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

**of **XXX****

**laying down ecodesign requirements for electronic displays pursuant to  
Directive 2009/125/EC of the European Parliament and of the Council, amending  
Commission Regulation (EC) No 1275/2008**

**and repealing Commission Regulation (EC) 642/2009**

(Text with EEA relevance)

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(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to Article 114 of 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,

Whereas:

- (1) Pursuant to Directive 2009/125/EC the Commission should set ecodesign requirements for energy-related products which account for significant volumes of sales and trade, in the Union and which have a significant environmental impact and presenting significant potential for improvement through design in terms of their environmental impact, without entailing excessive costs.
- (2) The Ecodesign Working Plan 2016-2019 established by the Commission in application of Article 16(1) of Directive 2009/125/EC sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The Working Plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of the current regulations.
- (3) Measures from the Working Plan have an estimated potential to deliver a total in excess of 260 TWh of annual primary energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Electronic displays are one of the product groups listed in the Working Plan, with an estimated 39 TWh of annual final energy savings in 2030.
- (4) The Commission established ecodesign requirements for televisions in Commission Regulation (EC) No 642/2009 of 22 July 2009<sup>2</sup>.
- (5) Pursuant to Article 6 of this Regulation, the Commission has reviewed the Regulation in light of technological progress and analysed the technical, environmental and economic aspects of televisions and other electronic displays, as well as real-life user behaviour. The review was carried out in close cooperation with stakeholders and

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

<sup>2</sup> Commission Regulation (EC) No 642/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for televisions (OJ L 191, 23.7.2009, p. 42).

interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.

- (6) The review concluded that there was a need for the introduction of new ecodesign energy-related requirements for televisions and that the same requirements should also apply to other computer displays because of the rapidly increasing functionality overlap between different displays types. Digital photo frames, had a sales peak in passed years but are now a declining market and should be out of scope of this Regulation. Projectors use deeply different technologies and consequently should be out of scope of this Regulation as well.
- (7) Electronic signage displays are used in public spaces such as airports, metro and train stations, retail stores, shop windows, restaurants, museums, hotels, conference centres or in prominent positions outside buildings and represent a relevant emerging market. Their energy needs are different and generally higher than those of other electronic displays, because they are often used in luminous places and continuously on. Minimum requirements for signage displays in on-mode should be evaluated once additional data will be available, however should at least have minimum requirements on off, standby and networked standby modes, and material efficiency as well as energy labelling.
- (8) The annual energy consumption in 2016 of televisions in the Union constituted more than 3 % of the European Union's electricity consumption. The projected energy consumption of televisions, monitors and signage displays would be expected be close to 100 TWh/yr in 2030. This Regulation, together with the accompanying energy labelling regulation, is estimated to reduce the overall consumption by 39 TWh/yr by 2030.
- (9) Specific requirements should be laid down for standby, networked standby and off mode electric power demand of electronic displays. Therefore, the requirements of Commission Regulation (EC) No 1275/2008<sup>3</sup> that does not apply to televisions, should no longer apply to the additional electronic displays types covered by the scope of this Regulation as well. Regulation (EC) No 1275/2008 should be amended accordingly.
- (10) Electronic displays have different features with respect to sound processing, with some having neither sound reproduction nor loudspeakers whilst others may include management of multiple audio channels and sophisticated home-theatre sound processing and reproduction features. In order to ensure equal treatment of electronic displays, the on-mode energy use of audio components integrated into electronic displays should be exempted from the requirements of this Regulation.
- (11) Electronic displays for professional use such as video-editing, computer-aided design, graphics or the broadcast sector, possess enhanced performance and very specific features that, although usually involve higher energy use, should be not subject to on-mode energy efficiency requirements set for more generic products.
- (12) Article 1.3 of Directive 2009/125/EC excludes means of transport for persons or goods from the scope of that Directive. Therefore, displays that are specifically designed and

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<sup>3</sup> Commission Regulation (EC) No 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment (OJ L 339, 18.12.2008, p 45).

constructed only for application in means of transport, including motorhomes and caravans, are exempted from the ecodesign requirements set out in this proposal.

- (13) Standardisation of external direct current (DC) power supplies and power delivery connectors, combined with automatic adaptive capabilities to different voltages and power drawn, provides the possibility of using the same power supply unit for a range of different products. Electronic displays, among other products, using DC current and a standardised power delivery interface may consequently be sold without an external power supply unit but specific testing methods should be indicated not to hinder such an opportunity for suppliers, possibly resulting in consumer savings and waste reduction. Therefore a specific measurement method should be set out would the external power supply not be included with the electronic display.
- (14) The Commission Communication on the circular economy<sup>4</sup> and the Communication on the ecodesign working plan<sup>5</sup> underline the importance of using the ecodesign framework to support the move towards more resource efficient and circular economy. Recital (11) and Article 4 of Directive 2012/19/EU of the European Parliament and of the Council<sup>6</sup> refer as well to Directive 2009/125/EC and indicates that ecodesign requirements should facilitate the re-use, dismantling and recovery of waste electrical and electronic equipment (WEEE) by tackling the issues upstream. In addition, Decision No 1386/2013/EU on a General Union Environment Action Programme to 2020 includes the goal "to turn the Union into a resource-efficient, green and competitive low-carbon economy". Implementable and enforceable requirements at the product design phase may be appropriate for optimising resource and material efficiency at end of life. Finally, in accordance with the Union action plan for the Circular Economy<sup>7</sup> the Commission should make sure that special emphasis is placed on aspects relevant to the circular economy when setting out or revising ecodesign criteria. This Regulation should lay down appropriate non-energy related requirements contributing to circular economy objectives.
- (15) Liquid crystal screens (LCD) with a surface greater than 100 square centimetres are in the scope of the requirements set in Article 8 and Annex VII of the Directive 2012/19/EU in relation to the selective treatment for materials and components of WEEE which means that such displays need to be removed from the product integrating them. Considering, in addition, that screens with a surface area smaller than or equal to 100 square centimetres have very limited energy use, all electronic displays should be outside the scope of this Regulation both for energy and for requirements contributing to circular economy objectives.
- (16) Once delivered to an electrical and electronic equipment waste collection facility at the end of their life, televisions, computer monitors, signage displays, professional displays, broadcast displays, security displays, as well as displays integrated into tablets, "all-in-one" desktop or portable computers are, generally, not distinguishable from each other. Therefore they should be subject to the same requirements for proper treatment set out in the Directive 2012/19/EU on WEEE and facilitating circular

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<sup>4</sup> Communication from the Commission to the European Parliament, the Council, the European Economic Social Committee and the Committee of the Regions: Closing the loop - An EU action plan for the Circular Economy, COM/2015/0614 final of 02.12/2015

<sup>5</sup> Communication from the Commission: Ecodesign Working Plan 2016-2019, COM(2016) 773 final of 30.11.2016

<sup>6</sup> Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (OJ L 197, 24.7.2012, p. 38).

<sup>7</sup> COM(2015) 614 final.

economy objectives, however electronic displays integrated into computers, such as tablets, laptops or integrated desktops, although hardly distinguishable from other electronic displays should be covered, both by energy and by requirements contributing to circular economy objectives, in a review of Commission Regulation (EU) No 617/2013 on computers.

- (17) Shredding of electronic displays causes large losses of resources and hinders circular economy objectives such as recovery of some rare and precious materials. Moreover, Article 8(1) and (2) of the Directive 2012/19/EU require Member States to ensure that all separately collected waste undergoes proper treatment including as a minimum, a selective treatment of a number of components – typically present in electronic displays – in preparation for recovery or recycling and before shredding. Dismantling of at least the specific components listed in Annex VII of that Directive should therefore be facilitated. Furthermore, Article 15 makes provision for information to be provided free of charge by producers to facilitate the preparation for re-use and the correct and environmentally sound treatment of WEEE, which can be provided using a voluntary electronic platform<sup>8</sup>.
- (18) Presence of halogenated flame retardants represents a major issue in the recycling of plastics of electronic displays. Some halogenated compounds have been restricted by Directive 2011/65/EU<sup>9</sup> because of their high toxicity, others are still allowed. Separation of plastics containing permitted halogenated compounds from the non permitted ones is not cost-effective, resulting in all being incinerated. Alternative solutions would exist for the bulk of the plastic part in an electronic display, such as the enclosure and stand, permitting higher yields of recycled plastics. Use of halogenated flame retardants in these parts should be limited, however legislative instruments other than eco-design may be considered better suited. Detailed plastic marking, particularly in respect to any flame retardant shall be required in any case also in light of a future review of the regulation.
- (19) Indium, used in manufacturing of display panels, has been identified as a critical raw material (CRM) within the European Raw Material Initiative<sup>10</sup>. However the current recycling rate is very low, because of a lack of information about indium volumes by display technology type. Information on the presence of indium in electronic display panels should be provided by manufacturers to recyclers.
- (20) Presence of cadmium, a highly toxic and carcinogenic substance in display panels is an additional obstacle to efficient management of the waste stream. Use of certain hazardous substances in electrical and electronic equipment, including cadmium, is restricted by Directive 2011/65/EU of the European Parliament and of the Council. Use of cadmium in electronic displays, however, is among the applications in Annex III exempted from the restriction for a limited time. A specific marking on displays that contain cadmium to facilitate the correct and environmentally sound treatment at end of life should therefore be provided by manufacturers. Similarly, a

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<sup>8</sup> 'Information for Recyclers – I4R' platform for the exchange of information between manufacturers of electrical and electronic equipment (EEE) and recyclers of Waste EEE: <http://www.i4r-platform.eu>.

<sup>9</sup> Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (OJ L 174, 1.7.2011, p. 88)

<sup>10</sup> Communication from the Commission to the European Parliament, the council, the European Economic and Social Committee and the Committee of the Regions on the review of the list of critical raw materials for the EU and the implementation of the Raw Materials Initiative (COM(2014) 297 final).

specific marking on displays that contain lamps containing mercury should be marked as well.

- (21) The relevant product parameters should be measured using reliable, accurate and reproducible methods, which take into account recognised state-of-the-art measurement methods and, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council<sup>11</sup>.
- (22) In line with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.
- (23) To facilitate compliance checks, manufacturers should provide information in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC in so far as that information relates to the requirements laid down in this Regulation. For market surveillance purposes, manufacturers should be allowed to refer to the product database if the technical documentation as per Commission Delegated Regulation (EU) [OP –please insert the number of the accompanying Energy Labelling Regulation] contains the same information.
- (24) To improve the effectiveness of this Regulation, products that automatically alter their performance in test conditions to improve the declared parameters should be prohibited from being placed on the market.
- (25) In addition to the legally binding requirements laid down in this Regulation, indicative benchmarks for best available technologies should be identified to make information on products environmental performance over their the life-cycle subject to this Regulation widely available and easily accessible, in accordance with Directive 2009/125/EC, Annex 1, part 3, point (2).
- (26) A review of this Regulation should assess the appropriateness and effectiveness of its provisions in achieving its goals. The timing of the review should be sufficient for all provisions to be implemented and show an effect on the market.
- (27) Regulation (EC) No 642/2009 should therefore be repealed.
- (28) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19 of Directive 2009/125/EC,

HAS ADOPTED THIS REGULATION:

#### *Article 1*

#### **Subject matter and scope**

- 1. This Regulation establishes ecodesign requirements for the placing on the market and putting into service of electronic displays that are primarily intended for household, office or commercial use, including televisions, monitors and signage displays.
- 2. This Regulation shall not apply to the following:

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<sup>11</sup> Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

- (a) any electronic display with a surface area smaller than or equal to 100 square centimetres;
  - (b) digital photo frames;
  - (c) projectors;
  - (d) all-in-one video conference systems;
  - (e) medical displays;
  - (f) electronic displays where the main function of the display is status display or control or function activation;
  - (g) electronic displays integrated or to be integrated exclusively into products whose main function is not displaying images.
3. The requirements in points A and B of Annex II shall not apply to the following displays:
- (a) broadcast displays;
  - (b) professional displays;
  - (c) security displays;
  - (d) digital interactive whiteboards;
  - (e) digital signage displays.

## *Article 2*

### **Definitions**

For the purpose of this Regulation the following definitions shall apply:

- (1) ‘*electronic display*’ means a display screen and associated electronics that, as its primary function, displays visual information from wired or wireless sources;
- (2) ‘*television*’ means a an electronic display designed primarily for the display and reception of audiovisual signals and which consists of an electronic display and one or more tuners/receivers;
- (3) ‘*tuner/receiver*’ means an electronic circuit that detects television broadcast signal, such as terrestrial digital or satellite, but not internet unicast, and facilitates the selection of a TV channel from a group of network channels;
- (4) ‘*monitor*’ or ‘*computer monitor*’ means an electronic display intended for one person for close viewing such as in a desk based environment;
- (5) ‘*digital photo frame*’ means an electronic display that displays exclusively still visual information;
- (6) ‘*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;
- (7) ‘*status display*’ means a display used to show simple but changing information such as selected channel, time or power consumption. A simple light indicator is not considered a status display;

- (8) '*all-in-one video conference system*' means a dedicated system designed for video conferencing and collaboration, integrated within a single enclosure, whose specification shall include all of the following features:
- (a) support for specific videoconference protocol ITU-T H.323 or IETF SIP as delivered by the manufacturer;
  - (b) camera(s), display and processing capabilities for two-way real-time video including packet loss resilience;
  - (c) loudspeaker and audio processing capabilities for two-way real-time hands-free audio including echo cancellation;
  - (d) an encryption function;
  - (e) High Network Availability (HiNA) as defined in Article 1 of Commission Regulation (EC) No 1275/2008;
- (9) '*broadcast display*' means 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, such as wave-form monitor/vector scope, RGB cut off, facility to check the video signal status at actual pixel resolution, interlace mode or screen marker;
  - (c) Serial Digital Interface (SDI) or Video over Internet Protocol (VoIP) integrated with the product;
  - (d) not intended for use in public areas.
- (10) '*digital interactive whiteboard*' means an electronic display which allows direct user interaction with the displayed image. The digital interactive whiteboard is designed primarily to provide presentations, lessons or remote collaboration, including the transmission of audio and video signals. Its specification shall include all of the following features:
- (a) primarily designed to be installed hanging, mounted on a ground stand or fixed to a physical structure for viewing by multiple people;
  - (b) to be necessarily used with computer software with specific functionalities to manage content and interaction;
  - (c) integrated or or to be integrated with a computer for running the software in point (c);
  - (d) a display surface greater than 40 dm<sup>2</sup>;
  - (e) user interaction by touch or other means such as hand, arm gesture or voice.
- (11) '*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 2,3 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 at least 38,4 % of CIE LUV. Colour and luminance uniformity shall be as required for Grade 1 monitors;
- (12) ‘*security display*’ means an electronic display whose specification shall include all of the following features:
- (a) self-monitoring function capable of communicating at least one 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;
- (13) ‘*digital signage display*’ or ‘*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 features:
- (a) unique identifier to enable addressing a specific display screen;
  - (b) a function disabling unauthorised access to the display settings and displayed image;
  - (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.
- (14) ‘*integrated*’ means organized and structured inside a product so that all constituent units of the whole function cooperatively.
- (15) ‘*Medical display*’ means an electronic display covered by the scope of:
- (a) Council Directive 93/42/EEC concerning medical devices; or
  - (b) Regulation (EU) 2017/745 of the European Parliament and of the Council on medical devices; or
  - (c) Council Directive 90/385/EEC on the approximation of the laws of the Member States relating to active implantable medical devices<sup>12</sup>; or
  - (d) Directive 98/79/EC of the European Parliament and of the Council on in vitro diagnostic medical devices; or

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<sup>12</sup> OJ L 189, 20.7.1990, p. 17.

- (e) Regulation (EU) 2017/746 of the European Parliament and of the Council on in vitro diagnostic medical devices; or
  - (f) any amendment to or modification of the above mentioned legislation.
- (16) ‘*Grade 1 monitor*’ means a monitor for high-level technical quality evaluation of images at key points in a production or broadcast workflow, such as image capture, post- production, transmission and storage.

For the purposes of the Annexes, additional definitions are set out in Annex I.

#### *Article 3*

### **Ecodesign requirements**

Products within the scope of this Regulation shall comply with all the applicable eco-design requirements set out in Annex II from the dates indicated therein.

#### *Article 4*

### **Conformity assessment**

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control system set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.
2. For the purposes of conformity assessment, the technical documentation file shall contain a copy of the product information provided in accordance with Annex II, point 2, and the results of the calculations set out in Annex III to this Regulation.
3. Where the information included in the technical documentation for a particular model has been obtained by calculation on the basis of design, or extrapolation from another model, or both, the documentation shall include details of such calculations or extrapolations, or both, and of tests carried out by manufacturers to verify the accuracy of the calculations.

#### *Article 5*

### **Verification procedure for market surveillance purposes**

Member State authorities shall apply the verification procedure set out in Annex IV to this Regulation when performing the market surveillance checks referred to in Article 3(2) of Directive 2009/125/EC.

#### *Article 6*

### **Circumvention**

The manufacturer or importer shall not place on the market products designed in such a way that a model's performance is automatically altered under test conditions with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer in the technical documentation or included in any of the documentation provided with the product.

The power consumption of the product shall not increase after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to the update.

*Article 7*  
**Indicative benchmarks**

The indicative benchmarks for the best-performing products and technologies available on the market at the time of adopting this Regulation are set out in Annex V.

*Article 8*  
**Review**

The Commission shall review this Regulation in the light of technological progress and shall present the results of this review, including, if appropriate, a draft revision proposal, to the Consultation Forum no later than *[OP – please insert date - three years after its entry into force]*.

This review shall in particular assess:

- (a) the need to update the definitions or the scope of the Regulation;
- (b) the need to adapt regulatory requirements as result of new technologies available, such as HDR, 3D mode, high frame rate, resolution levels above UHD-8K or new standards;
- (c) the appropriateness of setting more specific on-mode energy efficiency requirements for signage displays or other displays not covered in this respect;
- (d) different or additional requirements to enhance durability and to facilitate repair and reuse, such as a mandatory standardised external power supply;
- (e) different or additional requirements to improve dismantling at end of life and recyclability, in particular on restrictions in the use of any flame retardant in the enclosure in the stand and in other other non electric parts of electronic displays;
- (f) resource efficiency requirements for displays integrated into products covered by Directive 2009/125/EC and into any other product belonging to the scope of Directive 2012/19/EU.

*Article 9*  
**Amendment to Regulation (EC) No 1275/2008**

Annex I to Regulation (EC) No 1275/2008 is amended as follows:

- (a) point 2 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) *[OP – please insert here the number of this Regulation]*’.
- (b) in point 3, the last entry is replaced by the following:

‘and other equipment for the purpose of recording or reproducing sound or images, including signals or other technologies for the distribution of sound and image other than by telecommunications, but excluding electronic displays covered by Regulation (EU) *[OP – please insert here the number of this Regulation]*’.

*Article 10*

**Repeal**

Regulation (EC) No 642/2009 is repealed with effect from 1 April 2021.

*Article 11*

**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 apply from 1 April 2021.

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

Done at Brussels,

*For the Commission*

Jean-Claude JUNCKER

*The President*