**CEE® SUPER EFFICIENT HOME APPLIANCE INITIATIVE**

Room Air Conditioner Specification

Terms of Use below

**Effective January 31, 2017**

The CEE specification is limited to room air conditioners without reverse cycle. Units with reverse cycle provide the ability to heat as well as cool.

**Efficiency Criteria**

<table>
<thead>
<tr>
<th>Product Class (Btu/h)</th>
<th>Federal Standard(^1) (CEER)(^2)</th>
<th>CEE Tier 1(^3) / ENERGY STAR(^4) (CEER)</th>
<th>CEE Advanced Tier(^5) (CEER)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 8,000</td>
<td>≥11.0</td>
<td>≥12.1</td>
<td>≥12.7</td>
</tr>
<tr>
<td>8,000 to 13,999</td>
<td>≥10.9</td>
<td>≥12.0</td>
<td>≥12.5</td>
</tr>
<tr>
<td>14,000 to 19,999</td>
<td>≥10.7</td>
<td>≥11.8</td>
<td>≥12.3</td>
</tr>
<tr>
<td>20,000 to 27,999</td>
<td>≥9.4</td>
<td>≥10.3</td>
<td>≥10.8</td>
</tr>
<tr>
<td>≥ 28,000</td>
<td>≥9.0</td>
<td>≥9.9</td>
<td>≥10.4</td>
</tr>
</tbody>
</table>

**Connected Criteria**

A. Connected Room Air Conditioner System

To claim compliance with the CEE Connected Specification requirements, a Connected Room AC (RAC) System shall include the appliance plus all hardware and software elements required to enable communication in response to consumer-authorized energy related commands, not including third-party remote management, which may be made available.

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\(^1\) The DOE minimum efficiency standard is not a requirement of the CEE Room AC specification and is included for reference only.

\(^2\) Combined Energy Efficiency Ratio (CEER) is the ratio of measured cooling output (in BTU per hour) to the sum of the measured average annual electrical energy input (in watts) and measured annual standby/off-mode power consumption (in watts). CEER is expressed in BTUs per watt-hour.

\(^3\) CEE Tier 1 is a performance level intended to enable sufficient product volume for energy efficiency programs to achieve cumulative savings goals and to emphasize significant per unit savings over the performance baseline, which is typically the federal minimum efficiency standard.

\(^4\) The ENERGY STAR criteria is not a requirement of the CEE Room AC specification and is included for reference only.

\(^5\) A CEE Advanced Tier represents an aspirational level of efficiency and product performance, agreed by manufacturers to be technically feasible. While few or no products may fulfill the Advanced Tier’s standards at the time it is created and those that exist may not be appropriate for all applications, it lays the groundwork for future programs, provides a longer-term focus and shared performance target for manufacturers, and provides recognition for the first manufacturers to develop products that achieve new heights of efficiency and performance.
solely at the discretion of the manufacturer. These elements may reside inside or outside of the appliance.

This capability shall be supported through at least two means as identified in section B.2. The specific design and implementation of the Connected RAC System is at the manufacturer’s discretion, provided it is interoperable with other devices via an open communications protocol and enables economical consumer-authorized third-party access to the functionalities provided for in sections D, F, and G.

CEE requires that a product enables economical and direct, on-premise interconnection based on open-standards. Manufacturers may also choose to provide additional means to connect, including proprietary architecture and protocols. CEE highly recommends that a product also connect through wireless Internet protocol.

The product must continue to comply with the applicable product safety standards—the addition of the functionality described below shall not override existing safety protections and functions.

B. Communications

1. Open Standards—Communication with entities outside the Connected RAC System that enables connected functionality (sections D, F, and G) must use, for all communication layers, standards:

   o Included in the Smart Grid Interoperability Panel (SGIP) Catalog of Standards, and/or
   o Included in the NIST Smart Grid framework Tables 4.1 and 4.2, and/or
   o Adopted by the American National Standards Institute (ANSI) or another well-established international standards organization such as the International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), International Telecommunication Union (ITU), Institute of Electrical and Electronics Engineers (IEEE) or Internet Engineering Task Force (IETF)

2. Communications Hardware Architecture—Communication with entities outside the Connected RAC System that enables connected functionality (sections D through G) shall be enabled by either option A, or the combination of option B with options C or D, according to the manufacturer’s preference:

   a. Open standards communication port on the appliance, combined with open standards communications module
   b. Open standards communication within the physical premises of the home
   c. Built-in communication technology employing a manufacturer maintained cloud connection
   d. Manufacturer-specific external communication module(s) and/or device(s)

C. Open Access
To enable interconnection with the product, in addition to section B1 that requires open standards, an interface specification, application programming interface (API) or similar documentation shall be made available to interested parties that at a minimum allows transmission, reception, and interpretation of the following information:

- Energy consumption reporting specified in section D that must include accuracy, units, and measurement interval
- Operational status, user settings, and messages specified in section F if transmitted via a communication link
- Demand response specified in section G

D. Energy Consumption Reporting

In order to enable simple, actionable energy use feedback to consumers and consumer authorized energy use reporting to third parties, the product shall be capable of transmitting energy consumption data via a communication link to energy management systems and other consumer authorized devices, services, or applications. These data shall represent the product’s interval energy consumption. It is recommended that data are reported in watt-hours for intervals of 15 minutes or less. However, representative data may also be reported in alternate units and intervals as specified in the product manufacturer’s interface specification or API detailed in section C.

The product may also provide energy use feedback to the consumer on the product itself. On product feedback, if provided, may be in units and format chosen by the manufacturer, for example, $/month.

E. Remote Management

The product shall be capable of receiving and responding to consumer-authorized remote requests, not including third-party remote management, which may be made available solely at the discretion of the manufacturer, via a communication link, similar to consumer controllable functions on the product. The product is not required to respond to remote requests that would compromise essential performance, or product safety as determined by the product manufacturer.

F. Operational Status, User Settings and Messages

3. The product shall be capable of providing the following information to energy management systems and other consumer authorized devices, services or applications via a communication link:
   - Operational or Demand Response status, for example, off or standby, energy saver mode, low cool, max cool, delay appliance load, temporary appliance load reduction.

4. The product shall be capable of providing the following information on the product to energy management systems and other consumer authorized devices, services, or applications via a communication link:
   - At least two types of messages relevant to the energy consumption of the product. For example, messages for room air conditioners might address a performance issue,
such as a clogged filter, or reporting energy consumption that is outside the product’s normal range.

G. Demand Response

The product shall have the capability to receive, interpret and act upon consumer-authorized signals by automatically adjusting its operation depending on both the signal’s contents and settings from consumers. At a minimum, the product shall be capable of providing the following for all cycle and setting combinations:

1. Delay Appliance Load Capability: The capability of the product to respond to a signal in accordance with consumer settings, except as permitted below; by increasing the set temperature by at least 4°F for at least four hours.
   a. Maximum Set Temperature—The increased set temperature shall not exceed 85°F, unless authorized by the customer.
   b. Consumer override—The consumer shall be able to override the product’s Delay Appliance Load response without limitation.
   c. The product shall be able to provide at least one Delay Appliance Load response in a rolling 24-hour period.

2. Temporary Appliance Load Reduction Capability: The capability of the product to respond to a signal in accordance with consumer settings, except as permitted below; by disabling compressor operation for at least 10 minutes.
   a. Maximum Set Temperature—The product shall not respond if the set temperature is ≥ 85°F.
   b. Consumer override—The consumer shall be able to override the product’s Temporary Appliance Load Reduction response without limitation.
   c. The product shall be able to provide at least three Temporary Appliance Load Reduction responses in a rolling 24-hour period. The product is not required to provide more than one Temporary Appliance Load Reduction response per 60-minute period.

H. Information to Consumers

If additional modules, devices, services, or infrastructure are part of the configuration required to activate the product’s communications capabilities, prominent labels or other forms of consumer notifications with instructions shall be displayed at the point of purchase and in the product literature. These shall provide specific information on what consumers must do to activate these capabilities, for example, “This product has Wi-Fi capability and requires Internet connectivity and a wireless router to enable interconnection with an Energy Management System or with other external devices, systems, or applications.”

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