

## Annex 3

# Working Document on Ecodesign Requirements for Electronic Displays

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## Chapter 1 Subject Matter and Scope

1. This Regulation establishes ecodesign requirements for Electronic Displays (referred to hereafter as “displays”).

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2. The scope of this EuP Implementing Measure covers:

- Computer Monitors (30.5 cm (12 inches) ≤ viewable diagonal screen size )
- Digital Photo Frames

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3. If a display meets the definition of “television set” or “television monitor” as specified in COMMISSION REGULATION (EC) No 642/2009, it is not within scope of this regulation.

**Explanatory notes:** As compared to the Working Document discussed on 9 October 2009 the scope of the Regulation has been extended beyond 30 inch displays.

## Chapter 2 Definitions

A. 'Computer Monitor' means a commercially-available, electronic product with a display screen and its associated electronics that is capable of displaying output information from a computer via one or more inputs, such as VGA or DVI. The computer monitor must be capable of being powered by a separate AC wall outlet or a battery unit that is sold with an AC adapter.

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B. 'Digital Photo Frame (DPF), also known as a 'Digital Picture Frame', means a commercially-available product with a display screen and associated electronics that is capable of generating its own content and does not require an externally connected computer in order to provide the primary function of displaying and storing digital images or video. The DPF uses internal or external memory, and is primarily mains operated. DPFs may also display content provided from an external source via a network connection such as GSM, LAN or Wifi.

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C. 'Display' or 'Electronic Display' means a Computer Monitor, Digital Photo Frame or other electronic product capable of displaying content but not being a computer as defined in COMMISSION REGULATION (EC) No XXX/2010. It does not include

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Deleted: stores and displays digital images/video via its own display screen using

"television sets" or "television monitors" as specified in COMMISSION REGULATION (EC) No 642/2009.

D. 'On Mode' means the operational mode of a display that is (i) connected to a power source, and (ii) is performing its primary function of producing an image.

E. 'Sleep Mode' means the operational mode of a display that is (i) connected to a power source, and (ii) has been placed into a low-power mode by receiving a signal from a connected device (e.g. computer, game console, or set-top box) or by cause of an internal function such as a sleep timer or occupancy sensor. Sleep Mode is considered a "soft" low-power condition, in that the display can be brought out of Sleep Mode by receiving a signal from a connected device or by cause of an internal function.

F. 'Off mode(s)' means a condition in which the equipment is connected to the mains power source and is not providing any function; the following shall also be considered as off mode:

- Conditions providing only an indication of off-mode condition;
- Conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2004/108/EC of the European Parliament and the Council.

For systems where ACPI standards are applicable, Off Mode correlates to ACPI System Level S5 state.

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<#>"Automatic Brightness Control (ABC)", also known as "Ambient Lighting Control (ALC)" means the self-acting mechanism which controls brightness of the display as a function of ambient light. ¶

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#### **Explanatory notes:**

As compared to the Working Document discussed on 9 October 2009 the following main changes have been introduced:

- The scope has been extended beyond 30 inch displays
- The definition of off mode has been aligned with Regulation 1275/2008
- References to hard-off switches in the definitions have been taken out

Deleted: <#> means the operational mode of a display that is (i) connected to a power source, (ii) engaged by a power switch and (iii) not providing any function. The user must actuate a mechanical switch to bring the device out of Off Mode. If there is more than one such switch, the tester shall use the most readily available switch. ¶

### **Chapter 3 Ecodesign requirements**

Displays shall meet the ecodesign requirements set out in Annex I. Compliance with the ecodesign requirements shall be measured in accordance with the methods set out in Annex II.

### **Chapter 4 Relationship with Regulation (EC) No 1275/2008 December 2008**

Annex I, point 2 to Regulation (EC) No 1275/2008 is replaced by the text set out in Annex IV to this Regulation.

## **Chapter 5**

### **Conformity assessment**

The conformity assessment procedure referred to in Article 8 of Directive 2005/32/EC shall be the internal design control system set out in Annex IV of that Directive or the management system for assessing conformity set out in Annex V of that Directive.

## **Chapter 6**

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

Surveillance checks shall be carried out in accordance with the verification procedure set out in Annex II.

## **Chapter 7**

### **Revision**

No later than 4 years after the entry into force of this Regulation the Commission shall review it in the light of technological progress and present the result of this review to the Consultation Forum.

## **Chapter 8**

### **Entry into force**

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

Points 3(a) and 3(b) of Annex I shall apply as from the date referred to in the first paragraph.

Points ~~2, 4(a), 4(b) and 5~~ shall apply as from 12 months after the date referred to in the first paragraph

Point ~~1~~ of Annex I shall apply as from 18 months after the date referred to in the first paragraph.

Points 3(c) and 3(d) of Annex I shall apply as from 07 January 2013.

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

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- Deleted: and until Point 1(b) of Annex I starts to apply.¶
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- Deleted: Points 1(b), 2(b), 2(d), and 6(b) of Annex I shall apply as from 31 October 2012.¶

**Explanatory notes:** The timing for the introduction of requirements was chosen with the aim of the levels at the least life-cycle cost while taking into consideration the time needed for the redesign of the products and the availability of technological solutions at minimal/no additional cost.

## Chapter 9 Benchmarks

The indicative benchmarks for best-performing products and technology currently available on the market are identified in Annex VI.

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¶  
Monitor Screen Size ... [1]

ANNEX I

Ecodesign requirements

<b>1. ON MODE</b>	
All displays	<p><b>18 months after this Regulation has come into force:</b></p> <p>The on mode power consumption of a display with resolution <b>MP</b> (megapixels) and viewable screen area <b>A</b> (expressed in dm<sup>2</sup>) shall not exceed the following limit <b>P<sub>0</sub></b>:</p> <ul style="list-style-type: none"> <li>• Screen Resolution • 1.1 MP: <b>P<sub>0</sub> = 6*(MP) + 0.775*(A) + 3</b></li> <li>• Screen Resolution &gt; 1.1 MP <b>P<sub>0</sub> = 9*(MP) + 0.775*(A) + 3</b></li> </ul> <p>No additional allowance is provided for Automatic Brightness Control (ABC) / Ambient Lighting Control (ALC).</p>
<b>2. SLEEP MODE</b>	
All displays	<p><b>12 months after this Regulation has come into force:</b></p> <p>The sleep mode power consumption shall not exceed:</p> <ul style="list-style-type: none"> <li>• <u>1.00 W</u></li> </ul>
<b>3. OFF MODE</b>	
All displays	<p>On the day this Regulation comes into force :</p> <p>a) Power consumption in ‘off mode’ shall not exceed 1.00 W.</p> <p>b) Availability of off mode Equipment shall provide off mode and/or another condition which does not exceed the applicable power consumption requirements for off mode when the equipment is connected to the mains power source.</p> <p>By 7 January 2013 :</p> <p>c) Power consumption in ‘off mode’: Power consumption of equipment in any off-mode condition shall not exceed 0.50 W.</p>

... [2]

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The on mode power consumption of a display with resolution X (number of megapixels in decimal form<sup>1</sup>) shall not exceed the following limit Y (expressed in watts and rounded up to the nearest whole number): ¶  
<#>Screen Resolution ≤ 1 MP: ¶  
**Y = 23¶**  
<#>Screen Resolution > 1 MP: ¶  
**Y = 28X¶**  
¶  
b)

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The sleep mode power consumption shall not exceed: ¶  
2.00 W¶

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c) 6 months after this Regulation has come into force: ¶  
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Where a sleep mode is available, the sleep mode power consumption shall not exceed: ¶  
2.00 W¶  
d) By 31 October 2012: ¶  
¶  
The sleep mode power consumption shall not exceed: ¶  
1.00 W¶

	<p>d) Availability of off mode</p> <p>Equipment shall provide off mode and/or another condition which does not exceed the applicable power consumption requirements for off mode when the equipment is connected to the mains power source.</p>	
<b>4. POWER MANAGEMENT ENABLING</b>		
Computer monitors	<p>a) <del>12</del> months after this Regulation has come into force:</p> <ul style="list-style-type: none"> <li>Must have at least one mechanism enabled by default that allows the display to automatically enter sleep or off mode. For instance, data or network connections must support powering down the display according to standard mechanisms, such as Display Power Management Signalling.</li> </ul>	<p>Deleted: <b>4. EXTERNAL POWER SUPPLY EFFICIENCY</b> ... [3]</p> <p>Deleted: <b>5</b></p> <p>Deleted: 6</p>
Digital photo frames	<p>b) <del>12</del> months after this Regulation has come into force:</p> <ul style="list-style-type: none"> <li>Displays generating their own content must have a sensor or timer enabled by default to automatically engage sleep or off mode.</li> <li>Sleep or off mode shall be engaged after a period of 4 hours of user inactivity as default <u>with an alert message before the automatic switch from on mode to the applicable condition/modes.</u></li> <li>Power management settings shall be made available in the main display setup menus (where available).</li> </ul>	<p>Deleted: 6</p>
<b>5. INFORMATION REQUIREMENTS</b>		
All displays	<p><del>12</del> months after this Regulation has come into force manufacturers shall report the following information, and publish this information in an openly available website :</p> <ul style="list-style-type: none"> <li>Energy consumption in off, sleep and on modes (Watts).</li> <li>Screen resolution (MP)</li> <li>Screen area (dm<sup>2</sup>)</li> <li>User information on the advantages of power management in line with ENERGY STAR v5.0 requirements.</li> <li>User information on how to enable the power management functionality.</li> <li><u>If the display contains mercury the content of mercury as X,X mg.,</u></li> </ul>	<p>Deleted: <b>6</b></p> <p>Deleted: a)</p> <p>Deleted: 6</p> <p>Deleted: and in technical/user documentation provided with the product</p>

**Explanatory notes:**

As compared to the Working Document discussed on 9 October 2009 the following changes have been introduced:

- The first Tier requirements for Sleep and On have been deleted as these would have a small impact on the energy consumption of displays. Instead it is proposed to

introduce Sleep and On requirements from Tier II to respectively 12 and 18 months after the entry into force of the regulation

- The requirements for power management of displays providing their own content have been aligned with the provisions of Regulation 642/2009
- A requirement on informing consumers on the content of mercury has been added.

#### **Energy labelling under Directive 92/75/EEC:**

At this stage it is not proposed to apply an Energy label under Directive 92/75/EEC to displays. Although it is acknowledged that there are strong reasons for considering an Energy label for displays, at this stage it is not proposed to apply it for the following reasons:

- The market is still largely dominated by display sizes for which the different classification grades (A-G) would not correspond to significant energy and cost savings from the end-user perspective. As an example in the case of a 17 inch display consuming 17 W in on mode (among the best currently available) which would be graded 'B' and assuming a 'heavy' usage pattern (8 hours a day in on, 5 days a week), the difference between 'B' and 'A' (11 W in on in order to qualify) the annual electricity cost saving would be about 2 euro.
- Given fact that the formula for calculating the Energy Efficiency Index of televisions and displays is different the 'TV/displays boundary problem' would not be solved at this stage
- The Energy Star label, although voluntary and targeting a different consumer group is working well. There should be strong reasons for introducing new elements which might have an impact on the Agreement between the Government of the United States of America and the European Community on the coordination of energy efficiency labelling programs for office equipment

In this context it is proposed to address this issue in the mid-term taking into account market and technology evolution.

## ANNEX II

### Measurements and Verification Procedure for Market Surveillance

For the purposes of conformity assessment the following procedure should be used:

Product Type	Measured parameter	Reference
All Displays	On mode Sleep mode Off mode Tier I	ENERGY STAR® Program Requirements for Computer Displays V4.1
All Displays	On mode Sleep mode Off mode Tier II	ENERGY STAR® Program Requirements for Displays V5.0

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### ANNEX III Verification procedure

When performing the market surveillance checks referred to in Directive 2005/32/EC, Article 3(2), the authorities of the Member State shall apply the following verification procedure for the requirements set out in Annex I :

1. Authorities of the Member State shall test one single unit.  
For power consumption requirements formulated or larger than 1,00 W, Member State authorities shall test one single unit.
2. The model shall be considered to comply with the applicable provisions set out in Annex I, if the result for the applicable limit values do not exceed them by more than 10 %;
3. If the results referred to in point 2 are not achieved, three additional units of the same model shall be tested.
4. After three additional units of the same model have been tested, the model shall be considered to comply with the requirements set out in Annex I, if the average of the results for the latter three units for the applicable limit values does not exceed them by more than 10 %.
5. If the results referred above are not achieved, the model shall be considered not to comply with the requirements.

For power consumption requirements smaller than, or equal to, 1,00 W, Member State authorities shall test one single unit.

6. The model shall be considered to comply with the applicable provisions set out in Annex I if the results for the applicable limit values do not exceed them by more than 0,10 W.
7. Otherwise, three more units shall be tested. The model shall be considered to comply with this Regulation if the average of the results of the latter three tests for the applicable limit values does not exceed them by more than 0,10 W.
8. Otherwise, the model shall be considered not to comply.

9. For the purposes of checking conformity with the requirements, the authorities of the Member States shall use the procedure set out in Annex II.

Deleted: and reliable, accurate and reproducible measurement procedures, which take into account the generally recognised state of the art measurement methods, including methods set in documents the reference numbers of which have been published for that purpose in the *Official Journal of the European Union* . EN 23.7.2009 Official Journal of the European Union L 191/51

## ANNEX IV

### **List of energy-using products covered by Annex I, point 3 to Regulation (EC) No 1275/2008:**

Information technology equipment intended primarily for use in the domestic environment, but excluding non-professional electronic displays as defined in Commission Regulation (EC) No XXX/2010.

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**ANNEX VI**

The following indicative benchmarks are identified for the purpose of Annex I, part 3, point 2, of Directive 2005/32/EC.

They refer to the best available technology at the date of adopting this Regulation:

The best current computer monitor performance on the market for each power mode and monitor size is shown in the table below:

- Power consumption:

<b><u>Monitor Screen Size</u></b>		<b><u>Active Mode</u></b>	<b><u>Sleep Mode</u></b>	<b><u>Off Mode</u></b>
<b><u>Inches</u></b>	<b><u>cm</u></b>	<b><u>(W)</u></b>	<b><u>(W)</u></b>	<b><u>(W)</u></b>
<u>12</u>	<u>30.5</u>	<u>10.3</u>	<u>1.1</u>	<u>0.6</u>
<u>14</u>	<u>35.6</u>	<u>11.4</u>	<u>0.5</u>	<u>0.5</u>
<u>15</u>	<u>38.1</u>	<u>12.0</u>	<u>0.4</u>	<u>0.3</u>
<u>16</u>	<u>40.6</u>	<u>13.1</u>	<u>0.1</u>	<u>0.1</u>
<u>17</u>	<u>43.2</u>	<u>13.8</u>	<u>0.1</u>	<u>0.0</u>
<u>18</u>	<u>45.7</u>	<u>13.8</u>	<u>0.3</u>	<u>0.3</u>
<u>19</u>	<u>48.3</u>	<u>14.3</u>	<u>0.1</u>	<u>0.1</u>
<u>20</u>	<u>50.8</u>	<u>18.0</u>	<u>0.0</u>	<u>0.0</u>
<u>21</u>	<u>53.3</u>	<u>19.4</u>	<u>0.3</u>	<u>0.1</u>
<u>22</u>	<u>55.9</u>	<u>17.9</u>	<u>0.0</u>	<u>0.0</u>
<u>23</u>	<u>58.4</u>	<u>20.5</u>	<u>0.3</u>	<u>0.2</u>
<u>24</u>	<u>61.0</u>	<u>16.3</u>	<u>0.0</u>	<u>0.0</u>
<u>25</u>	<u>63.5</u>	<u>32.5</u>	<u>0.6</u>	<u>0.2</u>
<u>26</u>	<u>66.0</u>	<u>26.4</u>	<u>0.0</u>	<u>0.0</u>
<u>27</u>	<u>68.6</u>	<u>45.6</u>	<u>0.6</u>	<u>0.5</u>
<u>28</u>	<u>71.1</u>	<u>40.1</u>	<u>0.6</u>	<u>0.5</u>
<u>30</u>	<u>76.2</u>	<u>65.0</u>	<u>0.8</u>	<u>0.0</u>

- Environmental impacts other than energy in the use-phase: as laid out in the Commission Decision 2010/XXX/EC establishing ecological criteria and the related assessment and verification requirements for the award of the Community eco-label to computers and computer monitors

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The best current computer monitor performance on the market for each power mode and monitor size is shown in the table below:

Monitor Screen Size		Active Mode	Sleep Mode	Off Mode
Inches	cm	(W)	(W)	(W)
12	30.5	10.3	1.1	0.6
14	35.6	11.4	0.5	0.5
15	38.1	12.0	0.4	0.3
16	40.6	13.1	0.1	0.1
17	43.2	13.8	0.1	0.0
18	45.7	13.8	0.3	0.3
19	48.3	14.3	0.1	0.1
20	50.8	18.0	0.0	0.0
21	53.3	19.4	0.3	0.1
22	55.9	17.9	0.0	0.0
23	58.4	20.5	0.3	0.2
24	61.0	16.3	0.0	0.0
25	63.5	32.5	0.6	0.2
26	66.0	26.4	0.0	0.0
27	68.6	45.6	0.6	0.5
28	71.1	40.1	0.6	0.5
30	76.2	65.0	0.8	0.0

**These values were taken from the EU ENERGY STAR database on the 4<sup>th</sup> August 2009. Benchmarks for DPFs will be added.**

	<b>Tier I</b> <b>Tier II</b>
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<b>4. EXTERNAL POWER SUPPLY EFFICIENCY</b>	
All displays	Where a display has an external power supply, this must comply with the EuP external power supply Regulation No 278/2009.

All Displays	External Power Supply Efficiency	Regulation No 278/2009 - Ecodesign requirements for no-load condition electric power consumption and average active efficiency of external power supplies
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