

**Cabinet Resolution No. (25) of 2022**  
**Regarding the Regulation of Outdoor Lighting Products**

**The Cabinet:**

- Having reviewed the Constitution;
- Federal Law No. (1) of 1972 Regarding the Competences of Ministries and the Powers of Ministers, as amended;
- Federal Law No. (24) of 1999 Regarding the Protection and Development of the Environment, as amended;
- Federal Law No. (19) of 2016 Regarding the Combat of Commercial Fraud;
- Federal Law No. (10) of 2018 Regarding Product Safety, as amended;
- Federal Law No. (15) of 2020 Regarding Consumer Protection;
- Federal Law by Decree No. (20) of 2020 Regarding Standardization and Metrology;
- Cabinet Resolution No. (34) of 2013 Regarding the UAE Regulation for Lighting Products and their Control;
- Cabinet Resolution No. (35) of 2015 Regarding the UAE Regulation for the Control of Conformity Assessment Bodies;
- Cabinet Resolution No. (10) of 2017 Regarding the UAE Regulation for the Control of Restricted Hazardous Substance Levels in Electrical and Electronic Devices;
- Upon the proposal of the Minister of Industry and Advanced Technology, and the approval of the Cabinet,

**Hereby resolves as follows:**

**Article (1)**

**Definitions**

1. For the purposes of implementing the provisions of this Resolution, the following terms and expressions shall have the meanings assigned to each of them, unless the context requires otherwise:

<b>State</b>	: United Arab Emirates.
<b>Ministry</b>	: Ministry of Industry and Advanced Technology.
<b>Minister</b>	: Minister of Industry and Advanced Technology.
<b>Competent Authorities</b>	: Federal or local government authorities authorized to implement the provisions of this Resolution.
<b>Standard Specification</b>	: A document that defines the attributes of a commodity, product, material, service, or anything subject to measurement, including its descriptions, characteristics, quality level, dimensions, standards, or safety and security requirements. It also includes terminology, symbols, testing methods, sampling, packaging, labels, and marks.
<b>Approved Standard Specifications</b>	: The specifications approved by the Ministry and referred to as United Arab Emirates Standard Specifications and denoted by the abbreviation (UAE.S)
<b>Conformity Certificate</b>	: A certificate issued by the Ministry, which confirms that the product or any batch thereof complies with the requirements of the approved or mandatory standard specification.
<b>Conformity Assessment Body</b>	: The body registered, accredited or accepted by the Ministry to carry out conformity assessment procedures in accordance with the applicable legislation in this regard, including testing and calibration laboratories, inspection bodies, proficiency testing bodies and certification bodies for systems, individuals or products.
<b>Non-Domestic Lighting Product</b>	: Any product used for lighting outside residential homes, including street lighting products and public places
<b>Integrated Lighting Products</b>	: Lighting lamp products that are part of another product and are not used independently.

- Lighting Products** : Electric lamps or any devices, tools, or equipment that can be used individually or with other complementary tools used for the purpose of lighting.
- Supplier** : The manufacturer, transporter, packer, assembler, processor, agent or storer of the product or any main or sub-distributor whose activity has an impact on the characteristics of the product, or any commercial or legal representative responsible for importing the product subject to the provisions of this resolution.
- Energy Efficiency Label** : The document issued by the Ministry identifying the classification of lighting products by stars according to their energy efficiency, with the most efficient product receiving a higher number of stars, up to a maximum of five stars.
- Web Hosting Platforms** : Entities or companies that provide space rental services for the virtual store, where the files, data and information comprising the website are securely stored on the Internet.
- Lighting Products Waste** : Waste resulting from lighting products after the end of their operational life or due to breakage.
2. For the purposes of implementing this Resolution, the technical definitions provided in Annex (1) attached to this Resolution shall apply.

## **Article (2)**

### **Scope of Application**

1. The provisions of this resolution shall apply to all Non-Domestic Lighting Products that operate with or without control devices. It also applies to standalone control devices and Lighting Products placed on the market or integrated into another product.
2. The Lighting Products specified in Annex No. (3) attached to this resolution shall be exempt from the application of this resolution.

### **Article (3)**

#### **Electrical Safety Requirements**

1. All products falling within the scope of application of this resolution shall be subject to the requirements of the Emirates Conformity Assessment System (ECAS) and Chairman of the Board's Decision No. (26) of 2009 regarding the registration of low voltage electrical devices.
2. Products shall comply with the requirements of the UAE specifications for electrical safety as stated in Annex No. (8) of this resolution.

### **Article (4)**

#### **Energy Efficiency**

1. The Energy Efficiency class of Lighting Products shall be determined as shown in Table No. (1) of Annex No. (2) attached to this resolution.
2.  $\eta_{TM}$  is calculated by dividing the declared useful luminous flux  $\Phi_{use}$  (expressed in lm) by the declared on-mode power consumption  $P_{on}$  (expressed in W) and multiplying it by the applicable factor  $F_{TM}$  given in Table No. (2) of Annex No. (2) attached to this resolution.
3. The minimum Energy Efficiency requirements for a standalone control device operating at full load are specified in Table No. (3) of Annex No. (2) attached to this resolution.

### **Article (5)**

#### **Functional Requirements**

The Lighting Products specified within the scope of application of this resolution shall meet the functional requirements specified in Annex (4) attached to this resolution, and the tests specified in the standard specifications listed in Annex No. (8) attached to this resolution shall be applied.

## Article (6)

### Content of Hazardous Chemicals

1. Subject to compliance with the environmental legislation in force in the State, the products specified within the scope of application of this resolution shall comply with the maximum limits for hazardous substances specified in Annex No. (5) attached to this resolution. The tests specified in the standard specifications listed in Annex No. (8) attached to this resolution shall be applied.
2. Products are not required to be registered under the RoHS requirements approved by Cabinet Resolution No. (10) of 2017, referred to, if they are registered under the requirements of the lighting regulations in implementation of Cabinet Resolution No. (34) of 2013 and pursuant to this resolution.

## Article (7)

### Parties Obligations and Responsibilities

#### 1. Supplier obligations and responsibilities:

Suppliers and providers of products falling within the scope of application of this resolution shall obtain the Emirates Conformity Assessment Scheme (ECAS) Conformity Certificate and the Energy Efficiency Label, in addition to the following requirements:

##### a. Lighting Products:

- 1) Ensure that each light source placed on the market as a standalone product (not integrated into another product) and packaged is provided with an Energy Efficiency Label on the packaging.
- 2) Ensure that Lighting Product information and technical documentation are entered into the product database on the Ministry's website in accordance with Table No. (6) attached to this resolution.
- 3) Provide product information in printed format if requested by the distributor.

##### b. Lighting Products integrated with another product:

- 1) Provide information on integrated Lighting Products.
- 2) Provide information on how to remove Lighting Products for verification during the inspection process without damaging the light source.

**c. Lighting Products containing mercury and other hazardous chemicals:**

- 1) Provide details on the potential impacts of these hazardous substances on the environment and human health.
- 2) Indicate installation methods, and instructions for the safe disposal of defective and broken Lighting Products, including cleaning of Lighting Products containing mercury in the event of breakage.
- 3) Provide instructions indicating the necessity of collecting these mercury-containing products separately and not disposing of them with municipal waste.

**2. Sales Outlets Obligations and Responsibilities:**

Sales outlets for lighting products shall ensure the availability of the following:

- a. Conformity Certificate and an Energy Efficiency Label for each lighting source, clearly displayed at all designated points of sale.
- b. Energy Efficiency Label and Non-Domestic Lighting Product information for all products offered for remote sale.
- c. Energy Efficiency Label for all products displayed in visual advertisements on television screens or online.

**3. Web Hosting Platforms Obligations and Responsibilities:**

In the event that Lighting Products are sold through web hosting platforms, the service provider shall be obligated to display the Energy Efficiency Label and product information provided by the agent electronically, and shall inform the agent of the obligation to make them available for display.

**4. Tasks and duties of the Competent Authorities:**

The Competent Authorities shall be responsible for undertaking the following:

- a. Monitor the market to ensure that the product has obtained a Conformity Certificate in accordance with the provisions of this Resolution.
- b. Ensure that the product meets the Energy Efficiency Label requirements contained in this resolution.
- c. Coordinate with the Ministry to withdraw non-compliant products.
- d. Coordinate with the Ministry in the event that product samples are collected for testing.

## **Article (8)**

### **Conformity Assessment Procedures**

1. The Supplier shall apply to obtain the Conformity Certificate for the product, in accordance with the following requirements:
  - a. Submit an application to register the product with the Ministry.
  - b. A copy of a valid industrial or commercial license, valid in the State.
  - c. Sign the Conformity Declaration in accordance with the form approved by the Ministry.
  - d. Submit all documents and data related to the Product's compliance with the technical requirements set out in Annex No. (2) attached hereto.
  - e. Determine the nominal characteristics of the Product, which shall be recorded on the label.
2. The Conformity Certificate issued in accordance with the provisions of this Resolution shall be valid for a period of one year from the date of its issuance, and shall be annually renewed if it meets the conditions mentioned in the provisions of this Resolution.
3. The Manufacturer/Supplier shall bear the costs of any Product inspection or testing required by the Ministry during the product conformity period.
4. In the event that the Product has obtained the Gulf Conformity Certificate, it shall not be required to obtain a Conformity Certificate from the Ministry.
5. The Ministry has the right to conduct factory visits, when necessary, to review the manufacturing processes and attend the required tests in accordance with the Standard Specifications attached hereto.

## **Article (9)**

### **Energy Efficiency Label for Lighting Products**

1. **Energy Efficiency Label designs:**
  - a. The Energy Efficiency Label, including its designs and actual dimensions shall be placed in accordance with the procedures of the Ministry's mark usage policy.

b. If the Non-Domestic Lighting Product is marketed in a separate package, the product shall be provided with an Energy Efficiency Label that meets the following requirements:

- 1) The package shall not measure less than 20 mm on one side and 54 mm in high.
- 2) The Energy Efficiency Label may be printed in monochrome only if all other information, including graphics, on the package is also printed in monochrome.
- 3) In case the product packaging is smaller than the size described above, the label may be proportionally reduced, provided that its content remains legible.

## **2. Information required on the Energy Efficiency Label:**

The following information shall be included on the label of Lighting Products:

1. Number of energy efficiency stars
2. QR coding.
3. The name of this system.
4. RFID Chip.

## **Article (10)**

### **Lighting Products Waste and their Safe Disposal**

1. Lighting Products Waste shall be classified as follows:
  - a. General waste: All incandescent and halogen lamps.
  - b. Hazardous waste: Any Lighting Products containing mercury including fluorescent lamps (FLs), compact fluorescent lamps (CFLs), light-emitting diode lamps (LEDs) and any new lighting technology containing mercury or other hazardous compounds.
2. Safe disposal (including collection, storage, transportation and recycling) of Lighting Products containing hazardous waste shall be carried out by waste management entities, with other relevant authorities, in accordance with the provisions of Federal Law No. (24) of 1999, referred to, and the resolutions issued in implementation thereof.

## Article (11)

### Market Surveillance

1. When the Product is placed on the market, it shall be subject to surveillance. Accordingly, the Ministry or the Competent Authority, as the case may be, shall undertake the necessary procedures to monitor the Product to ensure its continued compliance with the Conformity Certificate throughout all stages of the supply chain. For such purpose, the Ministry or the Competent Authority may undertake any of the following procedures:
  - a. Ensure that all points of sale in the State comply with the prohibition of importing or placing it on the local markets, except after obtaining the Conformity Certificate.
  - b. Take samples of the Product, from the market or from the Supplier's warehouses, in order to conduct the necessary tests and verify their compliance with the requirements of this Resolution.
  - c. Undertake the appropriate procedures against the Products that violate the provisions of this Resolution, including the suspension or revocation of the Conformity Certificate for non-compliant Products and withdrawal and recall of such Products from the market.
  - d. Oblige the Supplier who is responsible for placing the non-compliant Product to recall and withdraw it from the local market, and to regularize its status where possible or obliging the Supplier to return the Product to the country of origin or exporter or to destroy the product in accordance with the Legislation in force in this regard, within the period specified by the Ministry or the Competent Authority, as the case may be.
  - e. Follow-up on the implementation of the procedures referred to in this article.
2. The Supplier from whom the Product sample is taken shall be deemed responsible for the Product Non-Conformity to this resolution requirements, unless proven otherwise that he is not responsible for the Product Non-Conformity, during the period specified by the Ministry or the Competent Body, as the case may be.
3. The values displayed on the label or in the product information shall not exceed the values stated in the technical documents by more than the tolerances permitted in Annex No. (7) attached to this resolution.

## **Article (12)**

### **Violations and Penalties**

1. Without prejudice to any penalty or procedure stipulated by any Legislation in force in the State, if a violation for any of the provisions of this Resolution is committed, the Ministry or the Competent Authority, as the case may be, may impose one or more of the following administrative penalties:
  - a. Coordinate with the Licensing Authority to cancel the commercial license of the Supplier responsible for the violation.
  - b. Revoke the Conformity Certificate granted to the non-compliant product.
  - c. Charge the Violator with the expenses and costs of removing and remedying the damages resulting from the violation, in the event of failure to do so.
2. If the Ministry or the competent authority, as the case may be, is unable to identify the party responsible for the Product's non-compliance with the requirements of this resolution, the person found in possession of the non-compliant product at the time the violation was detected shall be deemed responsible, unless proven otherwise.

## **Article (13)**

### **Grievance Procedures**

Grievances against decisions issued pursuant to the provisions of Article (12) of this Resolution may be submitted, provided that the following:

1. The grievance shall be submitted to the Minister, the Head of the Competent Authority, or whoever they delegate in accordance with the procedures specified by the Ministry or the Competent Authority, as the case may be, within a period not exceeding (14) fourteen working days from the date on which the Violator is notified of the decision subject to the grievance.
2. All documents substantiating the grounds of the grievance shall be enclosed.
3. The Minister or the Head of the Competent Authority, or whoever they delegate shall issue a decision deemed appropriate concerning the submitted grievance in accordance with the provisions of this Article within a period not exceeding (25) twenty-five working days from the date of submission. Also, the decision issued in this

regard shall be deemed final, and the grievance shall be considered rejected in the event that no action is taken during the period specified in this Clause.

## **Article (14)**

### **General Provisions**

1. The Ministry shall be responsible for the implementation of the provisions of this Resolution. For that purpose, it may undertake the procedures it deems appropriate, and it may delegate some of its powers to the acceptable Conformity Assessment bodies.
2. This resolution shall be implemented in conjunction with Cabinet Resolution No. (34) of 2013 Regarding the UAE Regulation for Lighting Products and their Control;
3. The Ministry shall be responsible for receiving and reviewing applications for Product registration and granting it the Conformity Certificate in accordance with the provisions of this Resolution. The Ministry may also delegate any of the Competent Authorities or appoint an accepted Conformity Assessment Body to assess the Product's conformity, in accordance with the Cabinet Resolution regarding the UAE regulation for the Control of Conformity Assessment Bodies.
4. The Supplier and the relevant parties shall fully cooperate with the Ministry and the Competent Authorities and shall provide the information necessary to implement the provisions of this resolution.
5. The approved standard specifications and technical requirements contained in the annexes attached to this resolution shall be deemed standard specifications and mandatory technical requirements to be applied for its implementation. No product may be placed on the market unless it conforms to or fulfils the provisions of this resolution.
6. The annexes attached hereto shall be considered an integral part of this resolution. The Minister may amend any of the standard specifications or the requirements contained in the annexes attached to this Resolution, or adopt any other standard specification required for the implementation of this Resolution, in accordance with the legislation in force in this regard.

7. The Minister or their delegate may take any action deemed appropriate concerning any case not provided for in this resolution or any dispute arising from the application or interpretation of any of its provisions.

## **Article (15)**

### **Regularization**

1. The Supplier, as appropriate, shall register the product with the Ministry under the Emirates Conformity Assessment Scheme (ECAS), within a period not exceeding (180) one hundred and eighty days from the date of publication of this resolution in the Official Gazette, for the product that has entered any stage of the supply chain, and has not been placed on the local market prior to the issuance of this resolution.
2. The Supplier shall be granted a period not exceeding one year from the date of publication of this resolution in the Official Gazette to regularize the status of the product placed on the markets prior to its issuance.
3. All concerned authorities existing at the time this resolution enters into force shall regularize their status in accordance with its provisions within (180) one hundred and eighty days from the effective date of this Resolution.

## **Article (16)**

### **Repeals**

Any provision that contradicts or conflicts with the provisions of this Resolution shall be repealed.

## **Article (17)**

### **Publication and Entry into Force**

This Resolution shall be published in the Official Gazette and shall enter into force from the day following its date of publication.

**Mohammad bin Rashid Al Maktoum**

**Prime Minister**

Issued by Us:

Dated: 25 Shaaban 1443 A.H.

Corresponding to: 28 March 2022 A.D

## Annex 1

### Technical Definitions

For this regulation, the following definitions shall apply:

1) '**light source**' means an electrically operated product intended to emit, or, in the case of a non-incandescent light source, intended to be possibly tuned to emit, light, or both, with all of the following optical characteristics:

(a) chromaticity coordinates  $x$  and  $y$  in the range:

$$0,270 < x < 0,530; \text{ and}$$

$$-2,3172 x^2 + 2,3653 x - 0,2199 < y < -2,3172 x^2 + 2,3653 x - 0,1595;$$

(b) a luminous flux  $< 500$  lumen per mm<sup>2</sup> of projected light-emitting surface area.

(c) a luminous flux between 60 and 82 000 lumens; (d) a colour rendering index (CRI)  $> 0$ ; using incandescence, fluorescence, high-intensity discharge, inorganic light-emitting diodes (LED) or organic light-emitting diodes (OLED), or their combinations as lighting technology.

High-pressure sodium (HPS) light sources that do not fulfil condition (a) are considered light sources for this regulation. Light sources do not include:

(a) LED dies or LED chips;

(b) LED packages;

(c) Products containing a light source(s) from which these light source(s) can be removed for verification;

(d) light-emitting parts contained in a light source from which these parts cannot be removed for verification as a light source.

2) '**control gear**' means one or more devices that may or may not be physically integrated with a light source, intended to prepare the mains for the electric format required by one or more specific light sources within boundary conditions set by electrical safety and electromagnetic compatibility. It may include transforming the supply and starting voltage, limiting operational and preheating current, preventing cold starting, correcting the power factor and/or reducing radio interference.

The term 'control gear' does not have power supplies and also does not include lighting control parts and non-lighting parts.

- 3) '**light**' means electromagnetic radiation with a wavelength between 380 nm and 780 nm;
- 4) '**LED die** or '**LED chip**' means a small block of light-emitting semiconducting material on which a functional LED circuit is fabricated;
- 5) '**LED package**' means a single electric part comprising principally at least one LED die. It does not include a control gear or parts of it, a cap or active electronic components and is not connected directly to the mains voltage. It can consist of one or more of the following: optical elements, light converters (phosphors), thermal, mechanical and electric interfaces or parts to address electrostatic discharge concerns. Any similar light-emitting devices that are intended to be used directly in an LED luminaire, are considered to be light sources;
- 6) '**chromaticity**' means the property of a colour stimulus defined by its chromaticity coordinates (x and y);
- 7) '**Luminous flux**' or 'flux' ( $\Phi$ ), expressed in the lumen (lm), means the quantity derived from bright flux (radiant power) by evaluating the electromagnetic radiation by the spectral sensitivity of the human eye. It refers to the total flux emitted by a light source in a solid angle of 4 steradians under conditions (e.g. current, voltage, temperature) specified in applicable standards. It refers to the initial flux for the undimmed light source after a short operating period, unless it is specified that the flux in a dimmed condition or the flux after a given period of operation is intended.
- 8) '**colour rendering index**' (**CRI**) means a metric quantifying the effect of an illuminant on the colour appearance of objects by conscious or subconscious comparison with their colour appearance under the reference illuminant and is the average Ra of the colour rendering for the first 8 test colours (R1-R8) defined in standards;
- 9) '**incandescence**' means the phenomenon where light is produced from heat, in light sources typically delivered through a threadlike conductor ('filament') which is heated by the passage of an electric current;
- 10) '**halogen light source**' means an incandescent light source with a threadlike conductor made from tungsten surrounded by gas containing halogens or halogen compounds;

- 11) '**Fluorescence**' or '**fluorescent light source**' (**FL**) means the phenomenon of a light source using an electric gas discharge of the low-pressure mercury type in which most of the light is emitted by one or more layers of phosphors excited by the ultraviolet radiation from the discharge. Fluorescent light sources may have one ('single-capped') or two ('double-capped') connections ('caps') to their electricity supply. For this regulation, magnetic induction light sources are also considered as fluorescent light sources;
- 12) '**high-intensity discharge**' (**HID**) means an electric gas discharge in which the light-producing arc is stabilized by wall temperature and the arc chamber has a bulb wall loading over 3 watts per square centimetre. HID light sources are limited to metal halide, high- pressure sodium and mercury vapour types;
- 13) '**gas discharge**' means a phenomenon where light is produced, directly or indirectly, by an electric discharge through a gas, plasma, metal vapour or mixture of gases and vapours;
- 14) '**Inorganic light-emitting-diode**'(**LED**) means a technology in which light is produced from a solid-state device embodying a p-n junction of inorganic material. The junction emits optical radiation when excited by an electric current;
- 15) '**organic light-emitting diode**' (**OLED**) means a technology in which light is produced from a solid-state device embodying a p-n junction of organic material. The junction emits optical radiation when excited by an electric current;
- 16) '**high-pressure-Sodium light source**' (**HPS**) means a high-intensity discharge light source in which the light is produced mainly by radiation from Sodium vapour operating at a partial pressure of the order of 10 kilopascals. HPS light sources may have one ('single-ended') or two ('double-ended') connectors to their electricity supply;
- 17) '**directional light source**' (**DLS**) means a light source having at least 80% of total luminous flux within a solid angle of a sr (corresponding to a cone with an angle of 120°);
- 18) '**non-directional light source**' (**NDLS**) means a light source that is not a directional light source;
- 19) '**mains light source**' (**MLS**)' means a light source that can be operated directly on the mains electricity supply. Light sources that operate directly on the mains, and can also operate indirectly on the mains using a separate control gear, shall be considered to be mains light sources;

- 20) '**non-mains light source (NMLS)**' means a light source that requires a separate control gear to operate on the mains;
- 21) '**luminance**' (in a given direction, at a given point of a real or imaginary surface) means the luminous flux transmitted by an elementary beam passing through the given point and propagating in the solid angle containing the given direction divided by the area of a section of that beam containing the given point (cd/m<sup>2</sup>);
- 22) '**Average luminance**' (Luminance-HLLS) for a LED light source means the average luminance over a light-emitting area where the luminance is more than 50% of the peak luminance (cd/mm<sup>2</sup>);
- 23) '**lighting control parts**' means parts that are integrated with a light source, or physically separated but marketed together with a light source as a single product, that is not strictly necessary for the light source to emit light at full load. But, that enable manual or automatic, direct or remote, control of the luminous intensity, chromaticity, correlated colour temperature, the light spectrum and/or beam angle. Dimmers shall also be considered as lighting control parts.
- 24) '**non-lighting parts**' means parts that are integrated with a light source, or physically separated but marketed together with a light source as a single product, that are not necessary for the light source to emit light at full-load, and that are not 'lighting control parts'. Examples include, but is not limited to: speakers (audio), cameras, repeaters for communication signals to extend the range (e.g. WiFi), parts supporting grid balance (switching to own internal batteries when necessary), battery charging, visual notification of events (mail arriving, doorbell ringing, alert), use of Light Fidelity (Li-Fi, a bidirectional, high-speed and fully networked wireless communication technology).  
The term also includes data-connection parts used for other functions than to control the light emission function;
- 25) '**useful luminous flux**' (**Φ<sub>use</sub>**) means the part of the luminous flux of a light source that is considered when determining its energy efficiency:
- for non-directional light sources, it is the total flux emitted in a solid angle of  $4\pi$  sr (corresponding to a 360° sphere);

- for directional light sources with beam angle  $\geq 90^\circ$  it is the flux emitted in a solid angle of  $\pi$  sr (corresponding to a cone with an angle of  $120^\circ$ );
  - for directional light sources with beam angle  $< 90^\circ$  it is the flux emitted in a solid angle of  $0,586\pi$  sr (corresponding to a cone with an angle of  $90^\circ$ ); 'full-load' means the condition of a light source, within the declared operating conditions, in which it emits the maximum (undimmed) luminous flux;
- 26) '**standby mode**' means the condition of a light source, where it is connected to the power supply, but the light source is intentionally not emitting light, and the light source is awaiting a control signal to return to a state with light emission. Lighting control parts enabling the standby function shall be in their control mode. Non-lighting parts shall be disconnected or switched off, or their power consumption shall be minimized following manufacturer's instructions;
- 27) '**on-mode power**' (**Pon**) expressed in watt, means the electric power consumption of a light source in full-load with all lighting control parts and non-lighting parts disconnected. If these parts cannot be disconnected, they shall be switched off, or their power consumption shall be minimized following the manufacturer's instructions. In case of an NMLS that requires a separate control gear to operate, Pon can be measured directly on the input to the light source, or Pon is determined using a control gear with known efficiency, whose electric power consumption is subsequently subtracted from the measured mains power input value;
- 28) '**standby power**' (**Psb**) expressed in watt, is the electric power consumption of a light source in standby mode;
- 29) '**networked standby power**' (**Pnet**) expressed in watt, is the electric power consumption of a CLS in networked standby mode;
- 30) '**Reference control settings**' (**RCS**) means a controlled setting or a combination of control settings that are used to verify compliance of a light source with this regulation. These settings are relevant for light sources that allow the end-user to control, manually or automatically, directly or remotely, the luminous intensity, colour, correlated colour temperature, spectrum, and/or beam angle of the emitted light. In principle, the reference control settings shall be those predefined by the manufacturer as factory default values

and encountered by the user at first installation (out-of-the-box values). If the installation procedure provides for an automatic software update during the first installation, or if the user has the option to perform such an update, the resulting change in settings (if any) shall be taken into account.

If the out-of-the-box value is deliberately set differently to the reference control setting (e.g. at low power for safety purposes), the manufacturer shall indicate in the technical documentation how to recall the reference control settings for compliance verification and provide a technical justification why the out-of-the-box value is set differently to the reference control setting.

For light sources that allow the manufacturer of a containing product to make implementation choices that influence light source characteristics (e.g. definition of the operating current(s); thermal design), and the end-user cannot control that, the reference control settings need not be defined. In that case, the nominal test conditions as defined by the light source manufacturer apply;

- 31) '**high-pressure mercury light source**' means a high-intensity discharge light source in which the significant portion of the light is produced, directly or indirectly, by radiation from predominantly vaporized mercury operating at a partial pressure over 100 kilopascals;
- 32) '**metal halide light source**' (MH) means a high-intensity discharge light source in which the light is produced by radiation from a mixture of metallic vapour, metal halides and the products of the dissociation of metal halides. MH light sources may have one ('single-ended') or two ('double-ended') connectors to their electricity supply. The material for the arc tube of MH light sources can be quartz (QMH) or ceramic (CMH);
- 33) '**compact fluorescent light source**' (CFL) means a single-capped fluorescent light source with a bent-tube construction designed to fit in small spaces. CFLs may be primarily spiral-shaped (i.e. curly forms) or fundamentally shaped as connected multiple parallel tubes, with or without a second bulb-like envelope. CFLs are available with (CFLi) or without (CFLni) physically integrated control gear;

- 34) '**T2**', '**T5**', '**T8**', '**T9**' and '**T12**' means a tubular light source with a diameter of approximately 7, 16, 26, 29 and 38 mm respectively, as defined in standards. The tube can be straight (linear) or bent (e.g. U-shaped, circular);
- 35) '**LFL T5-HE**' means a high-efficiency linear fluorescent T5 light source with driving current lower than 0,2 A;
- 36) '**LFL T5-HO**' means a high-output linear fluorescent T5 light source with driving current higher than or equal to 0,2 A;
- 37) '**HL R7s**' means a mains-voltage, double-capped, linear halogen light source with a cap diameter of 7 mm;
- 38) '**colour rendering**' (**Ra**) means the effect of an illuminant on the colour appearance of objects by conscious or subconscious comparison with their colour appearance under a reference illuminant;
- 39) '**R9**' means the colour rendering index for a red coloured object as defined in standards;
- 40) '**luminous intensity**' (candela or cd) means the quotient of the luminous flux leaving the source and propagated in the element of solid angle containing a given direction, by the element of solid angle;
- 41) '**correlated colour temperature**' (**CCT [K]**) means the temperature of a Planckian (black body) radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified viewing conditions;
- 42) '**colour consistency**' means the maximum deviation of the initial (after a short period), spatially averaged chromaticity coordinates (x and y) of a single light source from the chromaticity centre point (cx and cy) declared by the manufacturer or the importer, expressed as the size (in steps) of the MacAdam ellipse formed around the chromaticity centre point (cx and cy);
- 43) '**lumen maintenance factor**' (**XLMF**) means the ratio of the luminous flux emitted by a light source at a given time in its life to the initial luminous flux;
- 44) '**survival factor**' (**SF**) means the defined fraction of the total number of light sources that continue to operate at a given time under specified conditions and switching frequency;
- 45) '**lifetime for LED and OLED light sources**' means the time in hours between the start of their use and the moment when for 50% of a population of light sources the light output

has gradually degraded to a value below 70% of the initial luminous flux. This is also referred to as the L70B50 lifetime;

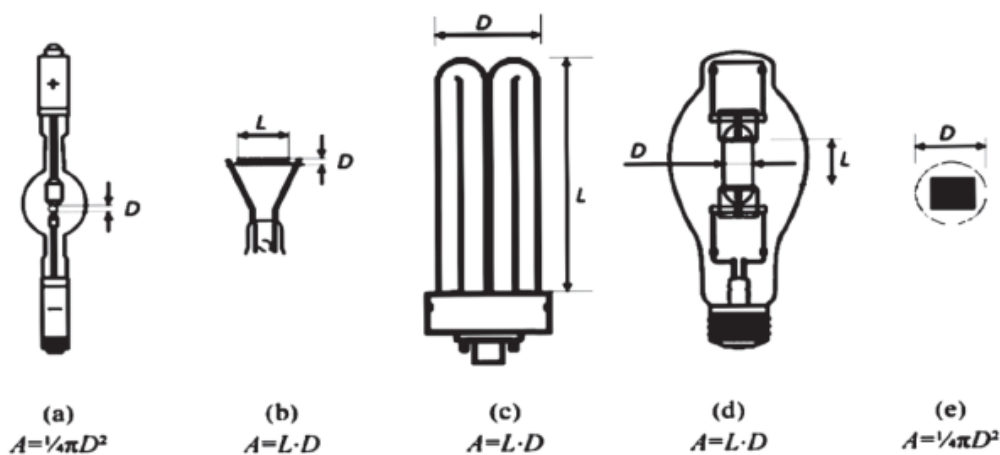
46) '**display mechanism**' means any screen, including tactile screen, or other visual technology used for displaying internet content to users;

47) '**projected light-emitting surface area**' (A) is the surface area in mm<sup>2</sup> (square millimetres) of the view in an orthographic projection of the light-emitting surface from the direction with the highest light intensity, where the light-emitting surface area is the surface area of the light source that emits light with the declared optical characteristics, such as the approximately spherical surface of an arc (a), cylindrical surface of a filament coil (b) or a gas discharge lamp (c, d), flat or semi-spherical envelope of a light-emitting diode (e).

For light sources with a non-clear envelope or with anti-glare shield, the light-emitting surface area is the entire area through which light leaves the light source.

For light sources containing more than one light emitter, the projection of the smallest gross volume enveloping all emitters shall be taken as the light-emitting surface.

For HID light sources definition (a) applies, unless the dimensions defined in (d) apply with  $L > D$ , where L is the distance between the electrode tips and D the inner diameter of the arc tube.



- 48) Containing Product means a product containing one or more light sources, or separate control gears, or both. Examples of containing products are luminaires that can be taken apart to allow separate verification of the contained light source(s), household appliances containing light source(s), furniture (shelves, mirrors, display cabinets) containing light source(s).
- 49) An 'integrated product' refers exclusively to LED luminaires i.e. where a light source or gear is physically installed and where the light source/gear cannot be physically removed by the customer.

## Annex 2

### The Energy Efficiency Stars and Calculation Method

#### 1- energy efficiency of light sources

$$\eta_{TM} = (\Phi_{use}/P_{on}) \times F_{TM} \text{ (lm/W)}.$$

**Table 1**

The energy efficiency of light sources

Energy efficiency class	Total mains efficacy $\eta_{TM}$ (lm/W)
5 stars	$210 \leq \eta_{TM}$
4 stars	$160 \leq \eta_{TM} < 210$
3 stars	$110 \leq \eta_{TM} < 160$
2 stars	$85 \leq \eta_{TM} < 110$
1 stars	$50 \leq \eta_{TM} < 85$

**Table 2**

Factors ( $F_{TM}$ ) by light source type

Light source type	Factor $F_{TM}$
Non-directional (NDLS) operating on mains (MLS)	1,000
Non-directional (NDLS) not operating on mains (NMLS)	0,926
Directional (DLS) operating on mains (MLS)	1,176
Directional (DLS) not operating on mains (NMLS)	1,089

#### 2- Energy efficiency requirements of a separate control gear

The values set in Table 3 for the minimum energy efficiency requirements of a separate control gear operating at full-load shall apply.

**Table 3**

Minimum energy efficiency for separate control gear at full-load

Declared output power of the control gear (P <sub>cg</sub> ) or declared power of the light source (P <sub>ls</sub> ) in W, as applicable	Minimum energy efficiency
Control gear for HL light sources all wattages P <sub>cg</sub>	0,91
Control gear for FL light sources P <sub>ls</sub> ≤ 5 5 < P <sub>ls</sub> ≤ 100 100 < P <sub>ls</sub>	0,71 $P_{ls}/(2x \sqrt{(P_{ls}/36) + 38/36 \times P_{ls} + 1})$ 0,91
Control gear for HID light sources P <sub>ls</sub> ≤ 30 30 < P <sub>ls</sub> ≤ 75 75 < P <sub>ls</sub> ≤ 105 105 < P <sub>ls</sub> ≤ 405 405 < P <sub>ls</sub>	0,78 0,85 0,87 0,90 0,92
Control gear for LED or OLED light sources all wattages P <sub>cg</sub>	$P_{cg} 0,81 / (1,09 \times P_{cg} 0,81 + 2,10)$

- Multi-wattage separate control gears shall comply with the requirements in Table 3 according to the maximum declared power on which they can operate.
- The no-load power P<sub>no</sub> of a separate control gear shall not exceed 0,5 W. This applies only to separate control gear for which the manufacturer has declared in the technical documentation that is designed for no-load mode.
- The standby power P<sub>sb</sub> of a separate control gear shall not exceed 0,5 W.
- The networked standby power P<sub>net</sub> of a connected separate control gear shall not exceed 0,5 W. The allowable values for P<sub>sb</sub> and P<sub>net</sub> shall not be added together

## Annex 3

### Exemptions

For non-directional household lamps, luminaires and control gears UAE Cabinet Decision No 34 of 2013 for Lighting Products is applied.

1. This regulation shall not apply to light sources specifically tested and approved to operate:
  - For radiological and nuclear medicine installations.
  - For emergency use.
  - For military or civil defense establishments, equipment, ground vehicles, marine equipment or aircraft.
  - For motor vehicles, and their trailers.
  - For non-road mobile machinery and their trailers.
  - For civil aviation aircraft.
  - For railway vehicle lighting.
  - For marine equipment.
  - For medical devices and in-vitro medical devices
2. Besides, this regulation shall not apply to:
  - Electronic displays (televisions, computer monitors, notebooks, tablets, mobile phones, e-readers, game consoles).
  - Light sources in range hoods.
  - Light sources in battery-operated products, including torches, mobile phones with an integrated torchlight, toys including light sources, desk lamps operating only on batteries, armband lamps for cyclists, solar-powered garden lamps;
  - Light sources on bicycles and other non-motorized vehicles;
  - Light sources for spectroscopy and photometric applications, such as UV-VIS spectroscopy, molecular spectroscopy, atomic absorption spectroscopy, nondispersive infrared (NDIR), Fourier-transform infrared (FTIR), medical analysis, layer thickness measurement, process monitoring or environmental monitoring.
3. Any light source specifically designed and marketed for use in at least one of the following applications:

- Signalling (including, but not limited to, road, railway, marine or air traffic- signalling, traffic control or airfield lamps);
- Image capture and image projection (including, but not limited to, photocopying, printing (directly or in pre-processing), lithography, film and video projection, holography);
- Light sources with specific effective ultraviolet power > 2 mW/klm and intended for use in applications requiring high UV-content;
- Light sources with peak radiation around 253,7 nm and intended for germicidal use;
- Light sources emitting 5% or more of total radiation power of the range 250- 800 nm in the range of 250-315 nm and/or 20% or more of total radiation power of the range 250-800 nm in the range of 315-400 nm, and intended for disinfection or fly trapping;
- Light sources having the primary purpose of emitting radiation around 185,1 nm and designed to be used for the generation of ozone;
- Light sources emitting 40% or more of total radiation power of the range 250- 800 nm in the range of 400-480 nm, and intended for coral zooxanthellae symbioses;
- FL light sources emitting 80% or more of total radiation power of the range 250- 800 nm in the range of 250-400 nm, and intended for sun tanning;
- HID light sources emitting 40% or more of total radiation power of the range 250- 800 nm in the range of 250-400 nm, and intended for sun tanning;
- Light sources with a photosynthetic efficacy > 1,2  $\mu\text{mol}/\text{J}$ , and/or emitting 25 % or more of total radiation power of the range 250-800 nm in the range of 700-800 nm, and intended for use in horticulture.

## Annex 4

### Functionality Requirements

The lamp functionality requirements are set out in Table 4

**Table 4**  
Functional requirements for light sources

Parameter	Functionality Requirements and endurance requirements for LED lamps	Functionality requirements for directional compact fluorescent lamps	Functionality requirements for other directional lights (excluding LED lights, compact fluorescent lamps and high-intensity discharge lamps)
Rated lamp life at 50% lamp survival			≥ 2 000 h ≥ 4 000 h for extra- low voltage lamps
Lamp survival factor at 2,000 h	≥ 0.90	≥ 0,70	
Lumen Maintenance	at 2000 h ≥ 0.80	At 2 000 h: ≥ 83% At 6 000 h: ≥ 70%	≥ 80% at 75% of rated average lifetime
Number of switching cycles before failure	≥ 15,000 if rated lamp life ≥ 30,000 h otherwise: ≥ half the rated lamp life expressed in hours	≥ lamp lifetime expressed in hours ≥ 30 000 if lamp starting time > 0,3s	≥ lamp lifetime expressed in hours
Starting time	< 0.5 s	< 1,5 s if P < 10 W < 1,0 s if P ≥ 10 W	< 1 s
Lamp warm-up time	to 95% $\Phi$ < 2s	to 60% $\Phi$ < 40 s or < 100 s for lamps containing mercury in amalgam form	to 60% ≤ 40 s
Premature failure rate	≤ 5.0% at 1,000 h	≤ 5,0% at 1000 h	≤ 5,0% at 200 h

Colour rendering (Ra)	$\geq 80$ $\geq 65$ if the lamp is intended for outdoor or industrial applications	$\geq 80$ $\geq 65$ if the lamp is intended for outdoor or industrial applications	
Colour consistency	Variation of chromaticity coordinates within a six- step MacAdam ellipse or less.		
Lamp power factor (Pf) for lamps with integrated control gear and integrated luminaires	$P \leq 2$ W: no requirement $2\text{W} < P \leq 5\text{W}$ : Pf > 0.4 $5\text{W} < P \leq 25\text{W}$ : Pf > 0.7 $P > 25\text{W}$ : Pf > 0.9	$\geq 0,55$ if $P < 25\text{W}$ $\geq 0,90$ if $P \geq 25\text{W}$	Power > 25 W: $\geq 0,9$ Power $\leq 25\text{W}$ : $\geq 0,5$

## Annex 5

### Hazardous Chemicals: Substance Restrictions for Lamps and Control Gears

The limits for hazardous substances in UAE cabinet Decree No. 34 of 2013 are applied except the limit on mercury content for single and double capped fluorescent lamps (without integrated ballast) and high-intensity discharge lamps for general lighting purposes per lamp. All other types of lamps in this regulation shall not have mercury limits.

**Table 5**

Maximum mercury content

Lamp type	Limit
<b>Mercury in single capped (compact) fluorescent lamps</b>	
>30 W and <150 W	5.0 mg
<30 W	2.5 mg
<30 W with long lifetime (> 15,000 h)	3.5 mg
With circular or square structural shape or other non-linear with tube diameter ≤ 17 mm	7.0 mg
<b>Mercury in double-capped linear fluorescent lamps</b>	
Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2)	5.0 mg
Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5)	5.0 mg
Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and 28 mm (e.g. T8)	8.0 mg
Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12)	5.0 mg
Tri-band phosphor with long lifetime (≥ 25,000 h) and T8 halophosphate	8.0 mg
<b>Mercury in other fluorescent lamps</b>	
Non-linear halophosphate lamps (all diameters)	15 mg
Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9)	15 mg
Lamps for other general lighting and special purposes (e.g. induction lamps)	15 mg

T12 linear halophosphate lamps	10 mg
<b>Mercury in other low-pressure discharge lamps</b>	15 mg
<b>Mercury in high-pressure sodium (vapour) lamps for general lighting purposes with improved colour rendering index Ra &gt; 60</b>	
P ≤ 155 W	30 mg
155 W < P < 405 W	40 mg
P > 405 W	40 mg
<b>Mercury in other high-pressure sodium (vapour) lamps for general lighting</b>	
P ≤ 155 W	25 mg
155 W < P < 405 W	30 mg
P > 405 W	40 mg
<b>Mercury in metal halide lamps (MH)</b>	no limit
<b>Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex</b>	no limit
Note: Maximum mercury content limits for lamps (per burner) in the scope of this regulation (only applies to single capped fluorescent lamps without integrated ballast and high-intensity discharge lamps for general lighting purposes)	

Table 6 outlines exemptions to the hazardous substance limits set in this Annex. Eligible products or components have no limit on the levels of the relevant hazardous substance.

**Table 6**

Lamps exempted from hazardous substance limits listed in UAE cabinet Decree No. 10 of 2017

Description	Requirements
Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezo-electronic devices, or in a glass or ceramic matrix compound	No limit
Lead in dielectric ceramic in capacitors for a rated voltage of 125V AC or 250V DC or higher	No limit
Lead in glass of fluorescent tubes not exceeding 0.2% by weight	No limit
Cadmium and its compounds in electrical contacts	No limit
Lead as an alloying element in aluminium containing up to 0.4% lead by weight	No limit
A copper alloy containing up to 4% lead by weight	No limit
Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)	No limit
Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda-lime glasses	No limit

## Annex 6

### 1. Product information

#### 1.1 Product information sheet

The supplier shall enter into the product database the information as set out in Table 7, including when the light source is a part in a containing product.

**Table 7**

Product information sheet

Supplier's name or trademark:

Supplier's address:

Model identifier:

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**Type of light source:**

Lighting technology used:	[HL/LFL T5 HE/LFL T5 HO/CFLni/other FL/HPS/MH/other HID/LED/OLED/mixed/other]	Non-directional or directional:	[NDLS/DLS]
Mains or non-mains:	[MLS/NMLS]	Connected light source (CLS):	[yes/no]
Colour-tuneable light source:	[yes/no]	Envelope:	[no/second/non-clear]
High luminance light source:	[yes/no]		
Anti-glare shield:	[yes/no]	Dimmable:	[yes/only with specific dimmers/no]

### Product parameters

Parameter	Value	Parameter	Value
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#### *General product parameters:*

Energy consumption in on-mode (kWh/	X	Energy efficiency class	[A/B/C/D/E/F/G] (*)
Useful luminous flux ( $\Phi_{use}$ ), indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°)	X in [sphere/wide cone/narrow cone]	Correlated colour temperature, rounded to the nearest 100 K, or the range of correlated colour temperatures, rounded to the nearest 100 K, that can be set	[x/x...x]
On-mode power ( $P_{on}$ ), expressed in W	x,x	Standby power ( $P_{sb}$ ), expressed in W and rounded to the second decimal	x,xx
Networked standby power ( $P_{net}$ ) for CLS, expressed in W and rounded to the second decimal	x,xx	Colour rendering index, rounded to the nearest integer, or the range of CRI- values that can be set	[x/x...x]

Outer dimensions without separate control gear, lighting control parts and non-lighting control parts, if any (millimetre)	Height	x	Spectral power distribution in the range 250 nm to 800 nm, at full-load	[graphic]
	Width	x		
	Depth	x		
Claim of equivalent power (°)		[yes/-]	If yes, equivalent power (W)	x
			Chromaticity coordinates (x and y)	0,xxx 0,xxx

***Parameters for directional light sources:***

Peak luminous intensity (cd)	x	Beam angle in degrees, or the range of beam angles that can be set	[x/x...x]
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***Parameters for LED and OLED light sources:***

R9 colour rendering index value	x	Survival factor	x,x
the lumen maintenance factor	x,xx		

***Parameters for LED and OLED mains light sources:***

displacement factor (cos $\phi$ 1)	x,xx	Colour consistency in McAdam ellipses	x
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(a) "-" not applicable;

Claims that an LED light source replaces a fluorescent light source without integrated ballast of a particular wattage.	[yes/-] <sup>(b)</sup>	If yes then replacement claim (W)	x
Flicker metric (Pst LM)	x,x	Stroboscopic effect metric (SVM)	x,x

'yes': An equivalence claim involving the power of a replaced light source type may be given only:

- for directional light sources, if the light source type is listed in Table 8 and if the luminous flux of the light source in a 90° cone ( $\Phi_{90^\circ}$ ) is not lower than the corresponding reference luminous flux in Table 8. The reference luminous flux shall be multiplied by the correction factor in Table 9. For LED light sources, it shall be in addition multiplied by the correction factor in Table 10;
- for non-directional light sources, the claimed equivalent incandescent light source power (rounded to 1 W) shall be that corresponding in Table 11 to the luminous flux of the light source.

The intermediate values of both the luminous flux and the claimed equivalent light source power (rounded to the nearest 1 W) shall be calculated by linear interpolation between the two adjacent values

(<sup>b</sup>): not applicable;

'Yes': Claim that a LED light source replaces a fluorescent light source without integrated ballast of a particular wattage. This claim may be made only if:

- the luminous intensity in any direction around the tube axis does not deviate by more than 25% from the average luminous intensity around the tube; and

**Table 8**

Reference luminous flux for equivalence claims

## Extra-low voltage reflector type

<b>T</b>	<b>Power (W)</b>	<b>Reference <math>\Phi_{90^\circ}</math> (lm)</b>
MR11 GU4	20	160
	35	300
MR16 GU 5.3	20	180
	35	300
	50	540
AR111	35	250
	50	390
	75	640
	100	785

## Mains-voltage blown glass reflector type

<b>T</b>	<b>Power</b>	<b>Reference <math>\Phi_{90^\circ}</math> (lm)</b>
R50/NR50	25	90
	40	170
R63/NR63	40	180
	60	300
R80/NR80	60	300
	75	350
	100	580
R95/NR95	75	350
	100	540
R125	100	580
	150	1 000

Mains-voltage pressed glass reflector type

Type	Power (W)	Reference $\Phi_{90^\circ}$ (lm)
PAR16	20	90
	25	125
	35	200
	50	300
PAR20	35	200
	50	300
	75	500
PAR25	50	350
	75	550
PAR30S	50	350
	75	550
	100	750
PAR36	50	350
	75	550
	100	720
PAR38	60	400
	75	555
	80	600
	100	760
	120	900

**Table 9**

Multiplication factors for lumen maintenance

<b>Light source type</b>	<b>Luminous flux multiplication factor</b>
Halogen light sources	1
Fluorescent light sources	1,08
LED light sources	$1+0,5 \times (1 - \text{LLMF})$ Where LLMF is the lumen maintenance factor at the end of the declared lifetime

**Table 10**

Multiplication factors for LED light sources

<b>LED light source beam angle</b>	<b>Luminous flux multiplication factor</b>
$20^\circ \leq \text{beam angle}$	1
$15^\circ \leq \text{beam angle} < 20^\circ$	0,9
$10^\circ \leq \text{beam angle} < 15^\circ$	0,85
$\text{beam angle} < 10^\circ$	0,80

**Table 11**

Equivalence claims for non-directional light sources

<b>Rated light source luminous flux <math>\Phi(\text{lm})</math></b>	<b>Claimed equivalent incandescent light source power (W)</b>
136	15
249	25
470	40
806	60
1 055	75
1 521	100
2 452	150

3 452	200
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**Table 12**

Minimum efficacy values for T8 and T5 light sources

T8 (26 mm Ø)		T5 (16 mm Ø) High Efficiency		T5 (16 mm Ø) High Output	
Claimed equivalent power (W)	Minimum luminous efficacy (lm/W)	Claimed equivalent power (W)	Minimum luminous efficacy (lm/W)	Claimed equivalent power (W)	Minimum luminous efficacy (lm/W)
15	63	14	86	24	73
18	75	21	90	39	79
25	76	28	93	49	88
30	80	35	94	54	82
36	93			80	77
38	87				
58	90				
70	89				

For light sources that can be tuned to emit light at full-load with different characteristics, the values of parameters that vary with these characteristics shall be reported at the reference control settings.

### 1.2 Information to be displayed in the documentation for a containing product

- If a light source is placed on the market as a part in a containing product, the technical documentation for the containing product shall clearly identify the contained light source(s), including the energy efficiency stars.
- If a light source is placed on the market as a part in a containing product, the following text shall be displayed, clearly legible, in the user manual or booklet of instructions:

'This product contains a light source of energy efficiency stars <X>',

Where <X> shall be replaced by the energy efficiency stars of the contained light source.

- If the product contains more than one light source, the sentence can be in the plural, or repeated per light source, as suitable.

### 1.3 Information to be displayed on the supplier's free access website:

The reference control settings, and instructions on how they can be implemented, where applicable;

- Instructions on how to remove lighting control parts and/or non-lighting parts, if any, or how to switch them off, or minimize their power consumption;
- If the light source is dimmable: a list of dimmers it is compatible with, and the light source dimmer compatibility standard(s) it is compliant with, if any;
- If the light source contains mercury: instructions on how to clean up the debris in case of accidental breakage;

## 2. Technical documentation

The technical documentation shall include:

- (a) The name and address of the supplier,
- (b) Supplier's model identifier;
- (c) The model identifier of all equivalent models already placed on the market;
- (d) Identification and signature of the person empowered to bind the supplier,
- (e) The declared and measured values for the following technical parameters:
  - (1) Useful luminous flux ( $\Phi_{use}$ ) in lm;
  - (2) Colour rendering index (CRI);
  - (3) On-mode power ( $P_{on}$ ) in W;
  - (4) Beam angle in degrees for directional light sources (DLS);
  - (5) Correlated colour temperature (CCT) in K for FL and HID light sources;
  - (6) Standby power ( $P_{sb}$ ) in W, including when it is zero;
  - (7) Networked standby power ( $P_{net}$ ) in W for connected light sources (CLS);
  - (8) Displacement factor ( $\cos \varphi$ ) for LED and OLED mains light sources;
  - (9) Colour consistency in MacAdam ellipse steps for LED and OLED light sources;
  - (10) Luminance-HLLS in cd/mm<sup>2</sup> (only for HLLS);

- (11) Flicker metric (PstLM) for LED and OLED light sources;
- (12) Stroboscopic effect metric (SVM) for LED and OLED light sources;
- (13) Excitation purity, only for CTLS, for the following colours and

dominant wavelength within the given range:

Color Dominant wavelength

Blue 440 nm 490 nm

Green 520 nm 570 nm

Red 610 nm 670 nm

- (f) The calculations performed, including the determination of the energy efficiency
- (g) class;
- (h) References to the harmonized standards applied or other standards used;
- (i) Testing conditions if not described sufficiently in point (g);
- (j) The reference control settings, and instructions on how they can be implemented, where applicable;
- (k) Instructions on how to remove lighting control parts and/or non-lighting parts, if any, or how to switch them off, or minimize their power consumption during light source testing;
- (l) Specific precautions that shall be taken when the model is assembled, installed, maintained or tested.

## Annex 7

### Verification procedure for market surveillance purposes

The following verification tolerances shall use only for the parameters in Table 13, no other tolerances, such as those set out in standards or in any other measurement method, shall be applied.

**Table 13**

Verification tolerances

Parameter	Sample size	Verification tolerances
<b>Full-load on-mode power</b> $P_{on}$ [W]:		
$P_{on} \leq 2W$	10	The determined value shall not exceed the declared value by more than 0,20 W.
$2W < P_{on} \leq 5W$	10	The determined value shall not exceed the declared value by more than 10%.
$5W < P_{on} \leq 25W$	10	The determined value shall not exceed the declared value by more than 5%.
$25W < P_{on} \leq 100W$	10	The determined value shall not exceed the declared value by more than 5%.
$100W < P_{on}$	10	The determined value shall not exceed the declared value by more than 2,5 %.
<b>Displacement factor [0-1]</b>	10	The determined value shall not be less than the declared value minus 0,1 units.
<b>Useful luminous flux</b> $\Phi_{use}$ [lm]	10	The determined value shall not be less than the declared value minus 10%.
<b>Total mains efficacy</b> $\eta_{TM}$ [lm/W]	10	The determined value (quotient) shall not be less than the declared value minus 5%
Luminous peak intensity [cd]	10	The determined value shall not deviate from the declared value by more than 25 %.

## Annex 8

### Standards Applicable for Lamps and Control Gears

A- Mandatory test methods Standards for lamps and control gears covers with this regulation

1- Directional Halogen incandescent light bulbs and Incandescent light bulbs shall be measured according to methods set out in the following:

Measured parameter	Directional incandescent light bulbs	Directional halogen incandescent light bulbs
Rated lifetime	UAE.S IEC 60064,	UAE.S IEC 60357,
Lumen maintenance	UAE.S IEC 60064,	UAE.S IEC 60357,
Number of switching cycles	—	—
Starting time	—	—
Lamp warm-up time	—	—
Premature failure rate	UAE.S IEC 60064,	UAE.S IEC 60357
Lamp power factor	—	—
Chromaticity coordinates	CIE S 010 (=ISO 23539) for basics on photometry, CIE 15 for basics on colorimetry, CIE 63 for spectroradiometric measurement	CIE S 010 (=ISO 23539) for basics on photometry, CIE 15 for basics on colorimetry, CIE 63 for spectroradiometric measurement
CRI	—	—
Beam angle	IEC/TR 61341	IEC/TR 61341,
Peak intensity	IEC/TR 61341	IEC/TR 61341,
Lamp type (MR11, GU4,	—	UAE.S IEC 60357

2- Directional Compact fluorescent lamps with integrated control gear and High Intensity Discharge lamps shall be measured according to methods set out in the following:

Measured parameter	Directional compact fluorescent lamps	Directional high intensity discharge lamps
Rated lifetime	UAE.S IEC 60969	—
Lamp survival factor	UAE.S IEC 60969	—
Lumen maintenance	UAE.S IEC 60969	—
Number of switching cycles	UAE.S IEC 60969	—
Starting time	UAE.S IEC 60969	UAE.S IEC 61167, AnnexeAnnexee A for electro-magnetic operation, AnnexeAnnexee G for square wave operation for metal halide lamps; EN 60662 8.2 for high pressure sodium lamps
Lamp warm-up time	UAE.S IEC 60969	UAE.S IEC 61167, AnnexeAnnexee A for electro-magnetic operation, AnnexeAnnexee G for square wave operation
Premature failure rate	UAE.S IEC 60969	—
Lamp power factor	UAE.S IEC 61000-3-2	UAE.S IEC 61000-3-2 (only for lamps with integrated control gear)

Chromaticity coordinates	CIE 15	CIE 15
CCT	CIE 15	CIE 15
CRI	CIE 13.3	CIE 13.3
Spectral power distribution	CIE 63	CIE 63
Lamp dimensions	UAE.S IEC 60969	UAE.S IEC 61167 for metal halide lamps
Beam angle	IEC/TR 61341	IEC/TR 61341
Peak intensity	IEC/TR 61341	IEC/TR 61341
Lamp type (MR11, GU4, etc.)	UAE.S IEC 60968	UAE.S IEC 61167 for metal halide lamps
Cone luminous flux	L2(AP)005	L2(AP)005
Cap	UAE.S IEC 60968	-

3- Directional Light emitting diode lamps and modules shall be measured according to methods set out in the following:

<b>Measured parameter</b>	<b>Directional light emitting diodes lamps</b>	<b>Directional light emitting diodes modules</b>
Rated lifetime	—	
Lamp survival factor	UAE.S IEC 62612, 11.2	IEC 62717, 10.2
Lumen maintenance	UAE.S IEC 62612, 11.2	IEC 62717, 10.2
Number of switching cycles	UAE.S IEC 62612, 11.3.3	IEC 62717, at present 34A/1659/CDV, 10.3
Starting time	—	—
Lamp warm-up time	—	—
Premature failure rate	UAE.S IEC 62612, 11.2	IEC 62717, 10.2
Lamp power factor (only for lamps)	UAE.S IEC 61000-3-2	UAE.S IEC 61000-3-2
CCT	BS EN 13032-4:2015+A1:2019	BS EN 13032-4:2015+A1:2019
Colour consistency	UAE.S IEC 62612, 10.1	IEC 62717, at present 34A/1659/CDV, 9.1 CIE 15
CRI	BS EN 13032-4:2015+A1:2019	BS EN 13032-4:2015+A1:2019
Spectral power distribution	CIE 63	CIE 63
Lamp dimensions	UAE.S IEC 62612, 6	IEC 62717, at present 34A/1659/CDV 5

Beam angle	UAE.S IEC 62612, 9.2	IEC 62717, at present 34A. 1659/CDV, 8.2.5 IEC/TR 61341
Peak intensity	UAE.S IEC 62612, 9.2	IEC 62717, at present 34A/ 1659/CDV 8 2 4
Dimmability	UAE.S IEC 62560, 5.2	IEC 62717, at present 34A/ 1659/CDV, 6 and 7.2
Lamp type (MR11, GU4, etc.	See parameter "cap".	
Cone luminous flux	L2(AP)005	L2(AP)005
Cap	UAE.S IEC 62560	

### B- List of Standards applicable to Measurements of certain substances

1	UAE.S IEC 62321-1	Measurements of certain substances in electrotechnical products Part 1: Introduction and overview
2	UAE.S IEC 62321-2	Measurements of certain substances in electrotechnical products Part 2: Disassembly, disjunction and mechanical sample preparation
3	UAE.S IEC 62321-3.1	Measurements of certain substances in electrotechnical products Part 3.1 Lead, mercury, cadmium, total chromium and total bromine using X-ray fluorescence spectrometry
4	UAE.S IEC 62321-4	Measurements of certain substances in electrotechnical products Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV- AFS, ICP-OES and ICP-MS
5	UAE.S IEC 62321-5	Measurements of certain substances in electrotechnical products Part 5: Cadmium, lead and chromium in polymers and electronics and cadmium and lead in metals by AAS, AFS, ICP- OES and ICP-MS
6	UAE.S IEC 62321-6	Measurements of certain substances in electrotechnical products Part 6: Polybrominated biphenyls and polybrominated diphenyl ethers in polymers by gas chromatography - mass spectrometry (GC-MS)
7	UAE.S IEC 62554 :2011/AMD1:2017	Sample preparation for measurement of mercury level in fluorescent lamps

### C- Additional reference standards

Reference document	Title
UAE.S IEC 60061-1	Lamp caps and holders together with gauges for the control of interchangeability and safety Part 1 lamp caps
UAE.S IEC 60064	Tungsten filament lamps for domestic and similar general lighting purposes Performance requirements
UAE.S IEC 60357	Tungsten halogen lamps (non-vehicle) - Performance specifications
UAE.S IEC 60432-1	Incandescent lamps - Safety specifications - Part 1: Tungsten filament lamps for domestic and similar general lighting purposes
UAE.S IEC 60432-2	Incandescent lamps - Safety specifications - Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes
UAE.S IEC 60432-3	Incandescent lamps - Safety specifications - Part 3: Tungsten halogen lamps (non-vehicle)
UAE.S IEC 60662	High-pressure sodium vapour lamps - Performance specifications
UAE.S IEC 60968	Self-ballasted lamps for general lighting services - Safety requirements
UAE.S IEC 60969	Self-ballasted lamps for general lighting services - Performance requirements
UAE.S IEC 61000-3-2	Electromagnetic compatibility (EMC) Part 3-2: Limits - Limits for harmonic current emissions (equipment input current $\leq 16$ A per phase)
UAE.S IEC 61167	Metal halide lamps - Performance specification
IEC/TR 61341	Method of measurement of center beam intensity and beam angle(s) of reflector lamps
UAE.S IEC 62442-1	Energy performance of lamp controlgear - Part 1: Controlgear for fluorescent lamps - Method of measurement to determine

	the total input power of controlgear circuits and the efficiency of the controlgear
IEC 62442-2,	Energy performance of lamp controlgear - Part 2: Controlgear for high intensity discharge lamps (excluding fluorescent lamps) - Method of measurement to determine the efficiency of controlgear
IEC 62442-3,	Energy performance of lamp controlgear - Part 3: Controlgear for halogen lamps and LED modules - Method of measurement to determine the efficiency of the controlgear
UAE.S IEC 62471	Photobiological safety of lamps and lamp systems
UAE.S IEC 62554	Sample preparation for measurement of mercury level in fluorescent lamps
UAE.S IEC 62560	Self-ballasted LED lamps for general lighting services by voltage >50 V - Safety specifications
UAE.S IEC 62612	Self-ballasted LED lamps for general lighting services with supply voltages > 50 V- Performance requirements
IEC 62717,	LED modules for general lighting - Performance requirements
BS EN 13032-4:2015+A1:2019	Light and lighting. Measurement and presentation of photometric data of lamps and luminaires. LED lamps, modules and luminaires
CIE TR 13.3:1995	Method of Measuring and Specifying Colour Rendering Properties of Light Sources
CIE TR 15:2004	Colorimetry
CIE 18	Principles of Light Measurement
CIE 43:1979	Photometry of Floodlights
CIE TR 53:1982	Methods of characterizing the performance of radiometers and photometers
CIE 63:1984	The spectroradiometric measurement of light sources
CIE 70:1987	The measurement of absolute luminous intensity distributions
CIE TR 84:1989	The measurement of luminous flux

CIE TR 127:2007	Measurement of LEDs
CIE TR 149:2002	The use of tungsten filament lamps as secondary standard sources
CIE S 010/E:2004/ ISO 23539: 2005	Photometry - The CIE System of Physical Photometry
L2(AP)005,	Cone luminous flux measurement