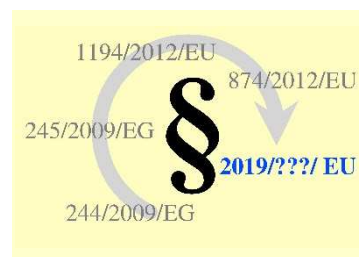


Texte zu den geplanten neuen EU-Regelungen zur umweltgerechten Produktgestaltung und zur Energieverbrauchs-kennzeichnung in der Beleuchtung – Zusammenstellung ^[1] des Umweltbundesamtes (UBA), Deutschland



Entwürfe vom Dezember 2018
von Regelungsausschuß und Fachgespräch

Arbeitshilfe:

**Fachgespräch zur Produktinformation
vom 18. Dezember 2018**

– Anhänge: Tischvorlage aufbereitet –

Hinweis: Bitte beachten Sie, daß der angehängte Text überwiegend in Englisch verfaßt ist.

EN: Information on the coming EU Lighting Regulations – Ecodesign and Energy Labelling
– Compilation ^[1] of the Federal Environment Agency (UBA), Germany

Drafts of December 2018
from Regulatory Committee and Technical Expert Meeting

**Working aid: Technical Expert Meeting on product information of
18 December 2018**

– Annexes room documents, refurbished –

FR: Informations sur les futures réglementations de l'UE concernant l'éclairage –
l'écoconception et l'étiquetage énergétique – Compilation ^[1] de l'Agence Fédérale de
l'Environnement (UBA), Allemagne

Projets du décembre 2018
du comité de réglementation et de la réunion d'experts technique

**Aide de travail : Réunion d'experts technique sur informations relatives au
produit du 18 décembre 2018**

– Annexes : documents de réunion, traité –

Indication : Veuillez noter que le présent texte n'est disponible qu'en anglais.

^[1] <https://www.eup-network.de/de/eup-netzwerk-deutschland/offenes-forum-eu-regelungen-beleuchtung/dokumente/texte/>

DE: ↓

EN: → page III

FR : → page IV

Texte im Offenen Forum

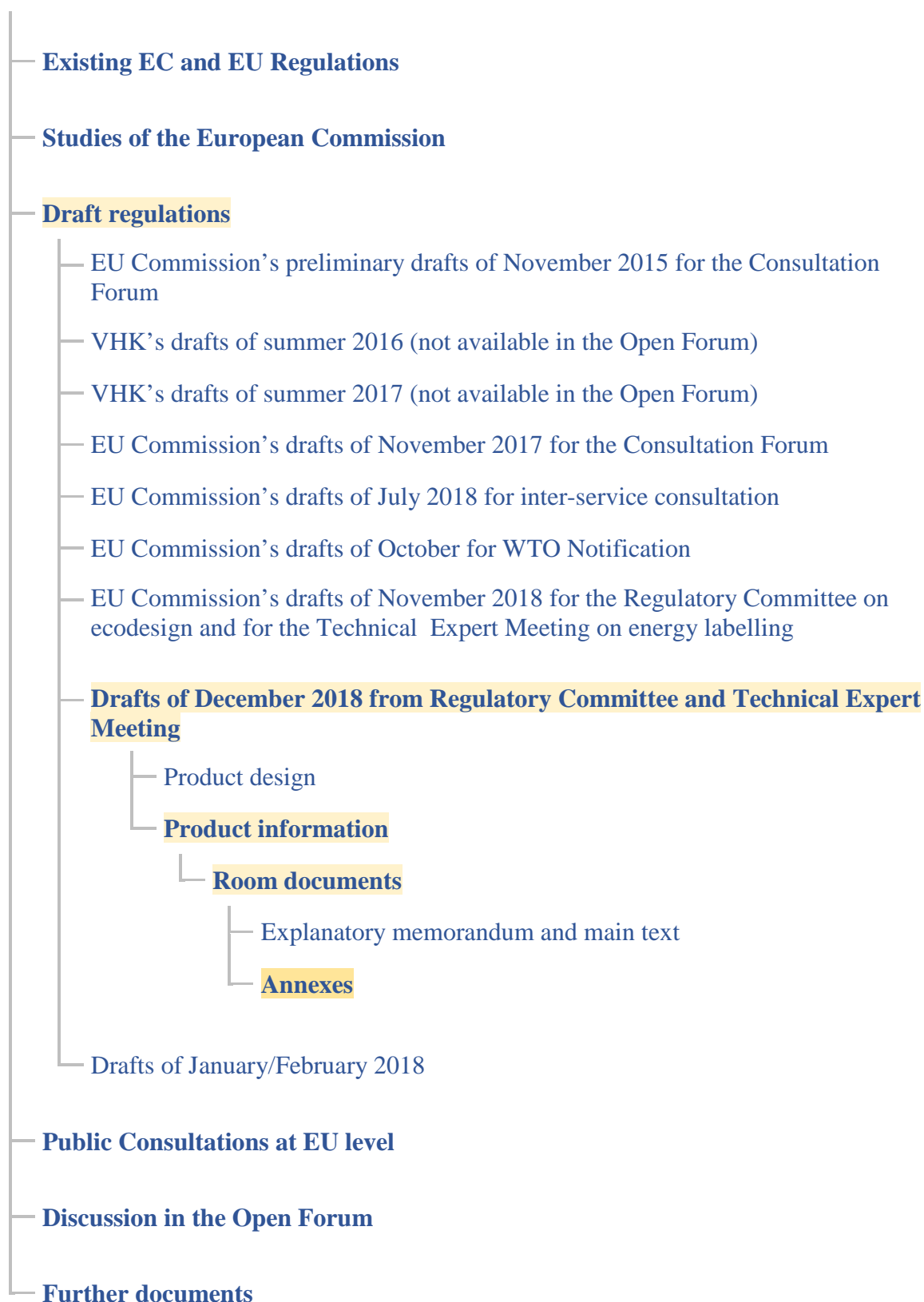
(**abc** = vorliegender Text)

- **Bestehende EG- und EU-Regelungen**
- **Studien der EU-Kommission**
- **Regelungsentwürfe**
 - EK-Vorentwürfe vom November 2015 für das Konsultationsforum
 - VHK-Entwürfe vom Sommer 2016 (nicht im Offenen Forum verfügbar)
 - VHK-Entwürfe vom Sommer 2017 (nicht im Offenen Forum verfügbar)
 - EK-Entwürfe vom November 2017 für das Konsultationsforum
 - EK-Entwürfe vom Juli 2018 für die dienststellenübergreifende Konsultation
 - EK-Entwürfe vom Oktober 2018 für die WHO-Notifizierung
 - EK-Entwürfe vom November 2018 für den Regelungsausschuß zur Produktgestaltung und das Fachgespräch zur Produktinformation
 - **Entwürfe vom Dezember 2018 von Regelungsausschuß und Fachgespräch**
 - Produktgestaltung
 - **Produktinformation**
 - **Tischvorlagen**
 - Begründungstext und Haupttext [EN]
 - **Anhänge** [EN]
 - Entwürfe vom Januar/Februar 2019
- **Öffentliche Konsultationen auf EU-Ebene**
- **Diskussion im Offenen Forum**
- **Weitere Dokumente**

Abkürzungen: • EG = Europäische Gemeinschaft • EU = Europäische Union

Documents in the Open Forum

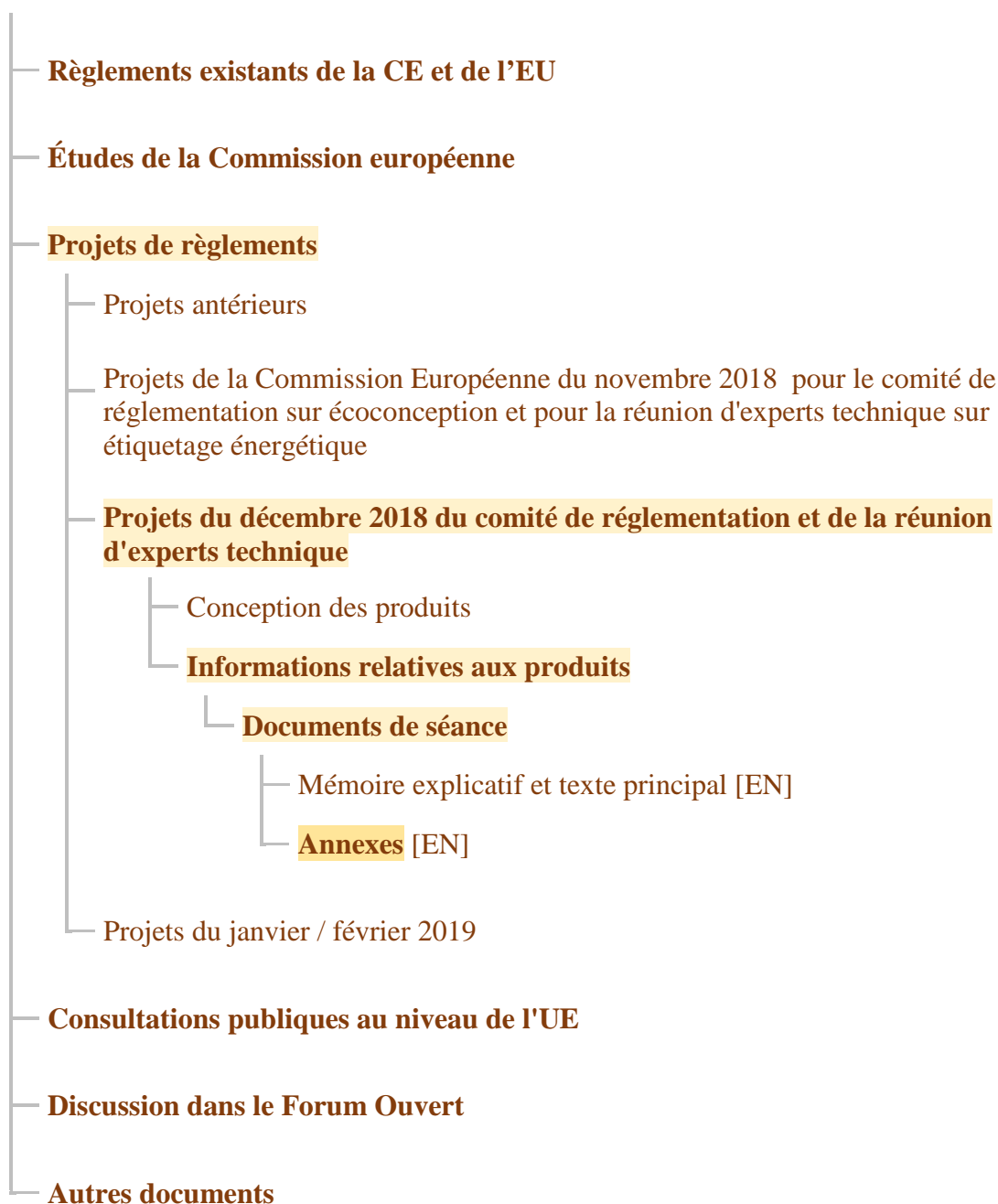
(**abc** = text at hand)



Abbreviations: ● EC = European Communities ● EU = European Union

Documents dans le forum ouvert

(**abc** = présent document)



Abréviations : ● CE = Communauté européenne ● UE = Union européenne

Es folgt ein unveränderter Originaltext.

EN: The following is an unmodified original text.

FR: Ce qui suit est un texte original.

**Offenes Forum EU-Regelungen zur Beleuchtung:
Besprechungsdokumente des Fachgespräches vom
18. Dezember 2018: Anhänge,
digitalisiert und aufbereitet, mit Anzeige der Änderungen
— Arbeitshilfe von Christoph Mordziol, UBA —**

EN:

**Open Forum EU Policies on Lighting:
Meeting documents of the Technical Expert Meeting of
18 December 2018: Annexes,
scanned and refurbished, with indication of changes
— Working aid by Christoph Mordziol, UBA —**

FR :

**Forum ouvert sur le politique européenne de l'éclairage :
Documents de réunion du d'experts technique du 18 décembre 2018 –
Annexes, balayés et traités, avec affichage des modifications
— Aide de travail par Christoph Mordziol, UBA —**

Die hier wiedergegebene Meinung muß nicht zwingend mit der Meinung des Umweltbundesamtes übereinstimmen. Bei Übersetzungen handelt es sich, sofern nicht anders gekennzeichnet, um nicht-autorisierte Übersetzungen. ◇ **EN:** This paper does not necessarily reflect the opinion or the policies of the German Federal Environment Agency. Translations are, unless otherwise indicated, unauthorized translations. ◇ **FR :** L'opinion reproduite ici ne doit pas nécessairement coïncider avec l'avis de l'Agence Fédérale de l'Environnement. Les traductions sont, sauf indication contraire, des traductions non autorisées.

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Hinweise zu Textmarkierungen:

~~abe~~ gelöschter Inhaltspunkt/Text

abc hinzugekommener Inhaltspunkt/Text

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FR : Table des matières

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Remarques préliminaires..... i

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Vorbemerkungen ◇ Preliminary remarks ◇ Remarques préliminaires

Hinweis: Diese Vorbemerkungen sind für alle vier Arbeitshilfen zu den Besprechungsdokumenten vom 17./18. Dezember 2018 identisch.

Am 16. November 2018 machte die EU-Kommission neue Entwürfe für Regelungen zu Beleuchtungsprodukten mit Anforderungen an die Produktgestaltung und –information bekannt ^[1]. Diese Texte dienten als Grundlage für zwei Treffen:

- den Regelungsausschuß zur Produktgestaltung am 17. Dezember 2018 und
- das Fachgespräch zur Produktinformation am 18. Dezember 2018.

Zu Produktgestaltung und –information gilt jeweils:

- An dem Treffen nahmen Vertreter der EU-Mitgliedstaaten sowie der EU-Kommission teil. Letztere leitete das Treffen.
- Zu dem Regelungsentwurf gab es vor dem Treffen von einer Reihe von EU-Mitgliedstaaten Rückmeldungen.
- Diese Rückmeldungen gingen an die EU-Kommission und sind nicht öffentlich.
- Vor dem Treffen übernahm die EU-Kommission in Eigenregie einen Teil der

Please notice: These preliminary remarks are for all four working aids to the discussion documents from 17/18 December 2018 identical.

On 16 November 2018, the EU Commission announced new draft regulations on lighting products with requirements on product design and product information ^[1]. These texts served as basis for two meetings:

- Regulatory Committee on product design on 17 December 2018 and
- Technical Expert Meeting on product information on 18 December 2018.

The following applies for product design as well as for product information:

- Representatives of EU Member States and of the EU Commission attended the meeting which was led by the Commission.
- A number of member states provided feedback on the draft regulation.
- These feedbacks were sent to the EU Commission and are not public.
- Before the meeting, the EU Commission, on its own, integrated a part of the

¹ Produktgestaltung: Siehe unter ... ◇ EN: Product design: cf. ◇ FR : Conception des produits : confer ... https://www.eup-network.de/fileadmin/user_upload/Lichtquellen_EK_2018_11_16_PG_gesamt.pdf

Produktinformation: Siehe unter ... ◇ EN: Product information: cf. ◇ FR : Informations relatives au produit : confer ... https://www.eup-network.de/fileadmin/user_upload/Lichtquellen_EK_2018_11_16_PI_gesamt.pdf

Rückmeldungen in den Entwurf vom 16. November.

- Der sich daraus ergebende Text wurde während des Treffens an eine Wand des Sitzungssaales projiziert und bildete eine wesentliche Diskussionsgrundlage.
 - Im Falle der Produktgestaltung umfaßte dies Haupttext (d. h. die Artikel) und Anhänge und
 - im Falle der Produktinformation zusätzlich den Begründungstext.
- Änderungen, über die sich die Mitgliedstaaten einig zu sein schienen, wurden durch die Kommission in den Text eingearbeitet und blieben als Änderungen zu erkennen.
- Nachdem der gesamte Text durchgesprochen worden war, wurde er mit angezeigten Änderungen ausgedruckt und der Ausdruck vervielfältigt. Wie beispielhaft in Bild 1 zu sehen,
 - zeigen die schwarz-weiß-Kopien neben Textänderungen auch Formatänderungen – der Regelungstext wird verkleinert dargestellt, um den sie daraus ergebenden Platzbedarf zu decken –;
 - erscheinen die Textänderungen in Grautönen und
 - weisen die Kopien – durch das Druck- oder das Kopiergerät bedingt – auf ein paar Seiten Querstriche auf, die über die gesamte Blattbreite gehen. Dort, wo sie über Text verlaufen, können sie als Striche fehlgedeutet werden, die Textlöschungen kennzeichnen.
- Diese Kopien sind deshalb für eine Weitergabe als eine Vorlage nur wenig

feedback into the draft regulations of 16 November 2018.

- The resulting text was projected onto a wall of the conference room during the meeting and provided a substantial basis for discussion.
 - In case of product design, this covered main text (i. e. the articles) and annexes and
 - in the case of product information, this covered also the explanatory memorandum.
- Amendments on which the Member States seemed to agree upon, were incorporated into the text by the Commission and remained indicated as changes.
- After the whole text had been read through, the resulting text was printed with indicated changes and the printout was duplicated. As Figure *Bild 1* shows exemplarily,
 - the black-and-white copies show not only text changes but also format changes — the text of the regulation is reduced in size to cover the resulting space requirements —;
 - the text changes appear in shades of grey and
 - due to the used printing or copying machine, the copies have horizontal lines on a few pages that run the entire width of the sheet. Wherever they pass over text, they can be misinterpreted as strokes that indicate text deletions.
- These copies are therefore not very suitable as a template for distribution. In addition, if they are digitized to create, for example, PDF files, legibility suffers.

geeignet. Hinzu kommt: Werden sie zur Erstellung von beispielsweise PDF-Dateien digitalisiert, leidet die Lesbarkeit weiter.

- Die EU-Kommission teilte mit, daß sie keine Dateien der Diskussionstexte herausgebe^[*]; es sei aber den Mitgliedstaaten überlassen, was sie mit den erhaltenen Kopien machen.
- Deshalb geben die vorliegende Arbeitshilfe und weitere Texte die Diskussionstexte aufbereitet wieder; vergleiche auch die beiden folgenden Bilder:
 - auf eine Anzeige von Formatänderungen wird verzichtet,
 - die Regelungstexte sind vergrößert,
 - die Fußzeilen sind neu aufgebaut, ...

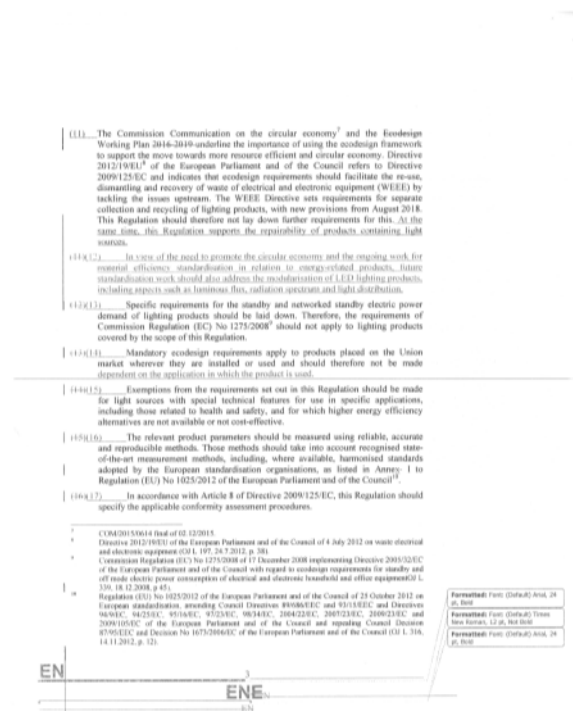


Bild 1: Beispiel für die von der EU-Kommission verteilten Kopien. ♦ **EN:** Example of the copies distributed by the EU Commission. ♦ **FR :** Exemple de copies distribuées par la Commission européenne.

- The European Commission told that it does not publish any files of the discussion texts^[*]; but it leaves it to the Member States what they do with the copies they have received.
- Therefore, the present working aid and other texts render the discussion texts; Compare the following two pictures:
 - an indication of format changes is omitted,
 - the regulation texts are enlarged,
 - the footers are rebuilt ...

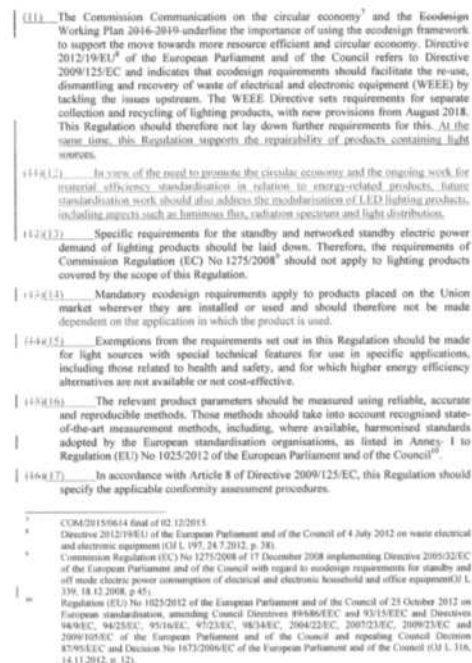


Bild 2: Zum selben Beispiel Darstellung der Aufbereitung in der vorliegenden Arbeitshilfe. ♦ **EN:** For the same example representation of the treatment in the present working aid. ♦ **FR :** Pour le même

exemple: Présentation du traitement dans le présent aide de travail.

- ... über die Blattbreite gehende, druckbedingte Striche sind soweit möglich entfernt. Dort, wo ein Strich durch Text verlief und deshalb nicht gelöscht werden konnte, ist er in der Überarbeitung mit einem Delaturzeichen (§) versehen, um Mißverständnisse zu vermeiden, wie dies Bild 3 zeigt.

- ... as far as possible, the printing process-related horizontal lines are removed. Where a line ran through text and therefore could not be deleted, it is provided with a deletion mark (§) to avoid misinterpretation, as shown in Figure Bild 3.

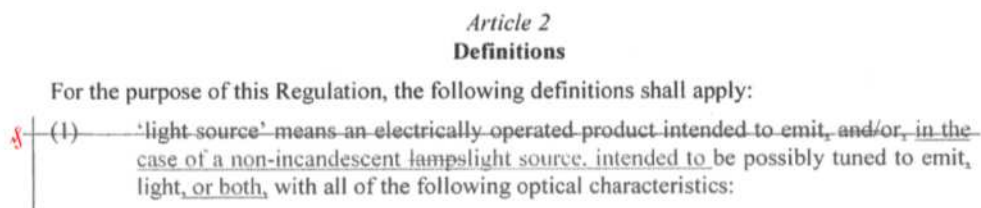


Bild 3: Kennzeichnung von druckbedingten Querstrichen, die als Anzeige einer Streichung fehlgedeutet werden könnten. ♦ EN: Marking of printing process-related horizontal lines that could be misinterpreted as an indication of deletion. ♦ FR: Marquage des courses croisées liées à la technique d'impression qui pourraient être interprétées à tort comme une indication de suppression.

- In den Kopien der Kommission waren Kommentare, wie die Anzeigen der Formatänderungen, am rechten Seitenrand ausgedruckt. In der Überarbeitung sind sie, wie in Bild 4 beispielhaft zu sehen, unter die Texte gesetzt.

- In the copies of the Commission, comments were set on the right side of the page, as this is done with format changes, too. In the present working aid they are placed under the texts, as shown in Figure Bild 4.

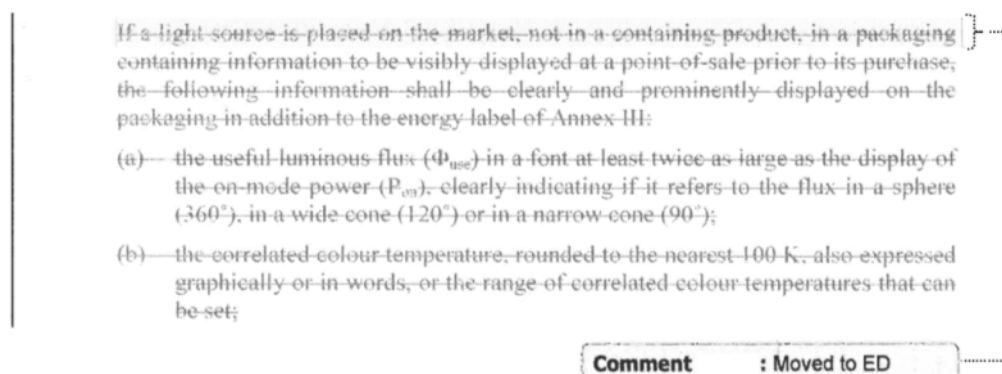


Bild 4: Beispiel für einen verschobenen Kommentar ♦ EN: Example of a shifted comment. ♦ FR: Exemple d'un commentaire déplacé

- Die Seitenzahlangaben folgen dem Original.

- The page numbers follow the original.

* Nachtrag: Am 8. Februar 2019 informierte die Kommission über das im Falle der Produktgestaltung eingeleitete Ausschußverfahren (engl. comitology). Die hierzu öffentlich zugänglichen Dateien umfassen auch aufbereitete Beschlußtexte, die im Offenen Forum zur Verfügung gestellt werden. ◇ [EN: Supplement: On 8 February 2019, the Commission informed about comitology in the case of product design. The related publicly accessible files also include edited decision texts, which will be made available in the Open Forum.](#)

Überarbeitetes Besprechungsdokument: Anhänge ◇ **Refurbished meeting document: Anhänge** ◇ **Document de réunion, traité : Anhänge**



Brussels, XXX
[...] (2018) XXX draft

ANNEXES 1 to 9

ANNEXES

to the

Commission Delegated Regulation

supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources

and repealing Commission Delegated Regulation (EU) No 874/2012

ANNEX I

Definitions applicable for the Annexes

The following definitions shall apply for the purposes of the Annexes:

- (1) 'mains light source (MLS)' means a light source that can be operated directly on the mains electricity supply. Light sources that operate directly on the mains, and can also operate indirectly on the mains using a separate control gear, shall be considered to be mains light sources;
- (2) 'non-mains light source (NMLS)' means a light source that ~~is not a mains light source. These light sources require~~ a separate control gear to operate on the mains;
- (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 part of a containing product;
- (4) 'directional light source' (DLS) means a light source having at least 80% of total luminous flux within a solid angle of π sr (corresponding to a cone with angle of 120°);
- (5) 'non-directional light source' (NDLS) means a light source that is not a directional light source;
- (6) 'connected light source' (CLS) means a light source including data-connection parts that are physically or functionally inseparable from the light emitting parts to maintain the 'reference control settings'. The light source can have physically integrated data-connection parts in a single inseparable housing, or the light source can be combined with physically separate data-connection parts placed on the market together with the light source as a single product;
- (7) 'data-connection parts' means parts that perform any one 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);
 - ~~(c) actuation by audio control (including voice control);~~
 - ~~(d)(e)~~ a combination of these;
- (8) 'colour-tuneable light source' (CTLS) means a light source that can be set to emit light with a large ~~variation~~ variety of colours outside the range defined in Article 2 but can also be set to emit white light inside the range defined in Article 2 for which the light source is within the scope of this Regulation.

~~The term does not include tuneable-white light sources that can only be set to emit light, with different correlated colour temperatures, within the range defined in Article 2, and.~~

~~The term also does not include 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, are not considered CTLS;~~

(9) 'colour purity index/excitation purity' means a percentage computed for a CTLS set to emit light of a certain colour, using a procedure further defined in standards, by drawing a straight line on an (x and y) colour space graph from a point with colour coordinates $x=0,33343$ and $y=0,3330$ (D65 reference point, 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). The colour excitation purity index is computed as the distance between points 1 and 2 divided by the distance between points 1 and 3. The full length of the line represents 100% colour purity (point on the locus). The D65 reference/achromatic stimulus point represents 0 % colour purity (white light);

(10) '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;

(11) '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/m²);

~~(9)~~(12) 'average luminance' (Luminance-HLLS) for a LED light source means the average luminance over a light-emitting area where the luminance is more than 50 % of the peak luminance (cd/mm²);

~~(10)~~(13) 'lighting control parts' means parts that are integrated in a light source, or physically separated but marketed together with a light source as a single product, that are not strictly necessary for the light source to emit light at full-load, but that enable manual- or automatic-, direct- or remote-, control of luminous intensity, chromaticity, correlated colour temperature, light spectrum and/or beam angle. Dimmers shall also be considered as lighting control parts.

The term also includes data-connection parts, but the term does not include devices within the scope of Commission Regulation (EC) No 1275/2008¹;

(14) 'non-lighting parts' means parts that are integrated in a light source, or physically separated but marketed together with a light source as a single product, that are not necessary for the light source to emit light at full-load, and that are not 'lighting control parts'. Examples include, but are not limited to: speakers (audio), cameras, repeaters for communication signals to extend the range (e.g. WiFi), parts supporting grid balance (switching to own internal batteries when necessary), battery charging, visual notification of events (mail arriving, door bell ringing, alert), use of Light Fidelity (Li-Fi, a bidirectional, high-speed and fully networked wireless communication technology).

The term also includes data-connection parts used for other functions than to control the light emission function;

~~(11)~~(15) 'useful luminous flux' (Φ_{use}), means the part of the luminous flux of a light source that is considered when determining its energy efficiency:

¹ Commission Regulation (EC) No 1275/2008 of 17 December 2008 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, OJ L 339, 18.12.2008, p. 45.

- for non-directional light sources it is the total flux emitted in a solid angle of 4π sr (corresponding to a 360° sphere);
- for directional light sources with beam angle $\geq 90^\circ$ it is the flux emitted in a solid angle of π sr (corresponding to a cone with angle of 120°);
- for directional light sources with beam angle $< 90^\circ$ it is the flux emitted in a solid angle of 0.586π sr (corresponding to a cone with angle of 90°);

~~(12)~~(16) '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 the centre of the front face of the light source and through points at which the luminous intensity is 50 % of the centre beam intensity, where the centre beam intensity is the value of luminous intensity measured on the optical beam axis.

For light sources that have different beam angles in different planes, the largest beam angle shall be the one taken into account;

For light sources with user-controllable beam angle, the beam angle corresponding to the 'reference control setting' shall be the one taken into account;

~~(13)~~(17) 'full-load' means the condition of a light source, within the declared operating conditions, in which it emits the maximum (undimmed) ~~initial~~ luminous flux;

~~(14)~~(18) 'standby mode' means the condition of a light source, where it is connected to the power supply but the light sources ~~are~~ intentionally not emitting light, and the light source is awaiting a control signal ~~(from a source different from a network)~~ to return to a state with light emission. Lighting control parts enabling the standby function shall be in their control mode. Non-lighting parts shall be disconnected or switched off or their power consumption shall be minimised following manufacturer's instructions;

~~(15)~~(19) 'networked standby mode' means the condition of a ~~connected light source (CLS)~~ where it is connected to the power supply but the light source is intentionally not emitting light and is awaiting a remotely initiated trigger to return to a state with light emission. Lighting control parts shall be in their control mode. Non-lighting parts shall be disconnected or switched off or their power consumption shall be minimised following manufacturer's instructions;

~~(16)~~(20) 'control mode' means the condition of lighting control parts where they are connected to the light source and performing their functions in such a way that a control signal can be internally generated or a remotely initiated trigger can be received, by wire or wireless, and processed to lead to a change in the light emission of the light source;

~~(17)~~(21) 'remotely initiated trigger' means a signal that comes from outside the light source via a network;

~~(18)~~(22) 'control signal' means an analogue or digital signal transmitted to the light source wirelessly or wired either via voltage modulation in separate control cables or via a modulated signal in the supply voltage. The signal transmission is not through a network but e.g. from an internal source or from a remote control delivered with the product;

(19)(23) 'network' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);

(20)(24) 'on-mode power' (P_{on}), expressed in W_{watt} , means the electric power consumption of a light source in full-load with all lighting control parts and non-lighting parts disconnected. If these parts cannot be disconnected, they shall be switched off or their power consumption shall be minimised following the manufacturer's instructions. In case of a ~~non-mains light source (NMLS)~~ that requires a separate control gear to operate, P_{on} can be measured directly on the input to the light source, or P_{on} is determined using a control gear with known efficiency, whose electric power consumption is subsequently subtracted from the measured mains power input value;

(21)(25) 'standby power' (P_{sb}), expressed in W_{watt} , is the electric power consumption of a light source in standby mode;

(22)(26) 'networked standby power' (P_{net}), expressed in W_{watt} , is the electric power consumption of a ~~connected light source (CLS)~~ in networked standby mode;

(23)(27) 'reference control settings' (RCS) means a control setting or a combination of control settings that is used to verify compliance of a light source with this Regulation. These settings are relevant for light sources that allow the end-user to control, manually or automatically, directly or remotely, the luminous intensity, colour, correlated colour temperature, spectrum, and/or beam angle of the emitted light.

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

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

The light source manufacturer shall define the reference control settings such that:

- the light source is within the scope of this Regulation according to Article 1 and none of the conditions for exemption applies;
- lighting control parts and non-lighting parts are disconnected or switched-off, or, in case this is not possible, the power consumption of these parts is minimal;
- the full-load condition is obtained;
- when the end-user opts to reset factory defaults, the reference control settings are obtained.

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

- | ~~(24)~~(28) 'high-pressure mercury 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;
- | ~~(25)~~(29) 'metal halide light source' (MH) means a high intensity discharge light source in which the light is produced by radiation from a mixture of metallic vapour, metal halides and the products of the dissociation of metal halides. MH light sources may have one ('single-ended') or two ('double-ended') connectors to their electricity supply. The material for the arc tube of MH light sources can be quartz (QMH) or ceramic (CMH);
- | ~~(26)~~(30) 'compact fluorescent light source' (CFL) means a single-capped fluorescent light source with a bent-tube construction designed to fit in small spaces. CFLs may be primarily spiral-shaped (i.e. curly forms) or primarily shaped as connected multiple parallel tubes, with or without a second bulb-like envelope. CFLs are available with (CFLi) or without (CFLni) physically integrated control gear;
- | ~~(27)~~(31) 'T2', 'T5', 'T8', 'T9' and 'T12' means a tubular light source with diameter of approximately 7, 16, 26, 29 and 38 mm respectively, as defined in standards. The tube can be straight (linear) or bent (e.g. U-shaped, circular);
- | ~~(28)~~(32) 'LFL T5-HE' means a high-efficiency linear fluorescent T5 light source with driving current lower than 0,2 A;
- | ~~(29)~~(33) 'LFL T5-HO' means a high-output linear fluorescent T5 light source with driving current higher than or equal to 0,2 A;
- | ~~(30)~~(34) 'HL R7s' means a mains-voltage, double-capped, linear halogen light source with a cap diameter of 7 mm;
- | ~~(31)~~(35) 'battery-operated' means a product that 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;
- | ~~(32)~~(36) 'second envelope' means a second outer envelope on a 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. In determining the presence of a second envelope, the HID arc tubes shall not count as an envelope;
- | ~~(33)~~(37) 'non-clear envelope' for a HID light source means a non-transparent outer envelope or outer tube in which the light producing arc tube is not visible;
- | ~~(34)~~(38) 'anti-glare shield' 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. It does not include surface coating of the light emitter in the directional light source;

~~(35)~~(39) '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. The fluctuations can be periodic and non-periodic and may be induced by the light source itself, the power source or other influencing factors.

The metric for flicker used in this Regulation is the parameter 'Pst LM', where 'st' stands for short term and 'LM' for light flickermeter method, as defined in standards. A value Pst LM=1 means that the average observer has a 50 % probability of detecting flicker;

~~(36)~~(40) '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. The fluctuations can be periodic and non-periodic and may be induced by the light source itself, the power source or other influencing factors.

The metric for the stroboscopic effect used in this Regulation is the 'SVM' (stroboscopic visibility measure), as defined in standards. SVM = 1 represents the visibility threshold for an average observer;

~~(37)~~(41) 'R9' means the colour rendering index for a red coloured object as defined in standards;

~~(38)~~(42) 'declared value' for a parameter means the value given by the supplier in the technical documentation pursuant to Article 3(3) of Regulation (EU) 2017/1369;

~~(39)~~(43) '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;

~~(40)~~(44) '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;

~~(41)~~(45) 'colour consistency' means the maximum deviation of the initial (after a short period of time), 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);

~~(42)~~(46) 'displacement factor (cos ϕ_1)' means the cosine of the phase angle ϕ_1 between the fundamental harmonic of the mains supply voltage and the fundamental harmonic of the mains current. It is used for mains light sources using LED- or OLED-technology. The displacement factor 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;

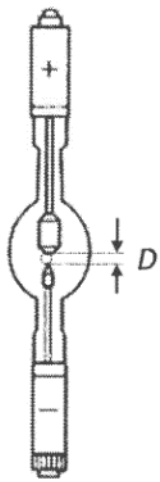
~~(43)~~(47) 'lumen maintenance factor' (X_{LMF}) means the ratio of the luminous flux emitted by a light source at a given time in its life to the initial luminous flux;

- | (44)(43) 'survival factor' (SF) means the defined fraction of the total number of light sources that continue to operate at a given time under defined conditions and switching frequency;
- | (45)(49) 'lifetime' for LED and OLED light sources means the time in hours between the start of their use and the moment when for 50 % of a population of light sources the light output has gradually degraded to a value below 70 % of the initial luminous flux. This is also referred to as the $L_{70}B_{50}$ lifetime;
- | (46) ~~'equivalent model' means a model with the same relevant technical and performance characteristics as another model placed on the market under a different commercial code;~~
- | (50) 'display mechanism' means any screen, including tactile screen, or other visual technology used for displaying internet content to users;
- | (51) 'tactile screen' means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;
- | (52) 'nested display' means visual interface where an image or data set is accessed by a mouse click, mouse roll-over or tactile screen expansion of another image or data set;
- | (53) 'alternative text' means text provided as an alternative to a graphic allowing information to be presented in non- graphical form where display devices cannot render the graphic or as an aid to accessibility such as input to voice synthesis applications
- | (47)(54) 'projected light-emitting surface area (A)' is the surface area in mm² (square millimetres) of the view in an orthographic projection of the light-emitting surface from the direction with the highest light intensity, where the light-emitting surface area is the surface area of the light source that emits light with the declared optical characteristics, such as the approximately spherical surface of an arc (a), cylindrical surface of a filament coil (b) or a gas discharge lamp (c, d), flat or semi-spherical envelope of a light-emitting diode (e).

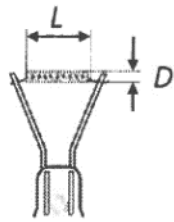
For light sources with a non-clear envelope or with anti-glare shield, the light-emitting surface area is the entire area through which light leaves the light source.

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

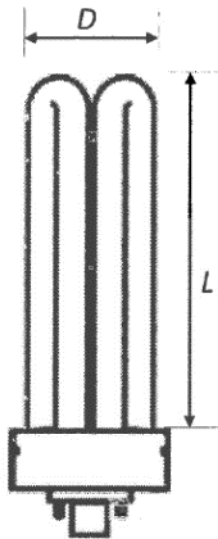
For HID light sources definition (a) applies, unless the dimensions defined in (d) apply with $L > D$, where L is the distance between the electrode tips and D the inner diameter of the arc tube.



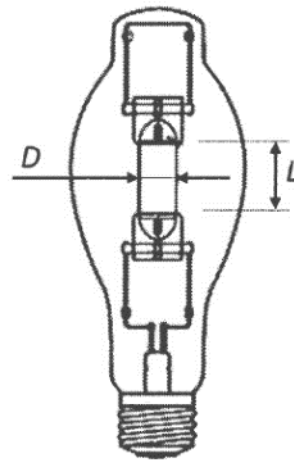
(a)
 $A = \frac{1}{4}\pi D^2$



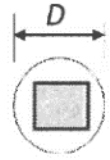
(b)
 $A = L \cdot D$



(c)
 $A = L \cdot D$



(d)
 $A = L \cdot D$



(e)
 $A = \frac{1}{4}\pi D^2$

ANNEX II

Energy efficiency classes and calculation method

The energy efficiency class of light sources shall be determined as set out in Table 1, on the basis of the ~~The~~ total mains efficacy η_{TM} , which is calculated by dividing the declared useful luminous flux Φ_{use} (expressed in lm) by the declared on-mode power consumption P_{on} (expressed in W) and multiplying by the applicable factor F_{TM} of Table 2, i.e.:

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

~~efficacy values expressed in total mains efficacy η_{TM} which is defined as the total initial luminous flux (in lm) divided by mains power input (in W) (lm/W) as set out in Table 1.~~

Table 1: Energy efficiency classes of light sources

Energy efficiency class	Total mains efficacy η_{TM} (lm /W)
A (most efficient)	$210 \leq \eta_{TM}$
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 (least efficient)	$\eta_{TM} < 85$

~~The total mains efficacy η_{TM} is calculated by dividing the declared useful luminous flux Φ_{use} (expressed in lm) by the declared on-mode power consumption P_{on} (expressed in W) and multiplying by the applicable factor F_{TM} of Table 2, i.e.:~~

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

Table 2: Factors F_{TM} by light source type

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

ANNEX III
Label for light sources

1. LABEL

If the light source is intended to be marketed through a point of sale, a label produced in the format and containing information as set out in this Annex is ~~placed or printed on, or attached to, the outside of the individual packaging.~~

Suppliers shall choose a label format between point 1.1 and point 1.2 of this Annex.

The label shall be:

- for the standard sized label at least 36 mm wide and 75 mm high;
- for the small sized label (width less than 36 mm) at least 20 mm wide and 54 mm high.

The packaging shall not be smaller than 20 mm wide and 54 mm high.

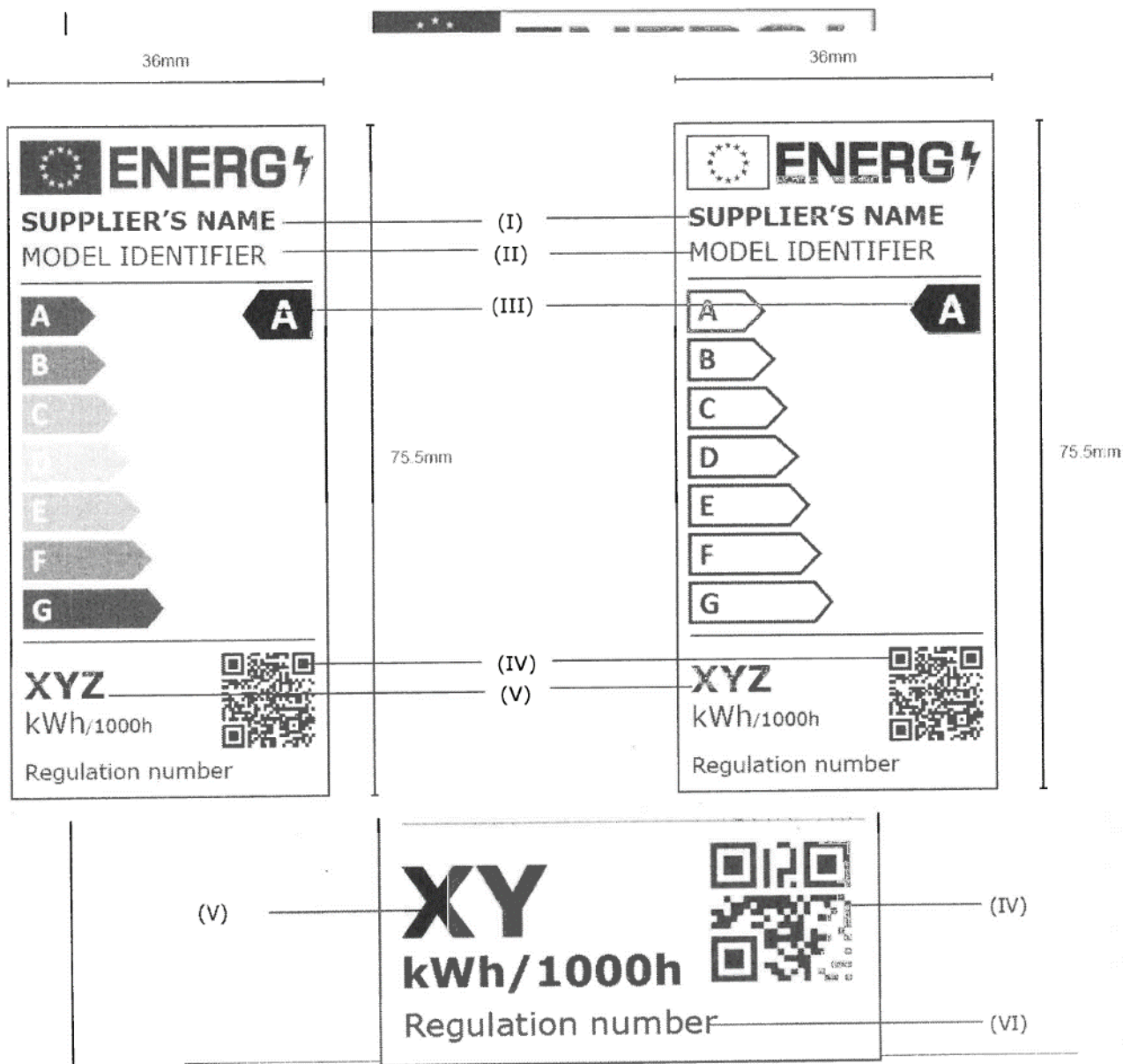
Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above. The small size label shall not be used with a width of 36 mm or more.

The label and the arrow indicating the energy class may be printed in monochrome as specified in point 1.1 and 1.2, only if all other information, including graphics, on the packaging is printed in monochrome.

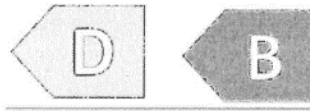
In the case referred to in Article 4(e) the rescaled label shall have a format and size that permits it to cover and adhere to the old label.

1.1. Standard-sized label:

~~1.1.~~ The label shall be:



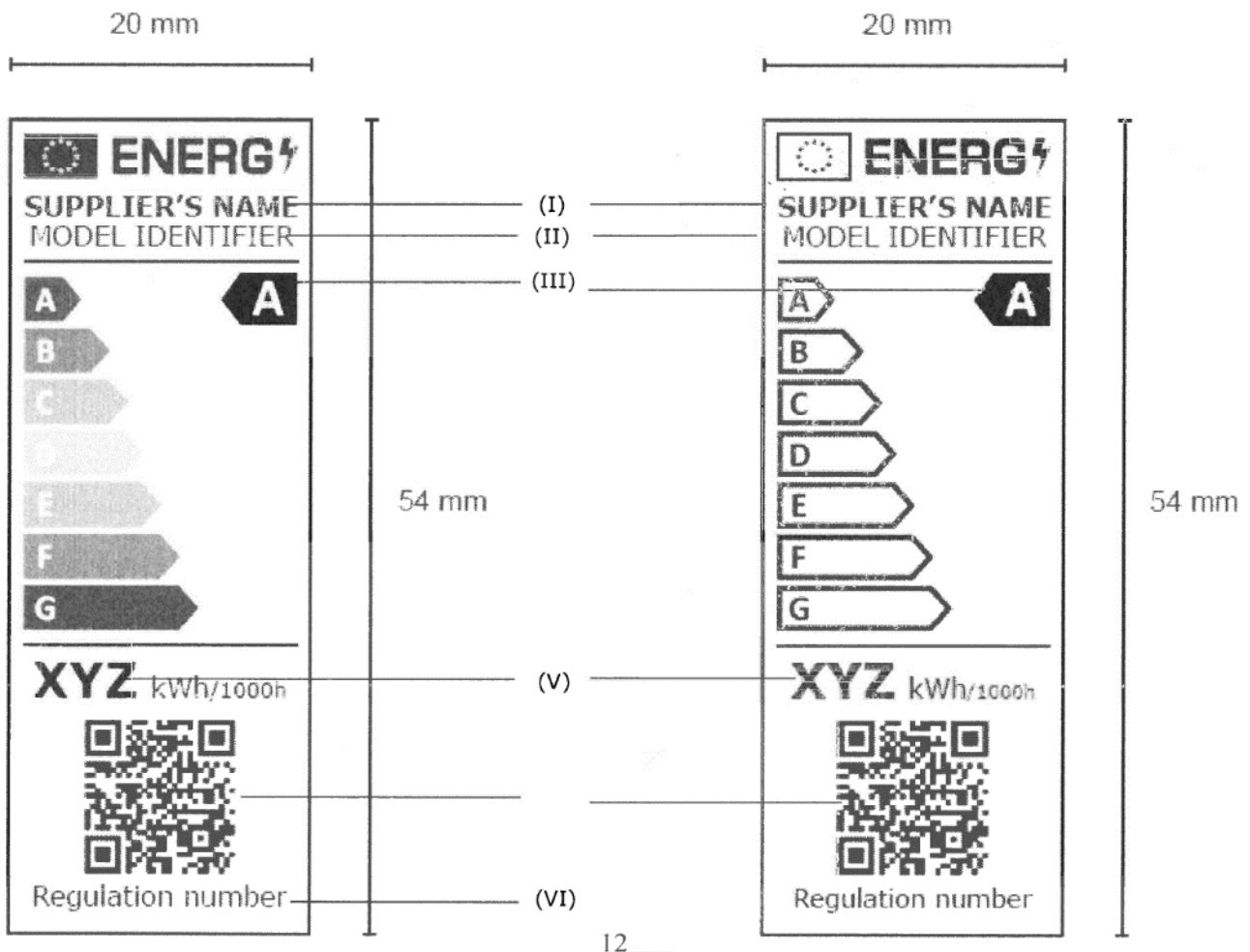
If the label is not printed on the part of the packaging meant to face the prospective customer, an arrow containing the letter of the energy efficiency shall be as displayed as hereafter, with the colour of the arrow matching the letter and the colour of the energy class. The size shall be such that the label is clearly visible and legible. The letter in the efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0.5 pt in black placed around the arrow and the letter of the efficiency class.

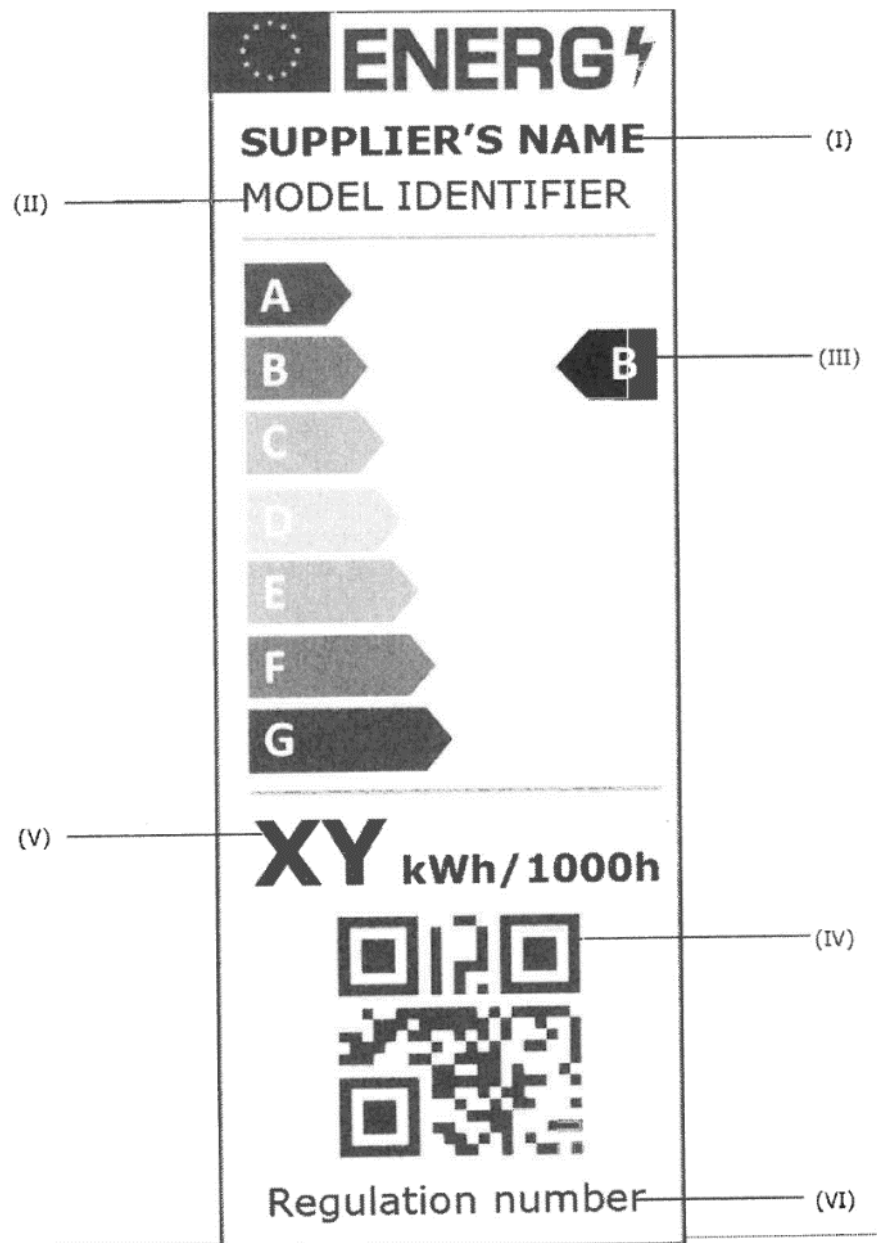


[add picture of monochrome arrow, with an A to G scale]

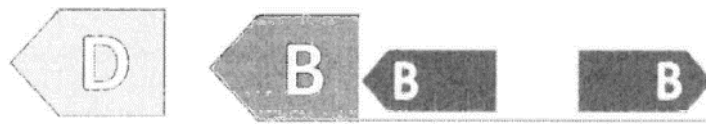
1.2. Small-sized L-label for small packaging:

For a part of the packaging which is not meant to face the prospective buyer/customer, the label shall be:



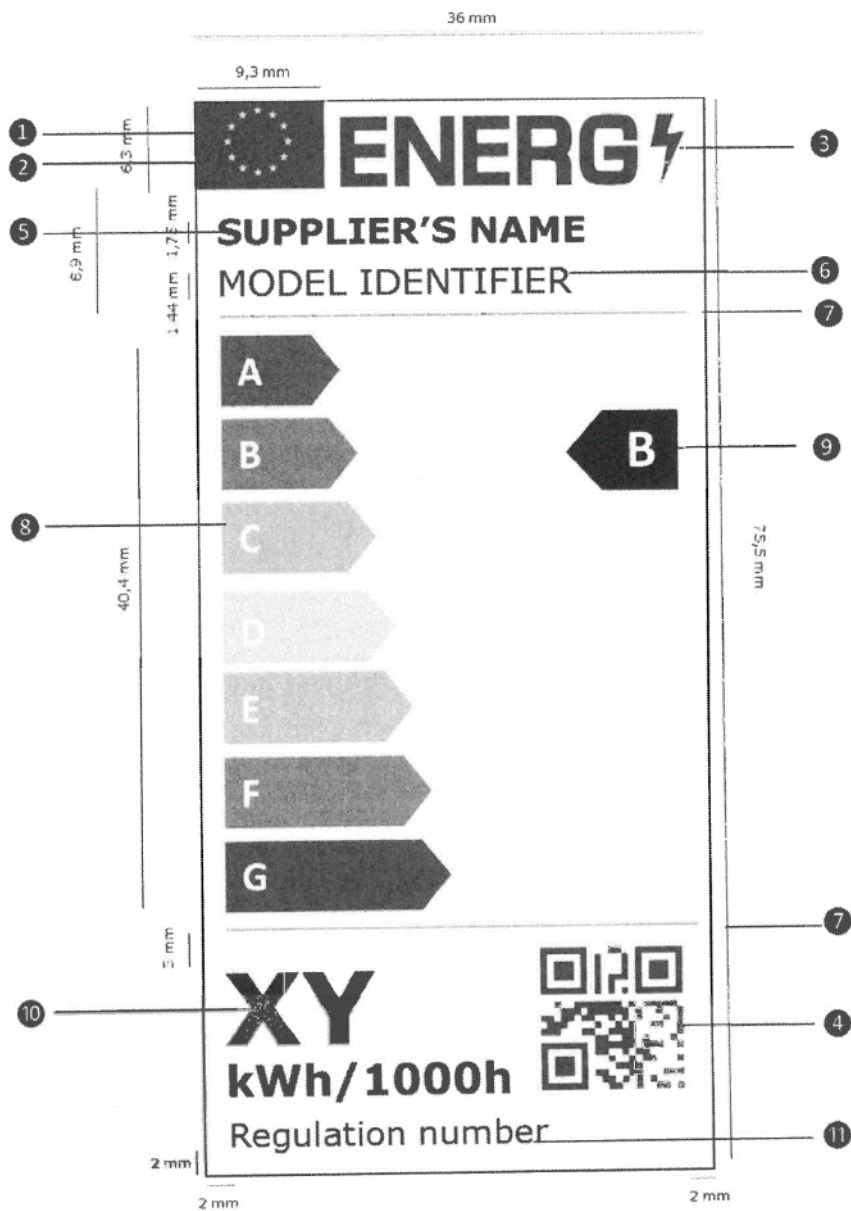


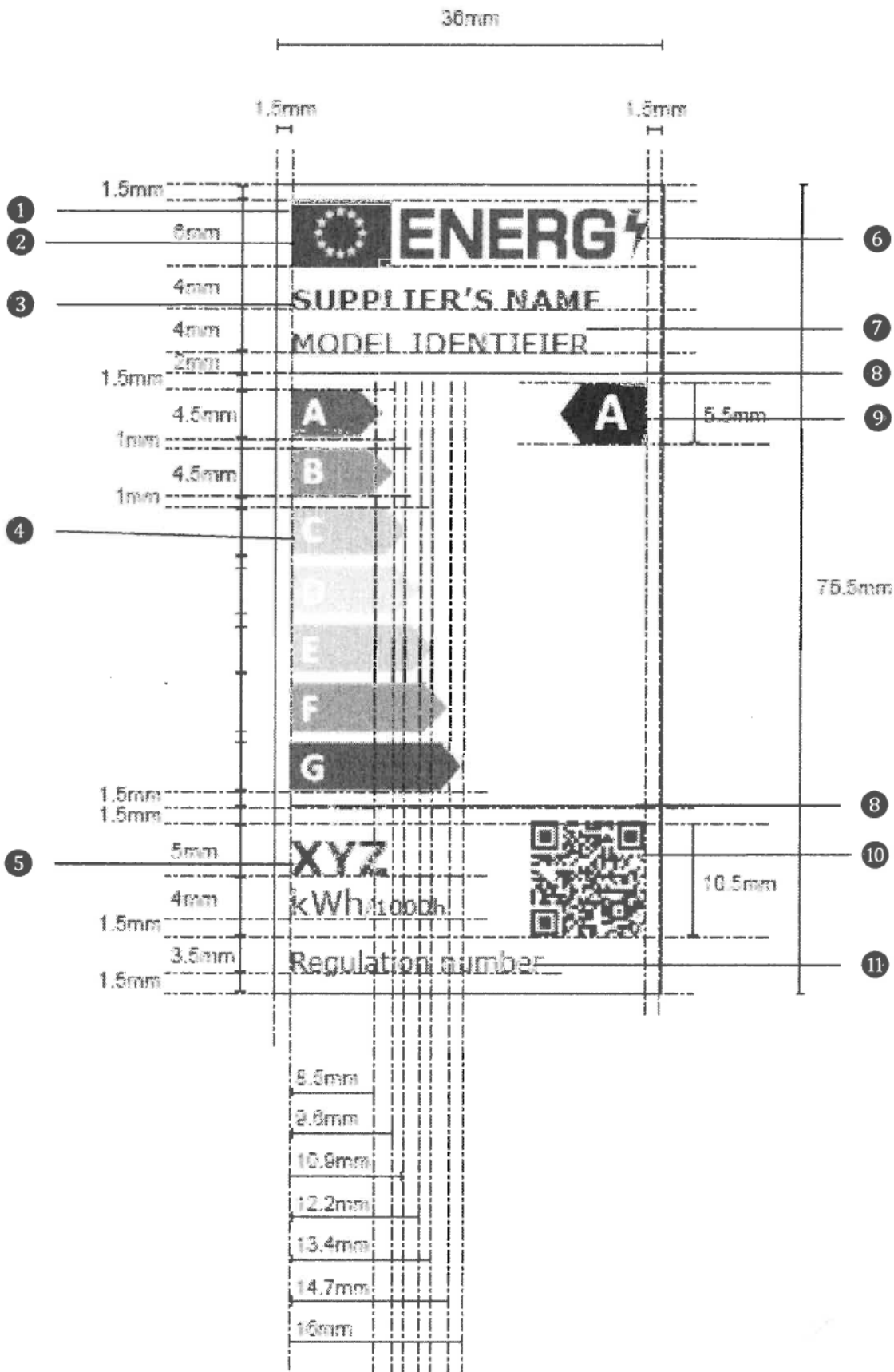
If the label is not printed on ~~For the part of the packaging meant to face the prospective buyer/customer, the~~ an arrow containing the letter of the energy efficiency shall be as displayed as hereafter, with the colour of the arrow matching the letter and the colour of the energy class. The size shall be such that the label is clearly visible and legible. The letter in the efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0.5 pt in black placed around the arrow and the letter of the efficiency class. ~~in one of the two following formats:~~



[add picture of monochrome arrow, and A to G scale]~~The colour of the arrow shall match the colour of the energy class.~~

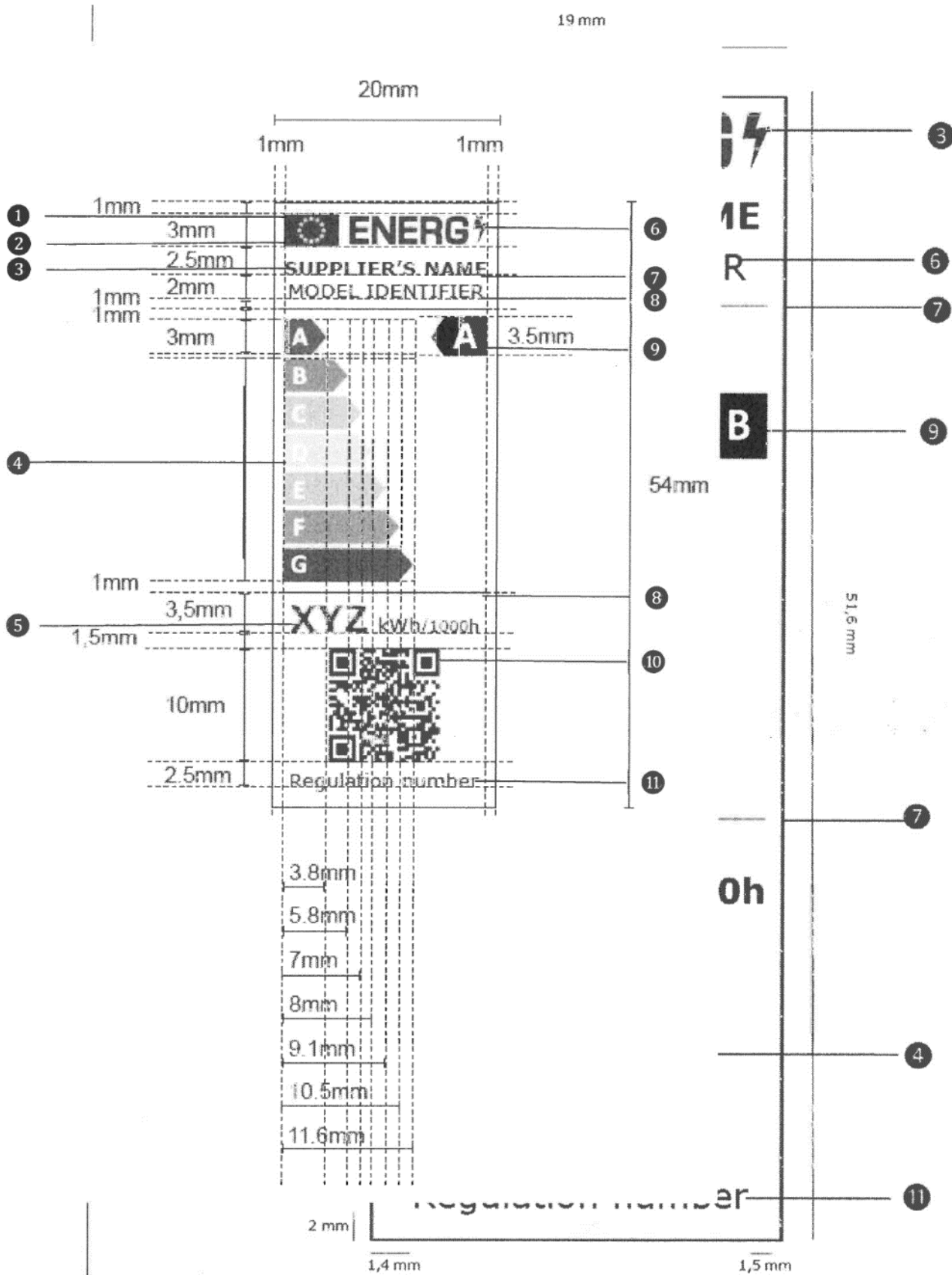
- 1.3. The following information shall be included in the label for light sources:
 - I supplier's name or trade mark;
 - II supplier's model identifier;
 - III the energy efficiency class; the head of the arrow containing the energy efficiency class shall be placed at the same height as the head of the arrow of the relevant energy efficiency class;
 - IV the QR-code; ~~linking to the model information available in the public part of the product database;~~
 - V the energy consumption, expressed in kWh of electricity consumption per 1000 hours of light source in on-mode operation;
 - VI the number of this Regulation, that is *[OP- please insert the number of this Regulation]*.
2. LABEL DESIGN
 - 2.1. Standard label:





2.2. Small sized E-label for small packaging:

~~For small packaging, the label can be in the following format, for a part of the packaging which is not meant to face the prospective buyer:~~



2.3. Description:

Whereby:

~~— The label shall be:~~

~~— for the standard size at least 36 mm wide and 75 mm high;~~

~~— for the small packaging at least 20 mm wide and 54 mm height.~~

~~Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above.~~

(a) ~~The dimensions and specifications of the elements in the label shall be as indicated in the label designs in points 2.1. and 2.2.~~

~~(a)(b)~~ ~~The background of the label shall be white.~~

~~(b)(c)~~ ~~The single typeface shall be Verdana and Calibri.~~

(d) ~~Colours shall be CMYK – cyan, magenta, yellow and black, following this example: 0-70-100-0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black.~~

(e) ~~The label shall fulfil all the following requirements (numbers refer to the numbers in the black bullets in the figure above):~~

(1) ~~the colour of the energy logo shall be: 100,80,0,0;~~

(2) ~~the colours of the EU logo shall be as follows:~~

~~– the background: 100,80,0,0;~~

~~– the stars: 0,0,100,0;~~

(3) ~~the supplier's name shall be in colour 100 % black and in Verdana Bold, 8 pt – 5 pt (normal size - small size);~~

(4) ~~the A to G scale shall be as follows:~~

~~– the colour of the energy rating scale shall be 100 % white and in Calibri Bold font 10 pt – 7 pt (normal size – small size);~~

~~– the colours of the energy rating scale arrows shall 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;~~

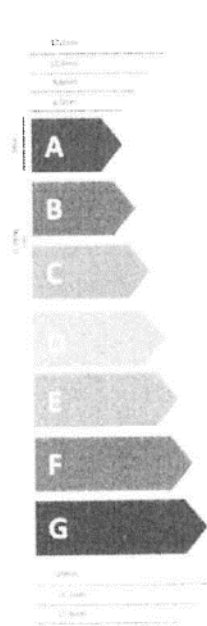
~~– F-class: 0,70,100,0;~~

~~– G-class: 0,100,100,0;~~

(5) ~~the QR code shall be 100 % black;~~

- (6) the model identifier shall be 100 % black and in Verdana Regular font 8 pt – 5 pt (normal size - small size);
- (7) the dividers shall have a weight of 0,5 pt. The colour of the divider shall be 100 % black;
- (8) the colour of the letter of the energy efficiency class shall be in 100 % white and in Calibri Bold font 14 pt – 10 pt (normal size – small size), with the background 100 % black. The rating scale arrow and the energy efficiency class arrow shall be positioned in such a way that their tips are aligned. The letter in the efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow;
- (9) the annual energy consumption value shall be in Verdana Bold font 12 pt – 9 pt (normal size – small size); 'kWh' shall be in Verdana Regular font 9 pt – 5 pt; '1000h' shall be in Verdana Regular font 6 pt – 4 pt, in 100 % black;
- (10) the numbering of the regulation shall be in 100 % black and in Verdana Regular font 7 pt – 5 pt (normal size – small size).
- (e) [Check for monochrome labels and arrows]
- (d) The label shall fulfil all the following requirements (numbers refer to the numbers in the black bullets in the figures above):
 - (1) the border of the label shall have weight of 1 pt;
 - (2) the colour of the background of the EU logo shall be 1,80,0,0 and the colour of the stars shall be 0,0,100,0;
 - (3) the colour of the energy logo shall be 100,80,0,0;
 - (4) the colour of the QR code shall be 100,80,0,0 and the minimum size 10 x 10 mm;
 - (5) the supplier's name shall be in colour black in font bold, 9 pt;
 - (6) the model identifier shall be in colour black in font regular, 9 pt;
 - (7) the dividers shall be 86 mm wide and have a weight of 1 pt. The colour of the divider shall be 39,4,0,62;
 - (8) the A to G scale shall be as follows:
 - the colour of the energy rating scale shall be in colour white, and font bold, 19 pt;
 - the dimensions and colours of the energy rating scale for the standard label shall be as follows:

Colours (CMYK)
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

(9) — the energy efficiency class shall be as follows:

- the colour of the letter shall be white and the font shall be in bold, 33 pt and positioned in such a way that the edges of the rating scale arrow and the energy efficiency class arrow are aligned;
- the dimensions and colour shall be as follows:

Rating scale and class	Colours (CMYK)
	The arrow: 0-0-0-100

(10)(11) — the annual energy consumption and kWh shall be in font bold, 26 pt, "annum" shall be in font bold, 16 pt; and the text shall be centred.

ANNEX IV

Exemptions

1. This Regulation shall not apply to light sources specifically tested and approved to operate:
- (a) in radiological and nuclear medicine installations, as defined in Article 3 of Directive 2009/71/EURATOM²;
 - ~~(b) for emergency use, as set out in Directive 2014/35/EU³;~~
 - ~~(b)(c)~~ in or on military or civil defence establishments, equipment, ground vehicles, marine equipment or aircraft as set out in Member States' regulations or in documents issued by the European Defence Agency;
 - ~~(e)(d)~~ in or on motor vehicles, their trailers and systems, interchangeable towed equipment, components and separate technical units, as set out in Regulation (EC) No 661/2009 of the European Parliament and of the Council⁴, Regulation (EU) No 167/2013 of the European Parliament and of the Council⁵ and Regulation (EU) No 168/2013 of the European Parliament and of the Council⁶;
 - (e) in or on non-road mobile machinery as set out in Regulation (EU) 2016/1628 of the European Parliament and of the Council⁷ and in or on their trailers
 - ~~(d)(f)~~ in or on interchangeable equipment as set out in Directive 2006/42/EC⁸ intended to be towed or to be mounted and fully raised from the ground or that cannot articulate around a vertical axis when the vehicle to which it is attached is in use on a road by vehicles as set out in Regulation (EU) No 167/2013⁹;
 - ~~(e)(g)~~ in or on civil aviation aircrafts as set out in Commission Regulation (EU) No 748/2012¹⁰;

² Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations, OJ L 172, 2.7.2009, p. 18

³ ~~Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits, OJ L 96, 29.3.2014, p. 357.~~

⁴ Regulation (EC) No 661/2009 of the European Parliament and of the Council of 13 July 2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor, OJ L 200, 31.7.2009, p.1-24

⁵ Regulation (EU) No 167/2013 of the European Parliament and of the Council of 5 February 2013 on the approval and market surveillance of agricultural and forestry vehicles, OJ L60, 2.3.2013, p. 1–51

⁶ Regulation (EU) No 168/2013 of the European Parliament and of the Council of 15 January 2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles, OJ L60, 2.3.2013, p. 52

⁷ Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC, OJ L252, 16.9.2016, p. 53–117

⁸ Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast), OJ L 157, 9.6.2006, p. 24–86

⁹ Regulation (EU) No 167/2013 of the European Parliament and of the Council of 5 February 2013 on the approval and market surveillance of agricultural and forestry vehicles, OJ L 60, 2.3.2013, p. 1–51

¹⁰ Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations, OJ L 224, 21.8.2012, p. 1-85

~~(b)(h)~~ in railway vehicle lighting as set out in Directive 2008/57/EC of the European Parliament and of the Council¹¹;

~~(g)(i)~~ in marine equipment as set out in Directive 2014/90/EU of the European Parliament and of the Council¹²;

~~(h)(j)~~ in medical devices as set out in Council Directive 93/42/EEC¹³ or Regulation (EU) 2017/745¹⁴ and in vitro medical devices as set out in Directive 98/79/EC of the European Parliament and of the Council¹⁵.

For the purpose of this point, 'specifically tested and approved' means that the light source:

- has been specifically tested for the mentioned operating condition or application, according to the European legislation mentioned or related implementing measures, or relevant European or international standards or, in the absence of these, according to relevant Member States legislation; and
- is accompanied by evidence, to be included in the technical documentation, in the form of a certificate, a type approval mark, a test report ~~or other documentation~~, that the product has been specifically approved for the mentioned operating condition or application; and
- is placed on the market specifically for the mentioned operating condition or application, as evidenced at least by the technical documentation, and except for point (d), information on the packaging and any advertising or marketing materials.

2. In addition, this Regulation shall not apply to:

- (a) electronic displays (e.g. televisions, computer monitors, notebooks, tablets, mobile phones, e-readers, game consoles), including but not limited to displays within the scope of Commission Regulation (EU) *[OP- please insert here the references of the regulation on ecodesign requirements for electronic displays and TV review]* Commission Regulation (EU) No 617/2013¹⁶, ~~Commission Decision (EU) 2015/1402¹⁷, Commission Regulation (EC) No 642/2009¹⁸,~~

¹¹ Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community (Recast). OJ L 191, 18.7.2008, p. 1–45

¹² Directive 2014/90/EU of the European Parliament and of the Council of 23 July 2014 on marine equipment and repealing Council Directive 96/98/EC. OJ L 257, 28.8.2014, p. 146–185

¹³ Council Directive 93/42/EEC of 14 June 1993 concerning medical devices. OJ L 169, 12.7.1993, p. 1

¹⁴ Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC. OJ L 117, 5.5.2017, p. 1–175

¹⁵ Directive 98/79/EC of the European Parliament and of the Council of 27 October 1998 on in vitro diagnostic medical devices. OJ L 331, 7.12.1998, p. 1

¹⁶ Commission Regulation (EU) No 617/2013 of 26 June 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for computers and computer servers. OJ L 175, 27.6.2013, p. 13 (computers)

¹⁷ Commission Decision (EU) 2015/1402 of 15 July 2015 determining the European Union position with regard to a decision of the management entities under the Agreement between the Government of the United States of America and the European Union on the coordination of energy-efficiency labelling programmes for office equipment on the revision of specifications for computers included in Annex C to the Agreement. OJ L 217, 18.8.2015, p. 9 (office equipment: computers)

~~Commission Decision (EU) 2016/1756¹⁹; Commission Communication COM(2015)178²⁰;~~

- (b) light sources in range hoods within the scope of Commission Delegated Regulation (EU) No 65/2014²¹;
- (c) light sources in battery-operated products, including but not limited to e.g. torches, mobile phones with an integrated torch light, toys including light sources, desk lamps operating only on batteries, armband lamps for cyclists, solar-powered garden lamps;

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

light sources for spectroscopy and photometric applications, such as for example UV-VIS spectroscopy, molecular spectroscopy, atomic absorption spectroscopy, nondispersive infrared (NDIR), fourier-transform infrared (FTIR), medical analysis, ellipsometry, layer thickness measurement, process monitoring or environmental monitoring;

~~(d) light sources that do not comply with requirements becoming applicable with Commission Regulation (EU) [OP please insert here the number of the accompanying ecodesign regulation for light sources and separate control gears (review)] implementing Directive 2009/125/EC of the European Parliament and of the Council.~~

3. Any light source within the scope of this Delegated Regulation shall be exempt from the requirements of this Regulation, with the exception of the requirements set out in Annex V, point 3, if it is specifically designed and marketed for its intended use in at least one of the following applications:

- (a) signalling (including, but not limited to, road-, railway-, marine- or air traffic-signalling, traffic control or airfield lamps);
- (b) image capture and image projection (including, but not limited to, photocopying, printing (directly or in pre-processing), lithography, film and video projection, holography);
- (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 emitting 5 % or more of total radiation power of the range 250-800 nm in the range of 250-315 nm and/or 20 % or more of total radiation

¹⁸ ~~Commission Regulation (EC) No 642/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for televisions, OJ L 191, 23.7.2009, p.42 (televisions)~~

¹⁹ ~~OJ L 268, 1.10.2016, p.90 (office equipment, displays)~~

²⁰ ~~COM(2015) 178 final, 22.4.2015 (related to self-regulatory initiative regarding game consoles)~~

²¹ ~~Commission Delegated Regulation (EU) No 65/2014 of 1 October 2013 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, OJ L 29, 31.1.2014, p.1~~

power of the range 250-800 nm in the range of 315-400 nm, and intended for disinfection or fly trapping;

- (f) light sources having the primary purpose to emit 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 $>1.2 \mu\text{mol/J}$, 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.

— LED or OLED light sources, complying with the definition of 'original works of art' as defined in Directive 2001/84/EC²², made by the artist him/herself in a limited number below 10 pieces;

(k) _____

4. ~~Light sources in refrigerating appliances within the scope of Commission Delegated Regulation (EU) [OP please insert the number of the regulation on energy labelling for refrigerating appliances (review)] shall be only subject to the requirements for light sources laid down in that Regulation when the light sources are not placed on the Union market before they are integrated into the refrigerating appliance.~~

²² Directive 2001/84/EC of the European Parliament and of the Council of 27 September 2001 on the resale right for the benefit of the author of an original work of art, OJ L 272, 13.10.2001, p. 32–36

ANNEX V
Product information

1. Product information sheet

- 1.1. The information ~~part of~~ in the product information sheet of a light source referred pursuant to ~~in~~ point 1(b) of Article 3-(1)(b), including when the light source is a part in a containing product, shall be ~~provided~~ entered into the product database by the supplier according to table 3. ~~in the following order and shall be included in the product brochure or other literature provided with the product:~~

Table 3: Product information sheet

<u>Supplier's name or trade mark:</u>			
<u>Supplier's address^a:</u>			
<u>Model identifier:</u>			
<u>Type of light source:</u>			
<u>Lighting technology used:</u>	[HL/LFL T5 HE/ LFL T5 HO/CFLni/ other FL/ HPS/ MH/ other HID/ LED/ OLED/mixed/other]	<u>Non-directional or directional:</u>	[NDLS/DLS]
<u>Mains or non-mains:</u>	[MLS/NMLS]	<u>Connected light source (CLS):</u>	[yes/no]
<u>Colour-tuneable light source:</u>	[yes/no]	<u>Envelope:</u>	[no/second/non-clear]
<u>High luminance light source:</u>	[yes/no]		
<u>Anti-glare shield:</u>	[yes/no]	<u>Dimmable:</u>	[yes/only with specific dimmers/no]
<u>Product parameters</u>			
<u>Parameter</u>	<u>Value</u>	<u>Parameter</u>	<u>Value</u>
<u>General product parameters:</u>			
<u>Energy consumption in on-mde (kWh/1000 h)</u>	<u>x</u>	<u>Energy efficiency class</u>	[A/B/C/D/E/F/G]

<u>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°)</u>		<u>x in [sphere/wide cone/narrow cone]</u>	<u>Correlated colour temperature, rounded to the nearest 100 K, or the range of correlated colour temperatures, rounded to the nearest 100 K, that can be set</u>	<u>[x/x...x]</u>
<u>On-mode power (P_{on}), expressed in W</u>		<u>x</u>	<u>Standby power (P_{sb}), expressed in W and rounded to the second decimal</u>	<u>x</u>
<u>Networked standby power (P_{net}) for CLS, expressed in W and rounded to the second decimal</u>		<u>x</u>	<u>Colour rendering index, rounded to the nearest integer, or the range of CRI-values that can be set</u>	<u>[x/x...x]</u>
<u>Outer dimensions without separate control gear, lighting control parts and non-lighting control parts, if any (millimetre)</u>	<u>Height</u>	<u>x</u>	<u>Spectral power distribution in the range 250 nm to 800 nm, at full-load</u>	<u>[graphic]</u>
	<u>Width</u>	<u>x</u>		
	<u>Depth</u>	<u>x</u>		
<u>Claim of equivalent power^c</u>		<u>[yes/-]</u>	<u>If yes, equivalent power (W)</u>	<u>x</u>
		<u>x</u>	<u>Chromaticity coordinates (x and y)</u>	<u>x</u> <u>x</u>
<i>Parameters for directional light sources:</i>				
<u>Peak luminous intensity (cd)</u>		<u>x</u>	<u>Beam angle in degrees, or the range of beam angles that</u>	<u>[x/x...x]</u>

		can be set	
<u>Parameters for LED and OLED light sources:</u>			
<u>R9 colour rendering index value</u>	<u>x</u>	<u>Survival factor</u>	<u>x</u>
<u>the lumen maintenance factor</u>	<u>x</u>		
<u>Parameters for LED and OLED mains light sources:</u>			
<u>displacement factor (cos φ1)</u>	<u>x</u>	<u>Colour consistency in McAdam ellipses</u>	
<u>Claims that a LED lamp replaces a fluorescent lamp without integrated ballast of a particular wattage.</u>	<u>[yes/-]^d</u>	<u>If yes then replacement claim (W)</u>	<u>x</u>
<u>Flicker (Pst LM)</u>	<u>x,x</u>	<u>Stroboscopic effect (SVM)</u>	<u>x,x</u>
<u>If yes:</u>	<u>Highest deviation of luminous intensity in any direction around the tube axis as a percentage of the average luminous intensity around the tube^c</u>		
<u>If yes:</u>	<u>luminous flux of the LED lamp as a percentage of the luminous flux of the fluorescent lamp^d</u>		
^a changes to these items shall not be considered relevant for the purposes of point 4 of Article 4 of Regulation (EU) 2017/1369. ^b if the product database automatically generates the definitive content of this cell the supplier shall not enter these data. ^c -: not applicable;			

yes: An equivalence claim involving the power of a replaced lamp type may be given only if the lamp type is listed in Table X for directional lamps and in Table X+3 for non-directional lamps. For directional lamps the luminous flux of the lamp in a 90° cone (Φ_{90°) is not lower than the corresponding reference luminous flux in Table X. The reference luminous flux shall be multiplied by the correction factor in Table X+1. For LED lamps, it shall be in addition multiplied by the correction factor in Table X+2. The intermediate values of both the luminous flux and the claimed equivalent lamp power (rounded to the nearest 1 W) shall be calculated by linear interpolation between the two adjacent values.

Table X [= Table 6 in Annex III of Regulation 1194/2012]

Reference luminous flux for equivalence claims

Extra-low voltage reflector type		
Type	Power (W)	Reference Φ_{90° (lm)
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

etc

Table X+1 [= Table 7 in Annex III of Regulation 1194/2012]

Multiplication factors for lumen maintenance

Lamp type	Luminous flux multiplication factor
Halogen lamps	1
Compact fluorescent lamps	1,08
LED lamps	$1 + 0,5 \times (1 - LLMF)$ where LLMF is the lumen maintenance factor at the end of the nominal life

Table X+2 [= Table 8 in Annex III of Regulation 1194/2012]

Multiplication factors for LED lamps

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

Table X+3 [note: rated lamp luminous flux in first column]

	Claimed equivalent incandescent lamp power
LED and other lamps	[W]
136	15
249	25
470	40
806	60
1 055	75
1 521	100
2 452	150
3 452	200

^d -: not applicable;

yes: Claim that an LED lamp replaces a fluorescent lamp without integrated ballast of a particular wattage. This claim may be made only if:

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

— the luminous flux of the LED lamp is not lower than the luminous flux of the fluorescent lamp of the claimed wattage. The luminous flux of the fluorescent lamp shall be obtained by multiplying the claimed wattage with the minimum luminous efficacy value corresponding to the fluorescent lamp in table X+4. and

— the wattage of the LED lamp is not higher than the wattage of the fluorescent lamp it is claimed to replace.

The technical documentation file shall provide the data to support such claims.

Table X+4

Rated minimum efficacy values for T8 and T5 lamps

T8 (26 mm Ø)		T5 (16 mm Ø) High Efficiency		T5 (16 mm Ø) High Output	
Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value
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				

^c may not be more than 25%
^d may not be less than 100%

- ~~(a) — supplier's name or trade mark, address, contact details and other legal identification of the supplier;~~
- ~~(b) — supplier's model identifier, meaning the code, usually alphanumeric, which distinguishes a specific light source model from other models with the same trade mark or supplier's name;~~
- ~~(c) — the energy label according to Annex III in electronic format;~~
- ~~(d) — the energy efficiency class according to Annex II;~~
- ~~(e) — the energy consumption expressed in kWh of electricity consumption per 1000 h of light source on-mode operation;~~
- ~~(f) — the lighting technology used, i.e. HL, LFL T5 HE, LFL T5 HQ, CFLni, other FL, HPS, MH, other HID, LED, OLED, mixed, other;~~
- ~~(g) — if the light source is non-directional (NDLS) or directional (DLS) in the sense of this Regulation;~~
- ~~(h) — if the light source is a mains light source (MLS) or a non-mains light source (NMLS) in the sense of this Regulation;~~
- ~~(i) — if the light source is a connected light source (CLS) in the sense of this Regulation;~~
- ~~(j) — if the light source is a colour-tuneable light source (CTLS) in the sense of this Regulation;~~
- ~~— if the light source is high luminance light source (HLLS) or not;~~
- ~~(k) — if the light source has a second envelope, a non-clear envelope and/or an anti-glare shield in the sense of this Regulation;~~
- ~~(l) — the date (month, year) when the light source was first produced placed on for the EU market;~~
- ~~(m) — the information specified in point 2.1 of this Annex;~~
- ~~(n) — the outer dimensions in mm, without separate control gear, lighting control parts and non-lighting parts, if any;~~
- ~~(o) — the spectral power distribution in the range 250 nm to 800 nm, at full load;~~
- ~~(p) — the displacement factor ($\cos \phi$) for LED and OLED mains light sources;~~
- ~~(q) — the chromaticity coordinates (x and y);~~
- ~~(r) — the colour consistency in McAdam ellipses for LED and OLED mains light sources;~~
- ~~(s) — the R9 colour rendering index value for LED and OLED light sources;~~
- ~~(t) — the peak luminous intensity for directional light sources (in cd);~~
- ~~(u) — the lumen maintenance factor for FL and HID light sources at 2 000 h, 4 000 h, 6 000 h, 8 000 h, 12 000 h, 16 000 h and 20 000 h (up to 8 000 h only for new light sources on the market where no data is yet available), indicating which~~

~~operation mode of the light source was used for the test if both 50 Hz and high frequency operation are possible;~~

- ~~(v) the survival factor for FL and HID light sources at 2 000 h, 4 000 h, 6 000 h, 8 000 h, 12 000 h, 16 000 h and 20 000 h (up to 8 000 h only for new light sources on the market where no data is yet available), indicating which operation mode of the light source was used for the test if both 50 Hz and high frequency operation are possible;~~
- ~~(w) the lumen maintenance factor for LED and OLED light sources;~~
- ~~(x) the survival factor for LED and OLED light sources;~~
- ~~(y) the reference control settings, and instructions on how they can be implemented, where applicable;~~
- ~~(z) instructions on how to remove lighting control parts and/or non-lighting parts, if any, or how to switch them off or minimize their power consumption;~~
- ~~(aa) if the light source is dimmable: a list of dimmers it is compatible with, and the light source dimmer compatibility standard(s) it is compliant with, if any;~~
- ~~(bb) if the light source contains mercury: instructions on how to clean up the debris in case of accidental breakage;~~
- ~~(cc) recommendations on how to dispose of the light source at the end of its life in line with Directive 2012/19/EU of the European Parliament and of the Council.~~

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

If the light source is no longer supplied for sale placed on the EU market, the supplier shall put in the product database the date (month, year) when the supply placing on for the EU market stopped.

- ~~1.2. One product information sheet may cover a number of light sources supplied by the same supplier.~~

2. Information to be displayed on the packaging

2.1. Light source

~~If a light source is placed on the market, not in a containing product, in a packaging containing information to be visibly displayed at a point of sale prior to its purchase, the following information shall be clearly and prominently displayed on the packaging in addition to the energy label of Annex III:~~

- ~~(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 correlated colour temperature, rounded to the nearest 100 K, also expressed graphically or in words, or the range of correlated colour temperatures that can be set;~~

Comment : Moved to ED

- ~~(c) the beam angle in degrees (for directional light sources), or the range of beam angles that can be set;~~
- ~~(d) electrical interface details, e.g. cap or connector type, type of power supply (e.g. 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. If the value is zero, it may be omitted from the packaging;~~
- ~~(h) the networked standby power (P_{net}) for CLS, expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;~~
- ~~(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 outdoor applications, industrial applications or other applications where lighting standards allow a $CRI < 80$, a clear indication to this effect. For HID light sources with useful luminous flux > 4000 lm, this indication is not mandatory;~~
- ~~(k) if the light source is designed for optimum use in non-standard conditions (such as ambient temperature $T_a \neq 25^\circ\text{C}$ or specific thermal management is necessary): information on those conditions;~~
- ~~(l) a warning if the light source cannot be dimmed or can be dimmed only with specific dimmers or with specific wired or wireless dimming methods. In the latter cases a list of compatible dimmers and/or methods could be provided on the manufacturer's website;~~
- ~~(m) if the light source contains mercury: a warning about it including the mercury content in mg rounded to the first decimal place;~~
- ~~(n) if the light source is within the scope of Directive 2012/19/EU, without prejudice to marking obligations pursuant to Article 14(4) of Directive 2012/19/EU, or contains mercury: a warning that it shall not be disposed of as unsorted municipal waste;~~
- ~~(o) in addition to the QR code included in the energy label, the internet address for the supplier's website(s) could be provided.~~

~~Items (a) to (d) shall be displayed on the packaging in the direction meant to face prospective buyer; for other items this is also recommended, if space permits.~~

~~For light sources that can be set to emit light with different characteristics, the information shall be reported for the reference control settings. In addition, a range of obtainable values may be indicated.~~

~~The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.~~

~~If the packaging is too small to accommodate all required information, in accordance with Annex III, a standard size label shall be placed in close proximity to the~~

~~packaging. Some of the information not required to face the prospective buyer may be displayed on the same physical carrier as the label instead of on the packaging.~~

~~3.3.2.1.~~ Light source in a containing product:

If a light source is placed on the market as a part in a containing product, the technical documentation for the containing product shall clearly identify the contained light source(s), including the energy efficiency class.

If a light source is placed on the market as a part in a containing product, ~~in a packaging containing information to be visibly displayed at a point of sale prior to its purchase, the following text shall be displayed, clearly legible, on the outside of the containing product's packaging in the user manual or booklet of instructions:~~

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

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

~~The text can be replaced by a pictogram representing a light source and including the arrow shown in Annex VII. The arrow can be in black and white.~~

If the product contains more than one light source, the sentence can be in the plural, or repeated per light source, as suitable. ~~If pictograms are used, they should be repeated per light source.~~

~~The text shall be present in any advertisement, formal price quote or tender offer disclosing energy related or price information on the containing product and in any technical promotional material for the containing product, which describes specific technical parameters.~~

3. Information for products specified in Annex IV, point 3

For the light sources specified in point 3 of Annex IV, ~~point 3~~, their intended use shall be stated on all forms of packaging, product information and advertisement, together with a clear indication that the light source is not intended for use in other applications.

The technical documentation file drawn up for the purposes of conformity assessment, in accordance with Article 3.3 of Regulation (EU) 2017/1369 shall list the technical parameters that make the product design specific to qualify for the exemption.

ANNEX VI

Technical documentation

1. The technical documentation referred to in Article 3(1)(d) shall include:

- (a) the name and address of the supplier;
- (b) supplier's model identifier, ~~meaning the code, usually alphanumeric, which distinguishes a specific light source model from other models with the same trade mark or supplier's name;~~
- (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) ~~technical parameters for measurements, including the declared values, as follows~~the declared and measured values for the following technical parameters:
 - (1) useful luminous flux (Φ_{use}) in lm;
 - (2) colour rendering index (CRI);
 - (3) on-mode power (P_{on}) in W;
 - (4) beam angle in degrees for directional light sources (DLS);
 - (5) correlated colour temperature (CCT) in K for FL and HID light sources;
 - (6) 'standby power (P_{sb}) in W, including when it is zero;
 - (7) networked standby power (P_{net}) in W for connected light sources (CLS);
 - (8) displacement factor ($\cos \phi$) for LED and OLED mains light sources;
 - (9) colour consistency in MacAdam ellipse steps for LED and OLED light sources;
 - ~~(9)~~(10) luminance-HLLS in cd/mm^2 (only for HLLS)
 - ~~(10)~~(11) flicker metric (P_{stLM}) for LED and OLED light sources;
 - ~~(11)~~(12) stroboscopic effect metric (SVM) for LED and OLED light sources;
 - ~~(12)~~(13) colour excitation purity index, only for CTLS, for the following colours and dominant wavelength within the given range:

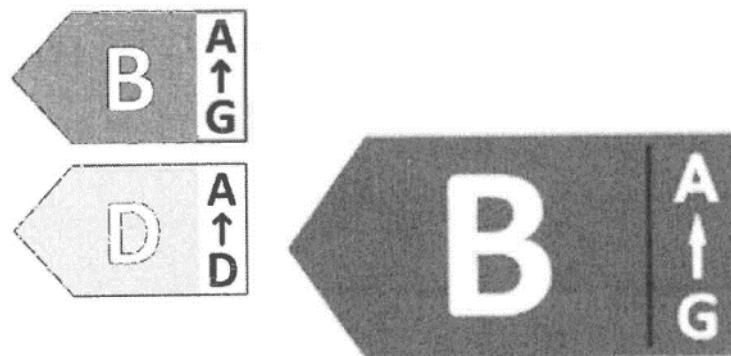
Colour	Dominant wave-length range
Blue	440nm — 490nm
Green	520nm — 540nm <u>570nm</u>
Red	610nm — 670nm
- (f) the calculations performed with the ~~measured~~ parameters, including the determination of the energy efficiency class;
- (g) references to the harmonised standards applied or other standards used;
- (h) testing conditions if not described sufficiently in point (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 shall be taken when the model is assembled, installed, maintained or tested.

ANNEX VII

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

1. In visual advertisements, for the purposes of ensuring conformity with the requirements laid down in Article 3(1)(e) and Article 4(1)(c), the energy class and the range of efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
2. In promotional material, for the purposes of ensuring conformity with the requirements laid down in Article 3(1)(f) and Article 4(1)(d), the energy class and the range of efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
3. Any paper-based distance selling must show the energy class and the range of efficiency classes available on the label as set out in point 4 of this Annex.
4. The energy class and the range of efficiency classes shall be shown, as indicated in Figure 1, with:
 - (a) an arrow containing the letter of the energy class;
 - (b) the colour of the arrow matching the colour of the energy class;~~and;~~
 - (c) the range of available efficiency classes in 100 % black; and,
 - ~~(e)~~(d) the size shall be such that the label is clearly visible and legible. The letter in the efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0.5 pt in black placed around the arrow and the letter of the efficiency class.



[Arrow in both directions]

Figure 1: Coloured arrow example, with range of energy classes indicated

By derogation, if the visual advertisements, promotional material or paper-based distance selling is printed in black and white, the colour of the arrow can be in black and white in that visual advertisements, promotional material or paper-based distance selling.

5. Telemarketing-based distance selling must specifically inform the customer of the energy class of the product and of the range of energy classes available on the label, and that the customer can access the full label and the product information sheet through a free access website, or by requesting a printed copy.

6. For all the situations mentioned in points 1, 2, 3 and 5, it must be possible for the customer to access the ~~full~~-label and the product information sheet through a link to the product database website, or to request a printed copy.

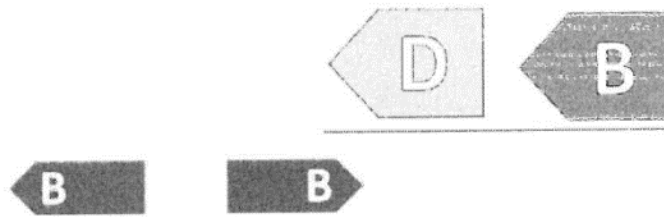
ANNEX VIII

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

1. The appropriate label made available by suppliers in accordance with Article 3(1)(g) shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified for the standard label in Annex III.

The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 3 of this Annex. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.

2. The image used for accessing the label in the case of nested display shall:
 - (a) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;
 - (b) indicate on the arrow the energy efficiency class of the product in white in a font size equivalent to that of the price; and
 - (c) the letter in the efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0.5 pt in 100 % black placed around the arrow and the letter of the efficiency class; and,
 - (d) have one of the following two formats:



[use the arrow with the range of classes]

3. In the case of nested display, the sequence of display of the label shall be as follows:
 - (a) the image referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product;
 - (b) the image shall link to the label;
 - (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
 - (d) the label shall 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 shall apply;
 - (f) the label shall 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 upon failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.
- 4. The appropriate product information sheet made available by suppliers in accordance with Article 3(1)(h) shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product database ~~established under Regulation (EU) 2017/1369~~, in which case the link used for accessing the product information sheet shall clearly and legibly indicate 'Product information sheet'. If nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

ANNEX IX

Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification of the measured parameters by Member State authorities. These tolerances shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the label or on the product information sheet shall not be more favourable for the supplier than the values reported in the technical documentation.

When verifying the compliance of a product model with the requirements laid down in this Delegated Regulation, the authorities of the Member States shall apply the following procedure:

1. The Member State authorities shall verify one single unit of the model for points 2(a) and 2(b) of this Annex.

The Member State authorities shall verify 10 units of the light source model, supplied from at least two different sources, for point 2(c) of this Annex. If the acquisition costs for the 10 units exceed 500 euros, the authorities of the Member State may reduce the sample size to 3 units. The verification tolerances are laid down in Table 6 of this Annex.

2. The model shall be considered to comply with the applicable requirements if:

- (a) the values given in the technical documentation pursuant to Article 3.3 of Regulation (EU) 2017/1369 (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the supplier than the corresponding values given in the test reports; and
- (b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values, and the indicated energy efficiency class is not more favourable for the supplier than the class determined by the declared values; and
- (c) when the authorities of the Member State test the units of the model, the determined values comply with the respective verification tolerances as given in Table 6 of this Annex, where 'determined value' means the arithmetical mean over the tested units of the measured values for a given parameter or the arithmetical mean of parameter values calculated from other measured values.

3. If the results referred to in point 2(a), or (b) or (c) are not achieved, the model and all models that have been listed as equivalent models in the supplier's technical documentation shall be considered not to comply with this Regulation.

- ~~4. If the result referred to in point 2(e) is not achieved, the model and all models that have been listed as equivalent models in the supplier's technical documentation shall be considered not to comply with this Regulation.~~

- ~~5.4.~~ The authorities of the Member State shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a

decision is taken on the non-compliance of the model in accordance with points 3 and 4 of this Annex.

The authorities of the Member State shall only apply the verification tolerances that are set out in Table 6 and shall use only the procedure described in this Annex. For the parameters in Table 6, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

Table 6 Verification tolerances

Parameter	Sample size	Verification tolerances
Full-load on-mode power P_{on} [W]:		
$P_{on} \leq 2W$	3	The determined value shall not exceed the declared value by more than 0,20 W.
	10	The determined value shall not exceed the declared value by more than 0,20 W.
$2W < P_{on} \leq 5W$	3	The determined value shall not exceed the declared value by more than 10 %.
	10	The determined value shall not exceed the declared value by more than 10 %.
$5W < P_{on} \leq 25W$	3	The determined value shall not exceed the declared value by more than 10 %.
	10	The determined value shall not exceed the declared value by more than 5 %.
$25W < P_{on} \leq 100W$	3	The determined value shall not exceed the declared value by more than 7,5 %.
	10	The determined value shall not exceed the declared value by more than 5 %.
$100W < P_{on}$	3	The determined value shall not exceed the declared value by more than 5 %.
	10	The determined value shall not exceed the declared value by more than 2,5 %.
Displacement factor [0-1]	3	The determined value shall not be less than the declared value minus 0,4 units.
	10	The determined value shall not be less than the declared value minus 0,1 units.
Useful luminous flux Φ_{use} [lm]	3	The determined value shall not deviate from the declared by more than 10 %.
	10	The determined value shall not deviate from the declared by more than 5 %.
Standby power P_{sb} and networked standby power P_{nct} [W]	3	The determined value shall not exceed the declared value by more than 0,10 W.
	10	The determined value shall not exceed the declared value by more than 0,10 W.
CRI and R9 [0-100]	3	The determined value shall not be less than the declared value by more than 3,0 units.
	10	The determined value shall not be less than the declared value by more than 2,0 units.
Flicker [P_{st} LM] and stroboscopic effect [SVM]	3	The determined value shall not exceed the declared value by more than 10 %.
	10	The determined value shall not exceed the declared value by more than 10 %.
Colour consistency [MacAdam ellips steps]	3	The determined number of steps shall not exceed the declared number of steps. The centre of the MacAdam ellipse shall be the centre declared by the supplier with a tolerance of 0,01

		units:
	10	The determined number of steps shall not exceed the declared number of steps. The centre of the MacAdam ellipse shall be the centre declared by the supplier with a tolerance of 0,005 units.
Beam angle (degrees)	3	The determined value shall not deviate from the declared value by more than 25 %.
	10	The determined value shall not deviate from the declared value by more than 25 %.
Total mains efficacy η_{TM} Efficiency [lm/W]	3	The determined value (quotient) shall not be less than the declared value minus 10 %.
	10	The determined value (quotient) shall not be less than the declared value minus 5 %.
$t_{2700B_{50}}$ lifetime (for LED and OLED)	3	The determined value shall not be less than the declared value minus 20 %.
	10	The determined value shall not be less than the declared value minus 10 %.
Lumen maintenance factor (for LED and OLED)	3	The determined X_{LMF} % of the sample shall not be less than $X_{LMF, MIN}$ % according to the text in Annex V of Regulation [OP – please insert here the number of the accompanying ecodesign regulation for light sources and separate control gears (review)].
	10	
Survival factor (for LED and OLED)	3	All 3 light sources of the test sample must be operational after completing the test in Annex V of Regulation [OP – please insert here the number of the accompanying ecodesign regulation for light sources and separate control gears (review)].
	10	At least 9 light sources of the test sample must be operational after completing the endurance test in Annex V of Regulation [OP – please insert here the number of the accompanying ecodesign regulation for light sources and separate control gears (review)].
Lumen maintenance factor (for FL and HID)	3	The determined value shall not be less than 90% of the declared value.
	10	The determined value shall not be less than 90 % of the declared value.
Survival factor (for FL and HID)	3	The determined value shall not be less than the declared value.
	10	The determined value shall not be less than the declared value.
Colour Excitation purity index [%]	3	The determined value shall not be less than the declared value minus 10 %.
	10	The determined value shall not be less than the declared value minus 5 %.
Correlated colour temperature [K]	3	The determined value shall not deviate from the declared value by more than 10 %.
	10	The determined value shall not deviate from the declared value by more than 105 %.
Luminous peak intensity [cd]	3	The determined value shall not deviate from the declared value by more than 25 %.
	10	The determined value shall not deviate from the declared value by more than 25 %.

For light sources with linear geometry which are scalable but of very long length, such as LED strips or strings, verification testing of market surveillance authorities shall consider a

length of 50 cm, or, if the light source is not scalable there, the nearest value to 50 cm. The light source supplier shall indicate which control gear is suitable for this length.

When verifying if a product is a light source, market surveillance authorities shall compare the measured values for chromaticity coordinates (x and y), luminous flux, luminous flux density, and colour rendering index directly with the limit values set out in the definition for light source of Article 2 of this Regulation, without applying any tolerances. If any of the 3 or 10 units in the sample satisfies the conditions for being a light source, the product model shall be considered to be a light source.

Light sources that allow the end-user to control, manually or automatically, directly or remotely, the luminous intensity, colour, correlated colour temperature, spectrum, and/or beam angle of the emitted light shall be evaluated using the reference control settings.

Anhang ◇ Annex ◇ Annexe

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