Suruhanjaya Tenaga
Energy Commission

GUIDE ON MINIMUM ENERGY PERFORMANCE STANDARD REQUIREMENTS FOR AIR CONDITIONER WITH COOLING CAPACITY ≤ 7.1kW

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1.0 Scope

This guide specifies the minimum energy performance standard (MEPS) and energy labeling requirements for single-phase non-ducted single split wall mounted type vapour compression air conditioners with cooling capacity up to 7.1 kW.

Exclusion

The following equipment is excluded from the scope of this Standard:

a) Models that have been granted exemption by the relevant regulatory authority.

This guide does not specify the procedure for Certificate of Approval (COA) application. For COA application procedure and information, please visit to Energy Commission website at www.st.gov.my.

2.0 Testing Standard

The following testing standard references are indispensable for the application of this document. For dated references, only the edition cited applies.

ISO 16358-1:2013. *Air-cooled air conditioners and air-to-air heat pumps — Testing and calculating methods for seasonal performance factors — Part1: Cooling seasonal performance factor*

MS ISO 5151:2012, *Non-ducted air conditioners and heat pumps: Testing and rating for performance*

3.0 Terms and definitions

3.1 Minimum Energy Performance Standards (MEPS)

The minimum level of energy efficiency which has to be met by each of applicable air conditioner.

3.2 Non-inverter air conditioner

Air conditioner that employs technologies that control the output of the compressor by start-stop operation.

3.3 Inverter air conditioner

Air conditioner that employs technologies that vary the output of the compressor, by means other than start-stop operation.

3.4 Wall mounted air conditioner

Encased assembly that consists of at least an evaporator, fan motor assembly and electrical assembly and mounted on a wall. Primarily designed to provide free delivery of conditioned air to an enclosed space, room or zone.

3.5 Energy Efficiency Ratio (EER)

Ratio of the total cooling capacity to the effective power input at any given set of rating conditions. The unit is kW/kW.

3.6 Cooling Seasonal Performance Factor (CSPF)

Ratio of the total annual amount of heat that the equipment can remove from the indoor air when operated for cooling in active mode to the total annual amount of energy consumed by the equipment during the same period. The unit is Wh/Wh.

4.0 Star Rating index and testing condition

Star rating index shall be CSPF Cooling Seasonal Performance Factor.

CSPF is specified by ISO16358-1, Air-cooled air conditioners and air-to-air heat pumps- Testing and calculating methods for seasonal performance factors- Part1: Cooling seasonal performance factor

To calculate CSPF, test data shall be taken according to the MS ISO5151 and temperature bin distribution shall follow Table 3, ISO 16358-1

Measured cooling capacity value shall not be less than 90% of rated cooling capacity.
Measured power input value shall not be greater than 110% of rated power input.
For all type of air conditioner, test shall be conducted only under standard temperature condition without testing under cooling low temperature condition (Please refer to Table 1 of ISO16358-1).

CSPF for non-inverter type air conditioner shall be calculated by multiplying EER tested at

standard temperature condition by 1.062

CSPF (Non-Inverter) = 1.062 x Tested EER

For inverter air conditioner, the 50 % load cooling capacity test, following tolerance shall be met:
50 % load = 100 % load capacity x 0.5 (tolerance ± 5.0 %)

where

100 % load capacity refers to measured cooling capacity during 100 % load cooling capacity

The air conditioner shall be measured at the following conditions:

i) Climatic ambient T1, refer MS ISO 5151

ii) Voltage 230V, 50Hz

Note: In the case of major changes of the any component related to performance of the air conditioner (i.e. compressor, fan motor, evaporator, condenser etc.) the air conditioner shall be tested again.

5.0 Star Rating

The star rating shall be in accordance with Tables 1 and 2.

Table 1 :

The rated cooling capacity < 4.5kW

Star Rating	Tested CSPF (Wh/Wh)
5	≥5.30
4	4.60 ≤CSPF<5.30
3	3.30 ≤ CSPF<4.60
2	3.10 ≤ CSPF<3.30
1	<3.10

Table 2:

4.5kW ≤Rated Cooling Capacity ≤ 7.1kW

Star Rating	Tested CSPF (Wh/Wh)
5	5.10≤
4	4.00≤ CSPF<5.10
3	3.10≤ CSPF<4.00
2	2.90 ≤ CSPF<3.10
1	<2.90

Note : Star Rating will be given by certification body appointed by the Commission in the test report or assessment letter

6.0 MEPS requirement

The MEPS requirement is 2-Star.

7.0 Energy Efficiency Label

Based on Electricity Regulation 1994 (Amendments 2013) Regulation 101A (3)
"Any equipment that meets all the requirements of efficient use of electricity under sub regulation (1) shall be affixed with an efficiency rating label in such form and manner as may be determined by the Commission."

All manufacturers and importers, must affix the Energy Efficiency Label onto the products before it can be sold to the customer.

7.1 Information in the label

Please refer to the picture below for the information that must be included in the MEPS label.

Figure 1: Information Required in the Label

7.2 Calculation Method

$$Annual\ Energy\ Consumption(kWh) = \frac{CSEC\ (kWh)}{1817\ hours} \times 4380hours *$$

Where

CSEC =Cooling Seasonal Energy Consumption (From Test Report)

*Operating hours per year =12hours per day x 365 day =4380 hours

$$Percentage\ energy\ saving\ compared\ to\ the\ lowest\ 2\ stars\ rating\ model$$
$$= 100\% - (100 \times \frac{CSPF_{Lowest\ 2-Star}}{CSPF_{Measured}})$$

Note : Calculation will be given by certification body appointed by the Commission in the test report or assessment letter

7.3 Size Specification

Please refer to the picture below for the size specification

Energy Consumption Sticker

Figure 2: Size Specification

7.4 Font Specification

The font guide specified below is the minimum requirement. The font can be bigger proportionate to the label size but cannot be smaller.

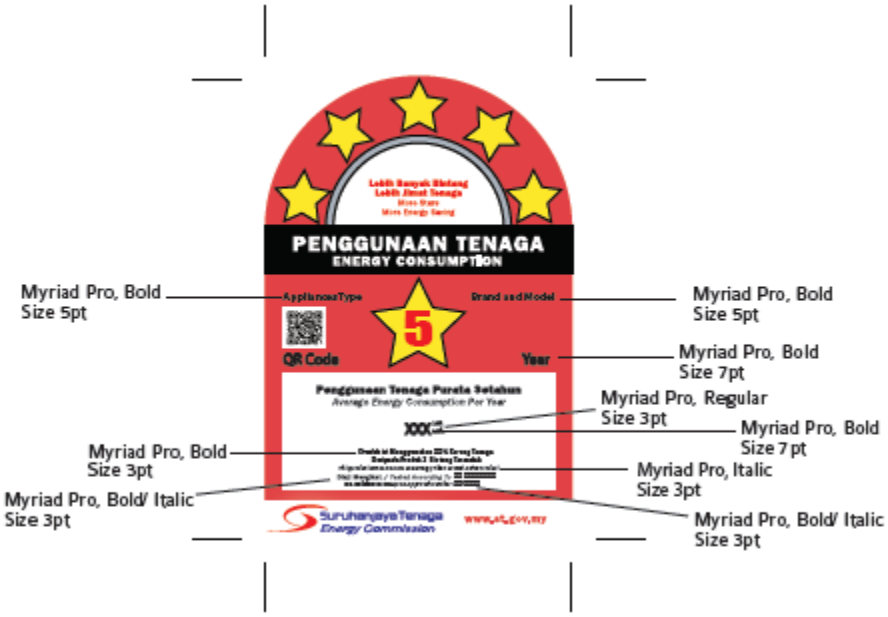

Figure 3: Font Specification

7.5 Colour Specification

The label shall be printed according to the colour specifications as follow:

Figure 4: Colour Specification

7.6 Design for 2-Star Rating Until 5-Star Rating

Figure 5

7.7 Location Label

The location for energy efficient label to be affixed on the product as shown in the Figure 6 and 7

Figure 6

Figure 7

A softcopy of energy efficiency label in AI format can be obtained from the Commission by emailing meps@st.gov.my with a request.

7.8 QR Code Generation Guideline

7.7.1 QR Code Details

i. Importer / Manufacturer can include the QR in the star rating sticker.

ii. Consumer can scan the QR to check product certification information from ST.

7.7.2 QR content

i. The QR content consist of a link which will call to ST enquiry page to request for COA product information.

ii. Parameters require to pass through in the link as below:

No.	Parameters	Data length	Remarks	Example
2.2.1	coa	18	COA No.	SJT161817103442019

2.2.2	roc	Refer to ROC	Company ROC. Without '-' or space	123456X
2.2.3	checksum	32	Please refer 2.4 for method to compute checksum.	46ed89b9c32a32cdb406426bc42b91e8

iii. Example:
https://edik.st.gov.my/productenquiry.aspx?coa=SJT161817103442019&roc=123456X&checksum=46ed89b9c32a32cdb406426bc42b91e8

iv. To compute checksum, please refer step as below:

i. Form a string by COA No. and ROC (without '-' or space)
Example: SJT161817103442019123456X
1. Hash the string by MD5
Example output: 9b9bfc138d5001f5501432bd57c8d7bb

Convert the link to QR code.
Example:

7.7.3 Product information enquiry

i. Once scan the QR code, the link will redirect to ST enquiry page. ST system will validate the COA no., ROC, and the checksum.

ii. If all information is correct, the product certification information will be displayed on screen (browser).
Example COA info as below:

<table>
<tr><th>No.</th><th>Information</th><th>Example</th></tr>
<tr><td>1</td><td>No. COA (COA No.)</td><td>SJT161817103442019</td></tr>
<tr><td>2</td><td>Jenis Pemohonan (Type of Application)</td><td>MENGIMPORT</td></tr>
<tr><td>3</td><td>Nama Pengimport (Importer Name)</td><td>ABC SDN BHD</td></tr>
<tr><td>4</td><td>No. Daftar Syarikat (ROC)</td><td>123456-X</td></tr>
<tr><td>5</td><td>No. Permohonan (Application No.)</td><td>SJT1612019822671</td></tr>
<tr><td>6</td><td>Tarikh COA (COA Date)</td><td>10 - Jan - 2019</td></tr>
<tr><td>7</td><td>Tarikh Tamat (COA Expiry Date)</td><td>9 - Jan - 2020</td></tr>
<tr><td>8</td><td>Kategori Kelengkapan (Equipment Category)</td><td>KETTLE including HEATING ELEMENTS IF SUPPLIED SEPARATELY</td></tr>
<tr><td>9</td><td>Model & Jenama (Model & Brand)</td><td><table><tr><td>Model</td><td>Brand</td></tr><tr><td>MA-321</td><td>BDX</td></tr></table></td></tr>
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