

Possible requirements for electronic displays

COMMISSION Delegated REGULATION (EC) No .../2015

of XXX

**supplementing Directive 2010/30/EC of the European Parliament and of the Council
with regard to energy labelling of electronic displays**

**and
repealing delegated Regulation 1062/2010 with regard to energy labelling of televisions**

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to 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 products¹, and in particular Article 11 thereof,

Whereas:

- (1) Directive 2010/30/EU 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, computer monitors and digital photo frames 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 Regulation 1062/2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of televisions². Regulation 1062/2010 was to be reviewed no later than five years after its entry into force.
- (4) The Commission has reviewed Regulation 1062/2010 in the light of technological progress. The review study has analysed technical, environmental and economic aspects of televisions and other electronic displays, including computer monitors and digital photo frames. The results of the study have been presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.

¹ OJ L 153, 18.6.2010, p. 1.

² OJ L 314, 30.11.2010, p. 64.

- (5) The study has 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. Furthermore, the study concluded that the Regulation should also apply to other displays available on the market which primary function is to display visual information and that are neither televisions nor computer monitors, e.g. digital photo frames. 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, computer monitors and digital photo frames.
- (6) An electronic display may have 2D and 3D modes and may employ, but is not restricted to, one of the following display technologies: Organic Light Emitting Diode (OLED), Liquid Crystal Display with a Light Emitting Diode back-light (LCD-LED), Liquid Crystal Display with a Cold Cathode Fluorescent Lamp back-light (LCD-CCFL), Light Emitting Diode (LED), Quantum dot LED (QLED), Plasma Display Panel (PDP), Cathode Ray Tube (CRT), Field Emission Display (FED), Vacuum Fluorescent Display (VFD), Surface-conduction Electron-emitter Display (SED), Electro-Luminescence Display (ELD) and various gas discharge displays.
- (7) Electronic displays associated with battery powered devices designed for mobility (products generically termed mobile computing and communications devices) and primarily powered by an internal battery, are normally designed to optimise energy efficiency to meet user requirements of long battery lifetime with, smaller or lighter and cheaper batteries. Furthermore the recyclability and specialist material recovery parameters of the display part of these products, in practice, need to be considered in the context of the entire device. Consequently these products shall be exempted from all requirements of this regulation, except from resource-efficiency requirements.
- (8) Displays in integrated desktop computers are not covered by Regulation (EU) 617/2013 on computers³, but because of the difficulty of isolating their energy use, and in view of a revision of the computers Regulation, shall be exempted from all requirements of this regulation, except from resource-efficiency requirements.
- (9) Digital signage displays, projectors, smart boards and displays in game consoles should be exempted from all requirements of the Regulation because they belong to product groups that are subject to other regulatory work.
- (10) Medical imaging displays, broadcast displays, enhanced performance displays, security displays and status displays have distinct characteristics and should therefore be exempted from the scope of this Regulation, except from resource-efficiency requirements.
- (11) Displays integrated in medical equipment, displays integrated in industrial or laboratory equipment and displays integrated in all-in-one video conference systems have distinct characteristics and uses and should therefore be exempted from the scope of this Regulation.
- (12) The information provided on the label 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

³ Regulation (EU) 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, 26.06.2013, p.13.

Regulation (EU) 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation⁴.

- (13) This Regulation should specify a uniform design and content for the label for electronic displays.
- (14) In addition, this Regulation should specify requirements as to the technical documentation and the fiche for electronic displays.
- (15) Moreover, this Regulation should specify requirements as to the information to be provided for any form of distance selling, advertisements and technical promotional materials of electronic displays.
- (16) It is appropriate to provide for a review of the provisions of this Regulation taking into account technological progress,

HAS ADOPTED THIS REGULATION:

Article 1
Subject matter and scope

- 1. This Regulation establishes requirements for the labelling and the provision of supplementary product information for electronic displays, including but not limited to:
 - (a) televisions, including hospitality televisions;
 - (b) computer monitors;
 - (c) digital photo frames
- 2. This Regulation shall not apply to the following products:
 - (a) status displays;
 - (2) enhanced performance displays;
 - (3) broadcast displays;
 - (4) security displays
 - (5) medical imaging displays.
 - (a) digital signage displays,
 - (b) projectors,
 - (c) smart boards
 - (d) all-in-one videoconference systems
 - (e) displays integrated into medical equipment,
 - (f) any display integrated into battery-powered products designed for mobility and primarily powered by an internal battery
 - (g) any display integrated into industrial machinery measurement or laboratory equipment or specific equipment not targeted to the consumer market.

⁴ OJ L 316, 14.11.2012, p. 12.

Article 2

Definitions

In addition to the definitions set out in Article 2 of Directive 2010/30/EU, the following definitions shall apply for the purpose of this Regulation:

- (1) ‘*Electronic display*’ means an electronic product with a display screen and associated electronics, that is primarily intended for use in a household and/or in an office, that as its primary function displays visual information and that is, as delivered to the user to be connected to an AC mains power source, or a standardised DC power source (e.g. USB) for its intended use, either directly or via an external power supply. The term ‘*monitor*’, used in some cases, is considered as equivalent to ‘*display*’ in respect to the provisions part of the present Regulation;

Electronic displays are devices capable of displaying dynamic visual information from wired or wireless sources including but not limited to:

- (i) broadcast and similar services for terrestrial, cable, satellite, and/or broadband transmission of digital signals;
- (ii) display-specific connections such as, but not limited to, VGA, DVI, HDMI, DisplayPort;
- (iii) non display-specific connections such as, but not limited to, Thunderbolt, USB;
- (iv) media storage devices such as USB flash drive, memory card, or a DVD/Blu-ray Disc,
- (v) network connections, usually using Internet Protocol, typically carried over Ethernet or WiFi, including wireless digital streams such as AirPlay, DIAL, WirelessHD, WiDi.

Electronic displays include, but are not limited to, the following products:

- (a) ‘*Television*’ means an electronic display that is manufactured with an internal television tuner and primarily conceived to display television images;
- (b) ‘*Computer display*’ means an electronic display that is primarily conceived to display a computer's user interface and as result of running programs, allowing the user to interact with the computer, using a keyboard and mouse, via a touch-sensitive interface and/or via gesture or movement detectors;
- (c) ‘*Digital photo frame*’ means an electronic display, that is primarily conceived to display still or dynamic visual information primarily without user interaction. It may also have features, such as, but not restricted to, a programmable timer, occupancy and/or luminance sensor, and connectivity for, audio, video and data through direct or wireless interfaces.

- (2) ‘*Battery-powered devices designed for mobility*’ means any electronic display device with an integrated electronic display that can regularly function using any feature and any application it is designed for, using exclusively the power supplied by an internal battery. The battery may be easily removable or not removable without specific tools and may be rechargeable via connection to an external power source, and/or an internal energy source such as an integrated photovoltaic system. Battery powered devices include but are not limited to a

device such as the following: notebook computer as defined in article 2(7) of Regulation (EC) No 617/2013, a *mobile workstation* as defined in article 2(10) of Regulation (EC) No 617/2013, a *Telephone*, a *Smartphone*, an *Electronic-book (e-book) reader*, a *Notepad*, a *Personal Digital Assistant*, and a *handheld game console*

- (3) ‘*Digital signage display*’ (also known as ‘public display’) means an electronic display with a diagonal display screen size greater than 27 inches. It shall be marketed for digital signage in public or private areas, such as, but not restricted to, retail or department stores, restaurants, museums, conference and meeting centres, fairs, train or metro stations, airports, school campuses or healthcare organisation for simultaneous viewing by one or more users and is not configured or supplied as a free-standing device for desktop use. Its specification shall include all of the following definitive features:

- (a) a scaling function for multiple display / split screen (e.g. ‘*video walls*’);
- (b) specific ID to address the selected display screen uniquely (even in a display group of 25 or more units);
- (c) remote control disabling function;
- (d) vertical and portrait physical orientation of the display screen;
- (e) designed for continuous use (‘24x7’);
- (f) designed to be installed, hanging from horizontal surfaces, attached to vertical surfaces or mounted on a floor stand.

The following characterising features can be present in addition to but not instead of the definitive features:

- i. high brightness level (e.g. 3000 cdl/m²);
- ii. LAN connection for controlling, monitoring or to receive the information to display.
- iii. boosted cooling;
- iv. HD-SDI signal interface capability;
- v. a power-on delay function to reduce power peaks in large installations;
- vi. control button lock and
 - i. self-monitoring function (e.g. product internal temperature).

- (4) ‘*Smart board*’ or *digital white board*’ means an electronic display with “touch-technology” capability allowing direct viewer interaction with the displayed image by touching the display surface. A whiteboard display includes the following features:

- a) designed to be installed hanging, on a wall, or mounted on a floor-stand with a portrait or landscape physical orientation of the display screen;
- b) integrated computer and computer software with specific functionalities to manage, content in windows and interaction.

- (5) ‘*Hospitality Television*’ means a television, typically used in hotel rooms, which includes the following features:

- a) Control ports for bi-directional communication (DB-9, RJ11, RJ12, RJ45, coaxial cable, or HDMI-CEC);
 - b) Integrated or integratable software and/or hardware solutions for hospitality offering management and maintenance of guest room display content such as Slide Show, Video-On-Demand (VOD), decoded MPEG-4 from satellite signal or hospitality-specific applications
 - c) Auto Sensing inputs
 - d) Gateway Network Appliance (GNA) for remote web based programmability and setup
 - e) Integrated b-LAN™ communication with PPV support
- (6) ‘*Medical imaging displays and displays integrated in medical devices*’ means electronic displays and other products covered by the scope of:
- (a) the Council Directive 93/42/EEC of 14 June 1993 concerning medical devices⁵, or
 - (b) the Council Directive of 20 June 1990 on the approximation of the laws of the Member States relating to active implantable medical devices 90/385/EEC⁶, or
 - (c) the Directive 98/79/EC of the European Parliament and of the Council of 27 October 1998 on in vitro diagnostic medical devices⁷ and
 - (d) any amendment or modification of the above mentioned legislation.
- (7) ‘*Broadcast display*’ means an electronic display that is designed and marketed for professional use by broadcasters and video production houses for video content creation. Its specification shall include all of the following definitive features:
- a. colour calibration (as required in TV production);
 - b. screen marker (for image focusing);
 - c. remote control by wired connection interface (typically BNC) with analogue or digital control signal protocols.
- The following characterising features can be present in addition to but not instead of the definitive features:
- (e) a simultaneous mix of parallel input signals (e.g., different image signals);
 - (f) a wave-form monitor function;
 - (g) an RGB cut-off mode;
 - (h) HD-SDI signal interfaces;
 - (i) a tally lamp (indication of system selection and operation); and
 - (j) a horizontal image shift;
- (8) ‘*Enhanced performance display*’ means a professional computer display whose specifications shall include all of the following functions and features:

⁵ OJ L 169, 12.7.1993, p. 1.

⁶ OJ L 189, 20.7.1990, p. 17.

⁷ OJ L 331, 7.12.1998, p.1.

- (a) A contrast ratio of 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 $\pm 85^\circ$ relative to that perpendicular.
 - (b) a native resolution greater than or equal to 2.3 megapixels (MP);
 - (c) a colour gamut area of at least sRGB as defined by IEC 61966 2-1. Shifts in colour space are allowable as long as 99% or more of defined sRGB colours are supported;
 - (d) a brightness and colour uniformity of >90% across the image;
 - (e) colour and brightness stability at the delivered specified performance across the specific working temperature range and nominal working life.
- (9) ‘*Security display*’ means a professional electronic display which shall include all of the following specifications:
- (a) reinforced design for heavy continuous usage (‘24/7’)
 - (b) self-monitoring function capable of communicating the following information to a remote server:
 - power status;
 - internal temperature from anti-overload thermal sensing;
 - video source;
 - audio source and audio status (volume/mute);
 - model and firmware version;
 - (c) end-user specified specialist form factor facilitating the installation of the display into professional housings or consoles;
- (10) ‘*Status display*’ means an electronic display capable of displaying alphanumeric characters or simple images. Its principal function is to display the status of the product(s) and/or the result of the activity, performed by the product(s). Status displays include also displays incorporating an end-user interface to allow the control of the associated product(s);
- (11) ‘*Game console*’ means a device as defined in article 2(1) of Regulation (EC) No 617/2013.
- (12) ‘*All-in-one video conference systems*’ means a videoconference codec (encoder/decoder) with integrated display and loudspeakers, to be used in interactive telecommunications using specific protocols such as ITU-T H.320 or H.323, whose specification shall include all of the following functions and features:
- (a) an encryption function;
 - (d) intelligent QoSTM function (quality of service function to achieve and maintain a stable transmission); and
 - (e) KIOSK mode (remote consulting, customized distance learning).
- (13) ‘*Projector*’ is an optical device for processing analogue or digital video image information, in any, broadcasting, storage or networking format to modulate a light source and project the resulting image onto an external screen;

- (14) ‘*High-Definition display*’ (HD display) means an electronic display that has at least one digital input with a native (design) resolution of 1920 by 1080 pixels Or in other formats with a minimum horizontal resolution of 1920 pixels;
- (15) ‘*Computer*’ means a device as defined in article 2(1) of Regulation (EC) No. 617/2013;
- (16) ‘*Integrated desktop computer*’ means a computer as defined in article 2(6) of Regulation (EC) No 617/2013 ;
- (17) ‘*End-user*’ means a consumer using the product.;
- (18) ‘*2D mode*’ means an electronic display mode where images are constructed on the display screen in two planes (height and width) and presented to the viewer with no additional optical processing;
- (19) ‘*3D mode*’ means a mode where separate sequential images are presented on the display screen and optically processed to present to the viewer, apparently simultaneous offset images creating a perception of physical depth (third dimension).

For the purposes of the Annexes, additional definitions are laid down in Annex I.

Article 3

Responsibilities of suppliers and timetable

1. Suppliers shall ensure that:
 - (a) each electronic display is supplied with a printed label in the format and containing the information set out in Annex IV;
 - (b) a product fiche, as set out in Annex V, is made available, including in electronic format;
 - (c) the technical documentation, as set out in Annex VI, is made available on request to the authorities of the Member States and to the Commission;
 - (d) any advertisement for a specific model of electronic display contains the energy efficiency class, if the advertisement discloses energy-related or price information;
 - (e) any technical promotional material concerning a specific model of electronic display which describes its specific technical parameters includes the energy efficiency class of that model;
 - (f) an electronic label in the format and containing the information as set out in Annex IV shall be made available to dealers for each electronic display model;
 - (g) an electronic product fiche as set out in Annex V is made available to dealers for each electronic display model.
2. The energy efficiency class shall be based on the Energy Efficiency Index calculated in accordance with Annex III.

Article 4

Responsibilities of dealers

Dealers shall ensure that from:

- (a) each model presented at the point of sale bears the label provided by suppliers in accordance with Article 3 displayed on the outside of the appliance or hung on it, in such a way as to be clearly visible;
- (b) electronic displays offered for sale, hire or hire-purchase where the end-user cannot be expected to see the electronic display displayed, are marketed with the information to be provided by suppliers in accordance with Annex VII, except where the offer is made through the Internet, in which case the provisions in Annex VIII shall apply;
- (c) any advertisement for a specific model of electronic display contains the energy efficiency class, if the advertisement discloses energy-related or price information;
- (d) any technical promotional material concerning a specific model of electronic display which describes its specific technical parameters includes the energy efficiency class of the model.

Article 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 IX.

Article 6

Verification procedure for market surveillance purposes

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

Article 7

Revision

The Commission shall review this Regulation in light of technological progress and present the results of this review to the Ecodesign Consultation Forum no later than four years after its entry into force. The review shall in particular assess the verification tolerances set out in Annex X, whether other electronic displays, particularly public displays should be included in the scope and whether it is feasible to develop the appropriate measurement methods for their annual energy consumption.

Article 8

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.

Article 9
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 twelve months after the entry into force, with the exemption set out in point 3.
3. Article 4b shall start applying to electronic displays other than televisions covered by Regulation 1062/2010 as from fifteen months after the entry into force.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

For the Commission
The President
Jean-Claude JUNCKER

ANNEX I
Definitions applicable for the purposes of the Annexes

- (1) ‘*ABC*’ means Automatic Brightness Control
- (2) ‘*APD*’ means Automatic Power Down;
- (3) ‘*HiNA*’ means High Network Availability
- (4) ‘*HiNA functionality*’ means a device with the function of a router, network switch, or wireless network access point (not being a terminal or node) or a combination of those functions;
- (5) ‘*Home mode/standard mode*’ means a display screen setting which is recommended to the end-user by the manufacturer from the initial set up menu or the mode that the display product comes shipped in if no setting is recommended;
- (6) ‘*Networked standby reactivation function*’ means a function facilitating the activation of other modes, including on-mode, by remotely initiated trigger to a condition providing additional functions, including the main function;
- (7) ‘*Forced menu*’ means a set of display settings pre-defined by the manufacturer, of which the end-user of the display must select a particular setting upon initial start-up of the display;
- (8) ‘*Network port*’ means a wired or wireless physical interface of the network connection located at the electronic display through which the electronic display can be remotely activated. For computer displays, the interfaces of the video and audio connection with the computer components are not considered to be network ports;
- (9) ‘*Standby mode*’ means a condition where the product is connected to the mains power source, depends on energy input from the mains power source to function properly, produces neither sound nor picture, but can be switched into another mode with the remote control unit or an internal signal.
- (10) ‘*Networked standby*’ means a condition where an electronic display is connected to the mains power source, depends on energy input from the mains power source to

function properly, and is able to resume a function through a remotely initiated trigger via a network connection. In the networked standby condition the product produces neither sound nor picture, but can be switched into another mode with the remote control unit or an internal signal or a data instruction through a network connection. The networked standby mode provides the following functions:

- (a) networked standby reactivation function, or reactivation function and only an indication of enabled reactivation function, and/or,
- (b) display of information or product status;

The networked standby mode may also provide the enhanced reactivation function(s);

- (11) ‘*Router*’ means a network device that, as its primary function, determines the optimal path along which network traffic should be forwarded. Routers forward packets from one network to another, based on network layer information (L3);
- (12) ‘*Network switch*’ means a network device that, as its primary function, filters, forwards, and distributes frames based on the destination address of each frame. All switches operate at least at the data link layer (L2);
- (13) ‘*Network access point*’ means a device that, as its primary function, provides connectivity to a network linking multiple nodes (final devices). The networks can be either wireless (e.g. based on IEEE 802.11 more frequently called WiFi) or wired, e.g. based on IEEE 802.3 or more frequently called Ethernet;
- (14) ‘*On mode*’ means a condition in which the product is connected to a mains power source, has been activated, and is providing one or more of its principal functions;
- (15) ‘*Off mode*’ means a condition in which the product, even if connected to the mains power source, produces no usable function and cannot be switched into any other mode using a remote control unit, an internal or an external signal. This mode may persist for an indefinite time. The product may only exit this mode by direct end-user actuation, including of a power switch or control;
- (16) ‘*Luminance*’ means the photometric measure of the luminous intensity per unit area of light traveling in a given direction, expressed in units of candelas per square meter (cd/m^2). The Luminance of a display is understood to refer to the brightness of a display;
- (17) ‘*Automatic Brightness Control (ABC)*’ means the self-acting mechanism that controls the brightness of a display as a function of the ambient light level illuminating the display product. Measurement of the ambient light level is performed via a sensor, sometimes indicated in documentation as "light sensor" or "economy sensor";
- (18) ‘*Screen area*’ means the viewable screen area of the product calculated by multiplying the maximum viewable image width by the maximum viewable image height;
- (19) ‘*Brightest on-mode condition*’ means the mode, pre-set by the manufacturer, which provides an acceptable picture with the highest measured luminance. This includes a pre-set mode incorporated for use specifically in the context of demonstrating the display, for example in high illumination (retail) conditions (often termed ‘*shop mode*’);
- (20) ‘*Equivalent electronic display*’ means a variant of a specific model of electronic display placed on the market by the same manufacturer but under a different commercial code number. Such a variant may be defined as an equivalent electronic

display only if it has essentially identical, electrical, physical and functional characteristics that affect energy consumption energy efficiency and recycling ecodesign criteria.(e.g. the same on-mode, off-mode, standby mode, networked standby condition power demand, automatic power down and/or power management functions, , peak luminance ratio, time of the extraction of key components, marking of plastic parts, minimum recyclability rate index for certain plastic parts and mercury free logo)

- (40) ‘*Reactivation function*’ means a function facilitating the activation, by a remote switch including a remote control unit, an internal sensor, or a timer, of other modes providing additional functions, including the main function;
- (41) ‘*Enhanced reactivation or mode control functions*’ means reactivation functions other than those traditionally supported by electronic displays (such as infrared remote control unit and internal timer) and using sensor systems for voice recognition, room presence and/or gesture detection ;
- (42) ‘*Voice recognition sensor*’ means a sensor monitoring and reacting to voice commands of an end-user that can allow the activation of other modes, including on-mode ;
- (43) ‘*Room presence and/or gesture detection sensor*’ means a sensor monitoring and reacting to the occupancy and movements, by an end-user, in the space around the product that can allow the activation of other modes, including on-mode;
- (44) ‘*Network*’ means a communication infrastructure with a topology of links and an architecture that includes the physical components, organisational principles and communication procedures and formats (protocols);
- (45) ‘*Networked Electronic Display*’ means a display product that can connect to a network using one or more network ports;
- (46) ‘*Network availability*’ means the capability of a display product to resume functions after a remotely initiated trigger has been detected by a network port;
- (47) ‘*Remotely initiated trigger*’ means a signal that comes from outside the electronic display via a network and
- (48) ‘*Easily visible and accessible on-off switch*’ means a switch that can be seen and accessed with one hand from prescribed limits as qualified in Annex XI

ANNEX II
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 III.

Table 1: Energy efficiency classes of electronic displays

Energy Efficiency Class	Energy Efficiency Index (EEI)
A+++	$EEI < 0,05$
A++	$0,05 \leq EEI < 0,13$
A+	$0,13 \leq EEI < 0,23$
A	$0,23 \leq EEI < 0,30$
B	$0,30 \leq EEI < 0,42$
C	$0,42 \leq EEI < 0,60$
D	$0,60 \leq EEI$

ANNEX III
Method for calculating the Energy Efficiency Index (EEI) and the annual on-mode energy consumption

1. The Energy Efficiency Index (*EEI*) is calculated as follows:

$$EEI = \frac{P_m}{(4.3224 \times A + 20)}$$

Where:

P_m = power demand (W) in on-mode, measured according to the accepted test methodology of determining the average power required by the electronic display when displaying a standardised dynamic broadcast content moving picture test sequence

A = the visible area of the display screen (dm²)

2. The annual on-mode energy consumption (AE) in kWh is calculated as $AE = 1,46 \times P_m$.

3. Electronic displays with ‘*automatic brightness control*’ (ABC)

For the purposes of calculating the Energy Efficiency Index (EEI) and the annual on-mode energy consumption (AE) referred to in points 1 and 2 of Annex III, the on-mode power demand as established according to the procedure set out in Annex IX is reduced by 15% if the following conditions are fulfilled when the electronic display is placed on the market:

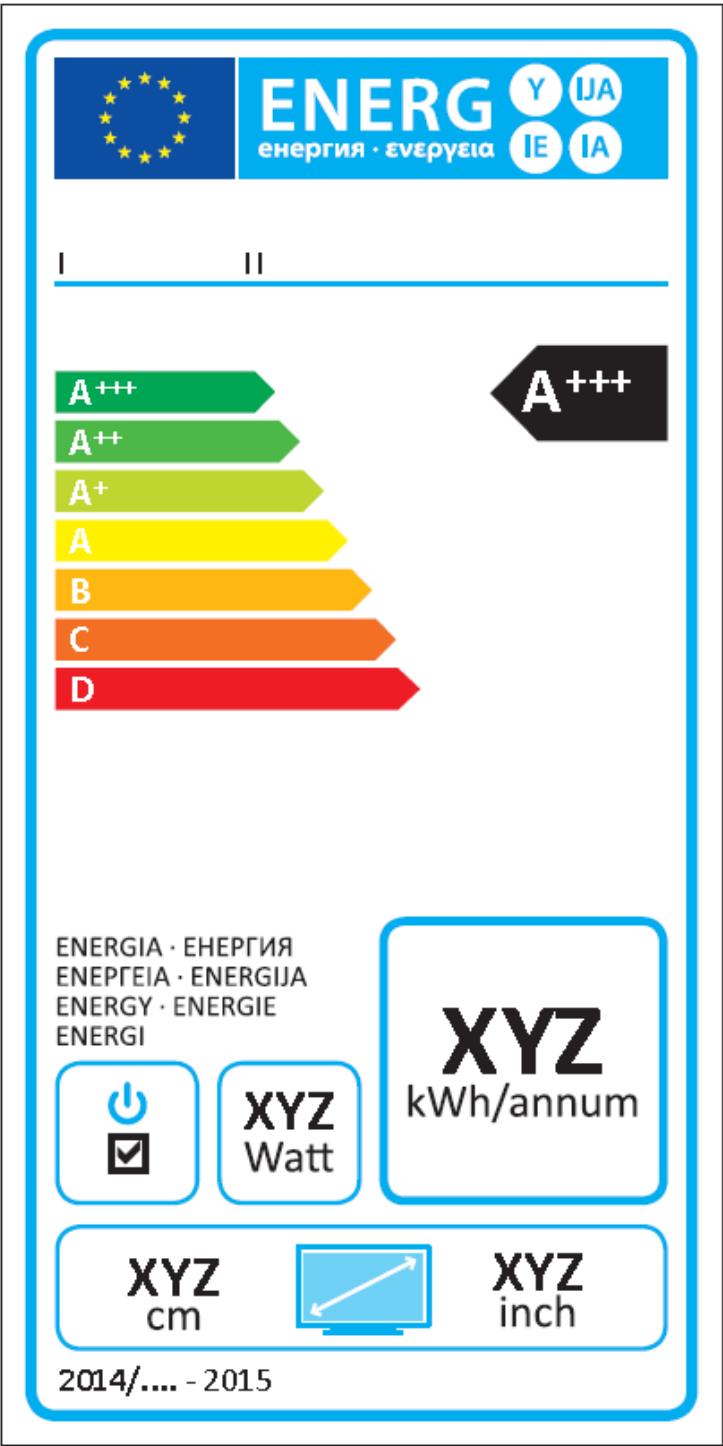
- (a) the luminance of the display in the home-mode/standard mode as set by the supplier, is automatically reduced between an ambient light intensity, measured at the Automatic Brightness Control (ABC) sensor of the display product, of 35 lux and 3 lux, and the average on-mode power requirement of the display product is reduced by at least 15% through this reduction in display luminance..
 - (b) the Automatic Brightness Control (ABC) is activated by the supplier in the home-mode/standard mode condition or the on-mode condition of the display as set by the supplier.
4. Electronic displays with ‘*enhanced reactivation features*’ In the case of electronic displays with enhanced reactivation features which recognise the presence of a user in the room containing the display and
- (a) Reduce the power consumption of the display product by at least 20% when there is no user presence detected and
 - (b) Return the display to the last user selected function when a user room presence is subsequently detected and

- Enable the '*room presence detection*' reactivation feature as a home-mode/standard mode function;

Shall have, the on-mode power demand, as established according to the procedure set out in Annex IX, reduced by 10% for the purposes of calculating the Energy Efficiency Index (EEI) and the annual on-mode energy consumption (AE) referred to in points 1 and 2 of Annex III,

ANNEX IV
The label

- 1. Label
- 1.1. Label



1.2. 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 electronic display model from other models with the same trade mark or supplier's name;
- III. the energy efficiency class as defined in Annex II; the head of the arrow containing the energy efficiency class of the electronic display shall be placed at the same height as the head of the arrow of the relevant energy efficiency class;
- IV. on-mode power demand in Watts, rounded to the first integer;
- V. annual on-mode energy consumption calculated in accordance with Annex III, in kWh, rounded to the first integer;
- VI. visible screen diagonal in inches and centimetres;
- VII. for electronic displays with an easily visible switch, which puts the display in a condition with power demand not exceeding 0,01 Watts when operated to the off position, the switch symbol defined in sub point 8 of point 4 may be added;

1.3. The design of the labels shall be in accordance with point 2 of Annex IV.

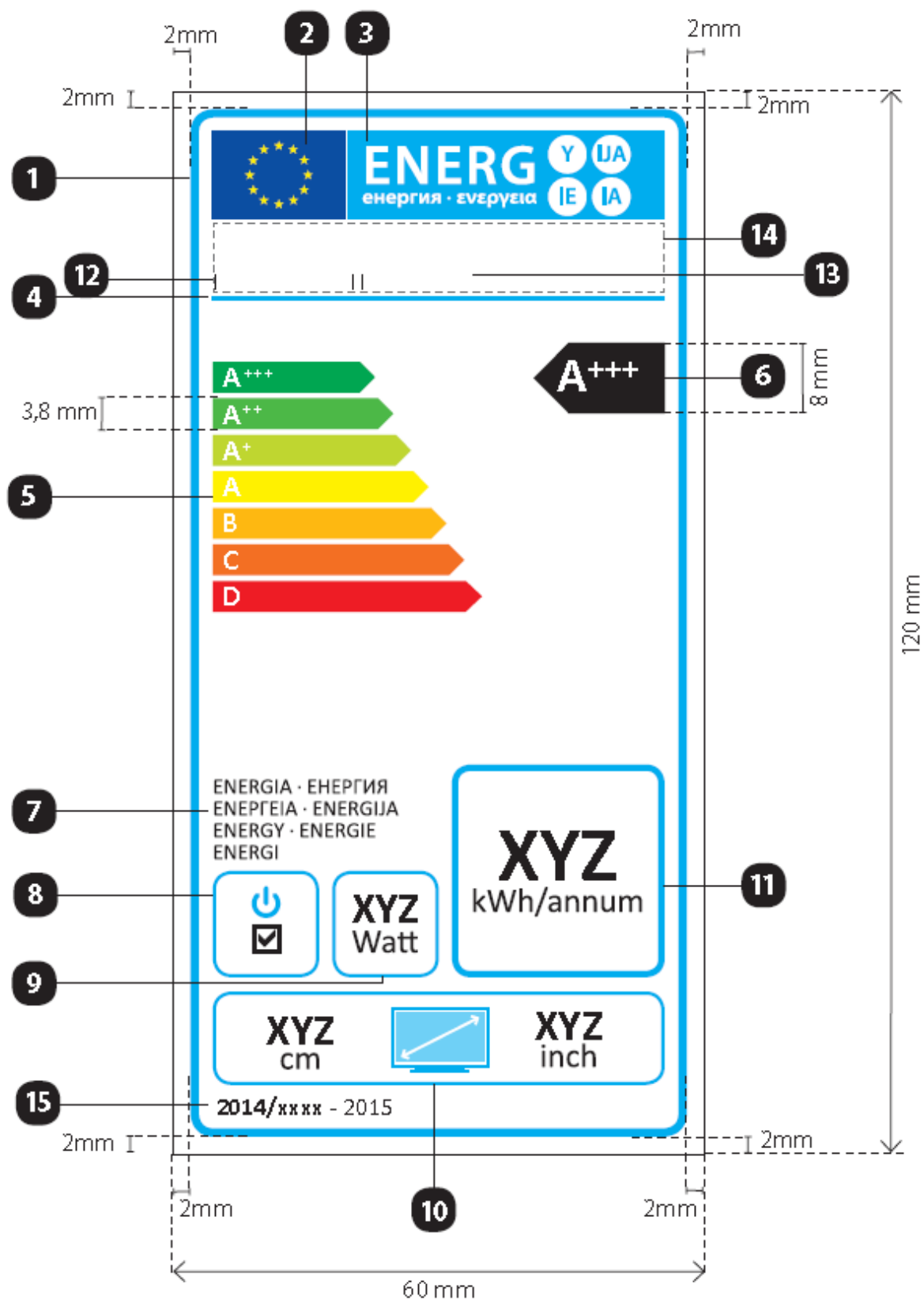
1.4. By way of derogation where a model has been awarded an 'EU Ecolabel' under Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel⁸, a copy of the EU Ecolabel may be added.

⁸

OJ L 27, 30.1.2010, p.1.

2. Label design

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



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+++D 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,
- 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. **Switch logo:**

- **Pictogram as depicted, Border:** 1 pt — colour: Cyan 100 % — round corners: 3,5 mm.

9. **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.

10. 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.

11. Text related to annual energy consumption:

- **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.

12. Supplier's name or trade mark

13. Supplier's model identifier

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

15. Numbering of the Regulation and label

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

ANNEX V
Product fiche

1. The information in the product fiche of the electronic display shall be given in the following order and shall be included in the product brochure or other literature provided with the product:
 - (a) supplier's name or trade mark;
 - (b) supplier's model identifier which means the code, usually alphanumeric, which distinguishes a specific electronic display model from other models with the same trade mark or supplier's name;
 - (c) the energy efficiency class, determined in accordance with Annex II;
 - (d) the visible screen diagonal in centimetres and in inches and the visible screen area in dm²;
 - (e) the on-mode power demand measured in accordance with the procedure set out in Annex IX;
 - (f) the annual energy consumption (AE) calculated in accordance with Annex III in kWh per year, rounded to the first integer; it shall be described as: 'Energy consumption XYZ kWh per year, based on the power demand of the electronic display operating 4 hours per day for 365 days. The actual energy consumption will depend on how the display is used';
 - (g) the standby, off-mode and networked standby power demand of both measured in accordance with the procedure as set out in Annex IX;
 - (h) the screen resolution in physical horizontal and vertical pixel count;
 - (i) whether Automatic Brightness Control according to Annex III, point 3 is available and activated.
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 Ecolabel⁹ this information may be included.
3. One fiche may cover a number of electronic display models supplied by the same supplier.
4. The information contained in the fiche may be given in the form of a copy of the label, either in colour or in black and white. Where this is the case, the information listed in point 1 not already displayed on the label shall also be provided.

⁹ OJ L 27, 30.1.2010, p.1.

ANNEX VI
Technical documentation

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

(a) Identification data:

- supplier's name, registered trade name or registered trade mark, and the address at which it can be contacted;
- identification and signature of the person empowered to bind the supplier;
- model number, and other codes, marks information sufficient for it to be unequivocally and easily identified;
- year of manufacture;
- where appropriate, the references of the harmonised standards applies;
- where appropriate, the other technical standards and specifications used.

(b) Test parameters for measurements:

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

(c) On mode:

- the power demand data in Watts rounded to the first decimal place for power measurements up to 100 Watts, and to the first integer for power measurements above 100 Watts;
- 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 shall be up converted by the electronic display to the native resolution of the display);
- the sequence of steps for achieving a stable condition with respect to power demand;
- 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 picture settings of menu setting (mode) used for the brightest on mode peak luminance measurement must be declared;
- 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.

(d) For standby and off mode:

- the power demand data in Watts rounded to the second decimal place;
 - the measurement method used;
 - description of how the mode was selected or programmed including any enhanced reactivation functions;
 - 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:
- 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;
 - 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;
 - 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:
- the default time after which the power management function, switches the display into a condition providing networked standby;
 - the trigger that is used to reactivate the electronic display;
 - the (maximum) performance specifications;
 - the (maximum) power demand of the electronic display 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/2015/(EC) *[Numbering of the Regulation to be added before publication in the OJ]*.
- (i) Automatic Brightness Control (ABC), and Enhanced Reactivation room presence detection if applicable:

- 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 35 lux and 3 lux.
 - 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.
2. 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.
 3. 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.

ANNEX VII



Information to be provided in the cases where end-users cannot be expected to see the product displayed, except on the Internet

1. The information referred to in Article 4(b) shall be provided in the following order:
 - (a) the energy efficiency class, determined in accordance with Annex II;
 - (b) the on-mode power demand in accordance with point 1 of Annex III;
 - (c) the annual energy consumption (AE), as referred to in point 2 of Annex III;
 - (d) the visible screen diagonal.
2. Where other information contained in the product information fiche is also provided, it shall be in the form and order specified in Annex V.
3. The size and font in which the information referred in this Annex is printed or shown shall be legible.

ANNEX VIII

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 mechanism*' means any screen, including tactile screen and visual technology used for displaying internet content to end-users;
 - (b) '*nested display*' means visual interface where an image or data set is accessed by mouse click, mouse roll-over or tactile screen expansion of another image or data set;
 - (c) '*tactile screen*' means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;
 - (d) '*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.
2. The appropriate label made available by suppliers in accordance with Article 3(1)(f) shall be shown on the display mechanism in proximity to the price of the product in accordance with the timetable set out in Article 3(1). 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 IV. 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.
3. 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 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 display, 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 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 on failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.

5. The appropriate product fiche 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 product fiche is clearly visible and legible. The product fiche may be displayed using a nested display, in which case the link used for accessing the fiche shall clearly and legibly indicate 'Product fiche'. If nested display is used, the product fiche shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

ANNEX IX

Measurement and calculation methods

1. 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.

2. Measurements

Electronic displays which can operate in both 2D and 3D modes shall be tested when they operate in 2D mode, according to the on-mode power demand test methodology established for electronic displays with 2D mode only. The on-mode power demand of the electronic display, when switched from 2D to 3D in the home mode/standard mode, shall be tested using a reliable accurate and reproducible measurement procedure for 3D electronic displays which takes into account the generally recognised state-of-the-art measurement methods, including harmonised standards, the reference numbers of which have been published in the Official Journal of the European Union.

2.1. 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:
 - 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.
 - Electronic displays with forced menu: the power demand shall be measured in the home-mode/standard mode condition.
- (b) General conditions:
 - Measurements shall be made at an ambient temperature of 23 °C +/- 5 °C.
 - Measurements shall be made using a dynamic broadcast-content video signal representing typical broadcast content for electronic displays. The measurement shall be the average power consumed over 10 consecutive minutes.
 - 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.
 - Measurements shall be made with the Automatic Brightness Control function, if such a function exists, made inactive. If the Automatic Brightness Control function exists

and cannot be made inactive, then the measurements shall be performed with the light entering directly into the ambient light sensor at a level of 300 lux, or more.

2.2. 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

2.3. Measurements of peak luminance

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

- Measurements of peak luminance shall be made 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 that does not exceed the average picture level (APL) point where any power limiting or other irregularity occurs in the electronic display luminance drive system affecting electronic display luminance.
- Measurements of luminance ratio shall be made without disturbing the luminance meter’s detection point on the electronic display whilst switching between the home-mode/standard mode condition or the on-mode condition of the electronic display as set by the supplier, as applicable, and the brightest on-mode condition.

ANNEX X

Verification procedure for market surveillance purposes

For the purposes of assessing conformity with the requirements laid down in Articles 3 and 4, the authorities of the Member States shall apply the following verification procedure:

1. The Member States shall test one single unit per model.
2. The electronic display model shall be considered to comply with the applicable requirements if the values and classes on the label and in the product fiche correspond to the values in the technical documentation and if testing of the relevant model parameters listed in Table 1 shows compliance for all of those parameters.
3. If the result referred to in point 1 is not achieved, the Member State authorities shall randomly select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more different models which have been listed as equivalent electronic display in the supplier's technical documentation.
4. The electronic display model shall be considered to comply with the applicable requirements if testing of the relevant model parameters listed in Table 1 shows compliance for all of those parameters.
5. If the results referred to in point 4 are not achieved, the model and all equivalent electronic displays shall be considered not to comply with this Regulation.

Member State authorities shall use the measurement and calculation methods set out in Annex IX.

The verification tolerances defined 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.

Table 1

Parameter	Verification tolerances
Energy Efficiency Index	The determined value ⁽¹⁾ is not more than 5% higher than the declared value.
Annual energy consumption in kWh	The determined value ⁽¹⁾ is not more than 5% higher than the declared value.
On mode power demand in Watts	The determined value ⁽¹⁾ is not more than 5% higher than the declared value.
Standby, off-mode and networked standby power demand in Watts, as applicable.	The determined value ⁽¹⁾ is not more than 5% higher than the declared value.
The peak luminance ratio	No tolerances; the determined value ⁽¹⁾ is no less than the declared value.
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.
Easily visible switch ⁽²⁾ which puts the electronic display in a condition with power demand not exceeding 0,01 Watts when operated to the off position.	The determined value ⁽¹⁾ is not more than 5% higher than 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.

⁽²⁾ Only for electronic displays with an easily visible switch.

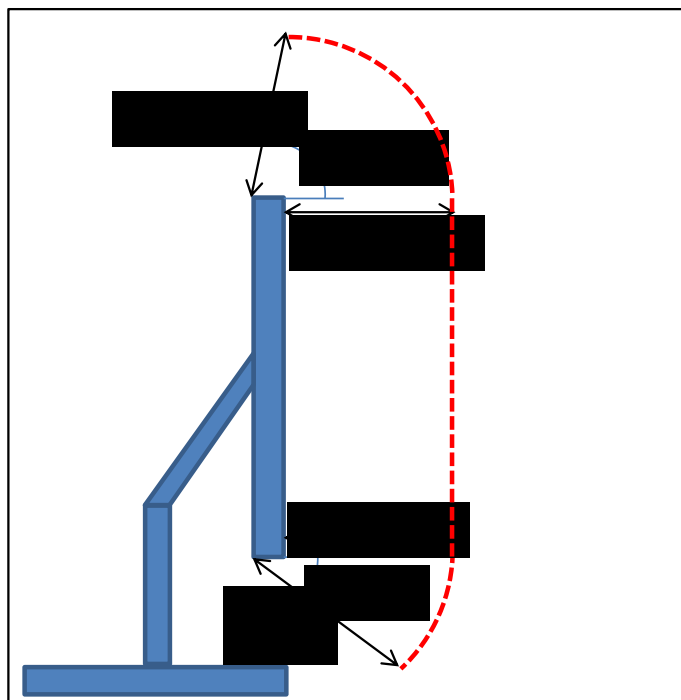
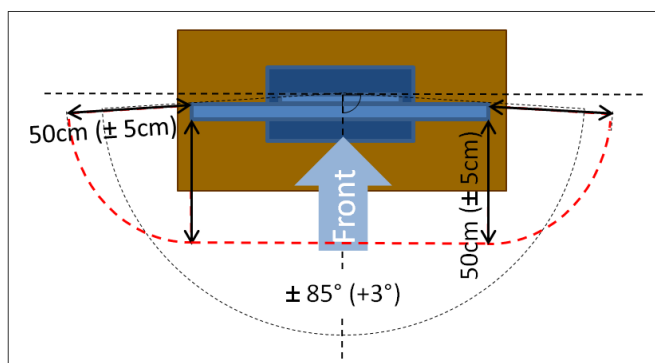
ANNEX XI

Parameters of easily visible and accessible on/off switch

The two following criteria are to be met for the on/off-switch of an electronic display set to be an 'easily visible and accessible on/off switch':

1. **Visibility:** The off-switch, or its protective housing, shall be visible under normal room light conditions by a person positioned at a point of the red dotted line, as defined in the pictures below;
2. **Accessibility:** The switch shall be accessible and operable by one hand from a person positioned at a point of the red dotted line, as defined in the pictures below.

The viewing distance shall be measured from the closest edge of the display towards the observer as indicated by the black arrows.



ANNEX XII
Correlation table

Regulation 1062/2010	This Regulation
Article 1	
Article 2	
Article 3	
Article 4	
Article 5	
Article 6	
Article 7	
Article 8	
Article 9	
Annexes I to III	