

وزارة الصناعة والتكنولوجيا المتقدمة
Ministry of Industry & Advanced Technology (MOIAT)

UNITED ARAB EMIRATES
MINISTRY OF INDUSTRY
& ADVANCED TECHNOLOGY



الإمارات العربية المتحدة
وزارة الصناعة
والتكنولوجيا المتقدمة

المواصفات القياسية الإماراتية

UAE.S 5010 -1 :20xx

بطاقة البيان . بطاقة بيان كفاءة الطاقة للأجهزة الكهربائية -

الجزء الأول: مكيفات الهواء ذات السعة الصغيرة

Labeling – Energy Efficiency Label for Electrical Appliances

Part 1: Low Capacity Air Conditioners

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Labeling – Energy Efficiency Label for Electrical Appliances

Low-Capacity Air Conditioners :Part 1

لائحة فنية	صفة الإصدار
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المواصفات القياسية لدولة الإمارات العربية المتحدة

Standards of United Arab Emirates

	تاريخ النشر بالجريدة الرسمية
	تاريخ بدء الإلزام

تقديم

وزارة الصناعة والتكنولوجيا المتقدمة هي الوزارة المسؤولة عن أنشطة التقييس بالدولة ومن مهامها إعداد المواصفات القياسية الإماراتية أو اللوائح الفنية بواسطة لجان فنية متخصصة.

وقد قامت الوزارة ضمن برنامج عمل اللجنة الفنية "برنامج كفاءة الطاقة للمكيفات الكهربائية بتحديث المواصفة القياسية الإماراتية رقم 1 - 5010 لعام 2024 "بطاقة بيان كفاءة الطاقة للأجهزة الكهربائية - الجزء الأول : مكيفات الهواء ذات السعة المنخفضة".

وقد اعتمدت هذه المواصفة كمواصفة قياسية إلزامية (لائحة فنية) وذلك بموجب قرار مجلس الوزراء رقم () بتاريخ / / هـ ، الموافق / / 2024 م.

Foreword

Ministry of Industry & Advanced Technology (MOIAT) has national responsibility for standardization activities. One of MOIAT's main functions is to issue Emirates Standards /Technical regulations through specialized technical committees (TCs).

MOIAT, through the technical program of committee "Technical committee for program of Energy Efficiency for Electrical Air Conditioner has Updated the Standard no. 5010-1 *Labeling – Energy efficiency label for electrical appliances - Part one: Low Capacity Air Conditioners*. This standard has been approved as (Technical Regulation) by Decree of UAE Cabinet No. (), held on / / H, / /2024.

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Labeling – Energy Efficiency Label for Electrical Appliances

Part 1 – Low Capacity Air-Conditioners

1. Scope

This standard deals with the performance and energy efficiency label requirements for ducted and non-ducted air-conditioners and air-cooled heat pumps with a cooling capacity up to 65000 Btu/h (19kW).

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

- a) Evaporative coolers.
- b) Individual assemblies not constituting a complete refrigeration system such as condensing units for separate use.
- c) VRF and multi split system regardless of the capacity will be cover under UAE.s 5010-5

2. Normative References

- 2.1 GSO ISO 5151:2017 – non-ducted air conditioners and heat pumps – Testing and rating for performance
- 2.2 GSO ISO 16358-1:2013 + AMD1:2019 – Air-cooled air conditioners and air-to-air heat pumps – Testing and calculating methods for seasonal performance factors – Part 1: Cooling seasonal performance factor
- 2.3 GSO ISO 13253:2017 – Ducted air-conditioners and air-to-air heat Pumps – Testing and rating for Performance

3. Terms and Definitions

For the purpose of this document, the following terms and definitions apply:

The following normative standards apply for certification purposes. In all cases, the most recent edition of the document is considered the preferred version

3.1 Accredited Laboratory

Any laboratory recognized by MoIAT or/ and recognized through the ILAC system for the list of testing procedures listed in this standard.

3.2 Total Cooling Capacity

Amount of sensible and latent heat that the equipment can remove from the conditioned space in a defined interval of time.

Note 1 to entry: Total cooling capacity is expressed in units of Btu (W.h).

3.3 Effective Power Input (P_E)

Average electrical power input to the equipment within a defined interval of time, obtained from:

- The power input for the operation of the compressor and any power input for defrosting, excluding additional electrical heating devices not used for defrosting.
- The power input of all control and safety devices of the equipment.
- The power input of the conveying devices within the equipment for heat transport media (e.g., fan, pump)

Note 2 to entry: Effective power input is expressed in units of watts, W

3.4 Total Power Input (P)

Average electrical power input to the equipment as measured during the test.

Note 3 to entry: Total power input is expressed in units of watts, W.

3.5 Non-ducted Air-conditioners

Encased assembly or assemblies, designed primarily to provide free delivery of conditioned air to an enclosed space, room or zone.

Note 4 to entry: It can be either single-package or split-system and comprises a primary source of refrigeration for cooling and dehumidification. It can also include heating other than a heat pump and means for circulating, cleaning, humidifying, ventilating or exhausting air. Such equipment can be provided in more than one assembly, the separated assemblies (split-systems) of which are intended to be used together.

Note 5 to entry: An enclosed space, room or zone is known as a conditioned space.

3.6 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.

3.7 Rated Cooling Capacity

The cooling capacity claimed by the manufacturer of an air-conditioner model at tropical condition T3.

Note 6 to entry: Rated cooling capacity is expressed in units of Btu-h (W.h).

3.8 Rated Power Input

Power input of the air-conditioner model as claimed by the manufacturer during the determination of rated cooling capacity at tropical condition, T3.

Note 7 to entry: Power input is expressed in units of watts, W.

3.9 Split System

An air-conditioner with separated assemblies (indoor and outdoor assemblies) of which are intended to be used together that are connected with refrigerant piping. The indoor unit usually lies within the conditioned space.

3.10 Star Rating

The number of stars indicating the efficiency level of the air conditioner, which ranges from 1 star (least efficient) to 5 stars (most efficient). It is represented on the Energy Efficiency label according to the classification in Table 1.

3.11 Energy Efficiency Label

An adhesive sticker placed on electrical appliances containing important information about the air-conditioner, such as the device's level of energy consumption.

3.12 Full-load Operation

Operation with the equipment and controls configured for the maximum continuous duty refrigeration capacity specified by the manufacturer and allowed by the unit controls.

Note 8 to entry: all indoor units and compressors operate during full-load operations.

3.13 Cooling half-load operation

Operation with the equipment and controls configured for 50% of the maximum continuous refrigeration capacity specified by the manufacturer and allowed by the unit controls.

3.14 Cooling minimum-load operation

Operation with the equipment and controls configured for the minimum refrigeration capacity specified by the manufacturer and allowed by the unit controls.

3.15 Cooling Seasonal Energy Consumption (CSEC)

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

3.16 Cooling Seasonal Performance Factor (CSPF)

Ratio of the total amount of heat that the equipment can remove from the indoor air when operated for cooling during the cooling season to the total amount of energy consumed by the equipment during the same period (Unit: W/W).

3.17 Radio Frequency Identification (RFID)

form of wireless communication that incorporates the use of electromagnetic or electrostatic coupling in the radio frequency portion of the electromagnetic spectrum to uniquely identify an object, animal, or person.

3.18 Radio Frequency Identification (RFID) Tag

Electronic microchip that can support radio frequency identification protocol and store a unique identifier

3.19 Refrigerant

Fluid used for heat transfer in a refrigerating system, which absorbs heat at a low temperature and a low pressure of the fluid and rejects it at a higher temperature and a higher pressure of the fluid usually involving changes of the phase of the fluid. (should be according the national regulations).

3.20 Rated current

current of the air-conditioner model as claimed by the manufacturer during the determination of rated cooling capacity at tropical condition, T3.

Note 9 to entry: current is expressed in units of Ampere, A.

4. General Requirements

4.1 Low-capacity air-conditioners and air-cooled heat pumps shall comply with the requirements of this standard. Tests carried out in order to fulfill the requirements of this standard accordance to the ISO 16358-1:2013/AMD 1:2019 requirements.

4.2 Product cover with this standard shall comply with the following:

- AC single phase circuits of 220V or 240 V,
- DC single phase up to 400V,
- Designed for dual voltages (including DC) up to 400V,
- Voltage range including above values
- Three phase circuits of 380V or 400V At frequency of 50/60 Hz or 50 Hz only.

5. Cooling Seasonal Performance Factor Classifications (Cooling Mode)

5.1 In order to calculate the Cooling Seasonal Performance Factor (CSPF) rating for the products covered within the scope of this standard, the calculation tool shall be applied from ISO 16358-1:2013/AMD 1:2019 and based on ISO 16358-1:2013, Clause 6 (Calculations), using the specified weather bin for hot climates as stipulated in Annex A of this standard according to Bin Hours - "0B" Climatic Zone.

Table 1
Cooling Seasonal Performance Factor Classifications (CSPF)

Star Rating	CSPF W/W at T3
	All types
5	CSPF \geq 5.2
4	5.2 > CSPF \geq 4.4
3	4.4 > CSPF \geq 3.7
2	3.7 > CSPF \geq 2.9
1	2.9 > CSPF \geq 2.6
Except windows ACs the minimum accepted value shall be at least 2.9.	

6. Marking Requirements

In addition to any information needed to be displayed on the air-conditioner unit, the following 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 information related to energy performance shown in any part of the air-conditioner unit or packaging shall not have any ambiguity or lead to miss misunderstanding of the performance of the unit.

6.1 The information on the name plate in Arabic or English or both shall include at least:

- a) Manufacturer's name and/or trademark.
- b) Country of origin.
- c) Manufacturer's model or type reference and serial number of the unit.
- d) Rated voltage or rated voltage range (in volts, V);
- e) Rated frequency (in hertz, Hz);
- f) Rated current (A or Amperes)
- g) Rated power input at T3 condition (in watts or kilowatts, W or kW);
- h) Rated cooling capacity at T3 condition (in Btu-h);
- i) Cooling Seasonal Performance Factor at T3 condition (CSPF);
- j) Power factor.
- k) Refrigerant and Refrigerant mass (Kg)

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

- a) CSPF calculation specified in clause 5.1.
- b) Dimensions of the unit and its method of mounting.
- c) Minimum clearances between the various parts of the unit and the surrounding framework.
- d) Instruction necessary for the correct operation of the unit and any special precaution to be observed to ensure its safe use and maintenance.
- e) Weight of the unit.
- f) Instruction for packing and unpacking the unit.
- g) Any additional information.

7. Cooling Capacity Tests

Cooling capacity shall be determined in accordance with clause 5.1 and GSO ISO 5151:2017 for non-ducted Acs, and according to GSO ISO 13253 for ducted units.

8. Maximum Cooling Performance Test

Air conditioners within the scope of this standard shall be tested for the Maximum cooling operating at full load at temperature 52⁰ C and shall comply with the performance requirements stipulated in in GSO ISO 5151 Clause 5.2 or GSO ISO 13253 Clause 6.2.

9. Annual Energy Consumption

The cooling seasonal energy consumption (CSEC) at T3 condition shall be calculated according to the applicable formula in GSO ISO 16358-1 clauses 6.4.4, 6.5.4, 6.7.4 and F 2.7.3.

10. Sampling and Compliance Criteria

The following tests and their required number of samples are listed in table 2 below:

Table 2 - Sampling Criteria

Type of test	No. of Samples
Cooling Capacity Tests	1
Maximum Cooling Capacity Tests	1
Cooling Seasonal Performance Factor	1

The following values shall not deviate by more than the deviation shown in Table 3 below:

Table 3 - Compliance Criteria

Rated Cooling Capacity	Tested Cooling Capacity $\geq 95\%$
Tested cooling capacity half load	50% $\pm 5\%$ of test full load
Tested power input	<110% of rated power input

11. Energy Efficiency Label

Air conditioners within the scope of this standard shall be provided with an approved Energy Efficiency Label and a valid RFID Tag. Placement and provision of the Energy Efficiency Label and valid RFID Tag shall be in accordance with the following conditions:

- Energy Efficiency labels without a valid RFID Tags are considered void/invalid.
- Products displayed in the local market shall be displayed with the approved/valid Energy Efficiency label + RFID Tag where the "label + tag" combination is placed in the most conspicuous area/portion of the product for verification and viewing purposes of the local consumer/buyer/market surveillance authorities.
- The approved/valid Energy Efficiency Label + RFID Tag shall be supplied together with the product to consumers/buyers even after purchase conditions.
- Energy Efficiency Label shall be according to the approved label design from conformity sector.

Annex A

Bin Hours - "OB" Climatic Zone

Bin Number (j)	Bin Temperature (t _j), °C	Bin Hours	%
1	21	18	0.37%
2	22	40	0.82%
3	23	74	1.51%
4	24	130	2.66%
5	25	198	4.05%
6	26	241	4.93%
7	27	290	5.93%
8	28	329	6.73%
9	29	364	7.44%
10	30	381	7.79%
11	31	388	7.93%
12	32	393	8.03%
13	33	372	7.60%
14	34	307	6.28%
15	35	255	5.21%
16	36	213	4.35%
17	37	185	3.78%
18	38	155	3.17%
19	39	131	2.68%
20	40	106	2.17%
21	41	88	1.80%
22	42	71	1.45%
23	43	55	1.12%
24	44	41	0.84%
25	45	27	0.55%
26	46	19	0.39%
27	47	11	0.22%
28	48	6	0.12%
29	49	3	0.06%
30	50	1	0.02%
Total		4892	100.00%