Draft Regulations laid before Parliament under regulation 24(1)(b) of the Ecodesign for Energy-Related Products Regulations 2010 and Article 11A(2)(b) of Regulation (EU) 2017/1369 of the European Parliament and of the Council setting a framework for energy labelling, for approval by resolution of each House of Parliament.

D R A F T S T A T U T O R Y I N S T R U M E N T S

2021 No. XXX

ENERGY CONSERVATION

The Ecodesign for Energy-Related Products and Energy Information (Lighting Products) Regulations 2021

Made - - - - ***

Coming into force in accordance with regulation 1(2) and (3)

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The Secretary of State makes these Regulations in exercise of the powers conferred by regulations 22(1) and 24(2) of the Ecodesign for Energy-Related Products Regulations 2010(**a**) ("the 2010 Regulations") and Articles 11(3) and 11A(3) of Regulation (EU) 2017/1369 of the European Parliament and of the Council setting a framework for energy labelling(**b**) ("the Framework Regulation").

A draft of this instrument was laid before Parliament in accordance with regulation 24(1)(b) of the 2010 Regulations and Article 11A(2)(b) of the Framework Regulation, and approved by a resolution of each House of Parliament.

(**a**) S.I. 2010/2617; regulations 22 to 24 were inserted by S.I. 2019/539, as amended by S.I. 2020/1528.
(**b**) EUR 2017/1369; Article 11 was substituted, and Article 11A was inserted, by S.I. 2019/539, as amended by S.I. 2020/1528.

For the purposes of paragraph (1) of regulation 22 of the 2010 Regulations, the Secretary of State considers that the matters set out in paragraphs (2) and (6) of that regulation are satisfied. The Secretary of State has complied with paragraph (4) of regulation 22 of those Regulations.

For the purposes of paragraph (3) of Article 11 of the Framework Regulation, the Secretary of State considers that the conditions set out in paragraph (1)(a) to (d) of that Article are satisfied. The Secretary of State has complied with paragraph (2) of Article 11 of that Regulation.

PART 1

INTRODUCTION

Citation, commencement and extent

1.—(1) These Regulations may be cited as the Ecodesign for Energy-Related Products and Energy Information (Lighting Products) Regulations 2021.

(2) These Regulations, except regulation 12(2)(a) and (b), come into force on 1st October 2021.

(3) Regulation 12(2)(a) and (b) comes into force on 1st March 2022.

(4) These Regulations extend to England and Wales and Scotland.

PART 2

ECODESIGN AND ENERGY LABELLING FOR LIGHT SOURCES AND SEPARATE CONTROL GEARS

CHAPTER 1

GENERAL

Interpretation

Meaning of "light source"

2.—(1) In these Regulations "light source" means, subject to paragraphs (4) to (6), an electrically operated product—

(a) intended to emit light; or

(b) in the case of a non-incandescent light source, intended to be possibly tuned to emit light; or

(c) intended to do both (a) and (b);

which has the optical characteristics specified in paragraph (2) and meets the conditions specified in paragraph (3).

(2) The optical characteristics referred to in paragraph (1) are—

(a) chromaticity coordinates x and y in the range—

$0.270 < x < 0.530$ 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^2 of projected light-emitting surface area as defined in Schedule 1;

(c) a luminous flux between 60 and 82,000 lumen; and

(d) a colour rendering index (CRI) > 0.

(3) The conditions referred to in paragraph (1) are that the product—

(a) uses incandescence, fluorescence, high-intensity discharge, LED or OLED, or any combinations of these, as lighting technology; and

(b) can be verified as a light source according to the procedure in Schedule 2.

(4) For the purposes of these Regulations "light source" does not include—

(a) LED dies or LED chips;

(b) LED packages;

(c) a product containing a light source from which the light source can be removed for verification as a light source according to the procedure in Schedule 2;

(d) light-emitting parts contained in a light source from which these parts cannot be removed for verification as a light source according to the procedure in Schedule 2.

(5) High-pressure sodium (HPS) light sources are not required to meet the characteristic in paragraph (2)(a) to be classed as light sources for the purposes of these Regulations.

(6) A light-emitting device which is intended to be used directly in an LED luminaire is to be classed as a light source for the purposes of these Regulations.

Meaning of "control gear"

(7) In these Regulations "control gear" means, subject to paragraph (9), one or more devices which—

(a) may or may not be physically integrated in a light source; and

(b) is intended to prepare the mains for the electric format required by one or more specific light sources, within boundary conditions set by electric safety and electromagnetic compatibility.

(8) The function of a control gear may include any of the following—

(a) transforming the supply and starting voltage;

(b) limiting operational and preheating current;

(c) preventing cold starting;

(d) correcting the power factor;

(e) reducing radio interference.

(9) For the purposes of these Regulations "control gear" does not include—

(a) power supplies within the scope of Commission Regulation (EU) 2019/1782 of 1 October 2019(**a**) laying down ecodesign requirements for external power supplies pursuant to Directive 2009/125/EC of the European Parliament and of the Council;

(b) lighting control parts and non-lighting parts (as defined in Schedule 1), although such parts may be physically integrated with a control gear or marketed together as a single product;

(c) equipment for power supply and data handling which is installed between the mains and office equipment and/or light sources for the purpose of data transfer and power supply (known as "Power over Ethernet" switch).

Interpretation of other terms

(10) In these Regulations—

"the 2010 Regulations" means the Ecodesign for Energy-Related Products Regulations 2010(**b**);

"Commission Regulation (EC) No 244/2009" means Commission Regulation (EC) No 244/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament

(**a**) EUR 2019/782, as amended by S.I. 2020/1528.
(**b**) S.I. 2010/2617.

and of the Council with regard to ecodesign requirements for non-directional household lamps(**a**);

"Commission Regulation (EC) No 245/2009" means Commission Regulation (EC) No 245/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council(**b**);

"Commission Regulation (EU) No 874/2012" means Commission Delegated Regulation (EU) No 874/2012 of 12 July 2012 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of electrical lamps and luminaires(**c**);

"Commission Regulation (EU) No 1194/2012" means Commission Regulation (EU) No 1194/2012 of 12 December 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light-emitting diode lamps and related equipment(**d**);

"chromaticity" means the property of a colour stimulus defined by its chromaticity coordinates (x and y);

"colour rendering index" ("CRI")—

(a) means a metric quantifying the effect of an illuminant on the colour appearance of objects by comparison with their colour appearance under the reference illuminant as defined in standards produced by an international standardising body(**e**); and

(b) is the average Ra of the colour rendering for the first 8 test colours (R1-R8) defined in standards produced by an international standardising body;

"containing product" means a product containing—

(a) one or more light sources; or

(b) separate control gears; or

(c) both of the above,

and includes luminaires that can be taken apart to allow separate verification of the contained light source, household appliances containing light sources, and furniture containing light sources (for example display cabinets);

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

"end-user" means a natural person buying or expected to buy a product for purposes which are outside their trade, business, craft or profession;

"equivalent model" means—

(a) for the purposes of Chapter 2, a model with the same technical characteristics relevant to the ecodesign requirements, but which is placed on the market or put into service(**f**) by the same manufacturer or importer as another model with a different model identifier;

(b) for the purposes of Chapter 3, a model with the same technical characteristics relevant to the label and with the same product information sheet, but which is placed on the market(**g**) by the same supplier as another model with a different model identifier; except

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(**a**) EUR 2009/244, as amended by S.I. 2019/539.
(**b**) EUR 2009/245, as amended by S.I. 2019/539.
(**c**) EUR 2012/874, as amended by S.I. 2019/539.
(**d**) EUR 2012/1194, as amended by S.I. 2019/539.
(**e**) See regulation 2A of the 2010 Regulations, as amended by paragraph 4 of Schedule 4 to the European Union (Future Relationship) Act 2020 (c. 29), for the meaning of "international standardising body". Regulation 2A was inserted by S.I. 2019/539.
(**f**) See regulation 2 of the 2010 Regulations for the meaning of "place on the market" and "put into service".
(**g**) See the definition of "placing on the market" in Article 2(8) of the Framework Regulation (as amended by S.I. 2019/538).

that the following items in the product information sheet are not to be taken into account for the purposes of determining whether this definition is met—

(i) supplier's name or trade mark;

(ii) supplier's address;

(iii) model identifier;

(iv) outer dimensions;

"fluorescence" means a phenomenon where light is produced by a 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 source" ("FL")—

(a) means a light source which uses fluorescence as its lighting technology;

(b) may have one ("single-capped") or two ("double-capped") connections ("caps") to their electricity supply;

(c) includes magnetic induction light sources;

"the Framework Regulation" means Regulation (EU) 2017/1369 of the European Parliament and of the Council(**a**) setting a framework for energy labelling;

"gas discharge" means a phenomenon where light is produced, directly or indirectly, by an electric discharge through a gas, plasma, metal vapour or a mixture of gases and vapours;

"halogen light source" means an incandescent light source with a threadlike conductor made from tungsten surrounded by gas containing halogens or halogen compounds;

"HID light sources" means the following types of light source—

(a) metal halide;

(b) high-pressure sodium;

(c) high-pressure mercury vapour;

"high intensity discharge" ("HID") means a gas discharge in which—

(a) the light-producing arc is stabilised by wall temperature; and

(b) the arc chamber has a bulb wall loading in excess of 3 watts per square centimetre;

"high-pressure sodium light source" ("HPS") means a high intensity discharge light source—

(a) in which the light is produced mainly by radiation from sodium vapour operating at a partial pressure of the order of 10 kilopascals;

(b) with one ("single-ended'") or two ("double-ended") connectors to its electricity supply;

"incandescence" means the phenomenon where light is produced from heat, and in light sources is typically produced through a threadlike conductor ("filament") which is heated by the passage of an electric current;

"LED" refers to inorganic light-emitting diodes, and means a technology in which—

(a) light is produced from a solid state device embodying a p-n junction of inorganic material; and

(b) the junction emits optical radiation when excited by an electric current;

"LED die" or "LED chip" means a small block of light-emitting semiconducting material on which a functional LED circuit is fabricated;

"LED package"—

(a) means a single electric part comprising principally at least one LED die;

(b) does not include a control gear or parts of a control gear, a cap or active electronic components;

(**a**) EUR 2017/1369.

(c) is not connected directly to the mains voltage;

(d) may include one or more of the following—

(i) optical elements;

(ii) light converters (phosphors);

(iii) thermal, mechanical and electric interfaces;

(iv) parts to address electrostatic discharge concerns;

"light" means electromagnetic radiation with a wavelength between 380 nm and 780 nm;

"luminous flux" or "flux" (Φ), expressed in lumen (lm)—

(a) means the quantity derived from radiant flux (radiant power) by evaluating the electromagnetic radiation in accordance with the spectral sensitivity of the human eye;

(b) refers to the total flux emitted by a light source in a solid angle of 4π steradians under conditions (for example current, voltage, temperature) specified in standards produced by an international standardising body;

(c) refers to the initial flux for the undimmed light source after a short operating period, unless it is clearly specified that the flux in a dimmed condition or the flux after a given period of operation is intended;

(d) for light sources that can be tuned to emit different light spectra or different maximum light intensities, refers to the flux in the reference control settings;

"mains" or "mains voltage"("MV") means the electricity supply of 230 (± 10%) volt of alternating current at 50 Hz;

"model identifier" means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trade mark or the same manufacturer's or importer's name;

"OLED" refers to organic light-emitting diodes, and means a technology in which—

(a) light is produced from a solid state device embodying a p-n junction of organic material; and

(b) the junction emits optical radiation when excited by an electric current;

"point of sale" means a physical location where the product is displayed or offered for sale, hire or hire-purchase to the customer;

"reference control setting" ("RCS")—

(a) means—

(i) a control setting; or

(ii) a combination of control settings,

that is used to check whether a light source conforms to these Regulations;

(b) applies to light sources which allow the end-user to control the luminous intensity, colour, correlated colour temperature, spectrum, or beam angle of the emitted light; and

(c) is set in accordance with paragraph 11 of Schedule 3;

"separate control gear" means a control gear that is not physically integrated with a light source and is placed on the market as a separate product or as a part of a containing product.

(11) Further terms are defined in Schedule 1.

CHAPTER 2

ECODESIGN FOR LIGHT SOURCES AND SEPARATE CONTROL GEARS

Application

3.—(1) Subject to paragraph (2) and regulation 5, this Chapter applies to—

(a) light sources; and

(b) separate control gears,

placed on the market or put into service on or after 1st October 2021, including light sources and separate control gears placed on the market or put into service in a containing product.

(2) The requirements of this Chapter do not need to be met in relation to a light source or separate control gear which—

(a) is placed on the market or put into service before 1st November 2021; and

(b) complies with (insofar as relevant)—

(i) Commission Regulation (EC) No 244/2009;

(ii) Commission Regulation (EC) No 245/2009; or

(iii) Commission Regulation (EC) No 1194/2012.

Ecodesign requirements

4.—(1) A light source or separate control gear must conform to the ecodesign requirements set out in Schedule 3 when it is placed on the market or put into service.

(2) Manufacturers, authorised representatives and importers of light sources or separate control gears must comply with paragraphs 4 to 8 and 10 of Schedule 3 (information requirements).

Exemptions

5. Schedule 4 specifies exemptions from the requirements of this Chapter.

Removal of light sources and separate control gears

6.—(1) Manufacturers, authorised representatives and importers of containing products must ensure that light sources and separate control gears can be replaced with the use of commonly available tools and without permanent damage to the containing product.

(2) Paragraph (1) does not apply where a technical justification related to the functionality of the containing product is provided in the technical documentation(**a**) explaining why the replacement of light sources and separate control gear is not appropriate.

(3) Manufacturers, authorised representatives and importers of containing products must ensure that light sources and separate control gears can be removed without being permanently damaged for verification purposes by the market surveillance authority, and the technical documentation must provide instructions on removal for this purpose.

(4) Manufacturers, authorised representatives and importers of containing products must provide information about the replaceability or non-replaceability of light sources and control gears by—

(a) end-users; or

(b) professional repairers,

without permanent damage to the containing product.

(5) The information referred to in paragraph (4) must be—

(a) available on a website which is accessible to the public without charge; and

(b) for products sold directly to end-users—

(i) on the packaging, at least in the form of a pictogram; and

(ii) in the user instructions.

(**a**) See paragraph 1(2) of Schedule 1A to the 2010 Regulations for the meaning of "technical documentation". Schedule 1A was inserted by S.I. 2019/539.

(6) Manufacturers, authorised representatives and importers of containing products must ensure that—

(a) light sources and separate control gears can be dismantled from containing products at end of life; and

(b) dismantling instructions are available on a website which is accessible to the public without charge.

(7) For purposes of paragraph (4), "professional repairer" means a person who provides services of repair and professional maintenance of light sources and separate control gears.

Conformity assessment

7.—(1) For the purposes of the assessment procedure referred to in Schedule 1A to the 2010 Regulations(**a**), a manufacturer assessing whether a product model conforms with these Regulations must use either—

(a) the internal design control procedure set out in Part 1 of that Schedule; or

(b) the management system procedure set out in Part 2 of that Schedule.

(2) The technical documentation required for the conformity assessment of a product model must contain—

(a) the details and results of the measurements and calculations made in accordance with paragraphs 1 to 3 of Schedule 3, and Schedule 5;

(b) the information specified in paragraph 9 of Schedule 3; and

(c) the details and results of any measurements or calculations carried out in accordance with regulation 9.

Verification procedure for market surveillance purposes

8. The market surveillance authority(**b**) must use the verification procedure set out in Schedules 2 and 5 when verifying the conformity of a product model with the requirements of these Regulations.

Measurements and calculations

9.—(1) The measurements and calculations required by this Chapter, or necessary for demonstrating or measuring conformity with this Chapter, must be made in accordance with designated standards(**c**), where available.

(2) Where designated standards are not available, the measurements and calculations referred to in paragraph (1) must be made in accordance with methods which—

(a) can be demonstrated to be reliable, accurate, and reproducible by the person deploying them; and

(b) take into account the generally recognised state of the art.

Circumvention and software updates

10.—(1) The manufacturer, authorised representative and importer must not place on the market products designed to be able to detect they are being tested (for example by recognising the test

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(**a**) Schedule 1A was inserted by S.I. 2019/539.

(**b**) The meanings of "market surveillance" and "market surveillance authority" are set out in Article 2(17) and (18) respectively of Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (RAMS) (EUR 2008/765, as amended by S.I. 2019/696). Definitions in RAMS are applied to the 2010 Regulations by regulation 2(2) of those Regulations (as amended by S.I. 2019/539).

(**c**) See regulation 2A of the 2010 Regulations, as amended by paragraph 4 of Schedule 4 to the European Union (Future Relationship) Act 2020 (c. 29), for the meaning of "designated standard".

conditions or test cycle) and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters in the technical documentation or included in any documentation provided.

(2) The energy consumption of the product and any of the other declared parameters must not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with the explicit consent of the end-user prior to the update.

(3) The performance of a product must not change as a result of rejecting a software update.

(4) A software update must not have the effect of changing the product's performance in a way that makes it non-compliant with the ecodesign requirements applicable for the declaration of conformity.

CHAPTER 3

ENERGY LABELLING OF LIGHT SOURCES

Application

11.—(1) Subject to paragraphs (2) and (3), this Chapter applies to light sources placed on the market, with or without integrated control gears, and includes light sources placed on the market in a containing product.

(2) Where a light source is placed on the market before 1st October 2021, the requirements of this Chapter, except the requirements in regulation 17(2) and (3)—

(a) do not apply in relation to the light source until the existing label on, or displayed in relation to, the light source is replaced with a rescaled label(**a**) in accordance with regulation 17(2); and

(b) are subject to the modifications in regulation 17(4).

(3) Schedule 6 specifies exemptions from the requirements of this Chapter.

Obligations of suppliers

12.—(1) Suppliers(**b**) must ensure that—

(a) each light source which is placed on the market as an independent product and in packaging is supplied with a label, printed on the packaging, in the format as set out in Schedule 7;

(b) the product information sheet, as set out in Schedule 8, is made available on a publicly accessible website, free of charge and on a page of the website that does not contain any other information;

(c) the information set out in paragraph 4 of Schedule 8 is displayed on the supplier's website in accordance with that paragraph;

(d) if specifically requested by the dealer(**c**), the product information sheet is made available in printed form;

(e) the content of the technical documentation(**d**) set out in Schedule 9 is made available for inspection in accordance with Article 4(2) of the Framework Regulation;

(f) any visual advertisement for a specific model of light source contains—

(i) the energy efficiency class; and

(ii) the range of energy efficiency classes available,

(**a**) See Article 2(21) of the Framework Regulation for the meaning of "rescaled label".
(**b**) See Article 2(14) of the Framework Regulation, as substituted by S.I. 2019/539, for the meaning of "supplier".
(**c**) See Article 2(13) of the Framework Regulation for the meaning of "dealer".
(**d**) See Article 4(7) of the Framework Regulation, inserted by S.I. 2019/539, for the meaning of "technical documentation".

on the label, in accordance with Schedules 10 and 11;

(g) any technical promotional material concerning a specific model of light source, including material on the internet, includes—

(i) the energy efficiency class of that model; and

(ii) the range of energy efficiency classes available,

on the label, in accordance with Schedule 10;

(h) an electronic label in the format and containing the information set out in Schedule 7, is made available to dealers for each light source model;

(i) an electronic product information sheet, as set out in Schedule 8, is made available to dealers for each light source model;

(j) customers are able to access the product information sheet in accordance with Schedules 10 and 11.

(2) Suppliers of containing products must—

(a) provide information on the contained light source, in accordance with paragraph 3 of Schedule 8;

(b) ensure that the technical documentation clearly identifies the contained light source, including the energy efficiency class;

(c) upon request by the market surveillance authority, provide information on how the light source can be removed for verification without permanent damage to the light source.

(3) For the purposes of this regulation, a light source is an independent product if it is not in a containing product.

(4) The energy efficiency class must be determined in accordance with Schedule 12.

Obligations of dealers

13. Dealers must ensure that—

(a) at the point of sale, each light source which is placed on the market and is not in a containing product bears the label provided by the supplier in accordance with regulation 12(1)(a);

(b) each light source which is placed on the market and is not in a containing product is displayed in such a way that the label (or where paragraph 1(8) of Schedule 7 applies, the arrow) is clearly visible to prospective customers at the point of sale;

(c) in the case of distance selling, the label and product information sheet are provided in accordance with Schedules 10 and 11;

(d) any visual advertisement for a specific model of light source, including any advertisement on the internet, contains—

(i) the energy efficiency class; and

(ii) the range of energy efficiency classes available,

on the label in accordance with Schedules 10 and 11;

(e) any technical promotional material concerning a specific model of light source which describes its specific technical parameters, including material available on the internet, includes—

(i) the energy efficiency class of that model; and

(ii) the range of energy efficiency classes available,

on the label in accordance with Schedule 10;

(f) customers are able to access the product information sheet in accordance with Schedules 10 and 11.

Obligations of internet hosting platforms

14. Where a hosting service provider as referred to in regulation 19 of the Electronic Commerce (EC Directive) Regulations 2002(**a**) allows the direct selling of light sources through its internet site, the service provider must—

(a) enable the showing of the electronic label and electronic product fiche sheet provided by the dealer on the display mechanism in accordance with the provisions of Schedule 11; and

(b) inform the dealer of the obligation to display them.

Measurement methods

15.—(1) The measurements and calculations required by this Chapter must be made in accordance with—

(a) Schedule 12, and

(b) designated standards(**b**), where available.

(2) Where designated standards are not available, the measurements and calculations referred to in paragraph (1) must be made in accordance with methods which—

(a) can be demonstrated to be reliable, accurate, and reproducible by the person deploying them; and

(b) take into account the generally recognised state of the art.

Verification procedure for market surveillance purposes

16. The market surveillance authority(**c**) must use the verification procedure set out in Schedule 13 when verifying the conformity of a product model with the requirements of these Regulations.

Light sources placed on the market before 1st October 2021

17.—(1) The requirements in paragraphs (2) and (3) apply in relation to light sources which are placed on the market before 1st October 2021.

(2) Dealers must ensure that, before 1st April 2023—

(a) existing labels on light sources at points of sale are replaced by rescaled labels in such a way as to cover the existing label, including when the label is printed on or attached to the packaging; and

(b) in the case of distance selling, existing labels displayed in relation to light sources are replaced by rescaled labels.

(3) Suppliers must ensure that, upon request by dealers—

(a) in the case of any light sources marketed through a point of sale, a rescaled label containing the information set out in Schedule 7 is provided for each light source in the form of a printed sticker in a size that permits it to cover the existing label; and

(b) in the case of light sources marketed through a point of sale or distance selling, the following are made available for each light source model to which the light sources belong—

(i) a rescaled electronic label in the format and containing the information set out in Schedule 7; and

(ii) an electronic product information sheet, as set out in Schedule 8.

(**a**) S.I. 2002/2013.
(**b**) See Article 2(18) of the Framework Regulation, as substituted by S.I. 2019/539, for the meaning of "designated standard".
(**c**) See Article 2(28) of the Framework Regulation for the meanings of "market surveillance" and "market surveillance authority". Point (28) was inserted by S.I. 2019/539, as amended by S.I. 2020/1528.

(4) The modifications to this Chapter referred to in regulation 11 are—

(a) regulation 12 is to be read as if paragraph (1)(a), (h) and (i) were omitted;

(b) regulation 13 is to be read as if—

(i) in paragraph (a), for "regulation 12(1)(a)" there were substituted "regulation 17(3)(a)";

(ii) paragraph (b) were omitted;

(c) paragraph 1 of Schedule 7 is to be read as if—

(i) sub-paragraphs (1), (2), (4) and (6) were omitted;

(ii) in sub-paragraph (7), the words "and the arrow" were omitted;

(iii) sub-paragraph (8) and Figure 2 were omitted;

(d) Schedule 11 is to be read as if—

(i) in paragraph 2(1), for "regulation 12(1)(h)" there were substituted "regulation 17(3)(b)(i)";

(ii) in paragraph 5(1), for "regulation 12(1)(i)" there were substituted "regulation 17(3)(b)(ii)".

PART 3

GENERAL

Review

18.—(1) The Secretary of State must before 1st October 2026—

(a) evaluate these Regulations, taking into account the speed of technological progress; and

(b) publish a report stating whether or not, in the opinion of the Secretary of State, these Regulations should be amended.

(2) If the Secretary of State concludes under paragraph (1) that these Regulations should not be amended, the Secretary of State must review this conclusion from time to time and publish a new report under paragraph (1)(b) at intervals not exceeding 5 years.

Revocations

19. The following Regulations are revoked, subject to regulations 22(1) and 23(1)—

(a) Commission Regulation (EC) No 244/2009;

(b) Commission Regulation (EC) No 245/2009;

(c) Commission Delegated Regulation (EU) No 874/2012;

(d) Commission Regulation (EU) No 1194/2012;

(e) Commission Regulation (EU) 2019/2020 of 1 October 2019 laying down ecodesign requirements for light sources and separate control gears pursuant to Directive 2009/125/EC of the European Parliament and of the Council(**a**).

Consequential amendments of the 2010 Regulations

20.—(1) The table in paragraph 4 of Schedule 1 (declaration of conformity) to the 2010 Regulations is amended as follows.

(2) Omit—

(**a**) EUR 2019/2020, as amended by S.I. 2020/1528.

(a) item 4 (fluorescent lamp without integrated ballast, a high intensity discharge lamp or a ballast or luminaire able to operate such lamps); and

(b) item 5 (non-directional household lamp).

(3) For item 16(**a**) (directional lamp, light-emitting diode lamp and related equipment), substitute—

"16	Light sources and separate control gears	The Ecodesign for Energy-Related Products and Energy Information (Lighting Products) Regulations 2021".

Consequential amendments of the Energy Information Regulations 2011

21. In the Energy Information Regulations 2011(**b**), in the table in paragraph 1 of Schedule 1 (product-specific measures)—

(a) omit the entry for "household lamps";

(b) for the entry for "electrical lamps and luminaires", substitute—

"Light sources	The Ecodesign for Energy-Related Products and Energy Information (Lighting Products) Regulations 2021	1st October 2021".

Transitional and saving provisions in connection with ecodesign requirements

22.—(1) The Regulations specified in paragraph (2) continue to have effect (insofar as applicable, and notwithstanding the revocation of these Regulations by regulation 19(a), (b) and (d))—

(a) in relation to a light source or separate control gear which is placed on the market or put into service before 1st October 2021; and

(b) for the purposes of regulation 3(2).

(2) The Regulations are—

(a) Commission Regulation (EC) No 244/2009;

(b) Commission Regulation (EC) No 245/2009;

(c) Commission Regulation (EU) No 1194/2012.

(3) Regulation 20 (consequential amendments in relation to the 2010 Regulations) does not have effect in relation to a light source or separate control gear which—

(a) is placed on the market or put into service before 1st October 2021; or

(b) falls within regulation 3(2).

Transitional and saving provisions in connection with energy labelling requirements

23.—(1) Commission Regulation (EU) No 874/2012 continues to have effect (notwithstanding the revocation of this Regulation by regulation 19(c)) in relation to a light source where—

(a) the light source is placed on the market before 1st October 2021; and

(b) the existing label on, or displayed in relation to, the light source has not been replaced by a rescaled label in accordance with regulation 17(2).

(**a**) Item 16 was inserted by S.I. 2013/1232.
(**b**) S.I. 2011/1524; relevant amending instruments are S.I. 2013/1232 and 2019/539.

(2) Regulation 21 (consequential amendments in relation to the Energy Information Regulations 2011) does not have effect in relation to a light source to which paragraph (1) applies.

Name
Address — Parliamentary Under Secretary of State
Date — Department for Business, Energy and Industrial Strategy

SCHEDULE 1

Regulation 2(2), (9) and (11)

Interpretation

Interpretation

1. In these Regulations—

"alternative text" means text provided as an alternative to a graphic allowing information to be presented in non-graphical form—

(a) where display devices cannot render the graphic; or

(b) as an aid to accessibility such as input to voice synthesis applications;

"anti-glare shield"—

(a) means a mechanical or optical reflective or non-reflective impervious baffle designed to block direct visible radiation emitted from the light emitter in a directional light source, in order to avoid temporary partial blindness (disability glare) if viewed directly by an observer;

(b) does not include surface coating of the light emitter in the directional light source;

"average luminance" ("Luminance-HLLS") for a LED light source means the average of the luminance over a light-emitting area where the luminance is more than 50% of the peak luminance (cd/mm^2);

"battery-operated" means a product which operates only on direct current (DC) supplied from a source contained in the same product, without being connected directly or indirectly to the mains electricity supply;

"beam angle" of a directional light source means the angle between two imaginary lines in a plane through the optical beam axis, such that these lines pass through—

(a) the centre of the front face of the light source;

(b) points at which the luminous intensity is 50% of the centre beam intensity, and for this purpose the centre beam intensity is the value of luminous intensity measured on the optical beam axis;

(c) for light sources that have different beam angles in different planes, the largest beam angle must be the one taken into account; and

(d) for light sources with user-controllable beam angle, the beam angle corresponding to the reference control setting must be the one taken into account;

"CFLni" means a compact fluorescent light source without a physically integrated control gear;

"colour consistency" means the maximum deviation of the initial, 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);

"colour-tuneable light source" ("CTLS")—

(a) means a light source that can be set to emit—

(i) light with a large variety of colours outside the range specified in regulation 2(2)(a); and

(ii) white light inside that range; and

(b) does not include—

(i) tuneable-white light sources that can only be set to emit light, with different correlated colour temperatures, within the range specified in regulation 2(2)(a); and

(ii) dim-to-warm light sources that shift their white light output to lower correlated colour temperature when dimmed, simulating the behaviour of incandescent light sources;

"compact fluorescent light source" ("CFL") means a single-capped fluorescent light source with a bent-tube construction designed to fit in small spaces and may be (but need not be)—

(a) primarily spiral-shaped (i.e. curly forms); or

(b) primarily shaped as connected multiple parallel tubes, with or without a second bulb-like envelope;

and is available with or without a physically integrated control gear;

"connected light source" ("CLS") means a light source which—

(a) includes data-connection parts that are physically or functionally inseparable from the light-emitting parts to maintain the reference control settings; and

(b) either—

(i) has physically integrated data-connection parts in a single inseparable housing; or

(ii) can be combined with physically separate data-connection parts which are placed on the market together with the light source as a single product;

"connected separate control gear" ("CSCG") means a separate control gear which—

(a) includes data-connection parts that are physically or functionally inseparable from the actual control gear parts to maintain the reference control settings; and

(b) either—

(i) has physically integrated data-connection parts in a single inseparable housing; or

(ii) can be combined with physically separate data-connection parts which are placed on the market together with the control gear as a single product;

"control gear efficiency" means the output power that supplies a light source, divided by the input power of a separate control gear; and for this purpose—

(a) any lighting control parts and non-lighting parts are disconnected, switched off or set to minimum power consumption according to manufacturer's instructions; and

(b) the power consumption of those parts is subtracted from the overall input power;

"control mode" means the condition of lighting control parts where they are—

(a) connected to the light source or to the separate control gear; and

(b) performing their functions in such a way that a control signal can—

(i) be internally generated or a remotely initiated trigger can be received, by wire or wireless; and

(ii) processed to lead to a change in the light emission of the light source or to a corresponding desired change in the power supply by the separate control gear;

"control signal" means an analogue or digital signal transmitted—

(a) to the light source or separate control gear, wired or wirelessly;

(b) via—

(i) voltage modulation in separate control cables; or

(ii) a modulated signal in the supply voltage;

(c) otherwise than through a network (for example from an internal source or a remote control delivered with the product);

"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;

"data-connection parts" means parts that perform any of the following functions—

(a) reception or transmission of wired or wireless data signals and the processing thereof (used to control the light emission function and possibly otherwise);

(b) sensing and processing of the sensed signals (used to control the light emission function and possibly otherwise);

"declared values" means—

(a) for the purposes of Schedules 2 to 5, the values provided by the manufacturer, authorised representative or importer for the stated, calculated or measured technical parameters in the technical documentation, in accordance with the conformity assessment procedure referred to in regulation 7;

(b) for the purposes of Schedules 6 to 13, the values provided by the supplier for the stated, calculated or measured technical parameters in the technical documentation, pursuant to Article 3(3) of the Framework Regulation and in accordance with regulation 12(1)(e) of and Schedule 9 to these Regulations, for the verification of conformity of a product model by the market surveillance authority;

"directional light source" ("DLS") means a light source which has at least 80% of total luminous flux within a solid angle of π sr (corresponding to a cone with angle of 120°);

"displacement factor" (cos $\varphi 1$)—

(a) means the cosine of the phase angle $\varphi 1$ between the fundamental harmonic of the mains supply voltage and the fundamental harmonic of the mains current;

(b) is used for mains light sources using LED-technology or OLED-technology;

(c) is measured at full-load, for the reference control settings where applicable, with any lighting control parts in control mode and non-lighting parts disconnected, switched off or set to minimum power consumption according to the manufacturer's instructions;

"excitation purity" means a percentage computed for a CTLS set to emit light of a certain colour, using a procedure further defined in accordance with standards produced by an international standardising body—

(a) by drawing a straight line on an (x and y) colour space graph from a point with colour coordinates x = 0.333 and y = 0.333 (achromatic stimulus; point(1)), going through the point representing the (x and y) colour coordinates of the light source (point (2)), and ending on the outer border of the colour space (locus; point (3)); and

(b) computed as the distance between points 1 and 2 divided by the distance between points 1 and 3;

such that the full length of the line represents 100% colour purity (point on the locus) and the achromatic stimulus point represents 0% colour purity (white light);

"FL T8 2-foot", "FL T8 4-foot" or "FL T8 5-foot" mean a T8 fluorescent light source with a length of approximately 600 mm (2 feet), 1,200 mm (4 feet) or 1,500 mm (5 feet) respectively, as defined in standards produced by an international standardising body;

"flicker" means the perception of visual unsteadiness induced by a light stimulus, the luminance or spectral distribution of which fluctuates with time, for a static observer in a static environment, in which—

(a) the fluctuations may be periodic and non-periodic and may be induced by the light source itself, the power source or other influencing factors;

(b) the metric for flicker used in these Regulations is the parameter "Pst LM", where "st" stands for short term and "LM" for light flickermeter method, as defined in standards

produced by an international standardising body, and for this purpose a value Pst LM = 1 means that the average observer has a 50% probability of detecting flicker;

"functionality after endurance testing" means the functionality of a LED or OLED light source after endurance testing as set out in Schedule 5;

"full-load" means—

(a) the condition of a light source, within the declared operating conditions, in which it emits the maximum (undimmed) luminous flux; or

(b) the operating conditions and loads of the control gear under efficiency measurement as specified in standards produced by an international standardising body;

"G4", "GY6.35" and "G9" means an electrical interface of a light source consisting of two small pins at distances of 4, 6.35 and 9 mm respectively, as defined in standards produced by an international standardising body;

"G9.5", "GX9.5", "GY9.5", "GZ9.5", "GZX9.5", "GZY9.5", "GZZ9.5" and "G9.5HPL" means an electrical interface of a light source consisting of two pins at distances of 9.5 mm, as defined in standards produced by an international standardising body;

"G16", "G16d", "GX16d" and "GY16" means an electrical interface of a light source consisting of two pins at distances of 16 mm, as defined in standards produced by an international standardising body;

"G22" means an electrical interface of a light source consisting of two pins at distances of 22 mm, as defined in standards produced by an international standardising body;

"G38", "GX38" and "GX38Q" means an electrical interface of a light source consisting of two pins at distances 38 mm, as defined in standards produced by an international standardising body;

"G9.5HPL" also includes a heatsink of specific dimensions as used on high-performance halogen lamps, and may include additional pins for grounding purposes;

"high-luminance light source" ("HLLS") means a LED light source with an average luminance greater than 30 cd/mm2 in the direction of peak intensity;

"high-pressure mercury vapour light source" means a high intensity discharge light source in which the major portion of light is produced, directly or indirectly, by radiation from predominantly vaporised mercury operating at a partial pressure in excess of 100 kilopascals;

"HL R7s" means a mains-voltage, double-capped, linear halogen light source with a cap diameter of 7 mm;

"K39d" means an electrical interface for a light source consisting of 2 wires with eyelets that can be fixed with screws;

"lifetime" or "$L_{70}B_{50}$ 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;

"LFL T5-HE" means a high-efficiency linear fluorescent T5 light source with driving current lower than 0.2 A;

"LFL T5-HO" means a high-output linear fluorescent T5 light source with driving current higher than or equal to 0.2 A;

"lighting control parts"—

(a) means parts that—

(i) are—

(aa) integrated in a light source or in a separate control gear; or

(bb) physically separated but marketed together with a light source or separate control gear as a single product; and

(ii) enable manual or automatic, direct or remote-control of luminous intensity, chromaticity, correlated colour temperature, light spectrum and/or beam angle;

(b) means parts that are not necessary for—

(i) the light source to emit light at full-load; or

(ii) the separate control gear to supply the electric power that enables the light source to emit light at full-load; and

(c) includes dimmers and data-connection parts, but does not include products within the scope of Commission Regulation (EC) No 1275/2008 of 17 December 2008(**a**) implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment;

"lumen maintenance factor" ("X_{LMF}") means the ratio of the luminous flux emitted by a light source at a given time in its life to the initial luminous flux;

"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^2);

"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;

"magnetic induction light source" means a light source using fluorescent technology, where energy is transferred to the gas discharge by means of an induced high-frequency magnetic field;

"mains light source" ("MLS") means a light source that can be operated directly on the mains electricity supply, and includes light sources that operate directly on the mains but can also operate indirectly on the mains using a separate control gear;

"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, and—

(a) which has one ("single-ended") or two ("double-ended") connectors to its electricity supply;

(b) in which the material for the arc tube is quartz or ceramic;

"nested display" means a visual interface where an image or data set is accessed by a—

(a) mouse click;

(b) mouse roll-over; or

(c) tactile screen expansion,

of another image or data set;

"network" means a communication infrastructure with a topology of links and an architecture that includes physical components, organisational principles, communication procedures and formats (protocols);

"networked standby mode" means the condition of a CLS or a CSCG where—

(a) it is connected to the power supply but the light source is intentionally not emitting light or the control gear does not supply the electric power that enables the light source to emit light;

(b) it is awaiting a remotely initiated trigger to return to a state with light emission;

(c) lighting control parts are in their control mode; and

(d) non-lighting parts are disconnected or switched off or their power consumption is minimised following manufacturer's instructions;

(**a**) EUR 2008/1275.

"networked standby power" ("P_{net}"), expressed in watt, is the electric power consumption of a CLS or of a CSCG in networked standby mode;

"no-load mode", in relation to a separate control gear for which the manufacturer or importer has declared in the technical documentation that it has been designed for this mode, means the condition of a separate control gear in which—

(a) its input is connected to the mains power source; and

(b) (i) its output is intentionally disconnected from light sources, and, if applicable, from lighting control parts and non-lighting parts; or

(ii) if these parts cannot be disconnected, they are switched off and their power consumption is minimised following the manufacturer's instructions;

"no-load power" ("P_{no}"), expressed in watt, is the electric power consumption of a separate control gear in no-load mode;

"non-clear envelope" for an HID light source means a non-transparent outer envelope or outer tube in which the light producing arc tube is not visible;

"non-directional light source" ("NDLS") means a light source that is not a directional light source;

"non-lighting parts"—

(a) means parts that are—

(i) integrated in a light source, or in a separate control gear; or

(ii) physically separated but marketed together with a light source or separate control gear as a single product;

(b) means parts that are not—

(i) necessary for the light source to emit light at full-load; or

(ii) necessary for the separate control gear to supply the electric power that enables the light source to emit light at full-load; or

(iii) lighting control parts; and

(c) includes data-connection parts used for functions other than the control of the light emission function (for example speakers, cameras and repeaters);

"non-mains light source" ("NMLS") means a light source that requires a separate control gear to operate on the mains;

"on-mode power" ("P_{on}"), expressed in watt, means the electric power consumption of a light source in full-load where—

(a) all lighting control parts and non-lighting parts are disconnected, or if these parts cannot be disconnected, they are switched off or their power consumption is minimised following the manufacturer's instructions; or

(b) in the case of a NMLS that requires a separate control gear to operate, P_{on} can be measured directly on the input to the light source, or determined using a control gear with known efficiency, whose electric power consumption is subsequently subtracted from the measured mains power input value;

"P28s", "P40s", "PGJX28", "PGJX36" and "PGJX50" mean an electrical interface of a light source that uses a flange contact to correctly position (pre-focus) the light source in a reflector, as respectively defined in standards produced by an international standardising body;

"photosensitive patients" means people with a specific condition causing photosensitive symptoms and who experience adverse reactions to natural light or certain forms of artificial lighting technology;

"projected light-emitting surface area" (A) is the surface area in mm^2 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—

(a) for light sources with a non-clear envelope or with anti-glare shield, the entire area through which light leaves the light source;

(b) for light sources containing more than one light emitter, the projection of the smallest gross volume enveloping all emitters;

(c) in all other cases except where paragraph (d) applies, the surface area of the light source that emits light with the declared optical characteristics, including—

(i) the approximately spherical surface of an arc (image (a));

(ii) the cylindrical surface of a filament coil (image (b));

(iii) the cylindrical surface of a gas discharge lamp (image (c) and (d));

(iv) the flat or semi-spherical envelope of a light-emitting diode (image (e)),

as shown in Figure 1;

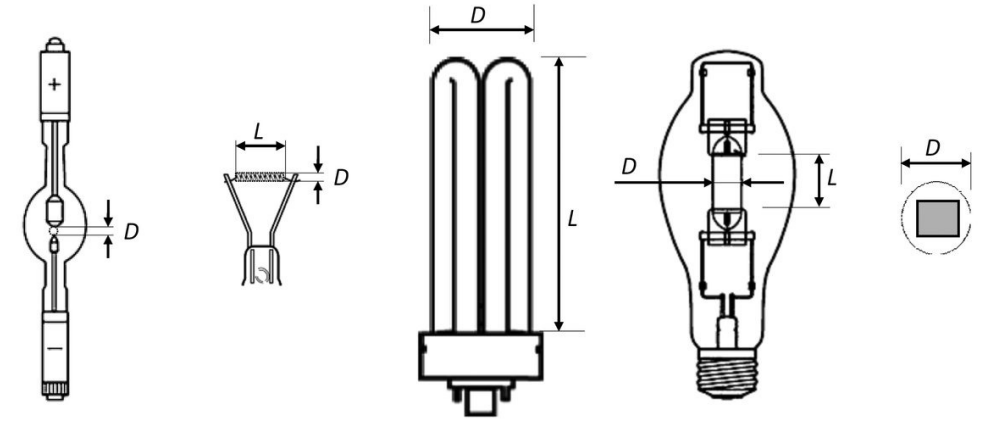
(d) for HID light sources, the surface area is as set out in paragraph (c)(i), except where the light source has a cylindrical surface (image (d)) whose dimensions are L>D, where—

(i) L is the distance between the electrode tips; and

(ii) D is the inner diameter of the arc tube,

in which case the surface area is as set out in paragraph (c)(iii) (image (d)).

Figure 1



(a) $A=¼\pi D^2$ (b) $A=L\cdot D$ (c) $A=L\cdot D$ (d) $A=L\cdot D$ (e) $A=¼\pi D^2$

"quick response" ("QR") code means a matrix barcode included on the energy label of a product model that links to that model's information on a publicly accessible website;

"QXL" (Quick eXchange Lamp) means an electrical interface of a light source which—

(a) consists—

(i) on the light source side, of two lateral tabs including the electrical contact surfaces; and

(ii) on the opposite (rear) side, of a central protrusion allowing the light source to be grabbed with two fingers; and

(b) is specifically designed for use in a specific type of stage lighting luminaires, in which the light source is inserted from the rear of the luminaire using a one quarter turn rotation to fix or unfix it;

"R9" means the colour rendering index for a red coloured object as defined in standards produced by an international standardising body;

"remotely initiated trigger" means a signal that comes from outside the light source or separate control gear via a network;

"second envelope" means a second outer envelope on an HID light source that is not required for the production of light, such as an external sleeve for preventing mercury and glass release into the environment in case of lamp breakage, and for this purpose, the HID arc tubes do not count as an envelope;

"specific effective ultraviolet power" ("mW/klm") means the effective power of the ultraviolet radiation of a light source, weighted according to the spectral correction factors and related to its luminous flux;

"standby mode" means the condition of a light source or of a separate control gear where—

(a) it is connected to the power supply but the light source is intentionally not emitting light;

(b) the light source or control gear is awaiting a control signal to return to a state with light emission;

(c) lighting control parts enabling the standby function are in their control mode; and

(d) non-lighting parts must be disconnected or switched off or their power consumption must be minimised following manufacturer's instructions;

"standby power" ("P_{sb}"), expressed in watt, is the electric power consumption of a light source or of a separate control gear in standby mode;

"stroboscopic effect" means a change in motion perception induced by a light stimulus, the luminance or spectral distribution of which fluctuates with time, for a static observer in a non-static environment, in which—

(a) the fluctuations may be periodic and non-periodic and may be induced by the light source itself, the power source or other influencing factors;

(b) the metric is the "SVM" (stroboscopic visibility measure), as defined in standards produced by an international standardising body, in which SVM = 1 represents the visibility threshold for an average observer;

"survival factor" (SF) means the fraction of the total number of light sources that continue to operate at a given time under defined conditions and switching frequency;

"T5", "T8" and "T9" mean a tubular light source with a diameter of approximately 16, 26 and 29 mm respectively, as defined in standards produced by an international standardising body, and in which the tube shape is straight (linear) or bent (for example U-shaped, circular);

"tactile screen" means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;

"useful luminous flux" ("Φuse"), means the part of the luminous flux of a light source that is considered when determining its energy efficiency, and is—

(a) for non-directional light sources, the total flux emitted in a solid angle of 4π sr (corresponding to a 360° sphere);

(b) for directional light sources with beam angle $\geq 90°$, the flux emitted in a solid angle of π sr (corresponding to a cone with angle of 120°);

(c) for directional light sources with beam angle $< 90°$, the flux emitted in a solid angle of $0.586\ \pi$ sr (corresponding to a cone with angle of 90°).

SCHEDULE 2

Regulations 2(3) and (4) and 8

Verification procedure for market surveillance purposes

Interpretation

1. In this Schedule "determined values" means the values of the relevant parameters as measured by the market surveillance authority in testing, and the values calculated from these measurements.

Verification procedure

2. The market surveillance authority must apply the procedure set out in this Schedule when verifying the conformity of a product model with these Regulations.

3. The product model conforms to these Regulations if all the following conditions are satisfied in respect of the product model—

(a) the declared values and, where applicable, the values used to calculate the declared values, are not more favourable for the manufacturer, importer, or authorised representative than the corresponding measurements carried out pursuant to paragraph 1(2)(b)(vii) or 5(2)(d) of Schedule 1A to the 2010 Regulations(**a**);

(b) the declared values meet the requirements of these Regulations, and any product information published by the manufacturer, importer or authorised representative does not contain values more favourable for the manufacturer, importer, or authorised representative than the declared values;

(c) the determined values comply with the respective verification tolerances as given in Table 1, and for this purpose the determined values are calculated as—

(i) the arithmetic mean over the tested units of the measured values for a given parameter; or

(ii) the arithmetic mean of parameter values calculated from measured values;

(d) the manufacturer, importer or authorised representative has put in place a system that complies with the requirements of regulation 10(2), (3) and (4) (software updates); and

(e) the manufacturer, importer or authorised representative has complied with the information requirements in paragraphs 4 to 10 of Schedule 3.

4. For the purposes of paragraph 3(a), (b), (d) and (e), the market surveillance authority must check one single unit of the product model.

5. For the purpose of paragraph 3(c), the market surveillance authority must test—

(a) in the case of a light source, 10 units of the product model; or

(b) in the case of a separate control gear, 3 units of the product model.

6. If any of the conditions set out in paragraph 3 are not satisfied in respect of the product model, the product model and all equivalent models do not conform to these Regulations.

7. Where a product model has been designed to be able to detect it is being tested (for example by recognising test conditions or test cycles), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in these Regulations or any parameters included in the technical documentation or in any of the documentation provided, the product model and all equivalent models do not conform to these Regulations.

Verification tolerances

8.—(1) The verification tolerances set out in Table 1 must be used only by the market surveillance authority and only for the purposes of this Schedule.

(2) The manufacturer, authorised representative or importer of a product must not use the verification tolerances—

(a) as allowed tolerances to establish the values in the technical documentation;

(b) in order to interpret those values with a view to achieving compliance; or

(c) to communicate better performance.

(**a**) Schedule 1A was inserted by S.I. 2019/539.

Table 1

Verification tolerances

Parameter	*Verification tolerances*
Full-load on-mode power P_{on} (W):	
$P_{on} \leq 2W$	The determined value must not exceed the declared value by more than 0.20 W.
$2W < P_{on} \leq 5W$	The determined value must not exceed the declared value by more than 10%.
$5W < P_{on} \leq 25W$	The determined value must not exceed the declared value by more than 5%.
$25W < P_{on} \leq 100W$	The determined value must not exceed the declared value by more than 5%.
$100W < P_{on}$	The determined value must not exceed the declared value by more than 2.5%.
Displacement factor *(0-1)*	The determined value must not be less than the declared value minus 0.1 units.
Useful luminous flux Φ_{use} *(lm)*	The determined value must not be less than the declared value minus 10%.
No-load power P_{no}, Standby power P_{sb} and Networked standby power P_{net} (W)	The determined value must not exceed the declared value by more than 0.10 W.
CRI *(0-100)*	The determined value must not be less than the declared value by more than 2.0 units.
Flicker (P_{st} *LM)* and stroboscopic effect (*SVM)*	The determined value must not exceed the declared value by more than 0.1.
Colour consistency (*MacAdam ellipse steps*)	The determined number of steps must not exceed the declared number of steps. The centre of the MacAdam ellipse must be the centre declared by the supplier with a tolerance of 0.005 units.
Beam angle (*degrees*)	The determined value must not deviate from the declared value by more than 25%.
Control gear efficiency (0-1)	The determined value must not be less than the declared value minus 0.05 units.
Lumen maintenance factor (for LED and OLED)	The determined X_{LMF}% of the sample following the test in Schedule 5 to these Regulations must not be less than $X_{LMF, MIN}$%(**a**).
Survival factor (for LED and OLED)	At least 9 light sources of the test sample must be operational after completing the test in Schedule 5.
Excitation purity (%)	The determined value must not be less than the declared value minus 5%.
Correlated colour temperature (K)	The determined value must not deviate from the declared value by more than 10%.

(**a**) For the calculation of $X_{LMF, MIN}$%, see the entry for "lumen maintenance factor (for LED and OLED)" in Table 5 of Schedule 3.

(3) For light sources with linear geometry which are scalable but of very long length, such as LED strips or strings, verification testing must consider a length of 50 cm, or, if the light source is not scalable there, the nearest value to 50 cm. The light source manufacturer or importer must indicate which separate control gear is suitable for this length.

(4) When verifying if a product model is a light source, the market surveillance authority must compare the measured values for—

(a) chromaticity coordinates (x and y);

(b) luminous flux;

(c) luminous flux density; and

(d) colour rendering index,

directly with the limit values set out in the definition for light source in regulation 2(1), without applying any tolerances.

(5) If any of the 10 units in the sample satisfies the conditions for being a light source, the product model must be considered to be a light source.

(6) Light sources that allow the end-user to control, manually or automatically, directly or remotely—

(a) the luminous intensity;

(b) colour;

(c) correlated colour temperature;

(d) spectrum; or

(e) beam angle,

of the emitted light must be tested using the reference control settings.

SCHEDULE 3 Regulations 2(10), 4 and 7(2)

Ecodesign requirements for light sources and separate control gears

Energy efficiency requirements

Light sources

1.—(1) The declared power consumption of a light source P_{on} must not exceed the maximum allowed power P_{onmax} (in *W*), defined as a function of the declared useful luminous flux Φ_{use} (in *lm*) and the declared colour rendering index CRI (-) as follows—

$$P_{onmax} = C \times (L + \Phi_{use}/(F \times \eta)) \times R;$$

where—

(a) the values for threshold efficacy (η in *lm/W*) and end loss factor (L in *W*) are as specified in Table 2, according to the light source type;

(b) basic values for correction factor (C) depending on light source type, and additions to C for special light source features are specified in Table 3;

(c) efficacy factor (F) is—

(i) 1.00 for non-directional light sources (NDLS, using total flux);

(ii) 0.85 for directional light sources (DLS, using flux in a cone);

(d) CRI factor (R) is—

(i) 0.65 for CRI ≤ 25;

(ii) (CRI+80)/160 for CRI > 25,

rounded to two decimals.

Table 2

Threshold efficacy (η) and end loss factor (L)

Light source description	*η*	*L*
	(lm/W)	*(W)*
LFL T5-HE	98.8	1.9
LFL T5-HO, 4,000 ≤ Φ ≤ 5,000 *lm*	83.0	1.9
LFL T5-HO, other *lm* output	79.0	1.9
FL T5 circular	79.0	1.9
FL T8 (including FL T8 U-shaped)	89.7	4.5
From 1st September 2023, for FL T8 of 2-, 4- and 5-foot	120.0	1.5
Magnetic induction light source, any length or flux	70.2	2.3
CFLni	70.2	2.3
FL T9 circular	71.5	6.2
HPS single-ended	88.0	50.0
HPS double-ended	78.0	47.7
MH ≤ 405 *W* single-ended	84.5	7.7
MH > 405 *W* single-ended	79.3	12.3
MH ceramic double-ended	84.5	7.7
MH quartz double-ended	79.3	12.3
OLED	65.0	1.5
Before 1 September 2023: HL G9, G4 and GY6.35	19.5	7.7
HL R7s ≤ 2 700 lm	26.0	13.0
Connected light sources (CLS) not mentioned above	120.0	2.0
Other light sources not mentioned above	120.0	1.5

Table 3

Correction factor C depending on light source characteristics

Light source type	*Basic C value*
Non-directional (NDLS) not operating on mains (NMLS)	1.00
Non-directional (NDLS) operating on mains (MLS)	1.08
Directional (DLS) not operating on mains (NMLS)	1.15
Directional (DLS) operating on mains (MLS)	1.23
Special light source feature	*Addition on C*
FL or HID with CCT > 5,000K	+0.10
FL with CRI > 90	+0.10
HID with second envelope	+0.10
MH NDLS > 405 W with non-clear envelope	+0.10
DLS with anti-glare shield	+0.20
Colour-tuneable light source (CTLS)	+0.10
High luminance light source (HLLS)	+ 0.0058 · Luminance-HLLS – 0.0167

(2) For the purposes of this paragraph—

(a) where applicable, additions on correction factor C are cumulative;

(b) the addition for HLLS must not be combined with the basic C-value for DLS (basic C-value for NDLS must be used for HLLS);

(c) light sources which allow the end-user to adapt the spectrum and/or the beam angle of the emitted light, resulting in changes to the values for useful luminous flux, colour rendering index (CRI) and/or correlated colour temperature (CCT), and/or changing the

directional/non-directional status of the light source, must be evaluated using the reference control settings;

(d) the standby power P_{sb} of a light source must not exceed 0.5 W;

(e) the networked standby power P_{net} of a connected light source must not exceed 0.5 W;

(f) the allowable values for P_{sb} and P_{net} must not be added together.

(3) This paragraph is subject to the exemptions in paragraph 3(3) of Schedule 4.

Separate control gears

2.—(1) The minimum energy efficiency requirements of a separate control gear operating at full-load are the values set out in Table 4.

Table 4

Minimum energy efficiency for separate control gear at full-load

Declared output power of the control gear (P_{cg}) or declared power of the light source (P_{ls}) in W, as applicable	*Minimum energy efficiency*
Control gear for HL light sources	
all wattages P_{cg}	0.91
Control gear for FL light sources	
$P_{ls} \leq 5$	0.71
$5 < P_{ls} \leq 100$	$P_{ls}/(2 \times \sqrt{(P_{ls}/36)} + 38/36 \times P_{ls}+1)$
$100 < P_{ls}$	0.91
Control gear for HID light sources	
$P_{ls} \leq 30$	0.78
$30 < P_{ls} \leq 75$	0.85
$75 < P_{ls} \leq 105$	0.87
$105 < P_{ls} \leq 405$	0.90
$405 < P_{ls}$	0.92
Control gear for LED or OLED light sources	
all wattages P_{cg}	$P_{cg}^{0.81}/(1.09 \times P_{cg}^{0.81} + 2.10)$

(2) For the purposes of this paragraph, the requirements of Table 4 apply to multi-wattage separate control gears in respect of the maximum declared power on which they can operate.

(3) Where a manufacturer or importer has declared in the technical documentation that a separate control gear has been designed for no-load mode, the no-load power P_{no} of the control gear must not exceed 0.5W.

(4) The standby power P_{sb} of a separate control gear must not exceed 0.5 W.

(5) For a connected separate control gear—

(a) the networked standby power P_{net} must not exceed 0.5 W;

(b) the allowable values for P_{sb} and P_{net} must not be added together.

(6) This paragraph is subject to the exemptions in paragraph 3(3) of Schedule 4.

Functional requirements

3. The functional requirements specified in Table 5 apply to light sources.

Table 5

Functional requirements for light sources

Colour rendering	CRI ≥ 80 (except for HID with Φ_{use} > 4 klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80, when a clear indication to this effect is shown on the light source packaging and in all relevant printed and electronic documentation)
Displacement factor (DF, cos φ_1) at power input P_{on} for LED and OLED MLS	No limit at $P_{on} \leq 5$ W; DF ≥ 0.5 at 5 W < $P_{on} \leq 10$ W; DF ≥ 0.7 at 10 W < $P_{on} \leq 25$ W; DF ≥ 0.9 at 25 W < P_{on}
Lumen maintenance factor (for LED and OLED)	The lumen maintenance factor X_{LMF}% after endurance testing in accordance with Schedule 5 must be at least $X_{LMF,MIN}$% calculated as follows— $X_{LMF,MIN}\% = 100 \times e^{\frac{(3000 \times \ln(0.7))}{L_{70}}}$ where L_{70} is the declared $L_{70}B_{50}$ lifetime (in hours). If the calculated value for $X_{LMF,MIN}$ exceeds 96.0%, an $X_{LMF,MIN}$ value of 96.0% applies.
Survival factor (for LED and OLED)	Light sources must be operational as specified in row "Survival factor (for LED and OLED)" Schedule 2, Table 1, following the endurance testing given in Schedule 5.
Colour consistency for LED and OLED light sources	Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.
Flicker for LED and OLED MLS	P_{st} LM ≤ 1,0 at full-load
Stroboscopic effect for LED and OLED MLS	Before 31st August 2024: SVM ≤ 0.9 at full-load (except for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80); From 1st September 2024: SVM ≤ 0.4 at full-load (except for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80)

Information requirements

4. The following information requirements apply.

Light sources

5.—(1) The following information must be displayed on light sources when they are placed on the market.

(2) For all light sources except CTLS, LFL, CFLni, other FL, and HID—

(a) the value and physical unit of the useful luminous flux (lm); and

(b) correlated colour temperature (K);

must be displayed in a legible font on the surface provided that, after the inclusion of safety-related information, there is sufficient space available for it without unduly obstructing the light emission.

(3) For directional light sources, the beam angle (°) must also be displayed in a legible font on the surface, provided that the condition set out in sub-paragraph 2 regarding the availability of sufficient space is met.

(4) If there is room for only two values, the useful luminous flux and the correlated colour temperature must be displayed.

(5) If there is room for only one value, the useful luminous flux must be displayed.

Packaging

Light sources

6.—(1) Where a light source is placed on the market and is—

(a) not in a containing product; and

(b) in packaging containing information to be visibly displayed at a point-of-sale prior to its purchase;

the information listed in sub-paragraph (2) must be clearly and prominently displayed on the packaging.

(2) The information referred to in sub-paragraph (1) is—

(a) the useful luminous flux (Φ_{use}), in a font at least twice as large as the display of the on-mode power (P_{on}), clearly indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°);

(b) the—

(i) correlated colour temperature, rounded to the nearest 100K, also expressed graphically or in words; or

(ii) range of correlated colour temperatures that can be set;

(c) the beam angle in degrees (for directional light sources), or the range of beam angles that can be set;

(d) electrical interface details (for example cap- or connector-type), type of power supply (for example 230 V AC 50 Hz, 12 V DC);

(e) the $L_{70}B_{50}$ lifetime for LED and OLED light sources, expressed in hours;

(f) the on-mode power (P_{on}), expressed in W;

(g) the standby power (P_{sb}), expressed in W and rounded to the second decimal, unless the value is zero, in which case it may be omitted;

(h) the networked standby power (P_{net}) for CLS, expressed in W and rounded to the second decimal, unless the value is zero in which case it may be omitted;

(i) the colour rendering index, rounded to the nearest integer, or the range of CRI-values that can be set;

(j) if CRI< 80, and the light source is intended for use in—

(i) outdoor applications;

(ii) industrial applications; or

(iii) other applications where lighting standards allow a CRI< 80;

a clear indication to this effect, except for HID light sources with useful luminous flux > 4,000 lm, for which this indication is not mandatory;

(k) if the light source is designed for optimum use in non-standard conditions (such as ambient temperature Ta ≠ 25°C or where specific thermal management is necessary), information on those conditions;

(l) a warning if the light source—

(i) cannot be dimmed; or

(ii) can be dimmed only with specific dimmers or with specific wired or wireless dimming methods;

and in the latter case a list of compatible dimmers and methods must be provided on the manufacturer's website;

(m) if the light source contains mercury, a warning of this, including the mercury content in mg rounded to the first decimal place;

(n) if the light source is—

(i) within the scope of the Waste Electrical and Electronic Equipment Regulations 2013(**a**), (without prejudice to the marking obligations in regulation 22 of those Regulations); or

(ii) contains mercury;

a warning that it must not be disposed of as unsorted municipal waste.

(3) Items listed in sub-paragraph (2)(a) to (d) must be displayed on the packaging in the direction intended to face the prospective buyer.

(4) For light sources that can be set to emit light with different characteristics—

(a) the information referred to in sub-paragraph (2) must be provided for the reference control settings; and

(b) a range of obtainable values may also be indicated.

(5) The information referred to in sub-paragraph (2) may be provided—

(a) in writing (which does not need to use the exact wording of the requirements in sub-paragraph (2));

(b) in the form of—

(i) graphs;

(ii) drawings; or

(iii) symbols; or

(c) any combination of the above.

Separate control gears

7.—(1) Where a separate control gear is placed on the market and is—

(a) not in a containing product;

(b) in a packaging containing information to be visibly displayed at a point of sale, prior to their purchase;

the information listed in sub-paragraph (2) must be clearly and prominently displayed on the packaging.

(2) The information referred to in sub-paragraph (1) is—

(a) for HL, LED and OLED, the maximum output power of the control gear;

(b) for FL and HID, the power of the light source for which the control gear is intended;

(c) the type of light source for which the control gear is intended;

(d) the efficiency in full-load, expressed as a percentage;

(e) the—

(i) no-load power (P_{no}), expressed in W and rounded to the second decimal, unless the value is zero in which case this may be omitted; or

(ii) indication that the gear is not intended to operate in no-load mode;

(**a**) S.I. 2013/3113.

(f) the standby power (P_{sb}), expressed in W and rounded to the second decimal, unless the value is zero in which case this may be omitted;

(g) where applicable, the networked standby power (P_{net}), expressed in W and rounded to the second decimal, unless the value is zero in which case this may be omitted;

(h) a warning if the control gear—

(i) is not suitable for dimming of light sources; or

(ii) can be used only with specific types of dimmable light sources or using specific wired or wireless dimming methods,

and in the latter cases, detailed information on the conditions in which the control gear can be used for dimming must be provided on the manufacturer's or importer's website;

(i) a QR code or an internet address for a website—

(i) which is accessible to the public without charge; and

(ii) where full information on the control gear can be found;

(3) The information referred to in sub-paragraph (2) may be provided—

(a) in writing (which does not need to use the exact wording of the requirements in paragraph (2); or

(b) in the form of—

(i) graphs;

(ii) drawings; or

(iii) symbols; or

(c) any combination of the above.

(4) Where information is omitted from the packaging in accordance with sub-paragraph (2)(e), (f) or (g), the omitted information must be provided in the technical documentation and on the website of the manufacturer, authorised representative or importer.

Websites

8.—(1) For any separate control gear that is placed on the market, the information listed in sub-paragraph (2) must be—

(a) available on a website of the manufacturer, authorised representative or importer; and

(b) accessible to the public without charge.

(2) The information referred to in sub-paragraph (1) is—

(a) the information specified in paragraph 7(2), including the information omitted from the packaging in accordance with paragraph 7(2)(e), (f) or (g) but excluding the information specified in paragraph 7(2)(i);

(b) the outer dimensions in mm;

(c) the mass in grams of the control gear—

(i) without packaging; and

(ii) without lighting control parts and non-lighting parts, if any, where these can be physically separated from the control gear;

(d) instructions on how to remove lighting control parts and non-lighting parts, if any, or how to switch them off or minimise their power consumption during control-gear testing for market surveillance purposes;

(e) if the control gear can be used with dimmable light sources—

(i) a list of minimum characteristics that the light sources should have to be fully compatible with the control gear during dimming; and

(ii) a list of compatible dimmable light sources;

(f) recommendations on how to dispose of the control gear at the end of its life in accordance with the Waste Electrical and Electronic Equipment Regulations 2013.

(3) The information listed in sub-paragraph (2) may be provided—

(a) in writing (which does not need to use the exact wording of the requirements in paragraph (2)); or

(b) in the form of—

(i) graphs;

(ii) drawings; or

(iii) symbols; or

(c) any combination of the above.

Technical documentation

9.—(1) The technical documentation required for the conformity assessment of the product must comply with the following.

(2) The information listed in paragraph 8(2) must also be contained in the technical documentation.

(3) Where the information in the technical documentation for a particular product model has been obtained—

(a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer;

(b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer; or

(c) by both paragraphs (a) and (b),

the technical documentation must include the details of any such calculation and the assessment undertaken by the manufacturer to verify the accuracy of the calculation, and, where appropriate, the declaration of identity between the models of different manufacturers.

(4) The technical documentation must include a list of all equivalent models, including the model identifiers.

(5) The technical documentation must include all the information specified in Schedule 9, and this must be provided in the order and in the format set out in that Schedule.

Information for products specified in paragraph 3 of Schedule 4

10.—(1) For the light sources and separate control gears specified in paragraph 3(2) of Schedule 4—

(a) the technical documentation required for the conformity assessment of the product; and

(b) all forms of packaging, product information and advertisement,

must contain a statement of the intended use and explicit indication that the light source or separate control gear is not intended to be used for other purposes.

(2) In relation to light sources referred to in paragraph 3(2)(p) of Schedule 4, the technical documentation and all forms of packaging, product information and advertisement must also contain the following statement—

> "This light source is for use only by photosensitive patients. Use of this light source will lead to increased energy costs compared to an equivalent more energy efficient product.".

(3) The technical documentation must also list the technical parameters that enable the product to qualify for the exemption.

Reference control settings

11.—(1) Subject to the following provisions of this paragraph, the reference control settings must be those predefined by the manufacturer as factory default values and encountered by the user at first installation (initial values).

(2) If the installation procedure provides for an automatic software update during first installation, or if the user has the option to perform such an update, the resulting change in settings (if any) is treated as the initial value.

(3) If the initial value is deliberately set differently from the reference control setting (for example, at low power for safety purposes), the manufacturer must indicate in the technical documentation how to recall the reference control settings for compliance verification and provide a technical justification as to why the initial value is set differently from the reference control setting.

(4) The manufacturer must define the reference control settings such that—

(a) where the range of potential settings includes the option for the reference control settings to be defined in such a way that the light source does not have the optical characteristics specified in regulation 2(2), that option is not exercised;

(b) lighting control parts and non-lighting parts are disconnected or switched-off or, where this is not possible, the power consumption of these parts is minimal;

(c) the full-load condition is obtained; and

(d) when the user opts to reset factory defaults, the reference control settings are obtained.

(5) For light sources which allow the manufacturer of a containing product to make implementation choices that influence light source characteristics (for example, definition of the operating current, thermal design) and cannot be controlled by the user, the reference control settings are not required to be defined.

(6) Where sub-paragraph (5) applies, the test conditions used by the light source manufacturer are to be used for the purposes of checking whether a light source conforms to these Regulations.

SCHEDULE 4

Regulation 5

Exemptions

Specified approvals

1.—(1) Chapter 2 of Part 2 of these Regulations does not apply to light sources and separate control gears specifically tested and approved to operate—

(a) in potentially explosive atmospheres, within the meaning of regulation 2(1) of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016(**a**);

(b) for emergency use;

(c) in radiological installations, within the meaning of regulation 2(1) of the Ionising Radiation (Medical Exposure) Regulations 2017(**b**);

(d) in or on military or civil defence establishments, equipment, ground vehicles, marine equipment or aircraft;

(e) in or on motor vehicles, their trailers and systems, interchangeable towed equipment, components and separate technical units as set out in—

(i) Regulation (EC) No 661/2009 of the European Parliament and of the Council of 13 July 2009(**c**) concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor;

(**a**) S.I. 2016/1107.
(**b**) S.I. 2017/1322.
(**c**) EUR 2009/661.

(ii) agricultural and forestry vehicles as set out in Regulation (EU) No 167/2013 of the European Parliament and of the Council of 5 February 2013(**a**) on the approval and market surveillance of agricultural and forestry vehicles;

(iii) two- or three-wheel vehicles and quadricycles at set out in Regulation (EU) No 168/2013 of the European Parliament and of the Council of 15 January 2013(**b**) on the approval and market surveillance of two- or three-wheel vehicles and quadricycles;

(f) in or on non-road mobile machinery as set out in Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016(**c**) on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, and in or on trailers for such machinery;

(g) in or on interchangeable equipment within the meaning of regulation 2(1) of the Supply of Machinery (Safety) Regulations 2008(**d**) that—

(i) is intended to be—

(aa) towed; or

(bb) mounted and fully raised from the ground,

by vehicles as set out in Regulation (EU) No 167/2013 (agricultural and forestry vehicles); or

(ii) cannot articulate around a vertical axis when the agricultural or forestry vehicle to which it is attached is in use on a road;

(h) in or on civil aviation aircraft;

(i) in railway vehicle lighting, and for this purpose "railway vehicle" is construed in accordance with regulation 2(1) of the Railways (Interoperability) Regulations 2011(**e**);

(j) in marine equipment, within the meaning of regulation 2(1) of the Merchant Shipping (Marine Equipment) Regulations 2016(**f**); or

(k) in medical devices, within the meaning of regulation 2(1) of the Medical Devices Regulations 2002(**g**).

(2) For the purposes of this paragraph "specifically tested and approved" means that, in relation to an operating condition or application, the light source or separate control gear—

(a) has been specifically tested for that operating condition or application, in accordance with standards produced by an international standardising body;

(b) is accompanied by evidence in the form of a—

(i) certificate;

(ii) type approval mark; or

(iii) test report,

that the product has been specifically approved for that operating condition or application; and

(c) is placed on the market specifically for that operating condition or application, as evidenced by—

(i) the information in the technical documentation; and

(ii) except in a case to which sub-paragraph (1)(d) applies, information on the packaging and any advertising or marketing materials.

(**a**) EUR 2013/167.
(**b**) EUR 2013/168.
(**c**) EUR 2016/1628.
(**d**) S.I. 2008/1597.
(**e**) S.I. 2011/3066.
(**f**) S.I. 2016/1025, as amended by S.I. 2019/470.
(**g**) S.I. 2002/618; relevant amending instruments are S.I. 2008/2936 and 2019/791.

(3) The evidence referred to in sub-paragraph (2)(b) must be included in the technical documentation.

Additional exemptions

2. Chapter 2 of Part 2 of these Regulations does not apply to—

(a) double-capped fluorescent T5 light sources with power $P \leq 13$ W;

(b) electronic displays (such as televisions, computer monitors, notebooks, tablets, mobile phones, e-readers, game consoles), including displays to which the following provisions apply—

(i) Chapter 7 of Part 2 of the Ecodesign for Energy-Related Products and Energy Information Regulations 2021(**a**);

(ii) Commission Regulation (EU) No 617/2013 of 26 June 2013(**b**) implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for computers and computer servers;

(c) light sources and separate control gears in battery-operated products, including—

(i) torches;

(ii) mobile phones with an integrated torch light;

(iii) toys with included light sources;

(iv) desk lamps operating only on batteries;

(v) armband lamps for cyclists;

(vi) solar-powered garden lamps;

(d) light sources for spectroscopy and photometric applications, including—

(i) UV-VIS spectroscopy;

(ii) molecular spectroscopy;

(iii) atomic absorption spectroscopy;

(iv) nondispersive infrared (NDIR);

(v) fourier-transform infrared (FTIR);

(vi) medical analysis;

(vii) ellipsometry;

(viii) layer thickness measurement;

(ix) process monitoring;

(x) environmental monitoring;

(e) light sources and separate control gears on bicycles and other non-motorised vehicles.

Limited exemptions

3.—(1) Subject to sub-paragraph (5), Chapter 2 of Part 2 of these Regulations does not apply to light sources and separate control gears which are specifically designed and marketed for intended use in any of the applications listed in sub-paragraph (2).

(2) The applications referred to in sub-paragraph (1) are—

(a) signalling (including road, railway, marine or air traffic signalling, traffic control or airfield lamps);

(b) image capture and image projection (including photocopying, printing (directly or in pre-processing), lithography, film and video projection, holography);

(**a**) S.I. 2021/745.
(**b**) EUR 2013/617, as amended by S.I. 2019/539.

(c) light sources with specific effective ultraviolet power > 2 mW/klm and intended for use in applications requiring high UV-content;

(d) light sources with a peak radiation around 253.7 nm and intended for germicidal use (destruction of DNA);

(e) light sources intended for disinfection or fly trapping, and emitting—

(i) 5% or more of total radiation power of the range 250-800 nm in the range of 250-315 nm; or

(ii) 20% or more of total radiation power of the range 250-800 nm in the range of 315-400 nm;

(f) light sources with the primary purpose of emitting radiation around 185.1 nm and intended to be used for the generation of ozone;

(g) 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;

(h) 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;

(i) 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;

(j) light sources with a photosynthetic efficacy > 1.2 μmol/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;

(k) HID light sources with correlated colour temperature CCT > 7,000K and intended for use in applications requiring such a high CCT;

(l) light sources with a beam angle of less than 10° and intended for spot-lighting applications requiring a very narrow light beam;

(m) halogen light sources with cap-type G9.5, GX9.5, GY9.5, GZ9.5, GZX9.5, GZY9.5, GZZ9.5, K39d, G9.5HPL, G16d, GES/E40 (low voltage (24V) silver crown only), GX16, GX16d, GY16, G22, G38, GX38, GX38Q, P28s, P40s, PGJX28, PGJX 36, PGJX50, R7s with a luminous flux > 12 000 lm, QXL, designed and marketed specifically for

(i) scene-lighting use in film studios, TV studios, and photographic studios; or

(ii) stage-lighting use in theatres, discos and during concerts or other entertainment events;

(n) colour-tuneable light sources that—

(i) can be set to at least the colours listed in the following table;

(ii) have for each of these colours, measured at the dominant wavelength, a minimum excitation purity of the values in that table; and

(iii) are intended for use in applications requiring high-quality coloured light;

Blue	440nm — 490nm	90%
Green	520nm — 570nm	65%
Red	610nm — 670nm	95%

(o) light sources accompanied by an individual calibration certificate detailing the exact radiometric flux and/or spectrum under specified conditions, and intended for—

(i) use in photometric calibration (for example for wavelength, flux, colour temperature, colour rendering index); or

(ii) laboratory use or quality control applications for the evaluation of coloured surfaces and materials under standard viewing conditions (for example standard illuminants);

(p) light sources provided specifically for use by photosensitive patients, to be sold in pharmacies and other authorised selling points (such as suppliers of disability products), upon presentation of a medical prescription;

(q) incandescent light sources (not including halogen light sources) which meet all of the following conditions—

(i) power ≤ 40 W;

(ii) length ≤ 60 mm;

(iii) diameter ≤ 30 mm;

(iv) declared by the manufacturer to be suitable for operation at ambient temperature ≥ 300°C;

(v) intended for use in high temperature applications such as ovens;

(r) halogen light sources which meet all of the following conditions—

(i) cap-type G4, GY6.35 or G9;

(ii) power ≤ 60 W;

(iii) declared suitable for operation at ambient temperature ≥ 300°C;

(iv) intended for use in high temperature applications such as ovens;

(s) incandescent light sources which—

(i) have one or more of the following—

(aa) blade contact;

(bb) metal lug;

(cc) cable;

(dd) litz wire;

(ee) metric thread;

(ff) pin base;

(gg) non-standard customised electrical interface;

(ii) have encasing made from quartz glass tubes; and

(iii) are specifically designed and marketed for industrial or professional electro-heating equipment (such as stretch blow-moulding process in polyethylene terephthalate (PET) industry, 3D-printing, photovoltaic and electronic manufacturing processes, drying or hardening of adhesives, inks, paints or coatings);

(t) halogen light sources which meet all of the following conditions—

(i) R7s cap;

(ii) CCT ≤ 2,500K;

(iii) length not in the ranges 75-80 mm and 110-120 mm;

(iv) specifically designed and marketed for industrial or professional electro-heating equipment (such as stretch blow-moulding process in PET industry, 3D-printing, gluing, inks, paint and coating hardening);

(u) single capped fluorescent lamps (CFLni) having a diameter of 16 mm (T5), 2G11 4 pin base, with

(i) CCT = 3,200K and chromaticity coordinates x = 0.415 y = 0.377; or

(ii) CCT = 5,500K and chromaticity coordinates x = 0.330 y = 0.335,

specifically designed and marketed for studio and video applications for traditional filmmaking;

(v) LED or OLED light sources which are "work" within the meaning of regulation 4 of the Artist's Resale Rights Regulations 2006(**a**), and are made by the artist in a limited number below 10 pieces;

(w) light sources which—

(**a**) S.I. 2006/346.

(i) are specifically designed and exclusively marketed for scene-lighting use in film-studios, TV-studios and locations, and photographic-studios and locations, or for stage-lighting use in theatres, during concerts or other entertainment events; and

(ii) meet at least one of the following specifications—

(aa) LED with power ≥ 100 W and CRI > 90;

(bb) GES/E40, K39d socket with changeable Colour Temperature down to 1,800K (undimmed), used with low voltage power supply;

(cc) LED with power ≥ 180 W and arranged to direct output to an area smaller than the light-emitting surface;

(dd) incandescent light source that is DWE type and has 650 W power, 120 V voltage and pressure screw terminal;

(ee) LED with power ≥ 100 W that allows the user to set different correlated colour temperatures for the emitted light;

(ff) LFL T5 with G5 cap with CRI ≥ 85 and CCT 2,900, 3,000, 3,200, 5,600 or 6,500 K;

(x) incandescent DLS which meets all the following conditions—

(i) E27 cap;

(ii) clear envelope;

(iii) power ≥ 100 W and ≤ 400 W;

(iv) CCT ≤ 2,500 K;

(v) specifically designed and exclusively marketed for infrared heating.

(3) CLS and CSCG designed and marketed specifically—

(a) for—

(i) scene-lighting use in film-studios, TV-studios and locations, and photographic studios and locations; or

(ii) stage-lighting use in theatres, discos and during concerts or other entertainment events;

(b) where these are also designed for connection to high speed control networks (utilising signalling rates of 250,000 bits per second and higher) in always-listening mode,

are exempt from the requirements on standby (P_{sb}) and on networked standby (P_{net}) in paragraphs 1 and 2 of Schedule 3.

(4) The following light sources are exempt from the requirements regarding lumen maintenance factor and survival factor specified in Table 5 in Schedule 3, and from the lifetime information requirement specified in paragraph 6(2)(e) of that Schedule—

(a) light sources specifically designed and exclusively marketed for use in products within the scope of Commission Regulation (EU) No 932/2012 of 3 October 2012(**a**) implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for household tumble driers;

(b) light sources specifically designed and exclusively marketed for use in products to which the following provisions of the Ecodesign for Energy-Related Products and Energy Information Regulations 2021 apply—

(i) Chapter 3 of Part 2 (household dishwashers);

(ii) Chapter 4 of Part 2 (household washing machines and washer dryers);

(iii) Chapter 5 of Part 2 (household refrigerating appliances).

(5) Light sources and control gears to which sub-paragraph (2) applies must comply with the information requirements in paragraph 10 of Schedule 3.

(**a**) EUR 2012/932, as amended by S.I. 2019/539.

SCHEDULE 5

Regulations 7(2) and 8

Functionality after endurance testing

1.—(1) Models of LED and OLED light sources must undergo endurance testing to check their lumen maintenance factor and survival factor (see Table 1 of Schedule 2).

(2) The market surveillance authority must carry out endurance testing in accordance with the method set out in this Schedule.

2.—(1) The endurance test for LED and OLED light sources must be conducted as follows.

Ambient conditions and test set-up

(2) The switching cycles must be conducted in a room with—

(a) an ambient temperature of 25 ± 10°C; and

(b) an average air velocity of less than 0.2 m/s.

(3) The switching cycles on the sample must be conducted in free air in a vertical base-up position, unless a manufacturer or importer has declared the light source suitable for use in a specific orientation only, in which case the sample must be mounted in that orientation.

(4) The applied voltage during the switching cycles must have a tolerance within 2%, and the total harmonic content of the supply voltage must not exceed 3%.

(5) Light sources designed to be operated on mains voltage must be tested at 230 V, 50 Hz supply, even if the products are able to be operated on variable supply conditions.

Endurance test method

(6) The luminous flux of the light source must be measured prior to starting the endurance test switching cycle.

(7) The light source must be operated for 1,200 cycles of repeated, continuous switching cycles without interruption, and for this purpose—

(a) one complete switching cycle consists of 150 minutes of the light source switched ON at full power followed by 30 minutes of the light source switched OFF; and

(b) the hours of operation recorded (3,000 hours) include only the periods of the switching cycle when the light source was switched ON, so that the total test time is 3,600 hours.

(8) Subject to sub-paragraph (9), at the end of the 1,200 switching cycles the luminous flux of the light sources must be measured.

(9) Any light sources that have failed the test in accordance with the "Survival factor" in Table 1 in Schedule 2 must not be measured.

(10) For each of the units in the sample that did not fail, the measured final flux must be divided by the measured initial flux.

(11) The resulting values must be averaged over all the units that did not fail to compute the determined value for the lumen maintenance factor X_{LMF}%.

SCHEDULE 6

Regulation 11(3)

Exemptions

1. Chapter 3 of Part 2 of these Regulations does not apply to a light source which meets any of the conditions in paragraphs (b) to (k) of paragraph 1(1) of Schedule 4.

2. Chapter 3 of Part 2 of these Regulations does not apply to—

(a) electronic displays (such as televisions, computer monitors, notebooks, tablets, mobile phones, e-readers, game consoles), including displays to which the following provisions apply—

(i) Chapter 7 of Part 2 of the Ecodesign for Energy-Related Products and Energy Information Regulations 2021 (electronic displays);

(ii) Commission Regulation (EU) No 617/2013 of 26 June 2013(**a**) implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for computers and computer servers;

(b) light sources in range hoods within the scope of Commission Delegated Regulation (EU) No 65/2014 of 1 October 2013(**b**) supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of domestic ovens and range hoods;

(c) light sources in battery-operated products, including—

(i) torches;

(ii) mobile phones with an integrated torch light;

(iii) toys with included light sources;

(iv) desk lamps operating only on batteries;

(v) armband lamps for cyclists;

(vi) solar-powered garden lamps;

(d) light sources on bicycles and other non-motorised vehicles;

(e) light sources for spectroscopy and photometric applications, including—

(i) UV-VIS spectroscopy;

(ii) molecular spectroscopy;

(iii) atomic absorption spectroscopy;

(iv) nondispersive infrared (NDIR);

(v) fourier-transform infrared (FTIR);

(vi) medical analysis;

(vii) ellipsometry;

(viii) layer thickness measurement;

(ix) process monitoring;

(x) environmental monitoring.

3.—(1) Except as provided in sub-paragraph (2), Chapter 3 of Part 2 of these Regulations does not apply to a light source which is specifically designed and marketed for intended use in any of the applications listed in paragraph 3(2)(a) to (j), (s) or (v) of Schedule 4.

(2) For the light sources to which this paragraph applies—

(a) the technical documentation; and

(b) all forms of packaging, product information and advertisement,

must contain a statement of the intended use and an explicit indication that the light source is not intended to be used for other purposes.

(3) The technical documentation must also list the technical parameters that enable the product to qualify for the exemption.

(4) The following light sources are exempt from the requirements specified in paragraph 1(e)(x) to (xii) of Schedule 9—

(a) light sources specifically designed and exclusively marketed for use in products within the scope of Commission Regulation (EU) No 932/2012 (household tumble dryers);

(**a**) EUR 2013/617, as amended by S.I. 2019/539.
(**b**) EUR 2014/65, as amended by S.I. 2019/539.

(b) light sources specifically designed and exclusively marketed for use in products to which the following provisions of the Ecodesign for Energy-Related Products and Energy Information Regulations 2021 apply—

(i) Chapter 3 of Part 2 (household dishwashers);

(ii) Chapter 4 of Part 2 (household washing machines and washer dryers);

(iii) Chapter 5 of Part 2 (household refrigerating appliances).

SCHEDULE 7

Regulations 12(1), 13 and 17

Labels for light sources

Format and placing of labels

1.—(1) If a light source is intended to be marketed through a point of sale, a label produced in the format and containing information set out in this Schedule must be printed on the individual packaging.

(2) Subject to sub-paragraph (6), suppliers may choose the standard or small sized label format shown in paragraph 2.

(3) The label must be—

(a) for the standard sized label, at least 36 mm wide and 72 mm high;

(b) for the small label, at least 20 mm wide and 54 mm high.

(4) The packaging must not be smaller than 20 mm wide and 54 mm high.

(5) Where the label is printed in a larger format, its content must remain proportionate to the specifications above.

(6) The small label must not be used on packaging with a width of 36 mm or more.

(7) The label and the arrow indicating the energy efficiency class may be printed in monochrome only if all other information on the packaging, including graphics, is printed in monochrome.

(8) If the label is not printed on the part of the packaging intended to face the prospective customer, an arrow containing the letter of the energy efficiency class as shown in Figure 2 must be displayed on that part as follows—

(a) the colour of the arrow must match the colour of the energy efficiency class as specified in paragraph 3;

(b) the label must be clearly visible and legible;

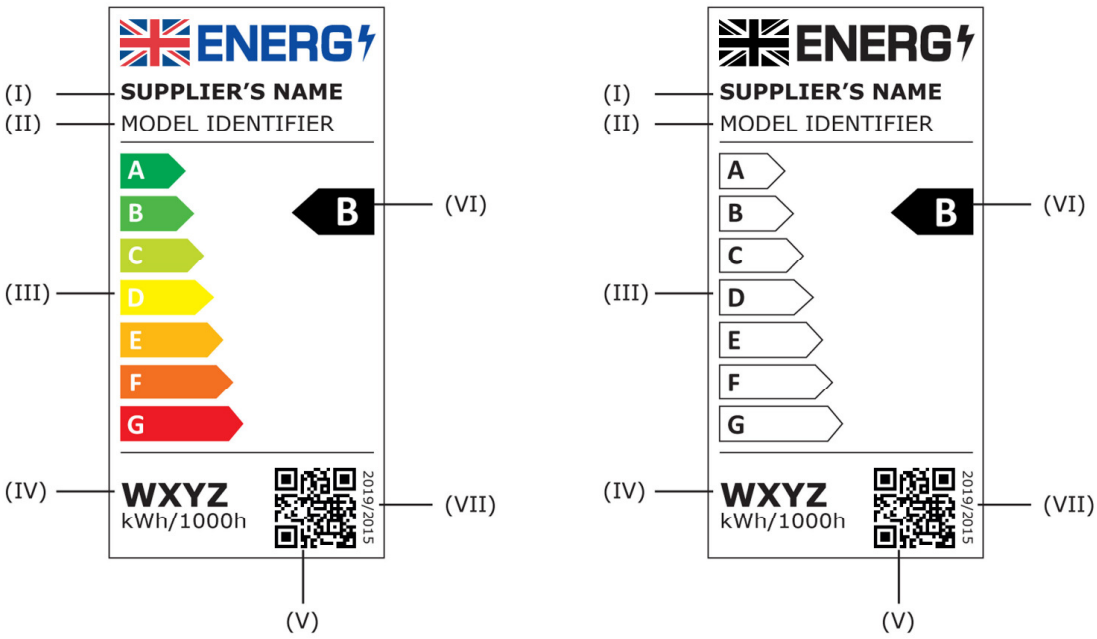
(c) the letter in the energy efficiency class arrow must be positioned in the centre of the rectangular part of the arrow, with a border of 0.5 pt in black around the arrow and the letter of the energy efficiency class.

Figure 2

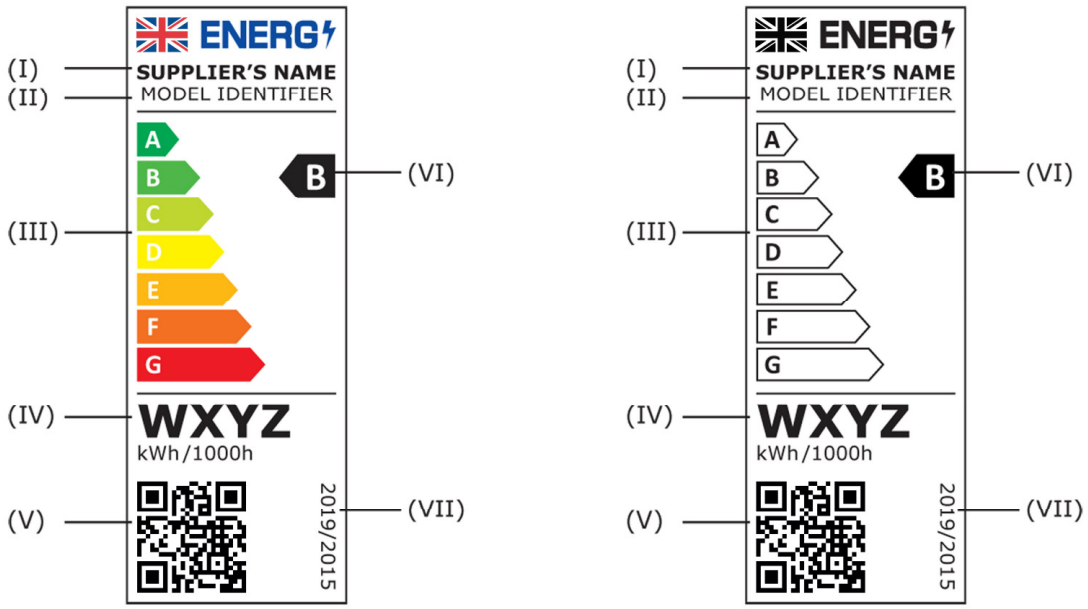
Coloured/monochrome left/right arrow for the part of the packaging facing the prospective customer



2.—(1) The format of the standard sized label is as follows—



(2) The format of the small label is as follows—



(3) The following information must be included in the label—

(a) point I: the supplier's name or trade mark;

(b) point II: the supplier's model identifier;

(c) point III: the scale of energy efficiency classes from A to G;

(d) point IV: the energy consumption, expressed in kWh of electricity consumption per 1,000 hours, of the light source in on-mode;

(e) point V: the QR code;

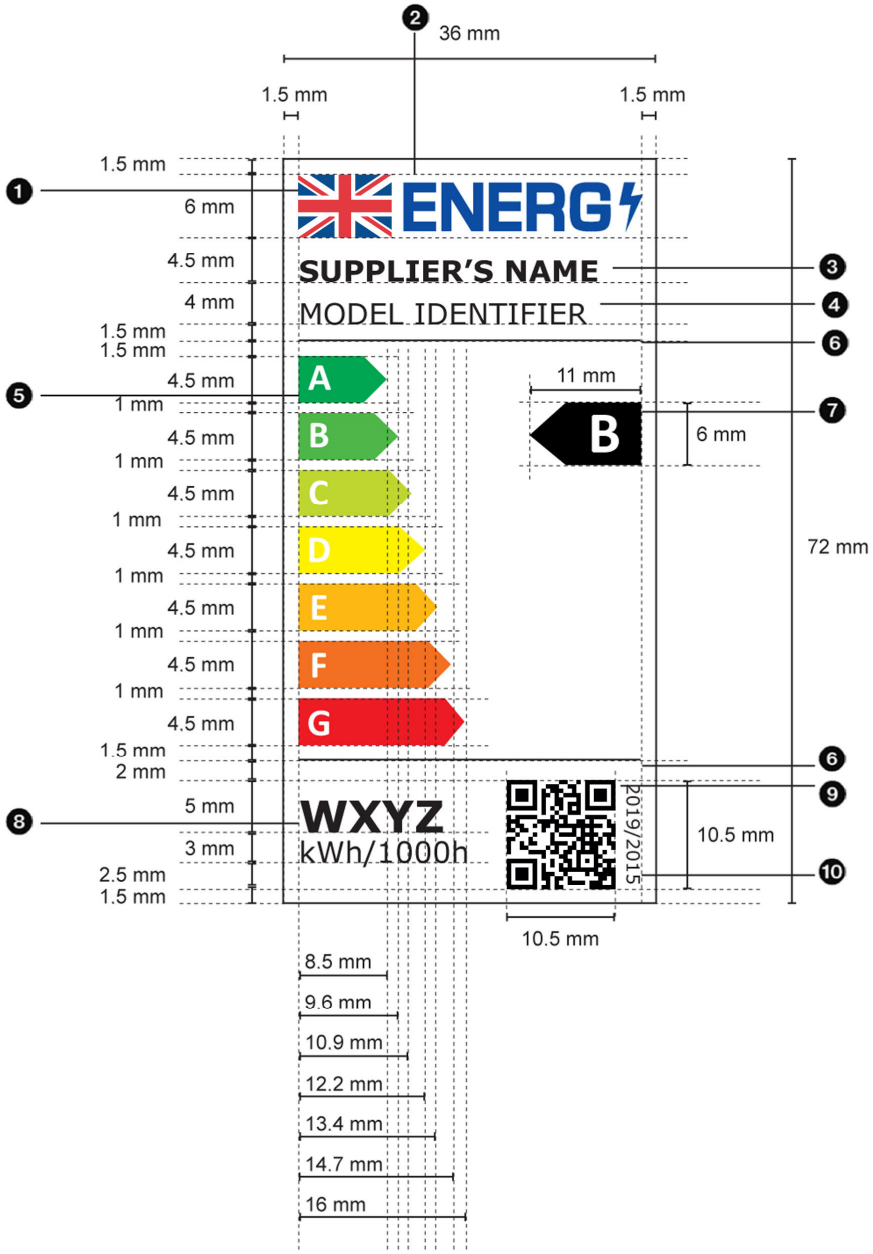
(f) point VI: the energy efficiency class in accordance with Schedule 12;

(g) point VII: the S.I. number of these Regulations.

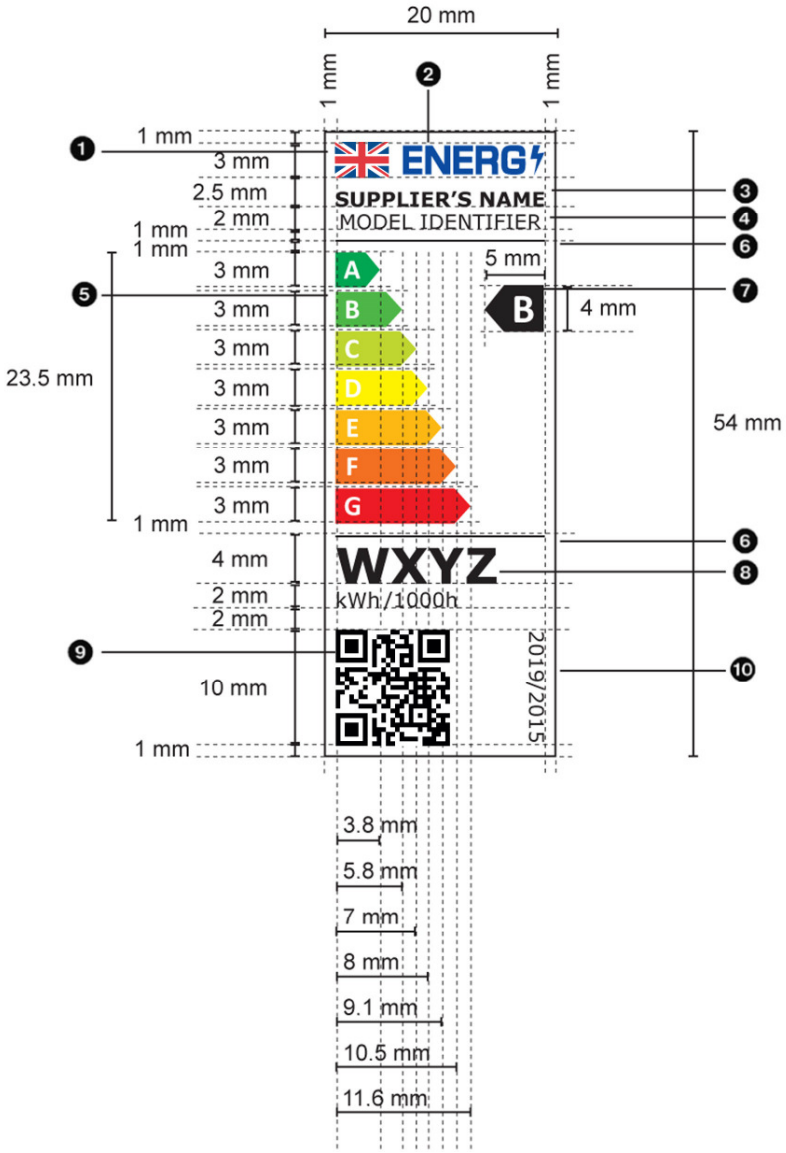
Label designs

3.—(1) The label designs for light sources are as follows—

(a) standard sized label—



(b) small label—



(2) The labels must meet the following requirements.

(3) The background of the label must be 100% white.

(4) The typefaces must be Verdana and Calibri.

(5) The dimensions and specifications of the elements constituting the label must be as indicated in the label designs in paragraph 1 and in sub-paragraph (1) of this paragraph.

(6) The colours used must be cyan, magenta, yellow and black (CMYB) in the proportions specified below.

(7) For the purposes of this paragraph, colour proportions are expressed in CMYB percentages, for example—

0,70,100,0 = 0% cyan, 70% magenta, 100% yellow, 0% black.

(8) The labels must fulfil all the following requirements in relation to the areas marked by numbers in the diagrams above—

(a) area 1: the colours of the UK flag must be as follows—

—the blue background: 100,72,00,18.5;

—the red crosses: 00,100,81,4;

—the remaining part: 100% white;

(b) area 2: the colour of the energy logo must be 100,80,0,0;

(c) area 3: the supplier's name must be 100% black and in Verdana Bold, 8 pt for the standard sized label and 5 pt for the small label;

(d) area 4: the model identifier must be 100% black and in Verdana Regular 8 pt for the standard sized label and 5 pt for the small label;

(e) area 5: the A to G scale must be as follows—

(i) the letters of the energy efficiency scale must be—

(aa) 100% white and in Calibri Bold Regular 10.5 pt for the standard sized label and 7 pt for the small label; and

(bb) centred on an axis at 4.5 mm from the left side of the arrows;

(ii) the colours of the A to G scale arrows must be as follows—

A-class: 100,0,100,0;

B-class: 70,0,100,0;

C-class: 30,0,100,0;

D-class: 0,0,100,0;

E-class: 0,30,100,0;

F-class: 0,70,100,0;

G-class: 0,100,100,0;

(f) area 6: the rectangular border of the label and the internal dividers must have a weight of 0.5 pt and the colour must be 100% black;

(g) area 7—

(i) the letter of the energy efficiency class must be 100% white and in Calibri Bold 16 pt for the standard sized label and 10 pt for the small label;

(ii) the energy efficiency class arrow and the corresponding arrow in the A to G scale must be positioned in such a way that their tips are aligned;

(iii) the letter in the energy efficiency class arrow must be positioned in the centre of the rectangular part of the arrow, which must be 100% black;

(h) area 8: the energy consumption value must be in Verdana Bold 12 pt, 'kWh/annum' must be in Verdana Regular 8 pt for the standard sized label and 5 pt for the small label, and both must be centred and 100% black;

(i) area 9: the QR code must be 100% black;

(j) area 10: the S.I number must be 100% black and in Verdana Regular 5 pt.

SCHEDULE 8 Regulations 12(1) and (2) and 17(3)

Product information

Product information sheet

1. The product information sheet must contain the information set out in Table 6.

Table 6

Product information sheet

Supplier's name or trade mark:
Supplier's address:
Model identifier:

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]
Light source cap-type (or other electric interface)	[Free text]			
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
General product parameters				
Energy consumption in on-mode (kWh/1,000 h) rounded up to the nearest integer	x		Energy efficiency class	[A/B/C/D/E/F/ G]
Useful luminous flux (Φ_{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 100K, or the range of correlated colour temperatures, rounded to the nearest 100K, that can be set	[x/x…x/x or x (or x…)]
On-mode power (P_{on}), expressed in W	x.x		Standby power (P_{sb}), expressed in W and rounded to the second decimal point	x.xx
Networked standby power (P_{net}) for CLS, expressed in W and rounded to the second decimal point	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 (see paragraph [2(1) and (2)])	[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]
Parameters for LED and OLED light sources:			
R9 colour rendering index value	x	Survival factor	x.xx
The lumen maintenance factor	x.xx		
Parameters for LED and OLED mains light sources:			
Displacement factor (cos φ1)	x.xx	Colour consistency in McAdam ellipses	x
Claims that an LED light source replaces a fluorescent light source without integrated ballast of a particular wattage (see paragraph [2(3)].	[yes/-]	If yes then replacement claim (W)	x
Flicker metric (Pst LM)	x.x	Stroboscopic effect metric (SVM)	x.x

2.—(1) An equivalence claim involving the power of a replaced light source type may be given only—

(a) for directional light sources, if the light source type is listed in Table 7 and the luminous flux of the light source in a 90° cone (Φ90°) is not lower than the corresponding reference luminous flux in Table 7, and for this purpose—

(i) the reference luminous flux must be multiplied by the correction factor in Table 8; and

(ii) for LED light sources, it must in addition be multiplied by the correction factor in Table 9;

(b) for non-directional light sources, if the claimed equivalent incandescent light source power (in Watts, rounded to the nearest integer) corresponds to the luminous flux of the light source in Table 10.

(2) The intermediate values of both the luminous flux and the claimed equivalent light source power (in Watts, rounded to the integer) must be calculated by linear interpolation between the two adjacent values.

(3) A claim that a LED light source replaces a fluorescent light source without integrated ballast of a particular wattage may be made only if—

(a) 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;

(b) the luminous flux of the LED light source is not lower than the luminous flux of the fluorescent light source of the claimed wattage; and

(c) the wattage of the LED light source is not higher than the wattage of the fluorescent light source it is claimed to replace.

(4) 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 must be reported at the reference control settings.

(5) For the purposes of sub-paragraph (3)(b), the luminous flux of the fluorescent light source must be obtained by multiplying the claimed wattage with the minimum luminous efficacy value corresponding to the fluorescent light source in Table 11.

Table 7

Reference luminous flux for equivalence claims

Type	Power	Reference $\Phi_{90°}$ (lm)
Extra-low voltage reflector type		
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		
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		
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 8

Multiplication factors for lumen maintenance

Light source type	*Luminous flux multiplication factor*
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 9

Multiplication factors for LED light sources

LED light source beam angle	*Luminous flux multiplication factor*
20° ≤ beam angle	1
15° ≤ beam angle < 20°	0.9
10° ≤ beam angle < 15°	0.85
beam angle < 10°	0.8

Table 10

Equivalence claims for non-directional light sources

Light source luminous flux Φ (lm)	*Claimed equivalent incandescent light source power (W)*
136	15
249	25
470	40
806	60
1,055	75
1,521	100
2,452	150
3,452	200

Table 11

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				

Information to be displayed for a containing product

3.—(1) If a light source is placed on the market as a part in a containing product, the following statement must be displayed, clearly legible, in the user manual or booklet of instructions—

"This product contains a light source of energy efficiency class <X>",

where <X> is to be replaced by the energy efficiency class of the contained light source.

(2) If the product contains more than one light source, the statement referred to in sub-paragraph (1) may be in the plural, or repeated for each light source, as appropriate.

Information to be displayed on the supplier's website

4. The following information must be shown, accessible to the public without charge, on the supplier's website—

(a) the reference control settings, and instructions on how they can be implemented, where applicable;

(b) instructions on how to remove lighting control parts or non-lighting parts, if any, or how to switch them off or minimise their power consumption;

(c) if the light source is dimmable—

(i) a list of dimmers with which it is compatible; and

(ii) the light source-dimmer compatibility standard with which it is compliant, if any;

(d) if the light source contains mercury, instructions on how to clean up the debris in case of accidental breakage;

(e) recommendations on how to dispose of the light source at the end of its life in line with the Waste Electrical and Electronic Equipment Regulations 2013.

SCHEDULE 9

Regulation 12(1)(e)

Technical documentation

1. The technical documentation referred to in regulation 12(1)(e) must include the following—

(a) the name and address of the supplier;

(b) the 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 values for the following technical parameters—

(i) useful luminous flux (Φ_{use}) in lm;

(ii) colour rendering index (CRI);

(iii) on-mode power (P_{on}) in W;

(iv) beam angle in degrees for directional light sources (DLS);

(v) peak luminous intensity in cd for directional light sources (DLS);

(vi) correlated colour temperature (CCT) in K;

(vii) standby power (P_{sb}) in W, including when it is zero;

(viii) networked standby power (P_{net}) in W for connected light sources (CLS);

(ix) R9 colour rendering index value for LED and OLED light sources;

(x) survival factor for LED and OLED light sources;

(xi) lumen maintenance factor for LED and OLED light sources;

(xii) indicative lifetime L70B50 for LED and OLED light sources;

(xiii) displacement factor (cos φ1) for LED and OLED mains light sources;

(xiv) colour consistency in MacAdam ellipse steps for LED and OLED light sources;

(xv) luminance-HLLS in cd/mm^2 (only for HLLS)

(xvi) flicker metric (PstLM) for LED and OLED light sources;

(xvii) stroboscopic effect metric (SVM) for LED and OLED light sources;

(xviii) excitation purity, only for CTLS, for the colours and dominant wavelength within the given range in the following table—

Colour	*Dominant wavelength range*
Blue	440 nm - 490 nm
Green	520 nm - 570 nm
Red	610 nm - 670 nm

(f) the calculations performed with the parameters, including the determination of the energy efficiency class;

(g) references to the designated standards applied or other standards used;

(h) testing conditions if not described fully in sub-paragraph (g);

(i) the reference control settings, and instructions on how they can be implemented, where applicable;

(j) instructions on how to remove lighting control parts and/or non-lighting parts, if any, or how to switch them off or minimise their power consumption during light source testing;

(k) specific precautions that must be taken when the model is assembled, installed, maintained or tested;

(l) where a claim of the kind referred to in paragraph 2(1) or (3) of Schedule 8 is made, the data to support such a claim.

SCHEDULE 10

Regulations 12 and 13

Information to be provided in visual advertisements, technical promotional material, and in distance selling except distance selling on the internet

1.—(1) In—

(a) visual advertisements for light sources, for the purposes of the requirements of regulations 12(1)(f) and 13(d); and

(b) in technical promotional material for light sources, for the purposes of the requirements of regulations 12(1)(g) and 13(e),

the energy efficiency class and the range of energy efficiency classes available on the label must be shown as set out in paragraph 2.

(2) Any paper-based distance selling of light sources must show the energy efficiency class and the range of energy efficiency classes available on the label as set out paragraph 2.

2.—(1) The energy efficiency class and the range of energy efficiency classes must be shown, as indicated in Figure 3, with—

(a) an arrow containing the letter of the energy efficiency class, in 100% white, Calibri Bold and in—

(i) if the price is shown, a font size at least equivalent to that of the price; and

(ii) in all other cases, a font size that is clearly visible and legible;

(b) subject to sub-paragraph (2), the colour of the arrow matching the colour of the energy efficiency class as specified in Schedule 7;

(c) the range of available energy efficiency classes shown in 100% black;

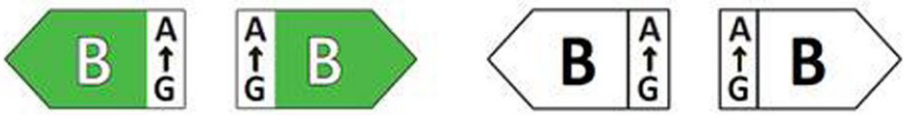
(d) the size such that the arrow is clearly visible and legible; and

(e) the letter in the energy efficiency class arrow positioned in the centre of the rectangular part of the arrow, with a border of 0.5 pt in 100% black around the arrow and the letter of the energy efficiency class.

(2) If the visual advertisement, technical promotional material or paper-based distance selling is printed in monochrome, the arrow may be in monochrome.

Figure 3

Coloured/monochrome left/right arrow, with range of energy efficiency classes indicated



3. Where a product is sold through telemarketing based distance selling, the manufacturer, importer or authorised representative must specifically inform the customer of the energy efficiency class of the product and of the range of energy efficiency classes available on the label, and that the customer can access the full label and the product information sheet by requesting a printed copy or accessing a website that is publicly available free of charge.

4. For all the situations referred to in paragraphs 1 and 3, it must be possible for the customer to obtain a printed copy of the label and the product information sheet on request.

SCHEDULE 11

Regulations 12, 13 and 14

Information to be provided in the case of distance selling through the internet

1. The following requirements apply to distance selling through the internet.

2.—(1) The appropriate label made available by suppliers in accordance with regulation 12(1)(h) must be shown on the display mechanism in proximity to the price of the product.

(2) The size of the label must be such that the label is clearly visible and legible, and must be proportionate to the size specified for the standard label in paragraph 3(1) of Schedule 7.

(3) If the label is displayed using a nested display, the image used for accessing the label must comply with the specifications set out in paragraph 4.

(4) If nested display is used, the label must appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.

3. The image used for accessing the label in the case of a nested display, as indicated in Figure 4, must—

(a) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;

(b) indicate the energy efficiency class of the product on the arrow in 100% white, Calibri Bold and in a font size equivalent to that of the price;

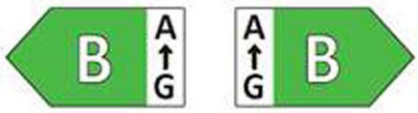
(c) have the range of available energy efficiency classes in 100% black;

(d) be of such a size that the arrow is clearly visible and legible, and in one of the following two formats shown in Figure 4; and

(e) position the letter in the energy efficiency class arrow in the centre of the rectangular part of the arrow, with a visible border in 100% black placed around the arrow and the letter of the energy efficiency class.

Figure 4

Coloured left/right arrow, with range of energy efficiency classes indicated



4. In the case of a nested display, the sequence of display of the label must be as follows—

(a) the image referred to paragraph 3 must be shown on the display mechanism in proximity to the price of the product;

(b) the image must link to the label set out in Schedule 7;

(c) the label must be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;

(d) the label must be displayed by pop-up, new tab, new page or inset screen display;

(e) for magnification of the label on tactile screens, the device conventions for tactile magnification must apply;

(f) the label must cease to be displayed by means of a close option or other standard closing mechanism;

(g) the alternative text for the graphic, to be displayed on failure to display the label, must be the energy efficiency class of the product in a font size equivalent to that of the price.

5.—(1) The electronic product information sheet made available by suppliers in accordance with regulation 12(1)(i) must be shown on the display mechanism in proximity to the price of the product.

(2) The size of the information sheet must be such that the sheet is clearly visible and legible.

(3) If the product information sheet is displayed using a nested display or by referring to a publicly available website, the link used for accessing the product information sheet must clearly and legibly indicate "Product information sheet".

(4) If a nested display is used, the product information sheet must appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

SCHEDULE 12

Regulations 12(4) and 15(1)

Energy labelling of light sources – energy efficiency classes and calculation method

1. The energy efficiency class of light sources must be determined as set out in Table 12, on the basis of the total mains efficacy η_{TM}, which is calculated by—

(a) dividing the declared useful luminous flux Φ_{use} (expressed in *lm*) by the declared on-mode power consumption P_{on} (expressed in *W*); and

(b) multiplying by the applicable factor F_{TM} in Table 13,

as follows—

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

Table 12

Energy efficiency classes of light sources

Energy efficiency class	*Total mains efficacy η_{TM} (lm/W)*
A	$210 \leq \eta_{TM}$

B	$185 \leq \eta_{TM} < 210$
C	$160 \leq \eta_{TM} < 185$
D	$135 \leq \eta_{TM} < 160$
E	$110 \leq \eta_{TM} < 135$
F	$85 \leq \eta_{TM} < 110$
G	$\eta_{TM} < 85$

Table 13

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

SCHEDULE 13

Regulation 16

Verification procedure for market surveillance purposes

Interpretation

1. In this Schedule "determined values" means the values of the relevant parameters as measured by the market surveillance authority in testing and the values calculated from these measurements.

Verification procedure

2. The market surveillance authority must apply the procedure set out in this Schedule when verifying the conformity of a product model with these Regulations.

3. The product model conforms to these Regulations if all the following conditions are satisfied in respect of the product model—

(a) the declared values and, where applicable, the values used to calculate the declared values, are not more favourable for the supplier than the corresponding measurements carried out pursuant to paragraph 1(2)(b)(vii) or 5(2)(d) of Schedule 1A to the 2010 Regulations;

(b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values;

(c) the indicated energy efficiency class is not more favourable for the supplier than the class determined by the declared values; and

(d) the determined values comply with the respective verification tolerances as given in Table 14, and for this purpose the determined values are calculated as—

(i) the arithmetic mean over the tested units of the measured values for a given parameter; or

(ii) the arithmetic mean of parameter values calculated from measured values.

4.—(1) For the purposes of paragraph 3(a), (b) and (c), the market surveillance authority must check one single unit of the product model to be verified.

(2) For the purpose of paragraph 3(d), the market surveillance authority must test 10 units of the product model.

5. If any of the conditions set out in paragraph 3 are not satisfied in respect of the product model, the product model and all equivalent product models do not conform to these Regulations.

6. Where a model has been designed to be able to detect it is being tested (for example by recognising test conditions or test cycles), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in these Regulations or any parameters included in the technical documentation or in any of the documentation provided, the product model and all equivalent models do not conform to these Regulations.

Verification tolerances

7.—(1) The verification tolerances set out in Table 14 must be used only by the market surveillance authority and only for the purposes of this Schedule.

(2) The supplier must not use the verification tolerances—

(a) as allowed tolerances to establish the values in the technical documentation;

(b) in order to interpret those values with a view to achieving compliance; or

(c) to communicate better performance.

Table 14

Verification tolerances

Parameter	*Verification tolerances*
Full-load on-mode power P_{on} (*W*):	
$P_{on} \leq 2W$	The determined value must not exceed the declared value by more than 0.20W.
$2W < P_{on} \leq 5W$	The determined value must not exceed the declared value by more than 10%.
$5W < P_{on} \leq 25W$	The determined value must not exceed the declared value by more than 5%.
$25W < P_{on} \leq 100W$	The determined value must not exceed the declared value by more than 5%.
$100W < P_{on}$	The determined value must not exceed the declared value by more than 2.5%.
Displacement factor *(0-1)*	The determined value must not be less than the declared value minus 0.1 units.
Useful luminous flux Φ_{use} (*lm)*	The determined value must not be less than the declared value minus 10%.
Standby power P_{sb} and networked standby power P_{net} (*W*)	The determined value must not exceed the declared value by more than 0.10W.
CRI and R9 (*0-100)*	The determined value must not be less than the declared value by more than 2.0 units.
Flicker *(Pst LM)* and stroboscopic effect *(SVM)*	The determined value must not exceed the declared value by more than 0.1, or by more than 10% if the declared value is more than 1.0.
Colour consistency (*MacAdam ellipse steps*)	The determined number of steps must not exceed the declared number of steps. The centre of the MacAdam ellipse must be the centre declared by the supplier with a tolerance of 0.005 units.
Beam angle (*degrees*)	The determined value must not deviate from the declared value by more than 25%.
Total mains efficacy η_{TM} (lm/W)	The determined value (quotient) must not be

	less than the declared value minus 5%.
Lumen maintenance factor (for LED and OLED)	The determined X_{LMF}% of the sample must not be less than $X_{LMF, MIN}$% in accordance with the test in Schedule 5.
Survival factor (for LED and OLED)	At least 9 light sources of the test sample must be operational after completing the endurance test in Schedule 5**.**
Excitation purity (%)	The determined value must not be less than the declared value minus 5%.
Correlated colour temperature (K)	The determined value must not deviate from the declared value by more than 10%.
Peak luminous intensity (cd)	The determined value must not deviate from the declared value by more than 25%.

(3) For light sources with linear geometry which are scalable but of very long length, such as LED strips or strings, verification testing must consider a length of 50 cm, or, if the light source is not scalable there, the nearest value to 50 cm. The light source manufacturer or importer must indicate which separate control gear is suitable for this length.

(4) When verifying if a product model is a light source, the market surveillance authority must compare the measured values for—

(a) chromaticity coordinates (x and y);

(b) luminous flux;

(c) luminous flux density; and

(d) colour rendering index,

directly with the limit values set out in the definition for light source in regulation 2(1), without applying any tolerances.

(5) If any of the 10 units in the sample satisfies the conditions for being a light source, the product model must be considered to be a light source.

(6) Light sources that allow the end-user to control, manually or automatically, directly or remotely—

(a) the luminous intensity;

(b) colour;

(c) correlated colour temperature;

(d) spectrum; or

(e) beam angle,

of the emitted light, must be tested using the reference control settings.

EXPLANATORY NOTE

(This note is not part of the Regulations)

These Regulations specify ecodesign requirements for light sources and separate control gears, and energy labelling requirements for light sources.

Chapter 1 of Part 2 contains interpretation provisions. Chapter 2 of Part 2 sets out the ecodesign requirements for light sources and separate control gears. These provisions are an implementing measure for the purposes of the Ecodesign for Energy-Related Products Regulations 2010 (as amended).

Chapter 3 of Part 2 sets out energy labelling requirements for light sources. These provisions are a product-specific measure for the purposes of EU Regulation 2017/1369 setting a framework for energy labelling (as amended).

Part 3 specifies requirements for reviewing these Regulations, and makes consequential amendments, transitional and saving provisions, and revocations.

A full impact assessment of the effect that this instrument will have on the costs of business, the voluntary sector and the public sector is available here:

https://www.gov.uk/government/consultations/draft-ecodesign-and-energy-labelling-regulations-2021, and is published with the Explanatory Memorandum alongside this instrument. Hard copies may be obtained from the Department for Business, Energy and Industrial Strategy, Energy Efficiency and Local Directorate, 1 Victoria Street, London SW1H 0ET.

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