

IMPLEMENTING GUIDELINES OF THE PHILIPPINE ENERGY LABELING PROGRAM FOR AIR CONDITIONERS

Pursuant to Section 9 of Department Circular No. 2020-06-0015, entitled “Prescribing the Guidelines of the Philippine Energy Labeling Program (PELP) for Compliance of Importers, Manufacturers, Distributors and Dealers of Electrical Appliances and Other Energy-Consuming Products (ECP)”, the Implementing Guidelines for Air Conditioners, including the Particular Product Requirements (PPR) and Code of Practice (COPE) are hereby issued for the information and guidance of all those concerned and for compliance by all manufacturers, importers, distributors, dealers, retailers and other key stakeholders.

1. Particular Product Requirement (PPR) for Air Conditioners. The PPR for Air Conditioners provides the requirements for Air Conditioners and other relevant information:

1.1 Scope

This PPR covers air conditioners with cooling capacity up to 50,000 kJ/hr or 14kW for domestic and similar use. The following are the categories:

Fixed-speed air conditioners / Variable-speed air conditioners

- a. Window-type
- b. Split-type
 - Wall-mounted
 - Floor-Standing type
 - Cassette-type
 - Ceiling-Suspended type

1.2 Definition of Terms

For this PPR, the following definitions shall apply:

Applicants – refers to Manufacturers / Importers / Distributors / Dealers.

Basic Model / Type – a product model whose main component and other design components are distinct as to voltage rating, power input, frequency, light output, etc.

Cooling Seasonal Performance Factor (CSPF) - Cooling Seasonal Total Load (CSTL) in (kWh) divided by the Cooling Seasonal Energy Consumption (CSEC) in (kWh). Also stated under the COPE as the measurement of efficiency.

Energy Efficiency Rating – as indicated in the energy label pertains to the rated Cooling Seasonal Performance Factor (CSPF) of the air conditioner.

Energy Efficiency Performance Rating (EEPR) - product’s star rating which is based on the ranges of CSPF and is stated on the energy label.

Fixed-speed Air Conditioner - fixed capacity unit.

Generic Models - refer to a range of models similar to the base model where all have the same major physical characteristics, construction, system design and other performance characteristics.

Non-Ducted Air Conditioner - encased assembly or assemblies, designed primarily to provide free delivery of conditioned air to an enclosed space, room or zone.

Variable-speed Air Conditioner - variable capacity unit

1.3 Normative Reference

The air conditioners covered under this PPR shall be tested, as applicable, according, but not limited to the following standards and their future amendments.

PNS ISO 5151 Non-ducted air conditioners and heat pumps - Testing and rating for performance contains provisions, which through reference in this text form part of this national standard. At the time of publication of this standard, the edition indicated is valid.

PNS ISO 16358-1 Air-cooled air conditioners and air-to-air heat pumps - Testing and calculating methods for Seasonal Performance Factors - Part 1 Cooling Seasonal Performance Factor

Considering the regular updating of standards, the latest edition of the PNS shall be used as reference. It is understood that future amendments of the PNS indicated in this PPR shall be applied after its promulgation. A transition period of one (1) year shall be provided to give ample time to all stakeholders to adjust and conform to the new requirements, if any.

1.4 Sampling Method for Verification Testing

A unit of base model or its generic model shall be randomly taken from the sampling location.

1.5 Specific Guidelines for the Conduct of Verification Testing

- 1.5.1 Test methods to verify conformity to the claimed information in the label shall be as specified in 1.3.
- 1.5.2 The authorized representative of the Applicant shall be responsible for the installation of the sample (split-type air conditioner).
- 1.5.3 Compartment temperatures (indoor and outdoor, wet bulb and dry bulb) during stable condition and reading period shall be maintained at ± 0.1 °C.
- 1.5.4 Samples shall be tested at a standard test voltage of 230V $\sim \pm 1\%$, 60Hz $\pm 1\%$.
- 1.5.5 All necessary operational settings required for the proper conduct of test shall be provided by the Applicant.
- 1.5.6 In the conduct of partial (half) load test, the measured half load cooling capacity at T1 shall be $\pm 5.0\%$ of the 50% of the measured full load.
- 1.5.7 The verification testing shall be conducted by the DOE-LATD or a DOE-recognized testing laboratory.

Conformance shall be evaluated according to the cases shown in Table 1:

Table 1. Conformance Requirements

Case Condition	1 st Sampling	2 nd Sampling	3 rd Sampling	Conformance
Case 1	Passed	Not Applicable	Not Applicable	Passed
Case 2	Failed	Passed	Passed	Passed
Case 3	Failed	Passed	Failed	Failed
Case 4	Failed	Failed	Not Applicable	Failed

Note:

- a. *Applies both for tolerances and MEPP.*
- b. *Replacement of defective units, that cannot be properly tested, shall be allowed up to three (3) times only. If the unit is still defective after the 3^d replacement, the testing shall be considered as failed.*

1.6 Inspection of Generic Models

1.6.8 There are major differences in any of the components related to the performance of the air conditioner (e.g., front grille design, number of tubes in evaporator and condenser, fins/inch of evaporator and condenser, compressor rating, number of louvers in the condenser, fan motor rating, inverter circuit board and number of fan blades).

1.6.9 In case of doubt, DOE-EPRED shall require the inspected units to be subjected to performance testing.

1.7 Minimum Energy Performance

For fixed-speed and variable-speed air conditioners with rated cooling capacity below 3.33kW, the CSPF shall not be lower than 3.08. For rated capacity of 3.33kW – 9.99 kW, the CSPF shall not be lower than 2.81.

Note:

- a. *Measured CSPF shall be rounded-off to the nearest 0.01 Wh/Wh. The rules of rounding-off shall be followed.*
- b. *Measured percentage value shall be rounded-off to the nearest tenth. The rules of rounding shall be followed.*
- c. *Verdict shall be based on the rounded-off value.*
- d. *MEPP shall be subjected to review and upgrading every three (3) years or earlier, as necessary.*

1.8 Tolerances

The following tolerances shall apply:

1.8.1 The measured cooling capacity (kW) shall not be less than 90% of the rated cooling capacity of the test sample.

Note:

- a. Measured cooling capacity shall be rounded-off to the nearest hundredth. The rules of rounding-off shall be followed.
- b. The measured cooling capacity shall be rounded-off first before determining the tolerance.
- c. Verdict shall be based on the rounded-off value.

1.8.2 The measured CSPF shall not be less than 90% of the rated CSPF of the test sample.

Note:

- a. Measured percentage value shall be rounded-off to the nearest tenth. The rules of rounding-off shall be followed.
- b. Verdict shall be based on the rounded-off value.
- c. The rated CSPF shall be mathematically consistent.

1.9 Energy Efficiency Performance Rating (EER) of Air Conditioners

1.9.1 Non-Ducted Air conditioners shall be classified based on the rated CSPF of the product.

1.9.2 The classification shall be represented by a star rating, with one star indicating the lowest range of the CSPF while five stars shall represent the highest range of the CSPF.

1.9.3 There shall be three (3) sets of EERs regardless of variable-speed or fixed-speed.

- a. Below 3.33 kW cooling capacity
- b. 3.33 kW up to 9.99 kW cooling capacity
- c. 10.00 kW up to 14.00 kW cooling capacity

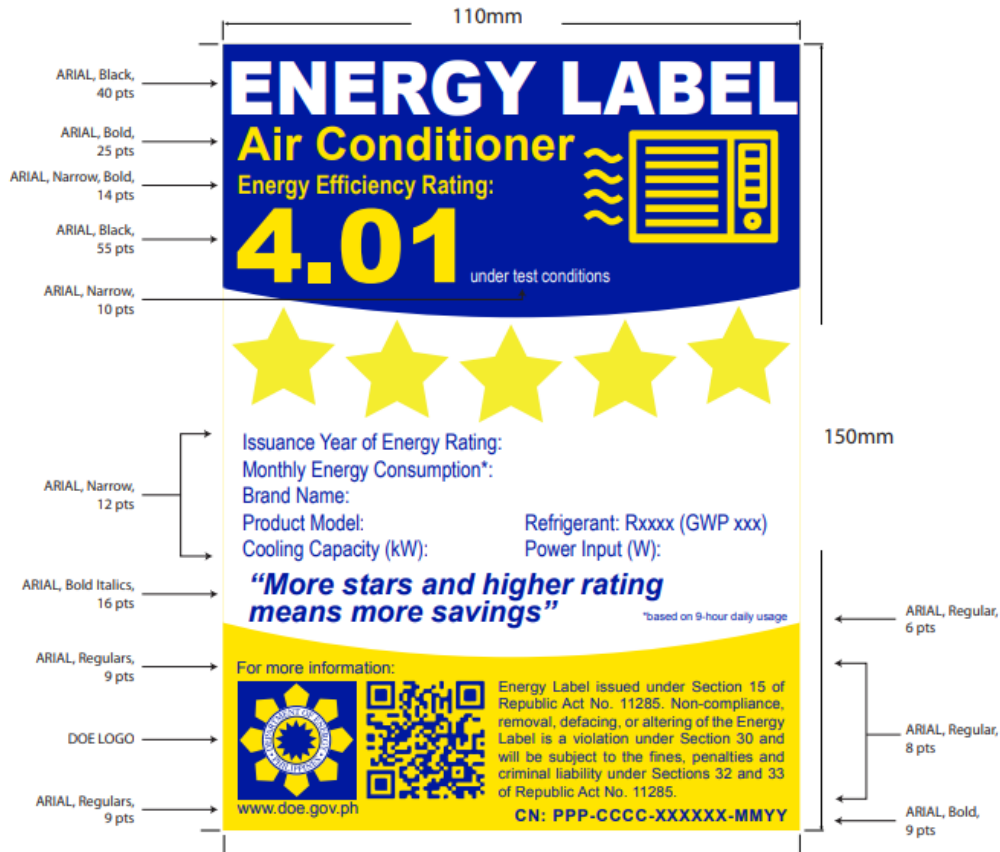
The rated CSPF of air conditioners shall be classified according to Table 2.

Table 2. Energy Efficiency Performance Rating (Window Type & Split Type) ¹

Cooling Seasonal Performance Factor (CSPF)			
EER	Below 3.33kW	3.33kW to 9.99kW	10.0kW to 14kW
One Star	3.08 to 3.31	2.81 to 3.11	≤ 3.11
Two Star	3.32 to 3.55	3.12 to 3.42	3.12 to 3.42
Three Star	3.56 to 3.79	3.43 to 3.73	3.43 to 3.73
Four Star	3.80 to 4.00	3.74 to 4.00	3.74 to 4.00
Five Star	≥ 4.01	≥ 4.01	≥ 4.01

¹ The method used in said table is the normalization of distribution of rated EERs of air conditioners based on the latest list of certified air conditioners (2015-2018)

1.10 Specifications and Dimensions of Energy Label



Swatches



Products on sale shall have the energy label affixed at the front grille or external enclosure of the indoor unit, whichever is visible.

1.11 Presentation of Energy Label



1.12 Correction of Performance Ratings

1.12.1 Applicant has the option to downgrade the claimed ratings to comply with the requirements of the standard based on the result of the verification test.

1.12.2 New claims shall conform to the tolerances specified in 1.8.

1.13 Presentation of Energy Labels

1.13.1 The cooling capacity and power input are based on rated values.

2. **Code of Practice on Energy Labeling of Products.** Pursuant to Section 15 of the EEC Act, the Code of Practice on Energy Labeling of Products (COPE) provides for the calculation methods of the following:

2.1 The Air Conditioner Energy Efficiency Performance Rating (EEPR) or the star rating shown in the DOE Energy Label is based on the **Cooling Seasonal Performance Factor (CSPF)**, which is calculated as follows:

$$CSPF = \frac{\text{Cooling Seasonal Total Load (kWh)}}{\text{Cooling Seasonal Energy Consumption (kWh)}}$$

Where:

CSTL stands for Cooling Seasonal Total Load and is defined as the total annual amount of heat energy removed from the indoor air when the equipment is operated for cooling in active mode. The value of which must be converted and expressed in kilowatt-hour (kWh).

CSEC stands for Cooling Seasonal Energy Consumption and is defined as the total annual amount of electrical energy consumed by the equipment when it is operated for cooling in active mode and is expressed in kilowatt-hour (kWh).

The EEPR reflected on the DOE Energy Label shall correspond to the CSPF value shown in the product test report during product registration. The EEPR shall be adjusted accordingly (as needed) once the product has undergone verification testing.

2.2 For the estimation of **monthly energy kWh consumption** (based on a specified hour of daily usage), as shown in the DOE Energy Label, the calculation is as follows:

$$\text{Monthly kWh Consumption} = \text{Power Input} \times \text{Daily Operating Hours} \times 30 \times F$$

Where:

Power Input is the determined electrical power required by the equipment to operate normally and is expressed in kilowatts (kW). This corresponds to the value declared by the applicant during product registration.

Operating Hours is the assumed length of time that the equipment is operated in a day and is expressed in hours. With regards to the DOE Energy Label, this parameter is assumed to be 9 hours.

F is the assumed operating factor for the air conditioners. It is 0.8 for fixed-speed units (due to compressor cut in / off) and 0.5 for variable-speed units (due to speed adjustment / control).

2.3 For the estimation of **monthly electricity cost**, the calculation is as follows:

$$\text{Monthly Electricity Cost} = \text{Monthly kWh Consumption} \times \text{Electricity Price}$$

Where:

Electricity Price is the prevailing peso per kWh, as indicated in the electricity bill issued by an electric power distribution company.

2.4 For the estimation of **monthly Greenhouse Gas (GHG) emission** due to monthly electricity consumption, the calculation is as follows:

$$\text{Monthly GHG emission} = \text{Monthly kWh Consumption} \times \text{Emission Factor}$$

Where:

Emission Factor is the Simple Operating Margin (OM) Emission Factor derived using the power grid statistics and is available in the DOE Website.

The unit of the calculated GHG emission shall be in kg CO₂.

3. Aircon Product Registration. Only registered companies can proceed to the per-model PELP Online Product Registration, applicable to both manufactured and imported institutional products, using Product Registration Form – Air Conditioner as shown below and available online.

Product Registration Form – Air Conditioner

Product	Air Conditioner
Particular Product	<input type="checkbox"/> AC Variable (ACV) <input type="checkbox"/> AC Fixed (ACF)
Installation Type	<input type="checkbox"/> Window Type <input type="checkbox"/> Split Type - Wall Mounted <input type="checkbox"/> Split Type - Ceiling Cassette <input type="checkbox"/> Split Type - Ceiling Suspended <input type="checkbox"/> Split Type - Floor Mounted
Brand Name	
Model Number/Code	
Year Model	
Country of Origin	
Original Equipment Manufacturer	
Is the product generic to a base model?	<input type="checkbox"/> Yes <input type="checkbox"/> No Please specify base model: _____
Cooling Capacity (KW)	
Power Input (W)	
Cooling Seasonal Performance Factor (CSPF)	
Global Warming Potential (GWP) of Refrigerant	

General List of Refrigerants	<input type="checkbox"/> HCFC-123 <input type="checkbox"/> R-407A <input type="checkbox"/> R-408A <input type="checkbox"/> R-407C <input type="checkbox"/> R-409A <input type="checkbox"/> R-407F <input type="checkbox"/> AK-225 <input type="checkbox"/> R-410A <input type="checkbox"/> H-997 <input type="checkbox"/> R-417A <input type="checkbox"/> R-412A <input type="checkbox"/> R-422A <input type="checkbox"/> R-23 <input type="checkbox"/> R-438A <input type="checkbox"/> R-32 <input type="checkbox"/> R-449A <input type="checkbox"/> R-134A <input type="checkbox"/> R-452A <input type="checkbox"/> R-227EA <input type="checkbox"/> R-4310 (HFC-43-10mee) <input type="checkbox"/> R-236FA <input type="checkbox"/> R-507 <input type="checkbox"/> R-245FA <input type="checkbox"/> R-508 <input type="checkbox"/> R-365mfc <input type="checkbox"/> R-513A <input type="checkbox"/> R-404A
No. of Stars	<input type="checkbox"/> ★ <input type="checkbox"/> ★★ <input type="checkbox"/> ★★★ <input type="checkbox"/> ★★★★ <input type="checkbox"/> ★★★★★
Other Parameters	

*Note: Number of samples tested for product registration purposes will be up to the Applicant.
The validity of the test report shall be one (1) year.*

4. Effectivity. This Aircon IG shall take effect fifteen (15) days following its publication in at least two (2) newspapers of general circulation. Copies of this IG shall be filed with the University of the Philippines Law Center – Office of the National Administrative Register.

Issued at Energy Center, Bonifacio Global City, Taguig City.

Approved by:

PATRICK T. AQUINO, CESO III
Director, Energy Utilization Management Bureau