

Annex 3

Working Document on Ecodesign Requirements for Non-Professional Electronic Displays

Chapter 1

Subject Matter and Scope

1. This Regulation establishes ecodesign requirements for non professional electronic displays (referred to hereafter as “displays”).
2. The scope of this EuP Implementing Measure covers:
 - Computer Monitors (30.5 cm (12 inches) \leq viewable diagonal screen size \leq 76.2cm (30 inches)
 - Digital Photo Frames
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: "Non-professional electronic displays" is used instead of "computer monitors", as the scope includes also Digital Photo Frames (DPFs.). It is proposed to exclude from the scope computer monitors larger than 30 inches as these can be highly customised, niche professional display products and would call for a different set of requirements. The requirements and scope for DPFs are based on the Sound and Imaging Equipment Study (ENTR Lot 3).

Chapter 2

Definitions

- A. “Computer Monitor” means a commercially-available, electronic product with a display screen and its associated electronics encased in a single housing that is capable of displaying output information from a computer via one or more inputs, such as VGA, DVI and/or IEEE 1394. 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. This definition is intended to cover standard monitors designed for use with computers with a viewable diagonal screen size greater than 30.5cm (12 inches) but not exceeding 76.2cm (30 inches).
- B. “Digital Photo Frame (DPF)”, also known as a “digital picture frame”, means a commercially-available product with a display screen and associated electronics encased in a single housing 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 digital images or video. The product stores and displays digital images/video via its own display screen using internal or external memory, and is primarily mains operated.

- C. “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.
- D. “On Mode” means the operational mode of a display that is (i) connected to a power source, (ii) has all mechanical (hard) power switches turned on, and (iii) 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, (ii) has all mechanical (hard) power switches turned on, and (iii) 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” 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.

Explanatory notes: The definitions are aligned with the ENERGY STAR Display V 4.1 and V 5.0 specifications with some adjustments, mainly due to the need to clearly define, DPFs, as Annex I includes a specific requirements for these products.

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.

Point 1(a) shall apply as from 6 months after the date referred to in the first paragraph and until Point 1(b) of Annex I starts to apply.

Points 2(a), 2(c), 5(a), 5(b) and 6(a) of Annex I shall apply as from six months after the date referred to in the first paragraph.

Points 1(b), 2(b), 2(d), and 6(b) of Annex I shall apply as from 31 October 2012.

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.

Explanatory notes: The timing for the introduction of requirements was chosen with the aim of taking off the market the least performing products and was based on the forecast

of compliance rates with the ENERGY STAR programme (scenario without an Ecodesign measure) shown below:

	Tier I	Tier II
	ENERGY STAR v4.1	ENERGY STAR v5.0
	After Jan-11	Oct-12
Monitors All/displays	95%	66%
Monitor 15-17 inches/displays	95%	69%
Monitor 18-22 inches/displays	95%	65%
Monitor 23-30 inches/displays	95%	68%

Potential ENERGY STAR V 4.1 and V 5.0 Coverage Rates Related to Tier timings

Chapter 9 Benchmarks

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 4th August 2009.
Benchmarks for DPFs will be added.

ANNEX I

Ecodesign requirements

	Tier I	Tier II
1. ON MODE		
All displays	<p>a) 6 months after this Regulation has come into force:</p> <p>The on mode power consumption of a display with resolution X (number of megapixels in decimal form¹) shall not exceed the following limit Y (expressed in watts and rounded up to the nearest whole number):</p> <ol style="list-style-type: none"> 1. Screen Resolution \leq 1 MP: Y = 23 2. Screen Resolution $>$ 1 MP: Y = 28X 	<p>b) By 31 October 2012:</p> <p>The on mode power consumption of a display with resolution MP (megapixels) and viewable screen area A (expressed in dm²) shall not exceed the following limit P_O:</p> <ul style="list-style-type: none"> • Screen Resolution \leq 1.1 MP: P_O = 6*(MP) + 0.775*(A) + 3 • Screen Resolution $>$ 1.1 MP P_O = 9*(MP) + 0.775*(A) + 3 <p>No additional allowance is provided for Automatic Brightness Control (ABC) / Ambient Lighting Control (ALC).</p>
2. SLEEP MODE		
Monitors	<p>a) 6 months after this Regulation has come into force:</p> <p>The sleep mode power consumption shall not exceed:</p> <ul style="list-style-type: none"> • 2.00 W 	<p>b) By 31 October 2012:</p> <p>The sleep mode power consumption shall not exceed:</p> <ul style="list-style-type: none"> • 1.00 W
Digital Photo Frames	<p>c) 6 months after this Regulation has come into force:</p> <p>Where a sleep mode is available, the sleep mode power consumption shall not exceed:</p> <ul style="list-style-type: none"> • 2.00 W 	<p>d) By 31 October 2012:</p> <p>The sleep mode power consumption shall not exceed:</p> <ul style="list-style-type: none"> • 1.00 W
3. OFF MODE		
All displays	<p>On the day this Regulation comes into force :</p>	<p>By 7 January 2013 :</p> <p>c) Power consumption in ‘off</p>

¹ e.g., 1,920,000 pixels = 1.92 megapixels

	<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>mode’: Power consumption of equipment in any off-mode condition shall not exceed 0.50 W.</p> <p>d) 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>
4. EXTERNAL POWER SUPPLY EFFICIENCY		
All displays	Where a display has an external power supply, this must comply with the EuP external power supply Regulation No 278/2009.	
5. POWER MANAGEMENT ENABLING		
Computer monitors	<p>a) 6 months after this Regulation has come into force:</p> <ul style="list-style-type: none"> • 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. 	
Digital photo frames	<p>b) 6 months after this Regulation has come into force:</p> <ul style="list-style-type: none"> • Displays generating their own content must have a sensor or timer enabled by default to automatically engage sleep or off mode. • Sleep or off mode shall be engaged after a period of 4 hours of user inactivity as default. • Power management settings shall be made available in the main display setup menus (where available). 	
6. INFORMATION REQUIREMENTS		
All displays	<p>a) 6 months after this Regulation has come into force manufacturers shall report the following information, and publish this information in an openly available website and in technical/user documentation provided with the product:</p> <ul style="list-style-type: none"> • Energy consumption in off, sleep and on modes (Watts). • Screen resolution (MP) • Screen area (dm²) • User information on the advantages of power management in line 	

	<p>with ENERGY STAR v5.0 requirements.</p> <ul style="list-style-type: none"> • User information on how to enable the power management functionality.
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Explanatory notes:

Power consumption requirements: First stage requirements to be applicable 6 months after the entry into force of the Regulation are in line with ENERGY STAR Displays V 4.1. Second stage requirements to be applicable by October 2012 are in line with ENERGY STAR Displays V 5.0 Tier I. The following exceptions should be noted:

- Requirements for the availability of 'off mode' are harmonised with those laid down in Regulation 1275/2008. Standby as defined in Regulation 1275/2008 is replaced by requirements focusing only on off mode.
- Requirements for the efficiency on the external power supply are based on Regulation No 278/2009.
- Power management requirements for Tier 1 for computer monitors are based on ENERGY STAR V5.0. For DPFs in addition to the applicable ENERGY STAR V5.0 requirements there is a requirements to automatically power down to sleep or off mode after 4 hours of user inactivity and one for power management settings to be made available in the main display setup menus (where available).
- User information requirements for Tier I include a requirement for user information on the advantages of power management in line with ENERGY STAR v5.0 requirements – this is unlikely to affect the ability of the market to comply to the measure.
- Tier II sleep requirements are in line with ENERGY STAR Displays V5.0 Tier II requirements. Contents of the EU ENERGY STAR database show that more than 75% of ENERGY STAR monitor products already on the market could meet this sleep requirement currently.
- Tier II on mode requirements do not include additional allowance for Automatic Brightness Control (ABC) / Ambient Lighting Control (ALC), as research has shown this technology does not currently provide consistent savings.

Information requirements: These are in line with the approach taken in the Ecodesign regulations that were adopted so far and correspond to the requirements of Annex I.

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
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

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 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.