

Guidelines accompanying 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  
equipment

(October 2009)

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## **1. Purpose of the guidelines and Disclaimer**

These guidelines have been prepared with a view to Article 13 (1a) of Directive 2005/32/EC to facilitate implementation of Commission Regulation (EC) No 1275/2008<sup>1</sup> on ecodesign requirements for standby and off-mode power consumption of electrical and electronic household and office equipment (in the following "the Regulation"), in particular for SMEs. The guidelines provide explanations on questions frequently raised by stakeholders. They have been drawn up by European Commission services and discussed with Member State and stakeholder experts.

The guidelines are intended only for facilitating the application of the Regulation and do not provide any "interpretation" of its content. It is the text of the Regulation which is legally binding and which is directly applicable in the Member States. The content focuses to some extent on information and telecommunication equipment (ITE), consumer electronic (CE) products and household appliances, and addresses mainly the questions raised by manufactures. The format – explanations structured alongside the Regulation and "Questions and Answers", respectively – is presented as preferred by those sectors.

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<sup>1</sup> OJ L 339, 18.12.2008, p. 45.

## **2. General issues**

### **2.1 Scope**

A product is in the scope if all criteria laid out in points (a) to (d) of Article 2 (1) are fulfilled. In particular, only products listed in Annex I are in the scope, because Annex I is exhaustive.

In the following several expressions used in Article 2 (1) are further explained.

#### ***Article 2, point 1a)***

##### Single functional unit

The concept of "single functional unit" is similar to an "apparatus" under the "Electromagnetic compatibility" (EMC) Directive 2004/108/EC, in particular a single functional unit has to be endowed with a declaration of conformity.

##### Equipment intended for the end-user

End-user equipment is equipment which can be used by individuals directly, and is used "physically" by the end-user. In particular, the end-user has direct contact with the product and has control over activation and de-activation of the product: he/she may for example want to switch it on to do something with the product or, on the other hand, switch it off because he is not going to use the product for a while.

Examples for products not being a single functional unit intended for the end-user include components that may be inside the defined products (and do not have their own CE-marking), and infrastructure elements that may connect products in a network for which the end-user has no direct control.

##### Portable products with batteries

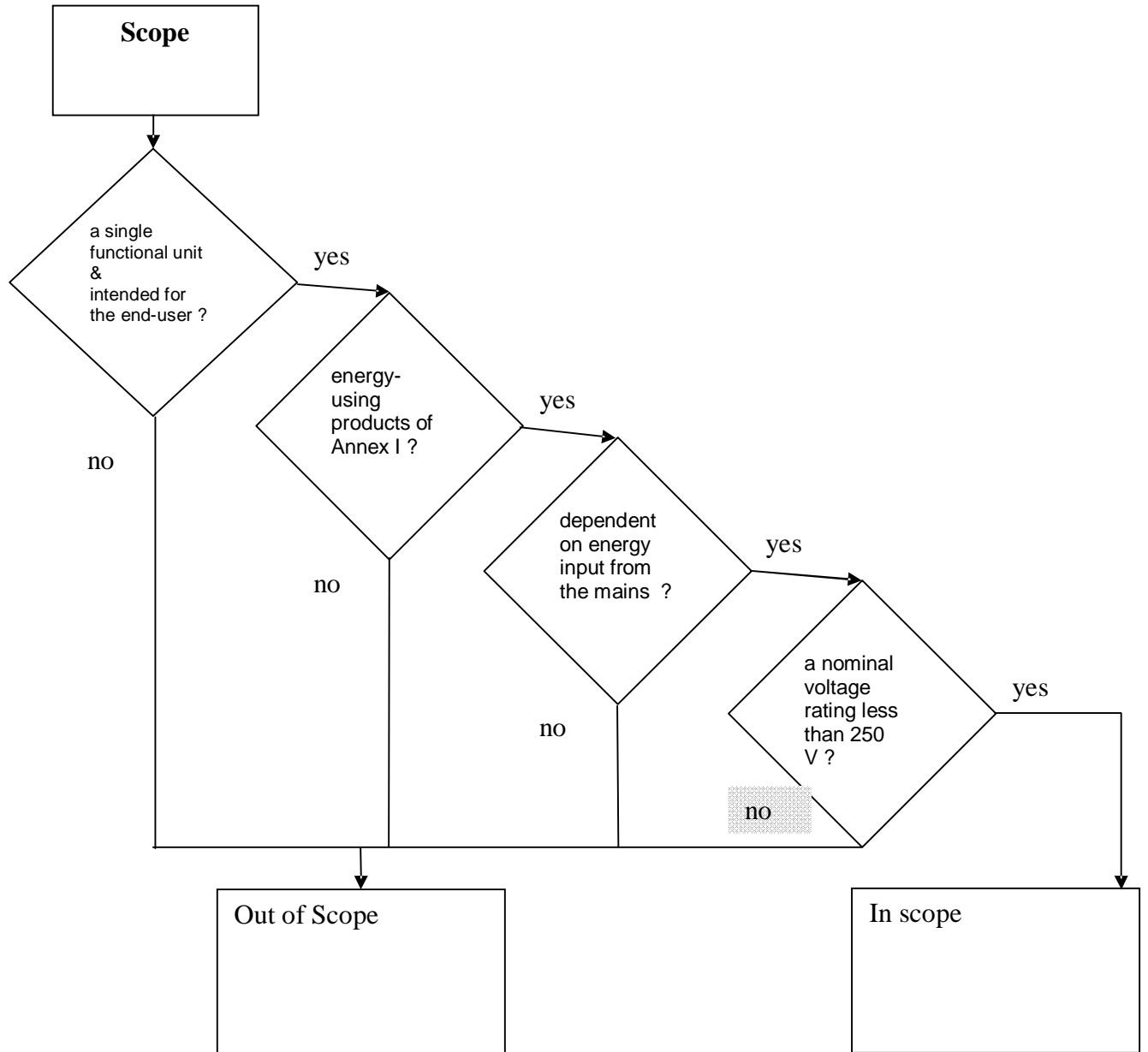
A portable product that has to be charged forms a functional unit together with its external power supply or battery charger and potential other accessories in as far as they are relevant for energy consumption.

#### ***Article 2, point 1d)***

Examples for products having nominal voltage rating above 250 V are products with more than a single electrical phase which in fact use twice or three times 230V. The nominal voltage rating for a three-phase appliance is 400V

##### Summary: decision tree for scope

The figure below visualises the conditions set out in Article 2, point 1, which determine if a product is in the scope of the Regulation. Note: the text in the diamonds is kept short for compactness and does not reflect all relevant aspects.



## **2.2 Ecodesign requirements**

### ***Timing***

The Regulation sets ecodesign requirements for all products falling under its scope.

Stage 1 is applicable for products placed on the market from 7 January 2010, and requires that products in the scope

- provide a standby- AND/OR off-mode,
- have to meet the power consumption requirements for standby- and off-mode

Stage 2 is applicable for products placed on the market from 7 January 2013, and requires lower power consumption for standby- and off-mode compared to Stage 1, and, in addition, requires power management or similar function that automatically switches the product into either standby or off-mode or another low energy mode satisfying stricter maximum energy consumption levels, except where all these functions are considered inappropriate for the intended use of the product.

The two-staged entry into force of the requirements is intended to allow industry an appropriate timeframe to redesign products, if needed.

### ***Availability of standby/off-mode***

The manufacturer may choose to provide a combination of off-mode and/or (several) standby-mode(s), or to provide only one condition falling under the definitions of standby/off-mode, or a condition meeting the power consumption requirements, but providing additional functionality. All products falling under the scope of the Regulation and placed on the EU/EEA market have to provide a standby OR an off mode OR a low energy mode meeting the initially prescribed maximum energy consumption levels to comply with the new requirements, unless neither of these is considered appropriate for the intended use of the product.

If more than one off/standby-mode is implemented, the power consumption of all off/standby-modes has to meet the requirements.

In other words, the requirements of the Regulation imply that a product has to provide at least one off/standby-mode. However, manufacturers are not required to justify the inappropriateness of implementing other off/standby-modes. If off/standby-modes are inappropriate for the intended use of the product and not provided, the technical documentation required by Annex II, point 3 has to state a technical justification for the inappropriateness of off/standby-mode for the intended use of the product.

### ***Off-mode and Standby mode requirements***

The table below summarizes the requirements for energy consumption in standby and off-mode (Annex II, points 1 and 2)

Mode	Maximum power consumption from January 07, 2010	Maximum power consumption from January 07, 2013
Off-mode	1.00 W	0.50 W
Standby mode without display	1.00 W	0.50 W
Standby mode with display	2.00 W	1.00 W

Examples for products complying with the ecodesign requirements of stage 1 and 2 are given in Annex 2.\*

***"Appropriate for the intended use"***

If applicable, the Regulation requires manufacturers to provide technical justification that the requirements to provide a standby AND/OR off-mode AND/OR low energy mode, and in a second stage an additional power management or similar function, are inappropriate for the intended use of the products (Annex II, point 4). The term “inappropriate for the intended use” is however not further specified in the Regulation.

The onus to determine if a function is inappropriate for the intended use of the product is on the manufacturer who is best placed to assess the characteristics and functionality of the product. It is admissible to claim the inappropriateness of the requirements for the intended use of equipment, provided a technical justification is given in the technical documentation. The Regulation does not prescribe any additional requirements in respect of the technical documentation to be provided by companies in this regard. Manufacturers should be able to substantiate that they undertook reasonable steps and exercised due diligence in forming their view on the inappropriateness of the requirements.

**2.3 Demonstrating conformity (Article 4 and Annex II, points 3 and 4)**

***Declaration of conformity (DoC) and technical documentation***

Article 4 of the regulation indicates that the manufacturer can choose to follow one the two systems for declarations of conformity described in the Ecodesign framework directive. Annex II point 4 gives an exhaustive description/template of the elements that need to be reported in the technical documentation for conformity assessment required for the standby/off-mode Regulation.

When a product falls under the scope of one or several legislative acts which are relevant for CE marking, it has to comply with all applicable requirements in order to be CE marked and placed on the EU market. CE marking is demonstrated with the respective CE mark on the product and via a declaration of conformity. The DoC must mention explicitly, that the product is in conformity with the requirements of the regulation, following the provisions of Directive 2005/32/EC.

## ***Measurement methods for conformity assessment***

Annex II, point 3 of the Regulation requires that measurement procedures are used which are "reliable, accurate, reproducible and take into account the generally recognized state of the art". Additional provisions are in the Regulation.

These requirements will be covered by a harmonised standard, which is currently (status: July 2009) being developed on the basis of a corresponding mandate to the European Standardisation Organisations issued in 2008.

EN 62301 (Household electrical appliances - Measurement of standby power) is expected to cover the requirements of the regulation. The underlying approaches in EN62301 Ed. 1 are considered robust, whereas the proposal of technical changes in Ed. 2 encompasses evolutionary improvements to the test method. In fact, EN62301 has been widely used in the field of household electrical appliances and ICT Equipment. The issue of Ed. 2 is scheduled in late 2009/early 2010.

One essential element for the energy consumption measurements is sufficient accuracy, in order to demonstrate the compliance unambiguously. The required accuracy levels can be achieved with dedicated equipment.

### **2.4 Verification procedure (Annex III)**

The verification procedure for market surveillance purposes focuses on the requirements for off/standby-mode power consumption. Compliance is assessed using certain error margins, and a product is considered non-compliant if it exceeds the power consumption requirements by more than a certain amount.

### **2.5 Relation with other ecodesign measures (cf. recital 10 of the Regulation)**

The Regulation affects a large number of product categories that may be covered by further measures implementing the Ecodesign Directive, and, if appropriate, ecodesign requirements for standby/off-mode may be set in the product-specific measures which may differ from those set in the standby/off-mode regulation (examples: televisions, simple set top boxes).

## **3. Explanations mainly related to ITE and consumer electronics equipment**

### **3.1 Scope**

#### ***Information technology equipment (ITE)***

ITE in the scope of the Regulation: this category is listed in Annex I and defined explicitly in Article 2, points (7) and (8) of the Regulation. Annex I limits the scope for ITE to those products intended primarily for use in the domestic environment, i.e. EMC Class B IT equipment. The definition of "information technology equipment" and "domestic



environment” is identical EN 55022 covering essential requirements of the "EMC" Directive 2004/108/EC.

The EMC classification can be used as an indicator to decide if an ITE product is in scope or out of scope of the Regulation. Because the EMC classification is part of the self declaration of CE conformity for IT equipment, it is a consistent indicator.

ITE outside the scope of the Regulation: the most important and decisive indicator is the EMC class A/B categorisation relevant for CE marking in Europe (which may be different from the EMC classification in other continents). Class "A" ITE is outside the scope of the Regulation.

### ***Consumer equipment, toys, leisure and sports equipment***

The meaning of "other equipment for the purpose of recording ..." (sometimes called "catch-all clause"): in addition to the specific consumer equipment product categories listed in Annex I (3), the "catch-all clause" covering consumer equipment includes (but is not limited to) entertainment appliances such as HiFi and home cinema, compact disc (CD) and digital versatile disc (DVD) players, video game consoles and answering machines.

### ***Article 2, point 1c)***

The Regulation covers energy consumed from the mains electricity grid (nominally 230V, 50 Hz), i.e. products that get their power from this grid directly. These products can be switched off from the grid.

Examples for energy input other than from the mains power source:

- power over Ethernet
- power over a telephone land-line
- DC-powered products, and power over USB
- non-rechargeable batteries.

Examples for portable products depending on energy input from the mains power source: Many portable rechargeable products are recharged in a cradle, in which the product is placed without removing the batteries. In case of such a product, the Regulation applies to the functional unit made up of the portable product and its external power supply (and potential other accessories in as far as they are relevant for energy consumption).

However, for example in “maintenance mode” the external power supply is providing some energy to the battery to compensate its natural self-discharging. This condition is not considered as being standby-mode, because it is an additional function beyond reactivation function and information display.

### ***Role of low voltage external power supplies***

Article 8 of Commission Regulation (EC) No 278/2009 setting ecodesign requirement for external power supplies<sup>2</sup> (EPS) amends the scope of the standby/off-mode Regulation, excluding household and office equipment placed on the market with a low voltage EPS from

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<sup>2</sup> OJ L 93, 7.4.2009, p. 3.

the scope of the standby/off-mode Regulation. The EPS regulation defines "low voltage EPS", consistent with the ENERGY STAR programme for EPS, as an EPS

- with a nameplate output voltage of less than 6 Volts
- and nameplate output current greater than 550 milliamperes.

This effectively puts a number of mobile products out of scope of the standby/off-mode Regulation.

### **3.2 Definitions for standby and off-mode (Article 2, points 2-6)**

#### ***“Off mode”***

This mode defines the status in which the energy-using product is connected to a mains power source and is not providing any function except the capability to react to a user’s action on a (soft) switch located on the energy-using product. To put the energy-using product into another mode, this (soft) switch needs to be operated.

This mode is comparable to the modes defined under ENERGY STAR as "Off Mode" for Computers, as "Off Mode" for Monitors, and as "Off" for Imaging Equipment. This mode is also comparable to the “off” modes defined in the EU Code of Conduct for digital TV Service systems or for Broadband equipment.

The definition for "off mode" in the Regulation clarifies that in off-mode the following functionalities may be present:

- a simple indication of the mode (e.g. a LED) is not considered as being a function. Therefore in "off-mode" as defined in the Regulation, a LED could be on.
- an electromagnetic compatibility (EMC) filter intended to provide compliance with Directive 2004/108/EC.

Examples for conditions not being “off mode”:

If any additional function to “switching on via a hard or soft switch”, "LED for indicating off-mode" and "EMC filter", is provided by the product, then the condition is not considered as “off-mode”. Examples are:

- standby
- volatile memory preservation functions enabling instant reactivation without booting (e.g. ACPI S3 for PC’s, see Recital 9)
- "sleep" mode for imaging equipment or for televisions as defined in ENERGY STAR.
- RF signal throughput in television signal recorders
- "networked" standby-mode for Blue Disk recorders

This is further discussed in Annex I.

### *“Standby” mode(s)*

This mode defines the status in which household and office equipment is connected to a mains power source and offers only one or more of the following functions:

- to facilitate the activation of other modes (including active mode) by remote switch (including remote control), internal sensor, timer
- continuous function: information or status displays including clocks

Examples include:

- IR-sensor in audio/video product which makes the product respond to a remote control signal
- clock timer to enable auto-off or auto-on e.g. during weekends in offices
- Audio-Video-PC with a remote control. Such a PC is turned on and off with the remote control

The definition of standby includes display, for which an additional allowance for power consumption is defined. A display is a field in which status information (e.g. the word “standby”) and/or time is displayed. As mentioned above a LED that is merely indicating off-mode condition, is not considered to be a display.

Examples for conditions not being “standby”:

If any function beyond the "standby"-functions is provided, then the corresponding operating condition of is not considered “standby” any more. Examples include:

- network communication functions through network interfaces such as LAN, USB, RS-232C, Wi-Fi, HDMI and infrared communications other than that of remote control.
- network reactivation functions such as Wake on LAN (e.g. PC’s may have Wake On LAN activated in ACPI S4 and S5 modes, see below).
- volatile memory preservation functions enabling instant reactivation without booting (e.g. ACPI S3 for PCs)
- sleep mode as defined in ENERGY STAR for those conditions which, e.g., maintain network connectivity, or conditions providing enhanced reactivation functions as those defined under "reactivation function" in the Regulation.
- the quick restart functions with OS active status such as present in equipment with hard-disk (e.g. DVD recorder, mini compo with HD)
- security alarm activation
- power supplying functions supporting other equipment (e.g. TV sets supplying power to antennas, video/DVD recorders supplying power to the RF signal from antenna towards TV set)
- battery presence and power level detector after completion of battery charging
- an active network download mode, such as present in e.g. DVD recorders that receive updates of the Electronic Program Guide at some pre-programmed moments in time.

However, the presence of the example functions does not constitute a technical justification why it would be inappropriate to provide "standby" or "off mode".

### *The role of battery maintenance*

The maintenance mode of the battery load in portable appliances (e.g. portable vacuum cleaners) is one of the key functions of the system (battery charge and portable appliance) to avoid discharge of the battery. This is a function beyond reactivation function and information display, and therefore not considered to be standby-mode.

### **3.3 Power management**

Power management is a feature of many ICT and consumer electronics (CE) products that turns off the power or switches the system to a low-power mode, e.g. when the main function has not been used for a certain predefined period of time. Power management is designed into these products for many reasons, including:

- extend battery life for portable and embedded systems
- reduce cooling requirements
- reduce noise
- reduce operating costs for energy and cooling

Lower power consumption also means lower heat dissipation, which increases system stability. One power management standard for computers is ACPI: this standard defines the different power saving states of personal computers, thus enabling the operating system to manage the entering of these states and the wake-up behaviour, including e.g. switching off the display and transition into "sleep-state".

Power management can be implemented in many different ways, depending on the type of product.

The Regulation defines a specific kind of power management: household and office equipment as defined in Article 2 should be designed such that they are automatically switched-off after a period of not performing their main function. This power management function should be activated when placing the product on the market (see Annex II, point 2 d).

The Regulation also allows power management such that the product is automatically switched into “Another condition which does not exceed the applicable power consumption requirements for off mode and/or standby mode when the equipment is connected to the mains power source”. This is relevant for documenting the presence and functionality of power management in a product.

Currently, many ICT-products have “power management” implementations of a different nature: those products are not automatically powered down to standby- or off-mode, because of the reactivation time that would be required to re-enter an active mode (which can take several minutes). For products that are used frequently, such a reactivation time would not be accepted by the customers, thus industry has designed these products to enter a state of reduced energy consumption that ensures reactivation times acceptable for the users, which, however, are not meeting the definitions of the Regulation. The power management definitions used in ENERGY STAR requirements for imaging equipment are examples of such different types of power management.

***Low power modes with enhanced functionality compared to "standby" (Annex II, points 1 c) and 2 c) and d)***

A manufacturer may choose to design a product without off- or standby-mode, provided that the product has an operating mode meeting the power consumption requirements for standby-mode. Such modes have to be documented.

**4. Explanations related in particular to household appliances**

1. Question: A different Standby definition is used in EN 62301:Ed.1. Which one should be followed?

Answer: the applicable standby definition is strictly linked with mandatory limits set in the legislation. Therefore only the definition in the Regulation shall be used to assess the working condition of the device, not any other standby definition.

2. Q.: A portable appliance has to be connected to a battery charger to work properly. Should the appliance, while connected to the battery charger and in 'maintenance mode' be considered under standby?

A.: In "maintenance mode" the battery charger is providing some energy to the battery to compensate its natural self discharging. When performing that function, the system is not considered as being in "standby-mode", because there is an extra function active on top of reactivation function and information display.

3. Q.: A portable appliance battery charger can have different contact technologies. How shall they be regarded vis-à-vis the Regulation?

A.: Regardless of the contact technology (being it galvanic connection, capacitive or inductive coupling) the complete product including the charger falls under the Regulation.

4. Q.: During the passive drying phase, the Dishwasher momentarily stops as part of the normal drying phase. Is that to be considered "standby"?

A.: The dishwasher is still in the active phase, performing its main function, which is cleaning and drying dishes, and therefore is not considered as being "standby".

5. Q.: At the end of a cooking cycle, the cooling fan of an oven may remain switched on for a certain time. Is that to be considered "standby"?

A.: This condition is not considered as being "standby", because it is an extra function and the condition does not last for an indefinite time. As soon as the oven has cooled down the fan is switched off.

6. Q.: When Anti-crease function is active in a washing machine, should it be considered "standby"?

A.: This condition is not considered as being "standby", because the condition is part of the active mode. Furthermore, it provides an extra functionality other than reactivation function and information display.

7. Q.: In some products, when the door is open, a lamp is turned on to light up the inside. That happens normally in ovens or sometimes in washing machines and dryers. Should "standby" limits be met in those circumstances?

A.: This condition is not considered as being "standby", because it provides an extra functionality (illumination of the interior of the product) beyond a reactivation function or information display.

8. Q: For equipment connected to more than one a phase supply (with or without neutral) does the Standby Regulation apply?

A: If the equipment only functions connected to more than one phase supply (with or without neutral) the Standby Regulation does not apply. However, if the equipment can both function on single phase and more than one phase supply then the Standby Regulation applies and the equipment shall comply with the requirements when functioning on a single phase; measurements shall be done with a single phase supply.

9. Q.: When only EMC/EMI filters are connected to the mains, which standby/off-mode limits are applicable?

A.: Limits for off-mode shall be respected. Article 2, point 6(b) stipulates that conditions providing only functionalities intended to ensure electromagnetic compatibility shall be considered as off-mode.

10. Q.: Some products, irons for instance, use a motion detection sensor to modify the working modality of the product to prevent accidents and avoid damaging clothes. Shall it be considered "standby"?

A.: This condition is not considered as being "standby", because it is part of the active mode of the device, able to save a considerable amount of energy if compared to the always on case.

11. Q.: Generally speaking, there might be transitory power consumption states when switching an appliance on or off. Are these condition "standby"?

A.: This condition is not considered as being "standby", because they do not last for an indefinite time. Examples of transitory power consumption states are start delay timers, cooling down phase for ovens.

12. Q.: Is "delayed start" to be considered "standby"?

A.: It shall not because it does not last for an indefinite time.

13. Q.: Are gas appliances (hobs, ovens) included in the Scope of the Regulation, if they use for example electronic controls?

A.: Yes, they are as per Article 2 1(c).

14. Q.: Are corded vacuum cleaners in the scope of the Regulation?

A.: Yes, they are as per Annex I, point 1 under "Other appliances for cooking and other processing of food, cleaning, and maintenance of clothes".

15. Q.: If an appliance has a device, switch or button that switches off the illumination of a display, under which conditions measurements shall be done?

A.: As per Annex II, point 4, test set-up such as switching off the illumination of a display shall be duly noted in the technical documentation. If the display is switched off, the power consumption requirements for standby/reactivation function and/or off-mode are applicable.

16. Q.: Are washer-dryer in the scope of the Regulation?

A.: Yes, they are, as per Annex I, under household appliances - other appliances for maintenance of clothes.

17. Q.: In electric coffee machines, is the function that preheats the cups to be considered "standby"?

A.: It is not. Preheating of cups is a function not covered by the definition for "standby".

18. Q.: In some espresso coffee machines, the coffee is produced using a coffee liquid extract. This extract must always be cooled to a specific temperature to prevent that it spoils and becomes unhealthy. Is this cooling function to be considered for the Regulation?

A.: It is not. The cooling function is essential for the maintenance of the coffee and is not covered by the definition for "standby".

19. Q.: Is the term 'household appliances' in Annex I(1) used as a title?

A.: Yes, as the types of household appliance that are covered by the Regulation are listed under this heading. This also applies to the terms 'consumer equipment' in Annex I(3) and 'toys, leisure and sports equipment' in Annex I(4), which are also titles of categories of product.

20. Q.: Are ice makers and water purifiers appliances in the scope of the Regulation?

A.: Yes they are, because in Appendix I the Regulation includes in the scope "other appliances for cooking and other processing of food". Water and other drinkable liquids shall be considered as being food.

21. Q.: The Regulation makes reference in Article 2, point 1(a) to an Energy Using Product "made commercially available". What does it mean?

A.: It means "made commercially available" in the sense of the New Legislative Framework (Regulation (EC) No 764/2008 of the European Parliament and of the Council of 9 July 2008 laying down procedures relating to the application of certain national technical rules to products lawfully marketed in another Member State and repealing Decision No 3052/95/EC), per Decision No 768/2008/EC on a common framework for the marketing of products.

22. Q.: Are cooling/freezing appliances, hoods, air purifiers, air ventilation and air conditioners, room heaters, water heaters and boilers, supplied with electrical or other energy (e.g. gas, oil) in the scope of the Regulation?

A.: No. They are not as they are not covered in Annex I.

23. Q.: Is there already a measurement standard to be used to assess conformity with mandatory limits?

A.: A mandate has been given to CENELEC on this topic. In general a measurement methodology complying with the requirement as laid out in Annex II (3) is acceptable, in particular IEC 62301.

24. Q.: Are professional home-appliances under the scope of the Regulation?

A.: The scope of the regulation is defined in Article 2, point 1.

25. Q.: In which cases is a LED considered to provide information or status display?

A.: A LED associated with further specific information, such as those marked on the equipment (e.g. Rinse aid needed, etc.) is considered as providing information or status display.

26. Q.: Are External Power Supplies in the scope of the Regulation?

A.: External power supplies placed on the market with products falling into the scope of the Regulation are implicitly also covered by the Regulation. However, External Power Supplies are covered explicitly by Regulation (EC) No 278/2009, which at Article 8 amends the Regulation (EC) No 1275/2008.

27. Q: Should a device composed of a combination of separate units (e.g. a hob and an oven) be considered as single functional unit?

A: If a device is made commercially available as a single item (e.g. a stand-alone cooker), but it is composed of a combination of separate units (e.g. a hob and an oven) with each of these units commercially available as single functional units, then the device shall not be considered as a single functional unit. Each separate unit (when combined with one or more other units) shall respect the requirements as single functional unit.

28. Q: When in a device composed of a combination of separate units (e.g. a stand-alone cooker composed by a hob and an oven, each these units commercially available as single functional unit) the controls for the two units are physically located in one of the two units, how shall the measurement be carried out?

A: When the controls for the two units are physically located in one of the two units (e.g. control panel for a separate hob to be integrated in an oven), manufacturers should clarify how the measurement should be carried out (as mentioned in Annex II, Section 4). In particular, manufacturers should describe the test setup and the level of expertise required.

## **5. Repair and re-use**

Broken products are repaired (inside or outside of the EU) and then shipped back (including to another customer). This could be the case for monitors and projectors, but also for laptops and desktops. Products which have been repaired (for example following a defect), without changing the original performance, are not to be considered as new products, and such products do not need to meet the requirements of the Regulation, which entered into force **after** the (broken) product has been put on the market. This is according to the "Blue Guide"<sup>3</sup> to the implementation of directives based on the New Approach and the Global Approach:

"Products which have been repaired (for example following a defect), without changing the original performance, purpose or type, are not to be considered as new products according to New Approach directives. Thus, such products need not undergo conformity assessment, whether or not the original product was placed on the market before or after the directive entered into force. This applies even if the product has been temporarily exported to a third country for the repair operations. Such operations are often carried out by replacing a defective or worn item by a spare part, which either is identical, or at least similar, to the original spare part (for example modifications may have taken place due to technical progress, or discontinued production of the old part). Thus, maintenance operations are basically excluded from the scope of the directives. However, at the design stage of the product the intended use and maintenance must be taken into account."

As an example, products falling under the scope of the Regulation and placed on the market before the entry into force of the requirements which are subsequently reused without changing their original performance, purpose or type, will not need to comply with the

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<sup>3</sup> [http://ec.europa.eu/enterprise/newapproach/legislation/guide/document/1999\\_1282\\_en.pdf](http://ec.europa.eu/enterprise/newapproach/legislation/guide/document/1999_1282_en.pdf)



requirements. Similarly, products placed on the market between the Regulations' Stage 1 and Stage 2, and subsequently reused without changing their original performance, purpose or type, has to comply with the requirements of Stage 1, but not with the requirements of Stage 2. If after repair the products are put on the market as new products they should comply with the relevant requirements however.

### *Software updates during repair and maintenance*

The Regulation does not mention software upgrades. Though software may in theory affect the ability of a product to enter standby- and/or off-mode, either automatically or by some kind of user-action, it is understood that a product is placed on the market whenever the **hardware** is placed on the market for the first time, as described in the Blue Guide. Thus software updates are not relevant with respect to compliance of a product to the Regulation. This applies to software upgrades done during repair and maintenance.

## **Annex I**

### **Examples for typical conditions of ICT equipment not covered by the definitions for standby/off-mode**

#### *Conditions sometimes dubbed "networked standby"*

The standby/off-mode preparatory study has suggested, on a preliminary basis, "networked standby" as being a condition/function in which reactivation by means of a network signal is enabled, apart from the reactivation functions relevant for the definition of "standby" set out in the Regulation.. The definition of "standby" does not cover reactivation by means of a network signal, because the corresponding conditions have additional functionality compared to "standby" as defined in the Regulation

The following examples highlight typical operating conditions providing "networked" functionalities beyond the functionalities defined as "standby":

- a condition in which the energy-using product is connected to a mains power source and at least one network reactivation function is available (such as reactivation via network command or network integrity communication);
- a condition providing one-way (e.g. PC – monitor) or two way (e.g. PC – printer) communication between two or more devices.

Many different types of network standards are used. Examples of hardware standards are: analogue telephone, RS232, IEEE488, USB, FireWire, Ethernet, Wi-Fi, RF-coax, SCART, VGA, HDMI-CEC, DVI, Bluetooth, ISDN, DSL, PictBridge, Infrared. All have different functionality (data rate, reactivation functions, hardware interfaces) and different implications on energy consumption. Examples of network protocols are: ARP, TCP/IP unicast, TCP/IP multicast, UDP/SNMP, Novell, DHCP, SMB/CIFS, Bonjour/ZeroConf, IPP, HTTP, LPR, HDCP, NFS etc. (see e.g. Wikipedia "list of network protocols").

"Networked" conditions are further analysed in a dedicated on-going ecodesign preparatory study<sup>4</sup>.

#### *Suspend to RAM (ACPI S3) for PCs*

The ACPI standard describes the S3 state as a state where many functions of the PC are powered-off, but the RAM maintains the memory. The operating system can re-start from this state without booting. The memory preservation function is not covered under "standby" as defined in the Regulations, though the PC is in a low energy state (screen is blacked). S3 can be combined with a reactivation from network function. For comparison: ENERGY STAR for computers requires the product in no operation to turn to Sleep mode after a delay time (ACPI S3).

#### *Sleep mode for imaging equipment as defined by ENERGY STAR*

In sleep mode, Imaging Equipment is powered down to a low level of energy consumption. However, waking-up from all possible input signals (either soft switch, wireless, infrared or

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<sup>4</sup> [www.ecostandby.org](http://www.ecostandby.org)

through a network) must be supported. Besides, the product is to maintain network connectivity, so that it is recognized on the network by computers on which it is installed. This function is not covered by the standby definition of the regulation.

### ***Sleep mode for televisions***

TV's can be connected to other products (e.g. play-back devices) via the HDMI interface. Then these products can automatically wake-up the TV when they are switched on.

### ***Television image recording equipment***

Television image recorders such as DVD or BluRay disc (BD) recorders, have to handle always an RF/baseband/audio signal to ensure loop through of a television broadcast signal also in case the television image recorder is not operating. The product is therefore not in standby- or off-mode as defined in the Regulation. The loop through condition will be considered in the preparatory study for sound and imaging equipment.

Some BD recorders provide functions a "networked" mode to operate the following functions:

- HDMI-CEC control: TV remote controller can turn on the BD recorder through HDMI-CEC control from TV, and recorded program is played, recording start or reservation screen of BD recorder is displayed.
- Home server by DLNA: some TVs, computers and gaming consoles can turn on the BD recorder, which may be in another room, through DLNA or home network (LAN) connection, and play the recorded program in BD recorder.
- Timer recording by network information: mobile phone sends the timer recording information to the server in reservation service side, and BD recorder receives that information through the network from the server, then wakes-up and records the program according to the timer recording information).
- Active network download of updates of the Electronic Program Guide: when the recorder has opened the network connection, it is not in standby-mode.

N.B.: A number of these functions may also be present in other recording devices such as VCR or DVD or even multifunctional devices (TV with integrated recorder): the network technology is essential in determining the available "networked" functionality, not the recording technology.

## Annex II

### Examples for products complying with the ecodesign requirements

#### *Stage 1*

#### *Examples for product complying with the ecodesign requirements of stage 1\**

\* N.B. 1: Any alternatives scenarios would result in the product being non-compliant.

N.B. 2: the standby/off-mode power consumption has to comply with the applicable requirements

	Off mode	Standby	other Condition	Status	Technical Documentation to justify inappropriateness of off/standby-mode
A	Yes	Yes	Yes	Compliant	No - No need to justify inappropriateness -
B	Yes	Yes	--	Compliant	No - No need to justify inappropriateness
C	Yes	--	Yes	Compliant	No - No need to justify inappropriateness
D	Yes	--	--	Compliant	No - No need to justify inappropriateness
E	--	Yes	Yes	Compliant	No - No need to justify inappropriateness
F	--	Yes	--	Compliant	No - No need to justify inappropriateness
G	--	--	Yes	Compliant	No - No need to justify inappropriateness
H	Not appropriate	Not appropriate	Not appropriate	Compliant	Yes / needed for all 3 modes - Need to justify inappropriateness for the 3 modes

**Stage 2**

**Examples for products complying with the ecodesign requirements of stage 2\***

\* N.B. 1: Any alternatives scenarios would result in the product being deemed non-compliant.

N.B. 2: the standby/off-mode power consumption has to comply with the applicable requirements.

N.B. 3: for scenarios B, D and F in the stage 1 table, and for scenarios B, D, F, I, K and M in the stage 2 table: the implementation of a compliant “other condition” might create an added value in terms of energy efficiency of a given product in these cases, though it is not strictly necessary to comply with the Regulation, because the required off-mode and/or standby mode are already present in the product.

	Power management	Off mode	Standby	other Condition	Status	Technical Documentation to justify inappropriateness
A	Yes	Yes	yes	Yes	Compliant	--
B	Yes	Yes	yes	--	Compliant	No - No need to justify inappropriateness
C	Yes	Yes	--	Yes	Compliant	No - No need to justify inappropriateness
D	Yes	Yes	--	--	Compliant	No - No need to justify inappropriateness
E	Yes	--	yes	Yes	Compliant	No - No need to justify inappropriateness
F	Yes	--	yes	--	Compliant	No - No need to justify inappropriateness

G	Yes	--	--	Yes	Compliant	No - No need to justify inappropriateness
H	Inappropriate	Yes	yes	Yes	Compliant	Yes - Need to justify inappropriateness for the power management
I	Inappropriate	Yes	yes	--	Compliant	Yes - Need to justify inappropriateness for the power management
J	Inappropriate	Yes	--	Yes	Compliant	Yes - Need to justify inappropriateness for the power management
K	Inappropriate	Yes	--	--	Compliant	Yes - Need to justify inappropriateness for the power management
L	Inappropriate	--	yes	Yes	Compliant	Yes - Need to justify inappropriateness for the power management
M	Inappropriate	--	yes	--	Compliant	Yes - Need to justify inappropriateness for the power management
N	Inappropriate	--	--	Yes	Compliant	Yes - Need to justify inappropriateness for the power management
O	Inappropriate	Inappropriate	Inappropriate	Inappropriate	Compliant	Yes / needed for all 4 modes - Need to justify inappropriateness for the 4 modes