Annex 2

Working Document on Ecodesign Requirements for Computers and for Servers

Chapter 1
Subject Matter and Scope

1. This Regulation establishes ecodesign requirements for computers.

2. The scope of this Implementing Measure covers:

- Desktop computers
- Notebook computers
- Integrated Desktop computers
- Workstations
- Thin clients
- Small-scale servers
- Servers

3. Products are not included within the scope of this Implementing Measure if they fall squarely within the strict definition of any of the following, as defined in Chapter 2:

- Blade Systems including Blade Servers and Blade Chassis,
- Fully Fault Tolerant Servers,
- Server Appliances,
- Multi-Node Servers,
- Storage Equipment including Blade Storage, and
- Network Equipment

4. Computer Servers with more than four processor sockets are currently not included under the scope of this regulation.

Explanatory notes: Whilst the preparatory study did not include Workstations and Thin clients it is proposed to include these products in the scope of the regulation as it is possible that these may transition to the domestic sector over the coming years, and applicable criteria exist under the ENERGY STAR programme. It is proposed to include servers in the scope of the regulation as the applicable criteria exist under the ENERGY STAR programme. However due to the complexity of this product group (as well as Workstations) it is proposed to only apply requirements on the efficiency of the internal power supply as well as information requirements, as well as power management in the case of Workstations (details in Annex I). This approach has been chosen as the technical parameters of internal power supplies are essentially the same across all products covered under this Regulation and in all cases offer a significant saving potential.

Chapter 2
Definitions

The following definitions shall apply:

1. 'Computer' means a device which performs logical operations and processes data, is capable of using input devices and computer displays, and includes a central processing unit (CPU) to perform operations. For the purposes of this measure, computers include both stationary and portable units, including Desktop computers, integrated Desktop computers, Notebook computers, thin clients, and workstations.

2. 'Computer Monitor' is defined as in Commission Regulation (EC) No XXX/2010

3. 'Desktop Computer' means a computer where the main unit is intended to be located in a permanent location and is not designed for portability.

4. 'Integrated Desktop Computer' means a Desktop system in which the computer and computer display function as a single unit which receives its ac power through a single cable. Integrated Desktop computers come in one of two possible forms: (1) a system where the computer display and computer are physically combined into a single unit; or (2) a system packaged as a single system where the computer display is separate but is connected to the main chassis by a dc power cord and both the computer and computer display are powered from a single power supply.

5. 'Notebook Computer' means a computer designed specifically for portability and to be operated for extended periods of time either with or without a direct connection to an ac power source. Notebooks utilise an integrated computer display and are capable of operation off of an integrated battery or other portable power source.

6. 'Thin Client' means an independently-powered computer that is intended for location in a permanent location and that relies on a connection to remote computing resources to obtain primary functionality. Thin Clients covered by these requirements are limited to devices with no rotational storage media integral to the computer.

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Deleted: means a commercially - available, electronic product with a display screen and its associated electronics encased in a single housing that is capable of displaying output information from a computer via one or more inputs, such as VGA, DVI and/or IEEE 1394. The computer monitor must be capable of being powered by a separate AC wall outlet or a battery unit that is sold with an AC adapter. This definition is intended to cover standard monitors designed for use with computers with a viewable diagonal screen size greater than 30.5cm (12 inches) but not exceeding 76.2cm (30 inches).

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7. 'Workstation' means a high-performance, single-user computer typically used for graphics, CAD, software development, financial and scientific applications among other compute intensive tasks. A workstation has the following characteristics;
   - Is marketed as a workstation or similar;
   - Has a mean time between failures (MTBF) of at least 15,000 hours based on either Bellcore TR-NWT-000332, issue 6, 12/97 or field collected data; and
   - Has error-correcting code (ECC) and/or buffered memory.
   - Meets three of the following six optional characteristics:
     - Has supplemental power support for high-end graphics (i.e., PCI-E 6-pin 12V supplemental power feed);
     - Its system is wired for greater than x4 PCI-E on the motherboard in addition to the graphics slot(s) and/or PCI-X support;
     - Does not support Uniform Memory Access (UMA) graphics;
     - Includes 5 or more PCI, PCIe or PCI-X slots;
     - Is capable of multi-processor support for two or more processors (must support physically separate processor packages/sockets, i.e., not met with support for a single multi core processor); and/or
     - Is qualified by at least 2 Independent Software Vendor (ISV) product certifications; these certifications can be in process, but must be completed within 3 months of qualification.

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8. 'Small-Scale Server' means a computer that typically uses desktop components in a desktop form factor, but is designed primarily to be a storage host for other computers. A computer must have the following characteristics to be considered a Small-Scale Server:
   - Designed in a pedestal, tower, or other form factor similar to those of desktop computers such that all data processing, storage, and network interfacing is contained within one box/product;
   - Intended to be operational 24 hours/day and 7 days/week, and unscheduled downtime is extremely low (in the order of hours/year);
   - Capable of operating in a simultaneous multi-user environment serving several users through networked client units; and
   - Designed for an industry accepted operating system for home or low-end server applications (e.g., Windows Home Server, Mac OS X Server, Linux, UNIX, Solaris).

   Small-Scale Servers are designed to perform functions such as providing network infrastructure services (e.g., archiving) and hosting data/media. These products are not designed to process information for other systems or run web servers as a primary function.

9. Servers means a computer that provides services and manages networked resources for client devices, e.g., desktop computers, notebook computers, thin clients, wireless devices, PDAs, IP telephones, other Computer Servers and other networked devices. Computer Servers are sold through enterprise channels for use in data centres and

office/corporate environments. Computer Servers are designed to respond to requests and are primarily accessed via network connections, and not through direct user input devices such as a keyboard, mouse, etc. In addition, Computer Servers must have all of the following characteristics:

- Marketed and sold as a Computer Server or similar;
- Designed for and listed as supporting Computer Server Operating Systems (OS) and/or hypervisors, and targeted to run user-installed enterprise applications;
- Support for error-correcting code (ECC) and/or buffered memory (including both buffered DIMMs and buffered on board (BOB) configurations);
- Packaged and sold with one or more AC-DC or DC-DC power supply(s); and
- All processors have access to shared system memory and are independently visible to a single OS or hypervisor.

10. 'Blade System' means a system composed of both a Blade Chassis and one or more removable Blade Servers or Blade Storage units. Blade Systems are designed as a scalable solution to efficiently package and operate multiple Computer Servers or Storage units in a single enclosure, and are designed for technicians to be able to easily add or replace hot-swappable Computer Server boards (e.g., Blade Servers) in the field.

11. Blade Chassis: An enclosure containing shared resources for the operation of Blade Servers and Blade Storage units. These resources may include power supply(s) for power conversion, shared storage, and hardware for DC power distribution, thermal management, system management, and network services. A Blade Chassis features multiple slots which can be populated with blades of different types.

Computer Server Types

12. 'Blade Server' means a Computer Server consisting of, at minimum, a processor and system memory that relies on shared resources (e.g., power supplies, cooling, etc.) for operation. Blade Servers are designed to be installed in a Blade Chassis, are hot-swappable and are incapable of operating independent of the chassis.

13. 'Direct Current (DC) Server' means a Computer Server with one or more DC-DC power supplies which runs directly off of DC power.

14. 'Fully Fault Tolerant Server' means a Computer Server designed with complete redundancy, in which every computing component is replicated between two nodes running identical and concurrent workloads. If one node fails or needs repair, the second node can run the workload alone to avoid any downtime. A Fully Fault Tolerant Server uses two systems to simultaneously and repetitively run a single workload for continuous availability in a mission critical application.

15. 'Managed Server' means a Computer Server designed for a high level of availability in a highly managed environment. A Managed Server must have all of the following characteristics:
    - Capability to operate with redundant power supplies; and
    - An installed dedicated management controller (e.g., service processor).

16. 'Dual-Node Servers' means a Dual-Node Server consists of two independent Computer Servers (or nodes) contained in a single enclosure and sharing one or more power supplies. The combined power for all nodes is distributed through the shared power supply(s). Dual-Node Servers are designed and built as a single enclosure and are not designed to be hot-swappable.

17. 'Multi-Node Server' for purposes of this specification, means a Multi-Node Server consisting of more than two independent Computer Servers (or nodes) contained in a single enclosure and sharing one or more power supplies. The combined power for all nodes is distributed through the shared power supply(s). Multi-Node Servers are designed and built as a single enclosure and are not designed to be hot-swappable.

18. 'Server Appliance' means a self-contained Computer Server system bundled with a pre-installed operating system and application software that is used to perform a dedicated function or set of tightly coupled functions. Server Appliances deliver services through one or more networks (e.g, IP or SAN), and are typically managed through a web or command line interface. Server Appliance hardware and software configurations are customized by the vendor to perform a specific task, and are not intended to execute user-supplied software. Example services that may be made available via a Server Appliance include: name services, firewall services, authentication services, encryption services, and voice-over-IP (VoIP) services.

Other Data Centre Equipment

19. 'Blade Storage' means a storage-specific element that relies on shared resources (e.g., power supplies, cooling, etc.) for operation. Blade Storage units are designed to be installed in a Blade Chassis, are hot-swappable and are incapable of operating independent of the chassis.

20. 'Network Equipment' means a product whose primary function is to provide data connectivity among devices connected to its several ports. Data connectivity is achieved via the routing of data packets encapsulated according to Internet Protocol, Fibre Channel, InfiniBand or similar protocol. Examples of network equipment commonly found in data centers are routers and switches.

21. 'Storage Equipment' means a system composed of integrated storage controllers, storage devices (e.g., hard drives or solid state storage) and software that provides data storage services to one or more Computer Servers. While storage equipment may contain one or more embedded processors, these processors do not execute user-

supplied software applications but may execute data-specific applications (e.g., data replication, backup utilities, data compression, install agents, etc.).

22. 'Discrete Graphics Processing Unit (GPU)' means a graphics processor with a local memory controller interface and a local, graphics-specific memory.

23. 'Internal Power Supply' means a component internal to the computer casing and designed to convert ac voltage from the mains to dc voltage(s) for the purpose of powering the computer components and meets the following criteria:
    - Is contained within the computer casing but is separate from the main computer board.
    - The power supply connects to the mains through a single cable with no intermediate circuitry between the power supply and the mains power.
    - all power connections from the power supply to the computer components, with the exception of a DC connection to a computer display in an Integrated Desktop Computer, are internal to the computer casing.

    Internal dc-to-dc converters used to convert a single dc voltage from an external power supply into multiple voltages for use by the computer are not considered internal power supplies.

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24. 'External Power Supply' is defined as in Commission Regulation (EC) No 278/2009

25. Internal storage means a component internal to the computer which provides non-volatile storage of data. Examples include hard disk drives and solid state drives.

26. 'Wake Event' means a user, scheduled, or external event or stimulus that causes the computer to transition from Sleep or Off to active mode of operation. Examples of wake events include, but are not limited to:
    - movement of the mouse
    - keyboard activity
    - controller input
    - real-time clock event, or a button press on the chassis,

    in the case of external events,
    - stimulus conveyed via a remote control
    - network, modem,

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27. 'Wake On LAN (WOL)' means functionality which allows a computer to wake from Sleep or Off when directed by a network request via Ethernet.

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28. 'Off mode(s)' means a condition in which the equipment is connected to the mains power source and is not providing any function; the following shall also be considered as off mode:
    - Conditions providing only an indication of off-mode condition;

- Conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2004/108/EC of the European Parilament and the Council.

For systems where ACPI standards are applicable, Off Mode correlates to ACPI System Level S5 state.

29. 'Off Mode-with-WOL' means the power consumption level in the lowest power mode which cannot be switched off (influenced) by the user and that may persist for an indefinite time when the appliance is connected to the main electricity supply and used in accordance with the manufacturer's instructions. For systems where ACPI standards are applicable, 'Off Mode-with-WOL' correlates to ACPI System Level S4 state.

30. 'Sleep Mode' means a low power state that the computer is capable of entering automatically after a period of inactivity or by manual selection. For systems where ACPI standards are applicable, Sleep mode most commonly correlates to ACPI System Level S3 (suspend to RAM) state.

31. 'Idle State' means a state in which the operating system and other software have completed loading, a user profile has been created, the machine is not asleep, and activity is limited to those basic applications that the system starts by default.

32. 'Typical Energy Consumption (TEC)' means a method of testing and comparing the energy performance of computers, which focuses on the typical electricity consumed by a product while in normal operation during a representative period of time.

Explanatory notes: As compared to the Working Document discussed on 9 October 2009 the following changes have been introduced:

- The definitions have been adjusted to fit the purpose of a regulation
- The definitions of a server, small-scale server, and internal storage have been added
- The operating modes have been redefined

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Deleted: For Desktop computers and Notebook computers, the key criterion of the TEC app roach is a value for typical annual electricity use, measured in kilowatt -hours (kWh), using measurements of average operational mode power levels scaled by an assumed typical usage model (duty cycle). For Workstations, requirements are based on a TEC powe r value calculated from operational mode power levels, maximum power, and an assumed duty cycle.

Chapter 3
Ecodesign Requirements

Computers shall meet the ecodesign requirements set out in Annex I. Compliance with the ecodesign requirements shall be measured in accordance with the methods set out in Annex II.

Chapter 4
Amendment to Regulation (EC) No 1275/2008

Annex I, point 2 to Regulation (EC) No 1275/2008 is replaced by the text set out in Annex IV to this Regulation.

Explanatory notes: In line with the approach taken in the case of Regulation (EC) No 642/2009 it is proposed to take out the subject matter of this Regulation from the scope of the 'Standby Regulation' and rewrite the applicable requirements related to off mode in the specific Regulation applying to this particular product group. Standby mode requirements, as defined in the 'Standby Regulation' are replaced by requirements focusing only on off mode. Where a computer provides a WOL function it is not considered to be in the off mode but in the 'Off-with WOL' mode.

Chapter 5

Conformity assessment

The conformity assessment procedure referred to in Article 8 of Directive 2005/32/EC shall be the internal design control system set out in Annex IV of that Directive or the management system for assessing conformity set out in Annex V of that Directive.

Chapter 6

Verification procedure for market surveillance purposes

Surveillance checks shall be carried out in accordance with the verification procedure set out in Annex II.

Chapter 7

Revision

No later than 3 years after the entry into force of this Regulation the Commission shall review it in the light of technological progress and present the result of this review to the Consultation Forum.

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Chapter 8
Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

Points 3(a), 3(b), and 4(a) of Annex I shall apply as from the date referred to in the first paragraph.

Points 1(a), 1(c), 2(a), 2(b), 5(a), 5(b), 6(a), 6(b), 7(a), 7(b), 7(c), 7(d) and 7(e) of Annex I shall apply as from 12 months after the date referred to in the first paragraph .

Points 1(b) and 1 (d) of Annex I shall apply as from 18 months after the date referred to in the first paragraph .

Points 3(d), 3(e), 4(b) and 6(c) of Annex I shall apply as from 07 January 2013.

Points 1(f) and 2(c) of Annex I shall apply as from 31 January 2013.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Explanatory notes: The timing for the introduction of requirements was chosen with the aim of setting the levels at the least life-cycle cost while taking into consideration the time needed for the redesign of the products and the availability of technological solutions at minimal/no additional cost.

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Points 3(a), 4(a) 6(a), 6(b), 7 (a), 7(c), 7(e)and 7 (g) of Annex I shall apply as from 6 months af ter the date referred to in the first paragraph.¶

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Chapter 9
Benchmarks

The indicative benchmarks for best-performing products and technology currently available on the market are identified in Annex VI.

ANNEX I

Ecodesign requirements

1. TEC	
Desktop and integrated Desktop computer (Category A, Category B and Category C)	a) 12 months after this Regulation has come into force: The TEC (kWh/y) shall not exceed: • Category A = 148.00 • Category B = 175.00 • Category C = 209.00 Where TEC (ETEC) in units of kWh, representing annual energy consumption, is determined using the formula below: **ETEC = (8760/1000) * (0.55*Poff + 0.05*Psleep + 0.40*Pidle)** where all Px are power values in watts. The following Capability Adjustments apply: • Memory o 1 kWh per GB over base, where base memory is 2 GB • Premium Graphics (for Discrete GPUs with specified Frame Buffer Widths) o Category A/B (FB Width • 128-bit) = 35 kWh o Category A/B/C (FB Width > 128-bit) = 50 kWh • Additional Internal Storage o 25 kWh
Desktop and integrated Desktop computer (Category D)	b) 18 months after this Regulation has come into force: The TEC (kWh/y) shall not exceed: • Category D = 234.00 Where TEC (ETEC) in units of kWh, representing annual energy consumption, is determined using the formula below: **ETEC = (8760/1000) * (0.55*Poff + 0.05*Psleep + 0.40*Pidle)** where all Px are power values in watts. The following Capability Adjustments apply: • Memory o 1 kWh per GB over base, where base memory is 4 GB

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¶
The idle power consumption shall not exceed:¶
<#>Category A = 50.0 0 W ¶
<#>Category B = 65. 00 W ¶
<#>Category C = 95.0 0 W¶
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	• Premium Graphics (for Discrete GPUs with specified Frame Buffer Widths) o Where FB Width • 128-bit = 35 kWh o Where FB Width > 128-bit = 50 kWh • Additional Internal Storage o 25 kWh
Notebook computer (Category A and Category B)	c) 12 months after this Regulation has come into force; The TEC (kWh/y) shall not exceed: • Category A: = 40.00 • Category B: = 53.00 Where TEC (E_{TEC}) in units of kWh, representing annual energy consumption, is determined using the formula below: **E_{TEC} = (8760/1000) * (0.60 Poff + 0.10 Psleep + 0.30 Pidle)** where all Px are power values in watts. The following Capability Adjustments apply: • Memory o 0.4 kWh (per GB, over 4 GB) • Premium Graphics (for Discrete GPUs with specified Frame Buffer Widths) o Category B (FB Width > 64-bit): 3 kWh • Additional Internal Storage o 3 kWh

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Where TEC (ETEC) in units of kWh, representing annual energy consumption, is determined using the formula below: ¶
ETEC = (8760/1000) * (0.55 *Poff + 0.05*Psleep + 0.40 *Pidle) ¶
where all Px are power values in watts. ¶
¶
The following Capability Adjustments apply: ¶
<#>Memory¶
<#>1 kWh per GB over base, where base memory is: ¶
<#>Category A/B/C = 2 GB ¶
<#>Category D = 4 GB¶

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The idle power consumption shall not exceed:¶
<#>Category A: = 14.00 W ¶
<#>Category B: = 22.00 W¶
<#>Category C: = 31.00 W ¶
¶
This is in line with ENERGY STAR Computers v4.0 requirements for idle state, but with additional Category C. ¶

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Notebook computer (Category C)	d) 18 months after this Regulation has come into force: The TEC (kWh/y) shall not exceed: • Category C: = 88.50 Where TEC (E_{TEC}) in units of kWh, representing annual energy consumption, is determined using the formula below: **E_{TEC} = (8760/1000) * (0.60 Poff + 0.10 Psleep + 0.30 Pidle)** where all Px are power values in watts The following Capability Adjustments apply: • Memory o 0.4 kWh (per GB, over 4 GB) • Additional Internal Storage o 3 kWh
Thin client	f) By 31 January 2013: The idle power consumption shall not exceed: • Category A: = 12.00 W • Category B: = 15.00 W
2. SLEEP MODE	
Desktop and integrated Desktop computer, and Notebook computer	a) 12 months after this Regulation has come into force equipment shall provide sleep mode and/or another condition which does not exceed the applicable power consumption requirements for sleep mode. The sleep mode power consumption shall not exceed: • 4.00 W but with an additional allowance of 0.70 W for WOL, where the product is shipped with WOL enabled.
Notebook computer	b) 12 months after this Regulation has come into force equipment shall provide sleep mode and/or another condition which does not exceed the applicable power consumption requirements for sleep mode.: The sleep mode power consumption shall not exceed: • 1.70 W but with an additional allowance of 0.70 W for WOL, where the product is shipped with WOL enabled.
Thin client	c) By 31 January 2013 equipment shall provide sleep mode and/or

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	another condition which does not exceed the applicable power consumption requirements for sleep mode. The sleep mode power consumption shall not exceed: • 2.00 W but with an additional allowance of 0.70 W for WOL, where the product is shipped with WOL enabled.
3. OFF MODE	
All computers excluding Workstations	a) On the day this Regulation comes into force power consumption in 'off mode' shall not exceed 1.00 W. b) On the day this Regulation comes into force equipment shall provide off mode and/or another condition which does not exceed the applicable power consumption requirements for off mode when the equipment is connected to the mains power source. d) By 7 January 2013 power consumption in 'off mode' shall not exceed 0.50 W. e) By 7 January 2013 equipment shall provide off mode and/or another condition which does not exceed the applicable power consumption requirements for off mode when the equipment is connected to the mains power source.
4. OFF-WITH-WOL MODE	
All computers excluding Workstations	a) On the day this Regulation comes into force where the product is shipped with WOL enabled, equipment must comply with Point 3.(a) and 3.(b) but with an additional allowance of 0.70 W.
All computers	b) By 7 January 2013 where the product is shipped with WOL enabled, equipment must comply with Point 3.(d) and 3.(e) but with an additional allowance of 0.70 W.
5. INTERNAL POWER SUPPLY EFFICIENCY	

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All computers	a) 12 months after this Regulation has come into force: All internal power supplies shall not perform at less than: • 85% efficiency at 50% of rated output • 82% efficiency at 20% and 100% of rated output • Power Factor = 0.9 at 100% of rated output.
All servers	b) 12 months after this Regulation has come into force: All Multi output (AC-DC, DC-DC) power supplies shall not perform at less than: • 85% efficiency at 50% of rated output • 82% efficiency at 20% and 100% of rated output All Multi-output (AC-DC) power supplies shall perform at not less than: • Power Factor 0.8 at 20% of rated output • Power factor 0.9 at 50% of rated output Power factor 0.95 at 100% of rated output All single output (AC-DC, DC-DC) power supplies with rated output of not more than 500W shall not perform at less than: • 70% efficiency at 10% of rated output • 82% efficiency at 20% of rated output • 89% efficiency at 50% of rated output • 85% efficiency at 100% of rated output All single output (AC-DC) power supplies with rated output of not more than 500W shall not perform at less than: • Power Factor 0.8 at 20% of rated output • Power Factor 0.9 at 50% of rated output Power Factor 0.95 at 100% of rated output All single output (AC-DC, DC-DC) power supplies with rated output greater than 500W but not more than 1000W shall not perform at less than: • 75% efficiency at 10% of rated output • 85% efficiency at 20% and 100% of rated output • 89% efficiency at 50% of rated output All single output (AC-DC) power supplies with rated output of not more than 500W shall not perform at less than: • Power Factor 0.65 at 10% of rated output • Power Factor 0.8 at 20% of rated output

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	• Power Factor 0.9 at 50% of rated output Power Factor 0.95 at 100% of rated output All single output (AC-DC, DC-DC) power supplies with rated output of more than 1000W shall not perform at less than: • 80% efficiency at 10% of rated output • 88% efficiency at 20% and 100% of rated output • 92% efficiency at 50% of rated output All single output (AC-DC) power supplies with rated output of not more than 500W shall not perform at less than: • Power Factor 0.8 at 10% of rated output • Power Factor 0.9 at 20% of rated output • Power Factor 0.9 at 50% of rated output • Power Factor 0.95 at 100% of rated output
6. POWER MANAGEMENT ENABLING	
All computers excluding thin client	a) 12 months after this Regulation has come into force: Computers shall: • Be placed on the market with a sleep mode, or • another condition which does not exceed the applicable power consumption requirements for sleep mode • which is set to activate within 30 minutes of user inactivity. • Reduce the speed of any active 1 Gb/s Ethernet network links when transitioning to Sleep or Off-with-WOL. • When WOL is enabled 'wake' in response to network connections or user interface devices with a latency of • 5 seconds from initiation of wake event to system becoming fully usable including rendering of display
All computers	b) 12 months after this Regulation has come into force: Computers with Ethernet capability shall: • Have the ability to enable and disable WOL for Sleep mode. Computers shall also: • Be shipped with the display sleep mode set to activate within 10 minutes of user inactivity.

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	c) By 07 January 2013: • When the computer is not providing the main function, or when other energy-using product(s) are not dependent on its functions, it shall 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: • 'Off mode-with-WOL', or • another condition which does not exceed the applicable power consumption requirements for 'off-with –WOL' mode when the equipment is connected to the mains power source. The power management function shall be activated before the placing on the market of the product.
7. INFORMATION REQUIREMENTS	
All computers	a) 12 months after this Regulation has come into force, manufacturers shall report the following additional information, and publish this information in an openly available website : • Off mode consumption (Watts) • 'Off mode-with-WOL' consumption (Watts) (where enabled) • Power requirements for other applicable low power modes (where available) • Internal/external power supply efficiency. • If the screen of the notebook or integrated computers contains mercury the content of mercury as X,X mg,. If a product model is placed on the market in multiple configurations this information may be reported at the model level representing the highest power configuration available.
Desktop computer, integrated Desktop computer, Notebook	b) 12 months after this Regulation has come into force: • Idle state consumption (Watts), • Sleep mode consumption (Watts), • Product category, • TEC value (kWh) If a product model is placed on the market in multiple configurations this information may be reported at the model level representing the highest power configuration available.

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Deleted: b) By 31 January 2013, manufacturers shall report the following additional information , and publish this information in an openly available website and in technical/user documentation provided with the product: ¶ <#>User information on the advantages of power management in line with ENERGY STAR v5.0 requirements. ¶

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Workstation	c) 12 months after this Regulation has come into force, manufacturers shall report the following additional information, and publish this information in an openly available website: • P_{TEC} value (kWh) • Max power consumption (Watts) • Idle state power (Watts) • Sleep mode power (Watts) • Off mode power (Watts) If a product model is placed on the market in multiple configurations this information may be reported at the model level representing the highest power configuration available.
Thin client	d) 12 months after this Regulation has come into force, manufacturers shall report the following additional information, and publish this information in an openly available website : • Off consumption (Watts) • Idle state consumption (Watts), • Sleep mode consumption (Watts), • Product category • Internal/external power supply efficiency. If a product model is placed on the market in multiple configurations this information may be reported at the model level representing the highest power configuration available.
Servers	e) 12 months after this Regulation comes into force, manufacturers shall report the following additional information for (the minimum, typical and maximum configurations) of each server family, and publish this information in an openly available website : 1. System characteristics (form factor, available sockets/slots, power specifications, etc.); 2. System configuration(s) (including maximum, minimum and typical configurations for product family qualification); 3. Power data for Idle and full load, estimated kWh/year, link to power calculator (where available); 4. Available and enabled power saving features (e.g., power management);

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h) By 30 January 201 4, manufacturers shall report the following additional information , and publish this information in an openly available website and in technical/user documentation provided with the product: ¶
¶
Idle state consumption (Watts), ¶
Sleep mode consumption (Watts). ¶
Product category

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Explanatory notes:

As compared to the Working Document discussed on 9 October 2009 the following changes have been introduced:

- TEC – it is proposed to move straight to requirements based on Energy Star v 5.0. These will be applicable 12 months after the entry into force of the Regulation, with two exceptions: for notebooks category C and desktop category D it is proposed to extend this period to 18 months. This will provide enough time for the industry to integrate technological solutions (hybrid graphics, new hard drives, new CPUs, chipset/motherboard power management) allowing to significantly reduce the power consumption of high-end products
- In addition to TEC it is proposed to maintain requirements on Sleep, Off and 'Off-with-WOL' modes in order to ensure a high impact of the power management requirements. The inclusion of TEC instead of Idle provides manufacturers with a margin of flexibility regarding the Idle power consumption.
- Workstations and servers- as these products have not been studied in detail and are evolving dynamically it is proposed to apply to them minimum performance requirements for the internal power supply complemented by information requirements.
- Off mode – the requirements have be reformulated in line with the new definitions
- Information requirements: a new requirement on information to consumers about the content of mercury has been added.

ANNEX II

Measurements and Verification Procedure for Market Surveillance

For the purposes of conformity assessment the following procedures should be used:

Product Type	Measured parameter	Reference
Desktop, Notebook and Integrated Computers	ETEC (from measurements of Off Mode, Sleep Mode, and Idle State)	ENERGY STAR Computer Test Method (Version 5.0), Section III Appendix A
Workstations	PTEC (from measurements of Off Mode, Sleep Mode, Idle State, and Maximum Power)	ENERGY STAR Computer Test Method (Version 5.0), Section III - IV
Thin Clients	Off Mode, Sleep Mode, and Idle State	ENERGY STAR Computer Test Method (Version 5.0) , Section III
All computers	Internal Power Supply Efficiency	Test methods referred to under ENERGY STAR Program Requirements for Computers V5.0

Verification procedure

When performing the market surveillance checks referred to in Directive 2005/32/EC, Article 3(2), the authorities of the Member State shall apply the following verification procedure for the requirements set out in Annex I :

1. Authorities of the Member State shall test one single unit.
For power consumption requirements formulated in TEC or larger than 1,00 W, Member State authorities shall test one single unit.

2. The model shall be considered to comply with the applicable provisions set out in Annex I, if the result for the applicable limit values do not exceed them by more than 10 %;

3. If the results referred to in point 2 are not achieved, three additional units of the same model shall be tested.

4. After three additional units of the same model have been tested, the model shall be considered to comply with the requirements set out in Annex I, if the average of the results for the latter three units for the applicable limit values does not exceed them by more than 10 %.

5. If the results referred above are not achieved, the model shall be considered not to comply with the requirements.

For power consumption requirements smaller than, or equal to, 1,00 W, Member State authorities shall test one single unit.

6. The model shall be considered to comply with the applicable provisions set out in Annex I if the results for the applicable limit values do not exceed them by more than 0,10 W.

7. Otherwise, three more units shall be tested. The model shall be considered to comply with this Regulation if the average of the results of the latter three tests for the applicable limit values does not exceed them by more than 0,10 W.

8. Otherwise, the model shall be considered not to comply.

9. For the purposes of checking conformity with the requirements, the authorities of the Member States shall use the procedure set out in Annex II.

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Annex 3

ANNEX III

Computer Categories

Desktop and Integrated Desktop Computers

Category	
A	All Desktop computers and integrated Desktop computers that do not meet the definition of Category B, Category C, or Category D below will be considered under Category A.
B	Desktop computers and integrated Desktop computers must have: • Equal to 2 Physical Cores; and • Greater than or equal to 2 gigabytes (GB) of System Memory.
C	Desktop computers and integrated Desktop computers must have: • Greater than 2 Physical Cores. • In addition to the requirement above, models must be configured with a minimum of 1 of the following 2 characteristics: • Greater than or equal to 2 gigabytes (GB) of System Memory; and/or • A Discrete GPU.
D	Desktop computers and integrated Desktop computers must have: • Greater than or equal to 4 Physical Cores. In addition to the requirement above, models must be configured with a minimum of 1 of the following 2 characteristics: • Greater than or equal to 4 gigabytes (GB) of System Memory; and/or • A Discrete GPU with a Frame Buffer Width greater than 128-bit.

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Tier II

Deleted: All Desktop computers that do not meet the definition of either Category B or Category C below will be considered under Category A.

Deleted: Desktops must have: ¶
Multi-core processor(s) or greater than 1 discrete processor; and ¶
Minimum of 1 gigabyte of system memory.

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<#>Multi-core processor(s) or greater than 1 discrete processor; and¶
<#>A GPU with greater than 128 megabytes of dedicated, non-shared memory. [1] ¶

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Notebook Computers

Category	Tier II
A	All Notebook computers that do not meet the definition of Category B or Category C below will be considered under Category A.
B	Notebooks must have: • A Discrete GPU.
C	Notebooks must have: • Greater than or equal to 2 Physical Cores; • Greater than or equal to 2 gigabytes (GB) of System Memory; and

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<#>A discrete GPU with a Frame Buffer Width greater than 128-bit ¶

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Greater than or equal to 2 Physical Cores;¶
Greater than or equal to 2 gigabytes (GB) of System Memory; and¶
A Discrete GPU with a Frame Buffer Width greater than 128-bit.¶

	• A Discrete GPU with a Frame Buffer Width greater than 128-bit

Thin clients

Category	Tier II
A	All Thin Clients that do not meet the definition of Category B, below, will be considered under Category A.
B	Thin Clients must: • Support local multimedia encode/decode.

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ANNEX IV

List of energy-using products covered by Annex I, point 3 to Regulation (EC) No 1275/2008:

Information technology equipment intended primarily for use in the domestic environment, but excluding computers as defined in Commission Regulation (EC) No XXX/2010.

ANNEX V

The following indicative benchmarks are identified for the purpose of Annex I, part 3, point 2, of Directive 2005/32/EC.

They refer to the best available technology at the date of adopting this Regulation:

- TEC:

		TEC (kWh/year)
Desktop Computer	Category A	39.5
	Category B	68.2
	Category C	144.7
	Category D	109.2
Notebook Computer	Category A	13.8
	Category B	30.3
	Category C	49.2
Integrated Computer	Category A	104.4
	Category B	165.6
	Category C	*n/d*
	Category D	125.0
Thin Client	Category A	--
	Category B	--

- Off mode: 0 W

- Environmental impacts other than energy in the use-phase: as laid out in the Commission Decision 2010/XXX/EC establishing ecological criteria and the related assessment and verification requirements for the award of the Community eco-label to computers and computer monitors

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As a subset of Desktop computers, integrated Desktop computers are typically designed to provide similar functionality as Desktop systems.

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In addition, most Notebooks use an external power supply and have an integrated keyboard and pointing device. Notebook computers are typically designed to provide similar functionality to Desktops, including operation of software similar in functionality as that used in Desktops. Docking stations are considered accessories and their power consumption is not considered under these requirements. Tablet PCs, which may use touch-sensitive screens along with or instead of other input devices, are considered Notebook Computers.

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Main computing (e.g., programme execution, data storage, interaction with other Internet resources, etc.) takes place using the remote computing resources.

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The main unit of a Thin Client covered by this specification must be intended for location in a permanent location (e.g. on a desk) and not for portability.

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	Tier 1 **Tier II**

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Workstation	none	e) By 31 January 2014: The P_{TEC} (W) shall not exceed: **P_{TEC} = 0.28* [Pmax + (# HDD * 5)]** where all Px are power values in watts and #HDD = number of hard disk drives, and the P_{TEC} value is determined by: P_{TEC} = 0.35*Poff + 0.10 *Psleep + 0.55* Pidle

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Workstation	none	none

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5. EXTERNAL POWER SUPPLY EFFICIENCY	
All computers	Where a computer has an external power supply, this must comply with the EuP external power supply Regulation No 278/2009.