section 5, STEP 5.1, Applicants shall submit the following documentation to AHRI:

- An Applicant requesting AHRI to submit data to CEC, DOE, FTC, and NRCan shall submit third-party authorization, compliance forms and other necessary information.
- Additional information may be needed to meet EPA ENERGY STAR® program requirements.

STEP 2.2.2 Processing Application Package.

STEP 2.2.2.1 Performance Certification Agreement for Private Brand Marketer (PBM Agreement). No further action required beyond that listed in Section 5, STEP 5.2.1 of the AHRI GOM.

STEP 2.2.2.2 OEM Agreement on Behalf of the PBM Applicant. No further action required beyond that listed in Section 5, STEP 5.2.2 of the AHRI GOM.

STEP 2.2.2.3 Licensing Fee Invoice. Payment of the Licensing Fee is due within 30 calendar days of the invoice issue date.

STEP 2.2.3 Welcome to the Program. No further action required beyond that listed in Section 5, STEP 5.3 of the AHRI GOM.

3. Equipment Selection And Testing

3.1 Annual Testing Requirement.

- For 65,000 Btu/h to less than 250,000 Btu/h. 20% of a Participant's BMGs, shall be tested annually, with a minimum of one (1) model. Fractional numbers shall be rounded to the nearest whole number using traditional rounding methods.
- For 250,000 Btu/h to less than 760,000 Btu/h. 20% of a Participant's BMGs, shall be tested annually, with a minimum of one (1) model. Fractional numbers shall be rounded to the nearest whole number using traditional rounding methods.

3.2 Location of Tests. Testing shall be performed at the Laboratory and the sample shall be installed in the test facility in accordance with the Participant's published installation instructions in printed or electronic format.

3.3 Selection of Test Samples. Selections shall be made based on data contained in the Directory. AHRI shall inform the Participant, in writing, of the sample(s) selected for test.

3.3.1 Quarterly Loading. Participants shall deliver their samples to the Laboratory on a quarterly basis, spread out over the first three (3) quarters of a calendar year. AHRI shall notify the Participant, in writing, of the number and type of samples that must be delivered per quarter to the Laboratory.

3.4 Method of Acquiring Test Samples. AHRI or the Laboratory shall make a Random Sample Selection or Random Component Selection. The Laboratory may witness the assembly of the Random Component Selection, at AHRI's direction. For the latter, the Laboratory is to be present at the final assembly and quality functional test and the unit is to be sealed and shipped to the test lab. Selected samples shall be shipped to the Laboratory accompanied by the Participant's published installation instructions in printed or electronic format. Refer to Section 9 of the AHRI GOM.

3.5 Sample Acquisition Timeframe. The Participant shall either deliver its first quarter set of selected sample(s) to the Laboratory within the first quarter selection deadline, or by 60 calendar days of notification of selections from AHRI for units from 65,000 Btu/h to less than 250,000 Btu/h, and within 90 calendar days for units from 250,000 Btu/h to less than 760,000 Btu/h, whichever deadline comes first. The participant shall provide samples per the deadlines set by AHRI per Section 3.3.1.

The Participant shall deliver the selected sample(s) to the Laboratory within 14 calendar days of Random Sample Selection or Random Component Selection. Failure to deliver the sample within the specified timeframe shall be grounds for a program violation.

3.6 Required Equipment Provisions. The Participant shall provide a complete system and a punch list (see Appendix C) to the Laboratory. The Participant is responsible for shipping all necessary equipment and parts to the Laboratory in order to ensure that the sample functions properly and test(s) can be performed in accordance with the Standard.

3.7 Break-in Operation and Start-Up of Test Units. The Participant may instruct the Laboratory to operate the equipment for a specified number of "break-in" hours prior to testing, not to exceed:

- 75 hours at ambient conditions (≥ 60 °F); and
- 20 hours inside the test chamber at conditions specified by the Participant.

The Participant is required to pay all break-in costs directly to the Laboratory.

3.8 Contact List for Testing Support. Within two (2) calendar weeks of the original selection by AHRI, the Participant shall provide a contact list for testing support to AHRI and the Laboratory, using the punch list in Appendix C. The Participant is responsible for notifying AHRI and the Laboratory of any changes to the contact list that occur during a testing year.

3.9 Certified Data. In accordance with the Standard, the following certified ratings are verified by test:

3.9.1 Air-Cooled and Water-Cooled Unitary Air-Conditioners from 65,000 Btu/h to below 250,000 Btu/h

- Standard Rating Cooling Capacity, Btu/h;
- Energy Efficiency Ratio (EER), Btu/W·h; and
- Integrated Energy Efficiency Ratio (IEER), Btu/W·h.

3.9.2 Air-Cooled Unitary Heat Pumps from 65,000 Btu/h to less than 250,000 Btu/h:

- Standard Rating Cooling Capacity, Btu/h;
- Energy Efficiency Ratio (EER), Btu/W·h;
- High Temperature Heating Standard Rating Capacity, Btu/h;
- High Temperature Coefficient of Performance (COP 47°F);
- Low Temperature Heating Standard Rating Capacity, Btu/h;
- Low Temperature Coefficient of Performance (COP 17°F); and
- Integrated Energy Efficiency Ratio (IEER), Btu/W·h.

3.9.3 Air-Cooled Air-Conditioning Condensing Units from 135,000 Btu/h to less than 250,000 Btu/h:

- Standard Rating Cooling Capacity, Btu/h;
- Energy Efficiency Ratio (EER), Btu/W·h; and
- Integrated Energy Efficiency Ratio (IEER), Btu/W·h.

3.9.4 Air-Cooled Single Packaged Unitary Air-Conditioners from 250,000 Btu/h to less than 760,000 Btu/h:

- Standard Rating Cooling Capacity, Btu/h;
- Energy Efficiency Ratio (EER), Btu/W·h; and
- Integrated Energy Efficiency Ratio (IEER), Btu/W·h.

3.10 Voltage. Standard Rating tests shall be conducted using the nameplate rated voltage and frequency specified in the Standard. For equipment with dual nameplate ratings, tests shall be performed at both voltages or at the lower of the two if only a single Standard Rating is published.

3.11 Additional Tests during First Year of Program Participation. For a Participant in its first year of the program, the following additional tests shall be conducted for each selected sample at the expense of the Participant:

- Maximum Operating Conditions (MOC)
- Insulation Efficiency
- Low Temperature Operation
- Condensate Disposal

If a sample fails any of these tests, the second sample selected shall pass in order to keep the BMG unaffected. If the second sample does not pass these tests, then the Participant shall stop all sales and marketing of that model and BMG and that BMG shall be removed from the Directory.

3.12 Test Failures.

3.12.1 Options Following 1st Sample Failure. When the Participant is notified of a first sample certified rating failure, the Participant has seven (7) calendar days to select one of the following options:

- Re-rate only the failed metric for all models within the failed sample's BMG proportionate to the failed test's results;
- Test second sample of the same model (sample must be available within the timeframe and procedure allotted in Section 3.4 following notification of decision to AHRI via Manufacturer's Decision Form [MDF]); or
- Obsolete the model, which also obsoletes all models within the corresponding BMG.

3.12.2 Options Following 2nd Sample Failure. When the Participant is notified of a second-sample certified rating failure, the Participant has seven (7) calendar days to select one of the following options:

- Re-rate only the failed metric for all models within the failed sample's BMG proportionate to the failed test's results; or
- Obsolete the model, which also obsoletes all models within the corresponding BMG.

3.13 Energy Policy Act (EPACT) Re-rating Requirements. US Energy Policy Act (EPACT) units are commercial equipment covered under 42 U.S. Code § 6313, that are sold in the U.S. Market.

- If an EPACT-covered model requires re-rating below the EPACT minimum efficiency, it shall be obsoleted and listed on the Directory with the appropriate "WAS" ratings.
- In the event of failure, all models in the BMG shall be re-rated proportionately as described above. Those re-rated at less than the EPACT minimum efficiencies shall be obsoleted and listed as previously stated.
- Should a chosen model fail but required rating still meets the EPACT minimum efficiency, all models in the basic model group shall be re-rated proportionately; any model which then does not meet the EPACT minimum efficiencies, shall similarly be obsoleted and listed. Any such model however may be tested to determine its pass/fail status at the expense of the Participant.

4. Challenge Tests

Refer to Section 10 of the AHRI GOM.

5. AHRI Directory of Certified Product Performance

All certified products shall be listed in the Directory, www.ahridirectory.org. Certification shall not be implied nor claimed for any product not listed in the Directory. Except as noted below, the Participant shall follow the steps outlined in Section 11 of the AHRI GOM.

5.1 Publication of Ratings in Certified Directory. The following information pertaining to each model certified shall be published in the Directory:

- AHRI Certified Reference Number;
- Model Status;
- Brand Name;
- Series Name;
- Model Number(s) or Designation(s);
- Indoor Unit Model Number
- AHRI Type;
- Refrigerant Type;
- Cooling Capacity 95°F, Btu/h;
- Energy Efficiency Ratio (EER) 95°F, Btu/W·h;
- Integrated Energy Efficiency Ratio (IEER);
- Heating Capacity 47°F, Btu/h;
- Coefficient of Performance (COP) 47°F;
- Heating Capacity 17°F, Btu/h;
- Coefficient of Performance (COP) 17°F;
- Full Load Indoor Coil Air Quantity, SCFM;
- Frequency (Hertz); and
- Sold in;

5.2 Data Forms. Each Participant shall list its products by BMG. OEM and PBM Participants shall submit/edit product data via the Directory.

6. Assessment and Payment of Certification Fees

Refer to Section 9 and 12 of the AHRI General OM.

7. Issuance of Violations and/or Termination

Refer to Section 14 of the AHRI General OM.

8. Program Hierarchy, Complaints, and the Appeals Process

Refer to Section 15 of the AHRI General OM.

9. Proper Use of the AHRI Certification Mark and Claims to Certification

Refer to the Section 8 of the AHRI General OM.

APPENDIX A

TYPES OF UNITARY LARGE EQUIPMENT

Table A1. Commercial and Industrial Air-Conditioning Equipment Certification

| Designation | AHRI Type | Rating Standard | Certified Capacity Range |
|---|-----------|-----------------|--|
| Single Package, Air Cooled | SP-A | AHRI-340/360 | ≥65,000 Btu/h and <760,000 Btu/h |
| Single Package, Water Cooled | SP-W | AHRI-340/360 | ≥65,000 Btu/h and <250,000 Btu/h |
| Single Package, Evaporative Cooled | SP-E | AHRI-340/360 | no certification |
| Year-Round Single Packaged, Air Cooled | SPY-A | AHRI-340/360 | ≥65,000 Btu/h and <760,000 Btu/h |
| Year-Round Single Packaged, Water Cooled | SPY-W | AHRI-340/360 | Not Certified |
| Year-Round Single Packaged, Evaporative Cooled | SPY-E | AHRI-340/360 | Not Certified |
| Condensing Unit, Coil and Blower, Air Cooled | RCU-A-CB | AHRI-340/360 | ≥65,000 Btu/h and <250,000 Btu/h as a system ** |
| Condensing Unit, Coil and Blower, Water Cooled | RCU-W-CB | AHRI-340/360 | Not Certified |
| Condensing Unit, Coil and Blower, Evaporative Cooled | RCU-E-CB | AHRI-340/360 | Not Certified |
| Year-Round Condensing Unit, Coil and Blower, Air Cooled | RCUY-A-CB | AHRI-340/360 | ≥65,000 Btu/h and <250,000 Btu/h as a system ** |
| Year-Round Condensing Unit, Coil and Blower, Water Cooled | RCUY-W-CB | AHRI-340/360 | Not Certified |
| Year-Round Condensing Unit, Coil and Blower, Evaporative Cooled | RCUY-E-CB | AHRI-340/360 | Not Certified |
| Remote Condenser, Air Cooled | RC-A | AHRI-340/360 | ≥65,000 Btu/h and <250,000 Btu/h as a system |
| Remote Condenser, Water Cooled | RC-W | AHRI-340/360 | Not Certified |
| Remote Condenser, Evaporative Cooled | RC-E | AHRI-340/360 | Not Certified |
| Condensing Unit, Coil Alone, Air Cooled | RCU-A-C | AHRI-340/360 | ≥65,000 Btu/h and <250,000 Btu/h as a system |
| Condensing Unit, Coil Alone, Water Cooled | RCU-W-C | AHRI-340/360 | Not Certified |
| Condensing Unit, Coil Alone, Evaporative Cooled | RCU-E-C | AHRI-340/360 | Not Certified |
| Year-Round Remote Condenser, Air Cooled | RCY-A | AHRI-340/360 | Not Certified |
| Year-Round Remote Condenser, Water Cooled | RCY-W | AHRI-340/360 | Not Certified |
| Year-Round Remote Condenser, Evaporative Cooled | RCY-E | AHRI-340/360 | Not Certified |
| Remote Condensing Unit, Air Cooled | RCU-A | AHRI 365 | ≥135,000 Btu/h and <250,000 Btu/h as a system ** |
| Remote Condensing Unit, Water Cooled | RCU-W | AHRI-365 | Not Certified |
| Remote Condensing Unit, Evaporative Cooled | RCU-E | AHRI-365 | Not Certified |

Note ** - Remote condensing units below 135,000 Btu/h must be certified as a system to AHRI Standard 340/360 and optionally can be certified as a system ≥135,000 Btu/h and <250,000 Btu/h or as a condensing unit only ≥135,000 Btu/h and <250,000 Btu/h.

Table A2. Commercial and Industrial Air-Conditioning Heat Pump Equipment Certification

| Designation | AHRI Type | | Rating Standard | Cooling Capacity Range |
|--|---------------------|--------------|-----------------|----------------------------------|
| | Heating and Cooling | Heating Only | | |
| Single Package, Air Cooled | HSP-A | HOSP-A | AHRI-340/360 | ≥65,000 Btu/h and <250,000 Btu/h |
| Remote Outdoor Coil | HRC-A-CB | HORC-A-CB | AHRI-340/360 | Not Certified |
| Remote Outdoor Coil with No Indoor Fan | HRC-A-C | HORC-A-C | AHRI-340/360 | Not Certified |
| Split System | HRCU-A-CB | HORCU-A-CB | AHRI-340/360 | ≥65,000 Btu/h and <250,000 Btu/h |
| Split System with no Indoor Fan | HRCU-A-C | HORCU-A-C | AHRI-340/360 | ≥65,000 Btu/h and <250,000 Btu/h |

APPENDIX B

CERTIFICATION OF MODELS RATED WITH INTERNATIONAL RATING CONDITIONS

Certification of models rated with International Rating Conditions shall be certified using ULE OM and the GOM, with the following exceptions:

B1. Basic Model Groups (BMGs). See Section 1.5.

B1.1 Optional Additional BMGs. In addition to the options in Section 1.5.1, a participant may choose to further subdivide its international products into separate BMGs from the North America, using the following options:

- *Market*. The BMGs can be subdivided into 2 groups based on whether it is sold in U.S. & Canada or Outside of U.S. and Canada.
- *Rating Conditions*. The BMGs can be subdivided into 2 groups based on whether it is rated using AHRI Rating Conditions or International Rating Conditions.

B2. Annual Testing Requirements.

B2.1 For 65,000 Btu/h to less than 250,000 Btu/h. 20% of a Participant's BMGs certified to International Rating Conditions, shall be tested annually, with a minimum of one (1) model. Fractional numbers shall be rounded to the nearest whole number using traditional rounding methods.

B2.2 For 250,000 Btu/h to less than 760,000 Btu/h. 20% of a Participant's BMGs certified to International Rating Conditions, shall be tested annually, with a minimum of one (1) model. Fractional numbers shall be rounded to the nearest whole number using traditional rounding methods.

B2.3 BMG Models with both AHRI Standard Ratings and International Ratings. BMGs that have certified ratings for both AHRI Standard and International Rating Conditions shall be counted only once, under BMGs with AHRI Standard Rating Conditions.

B3. Certified Data. In accordance with the Standard, the following certified ratings are verified by test:

B3.1 Certified Data at International Rating Conditions. The participant shall certify the performance rating at one or more of the international rating conditions, as specified in Table B1. The participant may further choose to certify additional operating conditions specified in Table B3. Certification tests shall be conducted at all conditions at which the participant certifies the equipment.

B3.1.1 Air-Cooled and Water-Cooled Unitary Air-Conditioners from 65,000 Btu/h [19,000 W] to below 250,000 Btu/h [73,200 W]

- Cooling Capacity at T1, T2, and/or T3, Btu/h; as applicable;
- Energy Efficiency Ratio (EER_{T1}, EER_{T2}, EER_{T3}) T1, T2, and/or T3, Btu/W·h, and Coefficient of Performance (COP_{T1}, COP_{T2}, COP_{T3}) at T1, T2, and/or T3, W/W; as applicable; and
- Extra High Temperature Operating Requirement, as applicable.

B3.1.2 Air-Cooled Unitary Heat Pumps from 65,000 Btu/h [19,000 W] to less than 250,000 Btu/h [73,200 W]

- Cooling Capacity at T1, T2, and/or T3, Btu/h; as applicable;
- Energy Efficiency Ratio (T1, T2, and/or T3, Btu/W·h, and Coefficient of Performance (COP_{T1}, COP_{T2}, COP_{T3}) at T1, T2, and/or T3, W/W; as applicable;
- Heating Capacity at H1, H2, and/or H3, Btu/h; as applicable;
- Coefficient of Performance (COP_{H1}, COP_{H2}, COP_{H3}) at H1, H2, and/or H3; as applicable; and
- Extra High Temperature Operating Requirement, as applicable.

B3.1.3 *Air-Cooled Single Packaged Unitary Air-Conditioners from 250,000 Btu/h [73,200 W] to less than 760,000 Btu/h [220,000 W]:*

- Cooling Capacity at T1, T2, and/or T3, Btu/h; as applicable;
- Energy Efficiency Ratio (EER_{T1}, EER_{T2}, EER_{T3}) T1, T2, and/or T3, Btu/W·h, and Coefficient of Performance (COP_{T1}, COP_{T2}, COP_{T3}) at T1, T2, and/or T3, W/W; as applicable; and
- Extra High Temperature Operating Requirement, as applicable.

B4 *Certification Requirements.* Unitary Large Air-Conditioners and Heat Pumps Production models sold for use outside the intended market are eligible for AHRI certification at International Rating Conditions and shall be rated at one or more of the conditions shown in Table B1. Certification tests shall follow all the conditions specified in the applicable rating standard, except for the requirements specified in Section B.1, B.2, and B.3. Certification tests shall be conducted at all conditions at which the participant certifies the equipment.

| Table B1. International Standard Rating Conditions (for I-P Standards) | | | |
|---|---|----------------------------|------------------------------|
| Cooling – Temperature Conditions | T1 (Moderate Climates) | T2 (Cool Climates) | T3 (Hot Climates) |
| Indoor | 80.6°F DB ¹ & 66.2°F WB ² | 69.8°F DB & 59.0°F WB | 84.2°F DB & 66.2°F WB |
| Outdoor | 95.0°F DB & 75.2°F WB | 80.6°F DB & 66.2°F WB | 114.8°F DB & 75.2°F WB |
| Heating – Temperature Conditions | H1 (Warm Climates) | H2 (Moderate Climates) | H3 (Cold Climates) |
| Indoor | 68.0°F DB and 59.0°F WB max. | 68.0°F DB & 59.0°F WB max. | 68.0°F DB and 59.0°F WB max. |
| Outdoor | 44.6°F DB and 42.8°F WB | 35.6°F DB & 33.8°F WB | 19.4°F DB & 17.6°F WB |
| Note: 1. DB = dry-bulb 2. WB = wet-bulb | | | |

B4.1 *External Static Pressure.* The External Static Pressure shall be adjusted using Table B2.

B4.2 *Airflow.* The unit shall run at the rated airflow at the respective International Rating Condition temperature, specified by the manufacturer. Airflow shall be adjusted in accordance to Section 6, of the Applicable Rating Standard. The airflow shall be adjusted within ±3% of the rated airflow.

B4.3 *Certified Metrics.* Production models sold for use outside of the intended market may be optionally certified to the following metrics, as shown in Table B3, at the respective rating conditions.

| Rated Cooling Capacity, Btu/h·1000 ¹ | Minimum External Static Pressure (in. H ₂ O) ^{2,3} |
|---|--|
| 65 ≤ 68 | 0.20 |
| 69 ≤ 102 | 0.25 |
| 103 ≤ 154 | 0.30 |
| 155 ≤ 280 | 0.40 |
| 281 ≤ 399 | 0.50 |
| 400 ≤ 502 | 0.60 |
| ≥ 503 | 0.70 |

¹ Rated full load Cooling Capacity for units with cooling function; high temperature Heating Capacity for heating-only units.
² The tolerance for external static pressure (averaged during the run time) for all equipment is -0 in. H₂O, +0.05 in. H₂O
³ Standard ratings shall be determined and tested with manufacturer standard, lowest level of air filtration. For units with no filters, static pressure allowance of 0.08 in. H₂O shall be added to the external static pressure. If higher filtration is offered then the unit shall be tested without filters, at an additional 0.08 in. H₂O external static pressure.

| Metric | Rating Condition |
|------------------|------------------|
| Cooling Capacity | T1, T2, T3 |
| EER (COP) | T1, T2, T3 |
| Heating Capacity | H1, H2, H3 |
| COP | H1, H2, H3 |

B4.4 Cooling Temperature Conditions. The international T1, T2, and T3 temperature conditions specified in Table B1 shall be considered Standard Rating Conditions for the determination of Cooling Capacity and energy efficiency.

B4.5 Heating Temperature Conditions. The international H1, H2, and H3 temperature conditions specified in Table B1 shall be considered Standard Rating Conditions for the determination of Heating Capacity.

B4.6 Optional Operating Requirements. Participant may choose to optionally certify equipment to the conditions for the operating tests specified in Table B4. The requirements of the optional operating condition tests are specified below.

B4.6.1 Extra High Temperature Operating Requirement. Unitary Air Cooled Air-Conditioners and Heat Pump Equipment shall pass the following extra high temperature operating condition test with an indoor-coil at the T3 condition airflow rate as determined under Section 6, AHRI Standard 340/360.

B4.6.1.1 Temperature Conditions. Temperature conditions shall be maintained as shown in Table B3 ± 1.0°F [0.6°C].

B4.6.1.2 Voltages. Tests shall be run at the unit’s rated voltage.

B4.6.1.3 Procedure. Unitary Air Cooled Air-Conditioners and Heat Pump Equipment shall operate continuously at full capacity for 2 hours at the temperature conditions and voltage(s) specified.

B4.6.1.4 Requirements. During the test, the equipment shall operate without failure of any of its components.

| Table B4. Conditions for Operating Requirement Tests for Air-cooled Equipment | | | | |
|--|--------------------------|------------------------|------------------------|-----------------------------|
| TEST | INDOOR SECTION | | OUTDOOR SECTION | |
| | Air Entering Temperature | | | |
| | Dry-Bulb °F [°C] | Wet-Bulb °F [°C] | Dry-Bulb °F [°C] | Wet-Bulb °F [°C] |
| Extra High Temperature Operating Conditions | 80.0 [26.7] | 67.0 [19.4] | 125.6 [52.0] | 87.8 ¹ {31.0} |
| Note: 1. The wet-bulb temperature condition is not required when testing air-cooled condensers which do not evaporate condensate. | | | | |

B5. Options Following International Rating Condition Optional Operating Requirement Test Failure. If the Participant’s model does not comply with an Optional Operating Requirement test (see Appendix B), the model shall no longer be listed as compliant to the Optional Operating Requirement on the AHRI Directory and AHRI Certificate.

Failure of Optional Operating Requirement test shall not count towards the participant’s standing in the certification program.

B5.1 Options Following 1st Sample Failure

- Accept non-compliance, the model shall no longer be listed as compliant to the Optional Operating Requirement on the AHRI Directory and AHRI Certificate; or
- Test second sample of the same model (sample must be available within the timeframe and procedure allotted in Section 3.4 following notification of decision); or
- Obsolete the model, which also obsoletes all models within the corresponding BMG. This option also accepts non-compliance.

B5.2 Options Following 2nd Sample Failure

- Accept non-compliance, the model shall no longer be listed as compliant to the Optional Operating Requirement on the AHRI Directory and AHRI Certificate; or
- Obsolete the model, which also obsoletes all models within the corresponding BMG. This option also accepts non-compliance.

B6 Publication of Ratings at International Rating Conditions in Certified Directory. The following information pertaining to each model certified shall be published in the Directory:

- AHRI Certified Reference Number;
- Model Status;
- Name of Manufacturer;
- Brand Name;
- Series Name;
- Model Number(s) or Designation(s);
- AHRI Type;
- Refrigerant;
- Standard Rating Cooling Capacity at T1 (CoolingCapacity_{T1}), Btu/h (W); if applicable;
- Standard Rating Cooling Capacity at T2 (CoolingCapacity_{T2}), Btu/h (W); if applicable;
- Standard Rating Cooling Capacity at T3 (CoolingCapacity_{T3}), Btu/h (W); if applicable;

- Energy Efficiency Ratio at T1 (EER_{T1}), Btu/W·h and Co-efficient of Performance at T1 (COP_{T1}); if applicable;
- Energy Efficiency Ratio at T2 (EER_{T2}), Btu/W·h and Co-efficient of Performance at T2 (COP_{T2}); if applicable;
- Energy Efficiency Ratio at T3 (EER_{T3}), Btu/W·h and Co-efficient of Performance at T3 (COP_{T3}); if applicable;
- Standard Rating Heating Capacity at H1 ($HeatingCapacity_{H1}$), Btu/h (W); if applicable;
- Standard Rating Heating Capacity at H2 ($HeatingCapacity_{H2}$), Btu/h (W); if applicable;
- Standard Rating Heating Capacity at H3 ($HeatingCapacity_{H3}$), Btu/h (W); if applicable;
- Coefficient of Performance (COP_{H1}) at H1; if applicable;
- Coefficient of Performance (COP_{H2}) at H2; if applicable;
- Coefficient of Performance (COP_{H3}) at H3; if applicable;
- Extra High Temperature Operating Requirement;
- Rated Full Load Indoor Coil Air Quantity at T1, SCFM; if applicable;
- Rated Full Load Indoor Coil Air Quantity at T2, SCFM; if applicable;
- Rated Full Load Indoor Coil Air Quantity at T3, SCFM; if applicable;
- Rated Full Load Indoor Coil Air Quantity at H1, SCFM; if applicable;
- Rated Full Load Indoor Coil Air Quantity at H2, SCFM; if applicable;
- Rated Full Load Indoor Coil Air Quantity at H3, SCFM; if applicable; and
- Frequency (Hertz)

APPENDIX C

AHRI UNITARY LARGE AIR (ULE) CERTIFICATION PROGRAM TEST - PUNCH LIST

The ULE Punch List can be downloaded at www.ahrinet.org

APPENDIX D

MODIFICIAITONS MADE TO AHRI STANDARD 340/360-2015

- D1. Certification testing of units that are within the scope of AHRI 340/360-2015 shall be tested without the use of Barometric Pressure corrections, as described in Appendix D *ATMOSPHERIC PRESSURE CORRECTION – NORMATIVE*, of AHRI Standard 340/360.
- D2. Removed Sections from AHRI Standard 340/360. The following sections from AHRI Standard 340/360-2015 shall not be used when conducting AHRI Certification Testing
- D2.1. Table 3, footnote 6: All ratings are at standard atmospheric pressure. Measured data shall be corrected to an atmospheric pressure of 14.696 psia in accordance with Appendix D
- D2.2 Section 6.2.4.2 Step 2. All test data shall then be corrected for atmospheric pressure, as defined in Appendix D
- D2.3 Section 6.2.5.2 Step 2. The test data shall then be corrected for atmospheric pressure as defined by Appendix D.
- D2.4 Section 6.2.6.2 Step 2. The test data shall then be corrected for atmospheric pressure as defined by Appendix D.
- D2.5 Section 6.2.7 Example calculations. Appendix G contains several examples that explain the correction for atmospheric pressure, calculation of IEER and calculation of tolerances. The examples are grouped by the three rating categories defined in Section 6.2.
- D2.6 Section F2 Atmospheric Pressure Corrections. The test derived capacity and efficiency shall be corrected to a standard atmospheric pressure of 14.696 psia (29.92 in Hg) using the procedure defined in Appendix D.
- D2.7 Appendix D *ATMOSPHERIC PRESSURE CORRECTION – NORMATIVE*
- D3. Modifications to Sections from AHRI Standard 340/360. The following sections from AHRI Standard 340/360-2015 shall be modified as indicated below when conducting AHRI Certification Testing
- D3.1 Section 6.1.3.2 Atmospheric Pressure Corrections. ~~Standard Ratings for all products covered by this standard shall be based on a standard air atmospheric pressure of 14.696 psi.~~ Cooling and Heating Capacity, EER, IEER and COP measurements obtained during test shall be corrected to Standard Air using the procedure in Appendix D. The test shall not be conducted if the atmospheric pressure is below 13.7 psia.
- D3.2 Section 6.2.4.3 Step 3. ~~The atmospheric pressure corrected rating shall be adjusted for cyclic degradation using the procedures in Section 6.2.3.~~
- D3.3 Section 6.2.4.4 Step 4. ~~The atmospheric corrected test results including adjustments for cyclic degradation from step 3 shall then be used to calculate the IEER using the procedures defined in Section 6.2.2. For example calculations, see Appendix G.~~
- D3.4 Section 6.2.5.3 Step 3. ~~If the corrected rating points are within 3% of the desired IEER rating point of 75%, 50% and 25%, they shall be used directly. If there are corrected ratings points above and below the desired IEER rating of 75%, 50%, and 25% then the rating data the IEER rating point shall be determined using linear interpolation. If the corrected rated Percent Load is greater than the Percent Load for 75%, 50% or 25% by more than 3% then the ratings data at the condenser temperature required for the rating point shall be used along with the degradation procedure defined in Section 6.2.~~
- D3.5 Section 6.2.5.4 Step 4. ~~The corrected rating point data from step 3 shall then be used to calculate the IEER using the procedures defined in Section 6.2.3.~~

D3.6 Section 6.2.6.3 Step 3. If any of the corrected-rating points are within 3% of the desired IEER rating point of 75%, 50% and 25%, they shall be used directly. If there are corrected ratings points above and below the desired IEER rating of 75%, 50%, and 25%, then the rating data the IEER rating point shall be determined using linear interpolation. If the corrected rated Percent Load is greater than the Percent Load for 75%, 50% or 25% by more than 3%, then the ratings data at the condenser temperature required for the rating point shall be used along with the degradation procedure defined in Section 6.2.3.2.