European Commission

Guidelines accompanying

Commission Regulation (EU) No 617/2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to **ecodesign requirements for computers and computer servers**
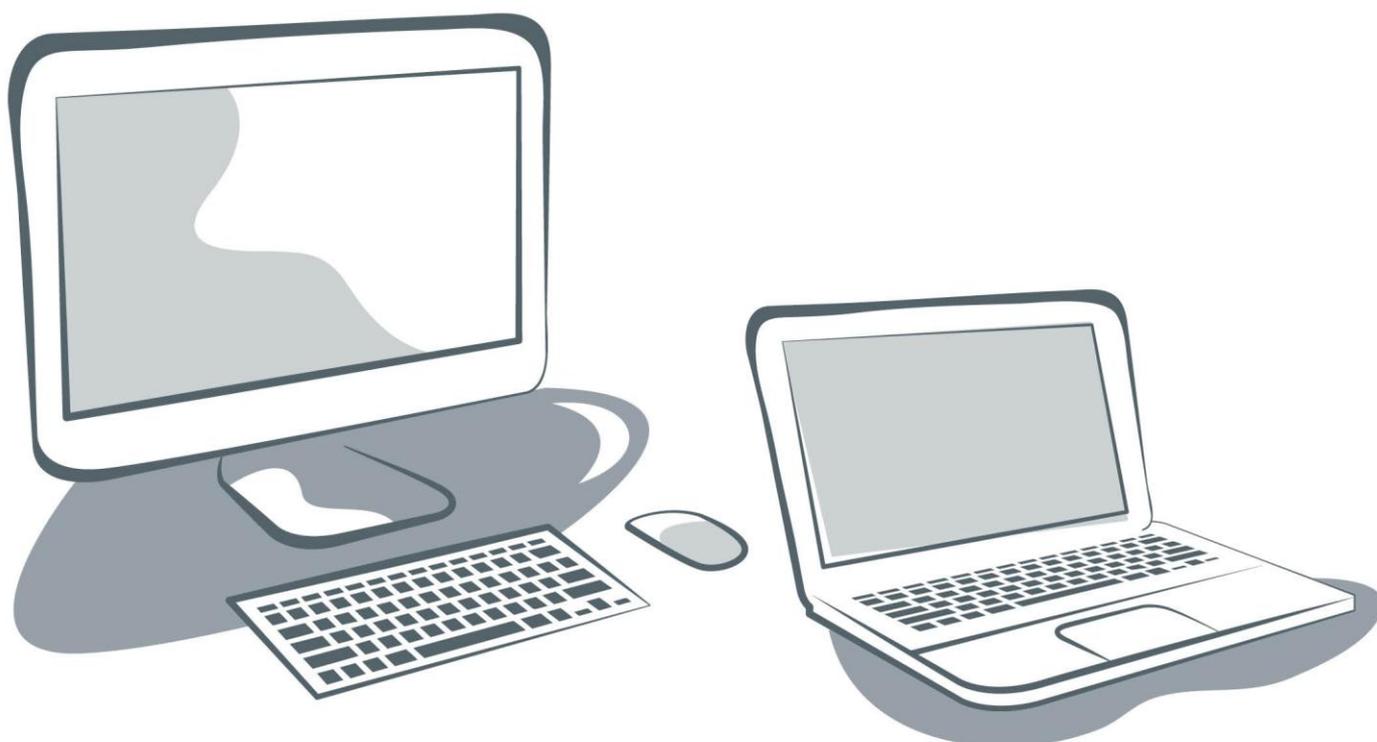
Energy

Table of Contents

1. PURPOSE OF THE GUIDELINES AND DISCLAIMER[1]

These guidelines were prepared to provide a common understanding of the various requirements of Commission Regulation (EU) No 617/2013 of 26th June 2013 implementing Directive 2009/125/EC (hereby called 'the Regulation') of the European Parliament and of the Council with regard to ecodesign requirements for computers and computer servers for the ICT Industry and in particular for SMEs. The guidelines provide explanations on questions frequently raised by the ICT Industry.

The guidelines are intended to be used as a companion document only for facilitating the implementation of the Regulation. They are not intended to replace the Regulation or to provide "interpretation" beyond its intent. It is the test of the Regulations which is legally binding and which is directly applicable in the EU Member States.

2. SUBJECT MATTER, SCOPE AND DEFINITIONS

Article 1, point 2

The products 'within' the scope of the Regulation are listed, i.e. desktop computers, integrated desktop computers, notebook computers (including tablet computers, slate computers and mobile thin clients), desktop thin clients, workstations, mobile workstations, small-scale servers and computer servers.

Article 1, point 3

The product groups 'out' of scope, for which the Regulation does **not apply**, are listed (i.e. blade system and components, server appliances, multi-node servers, computer servers with more than four processor sockets and game consoles). Docking stations are out of scope as well.

Article 2

The relevant definitions are provided. The Regulation **shall not apply** to control units which are not designed and not sold to be used as standalone or terminal computers, but are designed to be incorporated into or to be permanently connected to industrial machines/products/solutions for which other specific regulations are applicable and which are not in scope of this Regulation.

> Example 1: a control unit which is incorporated or built into an industrial robot is not meant to be in the scope of the Regulation as it is only a component of the main industrial robot product.

> Example 2: a computer integrated into medical equipment, is not in scope of the Regulation, unless it is a computer without specific customisation and just bundled with the medical equipment.

---

[1] Reference guidelines for SME's 1275/2008

Notebook-computers and similar mobile devices with special cases, sold for configuring and diagnosing industrial machines and equipped for that purpose with special non standardised computer interfaces and cards for industrial field buses, for measurement or analysis, acquisition cards, software configurations customized by a vendor, etc. are not in scope of the Regulation. Manufacturers may be required to provide proof that the equipment is specialised for industrial use.

Article 2, point 6

This point clearly indicates that an "*integrated desktop computer desktop is intended to be located in a permanent location and is not designed for portability*". Portability is intended as irrespective of time or range limitations. To this extent, products placed on the market and named by the industry as "Portable All-in-One", "Mobile Desktop", "Mobile Integrated", "Two-in-One", or similar, and that can be operated with or without a direct connection to an AC power source, are explicitly designed for portability and/or mobility and, consequently, are to be considered as "notebook computers" for the purposes of the Regulation. Additionally, portable devices having a touch-sensitive display and a non-permanently attached physical keyboard, fit in the definition of 'Slate computer' - Article 2, point 7(b).

Displays with integrated computing component based on Open Pluggable Specification (OPS) technology are not considered to be integrated desktop computers, since they are still primarily designed for digital signage applications and the display can still function without the pluggable computing in place. Manufacturers may be required to provide proof that the equipment is specialised for digital signage applications.

Article 2, point 7

Notebook computers with a viewable diagonal screen size less than 22.86 cm (9 inches), are not in scope of the this Regulation.

Notebook computers with two or more screens, all of which are less than 22.86 cm (9 inches) diagonally, are not in scope of this Regulation.

This point, additionally, specifies that products that would meet the definition of notebook computer but have an idle state power demand of less than 6W are out of scope of this Regulation. The display is considered to be powered down when measuring the idle state power demand.

Desktop, integrated desktop, desktop thin client, workstation and small-scale server computers not considered notebook computers, and so are in scope of the Regulation even if they have an idle state power demand of less than 6W.
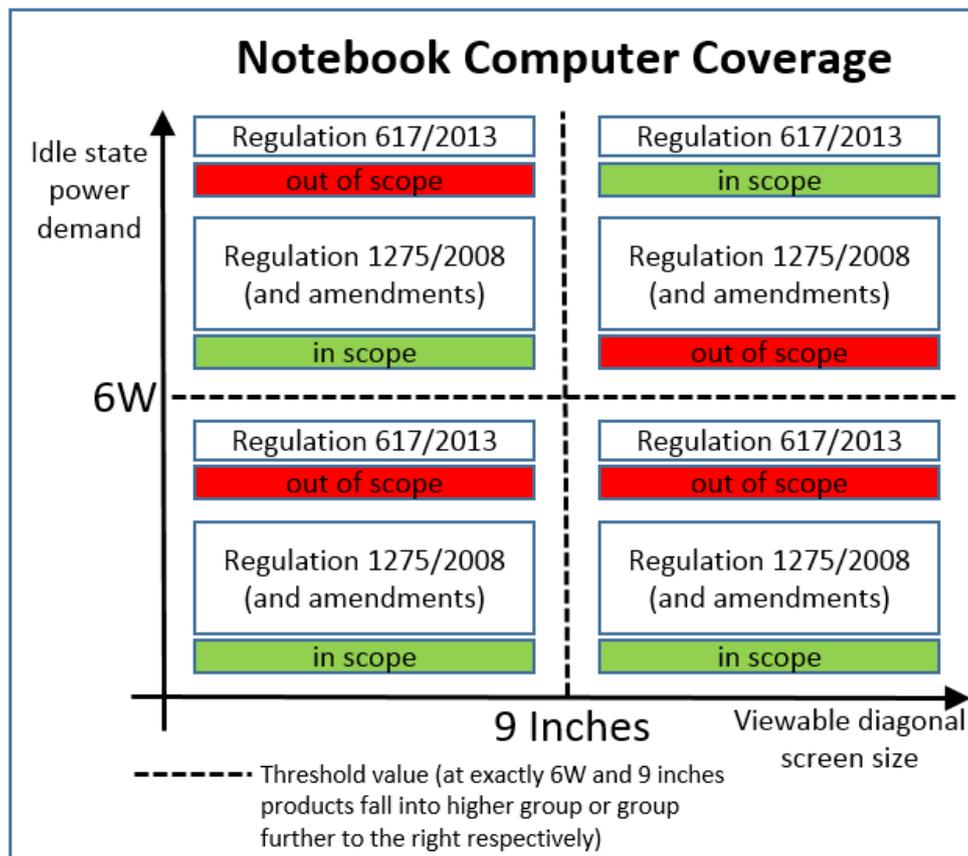
Article 4

Desktop computers, integrated desktop computers and notebook computers are excluded from the scope of the Commission Regulation (EC) No.1275/2008 (and following amendments). This avoids an overlap of regulations on standby and off-modes for these product types. Commission Regulation (EC) No.1275/2008 (and following amendments) provide guidance on whether any other types of computer,

other than those excluded by Commission Regulation (EU) No. 617/2013, remain in scope.

Products excluded from the scope of Commission Regulation (EU) No.617/2013 (e.g. products with a diagonal screen size of less than 22.86 cm (9 inches) and/or an idle state power demand less than 6W (with display powered down) do not need to meet the requirements of Commission Regulation (EC) No.1275/2008 provided that they are placed on the market with a low voltage external power supply[2].

Products with a screen size greater than 22.86 cm (9 inches) and an idle state power demand less than 6W (with display powered down) must meet the requirements of Commission Regulation (EC) No.1275/2008, unless they are placed on the market with a low voltage external power supply.

Products not considered to be notebook computers due to having a diagonal screen size of less than 22.86 cm (9 inches) and/or an idle state power demand less than 6W are still considered to be a "computer" as defined in the Regulation[3].

Article 5

---

[2] Article 8 of Commission Regulation (EC) No 278/2009 provides the applicable definition of 'low voltage external power supply': '*an external power supply with a nameplate output voltage of less than 6 volts and a nameplate output current greater than or equal to 550 milliamperes.*'

[3] Therefore they have to ensure that any external PSUs placed on the market with these products meet the requirements laid down in the Commission Regulation (EC) No 278/2009.

This article clarifies that external power supplies intended for use with computers as defined in this Regulation are in scope of Commission Regulation (EC) No 278/2009 (ecodesign requirements for no-load condition electric power consumption and average active efficiency of external power supplies).

Commission Regulation (EC) No 278/2009 sets out which external power supplies are included under its scope.

In summary, the following amendments apply to Commission Regulation (EC) No 1275/2008:

–   Commission Regulation (EC) No 278/2009 of 6 April 2009
–   Commission Regulation (EC) No 642/2009 of 22 July 2009
–   Commission Regulation (EU) No 617/2013 of 26 June 2013 and
–   Commission Regulation (EU) No 801/2013 of 22 August 2013

In particular:

1) Annex I.2 to Commission Regulation (EC) No 1275/2008 is amended by Article 4 of the Regulation (EU) No 617/2013

2) Article 2(1)(g) of Commission Regulation (EC) No 278/2009 has been amended by Article 5. of the Regulation (EU) No 617/2013

3.   ECODESIGN REQUIREMENTS

Annex II

The ecodesign requirements for all products in the scope of the Regulation are indicated.

3.1.   As of the entry into force of the Regulation

Since the entry into force (1 July 2013), desktop computers, integrated desktop computers and notebook computers must have a low power state, as defined in Annex I point 3 when connected to the mains power source, that does not exceed 0.5 W and that can be activated automatically or by the end user (mechanical means). An extra 0.5 W is allowed where the product has an information or status display. Systems complying under the Regulation (EC) No 1275/2008 (and following amendments) for 0.5 W standby/off mode, could continue to use the existing low power states and procedures to qualify for the *lowest power state*, requirement of 0.5 W.

As noted in point 6.1 of Annex II, manufacturers have to provide a power management function that automatically switches the computer into sleep or alternative low power mode when not providing the main function or when other energy-using products are not dependent on its functions. The power management function in sleep mode is indicated in the European Standard EN 62623:2013 (endorsing the International Standard IEC 62623) and the applicable procedure is indicated in section 5.3.3 of the Standard. The power demand for the chosen mode shall not exceed the power demand in sleep mode (no limit is defined until 1 July 2014).

The requirement in 6.1 in Annex II does not apply to desktop computers and integrated desktop computers with a system idle power demand of less than 10 W (measured with display powered down) and no discrete sleep mode as-shipped.

The DoC (Declaration of Conformity) should reflect compliance with the new specific Commission Regulation (EU) No 617/2013.

3.2.   From 1 July 2014

The ecodesign requirements set out in Annex II differ for the different product types listed in Article 1.1.

Desktop computers (Categories A to D) integrated desktop computers (Categories A to D) and Notebook computers (Categories A to C) must comply with maximum energy consumption limits measures as E_{TEC} (in kWh/year).

E_{TEC} is calculated using the following formula:

Desktop/Integrated Desktop:

$$E_{TEC} = (8760/1000) * (0.55*P_{off} + 0.05*P_{sleep} + 0.40*P_{idle})$$

Notebooks:

$$E_{TEC} = (8760/1000) * (0.60*P_{off} + 0.10*P_{sleep} + 0.30*P_{idle})$$

All P_x are measured power values in the indicated mode/state as defined in the definition section measured in Watts (W) according the procedure indicated in Annex III of the Regulation.

Additional allowances are provided for:

(a)   additional memory (per GB above 2 GB or 4 GB depending on the specific product type);

(b)   additional internal storage;

Additional allowances are applicable if the following are enabled during testing:

(c)   discrete television tuner;

(d)   discrete audio card (not applicable for notebooks);

(e)   (d for notebooks) discrete graphics card (dGfx) for the first and each additional discrete graphics card (dGfx).

For desktop computers and integrated desktop computers that use an idle state or alternative low power mode instead of discrete system sleep mode (if the alternative low power mode is not higher than 10 W), power in the idle state (P_{idle}) may be used in place of power in Sleep (P_{sleep}).

In detail:

(a)   Desktops: Replace P_{sleep} with P_{idle} in TEC equation (measured in short idle mode, with display on);

(b) Integrated Desktops: Replace P_{sleep} with P_{idle} in TEC equation (measured in long idle mode, display powered down).

The **following exemptions** are noted:

Category D desktop computers and integrated desktop computers *are exempt from the provisions* specified for energy consumption limits ((E_{TEC} in kWh/yr) in 2014 (Tier 1) and revised limits in 2016 (Tier 2) if they meet *all of the following technical parameters*:

(a) a minimum of six physical cores in the central processing unit (CPU);

(b) discrete graphics card(s) (dGfx) providing total frame buffer bandwidths above 320 GB/s;

(c) a minimum 16GB of system memory;

(d) a PSU with a rated output power of at least 1000 W.

Category C notebook computers are exempt from the provisions specified for energy consumption limits (E_{TEC} in kWh/yr) in 2014 (Tier 1) and revised limits in 2016 (Tier 2) if they meet all of the following technical parameters:

(a) a minimum of four physical cores in the central processing unit (CPU);

(b) discrete graphics card(s) (dGfx) providing total frame buffer bandwidths above 225 GB/s;

(c) a minimum 16GB of system memory.

Desktop computers and integrated desktop computers must have a sleep mode or equivalent condition with a <u>maximum power demand of 5.00 W</u>. Notebook computers must have a sleep mode or equivalent condition with <u>a maximum power demand of 3.00 W.</u>

If a product is placed on the market with WOL (Wake-on-Lan) functionality enabled in sleep mode, it must be tested with the functionality both enabled and disabled and comply with the sleep limits for both requirements. An allowance of 0.70 W can be applied to the applicable sleep mode limits when WOL is enabled.

Annex II section 5 sets out the Internal Power Supply efficiency requirements for desktop computers, integrated desktop computers, desktop thin clients, workstations, small-scale servers and computer servers as listed in Article 1.

The "Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies Revision 6.6" shall be used as reference standard, as stated in the Commission Communication 2014/C 110/05 of 11.4.2014. The product shall be tested at the following voltage and frequency combination: 230V at 50Hz[4].

---

[4] A typo present in the Commission Communication (2014/C 110/05 of 11 April 2014) erroneously indicating 230 V at 60 Hz.

Note the PSU efficiency at 10 % must be reported under 7.1.1 (l) – information to be provided by manufacturers.

Annex II, section 6 sets out the requirements for Power Management enabling only for product types (a) to (c) of Article 1 of the Regulation. In particular, desktop computers and integrated desktop computers that have an idle state power demand no higher than 10.00 W are not required to support a discrete sleep mode as-shipped and the power in idle state can be used in ETEC calculations. Please notice that these systems still have to comply with Annex II, section 6.1 and therefore should automatically switch the computer into a power mode that has a lower power demand than the applicable power demand requirement for sleep mode. Furthermore, these systems are also subject to display sleep mode provisions with 10 minute activation. WOL and wake management provision (where applicable) are enabled for sleep or alternative low power mode. Response to wake events with a less than 5 second resume time applies to these systems.

Annex II, section 7 lists the information to be explicitly indicated in the technical documentation and on websites, for the highest power-demanding configuration within any product category (as defined in the Regulation). The information requirements, however, are slightly different for product types listed in Article 1 (a) to (c) compared to (d) to (h).

Annex II, section 7.2 only covers notebook computers: from 1 July 2014, if notebook computers, tablets, slates and mobile thin clients have an internal battery that is not easily accessible by a normal user (e.g. without dismantling part of the product or without using professional tools etc), this limitation has to be indicated both on the external package and on the website where the technical specifications are listed. This alert must also be clearly indicated in the technical documentation provided in the product package. The text on the packaging must be clearly visible and legible and must be provided in the official language(s) of the country where the product is marketed.

The text must say: 'The battery[ies] in this product cannot be easily replaced by users themselves'.

Adhesive labels not covering text printed directly on the box are considered acceptable.

This requirement is complementary to and does not modify what is foreseen in Article 11 of the DIRECTIVE 2006/66/EC of 6 September 2006 on batteries and accumulators and waste batteries and accumulators.

The following table summarises the required information for product types listed in Article 1 as (a) to (c):

INFORMATION TO BE PROVIDED BY MANUFACTURERS (DESKTOP, INTEGRATED DESKTOP AND NOTEBOOK COMPUTERS) For multiple configurations of the same product, consider the highest power-demanding one. A list of all model configurations has to be included in information provided [5]			
(a) Product Type	*As per Definitions in Art 2*	(a') Category	*A - D as applicable)*
(b) Manufacturer's Name, registered trade name/mark		(b') Manufacturer's Address	
(c) Product Model Number	*As defined in CE DoC*	(d) Year of Manufacture	*First put on the market*
(e) Etec value (kWh) *	*dGfx disabled / UMA active*	(f) Etec value (kWh) *	As per 7.1.1(f): *dGfx enabled:*
Memory over base (GB)		Additional internal storage (TB)	
Enabled during testing:			
Discrete television tuner:	yes/no	Discrete audio card:	yes/no
Discrete graphics card(s) number:		Discrete graphics card(s) cat.(G1-G7)	
(g) Idle power (W)		(h) Sleep power (W)	
(i) Sleep power demand, WOL enabled		(j) Off mode power demand (W)	
(k) Off Mode power demand, WOL enabled (W)		(l) Internal power supply efficiency at 10 % / 20% / 50% / 100% (not relevant for notebook computers)	
(m) External Power Supply Efficiency (average active efficiency, not relevant if absent)		(n) Noise level (A-weighted)[6]	
(o) product category (c) only- Minimum number of loading cycles batteries can withstand [7]		(p) measurement methodology used in (e) to (o)	
(q) sequence of steps		(r) how sleep/off mode were selected/programmed	
(s) sequence required to go to sleep/off mode		(t) time in idle before going to sleep mode	
(u) time to power mode less power demanding than sleep		(v) default time to display sleep mode	
(w) user information on power management		(x) user information on how to access power management	
(y) content of mercury in integrated displays (mg, 1 decimal)		(z') test parameters to test Voltage (V)	
(z") test parameters to test frequency (Hz)		(z"') test parameters to test total harmonic distortion of supplied electricity	
(z[iv]) relevant additional information and documentation on instrumentation for testing			

---

[5] A list of all model configurations/numbers, that are defined at the time the product is put on the market, that are represented by the model for which the information is reported shall be included in the product documentation and on an applicable website. Should new model numbers be added later, then the new model numbers shall be added to on-line documentation.

[6] Declared Noise Emissions in accordance with ECMA-109 (or ISO 9296) and tested in accordance with ECMA-74 (or ISO 7779).

[7] To facilitate a consistent industry approach for reporting the minimum number of battery loading cycles - 7.1.1 (o) - the recommendation is to use the EN 61960 standard to meet this requirement – specifically section 7.6.3. Endurance in cycles at a rate of 0,5 I_t A (accelerated test procedure). The standard states that section 7.6.3 may be carried out as an alternative to section 7.6.2. In order to reduce the burden of the test requirements, it is recommend to use the test for cells (at 400 cycles) rather than the test for battery packs (at 300 cycles) since single cell designs may be used in multiple battery pack designs.

* Depending on the actual product specifications there are several potential options for providing the required information for e) and f) in the regulation as indicated below:

dGfx Status	dGfx installed, <u>with</u> disabling option	dGfx installed, <u>without</u> disabling option	No dGfx installed
Disabled	e)	n/a	e)
Enabled	f)	f)	n/a

Capability adjustments for discrete graphics cards, tuner and audio card can only be applied when they are enabled.

The following table summarises the required information for product types listed in Article 1 as (d) to (h):

INFORMATION TO BE PROVIDED BY MANUFACTURERS (DESKTOP THIN CLIENTS, WORKSTATIONS, MOBILE WORKSTATIONS, SMALL-SCALE SERVERS, COMPUTER SERVERS) For multiple configurations of the same product, consider the highest power-demanding one. A list of all model configurations has to be included in information provided			
(a) Product Type	*As per Definitions in Art 2*		
(b) Manufacturer's Name, registered trade name/mark		(b') Manufacturer's Address	
(c) Product Model Number	*As defined in CE DoC*	(d) Year of Manufacture	*First put on the market*
(e) Internal/external power supply efficiency		(f') test parameters to test Voltage (V)	
(f'') test parameters to test frequency (Hz)		f''') relevant additional information and documentation on instrumentation for testing	
(g) maximum power (W)		(h) Idle state power (W)	
(i) sleep mode power (W)		(j) off mode power (W)	
(h) Idle power (W)		(i) Sleep power (W)	
k) Noise level (A-weighted) [4]		(l) measurement methodology used in (e) to (k)	

3.3.   From 1 January 2016

The annual total energy consumption limits and the capability adjustments for discrete graphics cards are further restricted, respectively, for desktop computers and integrated desktop computers (point 1.2) and notebook computers (point 1.4).

Annex III

The measurements and verification procedure for market surveillance purposes are defined here. Computers shipped with operating systems that do not include the

ability to activate computer and computer monitor sleep modes shall be tested by the manufacturer, prior to placing these products on the market, with a test operating system that allows activation of these modes.

4. **MEASUREMENTS AND VERIFICATION PROCEDURE**

Please refer to the **transitional methods of measurement** published in the Commission communication (2014/C 110/05 of 11 April 2014) for a detailed list of measuring methods and verification procedures to use.

These transitional methods will ultimately be replaced by harmonised standard(s) to be published in the *Official Journal of the European Union* in accordance with Articles 9 and 10 of Directive 2009/125/EC.