CONSUMER RELEVANT ECO-DESIGN REQUIREMENTS FOR STANDBY AND OFF-MODE LOSSES

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Summary

In the context of the implementation of the Eco-design of Energy-using Products (EuP) Directive[1], the European Commission is proposing eco-design requirements for standby and off-mode electric power consumption of electrical and electronic household and office equipment[2]. These requirements are largely based on the findings of the relevant preparatory study on standby and off-mode losses (EuP Lot 6).

This paper outlines the main consumer relevant issues related to the possible eco-design requirements for standby and off-mode losses and recommends improvement options. We give specific, technical recommendations to increase the energy efficiency of products and highlight the need for a wide scope of application of the future implementing measure. We also stress the importance of providing better information to consumers.

[1] Eco-design of Energy-Using Products (EuP) Directive 2005/32/EC.
[2] These requirements are to be set through the comitology procedure, following a consultation of stakeholders by the Eco-design Stakeholder Consultation Forum.

Introduction

This paper outlines the main consumer relevant issues related to the possible eco-design requirements for standby and off-mode electric power consumption of electrical and electronic household and office equipment (EuP Lot 6).

Thereby the *"Commission Working document on possible eco-design requirements for standby and off-mode electric power consumption of electrical and electronic household and office equipment"* (in the following referred to as "draft implementing measure") was screened in order to identify aspects that might have consequences for consumers. The nature and importance of these consequences were evaluated using the preparatory study on standby and off-mode losses (Lot 6)[3]. For each consumer-relevant issue identified, we suggest improvement options for the draft implementing measure.

This paper[4] has been prepared in collaboration with the Öko-Institut (Germany), the Copenhagen Business School and International Consumer Research and Testing (ICRT)[5].

1. Definition of standby

The definition of standby in the draft implementing measure on possible eco-design requirements for standby and off-mode electric power consumption excludes preheating functions, sensor-based safety functions and network reactivity and network integrity functions:

> *"'Standby' means a condition with the following characteristics: The equipment is connected to a main power source that provides one or more of the following functions:*
>
> - *reactivity function, or reactivation function and a mere indication of enabled reactivation function;*
> - *information or status display;*
>
> *depending on energy input from the main power source to work as intended.*
>
> *Conditions of equipment providing the following functions are not considered as being standby:*
>
> - *preheating functions;*
> - *sensor-based safety functions;*
> - *network reactivation and network integrity functions."*

[3] EuP Preparatory Study Lot 6 "Standby and Off-mode Losses", Final Report. Berlin, 2 October 2007.
[4] This position will be presented at the EuP Stakeholder Consultation Forum meeting on Lot 6 on 19 October 2007.
[5] The work is done in the context of a Commission tender "Work on preparatory studies for Eco-design requirements for EuPs (II) and on stakeholder representation. Lot C Stakeholder representation: Consumers".

Pre-heating functions:

Nowadays certain equipment features a preheating function. This includes the preheating of water in washing machines and dishwashers, as well as preheating of ovens. Nevertheless this function is used in relation with the products' core function only. Whilst some coffee machines heat up once switched into standby, resulting in significant power demands, it can be assumed that coffee machines in private households are not in standby mode for long periods of time. Therefore the exclusion of preheating functions from possible eco-design requirements seems, from the consumer point of view, to have a limited impact on the total scope. However, from an environmental point of view, preheating functions should be considered as important for e.g. office equipment which is left on for longer periods of time in comparison with household equipment.

Sensor-based safety function:

Sensor-based safety functions are continuously running sensor circuits, necessary to monitor the safety-related status of a product or its environment[6]. In household equipment, sensor-based safety functions are mainly heat sensors to warn users against hot cooking plates, or water leak sensors in washing machines and dishwashers.

Network reactivation and network integrity functions:

'Network reactivation' and 'network integrity' functions entail minimal network communication needed to maintain network integrity, i.e. periodic short bursts of status data[7]. Products featuring these functions include cordless phones, TVs with digital set-top-boxes, fax machines, PC peripherals (e.g. modem, WLAN-router) and printers. Most products feature a combination of different standby energy demands, which can rarely be broken down to single functions.

Recommendations

The draft implementing measure on possible eco-design requirements for standby and off-mode losses excludes, from the definition of standby, preheating functions, sensor-based safety functions and network reactivity and network integrity functions. While, from the consumer point of view, the first two aspects have a limited impact on the scope of the eco-design requirements, the last points leave significant room for improvement. For instance fax machines, cordless phones, modems, WLAN-routers, set-top-boxes and, to some extent PCs and printers, include network reactivity and network integrity functions in their standby mode.

[6] If sensing is the main function of the energy-using product in question (e.g. smoke detector), it has not been regarded as a standby function in the final report of the preparatory study and is excluded from the scope of this work.
[7] Lot 6 Preparatory Study: Task 1, p. 6.

Considering it is difficult to allocate a share of standby energy-use to each standby function[8] of a product, we fear that products performing network reactivity / network integrity functions during standby will be excluded from standby requirements[9]. This would result in a situation where standby requirements would only apply for a limited number of EuPs, such as lighting, audio-systems and DVD-players.

We therefore ask for products with network reactivation and network integrity functions to be clearly integrated into the definition of standby and off-mode electric power consumption. This means that, according to Task 8[10], a third definition on "networked standby"[11] should be added. Also threshold values for "networked standby" should be set according to the preparatory study's suggestions[12].

2. Eco-design requirements

Although the definition of "electrical and electronic household and office equipment" covers most consumer-relevant product groups, we consider the definition to be severely weakened by the paragraph entitled "Eco-design requirements" on page 2 of the draft implementing measure. We fear that any product groups covered by other EuP preparatory study lots would be excluded from the scope of this draft implementing measure once product-specific EuP measures are set.

Although the explanatory notes of the draft implementing measure could be regarded as a minimum standard for products falling under the definition on page 1 of the draft implementing measure, we consider the paragraph to be very vague in its current form in that it does not give any criteria to justify less stringent measures.

[8] Example: digital-set-top boxes might feature both the reactivation function and the network integrity function during standby. Since both functions draw power from the same power supply and share some of the device's electronic circuits, the electricity demand cannot easily be allocated to one or the other function.
[9] Requirements laid out in Annex I of the draft implementing measure.
[10] Preparatory Study: Task 8, p. 16.
[11] While Task 8 of the preparatory study proposes to differentiate into "off-mode", "passive standby" and "networked standby" (Preparatory Study: Task 8, p.17), the working document on possible eco-design requirements only defines "off mode" and "standby".
[12] Preparatory Study: Task 8, p. 12.

Recommendations

In order to ensure a broad impact of the implementing measure, we suggest changing the paragraph on "eco-design requirements" on page 2 as follows:

> *"Equipment falling under the definitions of paragraph "Definitions" […] shall meet the eco-design requirements set out in Annex I.* ***For products covered by product-specific implementation measures pursuant to Directive 2005/32/EC, the eco-design requirements set out in Annex I constitute minimum requirements, unless less stringent requirements can be justified for product safety reasons****".*

Considering the explanatory notes have no legal status, we do not consider a change in the notes alone to be sufficient.

3. Annex I: "Off mode" and "standby"

Recommendations

Whilst we support the threshold values given in Annex I of the draft implementing measure, we regret that no absolute implementation dates are foreseen. Furthermore, a major shortcoming of the draft is the lack of threshold values for networked standby (see point 1 above).

4. Annex I: Energy consumption measurement

The IEC[13] 62301 standard can be regarded as the most complete test procedure taking most relevant aspects into account. However, according to this procedure, the equipment is tested in the lowest possible standby or off-mode mode. As many products (e.g. computers) feature more than one possible standby mode, this procedure does not adequately reflect common use patterns. Furthermore, IEC 62301 does not provide for a standardised verification procedure to control whether the requirements are met in reality.

Recommendations

We propose to complete the relevant paragraph as follows:

> *"The manufacturer shall declare in the technical documentation file all conditions of the equipment classified as passive standby and off mode […] and the corresponding energy consumption measured according to the procedure in IEC 62301, first edition 2005-06, section 4 and 5.* ***If a device features more than one possible standby mode, the measurement must be done based on the most commonly used standby mode.****"*

[13] International Electrotechnical Commission standard on a method for testing standby power use in appliances.

In addition, we support the verification procedure for market surveillance purposes as proposed in the explanatory notes of the draft implementing measure (p.8).

5. Annex I: Power management

We believe that the requirements for power management, as in the draft implementing measure, are too vague and lack measurable thresholds and clear deadlines. Almost all products fulfil the requirements of the definition in its current form meaning that it offers no added-value.

We are also concerned that the words "standby" and "off-mode" are not mentioned in the relevant paragraph. This implies that power management systems would not have to switch into standby or off-mode, as laid out in Annex I of the draft implementing measure, but would switch to an unspecified level of power consumption.

Further, we consider that the wording *"without prejudice to good engineering practice"* is too vague and may be used as a loophole for exemptions of any kind.

Finally, we regret that important consumer aspects are not covered by the current formulation of the draft implementing measure. It is not only important that a product features power management functions, but also that the pre-setting is chosen in accordance with the average use patterns. Power management functions should be easy to operate and should be easily adjustable by all users. Moreover, information on the consequences of each adjustment (energy demand / savings, time periods…) should be provided in a clear and concise manner.

Recommendations

In order to give real meaning to the paragraph on power management, we suggest altering the current paragraph as follows:

> *"Equipment shall, without* ***negatively influencing product safety and environmental performance*** *and unless inappropriate for the intended use, offer a power management function, or a similar function that switches equipment after the shortest possible period of time appropriate for the intended use of the equipment, automatically* ***into standby or off-mode condition*** *when the equipment is not providing the main function, or when energy-using product(s) are not dependent on its functions.* ***The power management should be preset according to average consumer behaviour. Users should be able to adjust the power management settings to their specific needs, and be clearly informed about the consequences on product performance and energy demand.****"*

6. Additional recommendations

6.1 Hard-off switch

As laid out in the preparatory study in Task 3 of the preparatory study, the availability of a hard-off switch[14] plays an important role in achieving energy savings. Due to the increased active standby functions such as network functions, there is an increasing number of consumer products on the market which cannot be fully turned off, unless unplugged from the electricity grid.
In addition, hard-off switches with galvanic separation increase product safety, for instance with regard to fire caused by malfunctions of the equipment or heavy disturbances on the electricity net.

Recommendations

We agree with the preparatory study suggestion that *"a hard-off switch should exist when there is no evident reason against it and should be placed so as to be as user-friendly as possible" (Task 3, p.6)*.

We suggest integrating this sentence in Annex I of the draft implementing measure, under the conditions for off-mode, leading to the following wording in point a) and b):

"Off mode:
Power consumption of equipment in any off mode condition shall not exceed [1.0/0.5] Watt.
A hard-off switch should be available when there is no evident reason against it and should be placed so as to be as user-friendly as possible."

6.2 User information

We regret that although the preparatory study stresses the importance of improved user information, the draft implementing measure solely focuses on technical features. We do not agree that information requirements should be dealt with only within the scope of product-specific lots. We strongly support the arguments found in Task 3 of the preparatory study highlighting the need to adequately and clearly inform consumers, at the point of sale as well as in the product manual, of the energy savings related to the use of standby and off-mode functions.

[14] A "hard-off switch" is a switch that allows to fully disconnect a device from the electricity grid. A soft-switch is a switch that deactivates a device only partially.

Recommendations

It is crucial that information on standby and off-mode energy consumption and the associated annual costs are given to consumers at the point of sale in an understandable and clearly visible way. Additional information on environmentally sound product use should be given in the product manual and / or information plates fixed to the products. This could include information such as: "This device uses energy even in standby mode. Use the main power switch to deactivate the device if not in use."

We suggest adding a new chapter in Annex I of the draft implementing measure:

"3. Requirements for user information

Equipment should be labelled with information on standby and off-mode power consumption, including the resulting annual electricity costs for the user, taking into account the average user behaviour and the average electricity costs. This information should be given at the point of sale and in the product manual in a clearly visible and understandable way."

Finally, many consumers receive product information through the use of office equipment and apply this knowledge when using equipment in their private homes. Thus, we believe that the above requirements should apply to both household equipment and office equipment.

Conclusions

Whilst we welcome the draft implementing measure on standby and off-mode losses, we believe that, to ensure that the implementing measure covers as many consumer products as possible in the future, the definition of standby should include network reactivity and network integrity functions and set related threshold values.

Second, the requirements for power management should be amended to clearly include the notions of standby and off-mode.

Third, considering that the availability of a hard-off switch plays an important role in achieving energy savings and product safety, it should be given a more prominent role in the future implementing measure.

Finally, consumer information should be incorporated in the implementing measure on standby and off-mode losses as an integral part of the solution to increase energy savings and product safety.

END