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**Discussion of Commission Services' Working Paper
Outline of Commission Delegated Act for possible energy labelling requirements
for electronic displays**

Version 18/5/17

INTRODUCTION

The present document is for consultation on the basis of Directive 2010/30/EU of 19 May 2010 of the European Parliament and of the Council on the indication by labelling and standard product information of the consumption of energy and other resources by energy related products and in particular of Article 10.

PRINCIPLES

- 1 Regulation (EU) No.../2017 sets a framework for energy labelling and requires the Commission to adopt delegated acts as regards the labelling of energy related products representing significant potential for energy savings and presenting a wide disparity in performance levels with equivalent functionality.
- 2 The energy used by electronic displays, including televisions and computer monitors accounts, for a significant part of total energy consumption in the Union. Furthermore, electronic displays with equivalent functionality have a wide disparity in terms of energy efficiency. The scope for reducing the energy consumption of electronic displays is substantial.
- 3 The energy labelling requirements for televisions were laid down in Delegated Regulation (EU) 1062/2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of televisions¹. Regulation 1062/2010 was to be reviewed no later than five years after its entry into force on 30 November 2010.
- 4 The Commission has reviewed Regulation 1062/2010 in the light of technological progress. The review study analysed technical, environmental and economic aspects of televisions and other electronic displays, including computer monitors. The results of the study were presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.
- 5 The study concluded that there was a need for the introduction of a new set of energy labelling requirements for televisions. The study also showed that the same set of requirements should also apply to computer monitors because of the rapidly increasing functionality overlap between this product group and televisions. Consequently, the scope of the Regulation shall comprise electronics displays that are primarily intended for use in a household and/or in an office, including televisions and computer monitors.
- 6 The information provided on the label for the electronic displays in the scope of this Regulation should be obtained through reliable, accurate and repeatable measurement procedures, which take into account the recognised state of the art measurement methods including, where available, harmonised standards adopted by the European standardisation organisations, as listed in Annex I to Regulation (EU) 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation².

¹ OJ L 314, 30.11.2010, p. 64.

² OJ L 316, 14.11.2012, p. 12.

- 7 This Regulation should specify a uniform design and content for the label for electronic displays. In addition, this Regulation should specify requirements as to the product information sheet, technical documentation for electronic displays and how such information should be entered into the product database established by Regulation (EU) No.../2017.
- 8 Moreover, this Regulation should specify requirements as to the information to be provided by suppliers and dealers for any form of distance selling, including mail order, by catalogue, telemarketing or through the internet.
- 9 It is appropriate to provide for a review of the provisions of this Regulation taking into account technological progress.

1 Subject matter and scope

1. This Regulation establishes requirements for the labelling and the provision of supplementary product information for electronic displays designed primarily as televisions and computer displays.
2. This regulation shall not apply to the following electronic displays:
 - a) Any display of a surface area smaller than or equal to that indicated in Article 8(2) of Directive 2012/19/EU;
 - b) Digital signage displays;
 - c) Professional displays;
 - d) Broadcast displays;
 - e) Security displays;
 - f) Digital photo frames.
 - g) Projectors and status or control displays integrated into projectors;
 - h) Displays where the main function of the display is status display or control or function activation;
 - i) Medical imaging displays and displays integrated into medical equipment;
 - j) Displays integrated into class A industrial and scientific equipment;
 - k) Displays integrated into desktop computers and notebook computers;
 - l) Displays integrated into digital interactive whiteboard;
 - m) Displays integrated into all-in-one video conference systems;
 - n) Displays integrated into game consoles;
 - o) Displays integrated into imaging products;
 - p) Displays integrated into virtual reality headsets and
 - q) Displays integrated into products listed in Article 2, Point 3 and Point 4 of Directive 2012/19/EU.

2 Definitions

1. '*Electronic display*': a display screen and associated electronics that, as its primary function, displays visual information from wired or wireless sources. The term '*monitor*', sometimes used for products on the market, is considered as equivalent to '*display*' within the context of this Regulation.
2. '*Television*': an electronic display designed primarily to display broadcast television images; a television integrates one or more tuners to decode broadcast signals and may integrate software and/or hardware solutions for hospitality offering management and maintenance of the guest room.
3. '*Computer display*': also known as '*computer monitor*', an electronic display designed primarily to display a computer's user interface.

4. *'Digital photo frame'*: an electronic display designed primarily to display exclusively still visual information.
5. *'Digital signage display'* (also known as 'public display' or 'commercial signage display'): an electronic display that is designed primarily to be viewed by multiple people in non-desktop based environments. Its specifications shall include all of the following definitive features:
 - (a) Unique identifier to enable addressing a specific display screen (including individual installations as well as applications involving a display group of several units, such as a "video wall");
 - (b) Remote control disabling function to prevent unauthorised access to display settings and displayed image (e.g. by systematically requiring an authentication mechanism or analogous restriction);
 - (c) Network connection (encompassing a hard-wired or wireless interface) for controlling, monitoring or receiving the information to display from remote unicast or multicast but not broadcast sources;
 - (d) Designed to be installed hanging, mounted, or fixed to a physical structure for viewing by multiple people;
 - (e) Does not integrate a tuner to display broadcast signals.
6. *'Digital interactive whiteboard'*: an electronic display which allows direct viewer interaction with the displayed image by touch, hand or arm gesture or voice that is designed primarily to provide presentations or lessons. A digital interactive whiteboard shall include all of the following features:
 - (a) Designed to be installed hanging, mounted on a ground stand or fixed to a physical structure for viewing by multiple people;
 - (b) Integrated or integrable computer and computer software with specific functionalities to manage content and interaction;
 - (c) a display surface greater than 50 dm².
7. *'Medical imaging displays and displays integrated in medical equipment'*: detached electronic displays or displays integrated into products covered by the scope of:
 - (a) Council Directive 93/42/EEC of 14 June 1993 concerning medical devices³; or
 - (b) Council Directive 90/385/EEC of 20 June 1990 on the approximation of the laws of the Member States relating to active implantable medical devices⁴; or
 - (c) Directive 98/79/EC of the European Parliament and of the Council of 27 October 1998 on in vitro diagnostic medical devices⁵; and
 - (d) any amendment to or modification of the above mentioned legislation.
8. *'Professional display'*: an electronic display designed and marketed for professional use for editing video and graphic images. Its specifications shall include all of the following features:
 - (a) a contrast ratio of at least 1000:1 measured at a perpendicular to the vertical plane of the screen and at least 60:1 measured at a horizontal viewing angle of

³ OJ L 169, 12.7.1993, p. 1.

⁴ OJ L 189, 20.7.1990, p. 17.

⁵ OJ L 331, 7.12.1998, p. 1.

at least 85° relative to that perpendicular and at least 83° from the perpendicular on a curved screen, with or without a screen cover glass;

- (b) a native resolution of at least 2.3 mega pixels;
 - (c) colour Gamut support is 38.4% of CIE LUV or greater (equivalent to greater than 99% of Adobe RGB and over 100% of sRGB colour space) Shifts in colour space are allowable as long as the resultant colour space is still 38.4% of CIE LUV or greater. Colour and luminance uniformity shall be as required for Grade 1 monitors;
 - (d) Colour and luminance uniformity shall be as required for Grade 1 monitors;
 - (e) not intended for use in public areas.
9. ‘*Broadcast display*’: an electronic display designed and marketed for professional use by broadcasters and video production houses for video content creation. Its specifications shall include all of the following features:
- (a) colour calibration function;
 - (b) input signal analysis function for input signal monitoring and error detection, wave-form monitor/vector scope, RGB cut off, facility to check the video signal status at actual pixel resolution, interlace mode, screen marker;
 - (c) SDI (Serial Digital Interface) or VoIP (Video over IP) integrated with the product;
 - (d) not intended for use in public areas.
10. ‘*Security display*’ : an electronic display which includes [some or all] one or more of the following features and is distributed on a business to business basis only:
- (a) self-monitoring function capable of communicating product status information to a remote server e.g.:
 - power status;
 - internal temperature from anti-overload thermal sensing;
 - video source;
 - audio source and audio status (volume/mute);
 - model and firmware version.
 - (b) user specified specialist form factor facilitating the installation of the display into professional housings or consoles.
11. ‘*All-in-one video conference system*’: a videoconference codec (encoder/decoder) with integrated display and loudspeakers, to be used in interactive telecommunications, whose specifications shall include all of the following features:
- (a) an encryption function;
 - (b) intelligent QoSTM function (quality of service function to achieve and maintain a stable transmission);
 - (c) KIOSK mode (remote consulting, customized distance learning);
 - (d) support of specific videoconference protocol ITU-T H.323 as delivered by the manufacturer; and
 - (e) HiNA functionality.

12. *'Projector'*: an optical device for processing analogue or digital video image information, in any format, to modulate a light source and project the resulting image onto an external surface.
13. *'Computer'*: a device as defined in Article 2(1) of Commission Regulation (EU) No 617/2013.
14. *'HD' (High-Definition)*: also known as *'Full HD'* (FHD), is a set of high-definition video systems standardised⁶ with a resolution of 1920 × 1080 pixels by ITU Recommendation 709.
15. *'HDR' (High Dynamic Range)*: a method that uses metadata generated in the creation of the video material to increase the range of contrast and colour rendering of the image from an electronic display, to provide more realistic images. An electronic display that does not respond to the HDR metadata displays images in a standard mode.
16. *'UHD' (Ultra High Definition)*: a displaying standard⁷ with two resolutions of 3840 × 2160 (UHD-4K) and 7680 × 4320 (UHD-8K) pixels.
17. *'Product Database'* means a product registry as set out in article 12 of Regulation of XXX.

3 Responsibilities of suppliers

1. Suppliers shall ensure that:
 - (a) each model unit is supplied with a label in printed form in the format and containing the information set out in Annex V. In addition, a label is printed on the packaging or attached to it on two different and adjacent sides.
 - (b) a product information sheet, as set out in Annex III, in electronic form and an electronic label in the format and containing the information as set out in Annex V, is made available to dealers from the product database;
 - (c) any advertisement and any technical promotional material concerning a specific model of electronic display includes the energy efficiency class of that model in the form of a coloured arrow as set in Annex VI point 3;
 - (d) the technical documentation, as set out in Annex VI, is made available on the Product Database;
2. Before any model unit is placed on the market, the supplier shall have entered into the Product Database all data of the Product Information Sheet, as listed in Annex V and all Technical Documentation, as listed in Annex VI. At the moment the first model unit becomes available on the market, the supplier shall have validated the entered data, thus making respectively the public information and the compliance information available.
3. Once a unit is in service, each single software or firmware update that may result in detriment of any of the parameters of in the label, shall only be explicitly authorised by the customer when the electronic display is in on-mode, even if the download and installation can be scheduled at a later moment or while in standby. The customer shall be informed of the objective of the update, of which parameters in the label would be negatively affected and in which circumstance or functionality the change would

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⁷ International Telecommunications Union Recommendation (ITU-R) BT.2020

occur, if applicable. For a period of at least 4 years, the customer shall be given the option to refuse the specific update without relevant loss of functionality. No notification is mandatory if the update has no negative relevance to energy use.

4. The energy efficiency class shall be based on the Energy Efficiency Index calculated in accordance with Annex II.

4 Responsibilities of dealers

Dealers shall ensure that:

- (a) each model presented at the point of sale bears the label, provided by suppliers in accordance with Article 3, displayed on the front of the appliance or hung on it or placed in such a way as to be clearly visible and unequivocally referring to the specific model; provided that the model presented is kept in on-mode when visible to customers for sale, a picture of the label displayed on the electronic display screen may replace the printed label, provided that size and legibility is comparable to the printed version or higher;
- (b) each model presented at the point of sale bears the label provided by suppliers in accordance with Article 3 displayed on the front of the appliance or hung on it or placed in such a way as to be clearly visible and unequivocally referring to the specific model;
- (c) electronic displays offered for sale, hire or hire-purchase where the end-user cannot be expected to see the product or its box displayed, are marketed with the reference to the product database entry , or providing the information in accordance with annex III and copy of the label, except where the offer is made through the Internet, in which case the provisions in Annex VI shall apply;
- (d) any visual advertisement or technical promotional material for a specific model of electronic display contains the energy efficiency class of the model; where the advertisement disclosing energy-related or price information is made through the Internet, a link to the specific product entry in the product database is provided as associated to the energy efficiency class.

5 Measurement methods

The information to be provided under Articles 3 and 4 shall be obtained by reliable, accurate and reproducible measurement and calculations methods, which take into account the recognised state-of-the-art measurement and calculation methods, as set out in Annex VIII.

6 Verification procedure for market surveillance purposes

Member States shall apply the procedure set out in Annex IX when assessing the conformity of the declared energy efficiency class.

7 Final provisions

7.1 Revision

The Commission shall review this Regulation in light of technological progress in accordance with Article 11 of Regulation EU No XXX /2017 The review shall in particular assess the verification tolerances set out in Annex IX, whether other electronic displays, particularly

public displays should be included in the scope and whether it is feasible to develop appropriate measurement or notification methods for their annual energy consumption.

7.2 Repeal

Regulation 1062/2010 is hereby repealed as of the day of entry into force of this Regulation, except for Articles 3 to 6 thereof and Annexes I to VIII thereto that shall apply until the energy labelling requirements set out in this Regulation start to apply.

References to the repealed Regulation shall be constructed as references to this Regulation and shall be read in accordance with the correlation table in Annex XI.

7.3 Entry into force and application

1. This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.
2. It shall start applying as from **xxx** months after the entry into force.

ANNEXES

1 Energy efficiency class

The energy efficiency class of an electronic display shall be determined on the basis of its Energy Efficiency Index (EEI) as set out in Table 1. The Energy Efficiency Index (EEI) of an electronic display shall be determined in accordance with Annex II.

Table 1: Energy efficiency classes of electronic displays

Energy Efficiency Class	Energy Efficiency Index (EEI)
A	$EEI < 0.30$
B	$0.30 \leq EEI < 0.40$
C	$0.40 \leq EEI < 0.50$
D	$0.50 \leq EEI < 0.60$
E	$0.60 \leq EEI < 0.75$
F	$0.75 \leq EEI < 0.90$
G	$1.10 \leq EEI$

2 Energy Efficiency Index (EEI)

2.1 Conventional EEI

The conventional Energy Efficiency Index (EEI) of the electronic display shall be calculated using the following equation:

$$EEI = \frac{(P_{measured} + 1)}{(3 \times [90 \times \tanh(0,02 + 0,004 \times (A - 11)) + 4] + 3)}$$

2.2 HDR EEI

For displays with high dynamic range (HDR) capability, the Energy Efficiency Index (EEI_{HDR}) of the electronic display shall be calculated using the following equation: :

$$EEI_{HDR} = \frac{(P_{measured-HDR} + 1)}{(3 \times [90 \times \tanh(0,02 + 0,004 \times (A - 11)) + 4] + 3)}$$

Where:

- A is the visible area of the display screen in decimetres squared (dm^2).
- $P_{measured}$ is power demand (W) in on-mode, measured using a reliable, accurate and reproducible test method to determine the average power required by the electronic display when displaying standardised dynamic broadcast content moving picture test sequences. Where allowances are relevant they should be deducted from $P_{measured}$ for the EEI calculation.

$P_{measured-HDR}$ is power demand (W) in on-mode, measured as for $P_{measured}$ but with the HDR functionality activated by metadata in the standardised HDR dynamic broadcast content moving picture test sequence. Where allowances are relevant they should be deducted from $P_{measured}$ for the EEI calculation.

2.3 Allowances

Allowances reducing the value of $P_{measured}$ for the purposes of calculating the EEI

a) Audio System

An electronic display audio system may use a special on-mode condition that shall disable or minimise the power consumption of that audio system during the on-mode power measurement $P_{measured}$ for the purposes of calculating the EEI. The special audio system on-mode condition must be achievable through, the display product remote control or through an externally accessible control or through a network port. Information describing the procedure to establish the special audio system on-mode condition must be provided as required in Annex IV. If it is not provided, then the on-mode power requirement must be measured for EEI calculation purposes with the audio system condition meeting the on-mode testing requirements of a supporting harmonised measurement standard.

(b) Display products with ABC

For products supplied with ABC enabled by default (as shipped), $P_{measured}$ may be reduced by 15% in the calculation of the EEI provided that:

- $P_{measured}$ is recorded with an ambient light illumination of 300 lux measured at the ABC sensor of the display product; and
- $P_{measured}$ shall decrease by at least 20% in a smooth transition and not a step transition when the ambient light illumination measured at the ABC sensor of the display product is reduced to 12 lux.

(c) Display products requiring an external AC to DC power supply (EPS)

- I. For display products supplied with a standardised DC power connection (such as those standardised for USB) and that are placed on the market without an external AC to DC power supply, $P_{measured}$ for the purposes of the EEI calculation shall be the DC input power.
- II. For display products requiring an EPS providing a non-standardised DC power connection. $P_{measured}$ for the purposes of the EEI calculation shall be the AC input power to the EPS. If the EPS is not provided with the display product when placed on the market, $P_{measured}$ for the purposes of the EEI calculation shall be 115% of the measured DC input power to make a notional allowance for AC to DC conversion losses.

3 Product Information Sheet

1. The product information sheet of the electronic display shall include the following information, in the following order and shall be included in the product brochure or other printed documentation provided with the product:
 - (a) supplier's name or trade mark;
 - (b) supplier's univocal complete model name;

- (c) xxx univocal code [EAN 13 or similar, subject to final decision in respect to the product database];
 - (d) year of placement on the market for the first time;
 - (e) the energy efficiency class, determined in accordance with Annex II;
 - (f) the visible screen diagonal in centimetres and in inches if the marketed dimension does not correspond to a numerical conversion from the unit in centimetres;
 - (g) the visible screen area in dm²;
 - (h) the screen resolution in horizontal and vertical pixels;
 - (i) the on-mode power demand in Watts, for both standard and HDR display modes where applicable, rounded to the nearest decimal place for power measurements up to 100 Watts, and to the nearest integer for power measurements above 100 Watts and measured in accordance with the procedure set out in Annex VIII;
 - (j) the off-mode, standby and networked standby power demand in Watts rounded to the second decimal place, measured in accordance with the procedure as set out in Annex VIII;
 - (k) whether Automatic Brightness Control according to Annex III, point 1.2.(c) of [Ecodesign Regulation on electronic displays] is available and activated as shipped
 - (l) whether a room presence sensor is available and activated as shipped;
 - (m) type of power supply. If an external dc power supply is foreseen, the following additional information shall be indicated:
 - if the power supply is delivered with the display, input voltage, current, frequency, output voltage and current and standardised interface, if applicable;
 - if the power supply is not delivered with the display, the standardised interface to use and the required maximum DC voltage and delivered current;
2. Where a model has been awarded an 'EU Ecolabel' under Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel⁸ this information may be included.
 3. The information sheet shall also include a reproduction of the label, either in colour or in black and white or levels of grey.

4 Technical documentation

The technical documentation referred to in Article 3(1)(c) shall be entered in the Product Database and kept for at least 15 years from the day the last model of a product family was placed on the market. It shall include:

- (a) Identification data:
 - i. supplier's name, registered trade name or registered trade mark;
 - ii. identification of the person empowered to bind the supplier;

⁸ OJ L 27, 30.1.2010, p.1.

- iii. xxx univocal code [EAN 13 or similar, subject to final decision in respect to the product database];
- iv. where appropriate, the references of the harmonised standards applies;
- v. where appropriate, the other technical standards and specifications used.

(b) Test parameters for measurements:

- i. ambient temperature;
- ii. test voltage in V and frequency in Hz;
- iii. total harmonic distortion of the electricity supply system;
- iv. the input terminal for the audio and video test signals;
- v. information and documentation on the instrumentation, set-up and circuits used for electrical testing;
- vi. where appropriate, the references of the harmonised standards applies;
- vii. where appropriate, the other technical standards and specifications used.

(c) On mode:

- i. the characteristics of the dynamic broadcast-content video signal representing typical broadcast TV content (in the case of UHD displays, the HD broadcast content standard video test signal described may be up converted by the electronic display to the native resolution of the display but shall not be up converted by an external device; for HDR dynamic broadcast content video signal the display must be automatically switched to HDR mode by the HDR metadata of that signal);
- ii. the sequence of steps for achieving a stable condition with respect to power demand;
- iii. for electronic displays with a forced menu, the ratio of the peak luminance of the home mode/standard mode and the peak luminance of the brightest on mode condition provided by the display and pre-set by the supplier expressed as a percentage rounded to the nearest integer. The pre-set picture mode or settings in a picture menu used for the brightest on mode peak luminance measurement must be declared;
- iv. for electronic displays without forced menu: the ratio of the peak luminance of on mode condition of the display as delivered by the supplier and the peak luminance of the brightest on mode condition provided by the display, expressed as a percentage, rounded to the nearest integer. The picture settings used for the brightest on mode peak luminance measurement must be declared.
- v. for electronic displays with an audio system: information describing the procedure to establish the special audio system on-mode condition. If no information is provided it shall be presumed that a special audio on-mode condition is not available for on-mode power measurement.

(d) For standby and off mode:

the measurement method used:

- i. description of how the mode was selected or programmed including any enhanced reactivation functions;
- ii. sequence of events to reach the mode where the electronic display automatically changes modes.

(e) Automatic power down (APD):

- the duration of on mode condition before the electronic display reaches automatically standby, or off mode, or another condition which does not exceed the applicable power demand requirements for off mode and/or standby mode.

(f) For networked electronic displays:

- i. the number and type of network ports and, except for wireless network ports, where these ports are located at the electronic display; in particular it shall be noted if the same physical network port accommodates several types of network ports;
- ii. whether the electronic display qualifies as electronic display with HiNA functionality; if no information is provided the electronic display is considered not to be HiNA display or display with HiNA functionality;
- iii. information whether networked electronic display provides functionality allowing the power management function and/or the end-user to switch the electronic display being in a condition providing networked standby into standby mode, or off mode or another condition which does not exceed the applicable power demand requirements for off mode and/or standby mode including enhanced reactivation function power allowance where applicable.

(g) For each type of network port:

- i. the default time after which the power management function, switches the display into a condition providing networked standby;
- ii. the trigger that is used to reactivate the electronic display;
- iii. the (maximum) performance specifications;
- iv. the (maximum) power demand of the electronic display in Watts rounded to the second decimal place in a condition providing networked standby into which the power management function will switch the electronic display, if only this port is used for remote activation.

If no information is provided, the electronic display is considered not to be networked electronic display.

(h) Hazardous substances:

- if the electronic display contains mercury or lead: the content of mercury as X,X mg, and the presence of lead and confirmation of the presence of an appropriate mercury content warning logo as prescribed in ecodesign Regulation xxx/2017/(EU)

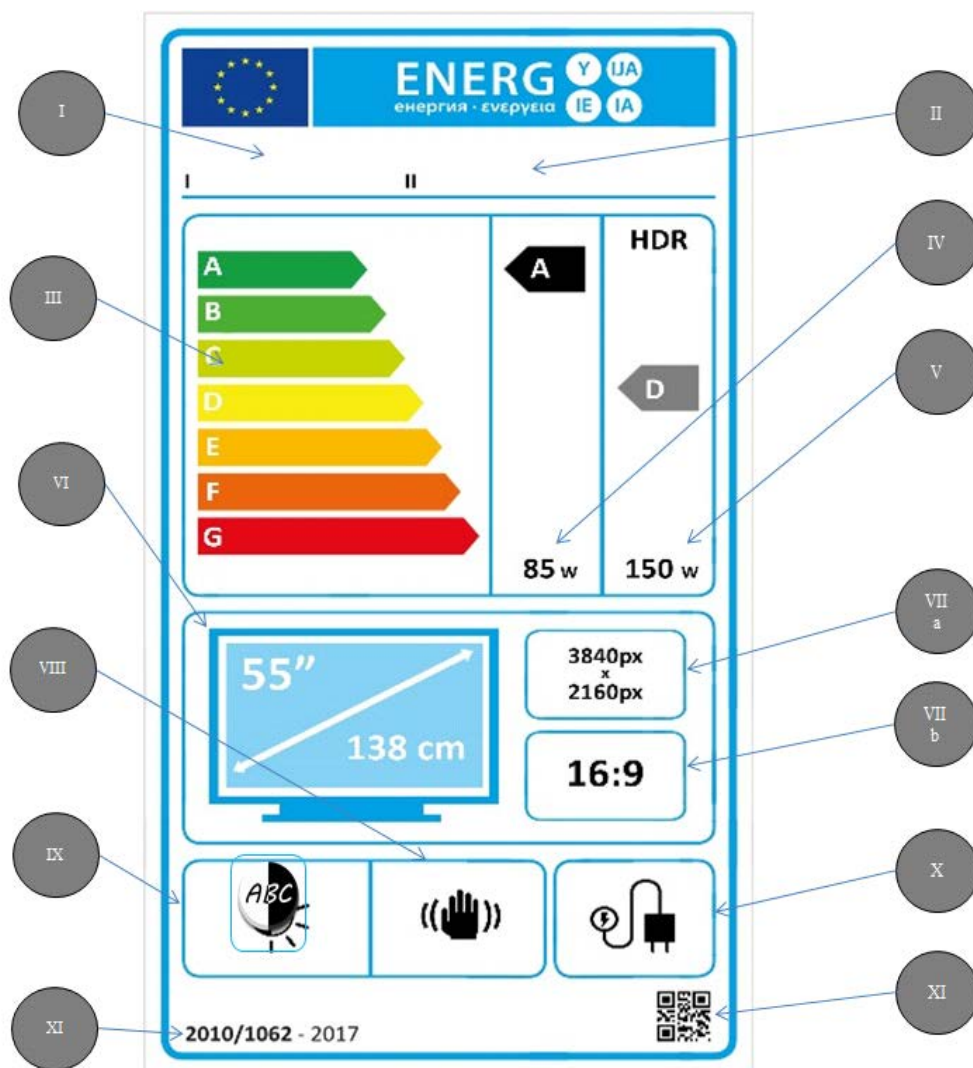
(i) If Automatic Brightness Control (ABC) and Enhanced Reactivation room presence detection are available and activated as shipped:

- i. the supplier shall confirm the power reduction due to ABC by measuring and declaring the average on-mode power demand of the electronic display at an ambient light intensity, measured at the Automatic Brightness Control (ABC) sensor of the display product, of 300 lux and 12 lux.
- ii. The supplier shall confirm the power reduction due to the room presence detection sensor system by measuring and declaring as a percentage relative to the on-mode power, the power reduction of the display product when no user is present.

1. Where the information included in the technical documentation file for a particular electronic display model has been obtained by calculation on the basis of an equivalent electronic display, the technical documentation shall include details of such calculations and of tests undertaken by suppliers to verify the accuracy of the calculations undertaken. The technical information shall also include a list of all other equivalent electronic display models where the information was obtained on the same basis.
2. The information contained in this technical documentation may be merged with the technical documentation provided in accordance with the measure on electronic displays adopted under Directive 2009/125/EC.

5 Label

The design of the label for electronic displays shall be the following:



The following information shall be included in the label:

- I. supplier's name or trade mark;
- II. supplier's model identifier, where 'model identifier' means the code, usually alphanumeric, which distinguishes a specific television model from other models of the same trade mark or supplier's name;
- III. the energy efficiency class of the television, determined in accordance with Annex I. The head of the arrow containing the energy efficiency class of the television shall be

- placed at the same height as the head of the arrow of the relevant energy efficiency class;
- IV. on-mode power consumption in Watts, rounded to the first integer;
 - V. on-mode power consumption in Watts, rounded to the first integer, when in HDR mode;
 - VI. visible screen diagonal in inches and centimetres;
 - VII. Horizontal and vertical resolution in pixels;
 - VIII. Size ratio, horizontal : vertical;
 - IX. Auto Brightness Control function, when available and enabled as shipped;
 - X. Presence of movement detection function, when available and enabled as shipped;
 - XI. Standardised external power supply. The pictogram is greyed if the power supply is not shipped with the display;
 - XII. Regulation reference;
 - XIII. QR code, pointing to the complete information sheet in the product database.

By way of derogation where a model has been awarded an 'EU Ecolabel' under Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel⁹, a copy of the EU Ecolabel may be added.

Whereby:

- (a) The label shall be at least 60 mm wide and 120 mm high. Where the label is printed in a larger format, its content must nevertheless remain proportionate to the specifications above.
- (b) The background shall be white.
- (c) Colours are CMYK — cyan, magenta, yellow and black following this example: 00-70-X-00: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black.
- (d) The label shall fulfil all of the following requirements (numbers refer to the figure above):

1. **EU label border stroke:** 3 pt — colour: Cyan 100 % — round corners: 3,5 mm.
2. **EU logo:** colours: X-80-00-00 and 00-00-X-00.
3. **Energy logo:** colour: X-00-00-00.

Pictogram as depicted; EU logo + energy logo (combined): width: 51 mm, height: 9 mm.

4. **Sub-logos border:** 1 pt — colour: Cyan 100 % — length: 51 mm.
5. **A-G scales:**
 - **Arrow:** height: 3,8 mm, gap: 0,75 mm — colours:
 - Highest class: X-00-X-00,
 - Second class: 70-00-X-00,
 - Third class: 30-00-X-00,
 - Fourth class: 00-00-X-00,

⁹ OJ L 27, 30.1.2010, p.1.

- Fifth class: 00-30-X-00,
- Sixth class: 00-70-X-00,
- Last class: 00-X-X-00.
- **Text:** Calibri bold 10 pt, capitals, white; '+' symbols: Calibri bold 7 pt, capitals, white.

6. Energy efficiency class

- **Arrow:** width: 15 mm, height: 8 mm, 100 % black.
- **Text:** Calibri bold 15 pt, capitals, white; '+' symbols: Calibri bold 10 pt, capitals, white.

7. Energy

- **Text:** Calibri regular 7pt, capitals, 100 % black.

8. Text related to on-mode power demand:

- **Border:** 1 pt — colour: Cyan 100 % — round corners: 3,5 mm.
- **Value:** Calibri bold 14 pt, 100 % black.
- **Second line:** Calibri regular 11 pt, 100 % black.

9. Display screen diagonal size:

- **Pictogram as depicted**
- **Border:** 1 pt — colour: Cyan 100 % — round corners: 3,5 mm.
- **Value:** Calibri bold 14 pt, 100 % black. Calibri regular 11pt, 100 % black.

10. Text related to power demand W.:

- **Border:** 2 pt — colour: Cyan 100 % — round corners: 3,5 mm.
- **Value:** Calibri bold 25 pt, 100 % black.
- **Second line:** Calibri regular 11 pt, 100 % black.

11. Supplier's name or trade mark

12. Supplier's model identifier

13. The supplier's name or trade mark and model information shall fit in a space of 51 × 8 mm.

14. Numbering of the Regulation and label

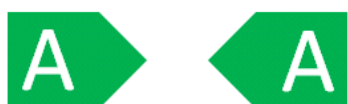
- Text: Calibri bold 8 pt
- Text: Calibri light 9 pt.

6 Information to be provided in the case of sale, hire or hire-purchase through the Internet

1. For the purpose of points 2 to 5 of this Annex the following definitions shall apply:
 - (a) '*display*': any screen, including tactile screen and visual technology used for displaying internet content to end-users;
 - (b) '*nested image d*': a presentation on a display where a picture or data set is accessed by mouse click, mouse roll-over or tactile screen expansion of another picture or text;
 - (c) '*tactile screen*': a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;
 - (d) '*alternative text*': also known as "alt text" 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.

2. The appropriate label made available by suppliers in accordance with Article 3(1)(c) shall be shown in proximity to the price. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in point 2 of Annex V. The label may be 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.
3. The picture used for accessing the label in the case of nested image 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) have one of the following two formats:



4. In the case of nested image, the sequence of display of the label shall be as follows:
 - (a) the image referred to in point 3 of this Annex shall be shown 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.
5. The appropriate product information sheet made available by suppliers in accordance with Article 3(1)(c) shall be shown on the display 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, in which case the link used for accessing the fiche shall clearly and legibly indicate 'Product Information Sheet'. If a 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.

7 Measurement and calculation methods

For the purposes of compliance and verification of compliance with the applicable requirements of this Regulation, measurements and calculations shall be made using harmonised standards, the reference numbers of which have been published in the *Official Journal of the European Union* or using other reliable, accurate and reproducible methods which take into account the generally recognised state-of-the-art, and produce results deemed to be of low uncertainty. They shall meet the technical definitions, conditions, equations and parameters set out in this Annex.

7.1. Measurements of on-mode power demand

Measurements of the on mode power demand shall fulfil all of the following conditions:

- (a) Conditions of electronic displays for measuring the on-mode power demand:
 - i. Electronic displays without forced menu: the power demand shall be measured in the on-mode condition of the electronic display as delivered by the supplier, that is, the controls affecting the brightness (peak luminance) of the electronic display shall be in the position adjusted by the supplier for the end-user.
 - ii. Electronic displays with forced menu: the power demand shall be measured in the home-mode/standard mode condition.
 - iii. Where an electronic display has a special audio on-mode condition, this shall be activated during on-mode power demand measurements according to the instructions provided under Annex IV (c) v.
- (b) General conditions:
 - i. Measurements shall be made at an ambient temperature of 23 °C +/- 5 °C.
 - ii. Measurements shall be made using a standardised dynamic broadcast video signal test loops representing typical broadcast content for electronic displays. For the HDR measurement the electronic display must automatically and correctly respond to the HDR metadata in the test loop. The measurement shall be the average power consumed over 10 consecutive minutes.
 - iii. Measurements shall be made after the electronic display has been in the off-mode for a minimum of 1 hour immediately followed by a minimum of 1 hour in the on-mode and shall be completed before a maximum of 3 hours in on-mode. The relevant video signal shall be displayed during the entire on-mode duration. For electronic displays that are known to stabilise within 1 hour, these durations may be reduced if the resulting measurement can be shown to be within 2 % of the results that would otherwise be achieved using the durations described here.
 - iv. Measurements shall be made with the Automatic Brightness Control function, if such a function exists, made disabled. If the Automatic Brightness Control function exists and cannot be disabled, then the measurements shall be performed with the light entering directly into the ambient light sensor at an illumination level of 300 lux. Where the ABC can be disabled there shall be no change in the measured on-mode power of the electronic display in a 300 lux illumination with the ABC disabled or enabled . .

7.2 Measurements of standby/off mode, and networked standby power demand

Measurements of the standby/off mode, and networked standby power demand shall be made using a reliable, accurate and reproducible measurement procedure, which takes into account the generally recognised state of the art measurement methods

7.3 Measurements of peak luminance

Measurements of the peak luminance shall fulfil all of the following conditions:

- (a) Measurements of peak luminance shall be made with the display in standard and not HDR mode with a luminance meter detecting that portion of the screen exhibiting a full (100 %) white image which is part of a 'full screen test' test pattern. The average picture level (APL) of the test pattern must not exceed the point where the electronic display luminance is affected by power limiting or other irregularities in the pixel drive system of electronic display .
- (b) Measurements of luminance shall be made without disturbing the luminance meter's detection point on the electronic display. The required measurements are the value of peak white luminance in the home-mode/standard mode condition and the value of peak white luminance in the brightest on-mode condition. The latter setting should be as provided for the requirements of Annex IV (c) iii.

8 Product compliance verification by market surveillance authorities

The verification tolerances set out in this Annex relate only to the verification of the measured parameters by Member State authorities and 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 in the product fiche shall not be more favourable for the supplier than the values reported in the technical documentation. For the purposes of assessing conformity with the requirements laid down in Articles 3 and 4, each Member State authority shall apply the following verification procedure:

1. The Member State authority shall verify one single unit of the model.
2. The model shall be considered to comply with the applicable requirements if:
 - (a) the values given in the technical documentation and, where applicable, the values used to calculate these values, are not more favourable for the supplier than the corresponding values given in the Member State's verification test reports;
 - (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 Member State authority tests the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 1.
3. If the result referred to in points 2(a) or (b) are not achieved, the model shall be considered not to comply with this Delegated Regulation.
4. If the result referred to in point 2(c) is not achieved, the Member State authority shall select three additional units of the same model for testing.
5. The model shall be considered to comply with the applicable requirements if for these three units, the arithmetical mean of the determined values complies with the respective tolerances given in Table 1.
6. If the result referred to in point 5 is not achieved, the model shall be considered not to comply with this Delegated Regulation.

7. The Member State authority shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision being taken on the non-compliance of the model according to points 3 and 6.

The Member State authority shall use the measurement and calculation methods set out in Annex VII.

The Member State authority shall only apply the verification tolerances that are set out in Table 1. and shall only use the procedure described in points 1 to 7 for the requirements referred to in this Annex. No other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

Table 1. Verification Tolerances

Parameter	Verification tolerances
On mode power demand in Watts	The determined value shall not exceed the declared value by more than 7 %.
Standby, off-mode and networked standby power demand in Watts, as applicable.	The determined value shall not exceed the declared value by more than 0,10 W.
The peak luminance ratio	The determined value shall not be lower than 60 % of the peak luminance of the brightest pre-set on-mode condition provided by the display.’
Visible screen diagonal in inches and centimetres	The determined value ⁽¹⁾ does not deviate more than +/- 1 mm or 0.04 inches from the declared value.
Visible screen area in dm ²	The determined value ⁽¹⁾ does not deviate more than +/- 0.1 dm ² from the declared value.
The screen resolution in physical horizontal and vertical pixel count	No tolerances; The determined value ⁽¹⁾ does not deviate from the declared value.

⁽¹⁾ In the case of three additional units tested as prescribed in point 3, the determined value means the arithmetic average of the values determined for these three additional units.