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**COMMISSION REGULATION (EU) .../...**

**of XXX**

**implementing**

**Directive 2009/125/EC of the European Parliament and of the Council with regard to  
ecodesign requirements for electronic displays,**

**repealing**

**Regulation (EC) No 642/2009 with regard to ecodesign requirements for televisions**

**and amending**

**Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby and  
off mode electric power consumption of electrical and electronic household and office  
equipment**

**and**

**Regulation (EU) No 617/2013 with regard to ecodesign requirements for computers and  
computer servers**

(Text with EEA relevance)

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(Text with EEA relevance)

THE EUROPEAN COMMISSION,

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

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products<sup>1</sup>, and in particular Article 15(1) thereof,

After consulting the Ecodesign Consultation Forum referred to in Article 18 of Directive 2009/125/EC,

Whereas:

- (1) Under Directive 2009/125/EC ecodesign requirements are to be laid down by the Commission for energy-related products that represent significant volumes of sales and trade, have a significant environmental impact and present significant potential for improvement in terms of their environmental impact without entailing excessive costs.
- (2) Article 16(2)(a) of Directive 2009/125/EC provides that the Commission, in accordance with the criteria set out in Article 15(2), and after consulting the Consultation Forum, shall introduce, as appropriate, implementing measures for consumer electronics.
- (3) Ecodesign requirements for televisions were laid down in Commission Regulation (EC) No 642/2009 of 22 July 2009 implementing Directive 2005/32/EC of the

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<sup>1</sup> OJ L 285, 31.10.2009, p. 10.

European Parliament and of the Council with regard to ecodesign requirements for televisions<sup>2</sup>.

- (4) Commission Regulation (EU) No 801/2013 amended Commission Regulation (EC) No 642/2009 to include additional requirements on networked standby power consumption.
- (5) Commission Regulation (EC) No 642/2009 was to be reviewed no later than three years after its entry into force.
- (6) The Commission has reviewed Commission Regulation (EC) No 642/2009/EC in the light of technological progress. Review studies, presented to the Consultation Forum in 2012 and 2014, analysed technical, environmental and economic aspects of televisions and other electronic displays, including computer displays. The studies concluded that there was a need for the introduction of new ecodesign energy-related requirements for televisions. The studies also showed that the same requirements should also apply to computer displays because of the rapidly increasing functionality overlap between such displays and televisions.
- (7) Consequently, the scope of the Regulation should comprise electronic displays that are primarily intended for household, office or commercial use, including televisions and computer displays.
- (8) Signage displays, used in non-private environments such as airports, metro and train stations, retail stores, shop windows, restaurants, museums, hotels, conference centres or in a prominent position outside buildings, represent an emerging market, mostly replacing paper-rolling or split-flap displays and frequently lit 24x7. Their energy requirements, however, are relatively different from those of other electronic displays.
- (9) Projectors and electronic displays in game consoles should be considered outside the scope of the Regulation because they belong to product groups that are subject to other regulatory or voluntary instruments.
- (10) Displays integrated into computers, such as tablets, laptops or integrated desktops, should be covered by the specific Commission Regulation (EU) No 617/2013/EU on computers and computer servers.
- (11) Once delivered to an electric and electronic equipment waste collection facility, televisions, computer monitors, signage displays, displays integrated into interactive whiteboards, professional displays, broadcast displays, displays for medical use or security displays, displays integrated into desktop computers, into tablets, into "two-in-one" notebooks, into "all-in-one" portables and into other computer types, are, in principle, not distinguishable from each other and resource efficiency requirements related to end of life processing should therefore be the same for all display types. End-of-life requirements for computers integrating a display, should be aligned as well.
- (12) New products are coming to market, such as snacks and drinks vending machines, or household refrigerators, integrating relatively big displays, generally with touch capabilities. Energy performance of these displays has to be part of the overall energy performance of the product integrating them. End-of-life treatment, however should follow the same stream, therefore non energy requirements should be aligned.
- (13) The EU action plan for the Circular Economy<sup>3</sup> calls for cost-effective improvements on resource efficiency, and therefore this Regulation lays down requirements on non-

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<sup>2</sup> OJ L 191, 23.07.2009, p. 42.

energy related aspects, including extraction of key-components and of critical raw materials, availability of the latest firmware version and similar.

- (14) Electronic displays with a surface area smaller than or equal to 1 square decimetre are exempted from the requirements set in Article 8 of Directive 2012/19/EU<sup>4</sup> (the WEEE Directive). Considering also their very limited energy use they should be outside the scope of this Regulation.
- (15) Electronic displays integrated in medical equipment, displays integrated in industrial or laboratory equipment, displays integrated in all-in-one video conference systems and displays integrated in equipment where the main function is status display or control and function activation have distinct characteristics and uses and should therefore not be subject to energy efficiency requirements of this Regulation. However, once at end of their life, they are not easily distinguishable from other display types. Therefore, not to determine additional burdens on the recycling industry, they should be subject to the same requirements for proper WEEE treatment.
- (16) Electronic displays for professional use, such as in the video-editing, CAD/CAM, the graphics or the broadcast sector, possess enhanced performance and features that usually involve higher energy use and should therefore not be subject to stringent energy efficiency requirements.
- (17) This Regulation lays down specific requirements for standby and off mode electric power demand of electronic displays. Therefore, the requirements of Commission Regulation (EC) No 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment<sup>5</sup> should only partly apply to electronic displays covered by the scope of this Regulation that need specific requirements. Regulation (EC) No 1275/2008 should be amended accordingly.
- (18) Specific requirements for televisions regarding standby, including networked standby and off mode have been set by Commission Regulation (EU) No 801/2013, amending Commission Regulation (EC) No 1275/2008 and Commission Regulation (EC) No 642/2009. These do not apply to electronic displays covered by the scope of this Regulation. Commission Regulation (EC) No 642/2009 should be amended accordingly.
- (19) Electronic displays have different features with respect to sound processing. Some displays have neither sound management, nor loudspeakers, whilst hi-end products may include home-theatre sound processing and reproduction features with, management of multiple audio channels with a relevant impact on the energy consumption of such displays. To ensure equal treatment of electronic displays and considering that sound equipment is subject to other regulatory measures, the on-mode energy use of sound components integrated into electronic displays should be exempted from the requirements of this Regulation.
- (20) Decision No 1386/2013/EU on a General Union Environment Action Programme to 2020 includes, in Article 2 (b), the goal "to turn the Union into a resource-efficient, green and competitive low-carbon economy". Priority objective 2 suggests that

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<sup>3</sup> COM(2015) 614 final

<sup>4</sup> OJ L 197, 24.7.2012, p. 38.

<sup>5</sup> OJ L 339, 18.12.2008, p. 45.

implementable and enforceable requirements at the product design phase may be appropriate for optimising resource and material efficiency at end of life.

- (21) Directive 2012/19/EU on waste electrical and electronic equipment<sup>6</sup> (the WEEE Directive) refers to Directive 2009/125/EC indicating that ecodesign requirements should facilitate the re-use, dismantling and recovery of WEEE by tackling the issues upstream. In particular, its Article 8(1) and (2) require Member States to ensure that all separately collected WEEE undergoes proper treatment including as a minimum, a selective treatment of a number of components – typically present in electronic displays – in preparation for re-use, recovery or recycling. Additionally, electronic displays may contain substances classified as toxic, carcinogenic or dangerous for the environment. Shredding of electronic displays causes large losses of resources and is not compatible with the recovery of some rare and precious materials. Dismantling of crucial components should therefore be facilitated before shredding or incineration of unsorted WEEE including electronic displays. Furthermore, Article 15 of the WEEE Directive makes provision for information to be provided by producers to facilitate the preparation for re-use and the correct and environmentally sound treatment of WEEE. Indium, used in manufacturing of display, has been identified as critical within the European Raw Material Initiative (COM(2014) 297 final). However the current recycling rate is very low, because of lack of information about indium volumes by display technology type. The recycling industry would therefore benefit greatly from information provided by the industry. Presence of cadmium, a highly toxic and carcinogenic substance, in display panels however, may be an additional obstacle. Use of cadmium is restricted by Directive 2011/65/EU, however its use in electronic displays, is among the applications in Annex II exempted from restriction for a limited time. A specific marking on displays that contain cadmium would be therefore necessary to facilitate the preparation for re-use and the correct and environmentally sound treatment at end of life provided for in the WEEE Directive.
- (22) The provisions of Commission Regulation (EC) No 278/2009 implementing Directive 2005/32/EC with regard to ecodesign requirements for no-load condition electric power consumption and average active efficiency of external power supplies<sup>7</sup> should apply to external power supplies that are placed on the market with electronic displays. For those displays with a DC power source input interface and that are placed on the market without an external AC to DC power supply, a correction to the declared measured DC on-mode power should be established to allow for energy loss in AC to DC conversion.
- (23) Standardisation of external DC power supplies and power delivery connectors, combined with adaptive capabilities to different volts and wattages based on the product requirements, provides the possibility of using the same power supply unit for a range of different products. Moreover displays may be powered and receive video, audio and data signal via the same standardised cable if connected to a computer. Electronic displays, among other electronic products using DC current and a standardised power delivery interface, may consequently be sold without a charger. In such a situation, the product efficiency measurement shall be measured at the DC input, instead of the AC input.
- (24) The ecodesign requirements should not have any significant negative impact on the functionality of the product, on its affordability, on life cycle costs or on industry's competitiveness. Furthermore, the requirements should not impose on manufacturers'

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<sup>6</sup> OJ L 197, 24.7.2012, p. 38–71

<sup>7</sup> OJ L 93, 7.4.2009, p. 3.

proprietary technology or excessive administrative burden, nor should they negatively affect health, safety and the environment.

- (25) The ecodesign requirements should be introduced gradually in order to provide sufficient timeframe for manufacturers to redesign products that are subject to this Regulation. The timing should be such as to avoid negative impacts on the functionalities of equipment already on the market, and to take into account cost impact for users and manufacturers, while ensuring timely achievement of the objectives of the Regulation.
- (26) In conformity with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.
- (27) In order to facilitate compliance checks, manufacturers should provide information in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC insofar as this information relates to the requirements laid down in this Regulation.
- (28) Benchmarks for currently available products with high energy efficiency should be identified. This will help to ensure the wide availability and easy accessibility of information, in particular for small and medium-sized enterprises, which will further facilitate the integration of best design technologies and the development of more efficient products for reducing energy consumption.
- (29) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19(1) of Directive 2009/125/EC.
- (30) A review of this Regulation is foreseen no later than 1 July 2020,

HAS ADOPTED THIS REGULATION:

#### *Article 1*

##### *Subject matter and scope*

1. This Regulation establishes ecodesign requirements for the placing on the market of electronic displays.
2. The requirements in Annex II shall not apply to:
  - (a) Digital signage displays.
3. The requirements in Annex II, points 1 and point 3 to point 7, and the requirements of Annex IV, points 1 and 2 shall not apply to:
  - (a) Professional displays;
  - (b) Broadcast displays;
  - (c) Security displays;
  - (d) Digital photo frames.
4. The requirements in Annex II and the requirements of Annex IV, points 1 and 2 shall not apply to:
  - (e) Displays integrated into desktop computers and notebook computers;
  - (f) Displays integrated into medical equipment (including medical imaging displays), laboratory equipment, industrial machinery;

- (g) Displays integrated into equipment where the main function is status display or control and function activation;
  - (h) Displays integrated into interactive whiteboards;
  - (i) Displays integrated into all-in-one video conference systems and
  - (j) Displays integrated into printing equipment.
5. This Regulation shall not apply to:
- (a) Displays of a surface area smaller than or equal to 1 square decimetre;
  - (b) Displays in game consoles;
  - (c) Displays in virtual reality headsets; and
  - (d) Projectors.

## *Article 2*

### ***Definitions***

The following definitions shall apply for the purpose of this Regulation:

1. ‘*Electronic display*’ means 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*’ means an electronic display designed primarily to display broadcast television images; a television integrates one or more tuners to decode broadcast signal and may integrate software and/or hardware solutions for hospitality offering management and maintenance of guest room display content.
3. ‘*Computer display*’ means an electronic display designed primarily to display a computer's user interface; the term ‘*computer monitor*’, sometimes used for products on the market, is considered as equivalent to ‘*computer display*’ within the context of this Regulation.
4. ‘*Digital photo frame*’ (DPF) means an electronic display conceived to display exclusively still visual information.
5. ‘*Digital signage display*’ (also known as ‘public display’ or ‘commercial signage display’) means 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 ID 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 both a hard-wired and 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 public viewing.
6. '*Digital white board*' means an electronic display which allows direct viewer interaction with the displayed image by touch, gesture or voice that is designed primarily to provide presentations or lessons. A whiteboard display 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 public view;
  - (b) Integrated or integrable computer and computer software with specific functionalities to manage content and interaction;
  - (c) a display surface greater than 50 dm<sup>2</sup>.
7. '*Medical imaging displays and displays integrated in medical equipment*' means electronic displays covered by the scope of:
- (a) Council Directive 93/42/EEC of 14 June 1993 concerning medical devices<sup>8</sup>; 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 devices<sup>9</sup>; or
  - (c) Directive 98/79/EC of the European Parliament and of the Council of 27 October 1998 on in vitro diagnostic medical devices<sup>10</sup>; and
  - (d) any amendment to or modification of the above mentioned legislation.
8. '*Professional display*' means an electronic display designed and marketed for professional use for editing video and graphic images. Its specification 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 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 2.7 mega pixels;
  - (c) colour gamut greater than 99% Adobe RGB colour space. Shifts in colour space are allowable as long as the resultant colour space is still greater than 99% of Adobe RGB. Colour and luminance uniformity shall be as required for Grade 1 monitors;
  - (d) not intended for use in public areas.
9. '*Broadcast display*' means an electronic display designed and marketed for professional use by broadcasters and video production houses for video content creation. Its specification 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, pixel zoom, interlace mode, screen marker;

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<sup>8</sup> OJ L 169, 12.7.1993, p. 1.

<sup>9</sup> OJ L 189, 20.7.1990, p. 17.

<sup>10</sup> OJ L 331, 7.12.1998, p. 1.

- (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*’ means an electronic display which includes all of the following features:
- (a) 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.
  - (b) user specified specialist form factor facilitating the installation of the display into professional housings or consoles.
11. ‘*All-in-one video conference system*’ means a videoconference codec (encoder/decoder) with integrated display and loudspeakers, to be used in interactive telecommunications, whose specification 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*’ means 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*’ means a device as defined in Article 2(1) of Commission Regulation (EU) No 617/2013.
14. ‘*2D mode*’ means a mode where images are constructed in two dimensions (height and width) and viewable without the need of additional optical processing.
15. ‘*3D mode*’ or ‘*stereoscopic display mode*’ means an electronic display capable of conveying depth perception to the viewer by means of stereopsis for binocular vision.
16. ‘*HD*’ means 'High-Definition' and is standardised<sup>11</sup> with a resolution of 1920 × 1080 pixels.
17. ‘*HDR*’ means 'High Dynamic Range' and is 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 display more realistic images, .

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<sup>11</sup> International Telecommunications Union (ITU) Recommendation 709

18. 'UHD' means 'Ultra High Definition' and is standardised<sup>12</sup> with two resolutions of 3840 × 2160 (UHD-4K) and 7680 × 4320 (UHD-8K) pixels.

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

*Article 3*  
***Ecodesign requirements***

The ecodesign requirements for electronic displays are set out in Annex II, Annex III and Annex IV to this Regulation. They shall apply in accordance with the following timetable:

1. From 1 July 2018: Annex II point 1.1, point 2.1, point 2, point 3, point 4, point 5, point 6, point 7, Annex III point 3 and Annex IV;
2. From 1 January 2020: Annex II point 1.2, Annex III point 1 and point 2;
3. From 1 January 2022: Annex II point 1.3.

Compliance of electronic displays with the applicable ecodesign requirements shall be measured in accordance with the methods set out in Annex V to this Regulation.

*Article 4*  
***Amendment to Regulation (EC) No 1275/2008***

Point 2 of Annex I to Regulation (EC) No 1275/2008 is replaced by the following:

‘2. Information technology equipment intended primarily for use in the domestic environment, but excluding desktop computers, integrated desktop computers and notebook computers as defined in Commission Regulation (EU) No 617/2013 as well as electronic displays covered by Commission Regulation (EU) [...] **[Numbering of the Regulation to be added before publication in the OJ]**.’.

*Article 5*  
***Amendment to Regulation (EC) No 278/2009***

Article 2(1) (g) of Regulation (EC) No 278/2009 is replaced by the following:

‘(g) it is intended for use with electrical and electronic household and office equipment as referred to in Article 2(1) of Regulation (EC) No 1275/2008 or with computers covered by the scope of Commission Regulation (EU) No 617/2013 or with electronic displays subject to the requirements laid down by points 1 to 10 of Annex II to Commission Regulation (EU) [...] **[Numbering of the Regulation to be added before publication in the OJ]**.’.

*Article 6*  
***Amendment to Regulation (EU) No 617/2013***

Article 3 of Regulation (EU) No 617/2013 is replaced by the following:

‘The ecodesign requirements for computers are set out in Annex II. The ecodesign requirements for displays integrated into desktop computers, desktop thin clients and workstations are set out in Annex III and in point 3 of Annex IV of Commission Regulation (EU) [...] **[Numbering of this Regulation to be added before publication in the OJ]**.’.

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<sup>12</sup> International Telecommunications Union Recommendation (ITU-R) BT.2020

Compliance of computers with the applicable ecodesign requirements shall be measured in accordance with the methods set out in Annex III.

Compliance of displays integrated into desktop computers, desktop thin clients and workstations with the applicable ecodesign requirements shall be measured in accordance with the methods set out in points 10 to 12 in Annex VI of Commission Regulation (EU) [...] *[Numbering of this Regulation to be added before publication in the OJ]*.<sup>13</sup>

Point 7.1.1(y) of Annex II to Regulation (EU) No 617/2013 is repealed.

#### *Article 7*

##### ***Conformity assessment***

The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC<sup>13</sup> shall be the internal design control system set out in Annex IV to that Directive or the management system for assessing conformity set out in Annex V to that Directive.

#### *Article 8*

##### ***Market surveillance and verification procedure***

Checking of electronic displays for compliance with the applicable ecodesign requirements shall be carried out in accordance with the verification procedure set out in Annex VI.

#### *Article 9*

##### ***Indicative benchmarks***

The indicative benchmarks for best-performing products and technology available on the market at the time of entry into force of this Regulation are identified in Annex VII.

#### *Article 10*

##### ***Evaluation***

The Commission shall evaluate this Regulation in the light of technological progress, including test standards and present the results of this evaluation to the Ecodesign Consultation Forum no later than 1 July 2020.

In particular, the evaluation shall assess whether:

1. it is appropriate to set stricter ecodesign requirements for electronic displays;
2. it is appropriate to set specific energy efficiency requirements for signage displays;
3. it is appropriate to set additional requirements for new and emerging display technologies, including high dynamic range, 3D mode, high frame rate, and resolution levels above UHD-8K (33,177,600 pixels);
4. it is appropriate to set additional requirements to enhance durability, to facilitate repair, reuse or dismantling at end of life;
5. it is necessary to update the definitions or the scope of the Regulation;
6. it is appropriate to set resource efficiency requirements for displays integrated into products covered by other Ecodesign regulations implementing Directive 2009/125/EC;
7. if new test standards for electronic displays would suggest adaptation of regulatory requirements .

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<sup>13</sup> OJ L 285, 31.10.2009, p. 10.

*Article 11*

***Repeal***

Regulation (EC) No 642/2009 is repealed as of the day that this Regulation starts 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 VIII to this Regulation.

*Article 12*

***Entry into force and application***

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*. It shall apply in accordance with Article 3.

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