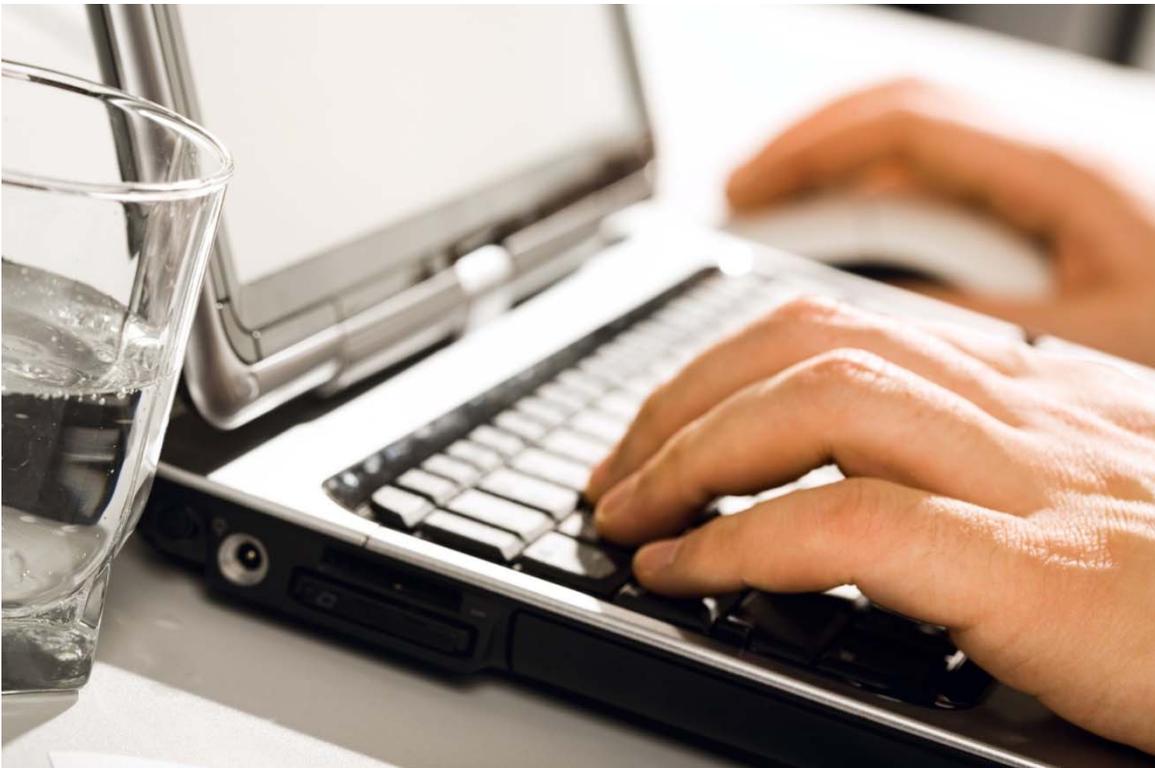


Nordic Ecolabelling of **Computers**



Version 7.4 • 23 October 2013 - 30 June 2020



Nordic Ecolabelling

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048 Computers, version 7.4, 15 December 2016

This document is a translation of an original in Swedish. In case of dispute, the original document should be taken as authoritative.

Addresses

In 1989, the Nordic Council of Ministers decided to introduce a voluntary official ecolabel, the Nordic Ecolabel. These organisations/companies operate the Nordic ecolabelling system on behalf of their own country's government. For more information, see the websites:

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It may be quoted from provided that Nordic Ecolabelling is stated as the source.

What is a Nordic Ecolabelled computer?

Nordic Ecolabelled computers meet strict environmental requirements making their environmental impact among the lowest in their category.

The environmental issues associated with computers are mainly due to power consumption but also the amount of waste produced. Since the service life of a computer is often very short, discarded computers represent a considerable waste problem. They also contain hazardous substances such as flame retardants and phthalates.

The requirements in this document, which a computer must fulfil to be awarded the Nordic Ecolabel, focus on the following aspects:

- have low energy consumption.
- do not contain harmful flame retardants.
- are free of mercury and contains a minimal amount of environmentally hazardous and harmful chemicals.
- are easy to upgrade, dismantle and recycle.
- The Nordic Ecolabel carries out on-site inspections in product development departments and factories to ensure that production follows the Nordic Ecolabelling requirements.

Why choose the Nordic Ecolabel?

- Companies selling Nordic Ecolabelled computers may use the Nordic Ecolabel trademark in their marketing. The Nordic Ecolabel is a very well-known and well-reputed trademark in the Nordic region.
- The Nordic Ecolabel is a cost-effective and simple way of communicating environmental work and commitment to customers and suppliers.
- Environmentally suitable operations prepare the manufacturer for future environmental legislation.
- Environmental issues are complex. It can take a long time and extensive resources to gain an understanding of a specific area. The Nordic Ecolabel can be seen as an aid in this work.
- Nordic Ecolabel requirements cover not only environmental aspects but also ethical production.

What can carry the Nordic Ecolabel?

This criteria document addresses computers available on the market for consumers and businesses. An ordinary computer consists of a CPU (central processing unit), a display (monitor) and a keyboard. These parts can be licensed all together or separately. There are different computer types available on the market such as desktop computers (also called stationary), notebook computers (also called portable) and tablet computers (either a notebook with a touch screen or a slate computer which is a notebook without

keyboard and with a touch screen). It is possible to license all of these. Small servers that basically are desktop computers can also be licensed. For more details see the section F about Small-Scale Servers below.

It is not possible to license peripherals, such as a mouse, an external storage (USB for example) or cables of different types etc. A standalone keyboard is exempted and can be licensed.

The following computers can be licensed.

- A. Desktop Computer (display or keyboard can also be licensed individually)
- B. Integrated Desktop Computer
- C. Notebook computer (including slate)
- D. Workstation
- E. Thin Client
- F. Small-scale Server

For definitions of the terms and computer types in this document see Annex I of this criteria.

Products not covered by the product type definitions in this document:

- Computer Servers, as defined in Energy Star Computer Server specification;
- Small-scale Servers that are marketed and sold for use in data centre
- Handheld Computers including eReaders
- Mobile Thin Clients not meeting the definition of Notebook Computer
- Game Consoles
- Mobile phones and Smartphones
- Computer accessories such as mouse, modem, docking stations, external hard drive, USB memory stick
- Cathode-ray tube (CRT) displays
- Printers (see criteria document for imaging equipment.)

How to apply

The application must comply with “Regulations for Nordic Ecolabelling” and the requirements of this document. The applicant must submit the documentation specified (with the symbol ☒) under each individual requirement in Sections 1 and 2.

Each requirement is marked with the letter O (obligatory requirement) and a number. All requirements must be fulfilled for the award of a licence.

Appendices 1-10 may be used to facilitate documentation when applying for a licence, but this is not mandatory.

Icons in the text

The text describes how the applicant shall demonstrate fulfilment of each requirement. There are also icons in the text to make this clearer. These icons are:

- ☒ Enclose
- 🔍 The requirement checked on site

Application

Applications are made to the national ecolabelling organisation and the application is valid for 12 months. Applications may be processed by another ecolabelling organisation according to agreement between the organisations. The applicant is notified of this. Companies located outside the Nordic countries make applications to the national ecolabelling organisation of the primary market.

The application must consist of a completed application form together with all of the documentation required to demonstrate compliance with the requirements specified in the criteria document (this is specified for each requirement). The application form must specify in which Nordic countries the products in question are to be sold and the estimated turnover from the products in each country.

Further information and assistance may be available. Visit the relevant national website for information.

Sales in the Nordic region

Once granted, a licence is valid throughout the Nordic region. The licence document specifies in which Nordic countries the products are sold according to the information provided on the application. The products are published on Nordic Ecolabelling's website(s). The licensee undertakes to inform Nordic Ecolabelling of any changes as to where the product is sold. If the product is to be sold in other Nordic countries than those initially specified in the application, the licensee must provide written notification of this and submit any extra documentation required to Nordic Ecolabelling in the country that issued the license.

On-site inspection

In connection with handling of the application, Nordic Ecolabelling performs an on-site inspection to ensure adherence to the requirements. For such an inspection, data used for calculations, original copies of submitted certificates, test records, purchase statistics, and similar documents that support the application must be available for examination.

Costs

An application fee is charged to companies applying for a licence. There is an additional annual fee based on the turnover of the Nordic Ecolabelled computer.

Enquiries

Please contact Nordic Ecolabelling if you have any queries or require further information. See page 3 for addresses.

1 Environmental requirements

1.1 General description

01 Description of the computer

Describe the computer and how it fulfils the definition of what can carry the Nordic Ecolabel.

- Description as specified above.

1.2 Power consumption

Power consumption for category A-F computers

This requirement is based on the energy efficiency requirements of Energy Star established by the U.S. Environmental Protection Agency and the U.S. Department of Energy. The Energy Star specifications are updated regularly. Requirements O3 and O4 below always refers to the most current version of the corresponding Energy Star specification. When a new version of an Energy Star specification is released products that have been licensed according to the previous version of the specification have to be relicensed within 6 months.

02 On/Off switch

Products in categories A-E must have a visible On/Off switch.

- Description of the On/Off switch (Appendix 1, power consumption, can be used).

03 Energy / power consumption of computer

Energy efficiency performance for desk top computers, integrated desk top computers, notebook computers, thin clients and small scale servers.

The energy efficiency performance shall fulfil the appropriate category energy efficiency requirements set out in the Agreement as amended by Energy Star version 6.

Capability adjustments allowed under the Agreement as amended by Energy Star version 6 may be applied at the same level, except in the case of discrete graphics processing units (GPUs) where no additional allowance shall be given.

Following requirements apply for Slate computers:

The AC-adaptor must fulfil at least the requirements of "International Efficiency Marking Protocol for External Power supplies" level V.

It must be possible to swap the battery. A replacement battery must be available as an option or spare part. The battery replacement can be done at a repair shop.

- The computer must be tested by a laboratory fulfilling requirement in appendix 9.
- Test report showing the fulfilment of the requirement. (Appendix 1, power consumption, can be used).

The following applies to Slate computers:

- A test report showing the fulfilment of the requirement for the external power supply.
- Declaration from the computer manufacturer that the battery requirement is fulfilled.

04 Energy / power consumption of display

The computer display's energy efficiency performance in active mode shall fulfil the energy efficiency requirements set out in Energy Star version 6.

- The display must be tested by a laboratory fulfilling requirement in appendix 9.
- Test report showing the fulfilment of the requirement. (Appendix 1, power consumption, can be used).

05 Energy efficiency of external power supply

External power supply that is sold/delivered with Nordic Ecolabelled products shall meet the performance requirements under the International Efficiency Marking Protocol for External Power Supplies and include the level V marking.

Additional information on the Marking Protocol is available at www.energystar.gov/powersupplies

Single-output External Power Supplies shall meet level V requirements when tested using the Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies, Aug. 11, 2004.

Multi-output External Power Supplies shall meet the level V requirements when tested using the EPRI 306 Generalized Internal Power Supply Efficiency Test Protocol, Rev. 6.4.2.

- The external power supply must be tested by a laboratory fulfilling requirement in appendix 9.
- Test report showing the fulfilment of the requirement. (Appendix 1, power consumption, can be used).

1.3 Design and materials

The requirements apply to all constituent substances in the product unless specified otherwise.

Ingoing substances are defined, if not otherwise mentioned, as all substances in the chemical product – including additives (e.g. preservatives or stabilisers) in the raw materials/ingredients, but not residuals from the production, incl. the production of raw materials. Residuals from production and from production of raw materials are defined as residuals, pollutants and contaminants derived from the production of the raw materials, which are present in the final product in amounts less than 100 ppm (0.0100 %w/w, 100 mg/kg), but not substances added to the raw materials or product intentionally and with a purpose – regardless of amount. Residuals in the raw materials above 1.0 % are regarded as ingoing substances. Known substances released from ingoing substances are also regarded as ingoing substances.

Declaration is made by the chemical supplier based to the best of his/her knowledge at the given time, also based on information from raw material manufacturers, recipe and available knowledge on the chemical product with reservations for new advances and new knowledge. Should such new knowledge arise, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

Design

06 Disassembly

Computers and displays must be designed in such a way that disassembly is possible. The requirement consists of the following individual requirements:

- A qualified person, working alone, must be able to disassemble the product.
- The manufacturer must ensure that disassembly of the unit is possible and compile disassembly instructions demonstrating that:
 - connections are easy to locate and access and easily separable with generally available tools.
 - connections are, where possible, standardized.

- It must be possible to separate the substances, preparations and components listed in ANNEX VII of the WEEE Directive (2012/19/EU).
 - If labels are required they shall be easily removable or integrated. This does not apply to safety labels according to CENELEC safety standard EN 60850 §1.7.2.
 - Plastic parts heavier than 25 g must be composed of one polymer or compatible polymers.
 - Plastic parts heavier than 25 g may contain metallic inlays provided that these can easily be separated without the use of special tools.
 - 90% by weight of plastics and metals in the enclosure and chassis must be technically suitable for material recovery.
- ☒ Disassembly instructions and a declaration from the manufacturer of the computer showing that the requirements are met (Appendix 2, Design, may be used).
- The ecolabelling organization may request a demonstration of disassembly, if this is considered necessary. The demonstration may take the form of a video film or an inspection visit by the ecolabelling organization. The licence applicant may also choose to arrange for a third party to verify that the product fulfils the requirements. The products that are checked must be selected randomly. The licence applicant will bear the cost of verification.*

Upgradeability

07 Upgradeability

Categories A, B, D and F computers

A category A, B, D or F computer must be modular. The user shall be able to replace the modules without the use of special tools and it shall be possible to upgrade the computer by:

- primary memory expansion
- installation, exchange and expansion of mass storage
- installation and/or exchange of CD ROM, DVD and hard disk drive
- at least one additional interface for external storage media and other peripheral devices.

Category C computers

The design of category C (excluding slate) computers must permit performance expansions (upgrades). At a minimum, the following expansions must be possible:

- primary memory expansion
- port for external monitor
- port for external keyboard and mouse
- at least one additional interface for external storage media and other peripheral devices.

For category C, slate computers, the following are required:

- primary memory (RAM) capacity shall minimum 1 GB
- storage capacity shall be minimum 18 GB
- storage expansion slot (example a SDHC slot)
- minimum 1 expansion port (contact) following industry standard for accessories
- support for external monitor, keyboard and mouse

- ☒ Declaration from the computer manufacture that the requirement is fulfilled (Appendix 3, Upgradeability, can be used).

The ecolabelling organization may request a demonstration of disassembly for upgradability, if this is considered necessary. The demonstration may take the form of a video film or an inspection visit by the ecolabelling organization. The licence applicant may also choose to arrange for a third party to verify that the product fulfils the requirements. The products that are checked must be selected randomly. The licence applicant will bear the cost of verification.

Plastics

O8 Chlorine-based plastics

The enclosure and chassis must not contain chlorine-based plastics.

- Declaration from the computer manufacturer, showing that the requirement is met (Appendix 4, Plastics, can be used).

O9 Paint and metal

Plastic parts heavier than 25 g must not be painted or metallized.

Exempted from this requirement are:

- Notebook computers.
- Fog paint with maximum 1% by weight paint per plastic part.
- Coatings made from the base polymer.

- Declaration from the computer manufacturer, showing that the requirement has been met (Appendix 4, Plastics, can be used).

O10 Marking of plastics

Plastic parts > 25 g must carry permanent labelling specifying the material in accordance with the latest versions of ISO 11469 and ISO 1043, sections 1 to 4.

This requirement does not apply to extruded plastics or light conductors in flat displays. Plastic parts covering a flat surface of less than 200 mm² are also exempted from this requirement.

- Declaration from the computer manufacturer, showing that the requirement has been met (Appendix 4, Plastics, can be used).

O11 Flame retardants in plastics

- a) The flame retardants Hexabromocyclododekan (HBCDD), tris(2-chloroethyl)phosphate (TCEP) and high chlorinated short chain and high chlorinated medium chain chloro paraffines must not be added.
- b) The flame retardant Tetrabromobisphenol-A (TBBP-A) must not be added,
- c) Other organic halogenated flame retardants and other flame retardants assigned one or more of the following risk phrases, or combinations, must not be added:
 - H350 (may cause cancer)
 - H350i (may cause cancer by inhalation)
 - H340 (may cause heritable genetic damage)
 - H360F (may impair fertility)
 - H360D (may cause harm to the unborn child).
 - H360Fd (Suspected of damaging the unborn child)
 - H360Df (Suspected of damaging fertility)

Exceptions from b) are made for printed circuit board

Exceptions from c) are made for flame retardants

- In cases where there is demand for safety reason with reference to low voltage directive 73/23/EG or standard EN 60335-1

- Printed circuit boards, PCB
- Plastic and rubber parts that weight less than 25 gram and are parts of electric components.

Exceptions are not made for flame retardants in a) or that are regulated according to RoHS-directive (2011/65/ EG).

- ☒ The manufacturer of the computer/display must provide a list of plastics used in plastic parts heavier than 25 g in the product by filling out Appendix 5 – Plastic parts >25g in computer, Computer Manufacturer's Declaration.
- ☒ The plastic manufacturer must provide a list with flame retardants used in plastic parts heavier than 25g, by filling out Appendix 6 – Flame retardants in plastics, Plastic Manufacturer's Declaration.
- ☒ The manufacturer of flame retardants, used in plastic parts heavier than 25g, must certify that the requirements are fulfilled by filling out Appendix 7 – Flame retardants, Manufacturer's Declaration and submit an MSDS for each flame retardant.

Confidential information can be sent directly to the Nordic Ecolabel.

012 Softeners/Phthalates

The external power cable delivered with the product must not contain following substances:

- Diethyl hexyl phthalate (DEHP)
- Dibutyl phthalate (DBP/DnBP)
- Butyl benzyl phthalate (BBP)
- Dicyclo hexyl phthalate (DCHP)
- Diiso butyl phthalate (DIBP)
- Diiso nonyl phthalate (DINP)
- Diiso decyl phthalate (DIDP)
- Di-n-octyl phthalate (DNOP)
- Dihexyl phthalate (DHP)
- Diethyl phthalate (DEP)
- Diiso heptyl phthalate (DIHP)
- Bis(2-methoxyethyl) phthalate
- Diiso pentyl phthalate
- N-pentyl-isopentyl phthalate

Ingoing substances are defined, if not otherwise mentioned, as all substances in the chemical product – including additives (e.g. preservatives or stabilisers) in the raw materials/ingredients, but not residuals from the production, incl. the production of raw materials. Residuals from production and from production of raw materials are defined as residuals, pollutants and contaminants derived from the production of the raw materials, which are present in the final product in amounts less than 100 ppm (0.0100 %w/w, 100 mg/kg), but not substances added to the raw materials or product intentionally and with a purpose – regardless of amount. Residuals in the raw materials above 1.0 % are regarded as ingoing substances. Known substances released from ingoing substances are also regarded as ingoing substances.

Declaration is made by the chemical supplier based to the best of his/her knowledge at the given time, also based on information from raw material manufacturers, recipe and available knowledge on the chemical product with reservations for new advances and new knowledge. Should such new knowledge arise, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

- Declaration from the cable manufacturer, Appendix 10, can be used.

O13 Nickel in metal parts

Metal parts that may come in contact with the skin during normal use of the computer must not contain nickel.

- Declaration from the manufacturer that the requirement is fulfilled.

O14 Mercury in LCD displays

Background lighting in all displays must not contain mercury.

- Declaration from the computer manufacturer that the requirement is fulfilled.

O15 Nano materials

Nano particles/materials* (from nano material), for example nano silver, nano gold and nano copper, shall not actively have been added to, or be part of, the surface of the product.

** Definition of nanomaterial follows the EC commissions definition of nanomaterial from 18 October 2011, with exception of the limit for particle size distribution which is reduced to 1 %: Nanomaterial means a natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 1% or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm - 100 nm. This definition counts for the material, also particles outside the interval 1-100 nm as long as 1 % of the material are particles of the size 1-100 nm. The definition is valid for particles in both bonded and not bonded form.*

- Declaration from the computer manufacturer that nano particles/materials have not actively been added to the surface of the product or are part of the product's surface.

O16 Nitrogen trifluoride (NF₃) and sulphur hexafluoride (SF₆) emission during LCD production

The LCD panel of a notebook or display unit must be produced in such a way that the Greenhouse gases NF₃ and SF₆, if part of the production process, are abated by a system that is an integrated part of the production process. It is the responsibility of the manufacturing company to ensure that the abatement system is installed, operated and maintained in accordance with the manufacturers (of the abatement system) specifications.

The manufacturer of the LCD panel shall declare the amount of NF₃ and SF₆ purchased in relation to amount of LCD panel (m²) produced over one year.

- Description of the abatement system for NF₃ and SF₆ gases used in the production of the LCD modules that are used in the notebook or display.

- Declaration regarding the amount of NF₃ and SF₆ purchased in relation to amount of LCD/TFT-panel from the manufacturer(s) of the LCD/TFT-panel, declared by production site.

Confidential information can be sent directly to the Nordic Ecolabel.

O17 Recycled material in packaging

When cardboard boxes are used, they shall be made of at least 50% post-consumer recycled material.

- Declaration of compliance from computer manufacturer. Only primary packaging, as defined in Directive Packaging, is subject to the requirement (Appendix 9, Packaging, may be used).

User information

018 Instructions for use

The product shall be delivered with an instruction manual which provides advice on how the product is best used from an environmental perspective.

The instructions shall include information that the product is Nordic Ecolabelled with a brief explanation of what this means together with a reference that more information about the Nordic Ecolabel can be found on the Nordic Ecolabel website.

- Copy from the instruction manual that show advice on how the device is best used from an environmental perspective.
- Copy from the instruction manual that displays information about that the product is Nordic Ecolabelled.

Performance

019 Noise emission

Computers must fulfil the requirements as to maximum (A-weighted) sound power level LwAd (bel(A)) during operation and idle mode in accordance with the following:

	Operating, LwAd	Idle mode, LwAd
Category A, B and D	4.2 bel (A)	3.8 bel (A)
Category C and E	4.0 bel (A)	3.5 bel (A)
Category F	Sound report (for information purpose)	

Operating (HDD load): The hard-disk drive is activated (RAL-UZ-78 3.2.2.1 (1) or ISO7779/A1:2001, No C.9.3.2).

E.g.: Test programme "Diskload" of all HDD with parameter: "Diskload c: -t7200 dac960_loc c:12" (c=Drive name).

Idle mode: The computer operates in Idle mode (RAL-UZ-78 3.2.2.1 (3) or ISO7779:2001, No C. 15.3.1). The OS is running, but no additional programme is started. HDD is running without I/O (only spindle motor in operation). All other devices are connected but not activated.

The sound power level of computers must be measured in accordance with ISO 7779 or RAL-UZ 78 and declared in accordance with ISO 9296. If the sound power level measurement is carried out on one appliance only the factor $K = 3.0 \text{ dB(A)}$ shall be added to the measured value. Factor K allows for measurement errors when the same device is tested using the same method at different times under different conditions and for deviations in production.

- Test report showing that the requirement is fulfilled.

2 Quality and regulatory requirements

020 Working conditions

The license holder must have a code of conduct that shows how the license holder works to ensure that human rights, labor rights, environmental protection and anti-corruption measures follow international guidelines, such as the principles of the United Nations Global Compact, read more at <http://www.unglobalcompact.org>.

The licensee shall ensure that all suppliers / subcontractors are aware of the code of conduct, and urging that these apply a code of conduct.

If the license holder violates the code of conduct the Nordic Ecolabel license can be revoked.

No documentation is required, but Nordic Ecolabelling may revoke the license if the requirement is not fulfilled.

To ensure that Nordic Ecolabel requirements are fulfilled, the following procedures must be implemented.

If the manufacturer's quality management system is certified according to ISO 9001 and environmental management system is certified according to ISO 14 001 or EMAS, the following requirements are met.

021 Nordic Ecolabel licence person

The company shall appoint a person responsible for ensuring the fulfilment of Nordic Ecolabel requirements, and a contact person for communications with Nordic Ecolabelling. Preferably, this should be one and the same person.

- Valid certificate of ISO 9001 and ISO 14001 or EMAS for all production sites for Nordic Ecolabelled products, or a chart of the company's organizational structure detailing who is responsible for the above.

022 Documentation

The licensee must be able to present a copy of the application, and factual and calculation data supporting the documents submitted on application (including test reports, documents from suppliers and suchlike).

- Checked on site.

023 Quality of the product

The licensee must guarantee that the quality in the production of the Nordic Ecolabelled computer is maintained throughout the validity period of the licence.

- Valid certificate of ISO 9001 and ISO 14001 or EMAS for all production sites for Nordic Ecolabelled products, or procedures for collating and, where necessary, dealing with claims and complaints regarding the quality of the Nordic Ecolabelled computer.

024 Service and support

The licensee shall offer the possibility of service and support in the official Nordic language where the Nordic Ecolabelled product is sold.

- Valid certificate of ISO 9001 and ISO 14001 or EMAS for all production sites for Nordic Ecolabelled products, or description of the service and support organisation.

025 Planned changes

Written notice must be given to Nordic Ecolabelling of planned changes in products and markets that have a bearing on Nordic Ecolabel requirements.

- Valid certificate of ISO 9001 and ISO 14001 or EMAS for all production sites for Nordic Ecolabelled products, or procedures detailing how planned changes in products and markets are handled.

026 Unplanned nonconformities

Unplanned nonconformities that have a bearing on Nordic Ecolabel requirements must be reported to Nordic Ecolabelling in writing and journalled.

- Valid certificate of ISO 9001 and ISO 14001 or EMAS for all production sites for Nordic Ecolabelled products, or procedures detailing how unplanned nonconformities are handled.

O27 Traceability

The licensee must have a traceability system for the production of the Nordic Ecolabelled computer and describe the development and production units used to manufacture the computer. This applies also to suppliers that produce significant parts of the computer.

- ☒ Valid certificate of ISO 9001 and ISO 14001 or EMAS for all production sites for Nordic Ecolabelled products, or description of/procedures for the fulfilment of the requirement. A chart of the company's organizational structure detailing who is responsible for the above development and production units.

O28 Take-back system

Pertinent national producer responsibility regulations, legislation and/or agreements within the sector regarding the recycling systems for products and packaging shall be met in the Nordic countries in which the Nordic Ecolabelled computer is marketed.

- ☒ Valid certificate of ISO 9001 and ISO 14001 or EMAS for all production sites for Nordic Ecolabelled products, or declaration from the applicant regarding adherence to existing recycling/take-back agreements.

O29 Laws and regulations

The licensee must guarantee adherence to safety regulations, working environment legislation, environmental legislation and conditions/concessions specific to the operations at all sites where the Nordic Ecolabelled product is manufactured.

No documentation is required, but Nordic Ecolabelling may revoke the licence if the requirement is not fulfilled.

Regulations for the Nordic Ecolabelling of products

More information about regulations, fees and graphical guidelines can be found at <http://www.svanen.se/en/For-Companies/Download/Regulations/> or at <http://www.nordic-ecolabel.org/downloads/regulations/>

Follow-up inspections

Nordic Ecolabelling may decide to check whether the computer fulfils Nordic Ecolabel requirements during the licence period. This may involve a site visit, random sampling or similar test.

The licence may be revoked if it is evident that the computer does not meet the requirements.

Random samples may also be taken in-store and analysed by an independent laboratory. If the requirements are not met, Nordic Ecolabelling may charge the analysis costs to the licensee.

How long is a licence valid?

Nordic Ecolabelling adopted version 7.0 of the criteria for computers on 23 October 2013. The criteria are valid until 31 October 2016.

On 19 February 2014 the Secretariat Manager's meeting decided to adopt a change in O12 Phthalates in external power cable. A definition of residuals in the plastics have been added to the requirement. The new version is called 7.1.

On 16 December 2014 an editorial change was made in O21, and at the same time Appendix 12 was introduced.

On 16 June 2015 the Nordic Ecolabelling's Criteria Group decided to prolong the criteria with five months. On 17 November 2014 the Board of Directors decided to remove requirement O32 Marketing. The new version is called 7.2 and are valid until 31 March 2017.

Nordic Ecolabelling decided November 5, 2015 to prolong the criteria with twenty-seven months simultaneously adopted the following changes: Requirement O18 Plastic packaging material and O21 Ergonomics was removed, Requirements O19 Instructions for use and O22 Code of Conduct were changed and the documentation requirements O23, O25 - O30 was changed. The new version is called 7.3 and it is valid until June 30, 2019.

Nordic Ecolabelling Criteria Group decided 15 December 2016 to prolong the criteria with one year. The new version is called 7.4 and it is valid until June 30, 2020.

The ecolabel licence is valid providing the criteria are fulfilled and until the criteria expire. The validity period of the criteria may be extended or adjusted, in which case the licence is automatically extended and the licensee informed.

Revised criteria shall be published at least one year prior to the expiry of the present criteria. The licensee is then offered the opportunity to renew their licence.

New criteria

In a forthcoming revision it might be of interest to take a look on some of the following requirements. The knowledge about available flame retardants increases and halogen free alternatives are developed.

In the next revision process for Computers, Nordic Ecolabelling will be focusing on the following areas:

- Energy consumption and other environmental impacts in the production phase (carbon footprints shall be evaluated)
- Additives in plastic (phthalates)
- Possibilities to exclude substances on the Candidate List of Substances of Very High Concern, Article 59(10) of the REACH Regulation from the licensed product.

The next coming revision will focus on:

- The LCD module manufacturing, emission of greenhouse gases (sulphur hexafluoride, SF6 and others)
- Requirements on the battery
- Flame retardants in plastic (alternatives, documentation / assessment of the properties)
- Nano material
- Reused/recycled plastics and Bioplastic
- Electric and magnetic fields (also from wireless communication)
- Packaging

Definition of computer and computer types

Definitions of a computer

A computer is a device which performs logical operations and processes data. For the purposes of this specification, computers include both stationary and portable units, including desktop computers, integrated desktop computers, notebook computers, small-scale servers, thin clients, and workstations. Although computers are capable of using input devices and displays, such devices are not required to be included with the computer upon shipment. Computers are composed of, at a minimum:

- a) A central processing unit (CPU) to perform operations. If no CPU is present, then the device must function as a client gateway to a server which acts as a computational CPU;
- b) User input devices such as a keyboard, mouse, or touchpad; and
- c) An integrated display screen and/or the ability to support an external display screen to output information.

Definition of a display:

A display screen and associated electronics encased in a single housing, or within the computer housing (e.g. notebook or integrated desktop computer), that is capable of displaying visual information from a computer via one or more inputs (e.g. VGA, DVI, HDMI, Display Port, IEEE 1394). Examples of computer display technologies are the cathode-ray tube (CRT) and liquid crystal display (LCD).

Different computer types

As mentioned above there are several different computer types and parts of the computer system. These are grouped into six categories, known as A-F, in this document. Computer types that comply with these definitions can be licensed.

A. Desktop Computer

A Desktop Computer is a computer whose main unit is designed to be located in a permanent location, often on a desk or on the floor. Desktop computers are not designed for portability and are designed for use with an external display, keyboard, and mouse. Desktop computers are intended for a broad range of home and office applications.

B. Integrated Desktop Computer

An Integrated Desktop Computer is a desktop computer in which the computing hardware and display are integrated into a single housing, and which is connected to AC mains power through a single cable. Integrated desktop computers come in one of two possible forms: (1) a system where the display and computer are physically combined into a single unit; or (2) a system packaged as a single system where the display is separate but is connected to the main chassis by a DC power cord and both the computer and display are powered from a single power supply.

C. Notebook computer

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. Notebook computers include an integrated display and are capable of being powered by an integrated battery or other portable power source. In addition, most notebooks use an external power supply and have an integrated keyboard and pointing device. Notebook computers are typically designed to provide similar functionality to desktops, including operation of software similar in functionality to that used in desktops.

- a) Tablet Computer: A Notebook Computer with a reversible touch-sensitive screen and a non-detachable physical keyboard. For the purposes of this specification, Tablet Computers are subject to all Notebook Computer requirements.
- b) Slate Computing Device: A computer is a Slate Computing Device if it has all of the following characteristics:
 1. either lacking a physical keyboard or has a detachable physical keyboard,
 2. relying solely on touchscreen input,
 3. having solely a wireless network connection (e.g., Wi-Fi, 3G), and
 4. primarily powered by an internal battery (with connection to the mains for charging, not primary powering of the device).
- c) Mobile Thin Client: A computer meeting the definition of a Thin Client, designed specifically for portability, and also meeting the definition of a Notebook Computer.

These products are considered to be Notebook Computers for the purposes of this specification.

D. Workstation

A high-performance, single-user computer, typically used for graphics, CAD, software development, financial and scientific applications among other compute intensive tasks. Workstations covered by this specification (a) are marketed as a workstation; (b) provide mean time between failures (MTBF) of at least 15,000 hours (based on either Bellcore TR-NWT-000332, issue 6, 12/97 or field collected data); and (c) support error-correcting code (ECC) and/or buffered memory. In addition, a workstation meets three or more of the following criterion:

1. Provides supplemental power support for high-end graphics (e.g., PCI-E 6-pin 12V supplemental power feed);
2. Wired for greater than x4 PCI-E on the motherboard in addition to the graphics slot(s) and/or PCI-X support;
3. Does not provide support for Uniform Memory Access (UMA) graphics;
4. Provides 5 or more PCI, PCI-E, or PCI-X slots;
5. Provides multi-processor support for 2 or more processors (shall support physically separate processor packages/sockets, i.e., requirement cannot be met with support for a single multi-core processor); and/or
6. Qualification by 2 or more Independent Software Vendor (ISV) product certifications; these certifications can be in process, but shall be completed within 3 months of qualification.

E. Thin Client

An independently-powered computer that relies on a connection to remote computing resources (e.g., computer server, remote workstation) to obtain primary functionality. Main computing functions (e.g., program execution, data storage, interaction with other Internet resources) are provided by the remote computing resources. Thin Clients covered by this specification are (1) limited to devices with no rotational storage media integral to the computer and (2) designed for use in a permanent location (e.g. on a desk) and not for portability.

- a) **Integrated Thin Client:** A Thin Client in which computing hardware and display are integrated into a single housing, and which is connected to ac mains power through a single cable. Integrated Thin Client computers come in one of two possible forms: (1) a system where the display and computer are physically combined into a single unit; or (2) a system packaged as a single system where the display is separate but is connected to the main chassis by a dc power cord and both the computer and display are powered from a single power supply. As a subset of Thin Clients, Integrated Thin Clients are typically designed to provide similar functionality as Thin Client systems.
- b) **Ultra-thin Client:** A computer with lesser local resources than a standard Thin Client that sends raw mouse and keyboard input to a remote computing resource and receives back raw video from the remote computing resource. Ultra-thin clients cannot interface with multiple devices simultaneously nor run windowed remote applications due to the lack of a user-discernible client operating system on the device (i.e., beneath firmware, user inaccessible).

F. Small-scale Server

A computer that typically uses desktop components in a desktop form factor, but is designed primarily to be a storage host for other computers. Small-scale Servers are designed to perform functions such as providing network infrastructure services (e.g., archiving) and hosting data/media. These products are not designed to process information for other systems or run web servers as a primary function. A Small-scale Server has the following characteristics:

- a) Designed in a pedestal, tower, or other form factor similar to those of desktop computers such that all data processing, storage, and network interfacing is contained within one box/product;
- b) Designed to operate 24 hours/day, 7 days/week, with minimal unscheduled downtime (on the order of hours/year);
- c) Capable of operating in a simultaneous multi-user environment serving several users through networked client units; and
- d) Designed for an industry accepted operating system for home or low-end server applications (e.g., Windows Home Server, Mac OS X Server, Linux, UNIX, Solaris).

Appendix 1 Power consumption (O2-O5)

If this appendix is used, the test results and the following information must also be submitted: descriptions of the test methods and details of who performed the power consumption measurements.

Type of product for which the Nordic Ecolabel is sought:

- Category A-F Type: _____
- Display External power supply

Name of product: _____

Is the product equipped with a visible and easily accessible On/Off switch? Yes No
Submit description of On/Off switch.

Category A-F

Does the product fulfil the current Energy Star specification for computers? Yes No
Is a test report demonstrating fulfilment of the requirements enclosed with the application? Yes No

Displays

Does the product fulfil the current Energy Star specification for monitors/displays? Yes No
Is a test report demonstrating fulfilment of the requirements enclosed with the application? Yes No

External power supplies

Does the external power supply meet the performance requirements under the International Efficiency Marking Protocol for External Power Supplies and include the level V marking? Yes No
Is a report demonstrating fulfilment of the requirements enclosed with the application? Yes No

Computer manufacturer:

Location and date	Phone
Company	
Contact person, signature	
Name in block capitals	

Appendix 2 Design (O6)

If this appendix is used, disassembly instructions must also be submitted.

Type of product for which the Nordic Ecolabel is sought:

- Category A-F Type: _____
- Display

Name of product: _____

The following requirements must be fulfilled:

Requirement fulfilled?

A qualified person, working alone, must be able to disassemble the product.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
The computer manufacturer must ensure that disassembly of the unit is possible and compile disassembly instructions demonstrating that: <ul style="list-style-type: none"> ▪ connections are easy to locate and access and easily separable with generally available tools. ▪ connections are, where possible, standardized. 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
It must be possible to separate the substances, preparations and components listed in ANNEX VII of the WEEE Directive (2012/19/EU).	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If labels are required they shall be easily removable or integrated. This does not apply to safety labels according to CENELEC safety standard EN 60850 §1.7.2.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Plastic parts heavier than 25 g must be composed of one polymer or compatible polymers, except for the enclosure, which shall consist of no more than two types of polymers that are separable.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Plastic parts (>25 g) may contain metallic inlays provided that these can easily be separated without the use of special tools.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
90% by weight of plastics and metals in the enclosure and chassis must be technically suitable for material recovery.	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Computer manufacturer:

Location and date	Phone
Company	
Contact person, signature	
Name in block capitals	

Appendix 3 Upgradeability (O7)

Type of product for which the Nordic Ecolabel is sought:

Category A-F Type: _____

Display

Name of product: _____

Stationary computers (Category A, B, D and F)

- Does the system unit of a stationary computer have a modular design? Yes No
- Can the user replace the modules without the use of special tools? Yes No
- Can the working memory be expanded? Yes No
- Can a mass storage device be installed, exchanged and expanded? Yes No
- Can a CD ROM, DVD or hard disk drive be installed and/or exchanged? Yes No
- Does the computer have a minimum of one additional interface for external storage media and other peripheral devices? Yes No

Notebook computers (Category C)

- Can the working memory be expanded? Yes No
- Does the notebook computer have ports for an external monitor and for an external keyboard and mouse? Yes No
- Does the computer have a minimum of one additional interface for external storage media and other peripheral devices? (Slate computer exempted) Yes No

Slate computers (Category C)

- Is primary memory (RAM) capacity minimum 1 GB? Yes No
- Is storage capacity shall be minimum 18 GB? Yes No
- Does the computer have storage expansion slot (example a SDHC slot)? Yes No
- Does the computer have minimum 1 expansion port (contact) following industry standard for accessories? Yes No
- Does the computer have support for external monitor, keyboard and mouse? Yes No

Computer manufacturer:

Location and date	Phone
Company	
Contact person, signature	
Name in block capitals	

Appendix 4 Plastics (O8, O9 and O10)

Type of product for which the Nordic Ecolabel is sought:

Category A-F Type: _____

Display

Name of product: _____

Does the enclosure or chassis contain chlorine-based plastics?

Yes

No

Have large plastic parts (> 25 g) been coated or metallized?

Yes

No

Are all plastic parts heavier than 25 g and with a surface in excess of 200 mm² labelled in accordance with ISO 11 469 or ISO 1043, sections 1 to 4?

Yes

No

Computer manufacturer:

Location and date	Phone
Company	
Contact person, signature	
Name in block capitals	

Appendix 5 Plastic parts >25 g in computer, Computer Manufacturer's Declaration

Type of product for which the Nordic Ecolabel is sought:

- Category A-F Type: _____
- Display

Name of product: _____

List of all plastic parts > 25 g in the product

Plastic Manufacturer	Trade name of plastic	Used in component

Computer Manufacturer:

Location and date	Phone
Company	
Contact person, signature	
Name in block capitals	

Appendix 6 Flame retardants in plastics, Plastic Manufacturer's Declaration

We, the manufacturer of the plastics, declare that the plastics listed below in the table do not contain other flame retardants than those declared in the same table.

Nordic Ecolabelling must be informed beforehand if any changes to the plastics are made regarding the flame retardants.

Plastic products from plastic manufacturer

Plastic's trade name	Trade name of flame retardant in plastic,	Flame retardant's CAS no.	Manufacturer of flame retardant

Plastic manufacturer:

Location and date	Phone
Company	
Contact person, signature	
Name in block capitals	

Appendix 7 Flame retardants, Manufacturer's Declaration

To be completed by the manufacturer of the flame retardant and sent to Nordic Ecolabelling.

We hereby declare that (name and CAS # of the flame retardant)

may not be assigned, at the time of application, any of the risk phrases as defined according to Regulation (EC) No 1272/2008 or as defined according to the Directives 67/548/EEC and 1999/45/EEC:

- H350 (may cause cancer)
- H350i (may cause cancer by inhalation)
- H340 (may cause heritable genetic damage)
- H360F (may impair fertility)
- H360D (may cause harm to the unborn child).
- H360Fd (Suspected of damaging the unborn child)
- H360Df (Suspected of damaging fertility)

Specify below appropriate information on the classification of the flame retardant. (The statement "No data available" is not accepted!)

Flame retardant's manufacturer:

Location and date	Phone
Company	
Contact person, signature	
Name in block capitals	

Appendix 8 Packaging (O17)

Type of product for which Nordic Ecolabel is sought:

- Category A-F Type: _____
 Display

Name of product: _____

The following requirements must be fulfilled:

Is the requirement fulfilled:

When cardboard boxes are used, they shall be made of at least 50% post-consumer recycled material.

Yes No

Computer manufacturer:

Location and date	Phone
Company	
Contact person, signature	
Name in block capitals	

Appendix 9 Requirements for the analysis laboratory

The analysis laboratory used shall be accredited standard EN ISO 17025 or have official GLP status.

The applicant's own analysis laboratory/test procedure may be approved for analysis and testing if one of the following is fulfilled:

Does the analysis laboratory hold official GLP status? Yes No

Are sampling and testing monitored by the authorities? Yes No

Has the analysis laboratory a quality management system encompassing sampling and analysis and that is certified to ISO 9001 or ISO 9002? Yes No

Can the analysis laboratory demonstrate agreement between a first-time test conducted at the manufacturer's own laboratory and testing carried out in parallel at an independent test institute? Yes No

Submit documentation that provides proof of the above.

Location and date	Phone
Company	
Contact person, signature	
Name in block capitals	

Appendix 10 Softeners/Phthalates, Manufacturer's Declaration

To be completed by the manufacturer of the cable and sent to Nordic Ecolabelling. We hereby declare, to the best of our knowledge, that the cable does not contain following substances:

- Diethylhexyl phthalate (DEHP)
- Dibutyl phthalate (DBP/DnBP)
- Benzyl butyl phthalate (BBP)
- Dicyclohexyl phthalate (DCHP)
- Diisobutyl phthalate (DIBP)
- Diisononyl phthalate (DINP)
- Diisodecyl phthalate (DIDP)
- Di-n-octylphthalate (DNOP)
- Dihexyl phthalate (DHP)
- Diethyl phthalate (DEP)
- Diisoheptyl phthalate (DIHP)
- Bis(2-methoxyethyl) phthalate
- Diisopentyl phthalate
- N-pentyl-isopentyl phthalate

Ingoing substances are defined, if not otherwise mentioned, as all substances in the chemical product – including additives (e.g. preservatives or stabilisers) in the raw materials/ingredients, but not residuals from the production, incl. the production of raw materials.

Residuals from production and from production of raw materials are defined as residuals, pollutants and contaminants derived from the production of the raw materials, which are present in the final product in amounts less than 100 ppm (0.0100 %w/w, 100 mg/kg), but not substances added to the raw materials or product intentionally and with a purpose – regardless of amount. Residuals in the raw materials above 1.0 % are regarded as ingoing substances. Known substances released from ingoing substances are also regarded as ingoing substances.

This appendix is completed and signed by the chemical supplier based to the best of his/her knowledge at the time of the application, also based on information from raw material manufacturers, recipe and available knowledge on the chemical product with reservations for new advances and new knowledge. Should such new knowledge arise, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

Cable manufacturer:

Location and date	Phone
Company	
Contact person, signature	
Name in block capitals	