

**ENERGY COMMISSION (ENERGY EFFICIENCY STANDARDS
AND LABELLING) (COMPUTERS) REGULATIONS, 2022**

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IN exercise of the power conferred on the Minister responsible for Energy by subparagraph (i) of paragraph (a) of subsection (1) of section 56 of the Energy Commission Act, 1997 (Act 541) and on the advice of the Board, these Regulations are made this 28th day of June, 2022.

Preliminary Provisions

Purpose of Regulations

1. The purpose of these Regulations is to promote the efficient use and conservation of energy in the country and mitigate related climate change by

- (a) providing for
 - (i) the enforcement of Standards set out in the First Schedule and the minimum energy performance standards set out in Part One of the Second Schedule;
 - (ii) the labelling of electric mains-operated computers;
 - (iii) supplementary product information on electric mains-operated computers; and
 - (iv) the registration of models of computers in the Appliance Energy Efficiency Register; and
- (b) prohibiting the manufacture, importation, offer for sale, sale, storage, donation, disposal, installation or use of a computer that does not meet the minimum energy performance standards set out in Part One of the Second Schedule.

Application of Regulations

2. (1) These Regulations apply to a computer, manufactured in the country or imported into the country for display, sale or use as

- (a) a desktop computer, including an integrated desktop computer and a desktop thin client;
- (b) a notebook computer, including a tablet computer, a laptop, a slate computer and a mobile thin client;
- (c) a workstation, including a mobile workstation; and
- (d) a computer server, including a small-scale server.

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- (2) These Regulations do not apply to a
- (a) blade system and components of a blade system;
 - (b) server appliance;
 - (c) multi-node server;
 - (d) computer server with more than four processor sockets;
 - (e) game console; or
 - (f) docking station.

Duties and Requirements

Duty to comply with requirements

3. (1) A person who manufactures, imports, offers for sale, sells, stores, supplies, distributes, donates or otherwise disposes of a computer for use in the country shall ensure that each model of the computer

- (a) is registered with the Commission; and
- (b) meets the
 - (i) Standards set out in the First Schedule;
 - (ii) minimum energy performance standards set out in Part One of the Second Schedule;
 - (iii) labelling requirements set out in the Third Schedule; and
 - (iv) information requirements set out in the Fourth Schedule.

(2) A person who advertises a computer shall comply with the provisions of Part Five of the Fourth Schedule.

Prohibition of manufacture, importation, offer for sale, sale, storage, donation, disposal, installation or use of computer

4. (1) A person shall not manufacture, import, offer for sale, sell, store, donate, or otherwise dispose of, install or use a computer in the country unless the computer meets the

- (a) minimum energy performance standards set out in Part One of the Second Schedule; and
- (b) requirements
 - (i) set out in Parts Two to Seven of the Second Schedule; and

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(ii) of the Standards.

(2) An enforcement authority shall

- (a) detain, cause to be re-exported, or seize and destroy a computer imported for use in the country contrary to subregulation (1); or
- (b) seize and destroy a computer manufactured for use in the country contrary to subregulation (1).

Category of computer

5. The category of a computer shall be determined in accordance with the categories set out in Part Two of the Fourth Schedule.

Total energy consumption or weighted power consumption of computer

6. The annual total energy consumption of a computer or the weighted power consumption of a computer and other energy related parameters shall be determined in accordance with the methods and procedures set out in Part One of the Second Schedule.

Voltage, input power or wattage of computer

7. The manufacturer of a computer shall ensure that the rated voltage, input power or wattage of the computer is printed conspicuously and displayed on the back of the computer.

Measurement methods

8. The information to be provided pursuant to regulations 10 and 11 shall be obtained by

- (a) a reliable, accurate and reproducible measurement which takes into account recognised state-of-the-art measurements; and
- (b) calculation methods

in accordance with the Standards.

Use of circumvention device

9. (1) A manufacturer, an importer or an authorised representative of the manufacturer shall not use a circumvention device during the conduct of a test of a computer.

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(2) A person shall not manufacture, import, offer for sale, sell, store, donate, or otherwise dispose of, install or use a computer which is designed to

- (a) detect that the computer is being tested by recognising the test conditions or test cycle; or
- (b) react specifically by automatically altering the performance of the computer during the test with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer, importer or authorised representative of the manufacturer, in the technical documentation or included in any other documentation provided.

(3) The energy consumption of a computer and any of the other declared parameters shall not deteriorate after a

- (a) software; or
- (b) firmware

update, when measured with the same test standard originally used for the declaration of conformity, except with the consent of the Commission and the Standards Authority, before the update.

(4) A manufacturer, an importer or an authorised representative of the manufacturer shall inform the Commission and the Standards Authority in writing, with reasons, prior to an update of the software or firmware.

Technical documentation

10. (1) A person shall not manufacture, import, offer for sale, sell, store, distribute, donate or otherwise dispose of a computer for use in the country, unless that person has provided the Commission with sufficient technical documentation to enable the Commission

- (a) ascertain the accuracy of the information contained
 - (i) in the Product Information Sheet; or
 - (ii) on the label; and
- (b) register each model of the computer in the Appliance Energy Efficiency Register.

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- (2) The technical documentation referred to in subregulation (1) shall
- (a) be in the English language;
 - (b) include the Product Information Sheet set out in Part One of the Fourth Schedule; and
 - (c) contain the information set out in Part Three of the Fourth Schedule marked "Technical Documentation".
- (3) The technical documentation shall
- (a) be prepared for each model of a computer placed on the market; and
 - (b) include
 - (i) the name and address of the supplier;
 - (ii) the description of the computer, for purposes of identification;
 - (iii) the model identifier of the manufacturer;
 - (iv) the relevant drawings on the main design features of the model and parameters of the computer that affect the energy consumption of the computer;
 - (v) reports of relevant measurement tests carried out in compliance with the Standards;
 - (vi) details of calculations, extrapolations and tests carried out to verify the accuracy of calculations;
 - (vii) the installation and operating instructions; and
 - (viii) the period within which the model of the computer was manufactured.

Labelling and information requirements

11. (1) A person shall not manufacture, import, offer for sale, sell, store, supply, distribute, donate or otherwise dispose of a computer for use in the country, unless the computer and the packaging of the computer meet the following requirements:

- (a) the computer shall bear a label
 - (i) in the form set out in the Third Schedule; and
 - (ii) placed on the back of the computer;

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- (b) the information in respect of the computer indicated on the packaging of the computer shall be in the English language;
- (c) the Product Information Sheet in respect of the computer shall be as set out in Part One of the Fourth Schedule;
- (d) the label on a packaging containing a computer shall
 - (i) contain the information set out in the Third Schedule; and
 - (ii) be printed in colour;
- (e) the labels on the computer and on the packaging of the computer shall include the following information:
 - (i) the Quick Response Code;
 - (ii) the name or trade mark of the manufacturer;
 - (iii) the model identifier of the manufacturer;
 - (iv) the type of computer;
 - (v) the annual total energy consumption (E_{TEC} in kWh/year) or the weighted power consumption (P_{TEC} in Watt) of the computer;
 - (vi) the maximum power (Watts) of the computer;
 - (vii) the wattage and voltage of the computer;
 - (viii) the year of manufacture; and
 - (ix) the country of origin or manufacture;
- (f) the label on the computer shall be printed in colour on a waterproof material and pasted conspicuously on the computer;
- (g) the background of a label printed or pasted on each packaging containing the computer shall be gold in colour; and
- (h) the text on the label of the computer shall be black in colour.

(2) Despite regulation 21, an update to the Standards shall take precedence over the requirements specified in paragraph (e) of subregulation (1) and the Second Schedule.

(3) Where

- (a) a side of the packaging is not large enough to contain a label and the blank border; or

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(b) a label would cover more than fifty per cent of the surface area of the largest side of a packaging, the label and the blank border shall be reduced to not less than forty per cent of the largest side of the packaging and pasted on the largest side of the packaging.

(4) A person shall not remove the label on a computer or the packaging containing a computer before the first retail purchase of the computer.

(5) For the purposes of this regulation, "first retail purchase" means the purchase of a computer by an end user.

Registration of Computers

Appliance Energy Efficiency Register

12. (1) The Commission shall establish, keep and maintain an Appliance Energy Efficiency Register.

(2) The Appliance Energy Efficiency Register shall contain the information specified in subregulation (5) of regulation 13.

Application for registration

13. (1) A person who

- (a) manufactures a computer in the country; or
- (b) imports a computer into the country

for use in the country shall, prior to the manufacture or importation, ensure that each model of the computer is registered with the Commission.

(2) A person who

- (a) manufactures a computer in the country; or
- (b) imports a computer into the country

for use in the country shall apply to the Commission for registration of the computer.

(3) An application for registration under subregulation (2) shall be made in writing or electronically on the website of the Commission and accompanied with the prescribed fee.

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- (4) An application for registration shall be accompanied with a test report from an accredited test laboratory that demonstrates that
- (a) the computer meets the minimum energy performance standards set out in Second Schedule; and
 - (b) the test report corresponds to the energy consumption that is provided on the energy efficiency label of the computer.
- (5) The following information shall be provided for each registration of a model of a computer:
- (a) the brand or trademark, if any, used in connection with a supply of the model;
 - (b) the model identifier issued by the manufacturer for each model covered by the registration;
 - (c) the Product Information Sheet of the model;
 - (d) the date the registration takes effect;
 - (e) a unique identifier for the registration issued by the Commission;
 - (f) the names and contact details of the applicant and contact person in relation to the registration;
 - (g) if the model is to be registered as a replacement model of an earlier registered model, that fact and details to identify the replaced model, including the date the replacement was made;
 - (h) if a model to be registered is affected by a replacement, that fact and details to identify the replaced model and replacement model, including the date the replacement was made;
 - (i) any information specified in these Regulations in relation to that model of computer; and
 - (j) any other information the Commission may consider appropriate.

Consideration of application

14. (1) The Commission shall, on receipt of an application for registration of a computer, consider the application.

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(2) The Commission shall, in considering the application, have regard to the requirements specified in subregulation (5) of regulation 13.

Grant of application

15. (1) The Commission may, within fourteen days after receipt of an application, grant or refuse an application.

(2) Where the Commission decides to grant an application, the Commission shall

(a) within three days after the date of the decision inform the applicant, in writing or electronically as the case may be, of the decision; and

(b) enter the information specified in subregulation (5) of regulation 13 in the Appliance Energy Efficiency Register.

(3) Where the Commission refuses to grant an application, the Commission shall within three days after the date of the decision communicate to the applicant, in writing or electronically as the case may be,

(a) the reason for the refusal; and

(b) the applicable Standards the model of the computer is required to meet.

Duties of Dealers and Suppliers of Computers

Duty of dealer to keep, maintain and provide technical documentation

16. (1) A dealer shall keep and maintain technical documentation in respect of a computer for a period of not less than two years after the date of manufacture or importation.

(2) A dealer shall, within two days after a request by an enforcement authority, provide the enforcement authority with technical documentation in respect of a computer for inspection.

(3) Where a dealer fails to provide technical documentation in respect of a computer within two days after the request, the enforcement authority shall detain the computer.

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- (4) A dealer shall ensure that
- (a) each computer, at the point of sale, including at trade fairs, bears the label provided by a supplier in accordance with regulation 3, with the label being displayed conspicuously on the face of the computer;
 - (b) in the event of distance selling, the label and Product Information Sheet are provided in accordance with the Third and Fourth Schedules;
 - (c) an audio advertisement, including radio and local information broadcast network, on a specific model of a computer where the brand, capacity, size, category or price is mentioned, includes a comparison of the annual total consumption of the model of the computer to the specified minimum energy performance standard in accordance with Part Five of the Fourth Schedule;
 - (d) a visual advertisement for a specific model of computer, including an advertisement on the internet, contains information on the annual total energy consumption, and the minimum energy performance of the computer available on the label in accordance with Part Five of the Fourth Schedule; and
 - (e) a technical promotional material concerning a specific model of computer, including technical promotional material on the internet, which describes the specific technical parameters of the computer includes the
 - (i) annual total energy consumption; and
 - (iii) minimum energy performance of the computer made available on the labelin accordance with Part Five of the Fourth Schedule.

Duty of supplier to keep, maintain and provide technical documentation

17. (1) A supplier shall keep and maintain technical documentation in respect of each model of a computer for a period of not less than two years after the date of manufacture or importation.

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(2) A supplier shall, on request by an enforcement authority, provide the enforcement authority with technical documentation of the computer for inspection.

(3) Where a supplier fails to provide technical documentation in respect of a computer within two days after the request, the enforcement authority shall detain the computer.

Duty of supplier to keep, maintain and provide Product Information Sheet

18. (1) A supplier shall keep and maintain in the possession of the supplier a Product Information Sheet in respect of each computer in the form set out in Part One of the Fourth Schedule.

(2) A supplier shall, on request by an enforcement authority, provide the enforcement authority with a Product Information Sheet which shall be in the

- (a) English language; and
- (b) form set out in Part One of the Fourth Schedule.

Duty of supplier to provide information for statistical purposes

19. (1) A person who manufactures in the country, imports into the country or exports out of the country a computer or an assembly of components that incorporates a computer, shall provide the Commission with the following information not later than four months after the end of each year:

- (a) the number of computers of each model that the person manufactured, exported or imported into the country in the relevant year;
- (b) the number of computers of each model that the person sold in the country in the relevant year;
- (c) the number of computers of each model that the person exported from the country in the relevant year;
- (d) the name of each model that the person discontinued
 - (i) manufacturing in the relevant year;
 - (ii) exporting in the relevant year; or
 - (iii) importing in the relevant year; and

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(e) a copy of any existing test report, or other energy performance data specified by the Commission, for each model specified under paragraph (d).

(2) Upon a written request by the Commission, a person who manufactures a computer for use in the country or imports a computer into the country shall provide the following information to the Commission not later than forty days after receiving the request:

- (a) the number of computers in each product class specified by the Commission that the person sold to a purchaser in the country in each of the preceding three years; and
- (b) the energy performance characteristics of the computers as specified in the request.

Duty of supplier to ensure accuracy of information

20. (1) A supplier shall ensure that the information indicated on a

- (a) Product Information Sheet; or
- (b) label

in respect of a computer is accurate.

(2) The duty imposed on a supplier under subregulation (1) does not affect any other right of action which a person may have by law against a person with respect to the inaccuracy of information on a Product Information Sheet or on a label.

Access to information on technical documentation and Product Information Sheet

21. (1) The information required under regulations 10, 11, 16, 17 and 18 shall be obtained in accordance with the test procedures required by the Standards.

(2) Information obtained in a manner other than in accordance with subregulation (1) shall, for the purposes of these Regulations, be invalid.

Product brochure in respect of computer

22. Where a supplier provides a product brochure in respect of a computer, the brochure shall contain a Product Information Sheet which shall be in the

- (a) English language; and

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(b) form set out in Part One of the Fourth Schedule.

Information

Public information

23. (1) The information provided by a supplier on the Product Information Sheet or on a label of a computer is deemed public information.

(2) A supplier is deemed to have consented to the publication of the information indicated on a Product Information Sheet or label in respect of a computer.

Information in respect of mail order and other distance selling

24. (1) Where a person offers a computer for sale to another person in the country through a medium of communication including a mail order or any other distance selling medium, that person shall provide information in respect of the computer.

(2) The information referred to in subregulation (1) shall

- (a) be in the English language,
- (b) include the product registration number assigned by the Commission upon registration in the Appliance Energy Efficiency Register;
- (c) include the information set out in Part Four of the Fourth Schedule; and
- (d) be written in a manner that is legible.

Obligations of audio or audio-visual broadcasting service provider

25. Where an audio or audio-visual broadcasting service provider advertises a computer, and the information in the advertisement includes the brand, model, size, price and any other information that is specific to a particular model, that service provider shall ensure that

- (a) the advertisement has been vetted and approved by the Commission; and
- (b) the advertisement includes
 - (i) information on the energy performance standard of the computer;
 - (ii) a statement that the advertisement has been vetted and approved by the Commission; and

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- (iii) any other information required under Part Five of the Fourth Schedule.

Obligations of e-commerce platform

26. (1) A person shall not offer for sale, sell, supply, distribute or otherwise dispose of a computer through a promotion on the internet, unless

- (a) the minimum energy performance of the computer is posted next to the price of the computer; and
- (b) the label of the computer is made available to consumers in the same medium of communication.

(2) Where an e-commerce service provider allows the direct sale of a computer through the website of the service provider, the service provider shall

- (a) enable the display of the
 - (i) electronic label; and
 - (ii) electronic Product Information Sheetprovided by the dealer on the display mechanism in accordance with Part Six of the Fourth Schedule; and
- (b) inform the dealer of the obligation to display the electronic label and electronic Product Information Sheet.

Misleading information

27. (1) A person shall not display a label, mark, symbol or inscription which relates to the energy consumption of a computer, if the display is likely to be

- (a) deceptive;
- (b) misleading; or
- (c) false.

(2) A person shall not broadcast an advertisement relating to the energy performance of a computer if the information in the advertisement is likely to be

- (a) deceptive;
- (b) misleading; or
- (c) false.

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- (3) Subregulations (1) and (2) do not apply to
- (a) a label;
 - (b) a mark;
 - (c) a symbol; or
 - (d) an inscription

displayed under an environmental labelling scheme or endorsement labelling scheme.

Restriction on disclosure of information

28. (1) An enforcement authority shall not disclose any information which consists of a

- (a) secret manufacturing process; or
- (b) trade secret

that was obtained by that enforcement authority in the course of the exercise of a power or duty conferred on the enforcement authority by these Regulations.

(2) Despite subregulation (1), an enforcement authority may disclose information if

- (a) the information is public information; or
- (b) the disclosure is made
 - (i) for the purpose of facilitating the exercise of power by an enforcement authority under these Regulations or any other enactment;
 - (ii) in connection with the investigation of an offence; or
 - (iii) for the purpose of a civil or criminal proceeding.

Powers of Enforcement

Power of enforcement authority to require technical documentation

29. Where an enforcement authority suspects that the information given

- (a) in a Product Information Sheet; or
- (b) on a label,

in respect of a computer is incorrect, that enforcement authority may, by notice served on the supplier or importer of the computer, require the

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supplier or importer to furnish the enforcement authority with the technical documentation referred to in regulation 10 within the period stipulated in the notice.

Power of enforcement authority to inspect computer

30. An enforcement authority may, at any reasonable time, enter any premises to inspect a computer if the enforcement authority has reason to believe that the premises are being used for a purpose in contravention of these Regulations.

Power of enforcement authority to detain or seize record or computer

31. (1) Subject to these Regulations, where an enforcement authority has reasonable cause to suspect that an offence has been committed or is being committed, that enforcement authority may

- (a) at any reasonable time enter premises other than a dwelling place, and conduct an inspection in accordance with subsection (3) of section 52 of the Act;
- (b) require a person engaged in a business or employed in connection with a business to produce a record in respect of a computer;
- (c) detain or seize a computer that is
 - (i) not labelled;
 - (ii) not properly labelled; or
 - (iii) labelled in a deceptive or misleading manner;
- (d) detain or seize a computer that is imported without technical documentation which justifies the label affixed on the computer;
- (e) detain or seize a computer to enable tests to be carried out;
- (f) detain or seize a record to be used as evidence in proceedings in respect of an offence under these Regulations;
- (g) cause a container to be opened for the purpose of inspection;
- (h) break open a container, where implementation of paragraph (g) is not practicable; or
- (i) detain or seize a computer if the model is not registered in the Appliance Energy Efficiency Register.

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(2) For the purposes of paragraphs (b) and (f) of subregulation (1), the enforcement authority may request for information stored electronically to be made available to the enforcement authority in printed form.

Power of enforcement authority to test computer

32. (1) An enforcement authority may

- (a) obtain, remove and test a computer; or
- (b) order the testing of a computer

to ascertain whether a provision of these Regulations has been contravened.

(2) A person who suspects that a computer offered for sale does not comply with the provisions of these Regulations may lodge a complaint with an enforcement authority.

(3) The enforcement authority may, upon receipt of a complaint under subregulation (2), detain and test the computer.

(4) The test to be conducted in respect of a computer purchased, obtained or detained under regulation 31 shall be carried out in accordance with the test procedures required by the Standards.

Detention, Re-Exportation and Seizure

Procedure for market surveillance and verification

33. (1) Despite regulation 32, the Commission and the Standards Authority shall conduct market surveillance to ascertain whether a computer on the market conforms to these Regulations.

(2) The Commission and the Standards Authority shall apply the verification procedure specified in the Fifth Schedule to conduct the market surveillance.

Order to access premises to inspect, detain or seize computer or record

34. Where

- (a) an enforcement authority is refused entry to premises;
- (b) a notification to enter premises would defeat the purpose of the entry;
- (c) the premises to be entered are unoccupied; or
- (d) the occupier of premises to be entered is temporarily absent,

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the enforcement authority may apply to a court for an order to enter the premises to inspect, detain or seize a computer or record, if the enforcement authority has reasonable grounds to believe that a computer or record on the premises may assist in the disclosure of evidence of the commission of an offence under these Regulations.

Procedure for detention of computer

35. (1) An enforcement authority that exercises a power of detention under these Regulations shall, immediately give a written notice to the person against whom the power has been exercised.

(2) The written notice shall state

(a) the computer that has been detained; and

(b) the reason for the detention.

(3) Where an enforcement authority detains a computer, that computer may be kept in a warehouse or other secure location reserved for the purpose.

Procedure for re-labelling of detained computer

36. (1) Subject to these Regulations, where an enforcement authority detains a computer under paragraph (e) of subregulation (1) of regulation 31, the enforcement authority shall

(a) within two days after the detention, submit a sample of the computer for testing; and

(b) within two days after receipt of the test results, give a notice in writing to the supplier of the computer to properly label the computer if the minimum energy performance standards have been complied with.

(2) The notice under paragraph (b) of subregulation (1) shall require a computer to be re-labelled in the required manner or exported out of the country within twenty-eight days.

(3) Where a supplier is required under subregulation (2) to re-label a computer, the supplier shall re-label the computer under the supervision of an officer authorised for the purpose by the Commission or the Standards Authority.

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- (4) Where a supplier fails to
- (a) re-label the computer; or
 - (b) export the computer

within twenty-eight days after the notice given under paragraph (b) of subregulation (1), the Commission shall, in consultation with the Standards Authority, destroy the computer in a manner that the Commission may determine.

Procedure for re-exportation of imported computer

37. (1) An enforcement authority that exercises a power of detention or seizure under these Regulations shall, within seven days after the detention or seizure, give an order in writing to the person against whom the power has been exercised to re-export the computer.

- (2) The order referred to in subregulation (1) shall state
- (a) the computer to be re-exported;
 - (b) the reason for the order;
 - (c) the period within which the computer is to be re-exported; and
 - (d) the fact that the supplier shall be responsible for the cost associated with the re-export.

(3) Where a computer is kept within premises that are under the control of the owner of the computer, the owner shall pay a security deposit against any breach of the re-exportation order.

(4) A security deposit under subregulation (3) shall be forfeited in the event of a breach of the re-exportation order, including the sale or destruction of a computer which has been ordered to be re-exported.

(5) Where a person fails to pay a security deposit imposed under subregulation (3), the Commission may recover the amount imposed as a civil debt.

Procedure for seizure of computer

38. (1) An enforcement authority that exercises a power of seizure under these Regulations shall, within seven days after the seizure, give a written notice to the person against whom the power has been exercised.

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- (2) The written notice under subregulation (1) shall state
- (a) the computer that has been seized;
 - (b) the reason for the seizure; and
 - (c) the venue and the period within which a petition against the seizure may be brought under regulation 39.
- (3) Where an enforcement authority seizes a computer, that computer may be kept in a warehouse or other secure location reserved for the purpose.
- (4) The owner of the computer may be required to pay a deposit to cover the cost of destruction if the computer does not meet the minimum energy performance standards.
- (5) Where a computer is kept within premises that are under the control of the owner of the computer, the owner shall pay a security deposit against any breach of the seizure order.
- (6) A security deposit under subregulation (5) shall be forfeited in the event of a breach of the seizure order, including the sale or destruction of a computer which has been seized.
- (7) Where a person fails to pay a security deposit imposed under subregulation (5), the Commission may recover the amount imposed as a civil debt.

Petition and Compensation

Petition against seizure

- 39.** (1) Subject to these Regulations, a person whose computer is seized may, within seven days after receipt of the written notice specified in subregulation (1) of regulation 38, petition the Executive Secretary for the release of the seized computer.
- (2) The Executive Secretary shall, within seven days after the receipt of a petition under subregulation (1),
- (a) confirm the seizure; or
 - (b) order the release of the seized computer to the petitioner on a specific day.
- (3) A person who is dissatisfied with a decision of the Executive Secretary under subregulation (2) may appeal to the Board within seven days after the receipt of the decision.

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- (4) The Board shall within thirty days after the receipt of an appeal under subregulation (3)
- (a) consult the Standards Authority; and
 - (b) take a decision on the appeal.
- (5) The Board may release the seized computer to the petitioner only if the Commission and the Standards Authority fail to prove that an offence under these Regulations has been committed.
- (6) A person who is dissatisfied with
- (a) a decision of the Board under subregulation (4) may, within fourteen days after the decision; or
 - (b) the failure of the Board to make a decision within thirty days after receipt of the appeal may, within fourteen days after the failure

apply to the court.

Forfeiture and destruction of seized computer

40. (1) Where an appeal to the Board under subregulation (3) of regulation 39 is not successful, the enforcement authority shall, within twenty-eight days after the decision of the Board, notify the owner of the computer of the forfeiture and date of destruction of the seized computer.

(2) The Commission may, in consultation with the Standards Authority, destroy a forfeited computer in a manner that the Commission may determine.

(3) Where under subregulation (6) of regulation 39, the court upholds or affirms the decision of the Board to forfeit and destroy the computer, the Commission shall destroy the computer within the period given by the court.

Compensation for loss of computer or record seized

41. (1) Where an enforcement authority exercises power under these Regulations to seize a computer or record, that enforcement authority is liable to pay compensation to the owner of the computer or record for any loss or damage caused by the exercise of the power, if

- (a) these Regulations have not been contravened in relation to the computer or record; and

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(b) the loss or damage is not attributable to the neglect or the fault of the owner but an official of the Commission.

(2) Paragraph (b) of subregulation (1) does not apply in a case of *force majeure*.

(3) The compensation payable under subregulation (1) for a loss or damage shall not exceed the value of the computer or record.

(4) A dispute as to the

(a) right to compensation; or

(b) amount of compensation payable to a person under subregulation (1),

shall be determined in the first instance by arbitration in accordance with the Alternative Dispute Resolution Act, 2010 (Act 798).

Recovery of expenses by enforcement authority

42. (1) Where an enforcement authority

(a) seizes;

(b) tests; or

(c) supervises the re-labelling or destruction of

a computer, that enforcement authority may surcharge the dealer or supplier of the computer for the expenses incurred for the seizure, testing or supervision.

(2) Despite subregulation (1), where a court convicts a person of an offence in respect of the contravention of a provision of these Regulations, the court may, in addition to any order that the court may make as to costs and expenses, order the person convicted to reimburse the enforcement authority for the expenditure incurred by the enforcement authority in connection with the seizure.

Miscellaneous Provisions

Offences and penalties

43. (1) A person who

(a) manufactures, imports, offers for sale, sells, stores, advertises, distributes, or otherwise disposes of a computer that

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- (i) does not meet a requirement in respect of the minimum energy performance standards contrary to regulation 3;
 - (ii) is not accompanied by the required technical documentation contrary to regulation 10;
 - (iii) is not labelled or properly labelled contrary to regulation 11; or
 - (iv) is labelled in a deceptive or misleading manner contrary to regulation 27;
- (b) uses a circumvention device contrary to regulation 9;
 - (c) fails to comply with a labelling requirement contrary to regulation 11;
 - (d) fails to provide technical documentation contrary to regulation 10, 16 or 17;
 - (e) fails to register a model of a computer contrary to regulation 13;
 - (f) fails to provide a Product Information Sheet contrary to regulation 18;
 - (g) fails to provide information on a computer contrary to regulation 19;
 - (h) provides inaccurate information contrary to regulation 20;
 - (i) advertises a computer without providing accurate information on the energy performance of the computer contrary to regulation 25;
 - (j) offers for sale or sells a computer over the internet or other distance selling medium without providing the information required contrary to regulation 24 or 26;
 - (k) provides misleading information contrary to regulation 27;
 - (l) obstructs or interferes with an enforcement authority in the exercise of the powers of that enforcement authority contrary to regulation 31;
 - (m) fails to comply with the requirements for re-labelling contrary to regulation 36; or
 - (n) violates a seizure order or notice contrary to regulation 38;

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commits an offence and is liable on summary conviction to a fine of not less than one hundred and twenty-five penalty units and not more than two hundred and fifty penalty units or to a term of imprisonment of not less than six months and not more than twelve months or to both.

(2) A person who commits a second or subsequent offence under subregulation (1) after an earlier conviction under subregulation (1) is liable on summary conviction to a fine of not less than two hundred and fifty penalty units and not more than five hundred penalty units or to a term of imprisonment of not less than twelve months and not more than twenty-four months or to both.

(3) Where an offence under these Regulations is committed by a body corporate or by member of a partnership or other firm, every director or officer of the body corporate, or by a member of the partnership or any other person concerned with the management of the firm shall be deemed to have committed that offence and is liable, on summary conviction, to a fine of not less than five hundred penalty units and not more than one thousand penalty units, and is in addition liable to the payment of compensation for the damage resulting from the breach.

(4) A person shall not be convicted of an offence under subregulation (3), if it is proved that

- (a) the person exercised due diligence to secure compliance with the provisions of these Regulations, and
- (b) the offence was committed without the knowledge, consent or connivance of that person.

Interpretation

44. In these Regulations, unless the context otherwise requires, “accredited test laboratory” means a test laboratory that is recognised by the Standards Authority for laboratory testing and product certification;

“active mode” means the state in which a computer is carrying out useful work in response to a prior or concurrent

- (a) user input; or
- (b) instruction over the network

which state includes active processing, seeking data from storage, memory or cache, including idle state time while

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- awaiting further user input and before entering low power modes;
- “additional internal storage” means any and all internal storage devices, including hard disk drives (HDD), solid state drives (SSD) and hybrid hard drives (HHD), included within a computer beyond the first storage drive;
- “annual total energy consumption” means the electricity consumed by a product over specified periods of time across defined power modes and states;
- “Appliance Energy Efficiency Register” means an official record, kept and maintained by the Commission on information in respect of models of electrical appliances that have been certified by the Commission and the Standards Authority for use in Ghana;
- “audio card or sound card” means a discrete internal component that processes input and output audio signals to and from a computer;
- “audio or audio-visual broadcasting service provider” means a person who provides a service which delivers radio programmes or programmes with hearing and sight components to persons with equipment appropriate for receiving that service, whether the delivery is effected by means of or uses the radio frequency spectrum, cable, optical fibre, satellite, internet radio via streaming media on the internet, or any other means or a combination of those means intended to reach a wide audience;
- “blade system and components” means a system composed of an enclosure into which different types of blade storage and servers are inserted;
- “central processing unit” means a component in a computer that controls the interpretation and execution of instructions and may contain one or more physical processors known as execution cores;
- “circumvention device” means any control, control device, software, component or part that alters the operating characteristics of a computer during any test procedure,

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- resulting in measurements that are unrepresentative of the true characteristics of the appliance that may occur during normal use under comparable conditions;
- “computer” means a device which performs logical operations and processes data, is capable of using input devices and outputting information to a display, and normally includes a central processing unit (CPU) to perform operations;
- “computer server” means a computing product that provides services and manages networked resources for client devices, such as desktop computers, notebook computers, desktop thin clients, internet protocol (IP), telephones, or other computer servers;
- “computer server with more than four processor sockets” means a computer server containing more than four interfaces designed for the installation of a processor;
- “container” means a receptacle or enclosure for holding a product for storage, packaging and shipping;
- “court” means a court of competent jurisdiction;
- “dealer” means a retailer or other person who displays, offers for sale or sells a computer to an end user;
- “default”, referring to a specific feature or setting, means the value of a specific feature set at the factory and available when the customer uses the product for the first time and after performing a “reset to factory settings” action, if allowed by the product;
- “desktop thin client” means a computer that relies on a connection to remote computing resources, including a computer server and a remote workstation, to obtain primary functionality and has no rotational storage media integral to the product;
- “display sleep mode” means the power mode the display product enters after receiving a signal from a connected device or an internal stimulus such as a timer or occupancy sensor;
- “distance selling” means the sale of goods or services without the buyer or seller being physically present simultaneously;

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- “docking station” means a discrete product designed to be connected to a computer in order to perform functions such as expanding connectivity or consolidating connections to peripheral devices;
- “dual-node server” means a common multi-node server configuration consisting of two server nodes;
- “dwelling place” means place of residence;
- “electric mains-operated computer” means a computer that operates on electricity supply from the grid of 230 ($\pm 10\%$) volts of alternating current at 50 Hz;
- “electronic Product Information Sheet” means a document containing the following information in electronic format:
- (a) basic product information;
 - (b) energy label information; and
 - (c) special features and characteristics;
- “end user” means the first user of a computer;
- “endorsement labelling scheme” includes a voluntary labelling scheme that guarantees appliance performance standards, that are equal to or exceed the minimum threshold established by a recognised advisory body;
- “energy efficiency rating” means the ratio of the lighting service time to the effective power input for a set of rating conditions specified in the Standards;
- “enforcement authority” means
- (a) an authorised officer of the Commission;
 - (b) an authorised officer of the Standards Authority;
 - (c) an authorised officer of the Customs Division of the Ghana Revenue Authority;
 - (d) an authorised officer of the Police Service; or
 - (e) any other authorised person designated by the Customs Division of the Ghana Revenue Authority, the Commission or the Standards Authority to carry out inspections for the purposes of these Regulations;

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- “environmental labelling scheme” means a voluntary labelling scheme that provides detailed information on the environment in respect of the performance characteristics of a computer;
- “equivalent model” means a model which has the same technical characteristics relevant for the technical information to be provided, but which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier;
- “execution core” means a processor that is physically present;
- “external power supply” means a power supply circuit that is designed to convert alternating current (AC) power input from the mains power source input into a lower voltage direct current (DC) or AC output intended to be used to operate a consumer product;
- “frame buffer bandwidth” means the amount of data that is processed per second by all GPUs on a dGfx;
- “GS” means Ghana Standards;
- “game console” means a mains-powered standalone device which is designed to provide video game playing as its primary function;
- “idle state” means a state of a computer in which the operating system and other software have completed loading, a user profile has been created, the computer is not in sleep mode, and activity is limited to those basic applications that the operating system starts by default;
- “importer” means a person who places a computer from a foreign country on the Ghanaian market and supplies that computer for use;
- “information or status display” means a continuous function providing information or indicating the status of the equipment on a display, including clocks;
- “integrated desktop computer” means a computer in which the computer and the display function as a single unit, which receives its AC power through a single cable;

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- “internal power supply” means a component designed to convert AC voltage from the mains to DC voltage for the purpose of powering the computer or computer server;
- “internal storage” means a component internal to the computer which provides non-volatile storage of data;
- “label” means a material attached to a computer the inscription of which contains information on the energy consumption of the computer;
- “lowest power state” means the state or mode with the lowest power demand in a computer which (mode) may be entered or left by either a mechanical means or via automatic means;
- “minimum energy performance standards” mean a set of procedures and regulations that prescribe the minimum allowable values of energy efficiency or energy performance of manufactured products;
- “mobile workstation” means a high-performance, single-user computer primarily used for graphics, Computer Aided Design, software development, financial and scientific applications among other computer intensive tasks, excluding game play, and which is 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;
- “model identifier” means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trademark or the same name of the manufacturer, importer or authorised representative;
- “multi-node server” means a system composed of an enclosure where two or more independent computer servers or nodes are inserted, which share one or more power supplies;
- “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;

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“off-mode” means the power demand level in the low power mode which cannot be switched off or influenced by a user, other than through the movement of a mechanical switch, and which may persist for an indefinite period of time when the appliance is connected to the main electricity supply and used in accordance with the instructions of the manufacturer;

“on-mode” means the condition where the computer is connected to the mains power source and produces sound and picture;

“organic light emitting diode (OLED)” means a technology in which light is produced from a solid state device embodying a pn junction of organic material which emits optical radiation when excited by electric current;

“ P_{idle} ” represents idle state power in watts as measured according to the procedures indicated in Annex II;

“ P_{off} ” represents off-mode power in watts as measured according to the procedures indicated in the Second Schedule;

“ P_{sleep} ” represents sleep-mode power in watts as measured according to the procedures prescribed in the Standards in the First Schedule;

“point of sale” means the place at which a retail transaction is carried out;

“premises” means land and any building, store, shop, apartment, or other structure on the land used for the storage of a computer;

“Product Information Sheet” means a standard table of information related to a computer;

“product type” means desktop computer, integrated desktop computer, notebook computer, desktop thin client, workstation, mobile workstation, small-scale server, computer server, blade system and components, multi-node server, server appliance, game console, docking station, internal power supply or external power supply;

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- “Quick Response Code” means a matrix barcode included on the energy label of a product model that links to the information of the model in the public part of the product database;
- “rating plate” means a name plate that indicates the measurable performance capability of a computer;
- “rated voltage” means the voltage marked on a computer in volts;
- “reactivation function” means a function facilitating the activation of other modes, including on-mode, by remote switch including remote control, internal sensor, timer to a condition providing additional functions, including on-mode;
- “record” includes a book, document, label, mark, symbol, inscription or information in electronic form;
- “sale” means the exchange of a product for consideration including hire purchase, credit sale and purchase by instalment;
- “server appliance” means a computer server bundled with a pre-installed operating system and application software that is used to perform a dedicated function or set of tightly coupled functions;
- “sleep-mode” means a low power mode that a computer is capable of entering automatically after a period of inactivity or by manual selection;
- “small-scale server” means a type of computer that typically uses desktop computer components in a desktop form factor but is designed primarily to be a storage host for other computers and to perform functions such as providing network infrastructure services and hosting data or media;
- “Standards” means quality specifications for computers and computer servers as stipulated in the First Schedule;
- “Standards Authority” means the Standards Authority established under the Standards Authority Act, 1973 (NRCD 173);

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“supplier” means a person or organisation that provides a product including

- (a) a manufacturer or the authorised representative of a manufacturer resident in the country; and
- (b) an importer or the person who introduces a computer on the Ghanaian market;

“supply” includes an offer to supply, contract to supply and advertisement for supply of a computer but excludes the exhibition at a trade fair of a computer that is prohibited by these Regulations;

“television tuner” means a discrete internal component that allows a computer to receive television signals;

“trade secret” means a secret device or technique used by a company in manufacturing a product of the company;

“UMA” means uniform memory access;

“wake event” means a user scheduled, or external event or stimulus that causes the computer to transition from sleep-mode or off-mode to an active mode of operation including

- (a) movement of the mouse;
- (b) keyboard activity;
- (c) controller input;
- (d) real-time clock event;
- (e) a button press on the chassis; and
- (f) in the case of external events, stimulus conveyed via a remote control, network or modem;

“Wake On LAN (WOL)” means a functionality which allows a computer to transition from sleep-mode or off-mode (or another similar low power mode) when directed by a network request via Ethernet;

“wattage” means the power marked on a computer, in watts (W);

“weighted power consumption” means the electric power consumed by a product over specified periods of time across defined power modes and states;

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“workstation” means a high-performance, single-user computer primarily used for graphics, Computer Aided Design, software development, financial and scientific applications among other computer intensive tasks; and

“year” means the period from 1st January to 31st December.

Transitional provision

45. A person who, before the coming into force of these Regulations, has

- (a) manufactured in the country; or
- (b) imported into the country

a computer that does not comply with these Regulations, shall, within one year after the coming into force of these Regulations, sell, distribute, donate or otherwise dispose of that computer.

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SCHEDULES

FIRST SCHEDULE

STANDARDS

(regulations 1(a)(i), 3(1)(b)(i) and 44)

1. GS IEC 62623: 2012 Desk-top and Notebook computers – Measurement of Energy Consumption.
2. ECMA 383: 2010 Measuring the Energy Consumption of Personal Computing Products 3rd edition (December 2010).
3. ECMA 389: 2010 Procedures for registration of categories for ECMA-383.
4. GS IEC 62075 Audio/video, information communication technology equipment - Environmentally conscious design.
5. GS IEC 61204 Low-Voltage Power Supply Devices, D.C. Output - Performance Characteristics.
6. GS IEC 62700: 2014 DC power supply for notebook computers.
7. GS IEC 62684: 2018 Interoperability specifications of common external power supply (EPS) for use with data-enabled mobile telephones.

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SECOND SCHEDULE

MINIMUM ENERGY PERFORMANCE STANDARDS

(regulations 1(a)(i) and (b), 3(1)(b)(ii), 4(1)(a) and (b)(i), 6, 11(2), 13(4)(a) and 44)

PART ONE

(regulations 1(a)(i) and (b), 3(1)(b)(ii), 4(1)(a) and 6)

The energy efficiency level of the types and categories of computers covered in these Regulations is defined in terms of specified minimum energy performance standards (MEPS) requirements using the following parameters which are measured and determined in accordance with standard test procedures and conditions and calculations specified by the Standards in the First Schedule:

- (a) Annual Total Energy Consumption Threshold;
- (b) Sleep-mode requirements;
- (c) Lowest power state;
- (d) Off-mode;
- (e) Internal power supply efficiency;
- (f) External power supply efficiency; and
- (g) Power management enabling.

1. ENERGY CONSUMPTION THRESHOLDS (E_{TEC})

1.1 Desktop Computer and Integrated Desktop Computer

1.1.1 The measured annual total energy consumption (E_{TEC}) shall not exceed the maximum annual consumption limits, $E_{TEC-MAX}$, in kWh/year as specified in Table 1 for the different categories of Desktop and Integrated Desktop Computers.

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Table 1: Annual Total Energy Consumption threshold for Desktop and Integrated Desktop Computers

Computer Category	Annual Total Energy Consumption, $E_{TEC-MAX}$, (kWh/year) limits
Category A	94.00
Category B	112.00
Category C	134.00
Category D	150.00

1.1.2 The annual total energy consumption, E_{TEC} , shall be determined using Equation (1) and the assumed duty cycle of modes provided in Table 5:

$$E_{TEC} = (8\ 760/1000) \times (0.55 \times P_{off} + 0.05 \times P_{sleep} + 0.40 \times P_{idle})$$

.....Equation (1)

Where

P_{off} = average power measured when in the off-mode

P_{sleep} = average power measured when in the sleep-mode with WOL capability disabled

P_{idle} = average power measured when in the long idle-mode

1.1.3 For computers that lack a discrete sleep-mode, but have idle state power demand less than or equal to 10W, power in idle state (P_{idle}) may be used in place of power in sleep-mode (P_{sleep}) in the above equation, such that the formula is replaced by Equation (2)

$$E_{TEC} = (8\ 760/1\ 000) \times (0.55 \times P_{off} + 0.45 \times P_{idle})$$

.....Equation (2)

All P_{idle} are power values in the indicated defined modes or states and measured in watts (W) in accordance with the standards specified in the First Schedule.

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Capability Adjustments

1.1.4 The capability adjustments specified in Table 2 shall apply to the total annual consumption thresholds provided for the different categories of Desktop and Integrated Desktop Computers.

Table 2: Capability adjustments for TEC for Desktop and Integrated Desktop Computers

Capability feature	Category	TEC allowance (kWh/yr)
(a) Memory-based on the memory gigabyte size (GB_{size}) over the base memory size (GB_{base})	A, B, C : $GB_{base} = 2GB$	$(GB_{size} - GB_{base}) \times 1kWh$
	D : $GB_{base} = 4GB$	
(b) Additional internal storage	A, B, C or D	25
(c) Discrete television tuner	A, B, C or D	15
(d) Discrete audio card	A, B, C or D	15
(e) Discrete graphics card (dGfx) for the first and each additional dGfx card as follows:		
dGfx card type (First or Additional)	dGfx category	TEC allowance (kWh/year)
First discrete graphics card (dGfx)	G1	18
	G2	30
	G3	38
	G4	54
	G5	72
	G6	90
	G7	122

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Each additional discrete graphics card (dGfx)	G1	11
	G2	17
	G3	22
	G4	32
	G5	42
	G6	53
	G7	72

1.1.5 The capability adjustments for discrete graphics cards (dGfx), discrete television tuner and discrete audio card mentioned only apply to cards and tuner that are enabled during testing of desktop computers or integrated computers.

1.1.6. Category D desktop computers and integrated desktop computers that meet all of the following technical parameters are exempt from the E_{TEC} energy efficiency assessment provisions set out in this Part.

- (a) a minimum of six physical cores in the central processing unit (CPU);
- (b) discrete graphics card(s) (dGfx) providing total frame buffer bandwidths above 320 GB/s;
- (c) a minimum 16 GB of system memory; and
- (d) a PSU with a rated output power of at least 1 000 W.

1.2 Notebook Computer

1.2.1 The measured annual total energy consumption (E_{TEC}) shall not exceed the maximum annual consumption limits, $E_{TEC-MAX}$, in kWh/year as specified in Table 3 for the different categories of Notebook Computers.

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Table 3: Annual Total Energy Consumption threshold for Notebook Computers

Computer Category	Annual Total Energy Consumption, $E_{TEC-MAX}$, (kWh/year)
Category A	27.00
Category B	36.00
Category C	60.50

1.2.2 The annual total energy consumption, EE_{TEC} , shall be determined using Equation (3) and assumed duty cycle of modes provided in Table 5:

$$E_{TEC} = (8\,760/1000) \times (0.60 \times P_{off} + 0.1 \times P_{sleep} + 0.30 \times P_{idle}) \dots\dots$$

Equation (3)

where

P_{off} = average power measured when in the off-mode

P_{sleep} = average power measured when in the sleep-mode with WOL capability disabled

P_{idle} = average power measured when in the long idle-mode

(NB: Assumption: P_{idle} = average of (Long idle power + Short idle power + Work power))

All P_i are power values in the indicated defined modes or states and measured in watts (W) in accordance with the standards specified in the First Schedule.

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Capability Adjustments

1.2.3 The capability adjustments specified in Table 4 shall apply to the total annual consumption thresholds provided for the different categories of Notebook Computers.

Table 4: Capability adjustments for TEC for Notebook Computers

Capability Feature	Category	TEC Allowance (kWh/year)
a) Memory- based on the memory gigabyte size (GB_{size}) over the base memory size (GB_{base}) =4GB)	A, B or C	$(GB_{size} - GB_{base}) \times 0.4kWh$
b) Additional internal storage		3
c) Discrete television tuner		2.1
d) Discrete graphics card (dGfx) for the first and each additional dGfx card as follows:		
dGfx card type (First or Additional)	dGfx category	TEC allowance (kWh/year)
First discrete graphics card (dGfx)	G1	7
	G2	11
	G3	13
	G4	20
	G5	27
	G6	33
	G7	61
Each additional discrete graphics card (dGfx)	G1	4
	G2	6
	G3	8
	G4	12
	G5	16
	G6	20
	G7	36

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1.2.4. The capability adjustments for discrete graphics cards (dGfx) and discrete television tuner mentioned in paragraph 1.2.3 only apply to cards and tuners that are enabled during testing of notebook computers.

1.2.5. Category C notebook computers meeting all of the following technical parameters are exempt from the provisions specified in subparagraphs 1.2.1 and 1.2.3:

- (a) a minimum of four physical cores in the central processing unit (CPU);
- (b) discrete graphics card(s) (dGfx) providing total frame buffer bandwidths above 225 GBs; and
- (c) a minimum sixteen gigabytes of system memory.

1.3 Minimum Energy Performance Standard Requirements for Workstations

1.3.1 The weighted power consumption P_{TEC} of a Workstation shall not exceed the maximum weighted power consumption requirement ($P_{TEC-MAX}$) and which is calculated using Equation (4) as follows:

$$P_{TEC-MAX} = 0.28 \times (P_{MAX} + NHDD \times 5) \dots\dots\dots \text{Equation (4)}$$

where

P_{MAX} = Measured maximum power consumption (W)

NHDD = Number of installed hard disk drives (HDD) or solid-state drives (SSD)

1.3.2 The weighted power consumption of a Workstation, P_{TEC} , shall be determined using Equation (5) and the assumed duty cycle of modes or states provided in Table 5.

$$P_{TEC} = 0.10 \times P_{off} + 0.35 \times P_{sleep} + 0.20 \times P_{idle} + 0.35 \times P_{light} \dots\dots\dots \text{Equation (5)}$$

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where

P_{off} = average power measured when in the off-mode

P_{sleep} = average power measured when in the sleep-mode with WOL capability disabled

P_{lidle} = average power measured when in the long idle-mode

P_{sidle} = average power measured when in the short idle-mode

1.4 Assumed Duty Cycle for Computers

The assumed duty cycles used for TEC calculations for Desktop and Integrated Desktop computers and Notebook computers are provided in Table 5.

Table 5: Assumed Duty Cycle attributes of modes for TEC calculations

Description of mode duty	Desktop or Integrated Desktop computer	Notebook Computer	Workstation
T_{off}	55%	60%	10%
T_{sleep}	5%	10%	35%
T_{idle} (or T_{on}): $T_{sidle} + T_{lidle} + T_{work}$	40%	30%	-
$T_{sidle workstation}$	-	-	20%
$T_{lidle workstation}$	-	-	35%

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PART TWO

(regulation 4(1)(b)(i))

2. SLEEP-MODE

REQUIREMENTS

Desktop Computer, Integrated Desktop Computer and Notebook Computer

- 2.1. A product shall provide sleep-mode or another condition that provides the functionality of sleep-mode and which does not exceed the applicable power demand requirements for a sleep-mode.
- 2.2. Power demand in sleep-mode shall not exceed 5.0W in desktop computers and integrated desktop computers and 3.0W in notebook computers.
- 2.3. Desktop computers and integrated desktop computers where idle state power demand is less than or equal to 10.0W are not required to have a discrete system sleep-mode.
- 2.4. Where a product is placed on the market with a WOL functionality enabled in sleep-mode:
 - (a) an additional allowance of 0.70W can be applied; and
 - (b) it must be tested with a WOL functionality both enabled and disabled and must comply with both requirements.
- 2.5. Where a product is placed on the market without Ethernet capability, it shall be tested without WOL functionality enabled.

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PART THREE

(regulation 4(1)(b)(i))

3. LOWEST POWER STATE REQUIREMENTS

Desktop Computer, Integrated Desktop Computer and Notebook Computer

- 3.1. Power demand in the lowest power state shall not exceed 0.50W.
- 3.2. A product shall provide a power state or mode which does not exceed the applicable power demand requirements for the lowest power state when it is connected to the mains power source.
- 3.3. Where a product is placed on the market with an information or status display, an additional allowance of 0.50W can be applied.

PART FOUR

(regulation 4(1)(b)(i))

4. OFF-MODE REQUIREMENTS

Desktop Computer, Integrated Desktop Computer and Notebook Computer

- 4.1. Power demand in Off-mode shall not exceed 1.00W.
- 4.2. A product shall provide off-mode or another condition which does not exceed the applicable power demand requirements for off-mode when it is connected to the mains power source.
- 4.3. Where a product is placed on the market with a WOL functionality enabled in off-mode:
 - (a) an additional allowance of 0.70 W can be applied; and
 - (b) it must be tested with a WOL functionality both enabled and disabled and must comply with both requirements.

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4.4 Where a product is placed on the market without Ethernet capability, it shall be tested without WOL functionality enabled.

PART FIVE

(regulation 4(1)(b)(i))

5. INTERNAL POWER SUPPLY EFFICIENCY

The energy performance of internal power supplies of microcomputers, including workstations and computer servers are determined in terms of minimum efficiency and power factor specifications as provided in this Part.

5.1 Desktop Computer, Integrated Desktop Computer, Desktop thin client, Workstation and Small-scale Server

5.1.1. The internal power supplies (IPS) for this group of microcomputers shall meet the minimum efficiency and power factor requirements set out in Table 2.

Table 2: Minimum Efficiency and power factor requirements for IPS

Loading as percentage of rated output (P_o)	Minimum Efficiency	Minimum Power Factor (P.F)
20%	82%	-
50%	85%	-
100%	82%	0.90

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5.1.2. Internal power supplies with a maximum rated output power of less than 75 W are exempt from the power factor requirement.

5.2. Computer servers

Performance of multi-output (AC-DC) and single-output (AC-DC) internal power supplies (IPS) for computer servers in terms of efficiency and power factor shall be within the ranges specified in Table 3 below.

Table 3: Efficiency and power factor performance requirements for IPS of Computer servers

Percentage of rated output (P_o)	Multi-output AC-DC power supplies		Single-output AC-DC power supplies					
			$P_o \leq 500W$		$500W < P_o \leq 1000W$		$P_o > 1000W$	
			$\eta \geq$	p.f. \geq	$\eta \geq$	p.f. \geq	$\eta \geq$	p.f. \geq
10%	-	-	70%	-	75%	0.65	80%	0.80
20%	82%	0.80	82%	0.80	85%	0.80	88%	0.90
50%	85%	0.90	89%	0.90	89%	0.90	92%	0.90
100%	82%	0.95	85%	0.95	85%	0.95	88%	0.95

PART SIX

(regulation 4(1)(b)(i))

6. EXTERNAL POWER SUPPLIES (EPS)

External Power Supplies used with microcomputers under the scope of these Regulations shall meet the minimum efficiency performance requirements specified in this Part in accordance with the International Efficiency Marking Protocol when tested according to the Uniform Test Method for Measuring the Energy Consumption of External Power Supplies.

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6.1 No-load condition power consumption

No-load condition power consumption of external power supplies used with computers under the scope of these Regulations shall not exceed the limits set out in Table 4.

Table 4: No-load condition power consumption limits for EPS

Type of External Power Supply (EPS)	Rated power output range (P_o)	
	$P_o \leq 49.0$ W	$P_o > 49.0$ W
1. AC-AC EPS (excluding Types 3 and 4)	0.21W	0.21W
2. AC-DC EPS (excluding Types 3 and 4)	0.10W	0.21W
3. Low voltage EPS	0.10W	0.21W
4. Multiple voltage output EPS	0.30W	0.30W

6.2 Average Active Efficiency requirements

All external power supplies used with computers under these Regulations shall meet the minimum average active efficiency requirements set out in Table 5.

Table 5: Minimum average active efficiency requirements for EPS

Type of External Power Supply (EPS)	Rated power output range		
	$P_o \leq 1.0$ W	$1.0W < P_o \leq 49.0$ W	$P_o > 49.0$ W
1. AC-AC EPS (excluding Types 3 and 4)	$0.5 \times P_o/1W + 0.160$	$0.071 \times \ln(P_o/1W) - 0.0014 \times P_o/1W + 0.67$	0.88
2. AC-DC EPS (excluding Types 3 and 4)	$0.5 \times P_o/1W + 0.160$	$0.071 \times \ln(P_o/1W) - 0.0014 \times P_o/1W + 0.67$	0.88
3. Low voltage EPS	$0.517 \times P_o/1W + 0.087$	$0.834 \times \ln(P_o/1W) - 0.0014 \times P_o/1W + 0.609$	0.87
4. Multiple voltage output EPS	$0.497 \times P_o/1W + 0.067$	$0.075 \times \ln(P_o/1W) + 0.561$	0.86

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PART SEVEN

(regulation 4(1)(b)(i))

7. POWER MANAGEMENT ENABLING

Desktop Computer, Integrated Desktop Computer and Notebook Computer

- 7.1. The computer shall offer a power management function, or a similar function which, when the computer is not providing the main function or when other energy-using products are not dependent on its functions, automatically switches the computer into a power mode that has a lower power demand than the applicable power demand requirement for sleep mode.
- 7.2. The computer shall reduce the speed of any active 1 Gigabit per second (Gb/s) Ethernet network links when transitioning to sleep or off-with-WOL mode.
- 7.3. When in sleep-mode, the response to “wake events”, such as those via network connections or user interface devices, should happen with a latency of less than or equal to five seconds from the initiation of a wake event to the system becoming fully usable including rendering of display.
- 7.4. The computer shall be placed on the market with the display sleep mode set to activate within ten minutes of user inactivity.
- 7.5. A computer with Ethernet capability shall have the ability to enable and disable a WOL function, if available, for sleep-mode. A computer with Ethernet capability shall have the ability to enable and disable WOL for off-mode if WOL from off-mode is supported.
- 7.6. Where a distinct sleep-mode or another condition that provides sleep-mode functionality exists, the mode shall be set to activate within thirty minutes of user inactivity. This power management function shall be activated before placing the product on the market.

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7.7. Users shall be able to easily activate and deactivate any wireless network connection and users shall be given a clear indication with a symbol, light or equivalent, when wireless network connection has been activated or deactivated.

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THIRD SCHEDULE


THE LABEL

(regulations 3(1)(b)(iii), 11(1)(a)(i), 11(1)(d)(i) and 16(4)(b))

1. Label design for Computers

The design of the label shall be in accordance with Figure 1 and shall include

ENERGY guide

Computer Type:	Desk/Lap/Server	
Manufacturer :	name/logo	
Model No. :	abc123	
Off Mode Power :	XYZ, W	
Sleep Mode Power:	XYZ, W	
Idle Mode Power :	XYZ, W	
Maximum Power :	XYZ, W	
Noise:	XY, dBA	
Country of Origin:	Abc	

Annual Energy Consumption of Computer, ETEC, kWh, (Indicative Benchmark)		
Min: (kWh)	→	Max: (kWh)
Annual Energy Consumption of this Model is		
(X Y Z), kWh		

When tested in accordance with SANS 1641:2011, Class A11, a star icon will appear on the appliance's star.
Further information is contained in the Product Brochure and Product Information Sheet.
Removal of this Label before First Retail Purchase is an offence under the law.




Figure 1: The Label for a Computer

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2. Label design for Workstation

The design of the label shall be in accordance with Figure 2 and shall include

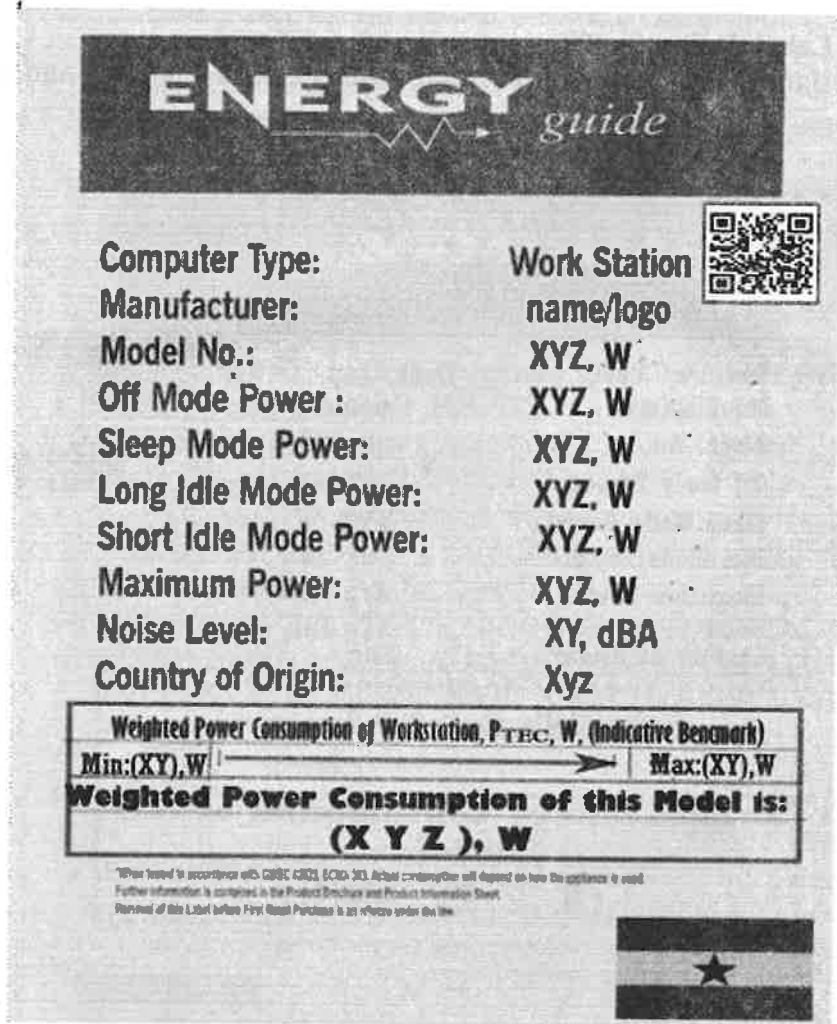


Figure 2: The Label for a Workstation

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3. Notes to Figure 1 and Figure 2

- (a) the Quick Response Code;
- (b) type of computer;
- (c) the name or trade mark of the manufacturer;
- (d) the model identifier of the manufacturer;
- (e) the country of origin;
- (f) the voltage (V); and
- (g) the maximum power (W).

For all computers except Workstations:

- (a) the annual total energy consumption, E_{TEC} , (kWh/year); and
- (b) maximum annual total energy consumption MEPS, $E_{TEC-MAX}$, (kWh/year).

For a Workstation:

- (a) weighted power consumption, P_{TEC} , (W); and
- (b) maximum weighted power consumption MEPS, $P_{TEC-MAX}$, (W).

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4. Dimensions of a label

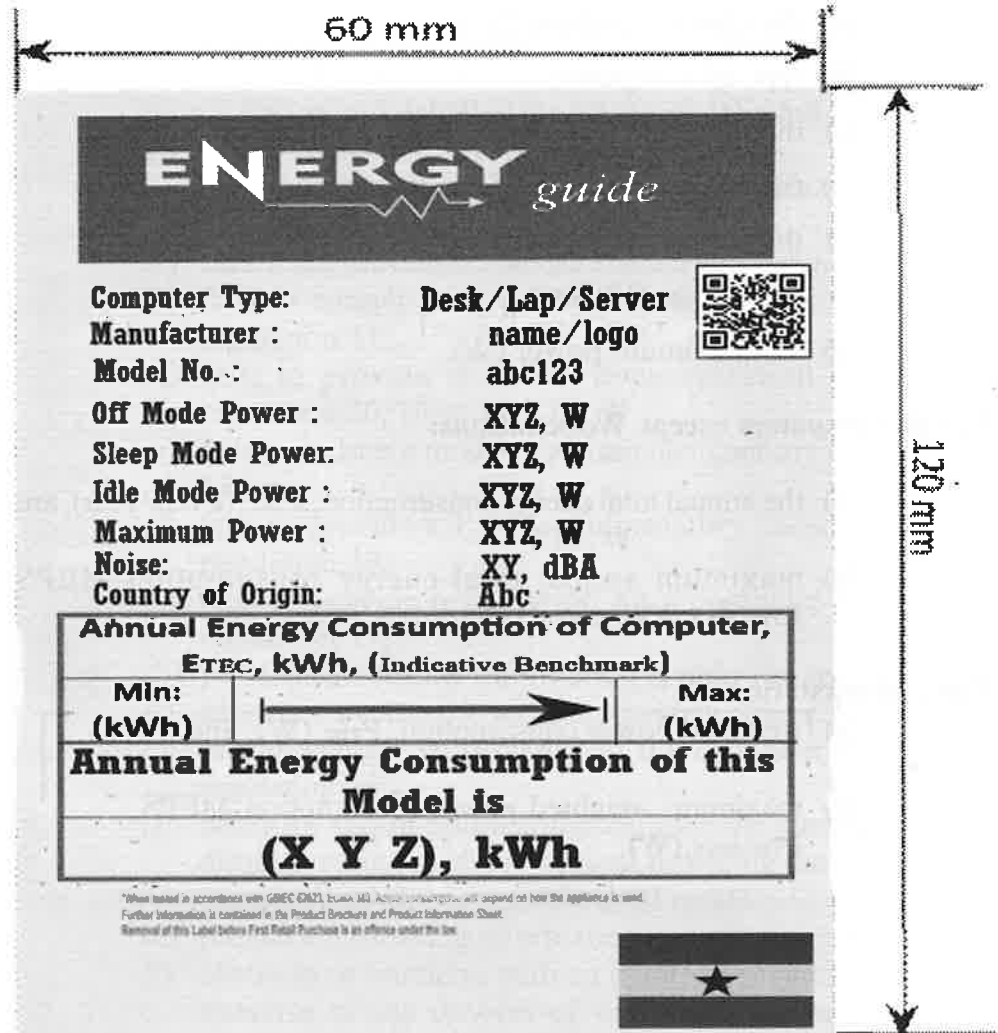


Figure 3: Dimensions of a Label

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5. Printing

- (1) Figure 3 defines aspects of a label.
- (2) The dimensions of the labels shall be in accordance with the illustration in Figure 3 and shall be placed on the side of the regulated appliance.
- (3) Colours are to be used on the label in accordance with the following:
 - (a) all text shall be in black or gold as illustrated;
 - (b) the background shall be gold; and
 - (c) border line shall be in black.

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FOURTH SCHEDULE

PRODUCT INFORMATION SHEET

(regulations 3(1)(b)(iv) and (2), 5, 10(2)(b) and (c), 11(1)(c), 16(4)(b), (c), (d) and (e), 18(1), 18(2)(b), 22(b), 24(2)(c), 25(b)(iii) and 26(2)(a))

PART ONE

(regulation 10(2)(b), 11(1)(c), 18(1), 18(2)(b) and 22(b))

Desktop Computer, Integrated Desktop Computer and Notebook Computer

1. A supplier shall provide in the Product Information Sheet and make publicly available on free-access websites the following information:
 - (a) product type and one category as defined in Part Two of this Schedule;
 - (b) the name, registered trade name or registered trade mark and address of the manufacturer;
 - (c) product model number;
 - (d) year of manufacture;
 - (e) E_{TEC} value (kWh) and capability adjustments applied when all discrete graphic cards (dGfx) are disabled and if the system is tested with switchable graphics mode with UMA driving the display;
 - (f) E_{TEC} value (kWh) and capability adjustments applied when all discrete graphic cards (dGfx) are enabled;
 - (g) idle state power demand (watts);
 - (h) sleep-mode power demand (watts);
 - (i) sleep-mode with WOL enabled power demand (watts) (where enabled);

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- (j) off-mode power demand (Watts);
 - (k) off-mode with WOL enabled power demand (Watts) (where enabled);
 - (l) internal power supply efficiency at 10 %, 20 %, 50 % and 100 % of rated output power;
 - (m) external power supply efficiency;
 - (n) noise levels (the declared A-weighted sound power level) of the computer;
 - (o) the minimum number of loading cycles that the batteries can withstand (applies only to notebook computers);
 - (p) the length of time before the display sleep mode is set to activate after user inactivity;
 - (q) user information on the energy-saving potential of power management functionality; and
 - (r) user information on how to enable the power management functionality.
2. If a notebook computer is operated by a battery that cannot be accessed and replaced by a non-professional user, in addition to the information specified in paragraph 1, a manufacturer shall provide in the technical documentation, and make available on free-access websites and on the external packaging of the notebook computer, the following information "*The battery in this product cannot be easily replaced by a user*". The information provided on the external packaging of the notebook computer shall be conspicuous and legible and be provided in the official languages of the country where the product is marketed.

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Workstation, mobile workstation, desktop thin client, small-scale server and computer server

3. A manufacturer shall provide in the Product Information Sheet and make publicly available on free-access websites the following information:
- (a) product type as defined in Part Two of this Schedule (one and only one category);
 - (b) the name, registered trade name or registered trade mark and address of the manufacturer;
 - (c) product model number;
 - (d) year of manufacture;
 - (e) internal/external power supply efficiency;
 - (f) maximum power (watts);
 - (g) weighted power consumption, P_{TEC} , (W);
 - (h) number of installed hard disk drives (HDD) or solid state drives (SSD);
 - (i) short idle state power (watts);
 - (j) long idle state power (watts);
 - (k) sleep-mode power (watts);
 - (l) off-mode power (watts); and
 - (m) noise levels (the declared A-weighted sound power level of the computer).

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PART TWO
(regulation 5)

Types and Categories of Computers

Table 1 shows the types and categories of computers that are covered in the scope of these Regulations.

Table 1: Types and Categories of Computers

<i>Type</i>	<i>Category</i>	<i>Description of characteristics</i>		
		<i>No. of physical CPU cores</i>	<i>System memory size</i>	<i>Discrete graphic card (dGfx)</i>
Desktop computers/ Integrated Desktop computers	A	Desktop computer that does not meet the definition of Category B, Category C or Category D desktop computer		
	B	2	≥ 2 GB	-
	C	≥ 3	≥ 2 GB	AND/OR 1 card
	D	≥ 4	≥ 4GB	AND/OR 1 card with G3 (with FB Data Width > 128-bit), G4, G5, G6 or G7 classification
Notebook computers <i>(includes: Tablet, Slate and "Mobile thin client" computers)</i>	A	Notebook computers that do not meet the definition of a Category B or Category C notebook computer		
	B	-	-	≥ 1 card
	C	≥ 2	≥ 2 GB	AND/OR 1 card with G3 (with FB Data Width > 128-bit), G4, G5, G6 or G7 classification

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Workstation	Graphical Production	CPU: Storage: ECC memory: RAID: Operating system: Graphics capability: Form factor: Multi-user environment: Single-user environment:
	Servers	
Mobile workstation	Multimedia	
	Modeling	
Computer server	Web server	
	Computing server	
	Mail server	
	File server	
	Print server	
Small-scale server	Application server	
	Database server	
	Virtual server	
	Proxy server	
	Monitoring & Management server	
	Others (Fax server, catalogue server etc.)	
Power supply	Internal Power Supply (IPS)	Single-output AC-DC
		Multi-output AC-DC
	External Power Supply (EPS)	AC-DC
		AC-AC
		Low voltage
		Multi voltage output

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PART THREE

(regulation 10(2)(c))

Technical documentation

1. The technical documentation referred to in regulation 10 shall include
 - (a) the Product Information Sheet requirements listed under Part Two;
 - (b) the measurement methodology used to determine information mentioned in paragraphs (e) to (i);
 - (c) a sequence of steps for achieving a stable condition with respect to power demand;
 - (d) a description of how sleep-mode or off-mode was selected or programmed;
 - (e) the sequence of events required to reach the mode where the equipment automatically changes to sleep-mode or off-mode;
 - (f) the duration of idle state condition before the computer automatically reaches sleep-mode, or another condition which does not exceed the applicable power demand requirements for sleep-mode;
 - (g) the length of time after a period of user inactivity in which the computer automatically reaches a power mode that has a lower power demand requirement than sleep-mode;
 - (h) for products with an integrated display containing mercury, the total content of mercury as X,X mg;
 - (i) test parameters for the following measurements:
 - (i) test voltage in V and frequency in Hz;
 - (ii) total harmonic distortion of the electricity supply system;
 - (iii) information and documentation on the instrumentation; and
 - (iv) set-up and circuits used for electrical testing.

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2. If a product model is placed on the market in multiple configurations the product information required in paragraph 1 of this Part may be reported once per product category as defined in Part Two of this Schedule, for the highest power-demanding configuration available within that product category. A list of all model configurations that are represented by the model for which the information is reported shall be included in the information provided.

Workstation, mobile workstation, desktop thin client, small-scale server and computer server

3. The technical documentation referred to in regulation 10 shall include all the Product Information Sheet requirements listed under Part Two and the following additional information:

- (a) test parameters for the following measurements:
 - (i) test voltage in V and frequency in Hz;
 - (ii) total harmonic distortion of the electricity supply system;
 - (iii) information and documentation on the instrumentation; and
 - (iv) set-up and circuits used for electrical testing; and
- (b) the measurement methodology used to determine all the relevant technical information listed.

4. If a product model is placed on the market in multiple configurations the product information required under paragraph 3 may be reported once per product category as defined in Part Two of this Schedule, for the highest power-demanding configuration available within that product category. A list of all model configurations that are represented by the model for which the information is reported shall be included in the information provided.

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PART FOUR

(regulation 24(2)(c))

Mail Order and other Distance Selling Information to be provided in cases where end-users cannot be expected to see the product displayed

1. A supplier shall ensure that

- (a) a computer offered for sale, hire or hire-purchase, where the end-user cannot be expected to see the appliance displayed, is marketed with the Product Information Sheet;
- (b) a mail order catalogue and other communication shall contain at least, the following information, given in the order specified below:
 - (i) product model number;
 - (ii) year of manufacture;
 - (iii) E_{TEC} value (kWh) and capability adjustments applied when all discrete graphic cards (dGfx) are enabled (required for all computers except Workstations);
 - (iv) P_{TEC} value (W) and capability features in terms of number of hard disk drives (HDD) and solid state drives (SSD) enabled (required for workstations only);
 - (v) idle state power demand (watts);
 - (vi) sleep-mode power demand (watts);
 - (vii) sleep-mode with WOL enabled power demand (watts) (where enabled);
 - (viii) off-mode power demand (watts);

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- (ix) internal power supply efficiency at ten per cent, twenty per cent, fifty per cent and hundred percent of rated output power;
 - (x) external power supply efficiency; and
 - (xi) noise levels (the declared A-weighted sound power level) of the computer;
- (c) an advertisement for a specific computer model contains the energy efficiency and performance specifications, if the advertisement discloses energy-related or price information and shall appear in the order described in (b); and
 - (d) a technical promotional material concerning a specific computer model, which describes the specific technical parameters of the model, includes the energy performance characteristics of that model.
2. The size and font in which all the information referred in this Part is printed or shown shall be legible.

PART FIVE

(regulation 3(2), 16(4)(c),(d) and (e) and 25(b)(iii))

Information to be provided in audio advertisements, visual advertisements, in technical promotional material, in distance selling, except distance selling on the internet

1. In an audio advertisement, for the purposes of ensuring conformity with the requirements laid down in subregulation (2) of regulation 3, the annual total energy consumption of the model of computer being advertised shall be compared with the specified minimum energy performance standards, including the TEC allowances listed

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in Part One of the Second Schedule and shall be stated in the advertisement.

2. In a visual advertisement, for the purposes of ensuring conformity with the requirements laid down in subregulation (2) of regulation 3, the annual total energy consumption and the minimum energy performance standards, of the model including the TEC allowances listed in Part One of the Second Schedule shall be made available on the label and be shown as set out in paragraph 5 of this Part.
3. In technical promotional material, for the purposes of ensuring conformity with the requirements laid down in subregulation (2) of regulation 3 the annual total energy consumption of the model and the minimum energy performance standards of the model, including the TEC allowances listed in Part One of the Second Schedule shall be made available on the label and be shown as set out in paragraph 5 of this Part.
4. Any paper-based distance selling must show the energy performance characteristics of the model and the ranges of energy performance characteristics available on the label as set out in paragraph 5 of this Part.
5. The annual total energy consumption and the minimum energy performance standards of the model shall be shown, as indicated in Figure 1 and include the following:
 - (a) an arrow, containing the annual total energy consumption in hundred per cent white, Calibri Bold and in a font size at least equivalent to that of the price, when the price is shown;
 - (b) the colour of the box shall be gold;
 - (c) the minimum energy performance standards in hundred per cent black; and

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- (d) the size shall be such that the box is clearly visible and legible.
6. By way of derogation, if the visual advertisement, technical promotional material or paper-based distance selling is printed in monochrome, the box may be in monochrome in that visual advertisement, technical promotional material or paper-based distance selling.

COMPUTERS		WORKSTATIONS	
ENERGY CONSUMPTION, ETEC		WEIGHTED POWER CONSUMPTION, PTEC	
HIGHEST ENERGY CONSUMPTION (LEAST EFFICIENT)	XX, kwh/yr	HIGHEST WEIGHTED POWER CONSUMPTION (LEAST EFFICIENT)	YY, W
THIS MODEL'S ENERGY CONSUMPTION	XX, kwh/yr	THIS MODEL'S WEIGHTED POWER CONSUMPTION	YY, W
LOWEST ENERGY CONSUMPTION (MOST EFFICIENT)	XX, kwh/yr	LOWEST WEIGHTED POWER CONSUMPTION (MOST EFFICIENT)	YY, W

Figure 1: Coloured/monochrome minimum energy performance standards indicated for Computers and Workstations respectively

7. Telemarketing-based distance selling shall specifically inform the customer of the annual total energy consumption of the model and minimum energy performance standards including the TEC allowances listed in Part One of the Second Schedule on the label, and that the customer can access the full label and the Product Information Sheet through a free access website, the public part of the Appliance Energy Efficiency Register of the Commission or by requesting a printed copy.

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8. For all the situations mentioned in paragraphs 2 to 4 and paragraph 7, it shall be possible for the customer to obtain, on request, a printed copy of the label and the Product Information Sheet.

PART SIX

(regulation 26(2)(a))

Information to be provided in the case of distance selling through the Internet

1. The appropriate label made available by suppliers in accordance with the Third Schedule shall be shown on the display mechanism in proximity to the price of the product.
2. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in the Third Schedule.
3. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in paragraph 5 of this Part.
4. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.
5. The image used for accessing the label in the case of nested display, as indicated in Figure 2, shall
 - (a) indicate the annual total energy consumption of the product in the box in hundred per cent black, Calibri Bold and in a font size equivalent to that of the price; and
 - (b) have the minimum energy performance standard in hundred per cent black.

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COMPUTERS		WORKSTATIONS	
ENERGY CONSUMPTION, ETEC		WEIGHTED POWER CONSUMPTION, PTEC	
HIGHEST ENERGY CONSUMPTION (LEAST EFFICIENT)	XX, kWh/yr	HIGHEST WEIGHTED POWER CONSUMPTION (LEAST EFFICIENT)	YY, W
THIS MODEL'S ENERGY CONSUMPTION	XX, kWh/yr	THIS MODEL'S WEIGHTED POWER CONSUMPTION	YY, W
LOWEST ENERGY CONSUMPTION (MOST EFFICIENT)	XX, kWh/yr	LOWEST WEIGHTED POWER CONSUMPTION (MOST EFFICIENT)	YY, W

Figure 2: Coloured/monochrome MEPS indicated for Computers and Workstations respectively

6. In the case of a nested display, the sequence of display of the label shall be as follows:
 - (a) the image referred to in paragraph 5 of this Part shall be shown on the display mechanism in proximity to the price of the product;
 - (b) the image shall link to the label set out in the Third Schedule;
 - (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
 - (d) the label shall be displayed by pop up, new tab, new page or inset screen display;
 - (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;

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- (f) the label shall cease to be displayed by means of a close option or other standard closing mechanism; and
 - (g) the alternative text for the graphic, to be displayed on failure to display the label, shall be the annual total energy consumption in a font size equivalent to that of the price.
7. The electronic Product Information Sheet made available by suppliers in accordance with subregulation (2) of regulation 26 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the Product Information Sheet is clearly visible and legible. The Product Information Sheet may be displayed using a nested display or by referring to the product database, in which case the link used for accessing the Product Information Sheet shall clearly and legibly indicate 'Product Information Sheet'. If a nested display is used, the Product Information Sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

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FIFTH SCHEDULE

VERIFICATION PROCEDURE FOR MARKET SURVEILLANCE
(regulation 33(2))

1. Measurements

For the purposes of compliance and verification of compliance with the applicable requirements of these Regulations, measurements and calculations shall be made using harmonised standards, as specified in the First Schedule, or using other reliable, accurate and reproducible methods which take into account the generally recognised state-of-the-art measurements, and produce results deemed to be of low uncertainty.

Computers placed on the market without an operating system capable of supporting an Advanced Configuration and Power Interface (ACPI) system or similar, shall be tested with an ACPI or similar supporting operating system.

2. Verification Procedure

When performing the market surveillance checks referred to in subregulation (2) of regulation 33, the Commission and the Standards Authority shall apply the following verification procedure elaborated in this Schedule:

E_{TEC} , sleep-mode, off-mode and lowest power state

2.1. For power demand requirements larger than 1.00W, or where energy consumption requirements formulated in TEC result in a power demand requirement larger than 1.00W in at least one power mode, the relevant verifying authorities shall test one single unit as follows:

- (a) the model configuration shall be considered to comply with the applicable requirements set out in paragraphs 1.1, 1.2, 1.3 and 2.3 of the Second Schedule if the test results for the applicable limit values do not exceed them by more than seven per cent;

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- (b) the model configuration shall be considered to comply with the applicable requirements set out in paragraph 2.2 of the Second Schedule if the test results for the applicable limit values do not exceed them by more than seven per cent. An additional allowance set out in paragraph 2.4 of the Second Schedule can be added to the test results if the model configuration is placed on the market with a WOL functionality enabled in sleep-mode. The model configuration should be tested with WOL functionality both enabled and disabled and should comply with both requirements. The model configuration placed on the market without Ethernet capability shall be tested without WOL enabled;
- (c) if the test results referred to above are not achieved, three additional units of the same model configuration shall be tested;
- (d) after three additional units of the same model and configuration have been tested, the model configuration shall be considered to comply with the applicable requirements set out in paragraphs 1.1, 1.2, 1.3 and 2.3 of the Second Schedule if the average of the test results of the latter three units for the applicable limit values does not exceed them by more than seven per cent; and
- (e) if the test results referred to above are not achieved, the model configuration and all models that are covered by the same product information mentioned in paragraphs 2 and 4 of Part Three of the Fourth Schedule shall be considered not to comply with the applicable requirements set out in subparagraphs in paragraphs 1.1, 1.2 and 2.3 of the Second Schedule.

2.2. For power demand requirements smaller than or equal to 1.00 W, relevant verifying authorities shall test one single unit as follows:

- (a) the model configuration shall be considered to comply with the applicable requirements set out in paragraph 3.1 of the Second Schedule if the test results for the applicable limit values do not

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exceed them by more than 0.10W. An additional allowance set out in paragraph 3.3 of the Second Schedule can be added to the test results if the model configuration is placed on the market with an information or status display;

- (b) the model configuration shall be considered to comply with the applicable requirements set out in paragraph 4.1 of the Second Schedule if the test results for the applicable limit values do not exceed them by more than 0.10W. An additional allowance set out in paragraph 4.3 of the Second Schedule can be added to the test results if the model configuration is placed on the market with a WOL functionality enabled in off-mode. The model configuration should be tested with WOL functionality both enabled and disabled and should comply with both requirements. The model configuration placed on the market without Ethernet capability shall be tested without WOL enabled.
- (c) if the test results referred to above are not achieved, three additional units of the same model configuration shall be tested;
- (d) after three additional units of the same model and configuration have been tested, the model configuration shall be considered to comply with the applicable requirements set out in paragraphs 3.1 and 4.1 of the Second Schedule if the average of the test results of the latter three tests for the applicable limit values does not exceed them by more than 0.10W; and
- (e) if the test results referred to above are not achieved, the model configuration and all models that are covered by the same product information mentioned in paragraphs 2 and 4 of Part Three of the Fourth Schedule shall be considered not to comply with the applicable requirements set out in paragraphs 3.1 and 4.1 of the Second Schedule.

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Internal power supply efficiency

2.3. The Commission and the Standards Authority shall test one single unit.

1. The model shall be considered to comply with the provisions set out in Part Five of the Second Schedule if
 - (a) the arithmetic average of efficiency at load conditions as defined in the Second Schedule does not fall below the applicable limit value for average active efficiency by more than two per cent; and
 - (b) the arithmetic average of the power factor defined in the Second Schedule does not fall below the applicable limit value for the power factor by more than ten per cent.
2. If the results referred to above are not achieved, three additional units of the same model shall be tested.
3. After three additional units of the same model have been tested, the model shall be considered to comply with the provisions set out in Part Five of the Second Schedule, if
 - (a) the average of the arithmetic averages of efficiency at load conditions as defined in the Second Schedule does not fall below the applicable limit value for average active efficiency by more than two per cent; and
 - (b) the arithmetic average of the power factor as defined in the Second Schedule does not fall below the applicable limit value for the power factor by more than ten per cent.
4. If the results referred to above are not achieved, the model configuration and all models that are covered by the same product

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information mentioned in paragraphs 2 and 4 of Part Three of the Fourth Schedule shall be considered not to comply with the applicable requirements set out in Part Five of the Second Schedule.

Power management enabling

2.4. For the requirements set out in paragraph 6.1 of the Second Schedule, the Commission and the Standards Authority shall use the applicable procedure to measure the power demand after the power management function, or a similar function, has switched the equipment into the applicable power mode.

2.5. For the requirements set out in paragraphs 6.2 to 6.7 of the Second Schedule, the Commission and the Standards Authority shall test one single unit as follows:

- (a) the model configuration shall be considered to comply with the applicable requirements set out in paragraph 6.2 of the Second Schedule if the speed of any active 1 Gigabit per second (Gb/s) Ethernet network links is reduced when a desktop computer, integrated desktop computer or notebook computer transitions to sleep or off-with-WOL mode;
- (b) the model configuration shall be considered to comply with the applicable requirements set out in paragraph 6.3 of the Second Schedule if a desktop computer, integrated desktop computer or notebook computer becomes fully usable, including rendering of any connected display, within 5 seconds after a wake event is initiated during sleep-mode;
- (c) the model configuration shall be considered to comply with the applicable requirements set out in paragraph 6.4 of the Second Schedule if a display connected to a desktop computer, integrated desktop computer or notebook computer enters sleep mode within ten minutes of user inactivity;

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- (d) the model configuration shall be considered to comply with the applicable requirements set out in paragraph 6.5 of the Second Schedule if a WOL function for sleep-mode and off-mode can be enabled and disabled;
- (e) the model configuration shall be considered to comply with the applicable requirements set out in paragraph 6.6 of the Second Schedule if a desktop computer, integrated desktop computer or notebook computer enters sleep-mode within thirty minutes of user inactivity;
- (f) the model configuration shall be considered to comply with the applicable requirements set out in paragraph 6.7 of the Second Schedule if users are able to easily activate and deactivate any wireless network connection and users are given a clear indication with a symbol, light or equivalent, when wireless network connection has been activated or deactivated;
- (g) if the test results referred to above are not achieved, three additional units of the same model configuration should be tested;
- (h) after three additional units of the same model and configuration have been tested, the model configuration shall be considered to comply with the applicable requirements set out in paragraphs 6.2 to 6.7 of the Second Schedule if all three of the additional units meet the requirements; and
- (i) if the results referred to above are not achieved, the model configuration and all models that are covered by the same product information mentioned in paragraphs 2 and 4 of Part Three of the Fourth Schedule shall be considered not

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to comply with the applicable requirements set out in paragraphs 6.2 to 6.7 of the Second Schedule.

The verification tolerances defined in this Schedule relate only to the verification of the measured parameters by the Commission and the Standards Authority and shall not be used by the manufacturer as an allowed tolerance on the values in the technical documentation to achieve compliance with the requirements. Declared values shall not be more favourable for the manufacturer than the values reported in the technical documentation.

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HON. DR. MATTHEW OPOKU PREMPEH
Minister responsible for Energy

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