

هيئة الإمارات للمواصفات والمقاييس  
EMIRATES AUTHORITY FOR STANDARDIZATION AND METROLOGY  
(ESMA)



UAE.S 5010-3:2013

Labeling – Energy Efficiency Label for Electrical Appliances  
Part 3: Household Refrigerating Appliances

دولة الإمارات العربية المتحدة  
UNITED ARAB EMIRATES

## FOREWORD

The Emirates Authority for Standardization and Metrology (ESMA) has a national responsibility for standardization activities; one of ESMA's main functions is to issue Emirates Standards/Technical Regulations through specialized technical committees.

ESMA through the "Technical Committee for Energy Efficiency – Household Refrigerating Appliances" has prepared the standard "UAE.S 5010-3:2013 Labeling – Energy Efficiency Label for Electrical Appliances – Part 3: Household Refrigerating Appliances."

This standard has been approved as Emirates Technical Regulation by Decree of UAE Cabinet No. ( ) held on ## / ## / #####H.

DRAFT COPY

## INTRODUCTION

The Energy Efficiency Standardization & Labeling (EESL) Program is an energy conservation initiative by the United Arab Emirates implemented and maintained by Emirates Authority for Standardization & Metrology, also known as ESMA. With the UAE's commitment to consumer safety, energy conservation and environment protection, this regulation is developed to ensure that household refrigerating appliances are registered and monitored for their continuous compliance to the set specifications on:

- Electrical Safety;
- Performance: Energy Efficiency;
- Energy Efficiency Labeling Requirements.

This standard shall provide comprehensive information about the UAE Energy Efficiency Standardization & Labeling Program for Household Refrigeration Appliances. It details requirements, references and procedures needed by traders, importers and/or manufacturers to make sure that their products complies with the program prior to selling in the UAE market.

## 1. SCOPE

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

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

## 2. TERMS AND DEFINITIONS

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

### 2.1 General

- 2.1.1. **Appliance** – means household refrigeration appliance covered by this regulation.
- 2.1.2. **Authorized Representative** – means any natural or legal person established in the UAE, having a valid trade license, who has received a written mandate from the manufacturer or from the Own Brand Labeler to perform on his behalf all or part of the obligations and formalities connected with this Regulation.
- 2.1.3. **End-user** – means a natural person buying or expected to buy a product for purposes which are outside his trade, business, craft or profession.
- 2.1.4. **ESMA** – Emirates Authority for Standardization & Metrology, the national authority mandated to implement this regulation.
- 2.1.5. **Government Authorities** – branches of the UAE government in cooperation with ESMA in market monitoring and surveillance.
- 2.1.6. **IEC CB Test Report and Certificate** – is a type of test report and certificate issued by an IEC Recognized Laboratory under the CB Scheme of International Electrotechnical Commission (IEC).
- 2.1.7. **IEC Recognized Laboratory** – a competent third party laboratory capable of performing tests and issues an IEC CB Test Report and Certificate based on applicable IEC standards.
- 2.1.8. **Importer** – means any natural or legal person established in the UAE who places a product from another country on the UAE market in the course of his business.
- 2.1.9. **Manufacturer** – means the natural or legal person who manufactures products covered by this Regulation and is responsible for their conformity with this Regulation in view of their being placed on the market and/or put into service under the manufacturer's own name or trademark or for the manufacturer's own use. In the absence of a manufacturer as defined in the first sentence of this point or of an importer, any natural or legal person who places on the market and/or

puts into service products covered by this Regulation shall be considered a manufacturer.

- 2.1.10. **Own Brand Labeler (Private Labeler)** – an own brand labeler (OBL) purchases a finished (or component parts of a) product from the Original Equipment Manufacturer (OEM) which he then places on the market under his own name or trade mark (brand label). This Own Brand Labeler may not be the person who actually designs, manufactures, packages or labels the device.
- 2.1.11. **Point of Sale or Vendor** – means a physical location where the product is displayed or offered for sale, hire or hire-purchase to the end-user. Showrooms are also included under this definition.
- 2.1.12. **Regulation** – refers directly to this Regulation UAE.S 5010-3:2013 – Labeling – Energy Efficiency Label for Electrical Appliances – Part 3: Household Refrigerating Appliances.
- 2.1.13. **Retailer** – means an entity or a person who sells, hires, offers for hire-purchase or displays products to end-users.
- 2.1.14. **Supplier** – a manufacturer and/or trader responsible for the product covered by this Specific Requirement.

## 2.2 Technical

- 2.2.1. **1-star Compartment** – a frozen-food storage compartment in which the temperature is not warmer than -6°C.
- 2.2.2. **2-star Compartment** – a frozen-food storage compartment in which the temperature is not warmer than -12°C.
- 2.2.3. **3-star Compartment** – a frozen-food storage compartment in which the temperature is not warmer than -18°C.
- 2.2.4. **4-star Compartment** – (food-freezer compartment) a compartment suitable for freezing at least 4.5kg of foodstuffs per 100 liters of storage volume, and in no case less than 2kg, from ambient temperature down to -18°C over a period of 24 hours, which is also suitable for the storage of frozen food under three-star storage conditions, and may include two-star sections within the compartment.
- 2.2.5. **Adjusted Volume** – means the volume for the storage of foodstuff corrected for the relative contribution to the total energy consumption according to the different temperatures of the storage compartment.
- 2.2.6. **Built-in Appliance** – means a fixed refrigerating appliance intended to be installed in a cabinet, in a prepared recess in a wall or similar location, and requiring furniture finishing.
- 2.2.7. **Cellar** – means a refrigerating appliance where only one or more cellar compartments are present.
- 2.2.8. **Cellar Compartment** – means a compartment intended for the storage of particular foodstuffs or beverages at a temperature warmer than that of a fresh-food storage compartment.
- 2.2.9. **Chill Compartment** – means a compartment intended specifically for the storage of highly perishable foodstuffs.

- 2.2.10. **Food Freezer** – means a refrigerating appliance with one or more compartments suitable for freezing foodstuffs with temperatures ranging from ambient temperature down to -18°C, and which is also suitable for the storage of frozen foodstuffs under three-star storage conditions; a food freezer may also include two-star sections and/or compartments within the compartment or cabinet.
- 2.2.11. **Foodstuff** – means food, ingredients, beverages including wine and other items primarily intended for consumption which require refrigeration at specified temperatures
- 2.2.12. **Fresh-food storage compartment** – means a compartment designed for the storage of unfrozen foodstuffs, which may itself be divided into sub-compartments.
- 2.2.13. **Frost-free Compartment** – means any compartment defrosted by a frost-free system.
- 2.2.14. **Frost-free System** – means a system automatically operated to prevent the permanent formation of frost, where cooling is provided by forced air-circulation, the evaporator or evaporators are defrosted by an automatic defrost system, and the water from defrosting is disposed automatically.
- 2.2.15. **Household Refrigerating Appliance** – means an insulated cabinet, with one or more compartments, intended for refrigerating or freezing foodstuffs, or for the storage of refrigerated or frozen foodstuffs for non-professional purposes, cooled by one or more energy-consuming processes, including appliances sold as building kits to be assembled by the end-user.
- 2.2.16. **Ice-making Compartment** – means a low-temperature compartment intended specifically for the freezing and storage of ice.
- 2.2.17. **Other compartment** – means a compartment, other than a wine storage compartment, intended for the storage of particular foodstuffs at a temperature warmer than +14°C.
- 2.2.18. **Refrigerator** – means a refrigerating appliance intended for the preservation of foodstuffs with at least one compartment suitable for the storage of fresh food and/or beverages, including wine.
- 2.2.19. **Refrigerator-cellar** – means a refrigerating appliance where at least one fresh-food compartment and one cellar compartment, but no frozen-food storage, chill or ice-making compartments are present.
- 2.2.20. **Refrigerator-chiller** – means a refrigerating appliance where at least a fresh-food storage compartment and a chill compartment, but no frozen-food compartment, are present.
- 2.2.21. **Refrigerator-freezer** – means a refrigerating appliance with at least one fresh-food storage compartment and at least one compartment suitable for the freezing of fresh food and the storage of frozen foodstuffs under three-star storage conditions.
- 2.2.22. **Wine Storage Appliance** – means a refrigerating appliance that has no compartment other than one or more multi-use compartments.

### 3. APPLICABLE STANDARDS

The test methodology for the energy consumption test, marking requirements and other terms and definitions applicable to this regulation is in accordance with the following standard:

- **UAE.S IEC 62552:2013** – Household refrigerating appliances – Characteristics and test methods

### 4. NATIONAL DEVIATIONS

The following national deviations shall apply to this regulation.

#### 4.1 Electrical Safety

Products covered by this regulation shall comply with the requirements set by the reference Scheme for Low-Voltage Equipment (LVE) under the Emirates Conformity Assessment Scheme (ECAS) and shall acquire a valid Certificate of Conformity (CoC) as specified in clause 7.2.

#### 4.2 Test Voltage and Frequency

The following specifications shall apply to the test conditions required by this regulation.

**Table 1**

<b>Voltage</b>	<b>Frequency</b>
230V	50Hz

#### 4.3 Climate Class

Test conditions and specifications shall comply with the tropical climate class as specified below:

**Table 2**

<b>Classification</b>	<b>Symbol</b>	<b>Ambient Temperature Range</b>
Tropical	T	+18°C to +43°C

#### 4.4 Plug Requirements

Appliance intended to be supplied with an electric plug for mains connection shall be supplied with a BS 1363 type of plug compliant to UAE.S IEC 60884-1:2012. An example of the plug is shown in [Annex A](#).

## 5. PERFORMANCE: ENERGY EFFICIENCY

For the purpose of this section, the following parameters shall be established:

- Overall dimensions which are measured to the nearest millimeter;
- Overall space required in use which is measured to the nearest millimeter;
- Total gross volume which is measured to the nearest whole number in liters;
- Storage volume and total storage volume which is measured to the nearest whole number in liters;
- Defrosting type;
- Storage temperature;
- Energy consumption which is expressed in kilowatt hours per 24 hours (kWh/24h), to three decimal places;
- Temperature rise time;
- Freezing capacity;
- Wine storage compartment humidity which is expressed as a percentage rounded to the nearest integer.

### 5.1 Appliance Categories

Household refrigerating appliances covered by this regulation shall be classified in to categories listed in Table 3.

**Table 3**

Category	Description
1	Refrigerator with one or more fresh-food storage compartments
2	Refrigerator-cellar, Cellar and Wine storage appliances
3	Refrigerator-chiller and Refrigerator with a 0-star compartment
4	Refrigerator with a one-star compartment
5	Refrigerator with a two-star compartment
6	Refrigerator with a three-star compartment
7	Refrigerator-freezer
8	Upright freezer
9	Chest freezer
10	Multi-use and other refrigerating appliances

Note: Other household refrigerating appliances that cannot be classified under category 1 to 9 shall be classified as category 10.

### 5.2 Appliance Compartment Composition

Household refrigerating appliances, as categorized in clause 5.1, shall be defined by the specific compartment composition as specified in [Annex B](#).

### 5.3 Storage Temperatures

**Table 4**

°C
----



Fresh-food storage compartment		Food freezer and 3-star compartment	2-star compartment	1-star compartment	Cellar compartment	Chill compartment	Wine compartment
$t_{1m}, t_{2m}, t_{3m}$	$t_{ma}$	$t^{***}$	$t^{**}$	$t^*$	$t_{cm}$	$t_{cc}$	$t_{wma}$
$0 \leq t_{1m}, t_{2m}, t_{3m} \leq +8$	$\leq +4$	$\leq -18^a$	$\leq -12^a$	$\leq -6$	$+8 \leq t_{cm} \leq +14$	$-2 \leq t_{cc} \leq +3$	$+5 \leq t_{wma} \leq +20$

<sup>(a)</sup> As a result of a defrost cycle, the storage temperatures of frost free and/or adaptive defrost refrigerating appliances are permitted to rise by no more than 3K during a period not greater than 4h or 20% of the duration of the operating cycle, whichever is shorter.

#### 5.4 Adjusted Volume ( $V_{adj}$ )

The adjusted volume shall be the sum of the volumes of the different compartments weighted by the difference in temperature between the interior of the compartment and the ambient temperature. The adjusted volume is calculated using the formula below:

$$V_{adj} = \left[ \sum_{c=1}^{c=n} V_i \times \Omega \times FF_c \right] \times CC_c \times BI_c$$

Where:

$V_{adj}$	Adjusted volume (liters)
$V_i$	Measured storage volume (liters)
$\Omega$	Weighting factor
$FF_c$	Frost-free correction factor
$CC_c$	Climate-class correction factor
$BI_c$	Built-in correction factor

#### 5.5 Weighting Factor ( $\Omega$ )

Weighting Factor is given by the following equation:

$$\begin{aligned} \Omega &= \frac{T_a - T_i}{T_a - T_f} \\ &\Rightarrow \frac{32 - T_i}{32 - 5} \\ &\Rightarrow \frac{32 - T_i}{27} \end{aligned}$$

Where:

$\Omega$	Weighting factor
$T_a$	Test room ambient temperature which is taken as 32°C (Tropical climate class)
$T_i$	Rated temperature in the individual compartment concerned
$T_f$	Rated temperature in the fresh food compartment which is taken as +5°C

The Weighting Factors for Refrigerating Appliance Compartments as listed in Table 5.

**Table 5**

Compartment Type	Nominal Temperature	Weighting Factor
Other compartment	Design Temperature	$\frac{(32 - T_i)}{27}$
Cellar compartment/Wine storage compartment	+12 °C	0.74
Fresh-food storage compartment	+5 °C	1.00
Chill compartment	0 °C	1.19
Ice-making compartment and 0-star compartment	0 °C	1.19
1-Star compartment	-6 °C	1.41
2-Star compartment	-12 °C	1.63
3-Star compartment	-18 °C	1.85
Food freezer compartment / 4-Star compartment	-18 °C	1.85

## 5.6 Correction Factor

**Table 6**

Correction Factor	Value	Conditions
$FF_c$	1.2	For frost-free frozen-food storage compartments
	1	Otherwise
$CC_c$	1.2	For T (Tropical) climate class
$BI_c$	1.2	For built-in appliances under 58cm in width
	1	Otherwise

## 5.7 Energy Efficiency Index (EEI)

The Energy Efficiency Index (EEI) of an appliance is defined as the ratio of the actual annual energy consumption of the appliance to the standard annual energy consumption. The indices are expressed in percentages as shown by the equation below:

$$EEI = \frac{AE_c}{SAE_c} \times 100\%$$

Where:

$EEI$	Energy Efficiency Index (%)
$AE_c$	Annual Energy Consumption (kWh/year)
$SAE_c$	Standard Annual Energy Consumption (kWh/year)

Annual Energy Consumption is calculated using the formula below and rounded to two (2) decimal places:

$$AE_c = E_{24h} \times 365 \text{ days}$$

Where:

$E_{24h}$  Energy consumption for the household refrigerating appliance (kWh/24h) rounded to three (3) decimal places

Standard Annual Energy Consumption is calculated using the formula below and rounded to two (2) decimal places:

$$SAE_c = [N + (V_{adj} \times M)] + CH$$

Where:

$SAE_c$  Standard Annual Energy Consumption (kWh/year)

$N$  and  $M$  Values are given in Table 7 below

$V_{adj}$  Adjusted volume (liters)

$CH$  Is equal to 50kWh/year for household refrigerating appliances with a chill compartment with a storage volume of at least 15 liters

**Table 7**

Category	Standard Annual Energy Consumption Formula
1	$[245 + (V_{adj} \times 0.233)] + CH$
2	$[245 + (V_{adj} \times 0.233)] + CH$
3	$[245 + (V_{adj} \times 0.233)] + CH$
4	$[191 + (V_{adj} \times 0.643)] + CH$
5	$[245 + (V_{adj} \times 0.450)] + CH$
6	$[303 + (V_{adj} \times 0.777)] + CH$
7	$[303 + (V_{adj} \times 0.777)] + CH$
8	$[315 + (V_{adj} \times 0.539)] + CH$
9	$[286 + (V_{adj} \times 0.472)] + CH$
10	$[(*) + (V_{adj} \times (*))] + CH$

Note: for category 10 household refrigerating appliances, the M and N values depend on the temperature and star rating of the compartment with the lowest storage temperature capable of being set by the end-use and maintained continuously according to the manufacturer's instructions. When only an „other compartment“ is present, the M and N values for category 1 are used. Appliances with 3-star compartments or food-freezer compartments are considered to be refrigerator-freezer.

## 5.8 Energy Efficiency Classes

**Table 8**

Star Rating	Energy Efficiency Index (EEI)
5-Star (most efficient)	$EEI < 33$
4-Star	$33 \leq EEI < 44$
3-Star	$44 \leq EEI < 75$
2-Star	$75 \leq EEI < 110$
1-Star (least efficient)	$110 \leq EEI \leq 125$

## **6. MARKING AND INSTRUCTION MANUAL REQUIREMENTS**

Markings and instruction manuals and energy efficiency labels supplied with products shall include the Arabic language. Cautionary and/or any safety warnings for the direct user or consumer shall be in Arabic language. Products shall not contain any material or descriptive images or definitions which may be regarded offensive to the Islamic Religion.

Additional requirements for marking and instruction manual set by the applicable standard mentioned in clause 3 shall apply.

## **7. PRODUCT CERTIFICATION**

The Emirates Conformity Assessment Scheme is a certification program enforced by ESMA for regulated products. Under this scheme, products are evaluated based on requirements set by this regulation.

- Manufacturers/Traders/Suppliers having a valid trade license in the UAE shall be responsible for securing approval from ESMA through the product certification process.
- To secure approval, the responsible party for registering the products shall submit the following documents:
  - ECAS Application form (fully filled-out, signed and stamped)
  - Valid ECAS Certificate of Conformity
  - Valid Performance Test report
- ESMA shall process the application and evaluate the documents based on standards and specifications detailed in this regulation.
- ESMA shall evaluate and assign the appropriate star rating for the product and the applicant notified.
- Processing time of fully documented applications takes an average of 1 week (5 working days) from the receipt of the application.

### **7.1 Registration Procedure**

Registration process shall be conducted by ESMA as per [Annex C](#).

### **7.2 Serial Number Issuance**

Serial Number Issuance shall be conducted by ESMA as per [Annex D](#).

## 8. ENERGY EFFICIENCY LABEL

Products having complying with the Energy Efficiency requirements of this regulation shall bear the Energy Efficiency Label depicted in [Annex E](#), [Annex F](#) and [Annex G](#). This label shall include a unique serial number per unit issued only by ESMA upon request.

The label shall be placed or printed on the most prominent part of the product packaging to be easily visible to the consumer. Examples of placement are shown in [Annex H](#).

## 9. SURVEILLANCE AND MARKET MONITORING

ESMA in coordination with different local government authorities are responsible for market monitoring of products to ensure compliance to this regulation.

- Consignment without the ECAS Registration Certificate shall be held. Appropriate action shall then be taken by both ESMA and Ports and Customs Authorities.
- Traders shall sell only ECAS Registered products. Vendors found selling unregistered products and substandard products, shall mean violation of this regulation.
- ESMA shall have the authority to conduct inspections, sampling and testing of products distributed in the local market. The result of the tests and evaluation shall be the basis whether to continue or revoke the registration of the product.

**Table 9**

Measured Parameter	Verification Tolerances
Energy Consumption	The measured value shall not be greater than the rate value ( $E_{24h}$ ) by more than 10%
Rated gross volume	The measured value shall not be less than the rated value declared by the manufacturer by more than 3% or 1 liter, whichever is the greater value.
Rated storage volume	The measured value shall not be less than the rated value more than 3% or 1 liter, whichever is the greater value. Where the volumes of the cellar compartment and fresh food storage compartment are adjustable, relative to one another by the user, this measurement uncertainty applies when the cellar compartment is adjusted to its minimum volume.

## 10. DUTIES AND AUTHORITIES – ESMA AND OTHER GOVERNMENT AUTHORITIES

- ESMA is authorized to process any application related to the verification, approval and certification household refrigerating appliance covered by this regulation.
- ESMA is authorized to take appropriate action for any products that do not comply with the requirement of this regulation. Appropriate actions may include suspension,

withdrawal and/or cancelation of Certificate of Conformity, Non-acceptance of substandard products and Removal of Non-conforming Products in the Market.

- ESMA shall take immediate action by informing other Local Government Authorities for any non-complying products.
- Relevant Government Authorities shall conduct market surveillance to ensure that only approved products are traded within their area of responsibility.

## **11. DUTIES AND RESPONSIBILITIES**

### **11.1 Manufacturers and Authorized Representatives**

The Manufacturer and its Authorized Representative shall manufacture and supply only products that comply with this regulation. Correct Energy Label shall be provided to the approved products.

They are responsible for securing appropriate certificate and shall make sure that products supplied continuously comply with this regulation.

They shall allow ESMA and/or its authorized representative to have an access for purposes of monitoring and inspection related to regulated products covered by this Regulation.

### **11.2 Retailers**

Retailers shall make sure that they sell only products that are approved and having the necessary UAE Energy Label and Certificate of Conformity.

They shall allow ESMA and/or its authorized representative to have an access for purposes of monitoring and inspection at point of sale related to regulated products covered by this regulation.

## **12. VIOLATIONS AND PENALTIES**

Violations and Penalties from the Federal Law 28 of 2001 shall apply.

## **13. REVISION**

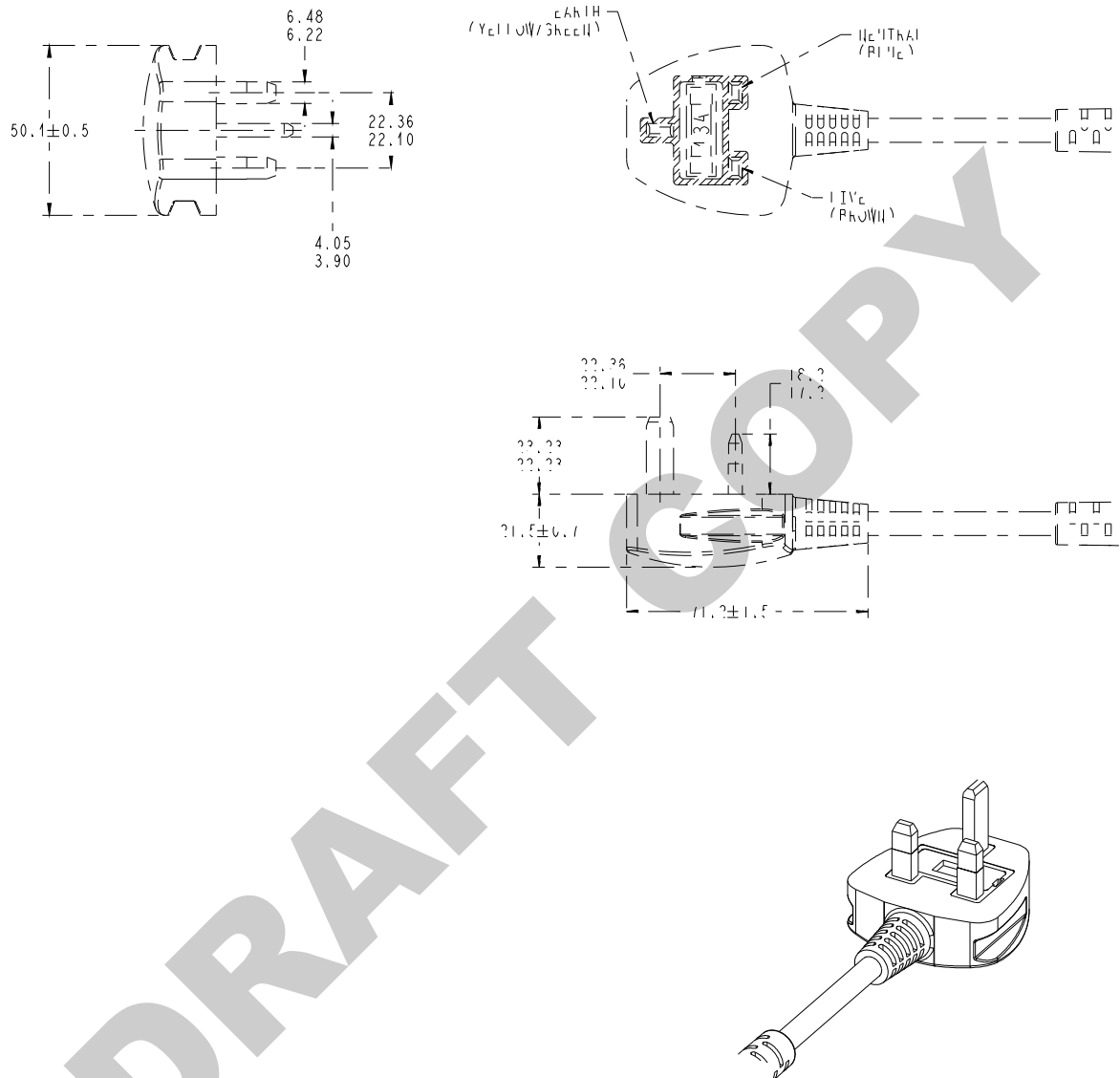
ESMA shall review this regulation in light of technological progress no later than three (3) years after the entry into force.

## 14. LIABILITY AND DISCLAIMER

**DRAFT COPY**

## ANNEX A – PLUG REQUIREMENTS

Below is an example of a plug suitable for UAE use.





## ANNEX B – HOUSEHOLD REFRIGERATING APPLIANCE CLASSIFICATION AND COMPARTMENT COMPOSITION

Compartment Type		Other	Wine Storage	Cellar	Fresh Food Storage	Chiller	0-Star / Ice-making	1-Star	2-Star	3-Star	4-Star
Nominal Temperature (°C)		Design T	+12	+12	+5	0	0	-6	-12	-18	-18
Category	Description	Compartment Composition									
1	Refrigerator with one or more fresh-food storage compartments	N	N	N	Y	N	N	N	N	N	N
2	Refrigerator-cellar, Cellar and Wine storage appliances	O	O	O	Y	N	N	N	N	N	N
		O	O	Y	N	N	N	N	N	N	N
		N	Y	N	N	N	N	N	N	N	N
3	Refrigerator-chiller and Refrigerator with a 0-star compartment	O	O	O	Y	Y	O	N	N	N	N
		O	O	O	Y	O	Y	N	N	N	N
4	Refrigerator with a one-star compartment	O	O	O	Y	O	O	Y	N	N	N
5	Refrigerator with a two-star compartment	O	O	O	Y	O	O	O	Y	N	N
6	Refrigerator with a three-star compartment	O	O	O	Y	O	O	O	O	Y	N
7	Refrigerator-freezer	O	O	O	Y	O	O	O	O	O	Y
8	Upright freezer	N	N	N	N	N	N	N	O	(Y) (*)	Y
9	Chest freezer	N	N	N	N	N	N	N	O	N	Y
10	Multi-use and other refrigerating appliances	O	O	O	O	O	O	O	O	O	O

Note: Y = the compartment is present; N = the compartment is not present; O = the compartment is optional; (\*) = also includes 3-star frozen food compartments.

## ANNEX C – REGISTRATION FLOWCHART

**DRAFT COPY**

## ANNEX D – SERIAL NUMBER ISSUANCE FLOWCHART

**DRAFT COPY**

## ANNEX E – ENERGY EFFICIENCY LABEL DESIGN

X-YY-ABCDEF



هيئة الإمارات للمواصفات والمقاييس

Emirates Authority for Standardization and Metrology

بطاقة كفاءة الطاقة لأجهزة التبريد المنزلية  
 Energy Efficiency Label for Household Refrigerating Appliances

UAE.S 5010-3:2012



5

الاستهلاك السنوي من الطاقة

Annual Energy Consumption

براد

REFRIGERATOR

BRAND NAME

MODEL NUMBER

XYZ

كيلو واط - ساعة \ سنة  
kWh / Year



XYZ L



YZ L

## ANNEX F – ENERGY EFFICIENCY LABEL DIMENSIONS

DRAFT COPY

## ANNEX G – ENERGY EFFICIENCY LABEL COLOR CONFIGURATION

DRAFT COPY

## ANNEX H – ENERGY EFFICIENCY LABEL PLACEMENT

**DRAFT COPY**