

Berlin, December 20<sup>th</sup> 2007

Dessau-Roßlau, December 20<sup>th</sup> 2007

Note: Following please find the statement of the German government. It substitutes the former statement of the Federal Environment Agency Germany from October 10th 2007.

### ***Eco-design Directive (2005/32/EC)***

#### ***Working document on possible ecodesign requirements for standby and off-mode electric power consumption of electrical and electronic household and office equipment***

BAM and UBA welcome the Working document on possible ecodesign requirements for standby and off-mode electric power consumption of electrical and electronic household and office equipment and strongly support the commission's intention to reduce standby and off-mode losses by a horizontal measure.

We like to stress also that as a general rule for all ecodesign requirements, a process for regular updating of the Implementing Measure (IM) in light of new best performing products and technologies and experience in market surveillance needs to be implemented on a regular interval of at least every 5 years or in case of notable technological progress on request by member states or the European Commission.

We note that the working document lacks some additional measures which are explained in the following sections.

The inclusion of a 'Dynamic Mechanism' in line with the Top Runner principle is considered as a good step forward with respect to the EU Council Decision in June, 2007. In this way the manufacturers get a clear perspective and security for their product innovations and planning.

We propose the following changes before adopting the IM by the Commission. In the enclosed "Working document on possible ecodesign requirements for standby and off-mode electric power consumption of electrical and electronic household and office equipment" the proposed changes are amended in detail.

#### **Application area – product groups**

In practice it might not be sufficiently clear, what product groups belong to household and office equipment. Therefore we propose to define the application area by referring to the categories and product groups listed in Annex IB of 2002/96/EC as amended in the working document (see adapted text in the annex).

## Definitions

The definition of equipment, item 1, last point, should be modified to "...and designed for use with a voltage rating not exceeding 400 V."

The definitions of the power modes in the implementing measure and in IEC 62301 and IEC 62087 should be harmonised in the future, since the used definitions should be standardized European-wide.

Following our statement some clarifications of definitions are necessary (see also adapted text in the annex).

Off mode and standby should be defined as proposed in the preparatory study concerning "0 Watt off-mode", "off-mode with losses" and "Lot 6 Standby" including passive and networked standby. There exists a variety of definitions for standby-modes. To provide a clear distinction a reference to the IM and the definitions given there should be made, e.g. "Lot 6 passive standby".

Products with sensor-based safety function should have to fulfil the designed IM. However, energy consumption of safety-sensors shall not be taken into consideration when calculating the overall power consumption of the equipment in Lot 6 passive standby or off-mode with losses.

## NEW Requirement for all equipment:

### Installation of a 0 Watt mode

As the preparatory study confirms for many products, the 0 Watt-mode realised by a hard-off switch is the best available technology. Beside this there are further technical facilities to achieve a 0 Watt-mode.

Therefore the IM should require that devices must provide the user with a facility to switch to 0 watt, e.g. by use of a hard-off switch or any other appropriate technical solution to reach the 0 Watt-mode, unless it is not technically possible or it does not appear appropriate or would endanger the user or the product.

The reasons for such an exception shall be clearly proved and stated by the manufacturer and be subject to acceptance by the competent authorities. The facility needs to be clearly visible, easily and conveniently accessible. In case of necessity due to a technology or safety requirement, the transition to 0 Watt-mode may be delayed. In any case power consumption has to be 0 Watts at least after 5 minutes, unless the manufacturer proves that a longer delay is necessary.

### Long term goal for off-mode with losses

A longer term BAT goal of 0.3 W as identified by the preparatory study should be envisaged for the off-mode with losses. However, the complete replacement by other technologies not needing the 'off-mode with losses' should be the best alternative (see above, 0 W mode). Internal power supply (e.g. capacitor) and other memory techniques could lead to easily manageable and low energy demanding solutions.

Therefore it should be foreseen that five years after this implementing measure will have come into force the 'off-mode with losses' should be eliminated by appropriate technological solutions.

## Requirements for networked standby

The working document states that networked standby modes contribute significantly to electricity consumption. The Commission argues in the Explanatory Notes of the Working Document, that “horizontal requirements on networked standby are problematic due to the new concepts and difficult/missing clear measurement methods (e.g. definition of the product condition when measurements are being carried out). Therefore legal requirements for networked standby are not foreseen at this stage, but could be envisaged for a possible future revision.” We require the Commission to strive for solutions for the open questions of definition and measurement methods and to introduce efficiency standards for networked standby in this Implementing Measure two years after it has come into force. For the meantime we see a need for a generic requirement (see adapted text in the annex).

In other EuP lots only a small number of product groups are already covered (computers, imaging equipment and complex set-top-boxes). Therefore we require the Commission to make sure that efficiency requirements for networked standby are part of all relevant Implementing Measures.

## Requirement for power management

For an effective power management it need to be required that the device switches at least to “Lot 6 passive standby” or “off-mode with losses” or “0 watt off-mode” after a period of inactivity. Furthermore the power management has to be activated by the producer in the delivery status.

## Marking of switches

To give clear information and guidance for the use of equipment, the marking of switches, including hard-off switches, where installed, should be harmonised according to IEEE 1621.

The proposed changes are amended in detail in the “Working document on possible ecodesign requirements for standby and off-mode electric power consumption of electrical and electronic household and office equipment” in the following Annex.

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## **Annex:**

Changes proposed by BAM and UBA to the

### **Working document on possible ecodesign requirements for standby and off-mode electric power consumption of electrical and electronic household and office equipment (provided by the European Commission on 19th September 2007)**

## **Subject matter**

This implementing measure pursuant to Directive 2005/32/EC establishes eco-design requirements related to standby and off-mode electric power consumption of electrical and electronic household and office equipment intended for the end user dependent on energy input from the mains power source. [It is to be updated in light of new best performing products and technologies in line with the Top Runner principle regularly, at least every five years or in case of notable technological progress on request by member states or the European Commission.](#)

## **Definitions**

For the purposes of this implementing measure the following definitions shall apply:

1. “Electrical and electronic household and office equipment dependent on energy input from the mains power source“, in the following abbreviated as “equipment“, means equipment
  - falling under the product categories specified in Directive 2002/96/EC, Annex IB, [as follows: with the exception of equipment not corresponding to household and office equipment,:](#)
    - a) categories 1 to 3 and 7, 9, 10: all devices,
    - b) category 4, however deviating from 2002/96/EC also including any other appliances used for cooking and other processing of food
    - c) category 5, however deviating from 2002/96/EC also including luminaries in households,
    - d) category 6: sewing machines only,
    - e) combinations thereof, e.g. combinations of fridges and freezers (fridge-freezer) and combinations of printers and copiers(multifunction devices)
  - and intended for the end-user,
  - and dependent on energy input from the mains power source in order to work properly,
  - and designed for use with a voltage rating not exceeding 400V,also when marketed for non-household or non-office use.

2. “0 Watt off mode” means a condition of equipment with the following characteristics: The equipment is connected to a power source but not drawing energy from the mains (also called “hard-off”, “primary side hard-off switch” or “galvanically switched off”).

3. “Off mode with losses” means a condition of equipment with the following characteristics: The equipment is connected to a mains power source and provides no function but is using energy (also called “soft off”). A mere indication of the off mode condition is also considered off mode.

4. “Lot 6 passive standby” means a condition with the following characteristics: The equipment is connected to a mains power source and provides one or more of the following functions

- reactivation function, or reactivation function and a mere indication of enabled reactivation function,
- information or status display (except indication of off mode with losses),

depending on energy input from the mains power source to work as intended.

Condition of equipment providing the following functions are not considered as being Lot 6 passive standby.

- preheating functions,
- ~~sensor-based safety functions,~~
- network reactivation and network integrity functions.

## 5. Safety functions

Products with sensor-based safety function have to fulfil the designed IM. However, energy consumption of safety-sensors shall not be taken into consideration when calculating the overall power consumption of the equipment in Lot 6 passive standby or off-mode with losses.

6. “Lot 6 networked standby” means a condition with the following characteristics: At least one network function is available (reactivation via network command or network integrity communication).

7. “Network Type I” (Simple networks): Analogue signalling and signal detection 4, and low speed connections (< 0.5 Mbps or < 5 MHz, such as IrDA or a phone line without DSL).

8. “Network Type II” (Standard range networks): Standard data networks, lower speed wireless and non-continuous broadcast reception.

9. “Network Type III (High speed networks): Data networks (Gbps range or > 500 MHz), higher speed wireless (all WLAN types) and continuous broadcast reception.

10. “Information or status display“ means a function not being the main function intended to provide information or indicate the status of the equipment on a display.

11. “Main function(s)“ means a function or functions providing the intended service of the equipment.

12. “Reactivation function” means a function intended to switch the equipment by remote switch, internal Sensor, or timer to a condition providing additional functions, including the main function.

Other expressions used in this implementing measure shall have the same meaning as in Directive 2005/32/EC.

### **Eco-design requirements**

Equipment falling under the definitions of paragraph “Definitions“, first subparagraph, shall meet the ecodesign requirements set out in Annex I unless product specific implementing measures pursuant to Directive 2005/32/EC adopted after this implementing measure establish different requirements.

### **Conformity Assessment**

A conformity assessment shall be carried out according to Article 8(2), and Annex IV (Internal design control) or Annex V (Management system for assessing conformity) of Directive 2005/32/EC.

## **Market surveillance**

When performing the market surveillance checks referred to in Directive 2005/32/EC, Article 3 (2), Member State authorities shall apply the verification procedure set out in Annex II of this implementing measure.

## Annex I: Ecodesign requirements

### 1. Requirements for “off mode“ and “[Lot 6 passive](#) standby“

#### a) One year after this implementing measure has come into force:

##### [0 watt mode:](#)

Devices must provide the user with a facility to switch to 0 watt, e.g. by use of a hard-off switch. The facility needs to be clearly visible, easily and conveniently accessible. In case of necessity due to technology or safety requirement, power consumption may be reduced delayed. In any case power consumption has to be 0 watts at least after 5 minutes.

If a 0 watt mode generally or within 5 minutes is technically not possible or if it is not appropriate or it is a threat for the user's or product's safety, the reasons shall be clearly proved and stated by the manufacturer and be subject to acceptance by the competent authority.

##### Off mode [with losses:](#)

Power consumption of equipment in ~~any~~ ‘off mode [with losses](#)’ condition shall not exceed 1.0 Watt.

##### [Lot 6 passive](#) standby:

- Power consumption of equipment in any condition providing only a reactivation function, or a reactivation function and a mere indication of enabled reactivation function shall not exceed 1.0 Watt.
- Power consumption of equipment in any condition providing information or status display, or a combination of reactivation function and information or status display shall not exceed 2.0 Watts.

#### b) Three years after this implementing measure has come into force:

##### Off mode [with losses:](#)

Power consumption of equipment in ~~any~~ ‘off mode [with losses](#)’ condition shall not exceed 0.5 Watt.



Lot 6 passive standby:

- Power consumption of equipment in any condition providing only a reactivation function, or a reactivation function and a mere indication of enabled reactivation function shall not exceed 0.5 Watt.
- Power consumption of equipment in any condition providing information or status display, or a combination of reactivation function and information or status display shall not exceed 1.0 Watt.

c) Five years after this implementing measure has come into force:

Off mode with losses:

Power consumption of equipment in 'off mode with losses' condition is to be phased out. The best available technology is the '0 Watt mode' and thus the target is a complete replacement of the 'Off Mode with Losses' by appropriate technological solutions.

d) Lot 6 networked standby:

Power consumption of equipment in any condition providing network functions be as low as possible.

Two years after coming into force of this implementing measure an amendment is foreseen. It will include precise definitions of networked standby and cover related efficiency standards.

e) The power consumption shall be measured according to the procedure to IEC 62301, first edition 2005-06, sections 4 and 5.

f) The manufacturer shall declare in the technical documentation file all conditions of the equipment classified as Lot 6 passive standby and off mode according to paragraph "Definitions", second and third subparagraph and the corresponding energy consumption measured according to the procedure in IEC 62301, first edition 2005- 06, sections 4 and 5.

## 2. Requirement for power management

Equipment shall, without prejudice to good engineering practice 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 a condition with reduced energy consumption [\(at least one of the defined Lot 6 passive standby or off-modes above under point 1\)](#) when the equipment is not providing the main function, or when other energy-using product(s) are not dependent on its functions.

[The power management has to be activated by the producer in the delivery status](#)

## [3. Marking of switches](#)

[The marking of switches should be harmonised according to IEEE 1621.](#)

## **Annex II: Verification procedure for market surveillance purposes**

When proceeding to a verification of conformity for market surveillance purposes, Member State authorities shall test one single unit.

For all [Lot 6](#) passive standby and off mode conditions of the test unit, the corresponding energy consumption values shall be established applying the procedure set out in IEC 62301, first edition 2005-06, sections 4 and 5.

The model shall be considered to comply with the provisions set out in Annex I of this implementing measure if the results for off mode and [Lot 6](#) passive standby conditions, as appropriate, are not exceeding the limit values set out in Annex I by more than 10%.

Otherwise, three more units shall be tested. The model shall be considered to comply with this implementing measure if the average of the results of the latter three tests for off mode and [Lot 6](#) passive standby conditions, as applicable, is not exceeding the limit values set out in Annex I.

Otherwise, the model shall be considered not to comply.

## Explanatory Notes

### Basic Rationale

The purpose of the implementing measure – in the following abbreviated as “IM” – is to set horizontal ecodesign requirements on standby mode and on off mode with the aim to reduce the related energy consumption (as required in Article 16 of Directive 2005/32/EC). In order to cope with the horizontal, i.a. product category “un-specific” character, the IM and the underlying preparatory study are based on a **functional approach**:

- The functions addressed by this IM are classified and defined more precisely as **‘lot 6 passive standby’** (preparatory study: ~~“passive standby”~~), **‘lot 6 networked standby’**, **‘off mode with losses’** and **‘0 W off mode’**. Furthermore, ~~“networked standby mode” has been also defined and investigated by the preparatory study~~
- Technical realizations of functions classified as (passive) standby mode and off mode have been investigated in the preparatory study. Several product categories have been chosen as example cases to develop numerical estimates, including the base case, overall energy consumption in passive standby mode and off mode, impact of policy measures etc. An investigation of all product categories having passive mode and off mode is neither feasible nor necessary because the functional approach ensures that a well-defined set of functions and their technical realization are addressed, regardless of the specific product category.
- Further functions have been classified in the preparatory study as **networked standby mode(s)**. In principle networked standby significantly contributes to electricity consumption. However, horizontal requirements on networked standby are problematic due to the new concepts and difficult/missing clear measurement methods (e.g. definition of the product condition when measurements are being carried out). Therefore legal requirements for networked standby are ~~not~~ foreseen ~~at this stage, but could be envisaged for a possible future revision~~ for an amendment of this implementing measure.
- The **classification developed in this IM** and the corresponding preparatory study is **perused for the revision of IEC 62301** (TC 59, WG 9), and proposals for energy efficiency legislation **in the USA**.

The function approach ensures applicability to household and office equipment powered by the mains power source and the **scope** of the product categories addressed by this IM has been chosen accordingly.

## **Relation with Product specific (“vertical“) IMs**

If a product is in the scope both of a vertical and the horizontal IM, the model has to comply both with the horizontal and the vertical IM for affixing the CE mark. Vertical measures prevail in the sense that more operational modes can be addressed (networked standby, ready, sleep, on ... operating modes), and that differing requirements on (passive) standby and off mode can be defined at a later stage if appropriate. They will usually be more stringent unless justified. Standby and off-mode powered by other energy sources (e.g. gas or oil) will be addressed in product specific (vertical) IMs.

## **Scope**

The focus of this implementing measure is on household and office equipment since these product types are most relevant for the electricity consumption in off mode and standby. Therefore the scope has been defined similar to the “WEEE Directive“ 2002/96/EC, but narrowing the scope of the latter to “household and office equipment“ by limiting the voltage rating to 380V, and exempting “industrial“, medical and “commercial“ product categories from 2002/96/EC, Annex IB (monitoring and control instruments used in industrial installations, coin slot machines, medical devices, monitoring and control instruments used in industrial installations, automatic dispensers) being sold in small numbers and often having “standby“ functions critical for safety aspects.

## **Off mode**

This definition covers electricity off-mode “losses“. The condition that equipment offers not functionality other than visualizing off mode e.g. by an LED is also considered off mode (and not information and status display).

## **Standby**

This definition covers standby powered by electricity also for those EuPs whose main function(s) is powered e.g. by gas or oil (e.g. passive standby of a gas-fired tumble dryer). This definition does not Cover “standby“ powered by means of energy other than electricity from the mains (e.g. a flame keeping the water heating function of a gas-fired boiler/water heater in “standby“, battery backup).

An LED only indicating that equipment is ready to be reactivated is not considered to be “information or status display“ (see off mode).

The preparatory study, draft US legislation and preliminary considerations on the IEC revision contain “sensor based safety function“. However, safety is priority and corresponding functions should not be addressed by ecodesign requirements for [Lot 6](#) standby. Fur-

thermore, sensor based safety functions are relevant mainly for wet appliances (covered by vertical measures) and cooking appliances.

### **Off mode and standby power consumption levels**

The preparatory study has shown that the proposed power levels can be achieved horizontally by existing design options for the functions addressed. The preparatory study has also shown that LLCC design options are the best available technology (i.a. BAT is cost-effective). It was also shown that those design options ~~and~~ do not imply trade-offs with other environmental aspects (e.g. higher through a higher material related environmental impact).

Although LLCC is achieved by BAT solutions the timing of entry into force of the requirements on off mode and standby has been chosen so as to allow for redesign of equipment. In a first step, a one year transition time to meet requirements levels reflecting the current state of the art technology readily available. Two more years are foreseen to allow for equipment redesign so as to implement design options corresponding to the LLCC. This timing is roughly in line with the planning for legislation in other parts of the world (Australia) foreseeing similar levels as the second ecodesign stage for off and passive standby to come into force in 2012.

The definition of power levels for standby distinguishes between reactivation function only, and reactivation and information and status display. This reflects the need for additional power for the latter functions.

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

IEC 62301 defines a measurement procedure which is appropriate for measuring the power consumption of the operational modes which are relevant for this IM. However, IEC 62301 does not provide for a verification procedure (unlike e.g. the EN standards developed in the context of energy labelling). The proposed verification procedure foresees tolerances of +I-10% for a single product, while requiring that the average of the product sample wider test has to meet the limit value on passive standby mode and off mode. This approach avoids that energy efficiency benchmarks/requirements are de facto (“structurally”) higher.