Eco Mark Product Category No.122

“Printers Version2.0”
Certification Criteria (Draft)

—Applicable Scope—

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

Established: May 1, 2007

Term of validity: April 30, 2012

Japan Environment Association
Eco Mark Office

Eco Mark Product Category No.122 "Printers Version2.0" Certification Criteria
Category A. Ink jet printer, wire dot printer, and thermo sensitive printer

Japan Environment Association
Eco Mark Office

1. Purpose of Establishing Certification Criteria 1
2. Applicable Scope 2
3. Terminology 3
4. Certification Criteria and Certification Procedure 7
4-1.Environmental Criteria and Certification Procedure 7
4-1-1 3R Design of Equipment 7
4-1-2 Requirements for plastic materials 8
4-1-3 Battery 13
4-1-4 Ink 13
4-1-5 Ink cartridges and Ink ribbon cartridges 16
4-1-6 Volatile organic compound (VOC) 18
4-1-7 Paper 19
4-1-8 System for repair, supply of maintenance parts 19
4-1-9 Packaging materials 19
4-1-10 Energy consumption 21
4-1-11 Noise 23
4-1-12 Reduction of quantity of paper consumption 24
4-1-13 Product Documentation 24
4-1-14 Manufacturing criteria 25
4-2.Quality Criteria and Certification Procedure 26
5. Product Category, Indication and Others 27

1. Purpose of Establishing Certification Criteria

"Printer" is an equipment widely used in offices and families. The purpose of establishing Certification Criteria for this Product Category is to reduce environmental burden by promoting to use the equipment which is developed with considerations for the following items.

○3R design of equipment and consumables (Resource cycle)

○Collection and recycling of used consumables such as toner cartridges and ink cartridges (Resource cycle)

○Energy saving at time of using equipment (Reducing substances effect to global warming)

○Noise reduction, suppressing VOCs emission (Comfortable environment at time of using equipment, considerations for human health)

○Restriction and reduction of using harmful substances (Suppressing harmful substances)

Recent market trend can be described as steep growth in multi functional printers that have functions such as copying and facsimile in one, increase in the number of color printers in the area of electrophotographic printers where the monochrome printers have dominated, and formation of new product areas such as for printers that function without a computer and printers dedicated to photographs. For the products in the new product areas, the Eco Mark Office decided to strengthen the standards stepwise. In addition, considering the printer's characteristic as an international distribution product, 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 jetprinters, 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.

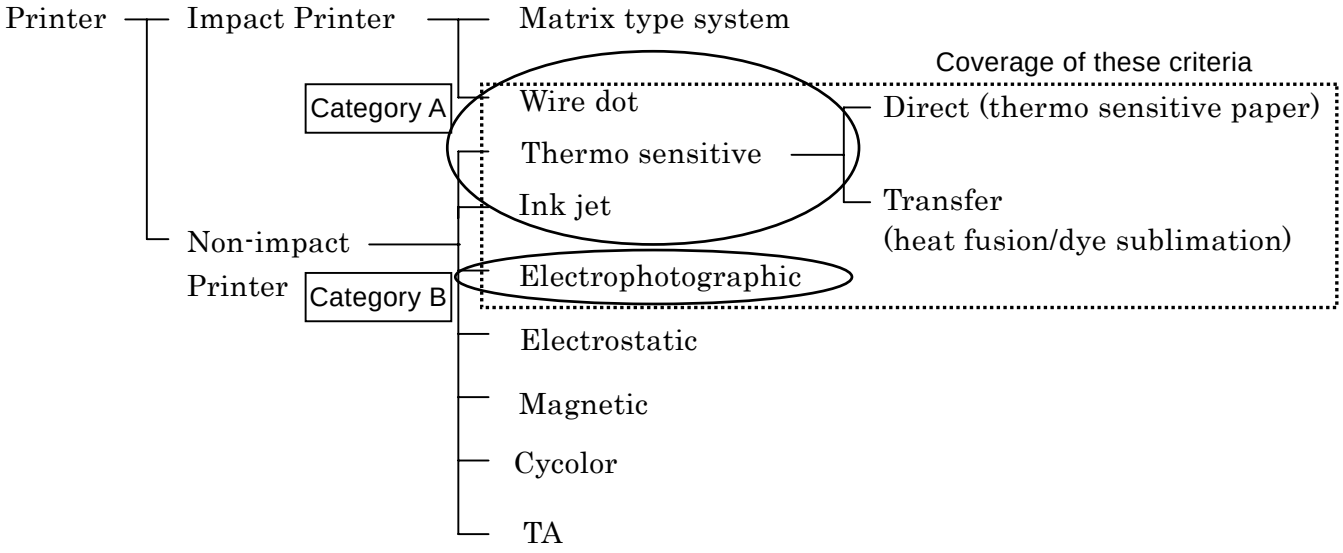

Figure 1　Applicable Scope

(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:	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) It refers the number of sheet printed per one minute (PPM) 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. (1) 4 times the number of print for the form of A2 size (2) 8 times the number of print for the form of A1 size

	(3) 16 times the number of print for the form of A0 size
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.
Image reproduction speed:	For the multifunctional printers which have copying function, monochrome impression per minute (IPM) at the default resolution, a both side image-output is counted with two sheets. When the copying speed and the printing speed are different, it is decided to use either fast one. A picture shall be the monochrome image with 12 point font, double spacing and 1 inch (2.54cm) blank from each side of the form of A4 size or 8.5"x11" size.
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:	Parts which protect the fixtures from environmental impact, and the users from contact with moving, radiating, or electrically charged components.
Copolymer:	Polymers consisting of two ore 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 equipement or consumables 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 consumables.
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 equipment or consumables 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 constituents:	Components intentionally added with the purpose of 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.
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 groped 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, the laboratory of the manufacturer is authorized to perform analysis and tests.

4-1. Environmental Criteria and Certification Procedure

4-1-1 3R Design of Equipment

(1) Equipment shall conform to Attachment 1 "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 1 "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, etcare 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 or mercury 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 plastinc partsor 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. In case to use recycled plastic parts, the specifications for the items “a.” to “c.” shall be reported. Upon request of the Eco Mark Office, the applicant shall comply with a hearing regarding 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 containing 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 Table1 (Criteria).

Attached Table 1 (Criteria)

1	・ There should be a collection system of used products: printers included in this product category or MFDs whose main function is a printer. The ***collection rate***[*1] shall be reported. Here, the collection rate is the rate of the ***same product group***[*2] for the most recent period of one year. ・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. <For the calculation> *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. 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 ***same product group***.
2	One or more plastic casing parts that weigh 50 g or more should be the recycle

	plastic part. The propotion of ***collected plastics in the closed-loop***[*3] within these parts shall be 10% or more.

[*1] Collection rate	Denominator: the number of printers in each ***same product group*** shipped for the most recent one year period. Numerator: the number of printers in each ***same product group*** 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 frame retardants used are added. If the CAS. numbers cannot be submitted, information may be included according to the ISO1043-4: 1998 (JIS6899-4: 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 and D shall be submitted concerning the ***same product group*** 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 ***same product group.*** *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.
2	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.

(8) For flame retardants used as prescription components in casing plastic parts weighing above 25g, report their names and CAS numbers.
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).

For the time being, instead of reporting their names and CAS numbers, description conforming to the description method of "ISO1043-4: 1998 (corresponding JIS standard JIS6899-4: 2000)" code number may be submitted. The approval of this alternative shall be reviewed again within the effective period of this certification criteria.

【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

(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, and substances classified as carcinogenic, mutagenic and toxic to reproduction in TRGS905.
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(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 200mm^2, 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.

【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:Amitliche 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-*o*-toluidine	95-69-2
4	2-naphthylamine	91-59-8
5	*o*-aminoazotoluene	97-56-3
6	2-amino-4-nitrotoluene	99-55-8
7	*p*-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	*p*-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	*o*-toluidine	95-53-4
19	2,4-diaminotoluene	95-80-7
20	2,4,5-trimethylaniline	137-17-7
21	*o*-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 "d.") 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 classified as carcinogenic, mutagenic, and toxic to reproduction by TRGS905 shall not be included as prescription constituents.

c. 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.

d. 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 1.

【Certification Procedure】
Compliance with this item shall be indicated in the Attached Certificate. Furthermore, the information on which type of the applied product is, "toner cartridge equipped type" or "toner container equipped type" and each serial number of toner cartridge or toner container shall be reported. Required particulars shall be indicated in Attachment 1 "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 or mercury 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 toner container and toner 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. Polymerblends (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) The measurements of total volatile organic compound (TVOC) during the printer operates shall be submitted as reference values. The measurement method shall be based on that described in Appendix 2 of Blue Angel (RAL-UZ-122:2005) and other conditions shall follow Table 2.

For color equipment, after June 1, 2006, the measurements during color printing shall be submitted as reference values.

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-122:2005.

【Certification Procedure】

Compliance with this item shall be indicated in the Attached Certificate and the applicant shall submit a certificate to show conformance to the measuring method defined by the Blue Angel (RAL-UZ-122:2005) (Example 4) and the actual result of the measurement. If submission is difficult at the time of application, a signed consent form indicating that "a certification indicating 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 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 recycled paper with 100% recycled pulp. However, thermo sensitive printers, the printers which accept stack form, large format printers and the printers which only accept photo paper 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.

4-1-8 System for repair, supply of maintenance parts

(28) 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.

(29) 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.

4-1-9 Packaging materials

(30) Plastic materials used for packaging products shall not use the specific CFCs

(five types), other CFCs, carbon tetrachloride, trichloroethane, and HCFCs described in Table 4.

【Certification Procedure】
Compliance with this item shall be indicated in the Attached Certificate.

Table 3 Substances prescribed in (30)

CFC5s	Trichlorofluoromethane	HCFCs	Pentachlorofluoropropane
	Dichlorodifluoromethane		Tetrachlorodifluoropropane
	Trichlorotrifluoroethane		Trichlorotrifluoropropane
	Dichlorotetrafluoroethane		Dichlorotetrafluoropropane
	Chloropentafluoroethane		Chloropentafluoropropane
Other CFCs	Chlorotrifluoromethane		Tetrachlorofluoropropane
	Pentachlorofluoromethane		Trichlorodifluoropropane
	Tetrachlorodifluoroethane		Dichlorotrifluoropropane
	Heptachlorofluoropropane		Chlorotetrafluoropropane
	Hexachlorodifluorpropane		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		
	Chlorofluroethane		
	Hexachlorofluoropropane		
	Pentachlorodifluoropropane		
	Tetrachlorotrifluoropropane		
	Trichlorotetrafluoropropane		
	Dichloropentafluoropropane		
	Chlorohexafluoropropane		

(31) 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.

(32) 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).

4-1-10 Energy consumption

(33) The energy consumption of each equipment shall comply with the following "a." to "e.".

a. Ink jet and wire dot printers, and ink jet MFPs shall comply with each benchmark shown in Table 4.

b. Large format printers and large format MFPs shall comply with each benchmark shown in Table 5.

c. Thermo sensitive printers shall comply with each benchmark shown in Table 7.

d. Thermo sensitive monochrome MFPs shall comply each benchmark shown in Table 8.

e. Thermo-sensitive color MFPs shall comply each benchmark shown in Table 9.

【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 Tables 4-9. If submission is difficult at the time of application, a signed consent form indicating that "a certification indicating conformance to Table 4 to 9 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.

Table 4 Benchmark concerning sleep-mode transition time and power consumption of ink jet printers, wire dot printers, and ink jet MFPs

	Sleep-mode transition time		Power consumption in sleep mode		Power consumption during stand-by
	Printer	MFP	Ink jet printer, MFP	Impact printer	
0<IPM≦10	5min.	5min.	3W	6W	With Fax: 2W W/O Fax: 1W
10<IPM≦20	15min.	15min.			
20<IPM≦30	30min.	30min.			
30<IPM	60min.	60min.			

Table 5 Benchmark concerning sleep-mode transition time and power consumption of large format printers and MFPs

	Transition time	Power consumption in sleep mode	
		Dye sublimation printer	Ink jet printer, MFP
0<IPM≦30	30 分	54W	13W
30<IPM	60 分		

Table 7 Benchmark concerning power consumption efficiency of thermo sensitive printers

	KWh/week	
	Monochrome equipment	Color equipment
0<IPM≦12	1.5 KWh/week	(0.2 KWh/ipm)x+2kWh
12<IPM≦50	(0.2 KWh/ipm)x-1kWh	
50<IPM	(0.8 KWh/ipm)x-31kWh	(0.8 KWh/ipm)x-28kWh

Table 8 Benchmark concerning power consumption efficiency of thermo sensitive monochrome MFPs

	KWh/week
0<IPM≦20	(0.2 KWh/ipm)x+2kWh
20<IPM≦69	(0.44 KWh/ipm)x-2.8kWh
69<IPM	(0.8 KWh/ipm)x-28kWh

Table 9 Benchmark concerning power consumption efficiency of thermo sensitive color MFPs

	KWh/week
0<IPM≦32	(0.2 KWh/ipm)x+5kWh
32<IPM≦61	(0.44 KWh/ipm)x-2.8kWh
61<IPM	(0.8 KWh/ipm)x-25kWh

(34) 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.

4-1-11 Noise

(35) 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 black and white 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.

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 (A2 or larger), 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 5) 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 10 Standard for noise

	Declared A-weighted sound power level "L_{WAd}" (B)	
	Monochrome	Color
Ink jet printer, thermo sensitive printer	≦0.035×Sbw +0.059 and ≦7.5	Parallel equipment : ≦0.03×Sco+0.061
Wire dot printer	≦7.2	-

Sbw : Operating speed in pages per minute for monochrome printing
Sco : Operating speed in pages per minute during color printing

4-1-12 Reduction of quantity of paper consumption

(36) 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.

4-1-13 Product Documentation

(37) Instruction manuals (user manuals) provided to users shall conform to the following "a." to "c.".

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, the product documentations printed overseas shall comform to "a." and "b." or "c."

【Certification Procedure】
Compliance with this item shall be indicated in the Attached Certificate.

(38) User information on the following: "a." to "g." 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 ibbon 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 recycled paper with 100% recycled pulp can be used (excluding the printers supporting stack form, large format printers and printers accepting only photo paper)

e. Energy consumption and energy conservation options in each driving mode of the equipment

f. Equipment must have the function which enables to reduce the quantity of paper consumption.

g. 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.

4-1-14 Manufacturing criteria

(39) 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.

(40) Relevant environmental regulations and agreements on preventing air pollution, water contamination, noise, odor and emission of hazardous materials shall not be violated for the past five years in manufacturing.

【Certification Procedure】

Compliance with this item shall be indicated in the Attached Certificate and a certificate (Example 6) by the manager of the plant which manufacture the product finally shall be submitted to certify that relevant local environmental laws, regulations, etc. have been observed with no violation for the last five years

before the filing of the application.

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 1, 2005	Established (Version2.0)
April 30, 2012	Validity period

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

Attachment 1

Checklist for 3R Design of Equipment and Consumables (Draft)

B. Electrophotographic printer

Items

The checklist consistes 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:

Modules	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 mechanicakl or optical (except for case and chassis).
Ink modules	Ink cartridges and Ink 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 :

Annex1 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, there 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	Componets made of materials incompatible with each other are conncected separably or via separation aids.	Case parts, chassis, electric modules	Yes / No		Promoting reuse and recycling
	2	Electronic modules are easily traseable and removal.	Entire unit, including lumps	Yes / No		Facilitating parts search
	3	Disassembly for recycling can be done with universal tools exclusively	Case, chassis, electric modules	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 modules	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 modules	Yes / No		Facilitating disconnection
	6	Disassembly can be done by a single person.	Entire unit	Yes / No		Facilitating dismantling
	7	Case parts are free from electronic modules. 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 forcusing 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.	Case parts, ink modules	Yes / No	"Considerations for occupational safety and health" includes ventilation/air emission and worker' wearing protective equipment. "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) The paints which shall not prevent recycling has been used. 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	The materials and material compounds used can be recycled by the material at a high level.	Case parts, chassis	Yes / No	Materials are considered as "recyclable by the material" when they can be recycled on an industrial scale and thus in a technically and economically beneficial manner. "High level" means that it is possible to produce a recyclate comparable to the original material for a similar	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 ＞200mm2(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 conncections 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 colour(e.g. grey and anthracite).The colours 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 propotional use of recyclate material 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. "Propotionall" means some available plastic components are appropriate. (This does not require all available components.)	Promoting reuse and recycling
	7	The persentage or recyclates in the total mass of plastics is at least 5 %	Case parts, cases of toner module	Yes / No		Promoting reuse and recycling
Longevity	8	The use of reprocessed modules or components is possible and permissable.	Entire unit	Yes / No	Referring to that spare/ETN(Equivakent to new) parts must be prepared for reuse under manufacturer's responsibility	Promoting reuse and recycling
	9	Ink modules(except ribbon) of individual colours can be exchanged separately	Ink modules	Yes / No		Reducing environmental burden