وزارة الصناعة والتجارة

قرار رقم (٨٠) لسنة ٢٠٢٣
بإصدار اللائحة الفنية الوطنية لبطاقة كفاءة الطاقة
لأجهزة التكييف ذات السعة الصغيرة

وزير الصناعة والتجارة:

بعد الاطلاع على القانون رقم (٩) لسنة ٢٠١٦ بشأن المواصفات والمقاييس،

وعلى القرار رقم (٧٠) لسنة ٢٠١٥ بشأن اعتماد لائحة بطاقة كفاءة الطاقة لأجهزة التكييف، المعدل بالقرار رقم (٣١) لسنة ٢٠١٧،

وعلى اللائحة التنفيذية للقانون رقم (٩) لسنة ٢٠١٦ بشأن المواصفات والمقاييس الصادرة بالقرار رقم (١٥٥) لسنة ٢٠١٧،

وعلى قرار اللجنة الوطنية للمواصفات والمقاييس في اجتماعها الخامس والخمسين المنعقد بتاريخ ٥ أبريل ٢٠٢٣ بالموافقة على اعتماد تحديث لائحة بطاقة كفاءة الطاقة لأجهزة التكييف ذات السعة الصغيرة،

وبناءً على عرض وكيل الوزارة،

قُرِّر الآتي:

المادة الأولى

يُعمل بأحكام اللائحة الفنية الوطنية لكفاءة الطاقة لأجهزة التكييف ذات السعة الصغيرة والمرافقة لهذا القرار.

المادة الثانية

يلغى القرار رقم (٧٠) لسنة ٢٠١٥ بشأن اعتماد لائحة بطاقة كفاءة الطاقة لأجهزة التكييف.

المادة الثالثة

على وكيل الوزارة والمعنين - كلٌّ فيما يخصه - تنفيذ أحكام هذا القرار، ويُعمل به بعد ثمانية عشر شهراً من تاريخ نشره في الجريدة الرسمية.

وزير الصناعة والتجارة

عبدالله بن عادل فخرو

صدر بتاريخ: ١٦ ربيع الآخر ١٤٤٥هـ

المـوافـــق: ٣١ أكتوبر ٢٠٢٣م

REGULATION ON ENERGY LABELLING AND MINIMUM ENERGY PERFORMANCE REQUIREMENTS FOR SMALL CAPACITY AIR-CONDITIONERS

Contents

REGULATION ON ENERGY LABELLING AND MINIMUM ENERGY PERFORMANCE REQUIREMENTS FOR SMALL CAPACITY AIR-CONDITIONERS

1. SCOPE AND OBJECTIVE

1.1 Scope

This regulation specifies the Minimum Energy Performance Standard (MEPS) and the energy labelling requirements for air conditioning units and heat pumps used in residential, commercial and industrial sectors with nominal capacities less than or equal to 65,000 Btu/h.

The following types of air conditioning or heat pumps units are included within the scope of this regulation:

1. Single-package units of window type
2. Single split-system non-ducted units using air-cooled condensers
3. Single split-system ducted units using air-cooled condensers
4. Units using electric resistance heaters

The following units are excluded from the scope of this regulation:

5. Evaporative coolers
6. Mobile (windowless) and portable units with exhaust air duct
7. Individual assemblies not constituting a complete refrigeration system such as condensing units for separate use
8. Air conditioners that are not intended for human comfort
9. 100% solar energy powered air conditioning systems

1.2 Objective

The objective of this regulation is to:

a) Provide detailed information on the performance and energy labeling requirements which an air-conditioning appliance has to meet in order to carry a valid energy efficiency label; and
b) Provide detailed information on the performance requirements which an air-conditioning appliance has to meet in order to meet minimum energy performance standard requirements.

2. NORMATIVE REFERENCES

Updated editions of the following normative references are applied (Including any changes on these normative references).

2.1 GSO ISO 5151 “Non-ducted air conditioners and heat Pumps -Testing and rating for Performance”.

2.2 GSO ISO 13253 “Ducted air-conditioners and air-to-air heat Pumps - Testing and rating for Performance”.

2.3 GSO 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.

2.4 ISO 16358-1:2013/Cor 1:2013 Air-Cooled Air Conditioners and Air-To-Air Heat Pumps — Testing and Calculating Methods for Seasonal Performance Factors — Part 1: Cooling Seasonal Performance Factor — Technical Corrigendum 1

2.5 ISO 16358-1:2013/Amd 1:2019 Air-Cooled Air Conditioners and Air-To-Air Heat Pumps — Testing and Calculating Methods for Seasonal Performance Factors — Part 1: Cooling Seasonal Performance Factor — Amendment 1

3. TERMS AND DEFINITIONS

For the purposes of this regulation, the terms and definitions given in references mentioned in sub-clauses 2.1 and 2.2 and those below are considered.

3.1 Ducted air conditioners

An air conditioner model configuration where the indoor side is situated remote to the space to be conditioned. The conditioned air is supplied or extracted via a duct.

3.2 Non-ducted air conditioner

An air conditioner model configuration where the indoor side is situated partly or wholly within the space to be conditioned. The conditioned air is supplied and extracted directly to and from the conditioned space.

3.3 Rated capacity

The nominal rated capacity claimed by the manufacturer of an air conditioner model determined as follows, as applicable:

a) Rated total cooling capacity as claimed by the manufacturer for temperature condition T1. (Units: Btu/h).

b) Rated heating capacity as claimed by the manufacturer for indicated heating capacity test conditions specified in the normative references in clause (2). (Units: W).

The rated capacity appears on the energy label as 'Capacity Output' (heating and/or cooling as applicable. (Units: Btu/h).

3.4 Rated power

Effective power input of the air conditioner model as claimed by the manufacturer during the determination of rated cooling capacity and rated heating capacity, as applicable. (Units: W or kW.)

3.5 Split system

An air conditioner with separate indoor and outdoor components that are connected with refrigerant piping. The indoor unit usually lies within the conditioned space and may be installed or portable/mobile.

3.6 Star rating

The number of stars displayed on the energy label. Available stars are between a minimum of one and a maximum of six. It is considered as an indication of the claimed energy efficiency of a model at rated conditions. A higher star rating indicates a higher energy efficiency. It is derived from the measured SEER.

3.7 Estimated annual energy consumption

Estimated annual energy consumption at rated power will be kWh consumed in 2700 hours at full load.

3.8 Energy Efficiency Ratio EER

Ratio of the cooling capacity to the cooling power input value (Unit: (Btu/h)/W).

3.9 Coefficient of Performance COP

Ratio of the heating capacity to the power input value (Unit: W/W).

3.10 Cooling Seasonal Energy Consumption (CSEC)

Total annual amount of energy consumed by the equipment when it is operated for cooling in active mode.

3.11 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

3.12 Seasonal Energy Efficiency Ratio (SEER)

Cooling Seasonal Performance Factor (CSPF) multiplied by 3.412 (Unit: Btu/(W.h)).

4. REGISTRATION REQUIREMENTS

4.1 Registration is mandatory for all imported and locally manufactured products. The information about registration requirement for energy labelling and MEPS is available at EER platform.

4.2 To register products for energy labeling and MEPS, a test report from an accredited laboratory in accordance with recent edition of the standards referenced in Clause 2 and the test points specified under Table 1, as applicable, shall be uploaded to the EER platform for each model.

Table 1 – Temperature and Humidity Conditions

Test	Characteristics	Fixed	Two-stage	Multi-stage	Variable	Default Values
Standard cooling capacity Indoor DB 29°C WB 19°C Outdoor DB 46°C WB 24°C	Full capacity $\emptyset_{ful}$(46) (W) or (Btu/h)	■	■	■	■	–
	Full power input P_{ful} (46) (W)					
	Half capacity $\emptyset_{haf}$ (46) (W) or (Btu/h)	–	–	**D**	**D**	0.859 x ϕhaf (35)
	Half power input P_{haf} (46) (W)					1.25 x *P*haf (35)
	Minimum capacity $\emptyset_{min}$ (46) (W) or (Btu/h)	–	**D**	**D**	**D**	0.859 x ϕmin (35)
	Minimum power input P_{min} (46) (W)					1.25 x *P*min (35)
Standard cooling capacity Indoor DB 27°C WB 19°C Outdoor DB 35°C WB 24°C	Full capacity $\emptyset_{ful}$ (35) (W) or (Btu/h)	■	■	■	■	–
	Full power input P_{ful} (35) (W)					
	Half capacity $\emptyset_{haf}$ (35) (W) or (Btu/h)	–	–	■	■	–
	Half power input P_{haf} (35) (W)					
	Minimum capacity $\emptyset_{min}$ (35) (W) or (Btu/h)	–	■	**O**	**O**	–
	Minimum power input P_{min} (35) (W)					
Low Temperature cooling capacity Indoor DB 27 °C WB 19 °C	Full capacity $\emptyset_{ful}$ (29) (W) or (Btu/h)	**D**	**D**	**D**	–	1.077 x ϕful (35)
	Full power input P_{ful} (29) (W)					0.914 x Pful (35)
	Half capacity $\emptyset_{haf}$ (29) (W) or (Btu/h)	–	–	**D**	**D**	1.077 x ϕhaf (35)

Table 1 – Temperature and Humidity Conditions							
Test	Characteristics		Fixed	Two-stage	Multi-stage	Variable	Default Values
Outdoor DB 29 °C WB 24 °C	Half power input P_{haf} (29) (W)						0.914 x Phaf (35)
	Minimum capacity $\emptyset_{min}$ (29) (W) or (Btu/h)		–	**D**	**D**	**D**	1.077 x ϕmin(35)
	Minimum power input P_{min} (29) (W)						0.914 x ***P***min (35)
Low humidity and cyclic cooling Indoor DB 27 °C WB 16 °C or lower Outdoor DB 35 °C WB -	Degradation coefficient (C_D)	Full capacity	**O**	–	–	–	0.27
		Half capacity	–	–	**O**	–	
		Minimum capacity	–	**O**	**O**	–	
▪ **:** Required test/ – **:** Not applicable value/**O :** Optional test.							**D :** Default

4.3 Energy Label Validity (Check Testing)

The energy label shall be accepted as valid when a single sample of an appliance or unit model, tested for an initial screening test, meets the following criteria for cooling and heating, as applicable:

a) Tested power at full load operation at (T1 and T3)…...≤ 1.05 x rated power at full load operation at (T1 and T3).
b) Tested power at half load operation at (T1) ……..…..≤ 1.05 x rated power at half load operation at (T1).
c) Tested power at minimum load operation at (T1).....≤ 1.05 x rated power at minimum load operation at (T1).
d) Tested cooling capacity at full load operation at (T1 and T3)…….. ≥ 0.95 x rated cooling capacity at full load operation at (T1 and T3).
e) Tested cooling capacity at half load operation at (T1) …….. ≥ 0.95 x rated cooling capacity at half load operation at (T1).
f) Tested cooling capacity at minimum load operation at (T1)……≥ 0.95 x rated cooling capacity at minimum load operation at (T1).
g) Tested EER at full load operation at (T1 and T3) ……..…….≥ MEPS and ≥ 0.95 x rated EER at full load operation (T1 and T3)
h) Tested COP ≥ 0.95 x rated COP.

i) Tested voltage 230 volt single phase or 400 volt three phase.
j) Tested frequency …… 50 Hz.
k) Testing conditions (T1) (Refer to the standards mentioned in clause2).
l) Testing conditions (T3) (Refer to the standards mentioned in clause2).

5. MEPS

The minimum energy performance standard MEPS value for the air conditioner in the scope of this regulation shall be greater than or equal to the value of Energy Efficiency Ratio (EER), when calculating the cooling capacity at test conditions (T1) and test condition (T3) as follows:

Table 2 – Minimum Energy Performance Standard MEPS

Air conditioner appliance type at test condition (T1)	EER Value (Btu/h)/W	
	T1	T3
Window type CC (≤24k)	9.8	7.0
Window type 24,000 < CC≤ 65,000	9.0	6.2
Split type CC ≤ 65,000	11.8	8.3

6. NAME PLATE AND INSTRUCTION SHEET OR MANUAL

The following information shall be marked on the name plate of the air- conditioner, in Arabic or English or both. The marking shall not be on a detachable part of the unit and shall be indelible, durable and easily legible.

Any energy / performance related information that is attached or displayed on any part of the air-conditioner unit or packaging must be justified and free from misstatements and according to the normative reference standards mentioned in clause (2).

6.1 The information on the name plate shall include at minimum, the following:

- Manufacturer's name and/or trademark.
- Country of origin.
- Manufacturer's model or type reference and serial number of the unit.
- Rated voltage or rated voltage range (Volts).
- Rated frequency (Hz).
- Rated current in Amperes.
- Rated power input in watts or kilowatts.
- Net total room cooling capacity in Btu/h.
- Energy Efficiency Ratio (EER) in (Btu/h)/W.
- Heating capacity in W (Applicable to heating units only).

- Coefficient of Performance (COP) (Watt/Watt). (Applicable to heating units only).
- Refrigerant used and mass of refrigerant charge in kg.

6.2 An instruction sheet or manual in both Arabic and English shall be delivered with each air-conditioner, including the following information:

- The information specified in clause 6.1.
- Dimensions of the unit and its method of mounting.
- Minimum clearances between the various parts of the unit and the surrounding framework.
- Instructions necessary for the correct operation of the unit and any special precautions to be observed to ensure its safe use and maintenance.
- Instruction for packing and unpacking the unit.
- Weight of the unit.
- Any other additional information.

7. SEASONAL ENERGY EFFICIENCY RATIO (SEER) CLASSIFICATION

7.1 General

The Seasonal Energy Efficiency (SEER) classification is used for the comparative label for products within the scope of this regulation.

7.2 Weather Bin.

Weather data, presented in table 3, shall be applied to the ISO 16358-1:2013, Clause 6 (Calculations) and the corresponding changes mentioned in ISO 16358-1:2013/Amd 1:2019, and incorporated into ISO 16358-1:2013/AMD 1:2019 calculation tool, to find the SEER value and its relevant measurements, such as the Cooling Seasonal Energy Consumption (CSEC).

Table 3 – WEATHER BIN

Bin number j	Outdoor temperature t_j °C	Fractional bin hours (informative)	Bin Hours n_j	Reference bin hours (n_j)h
1	21	0.032	n_1	267
2	22	0.033	n_2	279
3	23	0.033	n_3	281
4	24	0.037	n_4	314
5	25	0.037	n_5	309
6	26	0.041	n_6	341
7	27	0.042	n_7	357

Table 3 – WEATHER BIN				
Bin number j	Outdoor temperature t_j °C	Fractional bin hours (informative)	Bin Hours n_j	Reference bin hours (n_j)h
8	28	0.043	n_8	366
9	29	0.049	n_9	411
10	30	0.052	n_{10}	435
11	31	0.055	n_{11}	464
12	32	0.060	n_{12}	501
13	33	0.058	n_{13}	492
14	34	0.054	n_{14}	456
15	35	0.048	n_{15}	408
16	36	0.047	n_{16}	395
17	37	0.043	n_{17}	360
18	38	0.042	n_{18}	357
19	39	0.040	n_{19}	335
20	40	0.039	n_{10}	325
21	41	0.034	n_{21}	290
22	42	0.029	n_{22}	240
23	43	0.024	n_{23}	200
24	44	0.015	n_{24}	130
25	45	0.009	n_{25}	78
26	46	0.003	n_{26}	24
			Total	8415

7.3 Calculation tool to calculate SEER.

In order to calculate the Seasonal Energy Efficiency Ratio (SEER) value for products covered within the scope of this regulation, the calculation tool shall be applied from ISO 16358-1:2013/AMD 1:2019 and based on ISO 16358-1:2013, Clause 6 (Calculations) and the corresponding changes mentioned in ISO 16358-1:2013/Amd 1:2019, with the incorporation of weather data under clause 7.2 within this regulation.

7.4 Determination of the Seasonal Energy Efficiency Ratio (SEER) classification

The Seasonal Energy Efficiency Ratio classification is based on the SEER value, which is calculated based on the results of the rated values for the cooling capacity and power

input at the specified testing points mentioned in Table 1, and determined in accordance with the following table.

Table 4 – SEER limits for star rating	
SEER limits (Btu/h)/W	**Star Rating**
SEER ≥ 18	6
18 > SEER ≥ 15	5
15 > SEER ≥ 12.5	4
12.5> SEER ≥ 10	3
10 > SEER ≥ 9	2
SEER < 9	1

8. ENERGY LABELLING REQUIREMENTS

8.1 Information and Values Contained in the Energy Labels

The required fonts are “Simplified Arabic” for Arabic and “Times New Roman” for English as illustrated in Figures 1 and 2. The fields (a), (b), (c), (d) of Figure 1 shall comply with the following requirements:

a) *Field a* This band shall terminate according to the appliance’s star rating for a rating of only full stars, bisecting the gap between the relevant star and the next higher on the scale.
b) Field b The brand and model designation shall be inserted here. The wording should be complete and concise. They should have normal spacing of letter, line and word in the specified area. In the case of split systems, where the indoor and outdoor components have different model numbers, model numbers for both shall appear on the label.
c) Field c This band shall include the total rated cooling capacity (output capacity in Btu/h and in ton, where CCton = CCBtu/h/12000) and the annual energy consumption.
d) Field d This area shall contain the rated total heating capacity (if applicable), and the power input for heating. The Figures that apply to the particular appliance shall be of the font indicated and shall be centered in the area for heating.
e) Field e This band shall include the tested value of seasonal energy efficiency ratio (SEER) for the appliance.

Note: The cooling capacity and power input values shown on the energy label are based on the rated cooling capacity and the rated power, as declared by the manufacturer and shown in the nameplate for condition T1 for cooling capacity in accordance with the standards mentioned in clause 2.

8.2 Sample Labels

Examples of printed energy label for air-conditioning appliances are shown in Figures 1 and 2.

8.3 Dimensions of Labels

Figure 3 shows the dimensions of label.

8.4 Placement of Energy Labels

The label shall be fixed or attached as a tag on the most prominent part the of the product. For the split type Air Conditioners, the label shall be fixed or attached as a tag on both indoor and outdoor units.

Additional label shall be attached to the exterior of the packaging. The label shall remain on the unit/package when the unit is removed from its packaging for display purposes.

8.5 Material and Shape of Energy Labels

The label shall be of durable cardboard, if it is to be attached as a tag, or be self-adhesive, and shall be cut to the outline shown in Figure 1. A trim or die cut margin of up to 5 mm around the label is acceptable.

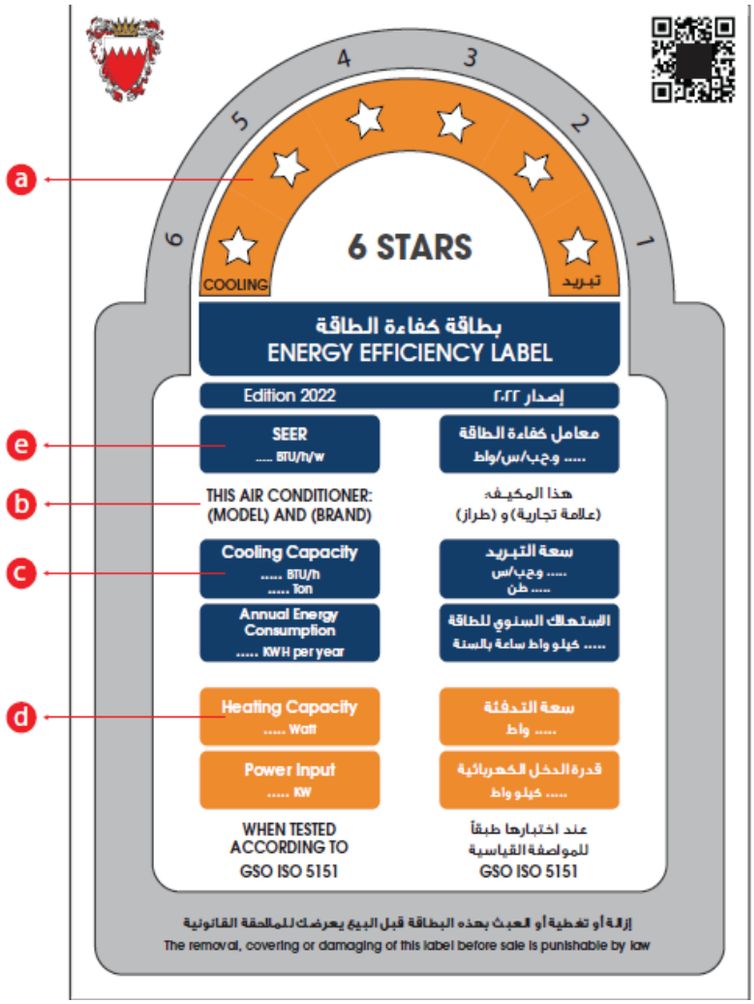

FIGURE 1: Example of label - Heating & Cooling Unit

FIGURE 2: Details of Label – Cooling only

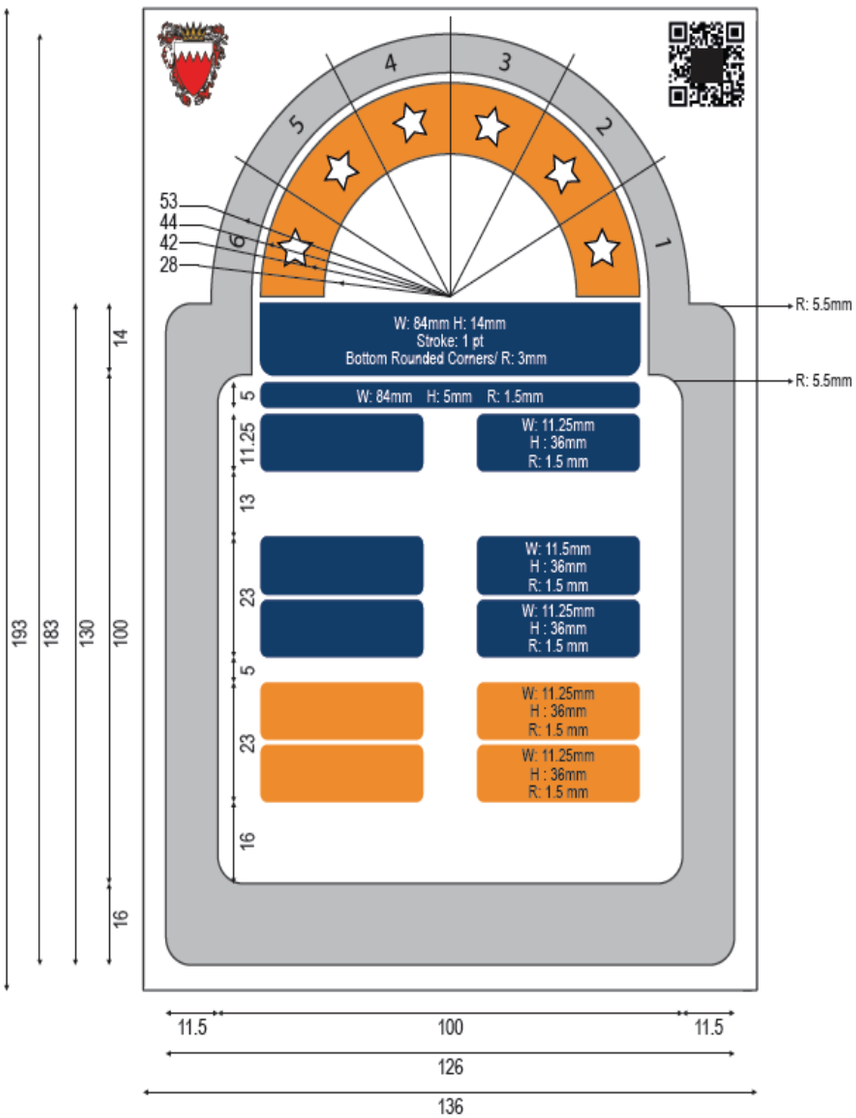

FIGURE 3: Dimension of label