# الهيئة العامة القطرية للمواصفات والتقييس
# Qatar General Organization for Standardization (QS)

**مشروع مواصفة نهائي**
Final Draft of Standard FDS

**إعداد اللجنة الوطنية الفنية الوطنية المتخصصة للمواصفات الكهربائية والالكترونية رقم TC05**

Prepared by Specialized National Technical Committee for Electrical standards No. TC05

**QS 05/FDS/ GSO 2769:2024**
**GSO 2769:2024**

# الثلاجات والمجمدات المنزلية – متطلبات أداء الطاقة والاختبار
# Household Refrigerating and freezers Appliances - Energy performance and Testing Requirements

**ICS: 97.030**

هذه الوثيقة مشروع للائحة فنية قطرية تم توزيعها لإبداء الرأي والملاحظات بشأنها، لذلك فإنها عرضة للتغيير والتبديل، ولا يجوز الرجوع إليها كمواصفة قياسية إلا بعد اعتمادها من الهيئة.

This document is a draft Qatari Technical regulation circulated for comment It is, therefore, subject to alteration and modification and may not be referred to as a Standard until approved by QS.

## تقديم

الهيئة العامة القطرية للمواصفات والتقييس هيئة وطنية من مهامها إعداد وتحديث وتبني المواصفات القياسية واللوائح الفنية القطرية بواسطة لجان فنية متخصصة للمواصفات والمقاييس.

وقد قامت الهيئة باعتماد اللائحة الفنية القطرية رقم QS GSO 2769:2024 (الثلاجات والمجمدات المنزلية – متطلبات أداء الطاقة والاختبار ) باللغة الإنجليزية، والتي تم دراستها وتبنيها عن هيئة التقييس الخليجية رقم (GSO 2769:2024) ضمن برنامج عمل اللجنة الوطنية الفنية الوطنية المتخصصة للمواصفات الكهربائية والالكترونية رقم TC05

وقد اعتمدت هذه المواصفة كلائحة فنية قطرية بقرار سعادة وزير التجارة والصناعة رقم (--) لسنة-- 20 م بتاريخ00/ 00 /-- 14 هـ، الموافق00/00/-- 20 م.

## Foreword

Qatar General Organization for standardization (QS) is the national authority entrusted with the preparation, updating, and adoption of Qatari Standards and Technical Regulations through Specialized National Technical Committees (TCs).

QS has approved Qatari Technical Regulation QS GSO 2769:2024 (Household Refrigerating and freezers Appliances - Energy performance and Testing Requirements) in English, which has been studied and adopted from (GSO 2769:2024) with technical modification within the work program of the Specialized (National Technical Committee for Electrical and Electronics Standards, ) TC05.

This standard has been approved as a Qatari Technical Regulation by H.E. the Minister of Commerce and Industry under Ministerial Decree No (00), issued on --/--/14--Hijri, Corresponding to--/--/20--.

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# Labeling – Energy Efficiency for Electrical Appliances
# Part 3: Household Refrigerating and Freezers Appliances

## 1. SCOPE

This regulation covers brand new household refrigerators, freezers, and refrigerator-freezers having a capacity of not more than 1,500 liters. This regulation applies to electric mains-operated household refrigerating and freezer appliances, stand-alone or built-in configuration.

Refrigerating and freezer appliances intended for industrial or commercial use are outside the coverage of this regulation. Refrigerating and freezer appliances intended for refrigeration of items other than foodstuff are not included in this regulation.

## 2. NORMATIVE REFERENCES

The following reference standards are referred to in this document in such a way that some or all their content constitutes the requirements of this standard:

- QS GSO IEC 62552-1:2024 Household refrigerating appliances - Characteristics and test methods - Part 1: General requirements
- QS GSO IEC 62552-2:2:2024– Household refrigerating appliances – Characteristics and test methods – Part 2: Performance requirements
- QS GSO IEC 62552-3:2024 – Household refrigerating appliances – Characteristics and test methods – Part 3: Energy consumption and volume
- QS GSO 1899:2010 - GCC Standard voltages and frequencies for A-C transmission and distribution systems

## 3. TERMS AND DEFINITIONS

For the purposes of this document, the terms and definitions listed in Annex I apply.

## 4. REGISTRATION REQUIREMENTS

**4.1** The registration requirements for energy labeling and energy performance will be available at the QATAR GENERAL ORGANIZATION FOR STANDARDIZATION (QS) or its authorized representative.

**4.2** To register a household refrigerating and freezer appliance, the following requirements should be provided:

1. A test report in accordance with a recent edition of GSO IEC 62552-1, GSO IEC 62552-2, and GSO IEC 62552-3, as applicable.
2. An application for each model according to Annex III to the registration body.

## 5. COMPARTMENT TYPES, TEMPERATURES AND ENERGY EFFICIENCY INDEX

### 5.1 Compartment types and target temperatures

**Table 2**

| Compartment Type | *Note* | Storage Conditions | | Target Temperature |
|---|---|---|---|---|
| | | $T_{min}$, °C | $T_{max}$, °C | $T_c$, °C |
| Pantry | (1) | +14 | +20 | +17 |
| Specific beverages | (2) (6) | +5 | +20 | +12 |
| Cellar | (1) | +2 | +14 | +12 |
| Fresh food | (1) | 0 | +8 | +4 |
| Chill | (3) | -3 | +3 | +2 |
| 0-star & ice-making | (4) | *n.a.* | 0 | 0 |
| 1-star | (4) | *n.a.* | -6 | -6 |
| 2-star | (4) (5) | *n.a.* | -12 | -12 |
| 3-star | (4) (5) | *n.a.* | -18 | -18 |
| 4-star (freezer) | (4) (5) | *n.a.* | -18 | -18 |

**Notes**:

(1) $T_{min}$ and $T_{max}$ are the average values measured over the test period (average over time and over a set of sensors).

(2) The average temperature variation over the test period for each sensor shall be no more than ±0.5 kelvin (K). During defrost and recovery period the average of all sensors is not permitted to rise more than 1.5K above the average value of the compartment.

(3) $T_{min}$ and $T_{max}$ are the instantaneous values during the test period.

(4) $T_{max}$ is the maximum value measured over the test period (maximum over time and over a set of sensors).

(5) If the compartment is of the auto-defrosting type, the temperature (defined as the maximum of all sensors) is not permitted to rise more than 3.0K during a defrost and recovery period.

(6) $T_{min}$ and $T_{max}$ are the average values measured over the test period (average over time for each sensor) and define the maximum allowed temperature operating range.

Each of these parameters shall be determined through a separate test or set of tests. Measurement data is averaged over a test period which is taken after the appliance has been in operation for a certain time. To improve the efficiency and accuracy of testing, the length of the test period shall not be fixed; it shall be such that the appliance is in steady state condition during this test period. This is validated by examining all data within this test period against a set of stability criteria and whether enough data could be collected in this steady state.

### 5.2 Energy Efficiency Index

The Energy Efficiency Index ($EEI$) of all refrigerating and freezer appliances covered by this standard shall not be above 125%. The equivalent star rating of refrigerating appliances covered by this standard shall be determined on the basis of the Energy Efficiency Index ($EEI$) as set out in Table 3.

**Table 3**

| Energy Efficiency Level | Energy Efficiency Index ($EEI$) |
|---|---|
| 5 stars (highest efficiency) | $EEI \leq 41$ |
| 4 stars | $41 < EEI \leq 51$ |
| 3 stars | $51 < EEI \leq 64$ |
| 2 stars | $64 < EEI \leq 80$ |
| 1 star (lowest efficiency) | $80 < EEI \leq 125$ |

The measurement methods and calculations of Annual Energy ($AE$), Standard Annual Energy ($SAE$) consumption, Energy Efficiency Index ($EEI$) shall be in accordance with Annex II.

### 5.3 DECLARATION OF RATED VALUES AND ENERGY EFFICIENCY LABEL

Rated values declared shall comply with the following criteria:

- Rated capacity shall be expressed in liters (l) in multiples of 1 liter
- Rated power shall be expressed in watts (W) in multiples of 10W

- Energy efficiency shall be expressed in % in multiples of 0.1%
- Rated annual energy consumption shall be expressed in kWh in multiples of 1kWh

## 6. MARKINGS AND INSTRUCTIONS

### 6.1 General Information

All refrigerating and freezer appliances covered in this standard shall comply with the requirements on nameplate information and instruction manual.

Any information related to the specifications and energy performance added on any part of the refrigerating and freezer appliance, packaging, and/or materials supplied with it shall not have any ambiguity or lead to misunderstanding on the specifications and energy performance of the appliance.

### 6.2 Nameplate Information

The following information shall be marked on the name or rating plate of the refrigerating and freezer appliance in Arabic and English. The marking shall not be on a detachable part of the unit and shall be indelible, durable, and easily legible:

- Manufacturer name
- Trademark or Brand name
- Model Number
- Country of Origin
- Category or type of the refrigerating and freezer appliance
- Rated Power, in watts (W)
- Net volume for food storage, in liters (l)
- Net volume for frozen food storage, in liters (l)
- class, at the least “Tropical” climate class (T)
- Rated voltage, in volts (V)
- Rated frequency, in hertz (Hz)
- Annual energy consumption ($AE$), in kWh

### 6.3 Instruction Manual

An instruction sheet or manual (in Arabic and English languages) shall be provided with each refrigerating and freezer appliance. Tables, drawings, and circuit diagrams may be depicted in English only.

The instruction sheet or manual shall include the following information as a minimum.

- Supplier’s name or trademark
- Supplier’s model identifier
- Category or type of the refrigerating and freezer appliance
- Energy efficiency level of the model
- Annual energy consumption ($AE$) in kWh per year, rounded up to the nearest integer. It shall be described as:
- The storge volume of each compartment and applicable star rating (as applicable)
- The design temperature of other compartments
- For specific beverages storage compartments, the coldest storage temperature, either pre-set in the compartment or capable of being set by an end-user and capable of being maintained continuously according to the manufacturer’s instructions, shall be given
- The mention “Frost-Free” for the relevant compartment (as applicable)
- “Power cut safe ‘X’ h”, defined as temperature rise time
- “Freezing capacity” in kg/24h
- “Climate class”
- If the model is intended to be a built-in appliance, an indication to this effect

The information contained in the fiche may be given in the form of a copy of the label, either in color or in black and white. One instruction sheet may cover several refrigerating and freezer appliances/models supplied by the same supplier.

### 6.4 Energy Efficiency Label:

The label must be printed, visible, and affixed to both the product and the packaging. The label should be on the visible part of the product packaging so that it is easy to see for the consumer.

The energy efficiency label must comply with the design and dimensions approved by the Qatar General Organization for Standardization

## 7. VERIFICATION FOR MARKET SURVEILLANCE PURPOSES

For the purposes of verification during a market surveillance action, a selected model shall be considered to compliant when the determined values (the values of the relevant parameters as measured in testing and values calculated from these measurements) comply with the respective verification tolerances as set out in Table 4.

**Table 4**

| Parameters | Verification Tolerances |
|---|---|
| Total volume and compartment volume | The determined value shall not be more than 3% or 1 liter lower – whichever is the greater value – than the declared value. |
| $E_{16}$, $E_{32}$ | The determined value shall not be more than 10% higher than the declared value. |
| $E_{aux}$ | The determined value shall not be more than 10% higher than the declared value. |
| Annual energy consumption | The determined value shall not be more than 10% higher than the declared value. |
| Power consumption of refrigerating and freezer appliances with a storage volume below 10 liters | The measured value shall not be greater than the limit value laid down by more than 0.10W at 95% confidence level. |
| Specific beverages appliances | The determined value shall not differ from the limits of the prescribed range by more than 10%. |

**A**

## ANNEX I

## TERMS AND DEFINITIONS

For the purpose of this standard, the following definitions shall apply:

(1) 'mains' or 'electric mains' means the electricity supply from the grid, as per the parameters in the Gulf Technical Regulation for Low Voltage Electrical Equipment and Appliances.

(2) 'Refrigerating appliance' means an insulated cabinet with one or more compartments that are controlled at specific temperatures, cooled by natural or forced convection whereby the cooling is obtained by one or more energy consuming means.

(3) 'compartment' means an enclosed space within a refrigerating appliance, separated from other compartment(s) by a partition, container, or similar construction, which is directly accessible through one or more external doors and may itself be divided into sub-compartments. For the purpose of this Regulation, unless specified otherwise, compartment refers to bot compartments and sub-compartment.

(4) 'External door' is the part of a cabinet that can be moved or removed to at least allow the load to be moved from the exterior to the interior or from the interior to the exterior of the cabinet.

(5) 'sub-compartment' means an enclosed space in a compartment having a different operating temperature range from the compartment in which it is located.

(6) 'Total volume' ($V$) means the volume of the space within the inside liner of the refrigerating appliance, equal to the sum of the compartment volumes, expressed in $dm^3$ or liters.

(7) 'Compartment volume' ($V_c$) means the volume of the space within the inside liner of the compartment, expressed in $dm^3$ or liters.

(8) 'Professional refrigerated storage cabinet' means an insulated refrigerating appliance integrating one or more compartments accessible via one or more doors or drawers, capable of continuously maintaining the temperature of foodstuffs within prescribed limits at chilled or frozen operating temperature, using a vapor compression cycle, and used for the storage of foodstuffs in non-household environments but not for the display to or access by customers.

(9) 'Blast cabinet' means an insulated refrigerating appliance primarily intended to rapidly cool hot foodstuffs to be 10°C in the case of chilling and below -18°C in the case of freezing.

(10) 'Professional chest freezer' means a freezer in which the compartment(s) is accessible from the top of the appliance, or which has both top-opening type and upright type compartments but where the gross volume of the top-opening type compartment(s) exceeds 75% of the total gross volume of the appliance, used for the storage of foodstuffs in non-household environments.

(11) 'freezer' means a refrigerating appliance with only 4-star compartments.

(12) 'Freezer compartment' or '4-star compartment' means a frozen compartment with a target temperature and storage conditions of -18°C and which fulfils the requirements for the freezing capacity.

(13) 'Frozen compartment' means a compartment type with a target temperature equal to or below 0°C; that is a 0-star, 1-star, 2-star, 3-star or 4-star compartment, as set out in Table 2;

(14) 'Compartment type' means the declared compartment type in accordance with the refrigerating performance parameters $T_{min}$, $T_{max}$, $T_c$ and others set out in Table 2;

(15) 'Target temperature' ($T_c$) means the reference temperature inside a compartment during testing, as set out in Table 2, and is the temperature for testing energy consumption expressed as the average over time and over a set of sensors.

(16) 'Minimum temperature' ($T_{min}$) means the minimum temperature inside a compartment during storage testing as set out in Table 2;

(17) 'Maximum temperature' ($T_{max}$) means the maximum temperature inside a compartment during storage testing, as set out in Table 2;

(18) '0-star compartment' and 'ice-making compartment' means a frozen compartment with a target temperature and storage conditions of 0°C, as set out in Table 2;

(19) '1-star compartment' means a frozen compartment with a target temperature and storage conditions of -6°C, as set out in Table 2;

(20) ‘2-star compartment’ means a frozen compartment with a target temperature and storage conditions of -12°C, as set out in Table 2;

(21) ‘3-star compartment’ means a frozen compartment with a target temperature and storage conditions of -18°C, as set out in Table 2;

(22) ‘Refrigerating appliance with a direct sales function’ means a refrigerating appliance used for the functions of displaying and selling items at specified temperatures below the ambient temperature to customers, accessible directly through open sides or via one or more doors, or drawers, or both, including also cabinets with areas used for storage or assisted serving of items not accessible by the customers and excluding minibars and specific beverages storage appliances.

(23) ‘minibar’ means a refrigerating appliance with a total volume of maximum 60 liters, which is primary intended for the storage and sales of foodstuffs in hotel rooms and similar premises.

(24) ‘Specific beverages storage appliance’ means a dedicated refrigerating appliance for the storage of specific beverages, with precision temperature control for the storage conditions and target temperature of a specific beverages’ storage compartment, as defined in Table 2, and equipped with anti-vibration measures.

(25) ‘Dedicated refrigerating appliance’ means a refrigerating appliance with only one type of compartment.

(26) ‘Specific beverages compartment’ means an unfrozen compartment with a target temperature of 12°C, an internal humidity ranges from 50% to 80% and storage conditions ranging from 5°C to 20°C, as defined Table 2;

(27) ‘Unfrozen compartment’ means a compartment type with a target temperature equal to or above 4°C; that is a pantry, specific beverage storage, cellar or fresh food compartment with storage conditions and target temperatures, as set out in Table 2;

(28) ‘Pantry compartment’ means an unfrozen compartment with a target temperature of 17°C and storage conditions ranging from 14°C to 20°C, as set out in Table 2;

(29) ‘Cellar compartment’ means an unfrozen compartment with a target temperature of 12°C and storage conditions ranging from 2°C to 14°C, as set out in Table 2;

(30) ‘Fresh food compartment’ means an unfrozen compartment with a target temperature of 4°C and storage conditions ranging from 0°C and 8°C, as set out in Table 2;

(31) ‘foodstuffs’ means food, ingredients, beverages, including specific beverages, and other items primarily used for consumption which require refrigeration at specified temperatures.

(32) ‘built-in appliance’ means a refrigerating appliance that is designed, tested and marketed exclusively:

(33) ‘Energy efficiency index’ ($EEI$) means an index number for the relative energy efficiency of a refrigeration appliance expressed in percentage, as set out in point 3.4 of Annex II.

## ANNEX II – MEASUREMENT METHODS AND CALCULATIONS

1. For storage conditions and target temperatures per compartment type:

   For assessing the storage temperatures, tests shall be carried out at an ambient of 16°C and 43°C.

   Table 2 sets out the storage conditions and target temperature per compartment type.

2. Determination of the Annual Energy Consumption ($AE$)

   The energy consumption shall be determined by testing at an ambient temperature of 16°C and 32°C.

   To determine the energy consumption, the average air temperatures in each compartment shall be equal to or below the target temperatures specified in Table 2 for each compartment type claimed by the supplier. Values above and below target temperatures may be used to estimate the energy consumption at the target temperature for each relevant compartment by interpolation, as appropriate.

   The main components of energy consumption to be determined are:

   - a set of steady state power consumption values ($P_{ss}$) in W and rounded to one decimal place, each at a specific ambient temperature and at a set of compartment temperatures, which are not necessarily the target temperatures.

   - the representative incremental defrost and recovery energy consumption ($\Delta E_{d\text{-}f}$), in Wh and rounded to one decimal place, for products with one or more auto-defrost systems (each with its own defrost control cycle) measured at an ambient temperature of 16°C ($\Delta E_{d\text{-}f16}$) and 32°C ($\Delta E_{d\text{-}f32}$);

   - defrost interval ($t_{d\text{-}f}$), expressed in h and rounded to three decimal places, for products with one or more defrost systems (each with its own defrost control cycle) measured at an ambient temperature of 16°C ($t_{d\text{-}f16}$) and 32°C ($t_{d\text{-}f32}$), ($t_{d\text{-}f}$) shall be determined for each system under a certain range of conditions.

   - for each test performed the $P_{ss}$ and $\Delta E_{d\text{-}f}$ are added together to form a daily energy consumption at a certain ambient temperature $E_T$ = 0.001 x 24 x ($P_{ss}$ + $\Delta E_{d\text{-}f}$/ $t_{d\text{-}f}$), expressed in kWh/24h, specific to the settings applied.

   - $E_{aux}$, expressed in kWh/year and rounded to three (3) decimal places. $E_{aux}$ is limited to the ambient temperature controlled anti-condensation heater and is determined from the heater's power consumption at a number of ambient temperature and humidity conditions, multiplied with the probability that this ambient temperature and humidity condition occurs and summed; this result is subsequently multiplied with a loss factor to account for heat leakage into the compartment and its subsequent removal by the refrigeration system.

   Each of these parameters shall be determined through a separate test or set of tests. Measurement data is averaged over a test period which is taken after the appliance has been in operation for a certain time. To improve the efficiency and accuracy of testing, the length of the test period shall not be fixed; it shall be such that the appliance is in steady state condition during this test period. This is validated by examining all data within this test period against a set of stability criteria and whether enough data could be collected in this steady state.

   $AE$, expressed in kWh/year and rounded to two (2) decimal places, shall be calculated as follows:

$$AE = 365\ x\ \frac{E_{daily}}{L} + E_{aux}$$

   Note:

   - The load factor L = 0.9 for refrigerating appliances with only frozen compartment and L = 1.0 for all other appliances; and
   - With $E_{daily}$, expressed in kWh/24h and rounded to three (3) decimal places calculated from $\boldsymbol{E_T}$ at an ambient temperature of 16°C ($\boldsymbol{E_{16}}$) and at an ambient temperature of 32°C ($\boldsymbol{E_{32}}$) as follows:

$$E_{daily} = (E_{16}\ x\ 0.5) + (E_{32}\ x\ 0.5)$$

Where $E_{16}$ and $E_{32}$ are derived by interpolation of the energy test at the target temperatures set out in Table 2.

3. Determination of the standard annual energy consumption ($SAE$)

3.1. For all refrigerating appliances:

$SAE$, expressed in kWh/year, and rounded to two (2) decimal places, is calculated as follows:

$$SAE = C\ x\ D\ x \sum_{c=1}^{n} A_c\ x\ B_c\ x\ [V_c V]\ x\ (N_c + V\ x\ r_c\ x\ M_c)$$

where

- $c$, is the index number for a compartment type ranging from 1 to n, with n the total number of compartment types.
- $V_c$, expressed in dm$^3$ or liters and rounded to the first decimal place is the compartment volume.
- $V$, expressed in dm$^3$ or liters and rounded to the nearest integer is the volume with $V \leq \sum_{c=1}^{n} V_c$;
- $r_c, N_c, M_c$ and $C$ are modelling parameters specific to each compartment with values as set out in Table 5; and
- $A_c, B_c$ and $D$ are compensation factors with values as set out in Table 6.

When carrying out the calculations above, for the variable temperature compartments, the compartment type with the lowest target temperature for which it is declared suitable is chosen.

3.2. Modelling parameters per compartment type for the calculation of $SAE$

The modelling parameters are set out in Table 5.

**Table 5**

**The values of the modelling parameters per compartment type**

| Compartment type | $r_c$ [(a)] | $N_c$ | $M_c$ | $C$ |
|---|---|---|---|---|
| Pantry | 0.35 | 75 | 0.12 | between 1.15 and 1.56 for combi appliances with 3- or 4-star compartments [(b)], 1.15 for other combi appliances, 1.00 for other refrigerating appliances |
| Specific beverages | 0.6 | | | |
| Cellar | 0.6 | | | |
| Fresh food | 1 | | | |
| Chill | 1.1 | 138 | 0.12 | |
| 0-star & ice -making | 1.2 | 138 | 0.15 | |
| 1-star | 1.5 | | | |
| 2-star | 1.8 | | | |
| 3-star | 2.1 | | | |
| Freezer (4-star) | 2.1 | | | |

(a) $r_c = (T_a - T_c)/\ 20$; with $T_a$= 24°C and $T_c$ with values as set out in Table 2.

(b) $C$ for combi appliances with 3- or 4-star compartments is determined as follows:

where $frzf$ is the 3- or 4-star compartment volume $V_{fr}$ as a fraction with $V$ with $frzf = \frac{V_{fr}}{V}$:

- if $frzf\ \leq 0.3$ then $C = 1.3 + 0.87\ x\ frzf$;
- else if $0.3 < frzf < 0.7$ then $C = 1.87 - 1.0275\ x\ frzf$;
- else $C = 1.15$.

3.3. Compensation factors per compartment type in the calculation of $SAE$

The compensation factors are set out in Table 6.

**Table 6**

**The values of the compensation factors per compartment type**

| Compartment type | $A_c$ | | $B_c$ | | $D$ | | | |
|---|---|---|---|---|---|---|---|---|
| | Manual defrost | Auto-defrost | Freestanding appliance | Built-in appliance | ≤2[(a)] | 3 [(a)] | 4[(a)] | >4[(a)] |
| Pantry | 1.00 | | 1.00 | 1.02 | 1.00 | 1.02 | 1.035 | 1.05 |
| Specific beverages | | | | | | | | |
| Cellar | | | | | | | | |
| Fresh food | | | | | | | | |
| Chill | | | | 1.03 | | | | |
| 0-star & ice-making | 1.00 | 1.10 | | 1.05 | | | | |
| 1-star | | | | | | | | |
| 2-star | | | | | | | | |
| 3-star | | | | | | | | |
| Freezer (4-star) | | | | | | | | |

(a) number of external doors or compartments, whichever is lowest.

3.4. Determination of the $EEI$

The Energy Efficiency Index ($EEI$), expressed in % and rounded to the first decimal place, shall be calculated as follows:

$$EEI = \frac{AE}{SAE}$$

Note:

- $EEI$ – *Energy Efficiency Index (%)*
- $AE$ – *Annual Energy Consumption (kWh/year)*
- $SAE$ – *Standard Annual Energy Consumption (kWh/year)*

4. Energy consumption of specified auxiliaries

The following regional values apply (Calculation of power consumption). The data as set out in Table 7 shall be used.

**Table 7**

**Format for temperature and humidity data – Ambient controlled anti-condensation heaters**

| Relative Humidity | RH band mid-point | Probability at 16°C | Probability at 22°C | Probability at 32°C | Heater W at 16°C | Heater W at 22°C | Heater W at 32°C |
|---|---|---|---|---|---|---|---|
| 0 to 10 % | 5 % | 0.00 % | 0.00 % | 0.03 % | $P_{H1}$ | $P_{H11}$ | $P_{H21}$ |
| 10 to 20 % | 15 % | 0.06 % | 0.06 % | 0.33 % | $P_{H2}$ | $P_{H12}$ | $P_{H22}$ |
| 20 to 30 % | 25 % | 0.60 % | 1.62 % | 2.35 % | $P_{H3}$ | $P_{H13}$ | $P_{H23}$ |
| 30 to 40 % | 35 % | 2.76 % | 9.24 % | 2.56 % | $P_{H4}$ | $P_{H14}$ | $P_{H24}$ |
| 40 to 50 % | 45 % | 6.93 % | 12.72 % | 3.57 % | $P_{H5}$ | $P_{H15}$ | $P_{H25}$ |
| 50 to 60 % | 55 % | 8.01 % | 11.70 % | 1.11 % | $P_{H6}$ | $P_{H16}$ | $P_{H26}$ |
| 60 to 70 % | 65 % | 5.55 % | 11.40 % | 0.05 % | $P_{H7}$ | $P_{H17}$ | $P_{H27}$ |
| 70 to 80 % | 75 % | 3.30 % | 7.92 % | 0.00 % | $P_{H8}$ | $P_{H18}$ | $P_{H28}$ |
| 80 to 90 % | 85 % | 1.80 % | 3.48 % | 0.00 % | $P_{H9}$ | $P_{H18}$ | $P_{H29}$ |
| 90 to 100 % | 95 % | 0.99 % | 1.86 % | 0.00 % | $P_{H10}$ | $P_{H20}$ | $P_{H30}$ |

**ANNEX III**
**APPLICATION FOR REGISTRATION OF**
**Household Refrigerating and freezer Appliances - Energy performance and Testing Requirements**
(please type or print)

I hereby apply for registration of a Household Refrigerating and freezer 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 Address and workplace in each sales

country) Job 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: | |
| 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<br>Is the date of manufacture permanently marked on the rating plate in a non-encrypted format?<br>If yes, provide an example of the date format.<br>If no, provide details on how to determine (from the serial number or other permanent markings for this model) | Yes<br>Date format: | | No Provide details: |
| Does this model or family replace or supplement another model or family with identical energy consumption and energy efficiency index?<br>*(indicate correct answer)* | Yes | | No |
| If yes, indicate relevant details: | Model name | Model number | Registration number |
| Information about the components used in the manufacturing: There must be complementary documents for the materials used in the Manufacturing including<br>drawings and figures and technical specifications | 1- Compressor<br>Country of origin:……..<br>Name of Manufacturer or his trading mark: ……<br>Compressor model number: ……<br>Compressor type: …….……. | | |

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

| **Part 3 TESTING AND TEST REPORT** | |
|---|---|
| Test Laboratory Type:<br>(put (□) inside the appropriate box) | □ Own 'in-house' laboratory:<br>□ Independent laboratory: |
| Test Laboratory Name: | |
| Test Laboratory Address: | |
| Test Laboratory Location: | □ Qatar<br>□ Other— *(please specify):* |
| Test Laboratory Accreditation: | □ Accredited from a body member in (ILAC) |

| | | |
|---|---|---|
| Test Standard Used: | ☐ GSO IEC 62552-1 (the standard mentioned in clause 2)<br>☐ GSO IEC 62552-2 (the standard mentioned in clause 2)<br>☐ GSO IEC 62552-3 (the standard mentioned in clause 2)<br>☐ Other— (please specify) | |
| Serial number of tested Refrigerating Appliances / and date tested: | SERIAL NUMBER: | Test date |
| | | |
| Rated voltage and frequency of tested Refrigerating Appliances | Refrigeration unit | |
| | Rated voltage or Rated voltage range (V) | |
| | Rated frequency (Hz) | |
| Rated power of the tested Refrigerating Appliances | Rated power (W) | |
| | Tested voltage (V) | |
| | Tested frequency (Hz) | |
| | Tested power(W) | |

| **Part 4 SPECIFIC APPLICANCE DETAILS** | | | |
|---|---|---|---|
| Household Refrigerating Appliances dimensions (Advisory only): | Width (mm): | Height (mm): | Depth (mm): |
| Refrigerating Appliances type:<br>(According to Table 2) | ☐ Pantry<br>☐ Specific beverages<br>☐ Fresh food<br>☐ Chill<br>☐ 0-star & ice-making<br>☐ 1-star<br>☐ 2-star<br>☐ 3-star<br>☐ 4-star(freezer)<br>☐ Other *(please specify)* | | |
| Power supply: | ☐ Single-phase<br>☐ Three-phase | | |
| Rated Voltage (V): | | | |
| Rated Frequency (Hz): | | | |
| Net Volume for food Storage (l): | | | |
| Net Volume for frozen food Storage (l): | | | |
| Refrigerant Number: | ☐ R410,<br>☐ Other *(please specify)* | | |

| | |
|---|---|
| Climate Class | □ SN(Subnormal)<br>□ N(Normal)<br>□ T(Tropical) |
| Does this Household Refrigerating Appliance use a variable speed drive (inverter) or a multi-speed compressor? | □ Yes<br>□ No |

| **Part 5 TEST RESULTS** | | |
|---|---|---|
| Annual Energy Consumption<br>*(In accordance with ANNEX II)* | Rated Annual Energy Consumption (kWh)** | |
| | Tested Annual Energy Consumption (kWh)** | |
| Standard Annual Energy<br>*(In accordance with ANNEX II)* | Standard Annual Energy (kWh)** | |
| EEI<br>*(In accordance with ANNEX II)* | Rated EEI * | |
| The class index number according to clause 5 of QS xxxx:202x (This standard) | | □ Yes<br>□ No |

* to 1 decimal places
** to 2 decimal places

**DECLARATION**

I declare that the details stated above are correct.

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

Office use only

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

# ANNEX IV - ENERGY EFFICIENCY LABEL

الهيئة العامة القطرية للمواصفات والتقييس
Qatar General Organization for Standardization