

Eco Mark Product Category No.122

“Printers Version2.6” Certification Criteria

—Applicable Scope—

A. Ink jet printer, wire dot printer, and thermo sensitive printer

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Japan Environment Association
Eco Mark Office

Eco Mark Product Category No.122

“Printers Version2.6”

Certification Criteria

Category A. Ink jet printer, wire dot printer, and thermo sensitive printer

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1 . Purpose of Establishing Certification Criteria

Printers are widely used in homes and offices. Certification Criteria were established for this Product Category with the intent of reducing environmental impacts by promoting;

- The use of design for recycling, reused and resource reductions (“3R design”) or devices and consumables
- Collection and recycling of used consumables such as toner cartridges and ink cartridges (recycling of resources)
- Energy conservation during device use to reduce global warming emissions
- Reductions in auditory noise and lower volatile organic compound (VOC) emissions (, for a comfortable and healthy environment during device use)
- Limits on and reductions in the use of harmful substances

The printer market in recent years has seen several noticeable trends: steep growth in “all-in-one” multi-function printers that include functions such as copying and facsimile; an increase in the number of color electrophotographic printers, where the monochrome printers once dominated; and the emergence of new product categories, such as for printers that function without a computer and photo printers. For products in new product categories, the Eco Mark Office decided to strengthen the criteria in stages. In addition, because printers’ are distributed internationally, the Eco Mark Office also took into account international harmony with foreign eco labels.

2 . Applicable Scope

The subject of this new Eco Mark categorization mainly consists of printers commonly used in offices and families. Following the classification by the Japan Electronics and Information Technology Industries Association (JEITA), Terminology for Printer Catalogs, edition of March 2004, Category A corresponds to printers of the wire dot, thermo sensitive, and ink jet printers, and Category B corresponds to electrophotographic printer (see the “Coverage” graphic shown in Fig. 1). It also covers multifunctional devices whose main function is printing, printers that can directly receive information from a memory-card or a digital camera. It does not include ticket vending machines in stations of traffic facilities, order ticket issuing machines to serve people waiting in a queue, cash registers, and search equipment for use in medical facilities or public libraries.

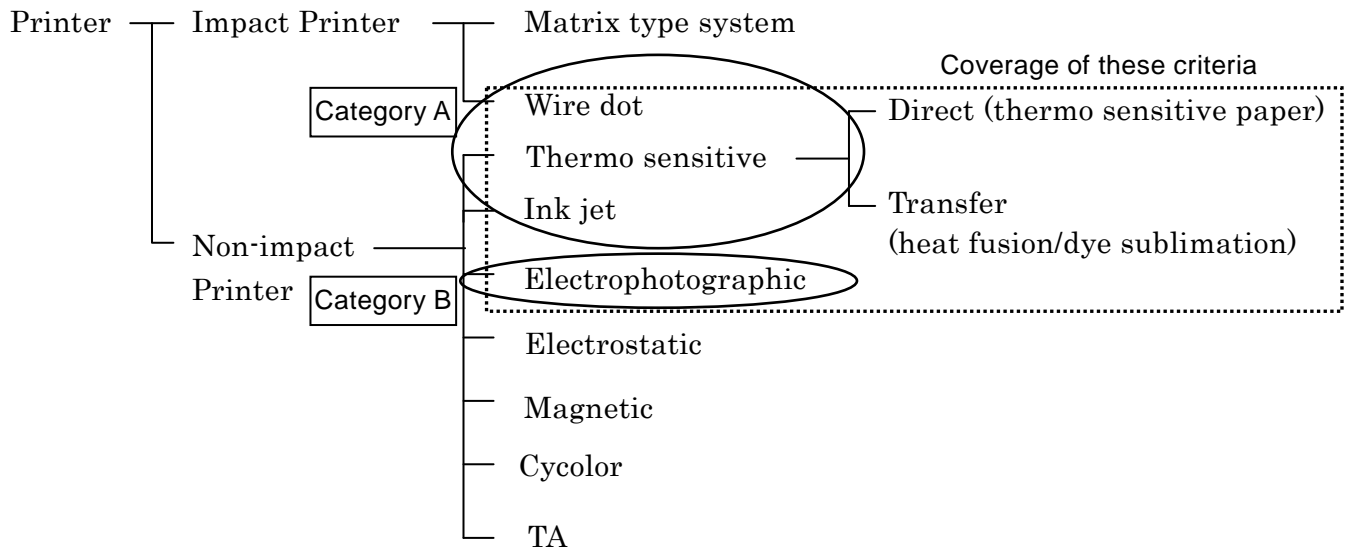


Figure 1 Applicable Scope

(from Terminology for Printer Catalogs, edition of March 2004)

3. Terminology

Ink cartridge:	A cartridge for printing filled with ink
Ink ribbon cartridge:	A cartridge for printing containing ribbon on which ink is applied
Ink module:	Ink cartridge, ink ribbon cartridge
Printing speed:	<p>For monochrome printers, the number of pages that can be printed per minute as determined according to ISO/IEC 10561:1999, though for color printers the speed is stated by each manufacturer as there is no standardized criterion. (Refer the Green Purchasing Law)</p> <p>It refers the number of sheet printed per one minute (PPM)</p> <p>For the printer which excludes a large size printer, the form with A4 size makes printing speed. Also, as for the large size printer, printing speed is computed, converting the print number per minute for the maximum size form of the concerned equipment to the copy number of A4 size form as follows.</p> <p>(1) 4 times the number of print for the form of A2 size</p> <p>(2) 8 times the number of print for the form of A1 size</p> <p>(3) 16 times the number of print for the form of A0 size</p>

Back side printing:	Printing again on a sheet of paper, of which one side is already printed, on the other side with the same machine by putting it into a paper feed tray or otherwise.
Large format printer:	A printer with a printing function for printing A2 or larger size sheets. Includes products that support continuous media having a width of 406 mm or more.
Mechanical parts:	Parts which are not included in electrical/electronics sub-assemblies and perform mechanical or optical functions (except casing, casing parts and chassis).
Casing:	External cover
Casing parts:	A part that protects a device from environmental influences and that prevents users from contacting moving, light-emitting or high-voltage components
Copolymer:	Polymers consisting of two or more types of monomers.
Recycled part:	Part for which forms or characteristics are changed by application of some kind of energy.
Recovery rate:	The mass rate of ink cartridges which have been put into the recovering process after collecting to recover the products disposed of; or the mass rate of all parts that are reused, recycled, energy recovered, conversion to oil, gasification, or subject to blast furnace reduction or conversion to chemical materials by coke oven, among the collected equipment or ink cartridges.
Reused parts:	Parts that have previously been used.
Reuse/material recycling rate:	The mass rate of all parts that are reused, and material recycled, among the ink cartridges which have been collected to recover the products disposed of, or which have been put into the recovering process after such collection.
Recycled plastic:	Plastic material made from pre-consumer materials or post-consumer materials.
Recycled plastic part:	Plastic part which contains recycled plastics.
Sub-assembly:	Assembly consisting of at least two components that are joined together in a force- or positive-fit manner.
Chassis:	Parts with functions serving as a frame to support the main parts of machines.
Prescription	Components intentionally added with the purpose of

constituents:	providing specific characteristics to the product. Impurities that inevitably enter during the manufacturing process are excluded.
Sleep mode:	When output operation isn't done continuously after the switchover into the low power mode, the secondary low power consuming condition which is continuously realized automatically without switching off the power supply.
Product Speed	<p>In general, for Standard-size products, a single A4 or 8.5" x 11" sheet printed/copied/scanned on one side in a minute is equal to one image-per-minute (ipm). If the maximum claimed speeds differ when producing images on A4 or 8.5" x 11" paper, the higher of the two shall be used.</p> <ul style="list-style-type: none"> - For Small-format products, a single A6 or 4" x 6" sheet printed/copied/scanned on one side in a minute is equal to 0.25 ipm. - For Large-format products, a single A2 sheet is equivalent to 4 ipm and one A0 sheet is equivalent to 16 ipm. - For continuous-form products categorized as Small-format, Large-format, or Standard-size, print speed in ipm should be obtained from the product's maximum marketed imaging speed in meters per minute according to the conversion below: $X \text{ ipm} = 16 \times [\text{Maximum media width (meters)} \times \text{Maximum imaging speed (length-meters/minute)}]$ <p>In all cases, the converted speed in ipm should be rounded to the nearest integer (e.g., 14.4 ipm rounds to 14.0 ipm; 14.5 ipm rounds to 15 ipm).</p> <p>For qualification purposes, manufacturers should report the speed of the product according to the prioritization of functions outlined below:</p> <ul style="list-style-type: none"> - Print Speed, unless the product cannot perform the print function, in which case, - Copy Speed, unless the product cannot perform the print or copy functions, in which case, and - Scan Speed.
Low power mode:	The low power consuming condition which is realized automatically after some non-operate time.
Electrical/electronic sub-assembly:	Assembly which include at least one electronic or electric part.
Battery:	A primary or secondary battery. A primary battery is no longer used once its charge is exhausted, while a secondary battery can be recharged for repeated use.
Multi Functional Printer (MFP):	A machine having a printing function as one of its standard features plus one or more of copying, scanning or facsimile

	functions.
Plastic:	Material composed of single or multiple polymers, plus additives, fillers, etc. which are added to the polymer(s) to give specific characteristics.
Printer:	A machine having function as its standard features which presuppose connection to a personal computer via a parallel port, USB interface or network interface. It may also perform direct printing via a memory card or some other medium.
Pre-consumer material:	Materials or defective products generated from the disposal route of manufacturing process. However, this excludes those recycled within the same process as the raw material (same plant).
Spare part:	Part for maintenance and repair to keep the functions/performance of a product.
Post-consumer material:	Materials or products disposed after used as a product.
Homopolymer:	Single polymer. Polymers consisting of one type of monomer.
Polymer:	High molecular material which is the main constituent of plastic.
Polymer alloy (Polymer blend):	General name of multi component polymers obtained by the chemical binding of the polymers of more than two components. Polymer blend is the physical blending of different types of polymers.
Material recycling:	Recycling of material, excluding the recovery of energy, conversion to oil, gasification, blast furnace reduction, conversion to chemical materials by coke oven.
Double side printing:	Automatic printing on both sides of a sheet of paper.
Stack form:	A continuous long strip of paper for computer print-out use. It may be perforated at regular intervals to facilitate folding into a box shape.
3R design check list:	The checklist to require the design to take the concept of 3R (Reuse, Reduce, Recycle) into consideration. The checklist consists of three requirement groups such as "Structure

	and joining technique”, “Selection and marking of materials” and “longevity” and the items are grouped by M-requirement and S-requirement.
M-requirement:	In the 3R design checklist, the requirement which must all be met, as same as the criterion in the criteria document.
S-requirement:	In the 3R design checklist, the requirement which should be met, however, do not influence the outcome of the certification even if it is not realized. S-requirement is positioned as item, which needs to be discussed at the time of criteria revision, and has the role to convey environmental targets to consumers and applicants.

4. Certification Criteria and Certification Procedure

The corresponding boxes in the Attached Certificates shall be checked/filled in, stamped with the applicant company seal and submitted.

General rule: analysis and testing bodies shall be run in accordance with ISO/IEC 17025 (not essential to be certified) (corresponding JIS Q17025: 2000). Applicants shall bear the expenses for preparing documents and for the analyses.

Special requirements, if performed at the laboratories of manufacturers: if competent authorities are monitoring the sampling and analysis process, if the analyses and tests are authorized, or if the manufacturer has developed a quality system for sampling and analysis and has received the ISO 9001 (corresponding JIS Q9001: 2000) certification, or if the manufacturer has ISO 9001-compliant internal regulations concerning its quality system for sampling and analysis and performs measurements in line with those internal regulations, the laboratory of the manufacturer is authorized to perform analysis and tests.

For the product using the certified product of the Product Category No. 142 “Ink Cartridge Version 1”, the Applicant can indicate the “Certification No.” of the applicable product in the Attached Certificates for the certification of the Certification Criteria 4-1. (13) to (20) and (25).

4-1. Environmental Criteria and Certification Procedure

4-1-1 3R Design of Equipment

(1) Equipment shall conform to Attachment 2 “3R Design of Equipment and Consumables”.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. Requirements shall be included in Attachment 2 “3R Design of Equipment and Consumables” and submitted.

- (2) Plastic casing parts over 25g shall be made of one homopolymer or copolymer. Polymer blends (polymer alloy) are permitted.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. The applicant shall submit a document and list (Example A) of plastic materials used.

- (3) Plastic casing parts over 25g shall be made of four or fewer types of mutually separable polymers or polymer blends. If labels, markings, stickers, etc. are difficult to separate, they must be made of the same material with the plastic parts on which they are put, or must not be the obstacle for recycle of the plastic parts on which they are put. .

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. The applicant shall submit a document and list (Example A) of plastic materials used, and a document describing whether labels, markings, stickers etc, are easy to separate in case that labels, markings, stickers, etc. are put on the corresponding plastic casing parts.

4-1-2 Requirements for plastic materials

- (4) Polybrominated biphenyl (PBB), polybrominated diphenyl ether (PBDE) or chlorinated paraffin (having a chain of 10 to 13 carbon atoms and a chlorine concentration of 50% or more) are not added to plastic casing parts and printed circuit boards as prescription constituents.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

- (5) Plastic additives and pigments which contain lead, cadmium, mercury or chromium (VI) shall not be added as prescription constituents.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

- (6) Any one of parts weighing more than 25 g shall be recycled plastic parts or reused plastic parts at the least. In case to use recycled plastic parts, the specifications for the following items a. to c. shall be reported.
- a. Name of the recycled plastic parts
 - b. Weight of the recycled plastic parts
 - c. Ratio of the recycled plastic (It shall be the value in design; for example, X%, X-X%, X% or more.)

[Certification Procedure]

Certificate. Compliance with this item shall be indicated in the Attached Certificate. If recycled plastic parts are used, the specifications for items “a” to “c” shall be reported. Upon request of the Eco Mark Office, the applicant shall comply with a hearing regarding the percentage of recycled plastic parts used in the product, the type of recycled plastic (one’s product-recovery post-consumer material, open post-consumer material, pre-consumer material), etc.

- (7) Polymer containing halogen shall not be used for casing plastic parts weighing over 25g. In addition, organohalogen compounds as flame retardants shall not be added as prescription constituents.

However, this criterion shall not apply to the following a. or b.:

- a. When any one of the following four is applicable:
 - *Fluoroorganic additives used for improving the physical properties of plastics, provided they are not present in concentrations greater than 0.5 weight percent.
 - *Fluorinated plastics like for example PTFE, etc.
 - *Special plastic parts which are installed in the direct vicinity of heating and fusing units
 - *Large plastic casing parts made of plastic which are demonstrably reused and marked in accordance with (10).
- b. This criterion shall not apply to products meeting requirements 1 and 2 in the following Attached Table 1 (Criteria).

Attached table 1 (Criteria)

1	<ul style="list-style-type: none"> • There should be a collection system of used products: printers included in this product category or MFDs whose main function is a printer. The <i>collection rate</i>^{*1} shall be reported. Here, the collection rate is the rate of the <i>same product group</i>^{*2} for the most recent period of one year.
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	<ul style="list-style-type: none"> • Among the plastic casing parts obtained from the collected products, which contain brominated flame retardants, 95% or more of the total mass shall be recovered and 50% or more shall be material recycled. <p><For the calculation></p> <ul style="list-style-type: none"> *Duration : the most recent one-year period *Denominator: the total mass of all casing plastic parts containing the brominated flame retardant, which are collected during above period. *Numerator: the total mass of casing plastic parts including the brominated flame retardants, which are recovered and material recycled by both of the manufacturer and the third parties who are involved. <p>In the calculation of the recovery or material recycling rate, the consolidated figure for all product groups applying for Ecomark certification can be used instead of the figures for each <i>same product group</i>.</p>
2	One or more plastic casing parts that weigh 50 g or more should be the recycle plastic part. The proportion of <i>collected plastics in the closed-loop</i> ^{*3} within these parts shall be 10% or more.

*1 Collection rate	Denominator: the number of printers in each <i>same product group</i> shipped for the most recent one year period. Numerator: the number of printers in each <i>same product group</i> collected for the most recent one year period, which must be the same period as the denominator calculation.
*2 Same product group	Group of products classified as a single category according to indices such as printing speed.
*3 Collected plastics in the closed-loop	Used casing plastic parts which contain brominated flame retardant. Such casing plastic parts shall be obtained from the used products which are collected in the closed-loop system managed by the manufacture itself. The scope of products consists of that of No. 117 Copier and No. 122. Printer.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, the list of plastic materials used (Example A) shall be submitted indicating the manufacturer of the raw material, and whether polymers containing halogens, organic halogenides, substances indicated in 4-1(9) and the CAS number of the flame retardants used are added. If the CAS numbers cannot

be submitted, information may be included according to the ISO1043-4: 1998 (JIS K 6899-4: 2000) code number system. For products excluded from requirements in Table 1 (Criteria) in 4-1(7) and (9), certification documents prescribed in 1 and 2 in the following=Attached Table 1 (Certification Procedure) shall be submitted.

Attached table 1 (Certification Procedure)

- 1 Certification documents indicating A to D below shall be submitted.
 - A. Outline of collection and material recycling mechanisms (required items are A-1 to -6 as follows)
 - A-1: Description of collection flow (Diagrams, etc. should be used)
 - A-2: Description of treatment flow (Diagrams, etc. should be used)
 - A-3: Applicable collection and recycling districts
 - A-4: List of collectors and companies handling recovery and material recycling (including intermediate disposal companies)
 - A-5: Provision of information to users (to certify that adequate information is provided to users through instruction manuals/ labeling on products)
 - Whether users (persons requesting collection) are charged collection and treatment fees
 - Contact number to request collection
 - Indication that used products are collected/recycled after use
 - A-6: Management system
 - Tracking method of collection and treatment results
 - If introducing the collection/disposal company, notifying these companies
 - Explanation of how instructions are given
 - Management of collection and disposal status (storage of records, etc.)
 - B. Description how to determine whether products are of the ***same product group***, and list of products belonging to the ***same product group***
 - C. Results of calculating the ***collection rate*** (indicate denominator and numerator values) and applicable period
 - D. Results of calculating recovery and material recycling (indicate denominator and numerator values), applicable period, products included in calculation (categorize by product group)

For successive products without collection history, in addition to A and B, C

	<p>and D shall be submitted concerning the <i>same product group</i> to which the original product belongs. For new products released less than a year ago, in addition to A and B, C and D shall be submitted concerning the product group considered as the <i>same product group</i>.</p> <p>*Applicants may be asked to submit reports on the collection, recovery and material recycling rates after the agreement on use has been entered (or an audit may be conducted) and applicants are required to give full cooperation.</p>
2	<p>A list of the parts applicable and the name, weight, and proportion of the collected plastic in the closed-loop of each product shall be indicated in the certification document.</p>

- (8) For flame retardants used as prescription components in casing plastic parts weighing above 25g, report their names and CAS numbers. However instead of reporting their names and CAS numbers, description conforming to the description method of “ISO1043-4: 1998 (equivalent JIS standard JIS6899-4: 2000)” code number may be submitted.

Also, report the research status (or CAS No., if used) on the use or no-use of relevant flame retardant classified as SVHC (Substances of Very High Concern) by the REACH regulation.

In addition, this criterion shall not apply to the following;

*Large plastic casing parts made of plastic which are demonstrably reused and marked in accordance with (10).

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, documents described in 4-1-2 (7)[Certification Procedure] shall be submitted

In addition, the research status (or CAS No., if used) on the use or no-use of relevant flame retardant classified as SVHC (Substances of Very High Concern) by the REACH regulation shall be entered in the description example A

- (9) Casing plastic parts weighing over 25g shall not contain, as prescription constituents, substances classified as hazardous in the EU, substances classified as

*Carcinogenic: EC Category Carc.1-3

*Mutagenic: EC Category Mut.1-3 and

*Toxic to reproduction: EC Category Repr. 1-3

in accordance to Annex 1 of the EC Directive 67/548/EEC on the approximating laws, regulations, and administrative rules on hazardous substances classifications packaging and labeling.

However, this criterion shall not apply to the following:

*Fluoroorganic additives used for improving the physical properties of plastics, provided they are not present in concentrations greater than 0.5 weight percent.

*Fluorinated plastics like for example PTFE, etc.

*Special plastic parts which are installed in the direct vicinity of heating and fusing units

*Large plastic casing parts made of plastic which are demonstrably reused and marked in accordance with (10).

Furthermore, for products meeting requirements 1 and 2 of Attached Table 1 (Criteria) in 4-1-2 (7), the use of antimony trioxide (equivalent to carcinogenic substance category 3) is approved.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, documents described in 4-1-2 (7)[Certification Procedure]shall be submitted

- (10) Plastic parts shall be marked according to ISO11469 (corresponding JIS standard JIS K 6999: 2004) and in compliance with ISO1043/Parts 1 to 4. (corresponding to JIS standard JISK6899 1-4). However, this need not apply to the parts with weight less than 25g or flat area less than 200mm², or using reused plastics.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. The applicant shall submit the marked parts list for the plastic (Example 1) upon request of the Eco Mark Office.

4-1-3 Battery

- (11) Batteries used shall not contain cadmium, mercury, lead, and their compounds as prescription constituents.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

- (12) Batteries installed in an equipment shall be able to replaced or removed, without removing a printed circuit board, etc. on which the batteries are mounted, when they reach the end of their life or at repair.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

4-1-4 Ink

- (13) With regard to heavy metal contained in the ink, cadmium, lead, mercury, chromium(VI), nickel and their compounds shall not be included as prescription constituents. However, this excludes complex compounds of high molecular weight nickel that are included as a coloring agent.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate, and lists issued by ink suppliers on whether the corresponding substances are added (Example 2) shall be submitted.

- (14) With regard to azo colorants (dyes and color pigments) in the ink, those which may release amines listed in Table 1 due to the reduction of one or more azo groups (according to analysis methods regulated by the official test method corpus based on the German Law on Foods and Sundries Article 35:Amtliche Sammlung Von Untersuchungsverfahren nach 35 LMBG) shall not be used.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, documents described in 4-1-4 (13)[Certification Procedure]shall be submitted.

Table 1 Amines list (according to EU Assembly/Council Directive 2002/61/EC)

	Substances	CAS No.
1	4-aminobiphenyl	92-67-1
2	Benzedrine	92-87-5
3	4-chloro- <i>o</i> -toluidine	95-69-2
4	2-naphthylamine	91-59-8
5	<i>o</i> -aminoazotoluene	97-56-3
6	2-amino-4-nitrotoluene	99-55-8
7	<i>p</i> -chloroaniline	106-47-8
8	2,4-diaminoanisole	615-05-4
9	4,4'-diaminodiphenylmethane	101-77-9
10	3,3'-dichlorbenzidine	91-94-1
11	3,3'-dimethoxybenzidine	119-90-4
12	3,3'-dimethylbenzidine	119-93-7
13	4,4'-diamino-3,3' -dimethyldiphenylmethane	838-88-0
14	<i>p</i> -cresidine	120-71-8
15	4,4'-Methylene-bis - (2-Chloroaniline)	101-14-4

16	4,4'-oxydianiline	101-80-4
17	4,4'-4-Aminophenyl Sulfide Bis	139-65-1
18	<i>o</i> -toluidine	95-53-4
19	2,4-diaminotoluene	95-80-7
20	2,4,5-trimethylaniline	137-17-7
21	<i>o</i> -anisidine	90-04-0
22	4-amino- azo- benzen	60-90-3

(15) Other hazardous substances related to ink shall not contain the following (“a.” to “c.”) substances as prescription constituents:

a. The following substances which need to be labelled as “R” in accordance with Annex I of the EC Commission Directive 67/548/EEC, which deals with the comparison of laws, regulations and administrative rules on hazardous substances classifications, packaging, and labelling in the EU.

*R40 (Limited evidence of a carcinogenic effect)

*R45 (May cause cancer)

*R46 (May cause heritable genetic damage)

*R49 (May cause cancer by inhalation)

*R60 (May impair fertility)

*R61 (May cause harm to the unborn child)

*R62 (Possible risk of impaired fertility)

*R63 (Possible risk of harm to the unborn child)

*R68 (Possible risk of irreversible effects)

b. Substances required to be marked by a specified hazard symbol as a whole product pursuant to Annex II, in Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances; and pursuant to Directive 1999/45/EC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous preparations.

c. Substances required to be marked by R43 (May cause sensitization by skin contact) as a whole product pursuant to Annex III, in Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, documents described in 4-1-4 (13)[Certification Procedure](Example 2) shall be submitted.

(16) Ink shall give a negative result in the Ames test.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. According to the Law concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances, a report of the results of the Ames test shall be submitted.

The report shall include the following items:

- Name of the testing institute
- Name of the tested substances
- Testing period
- Used strain
- Test result

(17) Products shall be equipped with the ink MSDS (Material Safety Data Sheet).

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate and MSDS issued by the toner supplier shall be submitted.

4-1-5 Ink cartridges and Ink ribbon cartridges

(18) Ink cartridges and Ink ribbon cartridge shall comply with “3R Design of Equipment and Consumables” of Attachment 2.

[Certification Procedure]

Compliance with this item, type of consumables and model number shall be indicated in the Attached Certificate. Required particulars shall be indicated in Attachment 2 “3R Design of Equipment and Consumables” and submitted.

(19) Polybrominated biphenyl (PBB), polybrominated diphenyl ether (PBDE) or chlorinated paraffin (having a chain of 10 to 13 carbon atoms and a chlorine concentration of 50% or more) are not added to plastic parts of ink cartridges and ink ribbon cartridges as prescription constituents.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

(20) Plastic additives and pigments which contain lead, cadmium, mercury or chromium (VI) shall not be added to plastic parts of ink cartridges and ink ribbon cartridges as prescription constituents.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

(21) Collection systems shall be available for ink cartridges.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

Certificates describing the ink cartridge collection system shall be submitted.

(22) Systems shall be available to material-recycle for ink cartridges. Reuse/material recycling rate of collected parts against overall product (ink cartridges) weight (ink cartridges excluding ink) shall be computed and known annually.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

Certificate describing ink cartridge material recycling system shall be submitted.

Annual reuse/material recycling rate shall be reported in compliance with the request of the Eco Mark Office.

(23) The recovery rate of collected ink cartridges shall be more than 95% of the overall product weight (excluding ink). Parts which cannot be recovered shall be processed or disposed by environmentally sound methods.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate and documents describing the recovery rate and that environmentally sound disposal systems are available (processing ability, details of processing, etc.) shall be submitted.

(24) The product documentation shall indicate the following information on the use of ink cartridges or ink ribbon cartridges (“a.” to “d.”) clearly.

a. Proper handling

b. Measures in case the ink adhere to hand or enter eyes or mouth accidentally

c. The ink cartridges and ink ribbon cartridges must be kept out of the reach of children.

d. Discarding/collection method after use

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. Copies of the corresponding portions of product documentation shall also be submitted.

- (25) Plastic parts of ink cartridges and ink ribbon cartridges must be made of one monomer or copolymer. Polymer blends (polymer alloys) are permitted. If labels, markings, stickers, etc. are difficult to separate, they must be made of the same material with the plastic parts on which they are put, or must not be the obstacle for recycle of the plastic parts on which they are put. .

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. The applicant shall submit a document and list (Example 3) of plastic materials used, and a document describing whether labels, markings, and stickers, etc., are easy to separate, and their materials, in case that labels, markings, stickers, etc., are put on the corresponding plastic parts.

4-1-6 Volatile organic compound (VOC)

- (26) Total volatile organic compounds (TVOC) emitted during printer operation shall be measured, and records of measured values shall be kept. The measurement method shall be based on that described in Appendix 2 of Blue Angel (RAL-UZ-122:2006) and other conditions shall be in compliance with Table 2.

For color equipment, TVOC values measured during both color printing and monochrome printing shall be submitted. If the emission rate during the color printing phase is less than or equal to 10 mg/h, measurement during the monochrome printing phase is not required.

Here, TVOC is the total of concentrations of identified and unidentified volatile organic compounds, which elute between n-hexane to n-hexadecane, inclusive of these compounds during gas chromatographic separation on a nonpolar column measured by gas chromatograph analysis based on Appendix 2 to the RAL-UZ-122:2006.

[Certification Procedure]

Compliance with this item and the date measurements were completed shall be indicated in the Attached Certificate. In addition, the applicant shall, at the request of the Eco Mark Office, submit a certificate to show conformance to the measuring method defined by the Blue Angel (RAL-UZ-122:2006) (Example 4) and the actual result of the measurement. If the emissions of the fastest model in a series are equal to or less than 10 mg/h, equivalent or slower models in the same series do not require testing.

The name and address of the analysis test center as well as conformance to ISO 9001(corresponding criteria JIS Q9001: 2000) or ISO/IEC17025 (corresponding criteria JIS Q17025: 2000) shall also be indicated.

Table 2 Measurement conditions for emission tests

Type	Sheet	Test text
Ink-jet large format or small equipment	A4 or the largest size that can be printed by the product	Use A4 test text or enlarge/compress the A4 test text into the largest size that can be printed by the product
Wire dot	A4 or the widest size of the stack form	Use A4 test text or enlarge/compress into the size that complies to the widest stack form that can be printed by the product

4-1-7 Paper

~~(27) The equipment must be able to use at least one or more types of recycled paper with 100% recycled pulp while satisfying company quality control requirements. However, thermo sensitive printers, printers which accept stack form, large format printers and printers which only accept photo paper/postcards are excluded.~~

~~[Certification Procedure]~~

~~Compliance with this item and the names of the paper manufacturer and product brand shall be indicated in the Attached Certificate. Furthermore, a compliance certificate indicating that the recycled pulp content is 100%, issued by the paper manufacturer shall be submitted.~~

4-1-7 System for repair, supply of maintenance parts

(27) Repair subcontract systems shall be available, and repairs shall be carried out as requested by the users (repair system). The following information on the repair systems shall be provided:

- a. repair services are available;
- b. Scope of repair (details of services), repair time, costs, how services are provided to users, etc.

~~[Certification Procedure]~~

~~Compliance with this item shall be indicated in the Attached Certificate. In addition, copies of product documentation showing that the proper system is~~

available (processing ability, information service details indicated in criteria, etc.) shall be copied and submitted.

(28) Supply of the spare parts shall be continued for five years after production of the copier stops.

[Certification Procedure]

Compliance with this item shall be indicated in the attached certificate, and the applicant shall submit copies of product documentation indicating the matters related to this item.

4-1-8 Packaging materials

(29) Plastic materials used for packaging products shall not use the specific CFCs (five types), other CFCs, carbon tetrachloride, trichloroethane, and HCFCs described in Table 3.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

Table 3 Substances prescribed in (29)

CFC5s	Trichlorofluoromethane	HCFCs	Pentachlorofluoropropane
	Dichlorodifluoromethane		Tetrachlorodifluoropropane
	Trichlorotrifluoroethane		Trichlorotrifluoropropane
	Dichlorotetrafluoroethane		Dichlorotetrafluoropropane
	Chloropentafluoroethane		Chloropentafluoropropane
Other CFCs	Chlorotrifluoromethane		Tetrachlorofluoropropane
	Pentachlorofluoromethane		Trichlorodifluoropropane
	Tetrachlorodifluoroethane		Dichlorotrifluoropropane
	Heptachlorofluoropropane		Chlorotetrafluoropropane
	Hexachlorodifluoropropane		Trichlorofluoropropane
	Pentachlorotrifluoropropane		Dichlorodifluoropropane
	Tetrachlorotetrafluoropropane		Chlorotrifluoropropane
	Trichloropentafluoropropane		Dichlorofluoropropane
	Dichlorohexafluoropropane	Chlorodifluoropropane	
	Chloroheptafluoropropane	Chlorofluoropropane	
	Carbon Tetrachloride		
	1,1,1-Trichloroethane		
HCFCs	Dichlorofluoromethane		
	Chlorodifluoromethane		
	Chlorofluoroethane		
	Tetrachlorofluoroethane		
	Trichlorodifluoroethane		
	Dichlorotrifluoroethane		
	Chlorotetrafluoroethane		

Trichlorofluoroethane
Dichlorodifluoroethane
Chlorotrifluoroethane
Dichlorofluoroethane
Chlorodifluoroethane
Chlorofluoroethane
Hexachlorofluoropropane
Pentachlorodifluoropropane
Tetrachlorotrifluoropropane
Trichlorotetrafluoropropane
Dichloropentafluoropropane
Chlorohexafluoropropane

(30) Plastic materials used for packaging of products shall not be composed of halogen containing polymers and organic halogenides as prescription constituents.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

(31) The packaging of products shall give consideration to ease of resource conservation, reuse, and recycling.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, the packaged state of products, packaging materials, raw materials used for these packaging, details for realizing resource saving, reuse, and recycling easily shall be indicated specifically (drawings and photographs can be used).

4-1-9 Energy consumption

(32) Machine energy consumption shall comply with Attachment 3. Definitions, criteria, test procedures, notes and so forth are as stipulated in ENERGY STAR Program Requirements for Imaging Equipment / ENERGY STAR Program Requirements for Imaging Equipment Version 1.1. However, conformance with each criteria shown in Attachment 4 can be acceptable until June 30th, 2010.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate and the applicant shall submit a certificate (Example 11) by each applying equipment complying with Attachment 3 (Attachment 4 for applications up to June 30th, 2010). If submission is difficult at the time of application, a signed consent form indicating that "a certification indicating conformance to Attachment 3 (Attachment 4 for applications up to June 30th, 2010) should be submitted for each equipment applying for certification by the time the Eco Mark agreement on use

is entered, and if criteria are not met, the agreement should not be entered” shall be submitted.

The name and address of the analysis test center as well as conformance to ISO 9001 (corresponding criteria JIS Q9001: 2000) or ISO/IEC17025 (corresponding criteria JIS Q17025: 2000) shall also be indicated in the Attached Certificate.

(33) Power consumption shall not exceed 2 W when the switch is off.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

4-1-10 Noise

(34) The noise emission shall be measured in accordance with the method specified in ISO 7779 (corresponding JIS X 7779: 2001), and the declared A-weighted sound power level “ L_{WAd} ” shall be determined in accordance with ISO 9296 (corresponding JIS X 7778: 2001). The declared A-weighted sound power level “ L_{WAd} ” during monochrome operation and color operation by a color equipment shall satisfy Table 10. However, for the phase of color operation, the declared A-weighted sound power level “ L_{WAd} ” can be submitted as reference values by May 31, 2008.

Color patterns prescribed in JBMS-74-1 shall be used for color printing.

This requirement is not applicable to products whose PPM >70 and ink-jet large format devices. However, as a reference value, the declared A-weighted sound power level “ L_{WAd} ” based on the same method shall be submitted.

For ink-jet and thermo-sensitive large size equipment, the PPM may be counted on an A4 basis (by Energy Star). For ink-jet and thermo-sensitive small equipment, the PPM (monochrome and color) may also be counted on an A4 basis.

PPM for ink jet systems may be decided by each manufacturer.

[Certification Procedure]

The applicant shall submit a certificate (Example 4) including the declared A-weighted sound power level “ L_{WAd} ” determined in accordance with ISO 9296 (corresponding JIS X 7778) after being measured in accordance with the method specified in ISO 7779 (corresponding JIS X 7779). For the Blue Angel certified products, the applicant shall submit a certificate (Examples 4) including the declared A-weighted sound power level “ L_{WAd} ” determined in accordance with ISO9296 (corresponding JIS X7778) based on the actual measured values obtained using the method described in 3.5 of RAL-UZ122:2005 or 3.2.2 of RAL-UZ-62/114:2003.

If submission is difficult at the time of application, a signed consent form indicating that “a certification indicating the declared A-weighted sound power level “ L_{WAd} ” determined in accordance with ISO9296 (corresponding JIS X7778) based on the actual measured values should be submitted by the time the Eco Mark agreement on use is entered, and if criteria are not met, the agreement should not be entered” shall be submitted.

The name and address of the analysis test center as well as conformance to ISO 9001(corresponding criteria JIS Q9001: 2000) or ISO/IEC17025 (corresponding criteria JIS Q17025: 2000) shall also be indicated in the Attached Certificate.

Table 4 Criteria for noise

	Declared A-weighted sound power level “ L_{WAd} ” (B)	
	Monochrome	Color
Ink jet printer, thermo sensitive printer	$\leq 0.035 * S_{bw} + 5.9$ and ≤ 7.5	Parallel equipment : $\leq 0.03 * S_{co} + 6.1$ and ≤ 7.5
Wire dot printer	≤ 7.2	-

S_{bw} : Operating speed in pages per minute for monochrome printing

S_{co} : Operating speed in pages per minute during color printing

4-1-11 Reduction of quantity of paper consumption

- (35) Equipment must have the function which enables to reduce the quantity of paper consumption (compression printing, back side printing).

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

4-1-12 Product Documentation

- (36) Instruction manuals (user manuals) provided to users shall conform to the following “a.” and “b”.

- a. The binding method shall not impede waste paper recycling.

However, use of hot melt adhesive is approved.

- b. Chlorine gas shall not be used in the bleaching process of waste paper pulp.

~~c. The percentage of waste paper in the pulp mixture shall be over 70%~~

However, product documentation printed overseas may conform to “a”.

~~d. The paper must have a waste paper pulp content of at least 30%~~

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

(37) User information on the following: “a.” to “e.” shall be provided in the product documentation.

- a. Installation conditions for machinery
- b. Information on collection, material recycling or disposal of ink cartridges and on disposal of ink ribbon cartridges, etc.
- c. Information on collection, reuse, material recycling, recovery or disposal as the waste of secondary batteries after use
- ~~d. Information that at least one type of recycled paper made using 100% recycled pulp can be used (excluding printers supporting stack form, large format printers, and printers accepting only photo paper/postcards)~~
- d. The equipment has a function capable of reducing the amount of printing paper used.
- e. Detailed product information other than product documentation (electronic media, etc.) is available.

[Certification Procedure]

Compliance with this item (information on the use of secondary batteries for each equipment type) shall be indicated in the Attached Certificate. Copies of appropriate portions of product documentations including user information shall be submitted. If submission is difficult at the time of application, a signed consent form indicating that “a copy of documents attached with the product should be submitted for each corresponding part by the time the Eco Mark agreement on use is entered, and if criteria are not met, the agreement should not be entered” shall be submitted.

4-1-13 Manufacturing criteria

(38) Specific chlorofluorocarbons (5 CFCs), other CFCs, carbon tetrachloride, trichloroethane, and HCFCs listed in Table 4 shall not be used in the final manufacturing stage, final supply stage of products and circuit boards, and during cleaning of parts for reuse.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

(39) In manufacturing the applied product, related environmental laws and regulations and pollution control agreement (hereinafter referred to as the “Environmental Laws, etc.”) must be followed with respect to air pollution, water contamination, noise, offensive odor, and emission of hazardous materials in the area where the plant performing the final manufacturing process is

located.

In addition, the state of compliance with the Environmental Laws, etc. for the last five years from the date of application (whether there is any violation) must be reported. If there is any violation, it is necessary that proper remedies and preventive measures have been already taken, and the related Environmental Laws, etc. must thereafter be followed appropriately.

[Certification Procedure]

With respect to the compliance with the Environmental Laws, etc. in the area where the plant performing the final manufacturing process is located, a certificate issued by the representative of the business of manufacturing the applied product or the manager of the relevant plant (entry or attachment of the list of names of the Environmental Laws, etc.) must be submitted. (Example 6)

In addition, it is necessary to report whether there is any violation during the last five years, including a violation subject to administrative punishment or administrative guidance, and if there is, the following documents in a and b must be submitted:

- a. With respect to the fact of violation, guidance documents from administrative agencies (including order of correction and warning) and copies of written answers (including those reporting causes and results of correction) to such documents (making a series of progress clear);
- b. Following materials (copies of recording documents, and so on) concerning the management system for compliance with the Environmental Laws, etc. in 1)-5):
 - 1) List of the Environmental Laws, etc. related to the area where the plant is located;
 - 2) Implementation system (organizational chart with entry of roles, etc.);
 - 3) Document stipulating retention of recording documents;
 - 4) Recurrence prevention measures (future preventive measures);
 - 5) State of implementation based on recurrence prevention measures (result of checking of the state of compliance, including the result of onsite inspection).

4-1-14 Chemical substance management

(40) Contents of lead, mercury, cadmium and these compounds, and chromium (VI) compound, polybrominated biphenyl (PBB), Polybrominated diphenyl ether (PBDE) in Ecomark Products shall be below the reference value of Table A.1 in Annex A (specific chemical substance, chemical symbol, substance to be calculated and reference value of percentage of content) of JIS C 0950: 2008 (the marking for presence of the specific

chemical substances for electrical and electronic equipment) . Regarding items allowed to exceed the reference value shall pursue Annex B in JIS above. In addition, accessories and others shall pursue JIS C 0950: 2008.

However this criterion does not apply to any recycled or reuse components.

[Certification Procedure]

The Applicant shall state in the Attached Certificate the conformity or not of the product to this criteria and confirmation method.

4-2 Quality Criteria and Certification Procedure

None.

5. Product Category, Indication and Others

- (1) The product classification shall be identified for each model or each series of models. When it is identified for each series of models, the application may be made only once on condition that each model of the product in a series satisfies the criteria.
- (2) The statement appearing below the Eco Mark shall be following environmental information. The location and details of the Eco Mark to be indicated shall be submitted when applying for Eco Mark product certification and use. The environmental information indicated shall be enclosed in a rectangular box, and (3R and Energy Conservation Design)”shall be indicated. The following shows an example. However, for only certified products of Eco Mark Product Category No. 122 “Printers”, the past description below the Eco Mark and certification number can be indicated



XXXX Ltd. (Authorized Eco Mark Holder)

Eco Mark Certification Number

No. XXXX (Indication of numbers only is allowed)

- (3) The Eco Mark labeling method shall be used in accordance with Eco Mark Use Regulations Article 7 separately prescribed based on the Guidelines for Eco Mark Program Implementation.

- (4) In principle, the products to be applied shall be free of “flame retardant”, “antibacterial agent” materials and “biodegradable plastic” indication. When using these materials reasoning special circumstances, however, the products shall satisfy the provisions contained in the “Eco Mark Business Execution Guideline” concerning “flame retardant”, “antibacterial agent” and “indication of biodegradable plastic”. Specifically, the use of these materials shall be described in the form “Application for Eco Mark Product Certification/Use” with documents stipulated in the form to be attached.

May 5, 2007	Established (Version2.0)
August 2, 2007	Revised (4-1-2.(7) Version2.1)
February 14, 2008	Revised (Paper, 4-1-12. (36) (37) Version2.2)
June 9, 2008	Revised B. Electrophotographic printer (4-1-6 (28) (29) (30): Exempted equipment, Version2.3)
August 21, 2008	Revised (4-1-13(39), Version 2.4)
April 28, 2009	Revised (4-1-9(32), 4-1-10(34), Version 2.5)
January 1, 2010	Revised(4-1-2(5)(8),4-1-5(20), 4-1-10(34), 4-1-14(40) Version 2.6)
April 30, 2014	Validity period

The certification criteria of this product category will be revised as necessary.

Attachment 1

Corresponding table for the Certification Criteria of the No.122 “Printer Version 2 A” and the No.142 “Ink cartridge Version 1 A”

Eco Mark No.122 Printer Ver.2 (A)	Eco Mark No. 142 Ink cartridge Ver.1 (A)
4-1-1 (1)	-
4-1-1 (2)	-
4-1-1 (3)	-
4-1-2 (4)	-
4-1-2 (5)	-
4-1-2 (6)	-
4-1-2 (7)	-
4-1-2 (8)	-
4-1-2 (9)	-
4-1-2 (10)	-
4-1-3 (11)	-
4-1-3 (12)	-
4-1-4 (13)	4-1-1 (1)
4-1-4 (14)	4-1-1 (2)
4-1-4 (15)	4-1-1 (3)
4-1-4 (16)	4-1-1 (4)
4-1-4 (17)	4-1-1 (5)
4-1-5 (18)	4-1-2 (6)
4-1-5 (19)	4-1-2 (8)
4-1-5 (20)	4-1-2 (9)
4-1-5 (21)	-
4-1-5 (22)	-
4-1-5 (23)	-
4-1-5 (24)	-
4-1-5 (25)	4-1-2 (7)
4-1-6 (26)	-
4-1-7 (27)	-
4-1-7 (28)	-
4-1-8 (29)	-
4-1-8 (30)	-
4-1-8 (31)	-
4-1-9 (32)	-
4-1-9 (33)	-
4-1-10 (34)	-
4-1-11 (35)	-
4-1-12 (36)	-
4-1-12 (37)	-
4-1-13 (38)	-
4-1-13 (39)	-
4-1-14 (40)	-

Attachment 2**Checklist for 3R Design of Equipment and Consumables**

A. Ink jet printer, wire dot printer, and thermo sensitive printer

Items

The checklist consists of the following three requirement groups:

- Structure and Connection Technology
- Material Selection and Marking
- Longevity

Applicable Scope

The requirements apply to certain sub-assemblies of basic unit of equipment and consumables:

Subassemblies	consist at least two components linked by power or design
Case parts	protect the built-in parts from environmental effects and user from getting into contact with moving, radiating, or current-carrying components.
Electronic modules (and parts)	include at least one electric or electronic component.
Mechanical parts	are not contained in electronic modules. Their functions are either mechanical or optical (except for case and chassis).
Ink modules	Ink cartridges and ribbon cartridges

Category Classification

Any requirements are classified as either "M" or "S".

M-Requirement	Requirements which must be met
S-Requirement	Requirements which should be met

Compliance with 3R Design

It is determined that equipment and consumables comply with the 3R design requirements if they meet the items listed in the checklist.

Applicant :

Device type designation :

Consumables :

Annex 1

Materials, preparations and components that are to be handled selectively

At least the following materials, preparations and components must be removed from separately collected used electronic equipment.

- PCB containing (PCB: polychlorinated biphenyls) capacitors according to Directive 96/59/EC on the removal of polychlorinated biphenyl and polychlorinated terphenyl compounds (PCB/PCT)
- Mercury-containing components like lamps for background lighting;
- Batteries;
- Printed circuit boards if the surface of the printed circuit board is larger than 10 square centimetres;
- Toner modules, powdery, paste-like and liquid toners including colour toners;
- Plastic parts that contain brominated flame retardants;
- Liquid crystal displays (with the casing, where applicable) with a surface of more than 100 square centimeters;
- External electric power lines;
- Electrolyte capacitors that contain critical materials (height; >25mm; diameter: >25mm or similar proportionate volumes):

These materials, preparations and components are to be disposed of or recycled in accordance with Article 4 of Directive 75/442/EEC.

Checklist for 3R design of equipment/ consumables -GroupA Ink jet, dot impact and thermo sensitive equipment-

"M"-requirements, which must be met

Requirement group	No	Requirement	Applies to subassembly(-ies)	Compliance?	Remarks	Purpose
Structure and joining technique	1	Are subassemblies made of mutually incompatible materials separable, or connected by separation aids?	Case parts, chassis, electric/electronic subassemblies	Yes / No		Promoting reuse and recycling
	2	Are electric/electronic subassemblies and components easy to find and separate?	Entire unit, including lumps	Yes / No		Facilitating parts search
	3	Disassembly for recycling can be done with universal tools exclusively	Case, chassis, electric/electronic subassemblies	Yes / No	"Universal tools" refers to widely used, commercially available tools. This requirement dose not apply to connections where legal regulations have influenced the choice of joining technique.	Facilitating disconnection
	4	Necessary points of application and working space for disassembly tools have been taken into consideration?	Case parts, chassis, electric/electronic subassemblies	Yes / No	"The points of engagement" refers to the places to transmit forces to connection elements by tools.	Facilitating disconnection
	5	Screwed connections between modules can be separated with no more than three tools.	Case parts, chassis, electric/electronic subassemblies	Yes / No	Tools can be distinguished by drive type (for example, cross-head slots) and drive size (for example, tool size).	Facilitating disconnection
	6	Disassembly can be done by a single person.	Entire unit	Yes / No	For example, if an undercut angle is 90 degrees or greater, any number of snap-fit joints that snap-fit in the same direction can be fit together simultaneously, but disconnecting them is not always possible. This requirement is considered not satisfied if three or more snap-fit joints cannot be simultaneously disconnected.	Facilitating dismantling
	7	Case parts are free from electronic subassemblies. Control element attached to the case and case parts which simultaneously perform the functions of the chassis are not considered as case parts.	Case parts	Yes / No		Promoting reuse and recycling
	8	The manufacturer did a trial dissembly(e.g. according to 1-7 and prepared a test report focusing on the weak-points	Entire unit	Yes / No		
Selection and marking of materials	9	The variety of materials forming plastic components performing comparable functions are limited to one material. This requirement shall not apply to parts that have been reused as can be proved.	Case parts, chassis, > 25 g	Yes / No	For instance, "similar functions" refer to impact resistance and abrasion resistance.	Promoting reuse and recycling
	10	(a) The coating of plastic components has been limited to the minimum necessary. Laser-produced labelings shall not be considered as printings. This requirement shall not apply to parts that have been reused as can be proved. If "No" in this item, (b) shall be conformed.	Case parts, ink modules	Yes / No	Coating includes layers of paint, vacuum-deposited layers and print. "Considerations for reducing environmental burden" includes the measures to control VOC emission into the air, such as the removal equipment, the devices in coating process, or replacement by low-VOC paint.	Promoting reuse and recycling
		(b) Coating works have been conducted with considerations for occupational safety and health and reducing environmental burden.	Case parts, ink modules	Yes / No		
		If "Yes" in (a) or (b), it is considered to conform this requirement.				
	11	Materials can be reused as materials, and materials are assembled such that they can be separated.	Case parts, chassis	Yes / No	"Can be reused as materials" means that recycled material identical to the starting material can be manufactured. (It can be used as if it were the original material.) This item asks the intention and purpose upon desiging and does not ask wheter recycling is actually conducted.	Promoting reuse and recycling
	12	Components and materials under Annex 1 can be easily exchanged	Entire unit			Promoting reuse and recycling
	13	Plastic parts >25g and >200mm ² (flat area) are marked in accordance with ISO11469:2000(corresponding standard JIS K6999:2004).	Entire unit	Yes / No		Promoting reuse and recycling
14	Material selection according to 9-13 has been done and recorded in writing.	Case parts, chassis	Yes / No			
Longevity	15	At least 50% of the components* of the device,except for standard parts, are identical in desigh to those in other devices of the same manufacturer and the same performance category and generation.	Entire unit	Yes / No		Promoting commonization of parts
	16	Ink modules can be reproduced	Ink modules	Yes / No	Reuse should not be prevented by constructive measures.	Promoting reuse and recycling

"S"-requirements, which should be met -GroupA Ink jet, dot impact and thermo sensitive equipment-

Requirement group	No	Requirement	Applies to subassembly(-ies)	Compliance?	Remarks (placed only if necessary)	Purpose
Structure and joining technique	1	Separable connections are easily traceable.	Case parts, chassis	Yes / No		Facilitating parts search
	2	All connection elements to be separated for recycling purposes are axially accessible	Case parts, chassis, electric modules	Yes / No		Facilitating disconnection and taking out of parts
	3	At least 50% of the separable connections between plastic components are plug/snap connections.	Case parts	Yes / No		Facilitating disconnection
	4	The supporting surface can be maintained during the entire disassembly work	Unit to be handled	Yes / No	The supporting surface refers to the product surface for wrecking company to work on. This requirement enables to indirectly check whether or not there is hierarchical structure. Unit to be handled refers to the unit which exceeds 5 kg, or can be turned over in case of less than 5kg.	Facilitating dismantling
Selection and marking of materials	5	Components made of the same sort of plastics are dyed uniformly or compatibly. Integrated control elements shall be exempt from this requirement.	Case parts, ink modules	Yes / No	"Compatible dyeing" stands for different shades of one color(e.g. grey and anthracite).The colors for dyeing of toner modules are limited due to shade purpose and the integrity with case parts of entire unit is not required.	Promoting reuse and recycling
	6	The proportional use of recycled plastic materials is permitted.	Case parts, chassis, ink modules	Yes / No	"Permitted" means the use of recyclable material is permitted as long as such material meets the requirements provided in the specifications and is available. "Proportional" means some available plastic components are appropriate. (This does not require all available components.)	Promoting reuse and recycling
	7	Does recycled material account for at least 5% of the total plastic weight?	Case parts, cases of toner module	Yes / No	"Total plastic weight" means the total weight of all applicable plastic parts. "Recycled material" means recycled plastic pellets, not plastic parts that include recycled plastics. The source of recycled pellets does not matter. In other words, the recycled plastic does not have to be from recycled pellets obtained from parts used in printers or copiers; it can be from other products on the market.	Promoting reuse and recycling
Longevity	8	The use of reprocessed modules or components is possible and permissible.	Entire unit	Yes / No	Referring to that spare/ETN(Equivalent to new) parts must be prepared for reuse under manufacturer's responsibility	Promoting reuse and recycling
	9	Ink modules(except ribbon) of individual colors can be exchanged separately	Ink modules	Yes / No		Reducing environmental burden

Attachment 3

Criteria concerning energy consumption

Printers and MFPs shall comply with Table 1 or Table 2. Definitions, criteria, test procedures, notes and so forth are as stipulated in ENERGY STAR Program Requirements for Imaging Equipment / ENERGY STAR Program Requirements for Imaging Equipment Version 1.1.

Definitions on Marking Technologies

Direct Thermal (DT)	A marking technology that transfers an image by burning dots onto coated media as it passes over a heated print head. DT products do not use ribbons.
Dye Sublimation (DS)	A marking technology where images are formed by depositing (subliming) dye onto the print media based upon the amount of energy delivered by the heating elements.
Impact	A marking technology characterized by the formation of the desired hard copy image by transferring colorant from a “ribbon” to the media via an impact process. Two types of impact technology are Dot Formed Impact and Fully-formed Impact.
Ink Jet (IJ)	A marking technology where images are formed by depositing colorant in small drops directly to the print media in a matrix manner. Color IJ is distinguished from monochrome IJ in that more than one colorant is available in a product at any one time. Typical types of IJ include Piezo-electric (PE) IJ, IJ Sublimation, and Thermal IJ.
High Performance IJ	The use of an IJ marking technology in high-performance business applications usually occupied by electrophotographic marking technology. This difference between the conventional IJ product and the High Performance IJ product is denoted by the presence of nozzle arrays that span the width of a page and/or the ability to dry the ink on the media through additional media heating mechanisms.
Solid Ink (SI)	A marking technology where the ink is solid at room temperature and liquid when heated to the jetting temperature. Transfer to the media can be direct, but is most often made to an intermediate drum or belt and then offset printed to the media.
Thermal Transfer (TT)	A marking technology where the desired hard copy image is formed by depositing small drops of solid colorant (usually colored waxes) in a melted/fluid state directly to the print media in a matrix manner. TT is distinguished from IJ in that the ink is solid at room temperature and is made fluid by heat.

Table 1 - TEC Approach

Product Area	Marking Technology	Size Format	Monochrome	Color
Printers	High Performance IJ	Standard	Table A	Table A
	Direct Thermal	Standard	Table A	—
	Dye Sublimation	Standard	Table A	Table A

	Solid Ink	Standard	–	Table A
	Thermal Transfer	Standard	Table A	Table A
Multifunction Devices (MFD)	High Performance IJ	Standard	Table B	Table B
	Direct Thermal	Standard	Table B	–
	Dye Sublimation	Standard	Table B	Table B
	Solid Ink	Standard	–	Table B
	Thermal Transfer	Standard	Table B	Table B

Table 2 - OM Approach

Product Area	Marking Technology	Size Format	Monochrome	Color
Printers	Direct Thermal	Large	Table C-1	–
	Direct Thermal	Small	Table C-2	–
	Dye Sublimation	Large	Table C-1	Table C-1
	Dye Sublimation	Small	Table C-2	Table C-2
	Impavct	Large	Table C-1	Table C-1
	Impavct	Small	Table C-2	Table C-2
	Impavct	Standard	Table C-3	Table C-3
	Ink Jet	Large	Table C-6	Table C-6
	Ink Jet	Small	Table C-2	Table C-2
	Ink Jet	Standard	Table C-4	Table C-4
	Solid Ink	Large	–	Table C-1
	Solid Ink	Small	–	Table C-2
	Thermal Transfer	Large	Table C-1	Table C-1
	Thermal Transfer	Small	Table C-2	Table C-2
Multifunction Devices (MFD)	Direct Thermal	Large	Table C-5	–
	Dye Sublimation	Large	Table C-5	Table C-5
	Ink Jet	Standard	Table C-4	Table C-4
	Ink Jet	Large	Table C-6	Table C-6
	Solid Ink	Large	–	Table C-5
	Thermal Transfer	Large	Table C-5	Table C-5

<TEC Approach>

Table A Criteria on Printers

Monochrome		Color	
Monochrome Product	Maximum TEC (kWh/week)	Monochrome Product Speed	Maximum TEC (kWh/week)

Speed (ipm)		(ipm)	
$x \leq 15$	≤ 1.0 kWh	$x \leq 32$	$\leq (0.10 \text{ kWh/ipm}) x + 2.8 \text{ kWh}$
$15 < x \leq 40$	$\leq (0.10 \text{ kWh/ipm}) x - 0.5 \text{ kWh}$	$32 < x \leq 58$	$\leq (0.35 \text{ kWh/ipm}) x - 5.2 \text{ kWh}$
$40 < x \leq 82$	$\leq (0.35 \text{ kWh/ipm}) x - 10.3 \text{ kWh}$	$58 < x$	$\leq (0.70 \text{ kWh/ipm}) x - 26.0 \text{ kWh}$
$82 < x$	$\leq (0.70 \text{ kWh/ipm}) x - 39.0 \text{ kWh}$		

x = Monochrome Product Speed (ipm).

Table B Criteria on MFD

Monochrome		Color	
Monochrome Product Speed (ipm)	Maximum TEC (kWh/week)	Monochrome Product Speed (ipm)	Maximum TEC (kWh/week)
$x \leq 10$	≤ 1.5 kWh	$x \leq 26$	$\leq (0.10 \text{ kWh/ipm}) x + 3.5 \text{ kWh}$
$10 < x \leq 26$	$\leq (0.10 \text{ kWh/ipm}) x + 0.5 \text{ kWh}$	$26 < x \leq 62$	$\leq (0.35 \text{ kWh/ipm}) x - 3.0 \text{ kWh}$
$26 < x \leq 68$	$\leq (0.35 \text{ kWh/ipm}) x - 6.0 \text{ kWh}$	$62 < x$	$\leq (0.70 \text{ kWh/ipm}) x - 25.0 \text{ kWh}$
$68 < x$	$\leq (0.70 \text{ kWh/ipm}) x - 30.0 \text{ kWh}$		

x = Monochrome Product Speed (ipm).

<OM Approach>

Table C-1 Criteria concerning maximum default delay times to sleep mode, power consumption in sleep mode and in standby (W) for large format printers_
Marking technology: Color DS, Color impact, Color TT, DT, Monochrome DS, Monochrome Impact, Monochrome TT, SI

Monochrome Product Speed (ipm)	Maximum Default Delay Times to Sleep(minutes)	Sleep (W)	Standby(W)
$0 < \text{ipm} \leq 30$	≤ 30	≤ 14	≤ 1
$31 \leq \text{ipm}$	≤ 60		

Table C-2 Criteria concerning maximum default delay times to sleep mode, power consumption in sleep mode and in standby (W) for small format printers.
Marking technology: Color DS, DT, Color IJ. Color Impact, Color TT, Monochrome DS, Monochrome IJ, Monochrome Impact, Monochrome TT, SI

Monochrome Product Speed (ipm)	Maximum Default Delay Times to Sleep(minutes)		Sleep (W)	Standby(W)
	MFDs	Printers		
$0 < \text{ipm} \leq 10$	≤ 15	≤ 5	≤ 9	≤ 1
$11 \leq \text{ipm} \leq 20$	≤ 30	≤ 15		
$21 \leq \text{ipm} \leq 30$	≤ 60	≤ 30		
$31 \leq \text{ipm}$	≤ 60	≤ 60		

Table C-3 Criteria concerning maximum default delay times to sleep mode, power consumption in sleep mode and in standby (W) for standard printers

Marking technology: Color Impact, Monochrome Impact,

Monochrome Product Speed (ipm)	Maximum Default Delay Times to Sleep(minutes)	Sleep (W)	Standby(W)
$0 < \text{ipm} \leq 10$	≤ 5	≤ 4.6	≤ 1
$11 \leq \text{ipm} \leq 20$	≤ 15		
$21 \leq \text{ipm} \leq 30$	≤ 30		
$31 \leq \text{ipm}$	≤ 60		

Table C-4 Criteria concerning maximum default delay times to sleep mode, power consumption in sleep mode and in standby (W) for standard MFDs and standard printers

Marking technology: Color IJ, Monochrome IJ,

Monochrome Product Speed (ipm)	Maximum Default Delay Times to Sleep(minutes)		Sleep (W)	Standby(W)
	MFDs	Printers		
$0 < \text{ipm} \leq 10$	≤ 15	≤ 5	≤ 1.4	≤ 1
$11 \leq \text{ipm} \leq 20$	≤ 30	≤ 15		
$21 \leq \text{ipm} \leq 30$	≤ 60	≤ 30		
$31 \leq \text{ipm}$	≤ 60	≤ 60		

Table C-5 Criteria concerning maximum default delay times to sleep mode, power consumption in sleep mode and in standby (W) for large format MFDs.

Marking technology: Color DS, Color TT, DT, Monochrome DS,

Monochrome EP, Monochrome TT, SI

Monochrome Product Speed (ipm)	Maximum Default Delay Times to Sleep(minutes)	Sleep (W)	Standby(W)
$0 < \text{ipm} \leq 30$	≤ 30	≤ 30	≤ 1
$31 \leq \text{ipm}$	≤ 60		

Table C-6 Criteria concerning maximum default delay times to sleep mode, power consumption in sleep mode and in standby (W) for large format MFDs and large format printers.

Marking technology: Color IJ, Monochrome IJ

Monochrome Product Speed (ipm)	Maximum Default Delay Times to Sleep(minutes)	Sleep (W)	Standby(W)

$0 < \text{ipm} \leq 30$	≤ 30	≤ 15	≤ 1
$31 \leq \text{ipm}$	≤ 60		

Note on Table C

- 1) The corresponding allowances below should be added to the marking engine criteria for Sleep. The total value for the base product with applicable “functional adders” should be used to determine eligibility. Manufacturers may apply no more than three Primary functional adders to each product model, but may apply as many Secondary adders as present (with Primary adders in excess of three included as Secondary adders).
- 2) Default Delay Time Requirements: Products must meet the default-delay time settings provided in Tables C-Annex below for each product type, enabled upon product shipment. In addition, all OM products must be shipped with a maximum machine delay time not in excess of four hours, which is only adjustable by the manufacturer. This maximum machine delay time cannot be influenced by the user and typically cannot be modified without internal, invasive product manipulation. The default-delay-time settings provided in Tables C may be user adjustable.

Table C-Annex functional-adder allowances for the maximum power consumption of sleep mode

Type	Details	Functional Adder Allowances (W)	
		Primary	Secondary
Interfaces	A. Wired < 20 MHz	0.3	0.2
	A physical data- or network-connection port present on the imaging product that is capable of a transfer rate < 20 MHz. Includes USB 1.x, IEEE488, IEEE 1284/Parallel/Centronics, RS232, and/or fax modem.		
	B. Wired ≥ 20 MHz and < 500 MHz	0.5	0.2
	A physical data- or network-connection port present on the imaging product that is capable of a transfer rate ≥ 20 MHz and < 500 MHz. Includes USB 2.x, IEEE 1394/FireWire/i.LINK, and 100Mb Ethernet.		
	C. Wired ≥ 500 MHz	1.5	0.5
	A physical data- or network-connection port present on the imaging product that is capable of a transfer rate ≥ 500 MHz. Includes 1G Ethernet.		
	D. Wireless	3.0	0.7
	A data- or network-connection interface present on the imaging product that is designed to transfer data via radio-frequency wireless means. Includes Bluetooth and 802.11.		
	E. Wired card/camera/storage	0.5	0.1
	A physical data- or network-connection port present on the imaging product that is designed to allow the connection of an external device, such as flash memory-card/smart-card readers and camera interfaces (including PictBridge).		
G. Infrared	0.2	0.2	
A data- or network-connection interface present on the imaging product that is designed to transfer data via infrared technology. Includes IrDA.			

Other	Storage	—	0.2
	Internal storage drives present on the imaging product. Includes internal drives only (e.g., disk drives, DVD drives, Zip drives), and applies to each separate drive. This adder does not cover interfaces to external drives (e.g., SCSI) or internal memory.		
	Scanners with CCFL lamps or non-CCFL lamps	—	0.5
	The presence of a scanner that uses Cold Cathode Fluorescent Lamp (CCFL) technology or a technology other than CCFL, such as Light-Emitting Diode (LED), Halogen, Hot-Cathode Fluorescent Tube (HCFT), Xenon, or Tubular Fluorescent (TL) technologies. This adder is applied only once, regardless of the lamp size or the number of lamps/bulbs employed.		
	PC-based system (cannot print/copy/scan without use of significant PC resources)	—	-0.5
	This adder applies to imaging products that rely on an external computer for significant resources, such as memory and data processing, to perform basic functions commonly performed by imaging products independently, such as page rendering. This adder does not apply to products that simply use a computer as a source or destination for image data.		
	Cordless handset	—	0.8
	The capability of the imaging product to communicate with a cordless handset. This adder is applied only once, regardless of the number of cordless handsets the product is designed to handle. This adder does not address the power requirements of the cordless handset itself.		
	Memory	—	1.0 W per 1 GB
	The internal capacity available in the imaging product for storing data. This adder applies to all volumes of internal memory and should be scaled accordingly. For example, a unit with 2.5 GB of memory would receive an allowance of 2.5 W while a unit with 0.5 GB would receive an allowance of 0.5 W.		
	Power-supply (PS) size, based on PS output rating (OR) Note: This adder ONLY applies to products which fall under Tables C-4 and C-3.	—	For PSOR > 10 W, 0.02 x (PSOR - 10 W)
	This adder applies to only those imaging products which fall under Tables C-4 and C-3. The allowance is calculated from the internal or external power supply's rated DC output as specified by the power supply manufacturer. (It is not a measured quantity). For example, a unit that is rated to provide up to 3 A at 12 V has a PSOR of 36 W and would receive an allowance of $0.02 \times (36 - 10) = 0.02 \times 26 = 0.52$ W of power supply allowance. For supplies that provide more than one voltage, the sum of power from all voltages is used unless the specifications note that there is a rated limit lower than this. For example, a supply which can supply 3A of 24 V and 1.5 A of 5 V output has a total PSOR of $(3 \times 24) + (1.5 \times 5) = 79.5$ W, and an allowance of 1.39 W.		

For the adder allowances shown in Table above, distinctions are made for “Primary” and “Secondary” types of adders. These designations refer to the state in which the interface is required to remain while the imaging product is in Sleep. Connections that remain active during the OM test procedure while the imaging product is in Sleep are defined as Primary, while connections that can be inactive while the imaging product is in Sleep are defined as Secondary. Most functional adders typically are Secondary types.

Manufacturers should consider only the adder types that are available on a product in its as-shipped configuration. Options available to the consumer after the product is shipped or interfaces that are present on the product's externally-powered digital front-end (DFE) should not be considered when applying allowances to the imaging product.

For products with multiple interfaces, these interfaces should be considered as unique and separate. However, interfaces that perform multiple functions should only be considered once.

For example, a USB connection that operates as both 1.x and 2.x may be counted only once and given a single allowance. When a particular interface may fall under more than one interface Type according to the Table C - attached Table, the manufacturer should choose the function that the interface is primarily designed to perform when determining the appropriate adder allowance. For example, a USB connection on the front of the imaging product that is marketed as a PictBridge or “camera interface” in product literature should be considered a Type E interface rather than a Type B interface. Similarly, a memory-card-reader slot that supports multiple formats may only be counted once. Further, a system that supports more than one type of 802.11 may count as only one wireless interface.

Criteria concerning power consumption

(Attachment 4 is applicable for the products applied by June 30th, 2010)

1. Ink jet and wire dot printers, and ink jet MFPs shall comply with each criteria shown in Table a.
2. Ink jet and wire dot large format printers and large format MFPs shall comply with each criteria shown in Table b.
3. Thermo sensitive printers shall comply with the criteria shown in Table d.
4. Thermo sensitive monochrome MFPs shall comply with each criteria shown in Table d.
5. Thermo-sensitive color MFPs shall comply with each criteria shown in Table e.

Definitions, criteria, test procedures, notes and so forth are as stipulated in ENERGY STAR Program Requirements for Imaging Equipment / ENERGY STAR Program Requirements for Imaging Equipment Version 1.0.

Table a. Criteria concerning maximum default delay times to sleep mode, power consumption in sleep mode, and power consumption in standby mode for ink jet printers, wire dot printers, and ink jet MFPs

	Sleep-mode delay time		Power consumption in sleep mode		Power consumption during standby
	Printer	MFP	Ink jet printer, MFP	Impact printer	
$0 \leq \text{ipm} \leq 10$	5 min.	15 min.	3W	6W	With Fax:2W W/O Fax:1W
$11 \leq \text{ipm} \leq 20$	15 min.	30 min.			
$21 \leq \text{ipm} \leq 30$	30 min.	30 min.			
$31 \leq \text{ipm}$	60 min.	60 min.			

Table b. Criteria concerning maximum default delay times to sleep mode and power consumption in sleep mode for large-format printers and MFPs

	Delay time	Power consumption in sleep mode	
		Wire dot printer	Ink jet printer, MFP
$0 \leq \text{ipm} \leq 30$	30 min.	54W	13W
$31 \leq \text{ipm}$	60 min.		

Notes for Tables a,b:

- 1) For products that meet the Sleep-mode power consumption requirements in Ready mode, no further automatic power reductions are required to meet the Sleep criterion. Additionally, for products that meet the Standby power requirements in Ready or Sleep mode, no further power reductions are required to earn the ENERGY STAR.
- 2) All products must be shipped with a maximum machine delay time not in excess of four

- hours, which is only adjustable by the manufacturer. This maximum machine delay time cannot be influenced by the user and typically cannot be modified without internal, invasive product manipulation. The default delay time settings may be user adjustable
- 3) For products to be shipped with functions such as network connections, the allowances corresponding to the function types listed in Table a,b-Annex should be added to the criteria for power consumption in Sleep, listed in Tables a,b. The total value for the base product with applicable "functional adders" should be used. Manufacturers may apply no more than three Primary functional adders to each product model, but may apply as many Secondary adders as are present (with Primary adders in excess of three included as Secondary adders). The interfaces on products with more than one interface are considered to be unique and separate. However, interfaces that perform more than one function count as only one interface.

Table a,b-Annex Functional Adder Allowances for Maximum Power Consumption in Sleep Mode

	Type	Examples	Primary adder allowance (W)	Secondary adder allowance (W)
1	A physical data- or network-connection port (interface) that is capable of a transfer rate of < 20 MHz	USB1.x,IEEE488, IEEE 1284/Parallel/Centronics, RS232	0.3	0.2
2	A physical data- or network-connection port (interface) capable of a transfer rate of \geq 20 MHz and < 500 MHz	USB2.x, IEEE1394/FireWire/i.LINK, 100M Ethernet	0.5	0.2
3	A physical data- or network-connection port (interface) capable of a transfer rate of \geq 500 MHz	1G Ethernet.	1.5	0.5
4	A data- or network-connection port (interface) designed to transfer data via radio-frequency wireless means.	Bluetooth, 802.11	3.0	0.7
5	A physical data- or network-connection port (interface) designed to allow the connection of an external device, such as a card, camera or storage device.	Flash memory reader, smart card reader, camera interface, PictBridge	0.5	0.1
6	A data- or network-connection port (interface) designed to transfer data via infrared technology	IrDA	0.2	0.2
7	Separate internal storage drives. This adder does not cover interfaces to external drives or internal memory.	Disk drive, DVD drive, Zip drive	—	0.2

8	A scanner that uses Cold-Cathode Fluorescent Lamp (CCFL) technology. This adder is applied only once, regardless of the lamp size or the number of lamps/bulbs employed.	—	—	2.0
9	A scanner that uses a lamp technology other than CCFL. This adder is applied only once, regardless of the lamp size or the number of lamps/bulbs employed.	Scanners using a light-emitting diode (LED), halogen, hot-cathode fluorescent tube (HCFT), xenon or tubular fluorescent lamp (TL) technologies	—	0.5
10	PC-based system that cannot print, copy or scan without use of significant PC resources. This adder applies to products that rely on an external computer for significant resources, such as memory and data processing, to perform basic functions commonly performed independently, such as page rendering.	—	—	-0.5
11	A system capable of communicating with a cordless handset. This adder is applied only once, regardless of the number of cordless handsets that can be handled.	—	—	0.8
12	The internal memory capacity available for storing data. This adder applies to all volumes of internal memory and should be scaled accordingly.	A unit with 2.5 GB of memory would receive an allowance of 2.5W, while a unit with 0.5 GB would receive an allowance of 0.5W.	—	1.0W per GB
13	Power-supply (PS) size, based on PS output rating (OR). The allowance is calculated from the internal and external power supply's rated DC output as specified by the power supply manufacturer. (This adder does not apply to scanners.)	<ul style="list-style-type: none"> • A unit rated to provide up to 3A at 12V has a PSOR of 36W and would receive an allowance of $0.05 \times (36-10) = 0.05 \times 26 = 1.3W$. • For power supplies that provide more than one voltage, the sum of power from all voltages is used unless the specifications note that there is a rated limit lower than this. For example, a supply which can supply 3A of 24V and 1.5A of 5V output has a total PSOR of $(3 \times 24) + (1.5 \times 5) = 79.5W$, and an allowance of $0.05 \times (79.5-10) = 3.475W$. 	—	For PSOR > 10W, $0.05 \times (PSOR - 10W)$

NOTE: A "primary adder allowance" refers to an allowance that can be added for connections that remain active while the imaging product is in Sleep. A "secondary adder allowance" refers

to an allowance that can be added for connections that can be inactive while the imaging product is in Sleep.

Table c. Criteria concerning power consumption efficiency of thermo sensitive printers

	kWh/week	
	Monochrome equipment	Color equipment
$0 < \text{ipm} \leq 12$	1.5 kWh/week	$(0.2 \text{ kWh/ipm})x + 2 \text{ kWh}$
$12 < \text{ipm} \leq 50$	$(0.2 \text{ kWh/ipm})x - 1 \text{ kWh}$	
$50 < \text{ipm}$	$(0.8 \text{ kWh/ipm})x - 31 \text{ kWh}$	

x = Product speed

Table d. Criteria concerning power consumption efficiency of thermo sensitive monochrome MFPs

	kWh/week
$0 < \text{ipm} \leq 20$	$(0.2 \text{ kWh/ipm})x + 2 \text{ kWh}$
$20 < \text{ipm} \leq 69$	$(0.44 \text{ kWh/ipm})x - 2.8 \text{ kWh}$
$69 < \text{ipm}$	$(0.8 \text{ kWh/ipm})x - 28 \text{ kWh}$

x = Product speed

Table e. Criteria concerning power consumption efficiency of thermo sensitive color MFPs

	kWh/week
$0 < \text{ipm} \leq 32$	$(0.2 \text{ kWh/ipm})x + 5 \text{ kWh}$
$32 < \text{ipm} \leq 61$	$(0.44 \text{ kWh/ipm})x - 2.8 \text{ kWh}$
$61 < \text{ipm}$	$(0.8 \text{ kWh/ipm})x - 25 \text{ kWh}$

x = Product speed