

Annex 2

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

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

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, with the exception of equipment not corresponding to household and office equipment,
- 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 380V, also when marketed for non-household or non-office use.

2. "Off mode" means a condition of equipment with the following characteristics: The equipment is connected to a mains power source and provides no function. A mere indication of the off mode condition is also considered off mode.

3. "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,
- depending on energy input from the mains 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.

4. "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.

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

6. "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 "standby"

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

Off mode:

Power consumption of equipment in any off mode condition shall not exceed 1.0 Watt.

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:

Power consumption of equipment in any off mode condition shall not exceed 0.5 Watt.

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.

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

The manufacturer shall declare in the technical documentation file all conditions of the equipment classified as 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 when the equipment is not providing the main function, or when other energy-using product(s) are not dependent on its functions.

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 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 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 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 **standby** (preparatory study: "passive standby") and **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.
- 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 standby. Furthermore, 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 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 +/-10% for a single product, while requiring that the average of the product sample under 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.