

## SCHEDULE 1

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

### Interpretation

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**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 ( $\text{cd}/\text{mm}^2$ );

“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

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- (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  $\pi$  sr (corresponding to a cone with angle of  $120^\circ$ );

“displacement factor” ( $\cos \phi_1$ )—

- (a) means the cosine of the phase angle  $\phi_1$  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;

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- (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/mm<sup>2</sup> 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<sub>70</sub>B<sub>50</sub> 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<sup>(1)</sup> 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 ( $\text{cd}/\text{m}^2$ );

“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);

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“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;

“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;

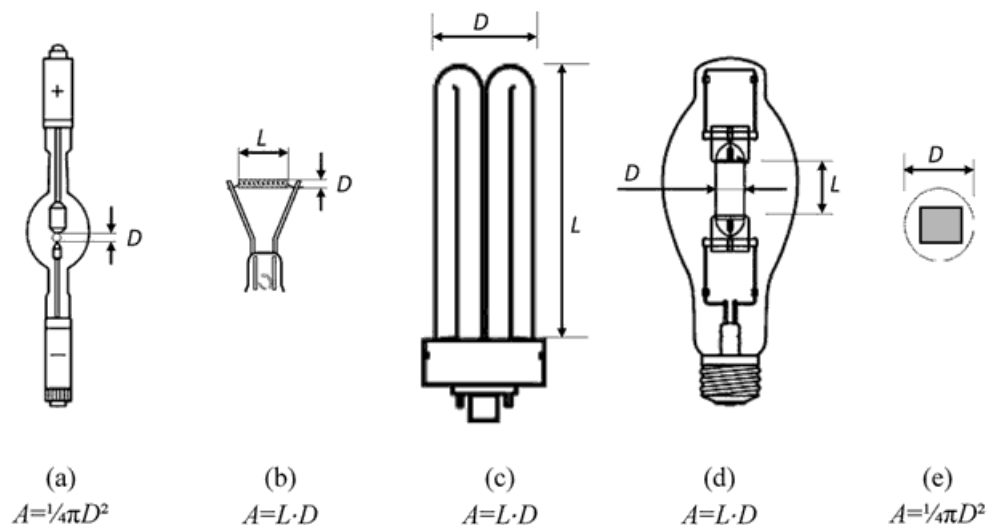
“P28s”, “P40s”, “PGJX28”, “PGJX36” and “PGJX50” mean an electrical interface of a light source that uses a flange contact to correctly position (pre-focus) the light source in a reflector, as respectively defined in standards produced by an international standardising body;

“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  $\text{mm}^2$  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



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“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” (“ $\Phi_{use}$ ”), 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  $4\pi$  sr (corresponding to a  $360^\circ$  sphere);
- (b) for directional light sources with beam angle  $\geq 90^\circ$ , the flux emitted in a solid angle of  $\pi$  sr (corresponding to a cone with angle of  $120^\circ$ );
- (c) for directional light sources with beam angle  $< 90^\circ$ , the flux emitted in a solid angle of  $0.586 \pi$  sr (corresponding to a cone with angle of  $90^\circ$ ).