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Draft for Public Comment Australian/New Zealand Standard

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**Information technology equipment—Energy
performance of computers
Part 2: Minimum energy performance standards
(MEPS) for computers**

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Draft for Public Comment

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Committee TE-001—Safety of Electronic Equipment

Subcommittee TE-001-10—MEPS Computer Standard

DRAFT

Australian/New Zealand Standard

Information technology equipment—Energy performance of computers

Part 2: Minimum energy performance standards (MEPS) for computers

(To be AS/NZS 5813.2:201X)

Comment on the draft is invited from people and organizations concerned with this subject. It would be appreciated if those submitting comment would follow the guidelines given on the inside front cover.

Important: The procedure for public comment has changed – please read the instructions on the inside cover of this document

This document is a draft Australian/New Zealand Standard only and is liable to alteration in the light of comment received. It is not to be regarded as an Australian/New Zealand Standard until finally issued as such by Standards Australia/Standards New Zealand.

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee TE-001, Safety of Electronic Equipment.

The objective of this Standard is to provide designers, manufacturers, importers, test laboratories, regulators and users of computers with minimum energy performance standard (MEPS) requirements for this equipment.

This Standard was prepared in response to the publication of a plan for the regulation of computers under the Equipment Energy Efficiency Program (E3) in 2004. This Standard draws upon the test method and Typical Energy Consumption calculations or maximum power allowances by operational mode specified in the ENERGY STAR® Program Requirements for Computers: Version 5.2 (ENERGY STAR® V5.2 Computer Specification) published by the United States' Environmental Protection Agency (EPA) in 2010. This standard also draws upon definitions and terms in International Electrotechnical Commission (IEC) draft standard 62623-post CD Rev Nov 2. This Standard is based on but not equivalent to the test and calculation methods specified in the ENERGY STAR® V5.2 Computer Specification and the International Electrotechnical Commission (IEC) draft standard 62623-post CD Rev Nov 2.

This series consists of 2 parts. These are:

AS/NZS

- 5813 Information technology equipment—Energy performance of computers
- 5813.1 Part 1: Methods of measurement
- 5813.2 Part 2: Minimum energy performance standard (MEPS) requirements (this Standard)

Part 1 contains the test method for assessing the energy performance of computers.

Part 2 specifies minimum energy performance standard (MEPS) requirements. Regulatory authorities have advised that it is intended to mandate this Standard in regulations in Australia and New Zealand no earlier than 1 October 2012.

Regulators advise that transitional arrangements, also known as grandfathering, exist for products that are manufactured in Australia or imported into Australia prior to the MEPS implementation date. Such products can continue to be sold without registration or MEPS compliance until stocks are exhausted. Products that are manufactured in Australia or imported after the MEPS implementation date must hold a valid registration at the time of sale which indicates compliance with the relevant MEPS requirements. Further information can be found in the Administrative Guidelines at the <http://www.energyrating.gov.au> website.

Administrative arrangements during the transition period may vary. Although it is expected that regulators will be able to call the requirements of this Standard into regulations by 1 October 2012, due to legislative variations in different jurisdictions, not all regulators may have regulations in place by that date. Suppliers should contact their regulator to obtain detailed requirements with respect to the application date for registration and holding of records.

The terms 'normative' and 'informative' are used in this Standard to define the application of the Appendix to which they apply. A normative appendix is an integral part of a Standard, whereas an informative appendix is for information and guidance.

Statements expressed in mandatory terms in notes to figures, are deemed to be requirements of this Standard. 'Shall' indicates a requirement is mandatory, while 'should' indicates a recommendation and good practice.

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Information technology equipment—Energy performance of computers****Part 2: Minimum energy performance standards (MEPS) for computers**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies the minimum energy performance standard (MEPS) requirements for computers as defined in AS/NZS 5813.1.

This Standard also specifies the following:

- (a) Classification of computers into categories associated with different MEPS requirements.
- (b) Classification of discrete graphics processing units.
- (c) Typical energy consumption (TEC) calculation methods for desktop, integrated and notebook computers.
- (d) Definition of base computer configurations and additional TEC allowances for non-base configurations.
- (e) Maximum power allowances by operational mode for small-scale servers.
- (f) Minimum power supply efficiency levels.
- (g) Maximum times for power management settings.
- (h) Information required for registration of computers for MEPS.

The scope includes computers supplied with operating systems, such as FreeDOS and Linux, that do not include the ability to activate computer and computer monitor sleep modes.

1.2 EXCLUSIONS

This Standard does not apply to hand-held computing devices such as personal digital assistants (PDAs) or palmtop computers, smart phones, game consoles, hand-held gaming devices, thin clients, blade personal computers (blade PCs), slate computers, workstations, mobile workstations, or computer servers designed or marketed for data centre operation, blade servers, direct current servers, fully fault tolerant servers, managed servers, dual-node servers, multi-node servers and server appliances.

The following characteristics apply to workstations:

- (a) Be marketed as a workstation.
- (b) Have 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.
- (c) Support error-correcting code (ECC) and/or buffered memory.

In addition, a workstation has three of the following six optional characteristics:

- (i) Have supplemental power support for high-end graphics (i.e., PCI-E 6-pin 12 V supplemental power feed).
- (ii) System is wired for greater than $\times 4$ PCI-E on the motherboard in addition to the graphics slot(s) and/or PCI-X support.
- (iii) Does not support Uniform Memory Access (UMA) graphics.
- (iv) Includes 5 or more PCI, PCIe or PCI-X slots.
- (v) 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).
- (vi) Be 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.

The following characteristics apply to mobile workstations:

- (A) Be marketed as a mobile workstation.
- (B) Have a mean time between failures (MTBF) of at least 13 000 hours based on either Bellcore TR-NWT-000332, issue 6, 12/97 or field collected data.
- (C) Be qualified by at least two independent software vendors product certifications; these certifications can be in process, but need to be completed within three months of qualification.
- (D) Be open graphics library (open GL) certified.
- (E) Have a discrete GPU greater than or equal to G3.
- (F) Be of integrated docking station design.

Category D desktop and integrated computers have all the following characteristics:

- (1) Greater than or equal to four physical processor cores.
- (2) A discrete GPU greater than or equal to category G5 with a data width (frame buffer width) greater than or equal to 192 bits.
- (3) System memory greater than or equal to six gigabytes (GB).
- (4) Greater than or equal to 2 channels of memory.
- (5) Greater than or equal to two PCIe slot single-ended points of $\times 8$ or $\times 16$ configuration.
- (6) A power supply unit of greater than or equal to 750 W nameplate output rating.

1.3 APPLICATION

This Standard shall be read in conjunction with AS/NZS 5813.1.

1.4 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS/NZS

4665 Performance of external power supplies

5813 Information technology equipment—Energy performance of computers

5813.1 Part 1: Methods of measurement

AS/NZS

5814 Information technology equipment—Energy performance of internal power supplies

5814.1 Part 1: Methods of measurement

IEC

60050-300 International Electrotechnical Vocabulary—Electrical and electronic measurements and measuring instruments

IEEE

100 The Authoritative Dictionary of IEEE Standards Terms

Bellcore Reliability Prediction Procedure for Electronic Equipment, TR-NWT-000332, Issue 6, 1997

1.5 DEFINITIONS

For the purpose of this Standard, the definitions contained in AS/NZS 5813.1, IEC 60050-300 and IEEE 100 and the following definitions apply.

1.5.1 Base configuration

The hardware configuration for each computer category. This is used to define base MEPS levels and additional capability allowances where hardware differs from the base configuration.

1.5.2 Capability adders

Additional allowances to typical energy consumption (TEC) requirements of MEPS over the base configurations for desktop, integrated and notebook computers. Capability adders apply to over base components such as system memory, hard disk drives, solid state drives, television tuners, audio cards and discrete graphics processing units.

1.5.3 Direct current (d.c.) server

A computer server with one or more d.c.-d.c. power supplies that runs directly off d.c. power.

1.5.4 Deemed-to-comply computers

Typically these are short run custom built computers for a single client.

1.5.5 Dual-node server

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 supplies. A dual-node server is designed and built as a single enclosure and is not designed to be hot-swappable.

1.5.6 Duty cycle

The percentage of time a computer spends in each of its individual operational modes.

1.5.7 Duty cycle components

1.5.7.1 Active (work) component (T_{work})

The percentage of time the EUT is in the active (work) mode.

1.5.7.2 Long idle component (T_{idleL})

The percentage of time the EUT is in the long idle mode.

1.5.7.3 Off component (T_{off} and T_{offWoL})

The percentage of time a computer is in the off mode.

T_{off} represents the off time with wake on LAN disabled.

T_{offWoL} represents the off time with wake on LAN enabled.

1.5.7.4 On component (T_{on})

The percentage of time the EUT is in the on mode.

The T_{on} duty cycle is equal to $T_{\text{work}} + T_{\text{idleS}} + T_{\text{idleL}}$.

1.5.7.5 Short idle component (T_{idleS})

The percentage of time the EUT is in the short idle mode.

1.5.7.6 Sleep component (T_{sleep} and T_{sleepWoL})

The percentage of time a EUT is in the sleep modes.

T_{sleep} represents the off time with wake on LAN disabled.

T_{sleepWoL} represents the off time with wake on LAN enabled

1.5.8 Enterprise channels

Supply channels normally used by large and medium-sized business, government organizations, educational institutions, or other organizations purchasing computers used in managed client/server environments.

1.5.9 Family of models

A group of computers typically sharing one chassis/motherboard combination that contains many possible hardware configurations.

A range of computer models, manufactured in multiple configurations or styles, may be registered as a product ‘family’ or series, in either of the following cases:

- (a) All computers are built on the same platform and are identical in every respect except for housing, colour or brand name. In this case, the family of models may be identified and tested based on a single representative model.
- (b) If a computer model is manufactured in multiple configurations, they may be treated as a family of models which is represented by the highest power configuration available in the family, i.e. rather than treating each and every individual configuration as a single model. In this case, the highest power configuration would consist of the highest power processor, the maximum memory configuration, the highest power GPU, etc. The family of models would be identified and tested based on the representative highest power configuration.

1.5.10 Fully fault tolerant server

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.

1.5.11 Game consoles

A standalone computer-like device whose primary use is to play video games. Game consoles use a hardware architecture based in part on typical computer components (e.g., processors, system memory, video architecture, optical and/or hard drives, etc.). The primary input for game consoles are special hand held controllers rather than the mouse and keyboard used by more conventional computer types. Game consoles are also equipped with audio visual outputs for use with televisions as the primary display, rather than (or in addition to) an external or integrated display. These devices do not typically use a

conventional PC operating system, but often perform a variety of multimedia functions such as: DVD/CD playback, digital picture viewing, and digital music playback.

1.5.12 Managed server

A computer server designed for a high level of availability in a highly-managed environment. A managed server has all of the following characteristics:

- (a) Capable of operation with redundant power supplies.
- (b) An installed dedicated management controller (e.g. service processor).

1.5.13 Mobile workstation

A high-performance, single-user portable computer typically used for graphics, CAD, software development, financial and scientific applications among other computer intensive tasks.

1.5.14 Model number

A unique descriptor that applies to a specific hardware/software configuration (i.e. operating system, types or processors, memory, graphics processing unit, etc.) that is either predefined, or a configuration that is selected by the customer.

1.5.15 Multi-node server

Greater 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 supplies. A multi-node server is designed and built as a single enclosure and is not designed to be hot-swappable.

1.5.16 Network proxy—Base capability

To maintain addresses and presence on the network while in a low power mode, the system handles IPv4 Address Resolution Protocol (ARP) and IPv6 Neighbour Solicitation/Neighbour Discovery (NS/ND).

1.5.17 Network proxy—Full capability

While in a low power mode, the system supports base capability, remote wake and service discovery/name services.

1.5.18 Network proxy—Remote wake

While in a low power mode, the system is capable of remotely waking upon request from outside the local network. This includes base capability.

1.5.19 Network proxy—Service discovery/name services (SD/NS)

While in a low power mode, the system allows for advertising host services and network name. This includes base capability.

1.5.20 Registration

1.5.20.1 *Registration in Australia*

The completion and submission to an Australian Regulator of the prescribed application form demonstrating that the product complies with the relevant energy performance Standards and/or the Standard's mandatory energy performance labelling requirements.

1.5.20.2 *Registration in New Zealand*

The completion and submission to EECA of the prescribed application form demonstrating that the product complies with the relevant energy performance Standards and/or the Standard's mandatory energy performance labelling requirements.

1.5.21 Regulators

Entities set out in the list of regulators maintained on the www.energyrating.gov.au website for the purposes of registration.

1.5.22 Server appliance

A self-contained computer server system bundled with a pre-installed OS 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.

1.5.23 Slate computer

A type of computer lacking a physical keyboard, relying solely on touchscreen input, having solely a wireless network connection (e.g. Wi-Fi, 3G), and primarily powered from an internal battery (with connection to the mains for charging, not primary powering of the device). They are considered handhelds, not notebook computers, and as such are outside the scope of this Standard.

1.5.24 Thin client

An independently-powered computer that relies on a connection to remote computing resources to obtain primary functionality. Main computing (e.g. program execution, data storage, interaction with other Internet resources, etc.) takes place using the remote computing resources. Typically thin clients are devices with no rotational storage media integral to the computer and are intended for location in a permanent location (e.g. on a desk) and not for portability.

1.5.25 Trans Tasman Mutual Recognition Agreement (TTMRA)

The agreement dated 1 May 1998 between the Commonwealth of Australia, the State of New South Wales, the State of Victoria, the State of Queensland, the State of Western Australia, the State of South Australia, the State of Tasmania, the Australian Capital Territory, the Northern Territory of Australia and New Zealand.

1.5.26 Typical energy consumption (TEC)

Represents the typical annual energy consumption of a computer, calculated using measured power for each operational mode scaled by an annual duty cycle, expressed as kilowatt-hours (kWh).

1.5.27 Workstation

A high-performance, single-user computer typically used for graphics, CAD, software development, financial and scientific applications among other computer intensive tasks.

SECTION 2 CLASSIFICATION OF COMPUTERS

2.1 CLASSIFICATION OF DESKTOP COMPUTERS AND INTEGRATED COMPUTERS

2.1.1 Category A

All desktop computers and integrated computers that do not meet the definition of Category B, Category C or Category D below shall be classified as Category A.

2.1.2 Category B

To be classified in Category B desktop computers and integrated computers shall have:

- (a) two physical processor cores; and
- (b) greater than or equal to two gigabytes (GB) of system memory.

2.1.3 Category C

To be classified in Category C, desktop computers and integrated computers shall have greater than two physical processor cores and shall be configured with a minimum of one of the following two characteristics:

- (a) Greater than or equal to two gigabytes (GB) of system memory.
- (b) A discrete GPU.

2.1.4 Category D

To be classified in Category D, desktop computers and integrated computers shall have greater than or equal to four physical processor cores and shall be configured with a minimum of one of the following two characteristics:

- (a) Greater than or equal to four gigabytes (GB) of system memory.
- (b) A minimum of a category G3 GPU.

2.2 CLASSIFICATION OF NOTEBOOK AND TABLET COMPUTERS

2.2.1 General

For the specification of MEPS requirements, notebook computers have three classification categories (A, B and C) as defined below.

NOTE: Tablet computers (which may use touch-sensitive screens and/or a physical keyboard), Netbook computers (sometimes called mini notebooks or ultra-portables) and laptop computers are all considered to be notebook computers in this Standard.

2.2.2 Category A

All notebook computers that do not meet the definition of Category B or Category C below shall be classified as Category A.

2.2.3 Category B

To be classified in Category B notebook computers shall have a discrete GPU.

2.2.4 Category C

To be classified in Category C notebook computers shall have—

- (a) greater than or equal to two physical processor cores;
- (b) greater than or equal to two gigabytes (GB) of system memory; and

- (c) a minimum of a category G3 GPU.

2.3 CLASSIFICATION OF SMALL-SCALE SERVERS

2.3.1 General

For the specification of MEPS requirements, small-scale servers have two classification categories (A and B) as defined below.

2.3.2 Category A

All small-scale servers that do not meet the definition of Category B below shall be classified as Category A.

2.3.3 Category B

Category B small-scale servers shall have—

- (a) processor(s) with greater than one physical core or greater than one discrete processor; and
- (b) greater than or equal to one gigabyte (GB) of system memory.

2.4 FAMILY OF MODELS

A range of computer models that meet the family definition but due to the range of configurations encompass multiple categories (as defined above), shall be registered for each applicable category. Registration of a family of models for each category shall utilize the highest power configuration relevant to that category.

SECTION 3 CLASSIFICATION OF DISCRETE GRAPHICS PROCESSING UNITS

3.1 METHOD OF CLASSIFICATION OF DISCRETE GRAPHICS PROCESSING UNITS (dGfx)

dGfx are categorized by their frame buffer bandwidth (FB_BW).

Discrete graphics categories shall be as set out in Table 3.3.

3.2 CALCULATION OF FRAME BUFFER BAND WIDTH (FB_BW)

Frame buffer bandwidth is calculated by—

$$FB_BW = \frac{(\text{Data rate} \times \text{Data width})}{(8 \times 1000)}$$

where

- FB_BW = frame buffer band width, in GB/s
- Data rate = effective memory data frequency in MHz
- Data width = memory frame buffer width
- (8 × 1000) = conversion factor from megabits to gigabytes

TABLE 3.3
DISCRETE GRAPHICS CATEGORIES

Graphics category	Frame buffer band width
G1	FB_BW ≤ 16
G2	16 < FB_BW ≤ 32
G3	32 < FB_BW ≤ 64
G4	64 < FB_BW ≤ 96
G5	96 < FB_BW ≤ 128
G6	FB_BW > 128 (<192-bit)
G7	FB_BW > 128 (≥192-bit)

SECTION 4 MINIMUM ENERGY PERFORMANCE STANDARDS

4.1 GENERAL

All computers shall comply with the requirements of Clause 4.3.

4.2 APPLICABLE MINIMUM ENERGY PERFORMANCE REQUIREMENTS

Deemed-to-comply computers shall comply with Clause 4.4.

All other (non deemed-to-comply) computers shall comply with Clause 4.5.

4.3 NETWORK AND POWER MANAGEMENT REQUIREMENTS

4.3.1 General

If the applicant is not responsible for supply of the operating system, then the applicant is exempt from the requirements of this (Clause 4.3).

4.3.2 Network requirements for power management—Wake on LAN (WOL)

All computers with ethernet WOL capability shall have the ability to enable and disable WOL for sleep mode.

Enterprise channel computers with ethernet capability shall meet one of the following requirements:

- (a) Shall be shipped with wake on LAN (WOL) enabled from the sleep mode when operating on a.c. power (i.e. notebooks may automatically disable WOL when disconnected from the mains).
- (b) Shall provide control to enable WOL that is sufficiently-accessible from both the client operating system user interface and over the network if the computer is shipped to the enterprise without WOL enabled.

For all computers with WOL enabled, any directed packet filters shall be enabled and set to an industry standard default configuration. Until one (or more) standards are agreed upon, direct packet filter configurations are to be specified in the test report attached to the application for registration.

4.3.3 Wake management—Enterprise channel computers only

Enterprise channel computers with ethernet capability shall be capable of both remote (via network) and scheduled wake events from sleep mode (e.g. real time clock).

Manufacturers shall ensure, where the manufacturer has control (i.e. configured through hardware settings rather than software settings), that these settings can be managed centrally, as the client wishes, with tools provided by the manufacturer.

4.3.4 Power management—Default time to sleep

All computers shall be shipped with default times to sleep after user inactivity of less than or equal to those in Table 4.1.

**TABLE 4.1
MAXIMUM DEFAULT TIME TO ACTIVATION OF SLEEP MODE**

Type	Display/monitor	Computer
Desktop, integrated and notebook computers	15 minutes	30 minutes
Small-scale servers	15 minutes	N/A

Products may have more than one low power mode but this Clause addresses sleep mode as defined in AS/NZS 5813.1.

4.3.5 Ethernet links

Computers shall reduce the speed of any active Ethernet network links operating at 1 GB/s or above when transitioning to sleep or off if WOL is enabled.

4.4 MINIMUM ENERGY PERFORMANCE REQUIREMENTS—DEEMED-TO-COMPLY COMPUTERS

To be classified as a deemed-to-comply computer, the supply quantity shall be no greater than 200 during each year, where the year ends on the day after each anniversary from the month and day of first supply.

Deemed-to-comply computer models shall have the same model number. Colour may vary.

In the event that the supply quantity in any year will exceed 200, supply shall cease at 200 units and prior to further supply the model shall be tested and registered in accordance with Clauses 4.1 and 4.

For deemed to comply computers using an internal power supply (IPS), the IPS shall meet or exceed the minimum requirements specified in Table 4.2 when tested in accordance with AS/NZS 5814.1.

**TABLE 4.2
IPS MINIMUM REQUIREMENTS—
DEEMED TO COMPLY COMPUTERS**

IPS minimum efficiency (at % of rated power)			Power factor (at 100% rated power)
20%	50%	100%	
85%	88%	85%	> 0.9

For deemed-to-comply computers using an external power supply (EPS), the EPS shall be compliant with performance mark V as per AS/NZS 4665.

4.5 MINIMUM ENERGY PERFORMANCE REQUIREMENTS—NON-DEEMED-TO-COMPLY COMPUTERS

4.5.1 Desktop, integrated and notebook computers TEC calculation method

TEC for each computer type shall be calculated using the following formula.

$$TEC_{\text{calculated}} = \frac{8760}{1000} \times (P_{\text{off}} \times T_{\text{off}} + P_{\text{sleep}} \times T_{\text{sleep}} + P_{\text{idleL}} \times T_{\text{idleL}} + P_{\text{idleS}} \times T_{\text{idleS}} + P_{\text{work}} \times T_{\text{work}})$$

where

- P_x = Power values, in watts measured in accordance with AS/NZS 5813.1:
- P_{off} = Standby level (Off mode) power

P_{sleep} = Sleep mode power

P_{idleL} = Long idle mode power defined in Appendix B of AS/NZS 5813.1

P_{idleS} = Short idle mode power defined in Appendix B of AS/NZS 5813.1

P_{work} = Work mode power

(a) T_x are time values in percent of a year:

T_{off} = % of year computer is in standby (off mode)

T_{sleep} = % of year computer is in sleep mode

T_{idleL} = % of year computer is in long idle mode

T_{idleS} = % of year computer is in short idle mode

T_{work} = % of year computer is in work mode

(b) $TEC_{\text{calculated}}$ is in units of kWh and represents typical annual energy consumption based on the mode weightings in Tables 4.3, 4.4 or 4.5 for the computer type.

Computers shipped with an operating system that does not allow activation of computer and computer monitor sleep mode shall utilize the full network connectivity—base capability weightings in Tables 4.3, 4.4 or 4.5 for the computer type.

TABLE 4.3
OPERATIONAL MODE WEIGHTING—DESKTOP COMPUTERS

Mode weighting	Conventional	Full network connectivity			
		Base capability	Remote wake	Service discovery/Name services	Full proxying
T_{off}	55	50	47	43	40
T_{sleep}	5	14	20	25	30
T_{idleS}	40	36	33	32	30
T_{idleL}	0	0	0	0	0
T_{work}	0	0	0	0	0

TABLE 4.4
OPERATIONAL MODE WEIGHTING—INTEGRATED COMPUTERS

Mode weighting	Conventional	Full network connectivity			
		Base capability	Remote wake	Service discovery/Name services	Full proxying
T_{off}	55	50	47	43	40
T_{sleep}	5	14	20	25	30
T_{idleS}	0	0	0	0	0
T_{idleL}	40	36	33	32	30
T_{work}	0	0	0	0	0

TABLE 4.5
OPERATIONAL MODE WEIGHTING—NOTEBOOK COMPUTERS

Mode weighting	Conventional	Full network connectivity			
		Base capability	Remote wake	Service discovery/Name services	Full proxying
T_{off}	60	54	49	48	45
T_{sleep}	10	18	24	26	30
T_{idleS}	0	0	0	0	0
T_{idleL}	30	28	27	26	25
T_{work}	0	0	0	0	0

TABLE 4.6
TYPICAL ENERGY CONSUMPTION BASE REQUIREMENTS (TEC_{base})

Desktops and integrated computers kWh	Notebook computers kWh
Category A: ≤148.0	Category A: ≤40.0
Category B: ≤175.0	Category B: ≤53.0
Category C: ≤209.0	Category C: ≤88.5
Category D: ≤234.0	

TABLE 4.7
DISCRETE GRAPHICS ADDERS—DESKTOP AND INTEGRATED COMPUTERS
(TEC_{dGfx})

Category	Discrete graphics adders (TEC), kWh						
	G1	G2	G3	G4	G5	G6	G7
'A' discrete graphics adders	46	70	95	118	140	225	394
'B' discrete graphics adders	46	70	95	118	140	225	394
'C' discrete graphics adders	46	70	95	118	140	225	394
'D' discrete graphics adders	46	70	95	118	140	225	394
Additional dGfx all categories	46	70	95	118	140	225	394

TABLE 4.8
DISCRETE GRAPHICS ADDERS—NOTEBOOK COMPUTERS (TEC_{dGfx})

Category	Discrete graphics adders (TEC), kWh						
	G1	G2	G3	G4	G5	G6	G7
'A' discrete graphics adders	n/a	n/a	n/a	n/a	n/a	n/a	n/a
'B' discrete graphics adders	4	12	24	30	36	66	146
'C' discrete graphics adders	n/a	n/a	37	43	49	79	159
Additional dGfx for categories B and C	17	25	37	43	49	79	159

ABLE 4.9
CAPABILITY ADDERS (*TEC* kWh)

	Desktop and integrated computers	Notebook computers
Memory (<i>TEC_{memory}</i>)	1 kWh (per GB over base memory) <i>Base Memory:</i> Categories A, B and C: 2 GB Category D: 4 GB	0.4 kWh (per GB over base memory) <i>Base Memory:</i> All categories: 4 GB
Additional Internal Storage (<i>TEC_{storage}</i>)	25	3
Discrete TV tuners (<i>TEC_{tv}</i>)	35	2.1
Discrete audio tuners (<i>TEC_{audio}</i>)	36	

4.5.2 Desktop, integrated and notebook computers *TEC* requirements

When measured in accordance with AS/NZS 5813.1:20XX, utilizing the *TEC* formula defined in Clause 4.5.2, a computer’s calculated *TEC* shall be less than or equal to the *TEC* requirements listed in Table 4.6 for its type and category including any applicable capability adders.

$$TEC_{\text{calculated}} \leq TEC_{\text{MEPS}}$$

where

$$TEC_{\text{MEPS}} = TEC_{\text{base}} + TEC_{\text{dGfx}} + \text{additional } TEC_{\text{dGfx}} + TEC_{\text{memory}} + TEC_{\text{storage}} + TEC_{\text{tv}} + TEC_{\text{audio}}$$

4.5.3 Small-scale server power requirements

Power levels for small-scale servers shall be less than or equal to the values shown in Table 3.6

TABLE 4.10
POWER REQUIREMENTS FOR SMALL-SCALE SERVERS

Category	Idle mode	Standby (off mode) WOL disabled	Standby (off mode) WOL enabled*
A	≤50.0 W	≤2.0 W	≤2.7 W
B	≤65.0 W		

* The Standby (Off mode) power limit for WOL enabled applies only if the computer is shipped with WOL enabled

SECTION 5 APPLICATION FOR REGISTRATION AND TEST REPORT FORMATS

5.1 APPLICATION FOR REGISTRATION

Where the relevant regulatory authority in Australia requires registration or approval of energy performance labelling or minimum energy performance standard requirements, Clause 5.3 shall apply. For registration in New Zealand Clause 5.4 shall apply.

More details can be found in the Administrative Guidelines. The most up to date version of the Administrative Guidelines can be obtained from <http://www.energyrating.gov.au>

5.2 PREREGISTRATION

Voluntary preregistration will be accepted prior to the MEPS legislation coming into force. Preregistration shall comply with the requirements of this Section.

5.3 REGISTRATION IN AUSTRALIA

5.3.1 Prescribed form

The preferred method to submit an application for energy performance labelling or MEPS in Australia is via the online registration system. To access this system, the applicant is required to request a user name and password. Once a user name is issued, full access to the online system is available. Details on how to apply for a user name and password and how to log on to the online system can be found at <http://www.energyrating.gov.au> website.

NOTES:

- 1 The information required for registration may change over time and the information required as shown in the online application takes precedence over this Standard. Appendix A of this Standard sets out (in general terms) the data input requirements for a MEPS application.
- 2 Applications in the form of computer printouts, which present all the information in a similar layout to the forms in Appendix A, are equally acceptable, however applicants need to refer to the Appendix A or the online application form for the information required for registration.
- 3 To register, contact the relevant state regulatory authority.
- 4 Details of the relevant regulatory bodies, regulations and electronic copies of application for registration forms, as well as online registrations are available at <http://www.energyrating.gov.au> website.

5.3.2 Test report format

Test reports are not required to be submitted for registration of computers, however, test reports may be submitted with the application for registration. If submitted, the test report should be in accordance with Appendix C. Other formats are acceptable.

5.3.3 Availability

All supporting documents and test reports used for the MEPS application shall be made available to the relevant regulatory authority upon request. These records shall be retained for at least five years after the last date of manufacture or import, whichever is applicable.

5.4 REGISTRATION IN NEW ZEALAND

5.4.1 General

The method of registration in New Zealand is for the manufacturer or importer to complete and submit the prescribed form as outlined in Appendix A of this Standard to the New Zealand regulatory authority: the Energy Efficiency and Conservation Authority (EECA).

In New Zealand this shall be done online at the Australian website: <http://www.energyrating.gov.au>.

Further details of the regulatory requirements for manufacturers or importers in New Zealand are found in the Energy Efficiency (Energy Using Products) Regulations 2002. (Refer to Appendix B for an overview)

5.4.2 Test report

A test report containing the information given in Appendix C for each computer available for sale shall be held by the manufacturer or importer. This test report may be submitted with the prescribed form when registering in New Zealand.

The test report shall be provided to the New Zealand regulatory authority: the Energy Efficiency and Conservation Authority (EECA) upon request and within five working days of such a request.

5.4.3 Records availability

Records shall be retained for at least five years after the last date of manufacture if the item is made in New Zealand or for at least five years after the last date of import if the item is imported into New Zealand.

5.5 MEPS TRANSITION

5.5.1 MEPS transition in Australia

From the date of publication of this Standard, it is anticipated that regulatory authorities will register computers in accordance with this Standard.

Regulatory authorities have advised that all computers within the scope of MEPS, manufactured or imported for sale into Australia on or after 1 October 2012 will be required to meet the MEPS requirements specified in this Standard and such units will be required to hold a valid registration.

Information on transitional arrangements (grandfathering) is given in the Administrative Guidelines available at <http://www.energyrating.gov.au> website.

5.5.2 MEPS transition in New Zealand

All products that are within the scope of MEPS that are for sale in New Zealand on or after the relevant MEPS date shall meet the relevant MEPS requirements. Administrative arrangements during the transition period may vary so registration holders should contact the Energy Efficiency and Conservation Authority (EECA) and consult the Energy Efficiency (Energy Using Products) Regulations 2002 to obtain further details.

5.6 CHECK TESTING

Authorities may undertake or commission tests to verify representations made by a person. More details can be found in the Administrative Guidelines. The most up to date version of the Administrative Guidelines can be obtained from <http://www.energyrating.gov.au>

APPENDIX A

FORMAT OF APPLICATION FOR REGISTRATION OF COMPUTERS FOR
MEPS

(Normative)

A1 SCOPE OF THIS APPENDIX

This Appendix sets out the required format for submitting an application for registration and listing with regulators.

A2 GENERAL

Applicants with products within the scope of the Standard shall have their products registered for MEPS and are required to provide information as set out in this Appendix.

NOTES:

- 1 The contact details supplied by applicants in this form or online may be used by other Government agencies to keep applicants informed of forthcoming regulatory changes that may affect the product registered under this Standard. Otherwise, contact details are treated as private and confidential.
- 2 NOTICE OF RIGHT TO DISCLOSE INFORMATION—The information you submit on this application will be used for the purposes of assessing your application and the performance of statutory responsibilities. The information that you have submitted may be disclosed to other state and territory or New Zealand energy efficiency government bodies (or their agents) who may use the information for the purposes of carrying out their duties and or responsibilities including comparing efficiency claims. The information will also be entered onto the Online Registration Database. Publicly accessible data and more information are available at <http://www.energyrating.gov.au> website.

A3 GUIDANCE ON THE USE OF THIS APPLICATION FORM**A3.1 General**

This Appendix has been formatted and structured to align with the online registration system for energy labelling and MEPS to assist users of this Standard. The information requirements are defined within the online registration system.

The only method of making an application for energy labelling and/or MEPS is via the online registration system to ensure compliance with the most current registration requirements. To use this system, you need to apply for a user name and password. Once a user name has been issued, you will have full access to the online system.

Details on how to apply for a user name and password and how to log on to the online system can be found at <http://www.energyrating.gov.au> website.

A3.2 All registrations

The Standard and requirements to which the application is made should be indicated in the application. Products sold in Australia and New Zealand shall be registered for energy labelling and MEPS with the relevant regulator.

A3.3 Submissions to the New Zealand regulator

Applicants who have registered and listed their product with the New Zealand regulator and intend to rely on the goods access provisions of the Trans Tasman Mutual Recognition Arrangement to sell that product in Australia without registering it with an Australian regulator shall comply with the following conditions:

- (a) In respect of product imported or manufactured by the applicant, this product shall be either imported into New Zealand (but not directly into Australia) or manufactured in New Zealand (but not in Australia).
- (b) If this product is imported into Australia, then it shall be imported through New Zealand.

DRAFT

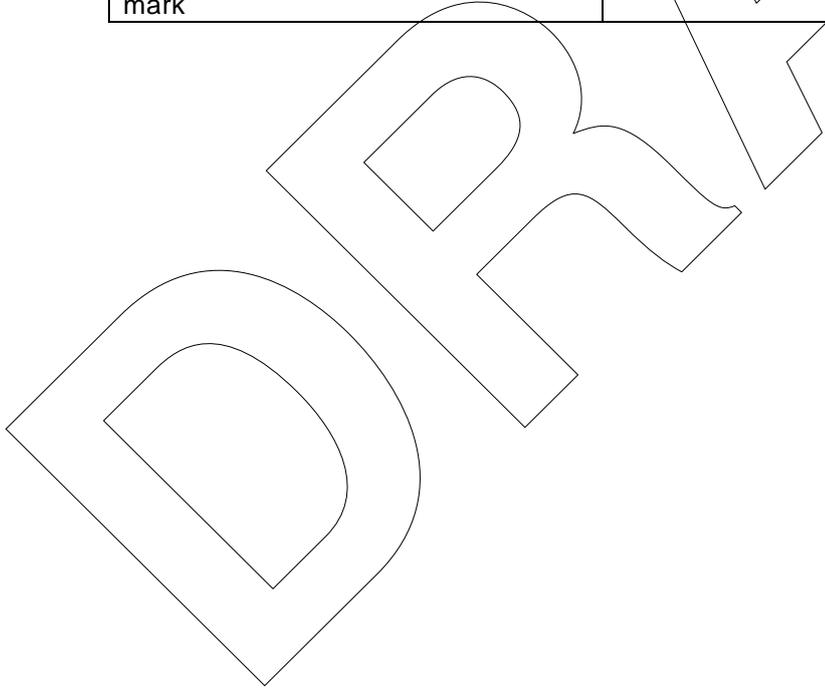
A4 APPLICATION FORM

APPLICATION FOR REGISTRATION OF A COMPUTER FOR MEPS	
(Please type or print)	
APPLICANT DETAILS	
Name of applicant	
Applicant's position	
Company/organisation name of applicant	
Company Australian Business Number if applicable	
Company street address of applicant	
Company postal address of applicant:	
Applicant's telephone number	
Applicant's facsimile number	
Applicant's email address	
AUSTRALIAN OR NEW ZEALAND CONTACT DETAILS	
A name, address and contact details for a person in Australia or New Zealand shall be provided	
Contact person's name	
Position/title	
Company/organization	
Postal address	
Telephone	
Facsimile	
Email address	
MANUFACTURER'S DETAILS	
Company name	
Contact person's name	
Street address	
Postal address	
Telephone number	
Facsimile	
Email	

APPLICATION DETAILS	
The Standard under which this application is made	AS/NZS 5813.2:20XX
Is the application meant for a single model or a family of models? (Identify one)	Single Family
In what countries are these models to be sold? (Indicate each country) NOTE: The response will determine how the model will be displayed on Government energy websites in Australia and/or New Zealand. If a model is not indicated as being available in a country, that model will not appear on a website specific to that country.	
Year and month in which the model will be/was first available in Australia or New Zealand	
If the applicant is not the manufacturer or importer, the applicant shall provide a letter of authority to make the registration application.	
COMPUTER DETAILS	
Brand name including family model designation, if applicable	
Computer type and category	
Total number of models in the application	
Model designation: (List all models covered by this application. This can be either a number or name or combination of the two that will identify the particular product. Add additional rows if more than 3 models)	Model 1:
	Model 2:
	Model 3:
Does this model or family replace or supplement another model or family with identical characteristics? (Indicate correct answer)	Yes No
Does the computer have any markings to indicate date, serial number or batch number?	Describe how these may be determined. E.g. from an encrypted code.

TESTING AND TEST REPORT	
Test laboratory type. E.g. NATA, own lab, independent lab.	
Test laboratory name	
Test laboratory address	
Test laboratory accreditation	
Test standard used	
Name of test report signatory	
Test report number(s) and date(s)	
Is a test report attached? Note: This is not compulsory	
TEST AND CALCULATED RESULTS	
Desktop, integrated and notebook computers to be registered using TEC	
(Add the results for each test undertaken)	
Idle power measured	
Sleep power measured	
Off power measured	
Operational mode weighting type used for $TEC_{calculated}$	
$TEC_{calculated}$	
TEC_{base}	
TEC_{dGfx}	
Additional TEC_{dGfx}	
TEC_{memory}	
$TEC_{storage}$	
TEC_{tv}	
TEC_{audio}	
TEC_{MEPS}	

Small-scale servers only					
(Add the results for each test undertaken)					
Idle power measured					
WOL data as applicable at shipment		WOL enabled		WOL disabled	
Standby (Off mode) power					
Deemed to Comply computers only					
Power supply brand					
Power supply model					
Power supply rating					
Internal Power Supply power factor and efficiency at 20, 50 and 100% of nameplate as per AS/NZS 5814.1		PF	20%	50%	100%
Internal power supply only. Is a test report attached? Note – this is not compulsory					
External Power Supply performance mark					



MINIMUM ENERGY PERFORMANCE STANDARDS		
MEPS are mandatory for all computers that are covered within the scope of this Standard		
Performance prerequisite declaration—Desktop, integrated and notebook computers		
If the computer is shipped with an operating system such as FreeDOS or Linux, the applicant shall indicate N/A where this is an option.		
Is $TEC_{\text{Calculated}}$ is less than or equal to TEC_{MEPS} ?	Yes	Deemed to Comply
Deemed to Comply computers only. Does the power supply comply with MEPS requirements?	N/A	
Deemed to comply computers only Manufacturing quantity in any 12 month period from each anniversary of the date of first supply will not exceed 200	N/A	
Is power management enabled at shipment?		
Do the default times to sleep for the computer and computer monitor comply?		
Does the computer comply with network requirements?		
Enterprise channel computers—is the computer capable of both remote and scheduled wake events?		

Performance prerequisite declaration—Small-scale servers			
If the small-scale server is shipped without an operating system the applicant shall indicate N/A where this is an option.			
Are idle and off levels less than or equal to MEPS requirements?			
Does the monitor sleep mode time comply with MEPS?	Yes	No display	N/A
Does the small-scale server comply with network requirements?			
Enterprise channel small-scale servers—is the small-scale server capable of both remote and scheduled wake events?			

<p>DECLARATION</p> <p>I declare that the details stated in this application are correct.</p> <p>Signature of Applicant: Date:</p>	
<p>Applications in New Zealand</p> <p>The company responsible for the manufacture or importation of this product shall have its registered office(s) in New Zealand.</p> <p>In respect of the subject product as imported or manufactured by the applicant, this product shall either be imported into New Zealand, but not directly into Australia, or manufactured in New Zealand. If this product is imported into Australia, then it shall only be imported via New Zealand.</p> <p>I, the applicant, confirm that I understand the conditions above.</p> <p>Signature of Applicant:..... Date:.....</p>	
<p>Office use only</p> <p>Date received: Registration number:</p>	



APPENDIX B
OVERVIEW OF NEW ZEALAND LEGAL REQUIREMENTS

(Informative)

In New Zealand, the Energy Efficiency (Energy Using products) regulations 2002 ('the Regulations') are promulgated pursuant to s36 of the *Energy Efficiency and Conservation Act 2000* ('the Act')

Regulations 4 and 6 impose obligations on manufacturers in New Zealand and importers of products identified in Schedule 1 and/or 2 of the Regulations, which must be discharged before those products can be sold in New Zealand. Contravention of these Regulations is an offence under Regulation 13.

Essentially no one who manufactures in New Zealand or imports into New Zealand the products identified in Schedule 1 and/or 2 is allowed to sell them in New Zealand unless—

- (a) The product complies with the relevant Energy Performance Standards and/or relevant Standards for mandatory Energy performance Labelling; and
- (b) The manufacturer or importer completes and submits to EECA the prescribed application form demonstrating that the product complies with those Energy Performance Standards.

There is an exception to the second of those requirements where the product is registered in Australia. A person relying on this exception is to ensure that the product's brand and model designations are the same as those registered in Australia when the products is sold by the importer or manufacturer in New Zealand.

Regulation 9 requires manufacturers and importers to provide statistical information to EECA by 1 August each year for the previous year, irrespective of where the product was registered.

A person relying on the goods access provisions of the Trans Tasman Mutual Recognition Arrangement to sell goods in Australia that can legally be sold in New Zealand, without registering the product with an Australian regulator, is to ensure that the goods are exported from New Zealand and are marked that they are from New Zealand.

APPENDIX C
 SAMPLE TEST REPORT

(Informative)

Test Report Number/code Comp 308

LABORATORY INFORMATION		
Test laboratory name	ABC Pty. Ltd.	
Test laboratory address	1 The Street, Big City, NSW, Australia	
Test technician	Joe Bloggs	
Test laboratory type, e.g. in-house or independent	Independent	
Test laboratory accreditation	NATA (Certificate No. Cxxxx)	
Test Standard used	AS/NZS 5813.1	
Date of test	1 November 2010	
TEST SETUP AND EQUIPMENT		
Notebook/tablet battery removed/in place	N/A – desktop computer with IPS	
Network type	Ethernet	
Full network connectivity maintained during sleep mode?	Yes	
a.c. test voltage	230 V a.c.	
Ambient temperature	23.1 °C	
Test equipment	Measurement	Calibration date
XYZ Power Analyser Model 123	All modes	22 October 2010

COMPUTER DETAILS		Source
Manufacturer/brand name	ACME Brand X	Lab
Computer type	Desktop	Lab
Chassis Type	Small form factor	Lab
Model number	XYZ	Client
Country of manufacture	China	Client
Date of manufacture (if known)	March 2010	Client
As shipped operating system and version	New OS V1.01	Lab
Test operating system and version	N/A	N/A
Other energy label/version	N/S	Lab
Power supply	External – actively cooled	Client
Power supply performance mark or internal efficiency claim (if known)	83.5% at 20% rated power 85.2% at 50% rated power 82.6% at 100% rated power Power factor 0.93 at 100% rated power	Client
Nameplate voltage/voltage range	100 – 240 V a.c.	Lab
Nameplate frequency/frequency range	50 – 60 Hz	Lab
Processor brand and model number	ABC Xpress 2.2	Client
Number of processors	1	Client
Number of cores	2	Client
Speed per core	2.53 GHz	Client
System memory	4 GB	Client
Channels of memory	2	Client
Number of hard disk drives	2	Client
Integrated or discrete GPU	Discrete	Client
Number of Discrete GPUs installed	1	Client
GPU data width	64	Client
GPU data frequency	800 MHz	Client
Notebook screen diagonal dimension	N/A	

Laboratory only data	
Serial number	123456
Computer display time to sleep (as shipped)	15 minutes
Computer time to sleep (as shipped)	30 minutes
WoL status at shipment	Enabled
Short idle power clause utilized and power measured— P_{idleS}	N/A
Long idle power— P_{idleL}	31.1 watts
Standby (off) power WoL disabled (if applicable)— P_{off}	N/A
Standby (off) power WoL enabled (if applicable)— P_{offWoL}	1.27 watts
Sleep power WoL disabled (if applicable)— P_{sleep}	N/A
Sleep power WoL enabled (if applicable)— $P_{sleepwoL}$	2.55 watts
Active (work) mode power (if applicable)— P_{work}	N/A
Additional components	Discrete television tuner

*** END OF DRAFT ***

PREPARATION OF AUSTRALIAN STANDARDS

Australian Standards are prepared by a consensus process involving representatives nominated by organizations drawn from all major interests associated with the subject. Australian Standards may be derived from existing industry Standards, from established international Standards and practices or may be developed within a Standards Australia technical committee.

During the development process, Australian Standards are made available in draft form at all sales offices and through affiliated overseas bodies in order that all interests concerned with the application of a proposed Standard are given the opportunity to submit views on the requirements to be included.

The following interests are represented on the committee responsible for this draft Australian Standard:

Australian Chamber of Commerce and Industry
Australian Communications and Media Authority
Australian Industry Group
Australian Information Industry Association
Australian Subscription Television and Radio Association
Certification Interests (New Zealand)
CHOICE
Consumer Electronics Association of New Zealand
Consumer Electronics Suppliers Association
Department of Climate Change and Energy Efficiency
Electrical Compliance Testing Association
Electrical Regulatory Authorities Council
Energy Efficiency and Conservation Authority of New Zealand
Engineers Australia
For Information
Free TV Australia
Ministry of Economic Development (New Zealand)
Telstra Corporation Limited

Standards Australia

Standards Australia is an independent company, limited by guarantee, which prepares and publishes most of the voluntary technical and commercial standards used in Australia. These standards are developed through an open process of consultation and consensus, in which all interested parties are invited to participate. Through a Memorandum of Understanding with the Commonwealth government, Standards Australia is recognized as Australia's peak national standards body.

Standards New Zealand

The first national Standards organization was created in New Zealand in 1932. The Standards Council of New Zealand is the national authority responsible for the production of Standards. Standards New Zealand is the trading arm of the Standards Council established under the Standards Act 1988.

Australian/New Zealand Standards

Under a Memorandum of Understanding between Standards Australia and Standards New Zealand, Australian/New Zealand Standards are prepared by committees of experts from industry, governments, consumers and other sectors. The requirements or recommendations contained in published Standards are a consensus of the views of representative interests and also take account of comments received from other sources. They reflect the latest scientific and industry experience. Australian/New Zealand Standards are kept under continuous review after publication and are updated regularly to take account of changing technology.

International Involvement

Standards Australia and Standards New Zealand are responsible for ensuring that the Australian and New Zealand viewpoints are considered in the formulation of international Standards and that the latest international experience is incorporated in national and Joint Standards. This role is vital in assisting local industry to compete in international markets. Both organizations are the national members of ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission).

Visit our web sites

www.standards.org.au

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