دولة قطر
الهيئة العامة القطرية للمواصفات والتقييس
QATAR GENERAL ORGANIZATION FOR STANDARDIZATION

المواصفة القياسية القطرية
QS 2663:2019

متطلبات بطاقات الطاقة والحدود الدنيا لكفاءة استهلاك الطاقة لمكيفات الهواء

ENERGY LABELLING AND MINIMUM ENERGY PERFORMANCE REQUIREMENTS

FOR AIR-CONDITIONERS

ICS : : 23.120

تقديم

الهيئة العامة القطرية للمواصفات والتقييس من مهامها إصدار المواصفات القياسية واللوائح الفنية لمختلف المنتجات والخدمات في دولة قطر، بواسطة لجان فنية متخصصة .

وقد قامت ادارة المواصفات والمقاييس بالهيئة العامة القطرية للمواصفات والتقييس وبالتنسيق مع ادارة الترشيد وكفاءة الطاقة بالمؤسسة العامة القطرية للكهرباء والماء بإعداد المواصفة القياسية القطرية رقم (QS 2663:2019) " **متطلبات بطاقات الطاقة والحدود الدنيا لكفاءة استهلاك الطاقة لمكيفات الهواء** " .

وقد اعتمدت هذه المواصفة القياسية بقرار من سعادة وزير البلدية والبيئة رقم ( ) لسنة 2019م ، بتاريخ / / 1440 هـ الموافق / / 2019م .

Foreword

One of the main responsibilities of Qatar general Organization for Standardization is to issue different standards and technical regulations on (commodities & services) in the State of Qatar, through specialized technical committees (TCs) .

Standards & Metrology Department within Qatar General Organization for Standardization, in coordination with the Conservation & Energy Efficiency Department of Qatar General Electricity & Water Corporation has been preparing Qatari standard No. (QS 2663:2019)" **ENERGY LABELLING AND MINIMUM ENERGY PERFORMANCE REQUIREMENTS FOR AIR-CONDITIONERS.**

This standard has been approved as a Qatari technical regulation by the Municipality & Environment Minister held on / / 1440 H , / / 2019 G .

ENERGY LABELLING AND MINIMUM ENERGY PERFORMANCE REQUIREMENTS FOR AIR-CONDITIONERS

1. SCOPE AND OBJECTIVE

1.1 Scope

This standard specifies the energy labelling requirements and the Minimum Energy Performance Standard (MEPS) requirements for single-package (such as window type) and split-system non-ducted air conditioners using air- and water-cooled condensers and heat pumps employing air-cooled condensers and ducted air-conditioners using air-to-air heat pumps for residential, commercial and industrial sector as applicable in accordance with Qatari standards.

1.2 Objective

The objective of this standard is to:

a) Provide detailed information on the performance and energy labelling requirements which an airconditioning 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 QS ISO:5151 “Non-ducted air conditioners and heat Pumps -Testing and rating for Performance”.

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

3. TERMS AND DEFINITIONS

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

3.1 Ducted airconditioners

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

3.2 Non-ducted airconditioner

An airconditioner 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 airconditioner model determined as follows, as applicable:

(a) Rated total cooling capacity As claimed by the manufacturer for temperature condition T1 and T3. (Units: Btu/h).

(b) Rated heating capacity As claimed by the manufacturer for temperature condition H1. (Units Btu/h).

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 airconditioner 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 airconditioner 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 EER .

3.7 Estimated annual energy consumption

Rated power expected within 2700 working hour with a full load annually.

Formula to calculate the Estimated Annual Energy Consumption :

Estimated Annual Energy Consumption = (Total Input Power in KW at (T1) conditions) x (2700 hours/year) .

4. REGISTRATION REQUIREMENTS

4.1 The information about registration requirement for energy labelling and MEPS will be available in Laboratories & Standardization Affairs.

4.2 For registration of an airconditioner for energy labelling and MEPS with a test report in accordance with recent edition of QS ISO 5151 or QS ISO 13253, as applicable. An application shall be provided for each model, in accordance with Appendix A, and submitted to the registration body .

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 effective power input …….....…….≤1.05 x rated power.
b) Tested cooling and heating capacity ……..…..≥0.95 x rated capacity.
c) Tested EER ……..……..≥0.95 x rated EER.
d) Tested COP ……..…….≥0.95 x rated COP.
e) Tested voltage .....240 volt single phase or 415 volt three phase.
f) Tested frequency …… 50 Hz.
g) Testing conditions (**T1,T3**)..... (refer to the standards mentioned in clause 2).

5. MEPS

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

Air Conditioner appliance type	**Cooling Capacity limit (CC) (Btu/h) At test condition (T1)**	**(EER) Value (Btu/h)/watt To be applied mandatory First Stage**		**(EER) Value (Btu/h)/watt To be applied mandatory Second Stage**	
		T1	T3	T1	T3
Window Type	18000 > CC	8.5	6.12	8.5	6.12
	18000 ≤ CC < 24000	8.5	6.12	8.5	6.12
	CC ≥ 24000	8.5	6.12	8.5	6.12
Split Type and the other types	All Capacities	9.5	6.84	11.5	8.28

6. NAME PLATE AND INSTRUCTION SHEET OR MANUAL

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

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

- 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).
- For each of cooling test conditions T1 and T3 according to the standard stated in clauses 2.1 and 2.2, as applicable:
  - Rated current in Amperes.
  - Rated power input in watts or kilowatts.
  - Net total room cooling capacity in Btu/h (and any units of kW or Kcal/h) when tested according to conditions stated in clauses 2.1 and 2.2.
  - Energy Efficiency Ratio (EER) in (Btu/hr)/Watt.
- For heating test conditions according to the standard stated in clauses 2.1 and 2.2, as applicable.
  - Current rating (Amperes).
  - Input power rating (watts or kilowatts).
  - Heating capacity in W when tested according to conditions stated in clauses 2.1 and 2.2, as applicable.
  - Coefficient of Performance (COP) (watt/watt).
- 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.
- Annual energy consumption for calculating the expected rated power within 2700 working hour with full load annually.

7. ENERGY RATING CLASSIFICATION

7.1 The energy efficiency class rating is used for the comparative label used with window type and split type air-cooled air-conditioner with cooling capacity less than and including 70000 Btu/h (20000 W).

7.2 The energy efficiency class is then determined in accordance with the following table, where the EER (energy efficiency ratio) is determined in accordance with the test procedures of the harmonized standards referred to in Article 2 at condition T_1 & T_3.

7.3 Stars No. on Label For 1st & 2ed Stages:

a) 1st Stage:

EER limits (Btu/h)/w at T_1	EER limits (Btu/h)/w at T_3	Star Rating	Status
EER ≥ 12.5	EER ≥ 9.00	8	Applied
12.5 > EER ≥ 11.5	9.00 > EER ≥ 8.28	7	Applied
11.5 > EER ≥ 10.0	8.28 > EER ≥ 7.20	6	Applied
10.0 > EER ≥ 9.5	7.20 > EER ≥ 6.84	5	Applied
9.5 > EER ≥ 9.0	6.84 > EER ≥ 6.48	4	Applied
9.0 > EER ≥ 8.5	6.48 > EER ≥ 6.12	3	Applied for Window Type only
EER < 8.5	EER < 6.12		Not Applicable

b) 2ed Stage for split type:

EER limits (Btu/h)/w at T_1	EER limits (Btu/h)/w at T_3	Star Rating	Status
EER ≥ 14.5	EER ≥ 10.44	9	Applied for split Type only
14.5 > EER ≥ 13.5	10.44 > EER ≥ 9.72	8	
13.5 > EER ≥ 12.5	9.72 > EER ≥ 9.00	7	
12.5 > EER ≥ 11.5	9. > EER ≥ 8.28	6	
EER < 11.5	EER < 8.28		Not Applicable

c) 2ed Stage for window type:

EER limits (Btu/h)/w at T1	EER limits (Btu/h)/w at T3	Star Rating	Status
11 > EER ≥ 10	7.92 > EER ≥ 7.20	5	Applied for Window Type only
10 > EER ≥ 9.0	7.20 > EER ≥ 6.48	4	
9.0 > EER ≥ 8.5	6.48 > EER ≥ 6.12	3	
EER < 8.5	EER < 6.12		Not Applicable

8. ENERGY LABELLING REQUIREMENTS

8.1 Information and Values Contained in the Energy Labels

The font should be written "AXt ALMANAL Bold" for Arabic and "Arial" for English as well as the Sticker Color Pallete are as illustrated in the Figure7&8 entitled (Colors , Fonts & Dimensions of the Stickers) Figure 7&8 .

Note : The cooling capacity and power input values shown on the energy label are based on the tested cooling capacity and the tested power, as declared by the manufacturer as well as shown in the nameplate for condition T1 for cooling capacity in accordance with the standard mentioned in clause 2.1 and 2.2.

8.2 Sample Labels

Example of printed energy label for air-conditioning appliances are shown in Figures 2, 3, 4, & 5.

Qatar General Organization for Standardization has right to modify the form of the label.

8.3 Dimensions of Labels

Figure 8&9 shows the dimensions of labelFor the split & window type.

8.4 Placement of Energy Labels

The label shall be adhered, or attached as a swing tag, on the front of the unit. Additional label may be attached to the exterior of the packaging. The label shall be existed on the unit 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 swing tag, or be self-adhesive, and shall be cut to the outline shown in Figure 8&9. A trim or die cut margin of up to 5 mm around the label is acceptable.

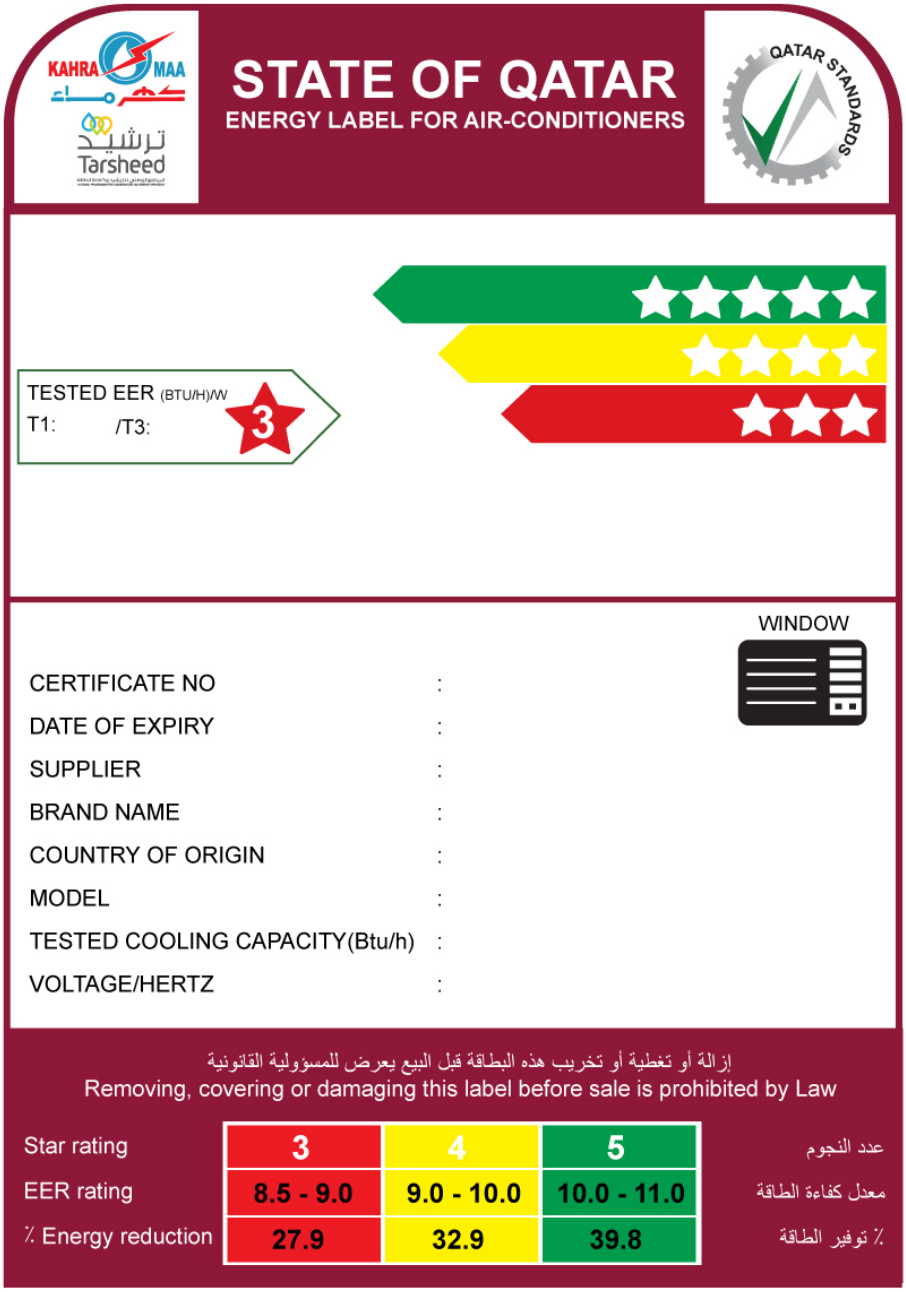


FIGURE1: Example of Label For Window type& Cooling Unit – 3 stars

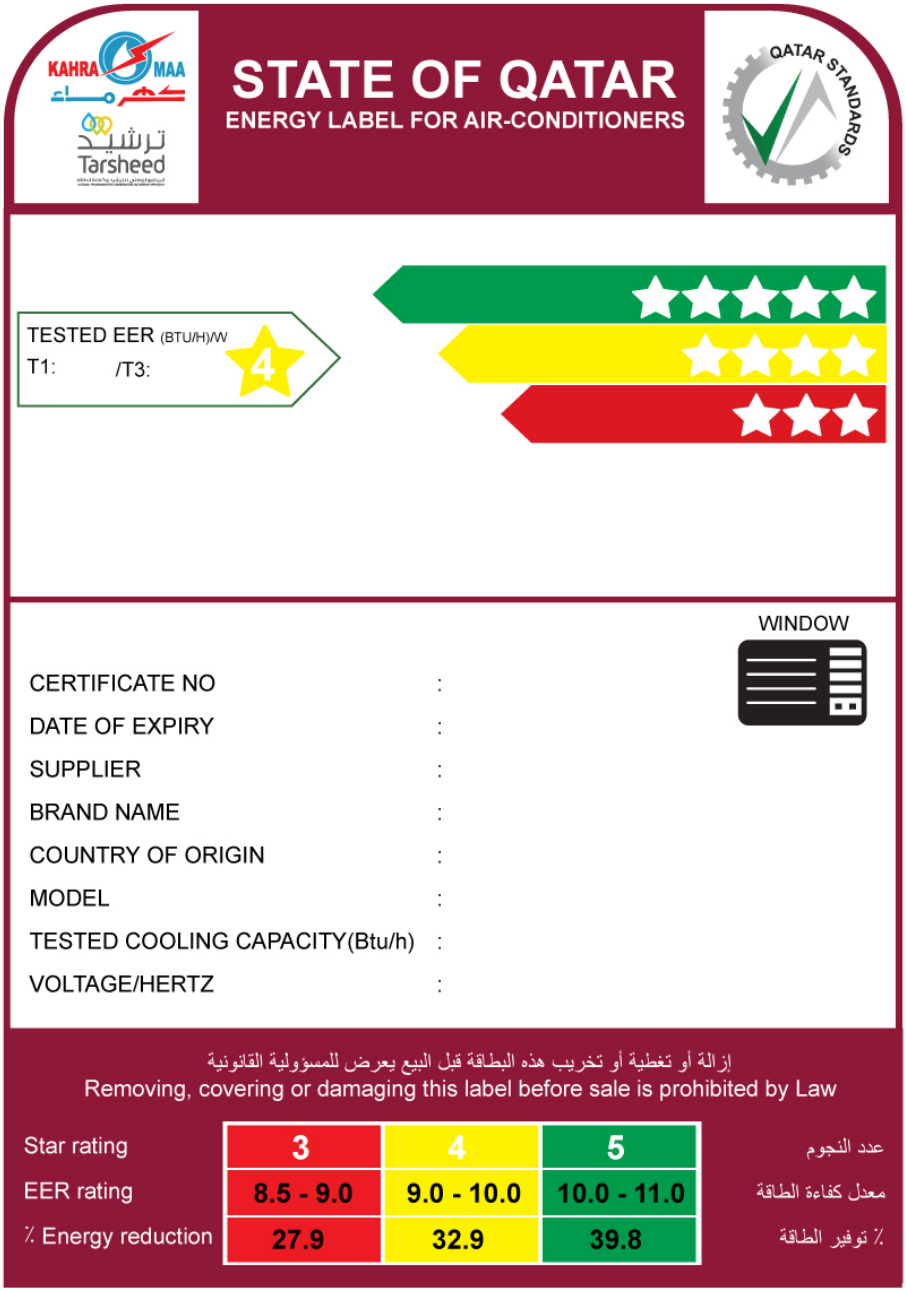


FIGURE 2: Example of Label For Window type & Cooling Unit – 4 stars

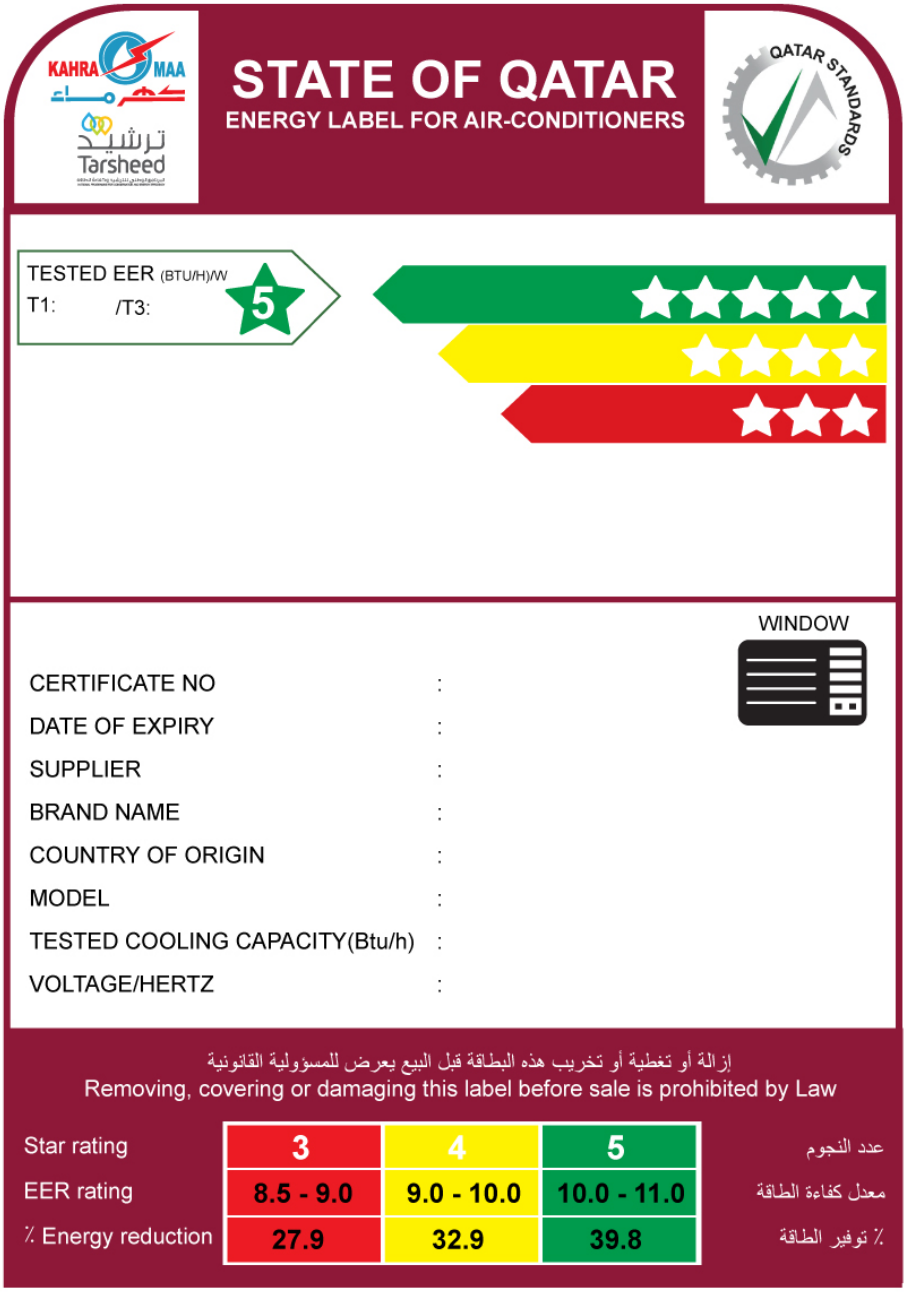


FIGURE 3: Example of Label For Window type & Cooling Unit – 5 stars

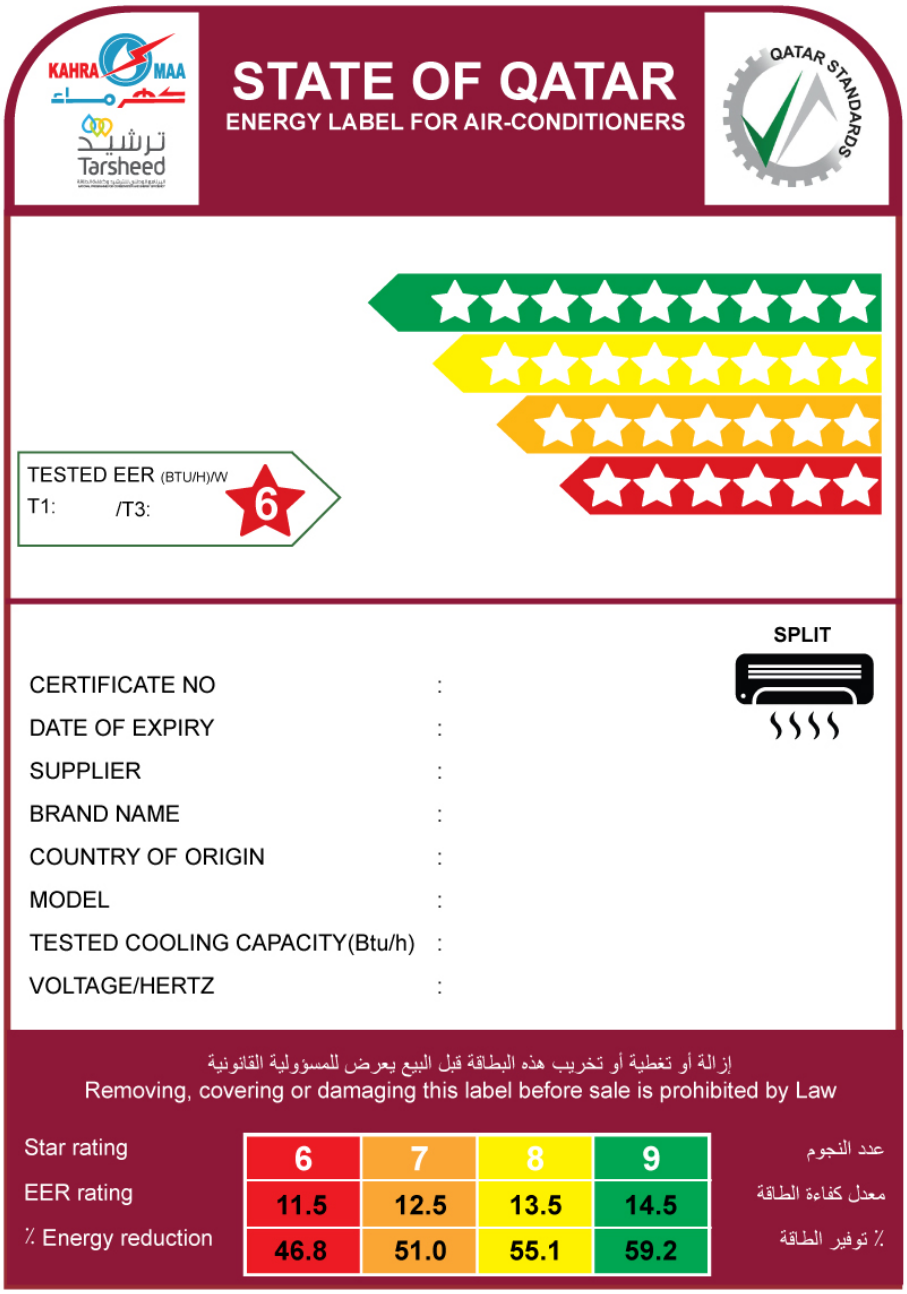


FIGURE 4: Example of Label for split type& Cooling Unit – 6 stars

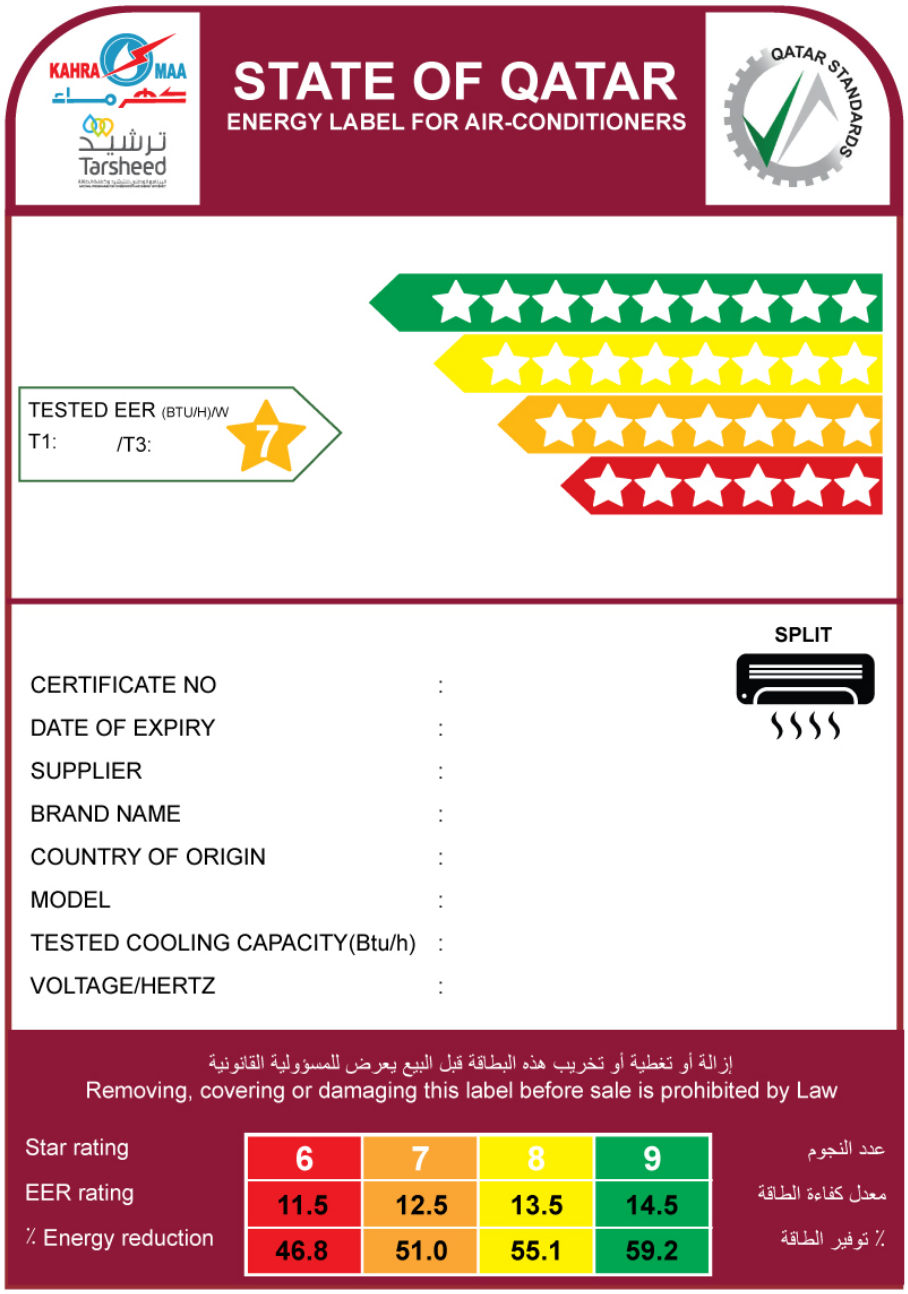


FIGURE 5: Example of Label for split type & Cooling Unit – 7stars

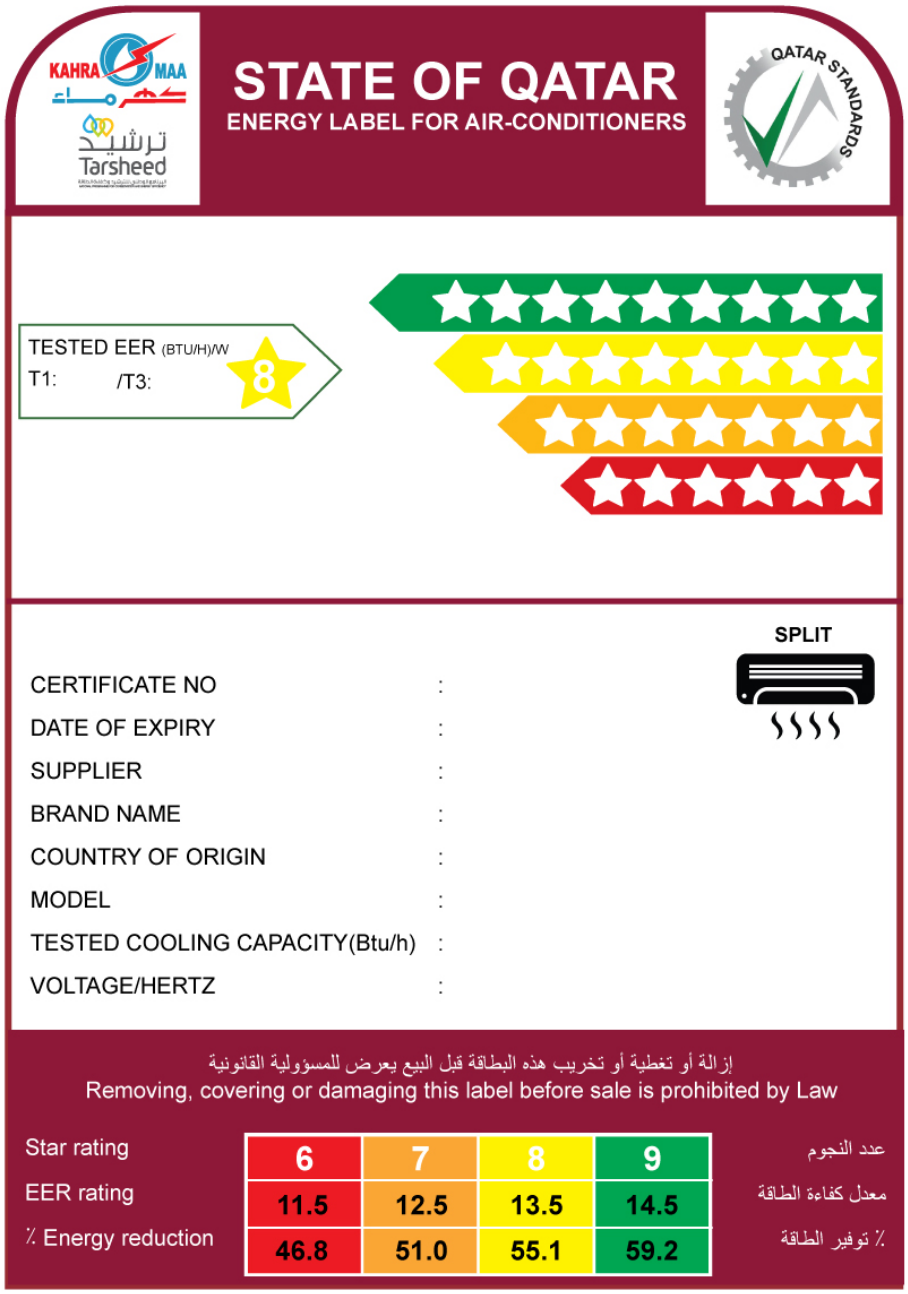


FIGURE 6: Example of Label for split type & Cooling Unit – 8 stars

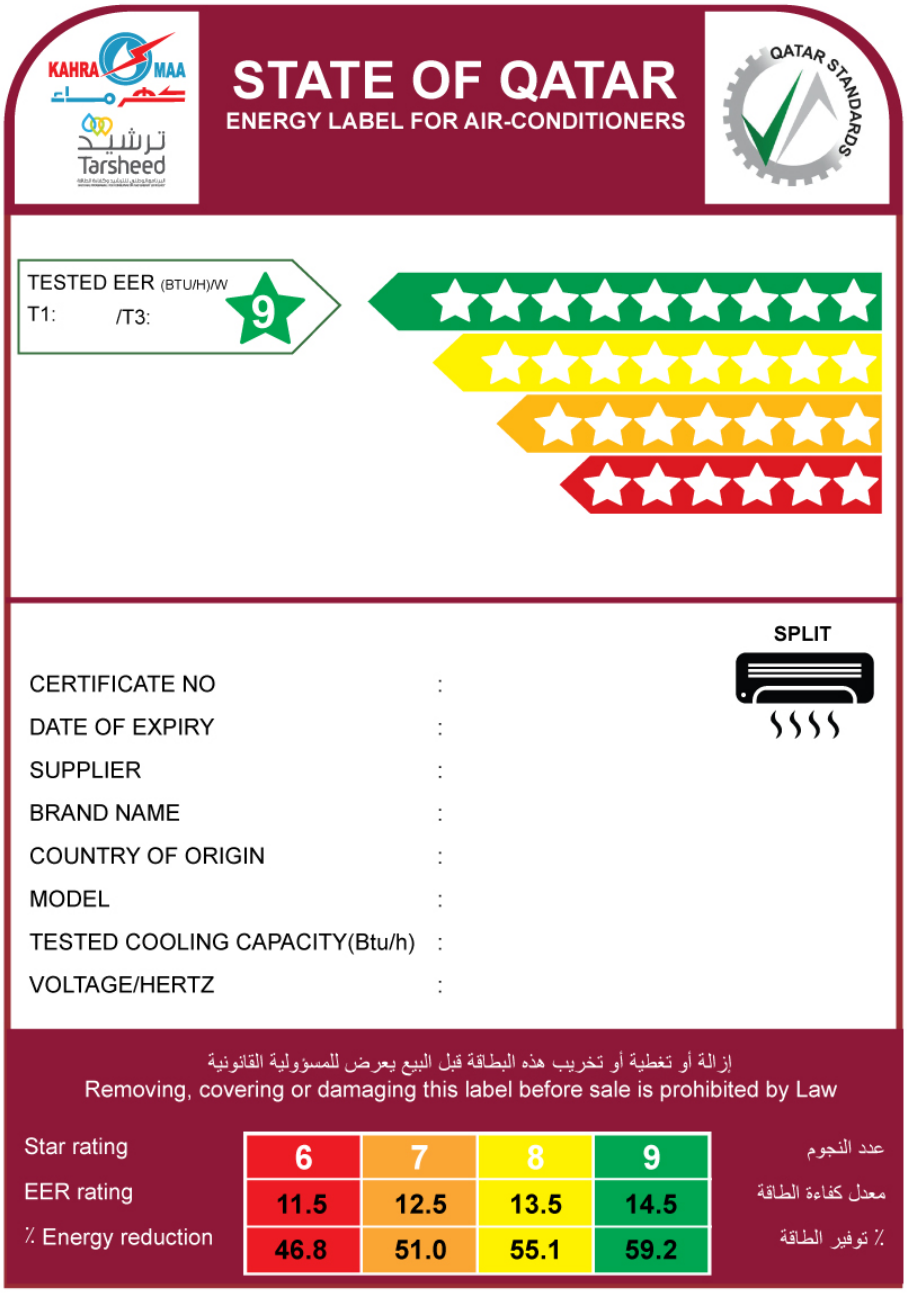
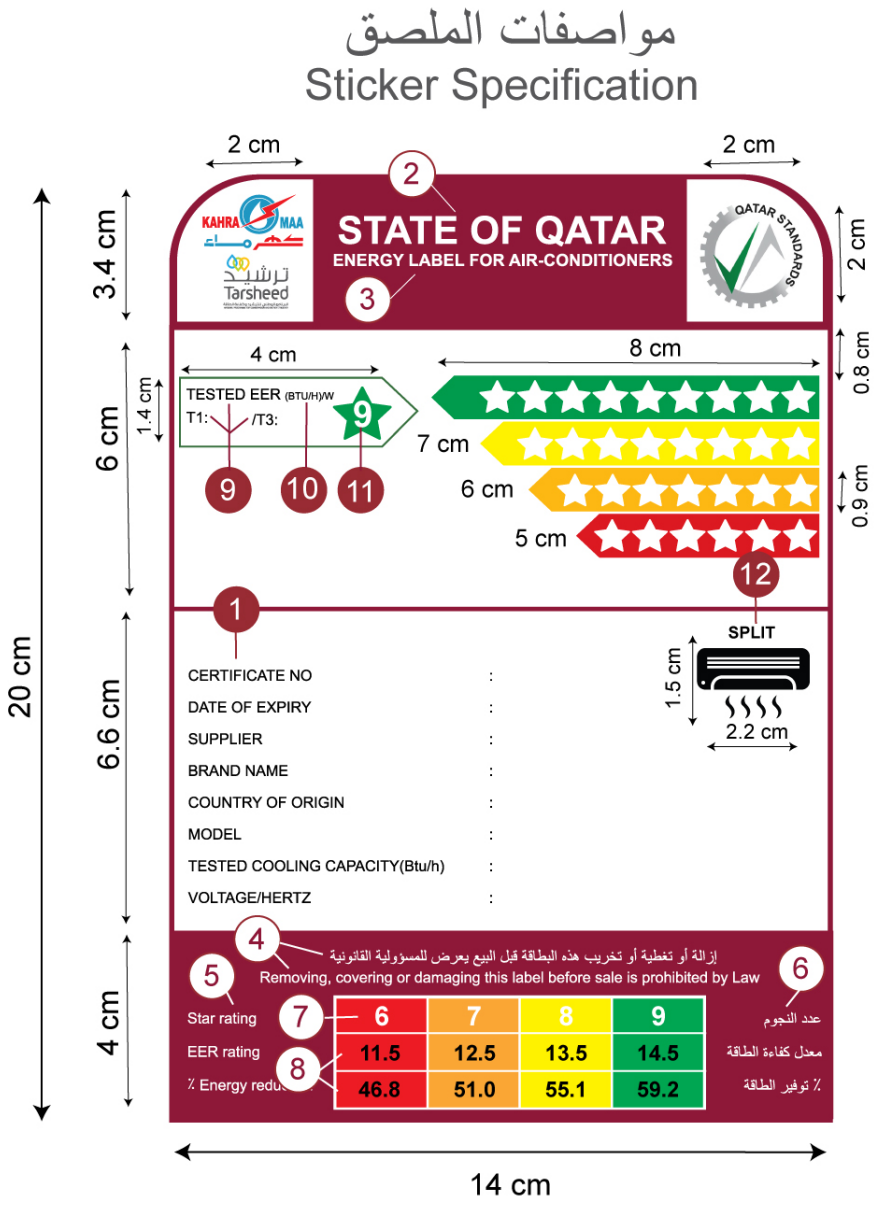


FIGURE 7: Example of Label for split type & Cooling Unit – 9 stars



Fonts: Arial

Sizes:

1 =10	5 =10	9 =9
2 =23	6 =10	10 =6
3 =10	7 =15 Bold	11 =20 Bold
4 =10	8 =12 Bold	12 =9

FIGURE 8:Colors, Fonts & Dimensions of Sticker for split type

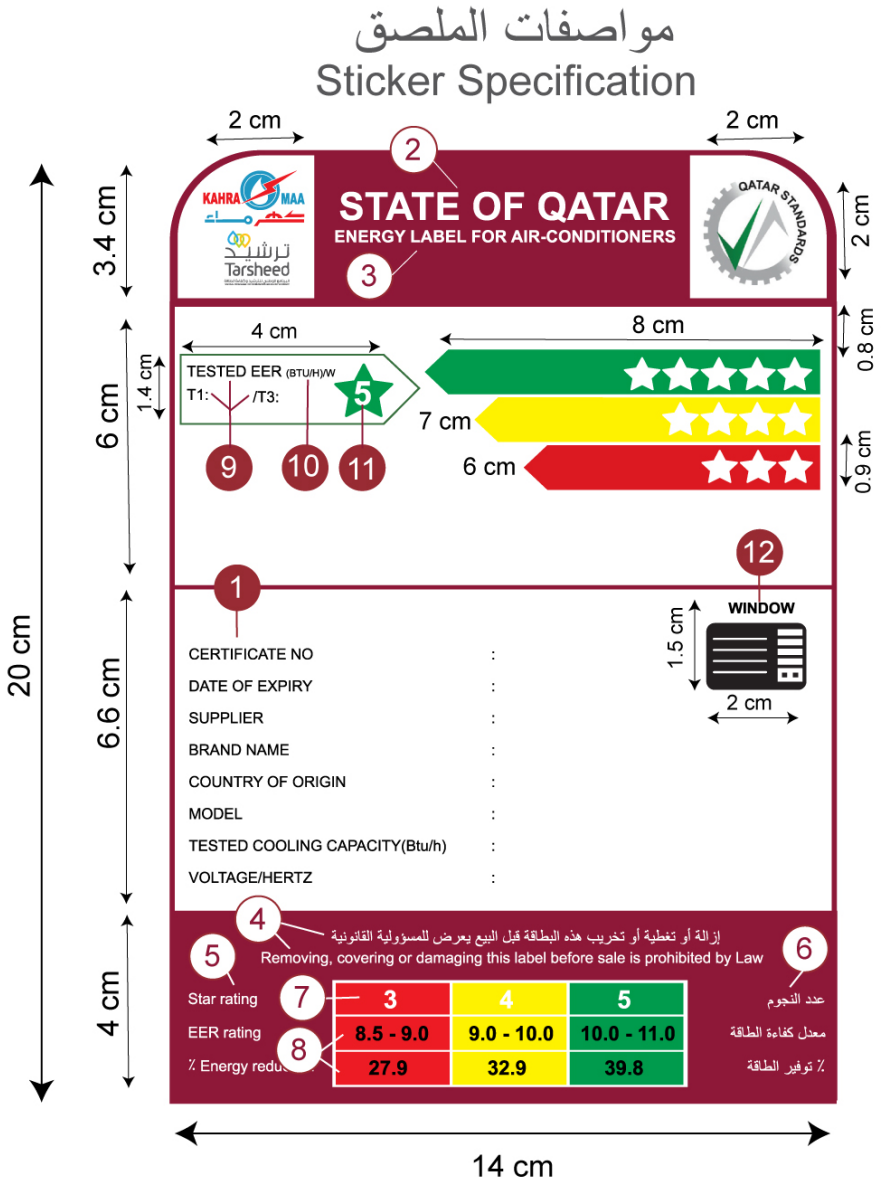
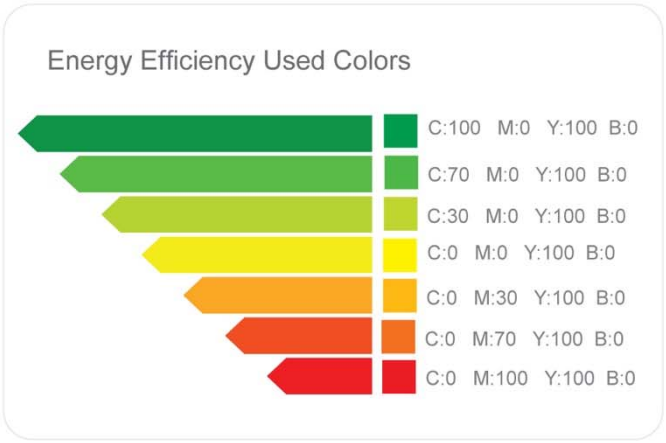


FIGURE 9:Colors, Fonts & Dimensions of Sticker for window type



PANTON 1950C

C:79 M:25 Y:12 B:0
C:0 M:100 Y:100 B:0

C:69 M:15 Y:0 B:0
C:31 M:0 Y:100 B:0
C:0 M:23 Y:79 B:0
C:63 M:55 Y:52 B:27

C:89 M:27 Y:100 B:15
C:0 M:0 Y:0 B:30
C:0 M:0 Y:0 B:100

APPENDIX A
APPLICATION FOR REGISTRATION OF
AIR-CONDITIONERS FOR ENERGY LABELLING AND MEPS
(please type or print)

This Appendix sets out the required format for submitting an application for registration. Application for registration of an air-conditioner for energy efficiency.

I hereby apply for registration of an electrical appliance/s for the purpose of energy labelling.

In the Country of.....
(*specify the country in which this application is made*)

PART 1 APPLICANT INFORMATION

Applicant Name : …….....

Company Name : …….....……

Company Address : …….....……....

P.O.Box : ……..... Post Code: .....

Contact Person : (Name and Adrees and workplace in each sales country)

Jop Title : ……

Phone : …… Fax : ……. Electronic Mail : .....

Supplier or Vendor in Qatar :

No.	Supplier or Vendor Name	Contact Address (Mail Address, Phone, Fax, Electronic Mail)	License Number or Commercial Licenses (related to import and sale of goods in Qatar.

Part 2 DESCRIPTION OF THE APPLIANCE			
Model Name *(if available)*			
Model Number or Family Number:			
Model Number: (on indoor unit for split systems)			
Model Number on Outdoor Unit: (split systems only)			
Other Model Numbers to be included under this registration:			
Country of Manufacture:			
Year in which model first available in Qatar :			
Model Number(s) to appear on the Energy Label:			
Date of manufacture traceability (of package unit or indoor unit if split system): Is the date of manufacture permanently marked on the rating plate in a non-encrypted format? If yes, provide an example of the date format. If no, provide details on how to determine (from the serial number or other permanent markings for this model)	Yes Date format:	No Provide details:	
'Date of manufacture traceability (of outdoor unit if split system): Is the date of manufacture permanently marked on the rating plate in a non-encrypted format? If yes, provide an example of the date format. If no, provide details on how to be determined (from the serial number or other permanent markings for this model)	Yes Date format:	No Provide details:	
Does this model or family replace or supplement another model or family with identical energy consumption and energy efficiency rating? *(indicate correct answer)*	Yes	No	
If yes, indicate relevant details:	Model name	Model number	Registration number
Informtion about the components used in the manfucturing: There must be complemantry documents for the materials used in the Manufacturing including	1- Compressor Country of origin:…….. Name of Manufacturer or his trading mark: …… Compressor model number: …… Compressor type: …….		

drawings and figures and technical specifications and product model accreditation (if any) for each of the components mentioned here.	2- Fan Country of origin:…….. Name of Manufacturer or his trading mark: ……. Fan Model number: …….. Fan type: …… 3- Heat Exchanger Volume and description of the heat exchanger:….

Part 3 TESTING AND TEST REPORT			
Test Laboratory Type: (put (√) inside the appropriate box)	□ Own 'in-house' laboratory: □ Independent laboratory:		
Test Laboratory Name:			
Test Laboratory Address:			
Test Laboratory Location:	□ Qatar □ Other—*(please specify):*		
Test Laboratory Accreditation:	□ Accredited from a body member in (ILAC)		
Test Standard Used:	□ QS ISO 5151 (the standard mentioned in 2.1) □ QS ISO 13253 (the standard mentioned in 2.2) Other— (please specify)		
Does this airconditioner have separate indoor and outdoor units	□ Yes □ No		
Serial number of test units/s and date tested:	SERIAL NUMBER Unitary unit or indoor unit if split system	SERIAL NUMBER Outdoor unit if split system	Test date
Rated voltage and frequency of tested unit	Package unit	Unitary unit or indoor unit if split system	Outdoor unit if split system
	Rated voltage or Rated voltage range (V)		
	Rated frequency (Hz)		
Tested voltage and frequency of tested unit		Unitary unit or indoor unit if split system	Outdoor unit if split system
	Tested voltage (V)		
	Test frequency (Hz)		

Part 4 SPECIFIC APPLICANCE DETAILS			
Air-conditioner dimensions (Advisory only): *(for split systems note only dimensions of the internal unit)*	Width (mm):	Height (mm):	Depth (mm):
Air-conditioner type:	☐ Cooling only ☐ Reverse cycle ☐ Heating only ☐ Other *(please specify)*		
Power supply:	☐ Single-phase ☐ Three-phase		
Rated Voltage (V):			
Rated Frequencu (Hz):			
Refrigerant Number :	☐ R22, ☐ Other *(please specify)*		
A/C Configuration 1—Air Distribution	☐ Ducted ☐ Non ducted		
A/C Configuration 2—Type	☐ Window/Wall, ☐ Spot cooler, ☐ Portable cooler, ☐ Single split system ☐ Double/triple split system, ☐ Multiple split system, ☐ Packaged		
Does this air-conditioner use a variable speed drive (inverter) or a multi-speed compressor?	☐ Yes ☐ No		

Part 5 TEST RESULTS		
TEST RESULTS—COOLING—CONDITION T1		
COOLING POWER	Rated Effective Power Input (kW)*	
	Tested Cooling Power Input (kW)**	
COOLING CAPACITY	Rated Total Cooling Capacity (Btu)*	
	Tested Total Cooling Capacity (Btu)**	
EER (Btu/h)/W	Rated EER **	
	Tested EER **	
The class rating number according to clause 7 of QS 2663/2015 (This standard)		□ Yes □ No

* to 2 decimal places
** to 3 decimal places

TEST RESULTS—COOLING—CONDITION T3		
COOLING POWER	Rated Effective Power Input (kW)*	
	Tested Cooling Power Input (kW)**	
COOLING CAPACITY	Rated Total Cooling Capacity (kW)*	
	Tested Total Cooling Capacity (kW)**	
EER (Btu/h)/W	Rated EER **	
	Tested EER **	
The class rating number according to clause 7 of of QS 2663/2019 (This standard)		□ Yes □ No

* to 2 decimal places

** to 3 decimal places

TEST RESULTS—HEATING—		
Does this model incorporate electric resistance heating?		□ Yes □ No
HEATING POWER	Rated Effective Power Input (kW)*	
	Tested Heating Power Input (kW)**	
HEATING CAPACITY	Rated Total Heating Capacity (kW)*	
	Tested Heating Capacity (kW)**	
COP (w/w)	Rated COP **	
	Tested COP **	

* to 2 decimal places

** to 3 decimal places

DECLARATION

I declare that the details stated above are correct.

Signature of Applicant: ..... Date: .....

Office use only

Date received: ..... Registration number: .....