Annex 2

Eco Mark Product Category No. 135

Product Certification Criteria for "Products Using Photovoltaic Cells Version 1.0"

Japan Environment Association
Eco Mark Office

Contents

1. Environmental Background

In order to effectively implement the United Nations Framework Convention on Climate Change (UNFCCC), which came into force in March 1994, its first protocol, the Kyoto Protocol, was adopted at the third session of the Conference of Parties (COP3) to the UNFCCC. This protocol imposed limits on the emissions of greenhouse gases, including carbon dioxide (CO_2), by developed nations. The Kyoto Protocol required Japan to reduce the emissions of greenhouse gases by 6% relative to the emission levels in 1990. Since the Kyoto Protocol entered into force on February 16, 2005, Japan is required to achieve this reduction target according to the UNFCCC. These greenhouse gases consist mostly of CO_2, which originates from energy production and usage, and most of them are emitted through the burning of fossil fuels. The main measures to combat global warming in Japan are therefore related to policies for reductions in energy consumption and policies that promote alternatives to fossil fuels through the development and proliferation of technologies that substitute for fossil fuels. The main alternatives to the use of fossil fuel energy are nuclear power generation and renewable sources of energy. Japan is emphasizing the development and proliferation of photovoltaic power generation as a form of renewable energy.

The first oil crisis in 1973 triggered the development of photovoltaic cells in Japan. The government's Sunshine Project started in 1974, which was a major project for the development of photovoltaic cells. The Sunshine Project was succeeded by the New Sunshine project in 1993, resulting in the rapid proliferation of photovoltaic power generation in the 1990s due to the cost-effectiveness of technological developments and political support, such as a system of subsidies for the installation of photovoltaic power generation facilities. This political support enabled the cumulative capacity of photovoltaic power generation facilities to rise to more than 1,100 MW by 2004. As a result, Japan has the most widespread photovoltaic power generation facilities in the world. The production base that supports the introduction of photovoltaic power has also become well established. As a result, Japan accounts for about 50% of the world's total production, making Japan the largest producer of photovoltaic cells in the world. This cumulative level of production, however, is far below the 4,820 MW goal for fiscal 2010 set by the government. This requires further cost reductions through technological innovation and additional support for technological proliferation.

Compared to general commercial electric power production and primary batteries, the photovoltaic cell has the potential to reduce the environmental burden in relation to the following aspects.

(1) Reduction of the amount of fuel and fossil reserves and rare metals used for commercial electric power generation and primary batteries (silicon, the material used for silicon-based photovoltaic cells, is a ubiquitous resource that is virtually unlimited)

(2) Reduction of the generation of waste (photovoltaic cells have a long life and may be reused or recycled.)

(3) No gases contributing to global warming are emitted when the cells are in use.

(4) Improvement of maintenance and user-friendliness, including replacement of the primary batteries, refilling fuel, and transportation.

(5) Reduction in the facilities and construction work required in relation to power supply

It has been considered that the Eco Mark should be given in recognition of the potential of photovoltaic cells to reduce the environmental burden and this standard has been established as a result.

On the other hand, it has also been recognized that the production of photovoltaic cells also consumes resources and in their manufacture emit gases that contribute to global warming, use hazardous materials, and any used photovoltaic cells also become waste, thus imposing a burden on the environment just as much as products that do not use solar energy. Of the environmental burdens associated with photovoltaic cell production, manufacturers are required to further reduce the amount of chemical substances used in manufacturing. Concerning the recovery, recycling, or reuse of photovoltaic cells, up to now no recovery system for products using photovoltaic cells has been established. Residential photovoltaic power generation systems, which account for most of the market, are considered to be part of the construction. Thus, quantities of used photovoltaic cells are expected to be generated in the future as buildings are demolished and replaced. Accordingly, it is highly possible that photovoltaic power generation systems could be recovered as a part of construction waste. Thus, photovoltaic cells that come onto the market in future should be required to be designed in consideration of the 3Rs (Reduce, Reuse, and Recycle) for the product. Products using photovoltaic cells can be either incinerated or buried. In order to prevent hazardous materials from entering the environment when photovoltaic cells are disposed of, there should also be investigation of how to reduce the usage of hazardous materials in the production of the cells in the first place.

2. Applicable Products

This category covers silicon photovoltaic modules and products that use silicon photovoltaic cells as main power sources. In addition, systems using photovoltaic cells as main power sources, together with wind power generation or hydroelectric power generation systems, are also covered. This category does not cover the other photovoltaic cells such as compound semiconductor cells (refer to “3. Terminology”) and products using them as sources of power.

Products covered by this category shall be residential photovoltaic power generation systems, traffic signs, streetlights, and other products smaller than these. Large-scale photovoltaic power generation systems or facilities for buildings or public places are excluded.

Scope of applicable products in this category is shown in Table 1.

Table 1 Scope of applicable products

Product category		Example of applicable product * The number is based on Japan Standard Commodity Classification
Category A: Residential photovoltaic power generation system		
	Residential power generation system (Output: less than 20 kW) * In case of being certified as a system, the components shall be as follows. In all items, each of them shall satisfy the applicable Certification Criteria. • Photovoltaic module • Power conditioner • Connecting box • Cable • Module external frame, frame, and supporting construction • Secondary battery (lead-acid battery)	30 212 Photovoltaic power generation system

Category B: Small-scale power generator/ charger		
	Small-scale power generator	30 212 Photovoltaic power generation system
	Small-scale charger (mobile)	30 212 Photovoltaic power generation system

Category C: Installed products (for residential use, industrial use, or public use)		
Products for residential use	Residential outdoor lighting equipment (Garden lights, garage lights, and door lights, etc.) Ventilation fans	62 214 Incandescent outdoor lighting equipment 62 223 Fluorescent outdoor lighting equipment 62 233 HID lighting outdoor equipment 60 62 Ventilation fans
Industrial products	Feeding equipment used in farming Pumps and related devices	40 131 Fish farming equipment 31 1 Pumps
Products for public use	Traffic signs or instruction signs Road rivets/visual road markings Marine signs/buoys Street lights/road lights Lights in tunnels Alarm systems Disaster prevention/safety equipment Telemeters for precipitation, water level, and wind direction, etc.	95 31 Road signs 41 541 Light emitting signaling systems/equipment 62 214 Incandescent outdoor lighting equipment 62 223 Fluorescent outdoor lighting equipment 62 233 HID lighting outdoor equipment 41 5 Alarming systems and signaling equipment 63 65 Environmental monitoring equipment
Category D: Mobile and vehicle-mounted products		
Leisure goods Commodities	Lights/lanterns Radios	62 24 Flashlights 60 24 Radio receivers
Stationery/office equipment Learning materials/toys	Electronic calculators Learning materials/toys, etc.	59 41 Electronic calculators 89 5 Toys and dolls
Vehicle-mounted goods	Car accessories	57 59 Car maintenance equipment/systems
Category E: Photovoltaic modules		
	Photovoltaic modules （planer-type photovoltaic modules with an output of 10 W or more）	Photovoltaic modules complying with JIS C 8918 1998 or C 8939 1995
Category F: Power conditioners for small-output photovoltaic power generation		
	Power conditioners for small-output photovoltaic power generation	Power conditioners for small-output photovoltaic power generation that comply with JIS C8980 1997

3. Terminology

-Photovoltaic cell: Smallest constituent unit of a photovoltaic sell for photovoltaic power generation (cited from JIS C 8960 2004)

-Photovoltaic sub-module: Smallest unit of multiple photovoltaic cells formed on an undividable substrate (cited from JIS C 8960 2004.)

-Photovoltaic module: Smallest power generation unit with a standard output, constituting a photovoltaic cell or photovoltaic sub-modules

enclosed in a container to provide them with resistance to environmental conditions (cited from JIS C 8960 2004)

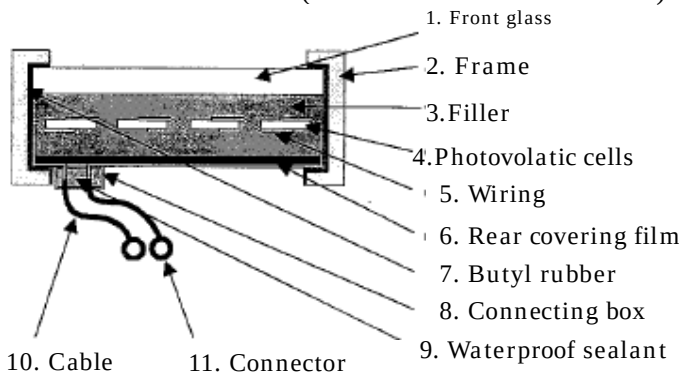

Figure 1 Photovoltaic module illustration

-Nominal maximum output: The nominal value of the maximum output in a basic state. The basic state is defined as a state with a module temperature of 25 degrees Celsius, a spectral distribution of AM1.5 global photovoltaic radiation standard sunshine (refer to JIS C 8911 1998,) and an irradiance of 1000 W/m^2.

-Photovoltaic array: An assembly in which the photovoltaic modules or panels are mechanically connected using a photovoltaic frame and/or base or other components, and that are electrically connected (cited from JIS C 8960 2004.)

-Silicon photovoltaic cell: A photovoltaic cell using silicon as the semiconductor material. Major types of this cells are single-crystal, multi-crystal, amorphous cells, etc.

-Compound semiconductor cell: A photovoltaic cell using compound semiconductors consisting of multiple types of elements. This battery is categorized by its constituent elements: III-V compound, II-IV compound, and I-III-VI2 compound cells. The major types are GaAs, InP, CdS/CdTe, and $CuInSe_2$ photovoltaic cells (cited from JIS C 8960 2004.)

-Photovoltaic power generation system: A general term for systems and accessories that convert solar energy to electricity using photovoltaic effects and that supply power suitable for loading (cited from JIS C 8960 2004.)

-Residential photovoltaic power generation system: A photovoltaic power generation system for installing in residences. These systems consist of components such as photovoltaic modules, power conditioners, connecting boxes, distribution boards, voltmeters, and batteries with support frames for installing the various components and wiring. This product category targets photovoltaic power generation systems with an output of less than 20 kW（Article 48, Section 4 of the enforcement regulations of the Electric Utility Law (Ministerial ordinance No. 77 of the Ministry of Economy, Trade and Industry of October 18, 1996.)

-Power conditioner: A system for converting the output of photovoltaic arrays to the prescribed power, consisting of or part of the main line controlling/monitoring systems, DC conditioners, inverters, DC/DC interfaces, AC/AC interfaces, and AC line interfaces

(cited from JIS C8960 2004.)

-Rated load efficiency: One of the load efficiencies of the power conditioner. The rate between AC output power (effective electric power) and DC input power under the rated load. This efficiency is usually shown as a percentage (%) (cited from JIS C 8960 2004.)

-Partial load efficiency: One of the load efficiencies of the power conditioner. The rate between AC output power (effective electric power) and DC input power under the designated load. This efficiency is usually shown as a percentage (%) (cited from JIS C 8960 2004.)

-Lead-acid battery for photovoltaic power generation: A generic term for lead-acid batteries used in photovoltaic power generation systems. In a narrow sense, this means lead-acid batteries designed to satisfy the required quality for photovoltaic power generation systems (cited from JIS C 8960 2004.)

-Renewable energy: Energy sources in which the resource is constantly being regenerated and thus does not become depleted, including wind power and photovoltaic radiation.

-Prescription constituent: Constituents added on purpose to provide products with certain properties. This type of constituent does not include impurities that are inevitably admixed in the manufacturing processes.

4. Certification Criteria

4-1. Environmental criteria

4-1-1. Common criteria

(1) In the manufacturing of products, local environmental laws and regulations as well as agreements on preventing air pollution, water contamination, noise, odor and emission of hazardous materials shall be observed.

(2) Instruction manuals (user manuals) offered to applicants shall satisfy the following items, a - c.

a. The manual shall have a method of binding that does not cause problems for waste paper recycling（See the Attachment 1）.

b. No chlorine compounds shall be used in the pulp bleaching process for the paper that is used.

c. The paper shall contain 70% or a higher proportion of recycled paper pulp. Item C is not applicable to manuals printed overseas.

(3) The packaging of the products shall be considered resource saving, easy-to-reuse and recyclable.

(4) Compounds that deplete the ozone layer (Attachment 2), including CFC substitutes, shall not be used in manufacturing the packaging materials

(5) The plastic materials used for packaging shall not contain polymers containing halogens or organic halogen compounds as recipe constituents.

(6) Maintenance and repair service systems shall be established, and repairs shall be carried out at the request of the users. As part of the maintenance and repair service system, user-requested information shall be provided regarding the applied items for each product in the items (a)-(c) in Table 2 (coverage and service contents for maintenance or repair, time and costs required for maintenance or repair).

(7) The contents of the documents supplied with the product or catalogues of the product shall correspond to the product category items shown in (d)-(l) in Table 2, providing users with information such as usage conditions/performance,

information for consumables or warranty, contact for information of the product, availability of maintenance and repair services, a contact address for obtaining these information, and notes on disposal of the product. The documents supplied with the product referred to here shall include all the documents supplied with the product, such as instruction manuals, as well as descriptions on the packaging and packing materials.

(8) Plastic parts of the product shall not contain PBB (polybromobiphenyl,) PBDE (polybromodiphenyl ether,) or short-chain chlorinated paraffins (containing a chain carbon of 10-13, and a chlorine content of 50% or more) as the prescription constituents.

(9) None of the constituents of the product shall contain lead, cadmium, hexavalent chromium, or mercury as prescription constituents. Lead-based solder shall not be used. This standard, however, shall not apply to secondary batteries, to which the individual standards for each product category shall apply.

Table 2 Information supplied, classified by product category

Item	Category A: Residential photovoltaic power generation systems	Category B: Small-scale power generators and chargers	Category C: Installed products	Category D: Mobile and vehicle-mounted products	Category E: Photovoltaic modules	Category F: Power conditioners
Information provided to the users that is written in the documents supplied with the product. Related to Certification Criteria (6)						
(a) Coverage and service contents for maintenance	XX	X	XX	X	X	X
(b) Coverage and service contents for repair	XX	XX	XX	XX	XX	XX
(c) Time and costs required for maintenance/repair	XX	XX	XX	XX	XX	XX
Information available on request from users that is written in attachment or catalogues of the product .Related to Certification Criteria (7)						
(d) Installation and usage conditions	XX*1	XX	XX	XX	XX*2	XX
(e) Description of the performance and structure	XX*3	XX*4	XX*4		XX*5	XX
(f) Information on the types of secondary batteries, recovery requests, replacement guidelines and requests for cooperation in recycling (only for products using secondary batteries)	XX	XX*6	XX	XX*6		
(g) Information for consumables (only for products with consumables, for example, type/replacement of primary battery or bulb)	XX	XX	XX	XX	XX	XX
(h) Warranty period	XX*7	XX	XX	XX	XX	XX
(i) Contact addresses and methods for obtaining the information	XX	XX	XX	XX	XX	XX
(j) Explanation concerning non-liability in designing a total system for photovoltaic power generation, the combination of equipment, and the installation					X*8	X*8
(k) Precautions for disposing of the product	XX*9	XX*10	XX*10	XX*10	XX*9	XX*9
(l) Maintenance/repair service system, information of (a)-(c), contact address or methods for obtaining these information	XX*11	XX*11	XX*11	XX*11	XX*11	XX*11

XX: Required X: Desirable for providing information or not required Blank: not necessarily required

*1: The following information regarding photovoltaic power generation systems shall be provided; “Expected annual power generation”, “basis and calculating standard [used data of amount of solar radiation, loss of photovoltaic cells and power conditioners, and the other loss (dirt on acceptance surface, loss of wiring/circuit, etc.)]”. In addition, the following statement shall be notified; “Power generation might be different value in case that the conditions of weather, location and installation are different from the standard condition”.

*2: Residential photovoltaic power generation systems shall satisfy 4-1-6 (24.) For other types of products, depending on each application, the installation and usage conditions shall be included for those who design or produce photovoltaic power generation systems. The information should include installation conditions, conditions for installing the final products, and safety installation and dismounting (including precautions against electric shocks and burns.)

*3: As for the display of the performance and structure of the photovoltaic battery arrays used for residential photovoltaic power generation systems, the system performance shall be described according to Table 1 in “JIS C 8952 1996 (how to describe photovoltaic battery arrays)”

*4: Products corresponding to stand-alone type photovoltaic power generation systems shall include descriptions of their performance according to Table 4 of “JIS C 8905 1993 (rules for stand-alone type photovoltaic power generation systems) Mobile power generators or chargers under Category B, however, shall be excluded.

*5: Descriptions according to either “JIS C 8918 1998 (crystalline photovoltaic modules)” or “JIS C 8939 1995 (amorphous photovoltaic modules)” shall be provided.

*6: Description example for cases where the secondary batteries can be removed and recovered: “This product uses a lithium battery as a secondary battery. Refer to page xx in the instruction manual for replacement. Bring the used battery to a local recycling station for recycling scarce materials.”

*7: Detailed information regarding required procedures for warranty shall be provided for users; for instance, application method, presence or absence of contract application for maintenance/repair service, options, etc.

*8: Eco Mark applicants cannot be responsible for designing the combination of equipment and installation using products that will be certified as photovoltaic modules or power conditioners alone. This explanation may be clearly written in the instruction manual to notify the users, if required.

*9: Description example: “Please inquire of the shop about dismantlement and the removal so that there are fears of electric shocks and accidents.” (Category A), “Please take care not to be electric shocked at the time of dismantlement of the products.”(Category E)

*10: Description example: “Take out any alkaline button batteries before disposing of the product. Take the battery to a button battery recycling box or station.” “ This product can be disposed of after each component has been being separated and sorted according to the material used.” “Properly dispose of the waste oil generated when disposing of this product as industrial waste.” “When disposing of this product, follow the disposal methods designated by the local government.”

*11: Description example: “Maintenance and repair services are available. Please contact xx department at the following phone number xxx-xxxx for maintenance and repair coverage, time and costs. Please also contact our web site www.xxxx.shuri.co.jp.”

4-1-2. Category A: Residential photovoltaic power generation systems

(10) Products using aluminum alloys for the module external frame, frames, or supporting construction shall use aluminum whose raw material is partly secondary aluminum metal (recycled shredded metal)

(11) The output of photovoltaic modules shall be guaranteed for 90% or more of the lowest value (90% of the nominal maximum output) of the maximum output before shipment at least for ten years. **(Requirement for the Output Guarantee)**

The maximum output before shipment shall meet the description in JIS C 8918 1998 (for crystalline photovoltaic battery modules) and JIS C 8939 1995 (for amorphous photovoltaic modules).

(12) The power conditioner shall be designed and manufactured so that 90% or more of its efficiency will be maintained for a service period of five years or longer for the rated load efficiency and partial load efficiency with half of the load. **(Requirement for the Design for Long-use)**

The calculation of the rated load efficiency and the partial load efficiency before shipment shall follow the description in JIS C 8961 1993 (how to measure the efficiency of power conditioners for photovoltaic power generation systems.)

(13) When secondary batteries are used as a part of residential photovoltaic power generation systems, lead, cadmium, mercury or their compounds may be used. However, a system in which secondary batteries using lead, cadmium, mercury or their compounds should be recoverable from the users and then recycled or properly disposed of, shall be implemented and maintained.

(14) Installation manuals shall be prepared for safety work such as wiring, effect on buildings (securing strength, waterproofing treatment, etc.). The items shown in Table 3 shall be described in the installation manuals.

Table 3 Items required to be included in the installation manual

Item	Contents
Photovoltaic power generation system overview	Basic configuration of the system
Installation of photovoltaic modules	Installation position
	Installation direction
	Installation pitch and arrangement
Installation methods	Wiring
	Fixing metals
	Securing strength (fixing load, system weight, snow weight, wind pressure, and earthquake force)
	Waterproofing treatment
Securing safety in installation	Securing safety for work at higher locations
	Maintaining working conditions
	Securing safety for wiring work
Securing safety for disassembling	Preventive measures against electric shocks and burns

In addition, the installation manuals of products under the scope of the JIS standard shall follow the JIS standard for each product.

- JIS C 8955 2004 (Design standard of supporting structure for photovoltaic arrays)
- JIS C 8956 2004 [Structural design and installation method for residential photovoltaic arrays (roof mounting type)]

(15) Regarding installation method, technical guidance system shall be provided for workers who install photovoltaic power generation systems in residences to understand the installation manuals described in (14).

4-1-3. Category B: Small-scale power generators and chargers

(16) Small-scale power generators and chargers with photovoltaic cells are categorized into the following three types.

1. Photovoltaic cells only are used
2. Photovoltaic cells and parts with storage function such as secondary batteries and condenser are used
3. Photovoltaic cells are used in the product with primary batteries or other power sources in combination

For products classified under Category 1 or 2, the products shall be so designed and manufactured that sufficient power is supplied from the photovoltaic cells alone. For products classified under Category 3, the products shall be so designed and manufactured under the standard operating conditions expected from the specifications as the photovoltaic cells supply 50% or more of the total power supplied by the product.

(17) Secondary batteries used in the products may use lead, cadmium, mercury or their compounds. However, a system for the recovery of the secondary batteries using lead, cadmium, mercury or their compounds from the users, and their proper recycling or proper disposal shall be implemented and maintained.

For small-scale chargers, the Certification Criteria (21) may be applied instead.

4-1-4. Category C: Installed product (residential use, industrial use, or public use)

(18) Installed products with photovoltaic cells are categorized into the following three types.

1. Only photovoltaic cells are used
2. Photovoltaic cells and parts with storage function such as secondary batteries and condenser are used
3. Photovoltaic cells are used in combination with primary batteries or other power sources

For products classified under Category 1 or 2, the products shall be so designed and manufactured that sufficient power is supplied from the photovoltaic cells alone. For products classified under Category 3, the products shall be so designed and manufactured under the standard operating conditions expected from the specifications as the photovoltaic cells supply 50% or more of the total power consumed by the product.

(19) Secondary batteries used in products may use lead, cadmium, mercury or their compounds. However, a system for the recovery of the secondary batteries that use lead, cadmium, mercury or their compounds from the users, and their recycling or proper disposal shall be implemented and maintained.

4-1-5. Category D: Mobile and vehicle-mounted products

(20) Mobile and vehicle-mounted products using photovoltaic cells are categorized into the following three types.

1. Only photovoltaic cells are used
2. Photovoltaic cells, parts with storage function such as secondary batteries, and condenser are used
3. Photovoltaic cells are used in combination with primary batteries or other power sources

For products classified under Category 1 or 2, the products shall be so designed and manufactured that sufficient power is supplied from the photovoltaic cells alone. For products classified under Category 3, the products shall be so designed and manufactured under the standard operating conditions expected from the specifications as the photovoltaic cells supply 50% or more of the total power consumed by the product.

For products classified under category 1 or 2, the products shall be so designed and

(21) Products using secondary batteries shall use recyclable batteries such as nickel-cadmium batteries, nickel hydride batteries, lithium-ion batteries, or small sealed lead-acid batteries. These secondary batteries may use lead, cadmium, mercury or their compounds. The product shall be so designed that users can remove the secondary batteries when disposing of the product after use, and the batteries can be recycled. If the product has a structure by which users are unable to remove the secondary batteries, a system for the recovery of the used products shall be established.

4-1-6. Category E: Photovoltaic modules

(22) Products using aluminum alloys for the module frame, frames, etc. shall use aluminum in which the raw material used is partly aluminum secondary metal (recycled shredded metal.)

(23) The output of the photovoltaic modules for residential photovoltaic power generation systems shall be guaranteed for 90% or more of the lowest value (90% of the nominal maximum output) of the maximum output before shipment at least for ten years. **(Requirement for the Output Guarantee)**

The maximum output before shipment shall meet the description in JIS C 8918 1998 (for crystalline photovoltaic battery modules) and JIS C 8939 1995 (for amorphous photovoltaic modules).

(24) Regarding photovoltaic modules for residential photovoltaic power systems, installation manuals shall be prepared for safety such as wiring, effect on buildings (securing strength, waterproofing treatment, etc.). The items in Table 3 (p.9) shall be described in the installation manuals.

In addition, the installation manuals of products under the JIS standard shall follow the JIS standard of each product.

- JIS C 8955 2004 (design standard of supporting object for photovoltaic arrays)
- JIS C 8956 2004 [Structural design and installation method for residential photovoltaic arrays (roof mounting type)]

Products used for applications other than residential photovoltaic power generation systems shall be required only to satisfy (d) in Table 2 of the Certification Criteria (7).

4-1-7. Category F: Power conditioners for small-output photovoltaic power generation

(25) The power conditioner shall be designed and manufactured so that 90% or more of its efficiency will be maintained for a service period of five years or longer for the rated load efficiency and partial load efficiency with half of the load.

(Requirement for the Design for Long-use)

The calculation of the rated load efficiency and the partial load efficiency before shipment shall follow the description in JIS C 8961 1993 (how to measure the efficiency of power conditioners for photovoltaic power generation systems.)

4-2. Quality criteria

(26) Products shall satisfy one of the following quality conditions.

1. Products covered by an official quality standard, such as JIS, shall satisfy that quality standard.
2. If the product is not covered by the standard in 1 above, the product shall meet the standard voluntarily defined by the related industry
3. If the product is not categorized under 1 or 2, individual quality standards shall be established to sufficiently control the quality.

5. Certification Procedures

5-1. Certification procedures for environmental criteria

5-1-1. Certification procedures for common criteria

(1) Certification criteria 4-1-1 (1) [Issuer of the certificate: the manufacturing plant of the final product]

Compliance with this item shall be included in the Attached Certificate. A certificate (Entry Table: 135-5) shall be submitted to show that the manufacturing plant of the final product has been abiding by and not violated laws, including environmental regulations for the area where the plant is located, for the last five years (or since the plant was started)

(2) Certification criteria 4-1-1 (2)

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

(3) Certification criteria 4-1-1 (3) [Issuer of the certificate: Applicant]

Compliance with this item shall be included in the Attached Certificate. A document shall be submitted describing the product packaging conditions and packaging materials in detail and what was taken into consideration to achieve resource saving, reuse, and recycling (supplemented by figures and photographs.)

(4) Certification criteria 4-1-1 (4)

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

(5) Certification criteria 4-1-1 (5)

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

(6) Certification criteria 4-1-1 (6) [Issuer of the certificate: Applicant]

Compliance with this item shall be included in the Attached Certificate.The contact address for the users, the maintenance and repair service system, and the guarantee system shall be described (Entry Table 135-1) to explain the developed service system for maintenance/repair.

For residential photovoltaic power generation systems, the responsibility of the equipment manufacturer, construction materials manufacturer, distributing agent, housing contractor, construction company, managing company, and related companies shall be described (Entry Table 135-2). Figures and tables may be used for this description (refer to Table 4-1 and Table 4-2.)

Table 4-1 Description of the responsibilities for contacting, maintenance, repair, and guarantees (Category A: Photovoltaic power generation system)

	Equipment manufacturer	Distributing agent	Construction company
Manufacturing equipment	X		
Repair equipment	X		
Instruction manual	Prepared	Description for the users	
Seminars for designing and construction	Prepared	Participated	Participated
Standard specifications and construction specifications	Prepared	Complied with	Complied with
Equipment guarantee	X		
Distribution		X	
Design system		X	
Guarantee system		X	
Management of construction		X	
Construction			X
Maintenance and repairs		Implemented	
Installation and repair of wiring			X
Contact by the users		Received	

→ If an inspection indicates the need for repair, contact those concerned to implement the repairs.

Table 4-2 Description of the responsibilities for contacting, repair, and guarantees (Category D: Mobile and vehicle-mounted products)

	Equipment manufacturer	Distributor
Manufacturing equipment	X	
Repair equipment	X	
Instruction manual	Prepared	
Equipment guarantee	X	
Distribution		X
Contact by the users		Received

→ If an inspection indicates the need for repairs, contact those concerned to implement the repairs.

(7) Certification criteria 4-1-1 (7)
Compliance with this item shall be included in the Attached Certificate. A copy of the corresponding part of the documents attached to the product or catalogues of the product shall also be submitted.
(8) Certification criteria 4-1-1 (8)
Compliance with this item shall be included in the Attached Certificate.
(9) Certification criteria 4-1-1 (9)
Compliance with this item shall be included in the Attached Certificate.

5-1-2. Category A: Residential photovoltaic power generation system

(10) Certification criteria 4-1-2 (10)
Compliance with this item shall be included in the Attached Certificate.
(11) Certification criteria 4-1-2 (11)
Compliance with this item shall be included in the Attached Certificate. A copy of the corresponding part of the document supplied with the product shall be submitted. The contact address for output of photovoltaic modules and the explanation of repair and guarantee systems shall be described in the Attached Certificate along with the manual described in 5-1-1 (6), which describes the maintenance, repair, and guarantee system.
(12) Certification criteria 4-1-2 (12) [Issuer of the certificate: Quality management or the manufacturing plant for the final product]
Compliance with this item shall be included in the Attached Certificate.
Operating conditions that were assumed in designing the power conditioner, the installation conditions, combination with photovoltaic modules, etc. shall be described, stating that the system was adequately designed and manufactured to maintain 90% or more of its ratio before shipment for a service period of five years or longer (Entry Table 135-4.)
(13) Certification criteria 4-1-2 (13) [Issuer of the certificate: Applicant]
The Attached Certificate shall describe the compliance with this item, the type of secondary battery used, the use or non-use of lead, cadmium, or mercury. A certificate shall be submitted describing the system for the recovery and reuse of the used batteries, and that the recycling of materials (recovery, reuse, and materials recycling systems) has been established. If a document supplied with the product describes the items defined in the standard, the corresponding part may be submitted instead.

(14) Certification criteria 4-1-2 (14)
Compliance with this item shall be included in the Attached Certificate.
(15) Certification criteria 4-1-2 (15) [Issuer of the certificate: Applicant]
Compliance with this item shall be included in the Attached Certificate. A copy of the document shall be submitted verifying that training for installation workers has been implemented, including the implementation guidelines for training systems.

5-1-3. Category B: Small-scale power generators and chargers

(16) Certification criteria 4-1-3 (16) [Issuer of the certificate: Applicant]
Compliance with this item shall be included in the Attached Certificate. For products classified under each category, a certificate (Entry Table 135-3) which describes information shown in Table 5 shall be submitted.

Table 5

Product Category	Information to be described in certificate
1 or 2	•Electric energy supplied (including the basis of the calculation), based on the specification of the applicable product •Basis for calculation of the capacity of the photovoltaic cells loading (including the expected amount of power generation)
3	•Electric energy supplied (including the basis of the calculation), based on the specifications of the applicable product •Basis for calculation of the capacity of the photovoltaic cells loading (including the expected amount of power generation) •The conditions to change over from photovoltaic cells to other power sources •The conditions to change over from other power sources to photovoltaic cells •Information on methods for charging the secondary battery (if used) •Electric power supplied from photovoltaic cells (including the equations and conditions for the calculation) that is calculated based on the information

(17) Certification criteria 4-1-3 (17) [Issuer of the certificate: Applicant]
The certificate attached shall describe the compliance with this item, the type of the secondary batteries used, the use or non-use of lead, cadmium, or mercury. A certificate shall be submitted, describing the systems for the recovery and reuse the used- batteries and for recycling materials (recovery, reuse, and materials recycling systems) that have been established. If a document supplied with the product describes the items defined in the standard, the corresponding part may be submitted instead.

For small chargers, if the secondary batteries are not recovered, a document shall be submitted stating that the system is so designed that users can remove the batteries, and that a product recovery system has been established for cases where the products are so designed that users cannot remove the batteries.

5-1-4. Category C: Installed product (residential use, industrial use, or public use)

(18) Certification criteria 4-1-4 (18) [Issuer of the certificate: Applicant]
Compliance with this item shall be included in the Attached Certificate. For products classified under each category, a certificate (Entry Table 135-3) which describes information shown in Table 6 shall be submitted.

Table 6

Product Category	Information to be described in certificate
1 or 2	•Electric energy supplied (including the basis of the calculation), based on the specification of the applicable product •Basis for calculation of the capacity of the photovoltaic cells loading (including the expected amount of power generation)
3	•Electric energy supplied (including the basis of the calculation), based on the specifications of the applicable product •Basis for calculation of the capacity of the photovoltaic cells loading (including the expected amount of power generation) • •The conditions to change over from photovoltaic cells to other power sources •The conditions to change over from other power sources to photovoltaic cells •Information on methods for charging the secondary battery (if used) •Electric power supplied from photovoltaic cells (including the equations and conditions for the calculation) that is calculated based on the information

(19) Certification criteria 4-1-4 (19) [Issuer of the certificate: Applicant]
The Attached Certificate shall include the compliance with this item and the type of the secondary batteries used. A certificate shall be submitted describing the systems for the recovery and reuse of the used batteries and for recycling materials (recovery, reuse, and materials recycling systems) that have been established. If a document supplied with the product describes the items defined in the standard, the corresponding part may be submitted instead.

5-1-5. Category D: Mobile and vehicle-mounted products

(20) Certification criteria 4-1-5 (20) [Issuer of the certificate: Applicant]

Compliance with this item shall be included in the Attached Certificate. For products classified under each category, a certificate (Entry Table 135-3) which describes information shown in Table 6 (p.17) shall be submitted.

(21) Certification criteria 4-1-5 (21) [Issuer of certificate: Applicant]

The Attached Certificate shall describe the compliance with this item, the type of secondary batteries used, and the use or non-use of lead, cadmium, or mercury. Concerning the secondary batteries used for the product, a document shall be submitted stating that the system is so designed that users can remove the batteries and that a product recovery system has been established for cases where the product is so designed that users cannot remove the batteries.

5-1-6. Category E: Photovoltaic modules

(22) Certification criteria 4-1-6 (22)

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

(23) Certification criteria 4-1-6 (23)

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

A copy of the corresponding part of the document supplied with the product shall be submitted. The contact address for output and the explanation of repair and guarantee systems shall be described in the Attached Certificate along with the manual described in 5-1-1 (6) to explain the maintenance, repair, and guarantee system.

(24) Certification criteria 4-1-6 (24)

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

5-1-7. Category F: Power conditioner for small-output photovoltaic power generation

(25) Certification criteria 4-1-7 (25) [Issuer of the certificate: Quality management or the manufacturing plant for the final product]

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

Operating conditions that were assumed in designing the power conditioner, the installation conditions, combination with photovoltaic modules, etc. shall be described, stating that the system was adequately designed and manufactured to maintain 90% or more of its ratio before shipment for a service period of five years or longer (Entry Table 135-4.)

5-2. Certification procedures for quality criteria

(26) A certificate (Example: 135-6 or 135-7) shall be submitted showing compliance with the laws, JIS standards, or voluntary standards that are applicable to the product. For “photovoltaic module” and “power conditioner” of Category A, and Category E or F, a certificate issued by JET (Japan Electrical Safety Environment Technology Laboratories) may be submitted instead.

6. Other Requirements

(1) Product certification is classified into A-F as shown in Table 1 and is classified according the product function (about 4 figures, based on the Japan Standard Commodity Classification) with brand names. The certification is not classified according to color or size.

If various combinations are available for the set composed of photovoltaic modules, power conditioners, cables, and module external frames/frames/supporting construction, etc. for a residential photovoltaic power generation system, the Eco Mark can be provided to the total system if all the

equipment used satisfies the certification standard.

(2) Displayed below the Eco Mark shall be a square frame with center-aligned environmental textual information inside (Figure 2.)

The text displayed in the frame shall be “photovoltaic power generation system” for Category A, “photovoltaic module” for Category E, and “power conditioner for photovoltaic power generation” for Category F.

For products that do not use electric power other than photovoltaic cells, classified into Category B, C, or D, the text displayed shall be “Power supply 100% using photovoltaic cells.” For products using other electric power sources (such as primary cells, commercial electric power, or wind power generation) along with photovoltaic cells, the text displayed shall be “Power supplied by photovoltaic cells.”

(3) Products in stock that have been manufactured during the contract period of a product already certified may have the text displayed under the Eco Mark and the certification number, in principle, for up to one year from the new contract date.

(4) The Eco Mark shall be used in accordance with the Eco Mark Usage Regulations Article 7 separately prescribed, based on the Guidelines for Eco Mark Program Implementation.

(5) In principle, the products to be applied shall be free from “antimicrobial agent.” The product shall not have a text displaying “biodegradable plastics.” If a product uses or displays the agent for a specific reason, the product shall satisfy the regulations for “antimicrobial agents” and “biodegradable plastics” based on the Guidelines for Eco Mark Program Implementation. Specifically, an application form for certifying Eco Mark products shall be submitted with information on the presence or absence of the agent, and the prescribed document shall be attached if the agent is used.

Contractor for the Eco Mark

Photovoltaic power generation systems

Eco Mark Certification
No. xxxxxxx
(allowable with numbers only)

Category A
Photovoltaic power generation system

Contractor for the Eco Mark

Power supply 100% using photovoltaic cells

Eco Mark Certification
No. xxxxxxx
(allowable with numbers only)

Category B, C, and D
Products using photovoltaic cells only

Contractor for the Eco Mark

Power supply using photovoltaic cells

Eco Mark Certification
No. xxxxxxx
(allowable with numbers only)

Category B, C, and D
Products using other electric power sources (such as primary batteries, commercial electric power, or wind power generation) along with photovoltaic cells

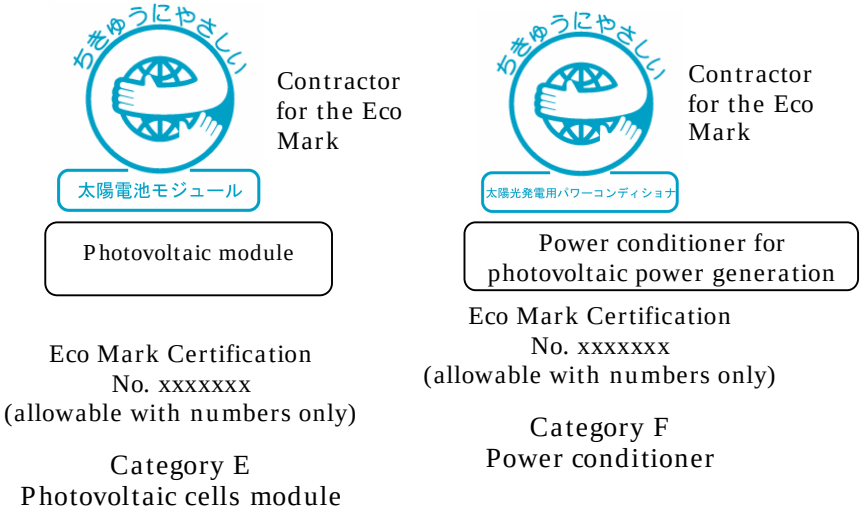

Figure 2 Example of Eco Mark Display

Scheduled to be established: March 15, 2006
Term of validity: March 14, 2011

These Certification Criteria and/or the product category will be revised or abolished when necessary.

Attachment 1

Inhibitory Factors for Waste Paper Recycling in 4-1-1(2)

(1) Prohibitive (; metal material excluding bookbinder's staple, wire, etc.)

(2) Hot-melt adhesive (excluding improved type of EVA hot-melt adhesives (difficult to be torn into narrow strips), polyurethane hot-melt adhesives and water-soluble aesive)

(3) UV ink, forming ink, gold/silver/pearl ink (excluding Eco Mark certified inks)

(4) India paper

(5) 3D printed matters (indicating that lenticular lenses are attached to the printed matter)

(6) Aromatic supplements (aromatic agent, perfume, lipstick and so on)

Note: Definition of I. Regulation 3. "Prohibitive": Refer to "Quality Standard of Waste Paper" by Paper Recycling Promotion Center.

Attachment 2

Substances regulated in 4-1-1(2) and 4-1-3(10)

Specific chlorofluoro-carbon (Five CFCs)	Trichlorofluoromethane	Hydrochloro-fluorocarbon (HCFC)	Pentachlorofluoropropane
	Dichlorodifluoromethane		Tetrachlorodifluoropropane
	Trichlorotrifluoroethane		Trichlorotrifluoropropane
	Dichlorotetrafluoroethane		Dichlorotetrafluoropropane
	Chloropentafluoroethane		Chloropentafluoropropane
Other CFCs	Chlorotrifluoromethane		Tetrachlorofluoropropane
	Pentachlorofluoroethane		Trichlorodifluoropropane
	Tetrachlorodifluoroethane		Dichlorotrifluoropropane
	Heptachlorofluoropropane		Chlorotetrafluoropropane
	Hexachlorodifluoropropane		Trichlorofluoropropane
	Pentachlorotrifluoropropane		Dichlorodifluoropropane
	Tetrachlorotetrafluoropropane		Chlorotrifluoropropane
	Trichloropentafluoropropane		Dichlorofluoropropane
	Dichlohexafluoropropane		Chlorodifluoropropane
	Chloroheptafluoropropane		Chlorofluoropropane
	Carbon tetrachloride		
	1,1,1-trichloroethane		
Hydrochloro-fluorocarbon (HCFC)	Dichlorofluoromethane		
	Chlorodifluoromethane		
	Chlorofluoromethane		
	Tetrachlorofluoroethane		
	Trichlorodifluoroethane		
	Dichlorotrifluoroethane		
	Chlorotetrafluoroethane		
	Trichlorofluoroethane		
	Diclorodifluoroetahne		
	Chlorotrifluoroethane		
	Dichlorofluoroethane		
	Chlorodifluoroethane		
	Chlorofluoroethane		
	Hexachlorofluoropropane		
	Pentachlorodifluoropropane		
	Tetrachlorotrifluoropropane		
	Trichlorotetrafluoropropane		
	Dichloropentafluoropropane		
	Chlorohexafluoropropane		

Eco Mark Product Category No.135 “Products Using Photovoltaic Cells Version1.0” Attached Certificate

Submit this Attached Certificate with “Application for Eco Mark Product Certification or Use” when applying for Eco Mark Product Category No.135 “Products Using Photovoltaic Cells”.

Date: Year Month Day

Brand Name:	
Applicant:	(Company Name) (Company Seal)

＜How to prepare Attached Certificate＞

1. Fill the details of the product in “Fill in this Column.”
   * Shaded areas in “Fill in this Column” do not require entry.
2. Prepare the certificates specified in “Documents to be submitted,” and submit them with this document when applying for Eco Mark Product Certification or Use.
3. Shaded areas in “Documents to be Submitted” do not require entry.
   * Refer to the “Entry tables” when preparing the certificates.
4. Refer to the issuer(s) in the “Issued by” column when preparing “Documents to be Submitted.”

* Fill in the boldly-framed column in case of the followings.
  1) In case the company that developed the product is different from the applicant.
  2) In case of applying the product already certified in this Product Category as another brand.

Item	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
Manufacturing company	□ Own company	—	—
	□ Other company	Approval of Eco Mark Use Application Entry Table 135-8	Person who accept the application
In case of applying the product already certified in this Product Category as another brand	Other changes except brand name □ Yes	—	—
	□ No	Copy of notification to certify the Eco Mark Product Correspondence table of certified product type and newly applied product type	Applicant
		Certificate for Certification Criteria about changes (If changed) e.g.: Packaging, etc.	

Applicable Products

Item	Fill in this Column * Check the appropriate box
Product Category	For the product in the following category, fill in the applicable pages of each category.
	□ A. Residential photovoltaic power generation system (Output: less than 20 kW)
	□ B. Small-scale power generator/charger
	□ C. Installed products □ for residential use／□ for industrial use／ □ for public use
	□ D. Mobile and vehicle-mounted products □ Leisure goods/commodities ／ □ Stationery/office equipment, learning materials/toys ／ □ Vehicle-mounted goods
	□ E. Photovoltaic module (planer-type photovoltaic modules with an output of 10W or more) □JIS C8918 1998 ／ □JIS C8939 1995 Purpose of use：□ for residential use ／ □ for the others (_____) * Explain the purpose of use.
	□F. Power conditioners for small-output photovoltaic power generation (JIS C8980 1997)
Product overview	For the product in Category B-D, describe the product outline.
	Japan Standard Commodity Classification：
	Type of used photovoltaic cell ：(Example) silicon, amorphous
Product type	For the product in the Category A, E and F, fill the product type in the Certificate of each category.
	For the product in the Category B-D, fill all types of the applied brand below.
Eco Mark indication （Planned）	□ Yes □ Product／□ Packaging ／□ Catalogue, leaflet ／□ Instruction manual／ □ Others ( ) □ No * Eco Mark indication requires submitting the indication design (free format, draft is acceptable).

Required documents to satisfy “4. Certification Criteria” and “5. Certification Procedure”

4-1-1. Common criteria

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-1-1.(1)	5-1-1.1)	[Environmental laws and regulations] Shall conform to relevant laws/regulations and pollution control agreements at the production process □ Yes ／ □ No	Environmental Laws and Regulations Compliance Certificate Entry Table 135-5	Finished product manufacturing/ assembly plant
			*For Category A, finished product manufacturing/ assembly plant of photovoltaic module and power conditioner	
4-1-1.(2)	5-1-1.(2)	[Instruction manual] a. Shall have a binding method appropriate for waste paper recycling. (See the Attachment 1) □ Yes ／ □ No Concrete description of binding condition： 〔 〕 b. Chlorine compounds used in the pulp bleaching process for this paper □ Used ／ □ Not used c. Containing ratio of recycled paper pulp □ 70% or more ／□ Less than 70%		
4-1-1.(3)	5-1-1.(3)	[Packaging] Shall be eco-friendly, such as resource saving, easy-to-reuse and recyclable □ Yes ／ □ No (Material of packaging：) □ No use of packaging materials	Explanatory document to indicate the packaging condition, packaging material and consideration (with figures/ photographs)	Applicant
4-1-1.(4)	5-1-1.(4)	[Packaging/ ozone depleting substances] Ozone depleting substances, such as CFC substitutes, shall not be used in manufacturing the packaging materials □ Not used ／ □ Used		

4-1-1.(5)	5-1-1.(5)	[Packaging / halogens] The plastic materials used for packaging shall not contain polymers containing halogens or organic halogen compounds as prescription constituents □ Not contain ／ □ Contain □ No use of plastic materials for packaging		
4-1-1.(6)	5-1-1.(6)	[Maintenance and repair] Maintenance and repair service systems shall be established, and repairs shall be carried out by user's request. □ Yes ／ □ No □ Maintenance system (Essential for Category A/C) □ Repair system (Essential for all Categories) [Information disclosure as part of maintenance and repair system] 【Item of user-oriented information disclosure】 □ a. Coverage and service contents for maintenance (Essential for Category A/C) □ b. Coverage and service contents for repair (Essential for all Categories) □ c. Time/costs for maintenance or repair (Essential for all Categories)	Materials for contact address, maintenance/ repair system and guarantee system Entry Table 135-1 (For Category B-F) Entry Table 135-2 (For Category A) (In case of Residential photovoltaic power generation systems, the responsibility sharing of the related companies shall be described.) The description of 4-1-2 (11) and 4-1-6 (23) can be added here.	Applicant

4-1-1.(7)	5-1-1.(7)	[Information disclosure] Information shall be provided for the following items. 【Items to be indicated in attached documents of the product 】 □ d. Power generation is possibly different in case that the followings are different from standard (conditions): Expected annual power generation, the basis and calculating standard, the conditions of weather, location and installation (Essential for Category A) □ e. Installation and usage conditions (Essential for all Categories) □ f. Performance and structure conditions (Essential for Category A/B/C/E/F) □ g. Information on the types of secondary batteries, the replacement guidelines and the recovery/recycling (Essential for products using secondary batteries of Category A/B/C/D) □ with secondary battery／ □ without secondary battery □ h. Information for consumables (Essential for products with consumables) □ with consumables／ □ without consumables □ i. Guarantee period (Essential for all Categories) * Required conditions for guarantee (application method, presence or absence of contract application for maintenance/repair service, options, etc.) (Essential for Category A) □ j. Contact addresses and methods for obtaining the information (Essential for all Categories) □ k. Explanation concerning non-liability in designing a whole photovoltaic power generation system, the combination of equipment, and the installation (Optional for Category E/F) □ l. Precautions in disposing (Essential for all Categories) □ m. Maintenance/repair service system, information of (a)-(c), contact address or methods for obtaining these information (Essential for all Categories)	Attached documents of the product (Instruction manual, attached documents, packaging, etc.) or a copy of corresponding part of the product catalogue	Applicant
4-1-1.(8)	5-1-1.(8)	[Fire retardant] Plastic parts of the product shall not contain PBB (polybromobiphenyl,) PBDE (polybromodiphenyl ether,) or short-chain chlorinated paraffins as the prescription constituents for fire retardant □ Not contain ／ □ Contain		
4-1-1.(9)	5-1-1.(9)	[Heavy metal] None of the constituents of the product shall contain lead, cadmium, hexavalent chromium, or mercury as prescription constituents. Lead-based solder shall not be used. □ Not contain ／ □ Contain		

Applicant and sales form for residential photovoltaic power generation systems

	Fill in this Column * Check the appropriate box
Applicant / Case	□ Equipment manufacturer ／ □ Sales agent ／ □ Building material manufacturer／ □ Housing manufacturer ／ □ Installer/constructor ／ □ Other (　　)
□ Case 1	Photovoltaic module manufacturer and related company produce or procure each product with consideration for combination with surrounding equipment such as power conditioner, and conduct direct sales to users and/or installation work of set(s) as a system.
□ Case 2	Photovoltaic module manufacturer and related company produce or procure each product with consideration for combination with surrounding equipment such as power conditioner. Direct sales to users or installation work of set(s) as a system are conducted by agency, etc.
□ Case 3	Building material manufacturer procures the component parts of photovoltaic module or power conditioner, develops own building materials, and sells photovoltaic power generation system in combination with these building materials and parts.
□ Case 4	Housing manufacturer sells photovoltaic power generation system to users who live in new or existing house. The photovoltaic power generation system for sales is the existing system, not own-developed system. In this case, existing photovoltaic power generation system, and own-developed installation/construction method might be used.
□ Case 5	The third party/individual such as housing constructor procures the component parts of photovoltaic module or power conditioner sold in single body, and sells and constructs with a unique combination of them.

List of photovoltaic modules used for system

(Attached sheet is acceptable.)

Name of type	Description of type	Nominal maximum output before shipment *1/ Conversion efficiency *2	Name of finished product manufacturing/ assembly plant
(Example) Eco X01	(Example) Silicon crystalline	W / %	

*1 The basic state (a module temperature of 25 degrees Celsius, a spectral distribution of AM1.5 global photovoltaic radiation standard sunshine and an irradiance of 1000 W/m^2) is defined in JIS C 8911 1998.

*2 The following formula is used: Conversion efficiency = (Nominal maximum output of module (W)×100)÷(Module area (m^2)×1000W/m^2)

List of power conditioners used for system

(Attached sheet is acceptable.)

Name of type	Rated output	Efficiency before shipment *3	Name of finished product manufacturing/ assembly plant
(Example) EcoY01	kW	Rated load efficiency: % Partial load efficiency under half load: %	

*3 The calculation of rated load efficiency and partial load efficiency shall follow the measuring method described in JIS C 8961.

List of others used for system (Connecting box, cable, module external frame, frame, support structure) (Attached sheet is acceptable.)

	Product	Name of type
□	Connecting box	
□	Cable	
□	Module external frame/ frame/support structure	
□	Secondary battery (lead-acid battery)	

4-1-2. Category A：Residential photovoltaic power generation systems

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-1-2.(10)	5-1-2.(10)	[Secondary aluminum metal] Use of aluminum alloys for photovoltaic module external frame, frame/support structure □ Used ／ □ Not used		
		If you check the above "Used", use of secondary aluminum metal (recycled shredded metal) □ Used ／ □ Not used		
4-1-2.(11)	5-1-2.(11)	[Output guarantee of photovoltaic module] 90% or more of the lowest value (90% of the nominal maximum output) of the maximum output before shipment shall be guaranteed at least for ten years. □ Yes ／ □ No	Attached documents of the product (Instruction manual, attached documents, packaging, etc.) or a copy of corresponding part of the product catalogue	Applicant, etc.
		Contact address for output, description for maintenance/repair system	Entry Table 135-2	Applicant, etc.
4-1-2.(12)	5-1-2.(12)	[Conversion efficiency of power conditioner] Regarding the rated load efficiency and partial load efficiency with half of the load, the power conditioner shall be designed and manufactured to maintain 90% or more of its efficiency for a service period of five years or longer. □ Yes ／ □ No	Certificate for long-use design Entry Table 135-4	Finished product manufactur-ing/ assembly plant or quality control manager
4-1-2.(13)	5-1-2.(13)	[Secondary battery] Use of secondary battery □ Used (Type of battery) □ Not used		
		Pb・Pb compounds □Used／□Not used Cd・Cd compounds □Used／□Not use Hg・Hg compounds □Used／□Not used		
		If you check "Used" at least once in the above column： A system to recycle and properly dispose secondary batteries collected from the users shall be implemented and maintained. □ Yes ／ □ No	Certificate for recovering system , reuse, material recycling system, or Attached documents of the product and/or a copy of corresponding part of the product catalogue	Applicant

4-1-2.(14)	5-1-2.(14)	[Installation manual] For the applied system, □ Within the scope of JIS C8955 2004 □ Out of the scope of JIS C8955 2004 □ Within the scope of JIS C8956 2004 □ Out of the scope of JIS C8956 2004		
		Installation manual describing the following items shall be prepared. In case of being covered by the above JIS scope, conform to the JIS. □ Yes ／ □ No * Check the item included in the manual. □ Photovoltaic power generation system overview ・Basic structure of the system □ Installation of photovoltaic module ・Installation position ・Installation direction ・Installation pitch and arrangement □ Installation methods ・Wiring ・Fixing metals ・Securing strength (fixed load, system weight, snow weight, wind pressure, and earthquake-resistance strength) ・Waterproof treatment □ Securing safety in installation ・Securing safety for high-place work ・Maintaining working conditions ・Securing safety for wiring work □ Securing safety for disassembling ・Preventive measures against electric shocks and burns		
4-1-2.(15)	5-1-2.(15)	[Technical training] Targeting workers to install photovoltaic power generation systems in residences, technical training system shall be established for them to understand the installation manuals described in (14) □ Yes ／ □ No	A copy of documents to certify the technical training implementation (technical training guideline, etc.)	Applicant, etc.

4-2. Quality criteria

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-2.(26)	5-2.(26)	[Corresponding quality criteria] Photovoltaic array □JIS C8951 1996／□JIS C8952 1996 Photovoltaic module □JIS C8918 1998／□JIS C8938 1995 □JIS C8990 2004／□JIS C8991 2004 Power conditioner for small-output photovoltaic power generation □JIS C8980 1997	Certificates of meeting corresponding quality criteria Entry Table 135-6 * A copy of JET Certificate is acceptable for module and conditioner	Finished product manufactur-ing/ assembly plant or quality control manager

4-1-3. Category B：Small-scale power generators and chargers

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-1-3.(16)	5-1-3.(16)	[Product Category and power] □ 1. Photovoltaic cells only are used □ 2. Photovoltaic cells and parts with storage function, such as secondary batteries and condenser, are used □ 3. Photovoltaic cells are used in combination with primary batteries or other power sources □ With primary battery □ With the other power sources (Type of power source:)	Certificate for supplied or consumed power Entry Table 135-3	Applicant
4-1-3.(17)	5-1-3.(17)	[Secondary battery] Use of secondary battery □ Used (Type of battery) □ Not used		
		Pb・Pb compounds □Used／□Not used Cd・Cd compounds □Used／□Not used Hg・Hg compounds □Used／□Not used		
		If you check "Used" at least once in the above column： A system to recycle and properly dispose secondary batteries collected from the users shall be implemented and maintained. □ Yes ／ □ No	Certificate for recovering system, reuse, material recycling system of secondary battery ; or Attached documents of the product and/or a copy of corresponding part of the product catalogue	Applicant
		* For small-scale power charger, the following items are applicable. Use of recyclable secondary battery □ Yes ／ □ No Product design is that users can remove secondary battery. □ Yes ／ □ No [In case of product design that users can not remove secondary battery] Recovering system of used products is established. □Yes ／ □No	Documents to describe the product design that users can remove, or documents to certify the collection system; or Attached documents of the product or a copy of corresponding part of the product catalogue	Applicant

4-2. Quality criteria

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-2.(26)	5-2.(26)	[Corresponding quality criteria] □ 1. Laws and regulations such as JIS □ 2. Industry's own quality standard □ 3. In-house quality standard In case of 1 or 2, Name of the corresponding standard ( )	In case of 1 or 2 : Certificates of meeting corresponding quality criteria (*2) [Test results, etc.]	Third party testing body or applicant, etc.
			Entry Table135-7	Finished product manufactur-ing/ assembly plant or quality control manager
			In case of 3 : Certificates of meeting in-house criteria [Contents of in-house standard, test results, etc.] Entry Table 135-7	Finished product manufactur-ing/ assembly plant or quality control manager

4-1-4. Category C：Installed product (for residential use, industrial use, or public use)

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-1-4.(18)	5-1-4.(18)	[Product Category and power] □ 1. Photovoltaic cells only are used □ 2. Photovoltaic cells and parts with storage function, such as secondary batteries and condenser, are used □ 3. Photovoltaic cells are used in combination with primary batteries or other power sources □ With primary battery □ With the other power sources (Type of power source:)	Certificate for supplied or consumed power Entry Table 135-3	Applicant
4-1-3.(19)	5-1-4.(19)	[Secondary battery] Use of secondary battery □ Used (Type of battery) □ Not used		
		Pb・Pb compounds □Used／□Not used Cd・Cd compounds □Used／□Not used Hg・Hg compounds □Used／□Not used		
		If you check "Used" at least once in the above column： A system to recycle and properly dispose secondary batteries collected from the users shall be implemented and maintained. □ Yes ／ □ No	Certificate for recovering system, reuse, material recycling system of secondary batteries; or Attached documents of the product and/or a copy of corresponding part of the product catalogue	Applicant

4-2. Quality criteria

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-2.(26)	5-2.(26)	[Corresponding quality criteria] □ 1. Laws and regulations such as JIS □ 2. Industry's own quality standard □ 3. In-house quality standard In case of 1 or 2, Name of the corresponding standard (　　)	In case of 1 or 2 ： Certificates of meeting corresponding quality criteria (*2) [Test results, etc.]	Third party testing body or applicant, etc.
			Entry Table 135-7	Finished product manufactur-ing/ assembly plant or quality control manager
			In case of 3： Certificates of meeting in-house criteria [Contents of in-house standard, test results, etc.] Entry Table 135-7	Finished product manufactur-ing/ assembly plant or quality control manager

4-1-5. Category D：Mobile and vehicle-mounted products

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-1-5.(20)	5-1-5.(20)	[Product Category and power] □ 1. Photovoltaic cells only are used □ 2. Photovoltaic cells and parts with storage function, such as secondary batteries and condenser, are used □ 3. Photovoltaic cells are used in combination with primary batteries or other power sources □ With primary battery □ With the other power sources (Type of power source:)	Certificate for supplied or consumed power Entry Table 135-3	Applicant
4-1-5.(21)	5-1-5.(21)	[Secondary battery] Use of secondary battery □ Used (Type of battery:_____) □Recyclable battery □Non-recyclable battery □ Not used		
		Pb・Pb compounds □ Used／□ Not used Cd・Cd compounds □ Used／□ Not used Hg・Hg compounds □ Used／□ Not used		
		In case of use of secondary battery: Product design that users can remove secondary battery. □ Yes ／ □ No [In case of product design that users can not remove secondary battery] Recovering system of used products is established. □Yes ／ □No	Documents to describe the product design that users can remove, or documents to certify the collection system; or Attached documents of the product or a copy of corresponding part of the product catalogue	Applicant

4-2. Quality criteria

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-2.(26)	5-2.(26)	[Corresponding quality criteria] □ 1. Laws and regulations such as JIS □ 2. Industry's own quality standard □ 3. In-house quality standard In case of 1 or 2, Name of the corresponding standard (　　)	In case of 1 or 2： Certificates of meeting corresponding quality criteria (*2) [Test results, etc.]	Third party testing body or applicant, etc.
			Entry Table 135-7	Finished product manufactur-ing/ assembly plant or quality control manager
			In case of 3： Certificates of meeting in-house criteria [Contents of in-house standard, test results, etc.] Entry Table 135-7	Finished product manufactur-ing/ assembly plant or quality control manager

4-1-6. Category E：Photovoltaic module

List of photovoltaic modules included in the applied brand (Attached sheet is acceptable.)

Name of type	Description of type	Nominal maximum output before shipment *1/ Conversion efficiency *2	Name of finished product manufacturing/ assembly plant
(Example) Eco X01	(Example) silicon crystalline	W / %	

*1 The basic state (a module temperature of 25 degrees Celsius, a spectral distribution of AM1.5 global photovoltaic radiation standard sunshine and an irradiance of 1000 W/m^2) is defined in JIS C 8911 1998.

*2 The following formula is used: Conversion efficiency = (Nominal maximum output of module (W)×100)÷(Module area (m^2)×1000W/m^2)

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-1-6.(22)	5-1-6.(22)	[Secondary aluminum metal] Use of aluminum alloys for photovoltaic module external frame, frame/support structure □ Used ／ □ Not used		
		If you check the above "Used", use of secondary aluminum metal (recycled shredded metal) □ Used ／ □ Not used		
4-1-6.(23)	5-1-6.(23)	□For photovoltaic modules for residential photovoltaic power system, the following item is required. [Output guarantee of photovoltaic module] 90% or more of the lowest value (90% of the nominal maximum output) of the maximum output before shipment shall be guaranteed at least for ten years □ Yes ／ □ No	Attached documents of the product (Instruction manual, attached documents, packaging, etc.) or a copy of corresponding part of the product catalogue	Applicant, etc.
		Contact address for output, description for maintenance/repair system ( )	Entry Table 135-1	Applicant

4-1-6.(24)	5-1-6.(24)	□ For photovoltaic modules for residential photovoltaic power system, the following item is required. [Installation manual] The applied system is, □ Within the scope of JIS C8955 2004 □ Out of the scope of JIS C8955 2004 □ Within the scope of JIS C8956 2004 □ Out of the scope of JIS C8956 2004		
		Installation manual describing the following items shall be prepared. In case of being covered by the above JIS scope, conform to the JIS. □ Yes ／ □ No * Check the item included in the manual. □ Photovoltaic power generation system overview ・Basic structure of the system □ Installation of photovoltaic module ・Installation position ・Installation direction ・Installation pitch and arrangement □ Installation methods ・Wiring ・Fixing metals ・Securing strength (fixed load, system weight, snow weight, wind pressure, and earthquake-resistance strength) ・Waterproof treatment □ Securing safety in installation ・Securing safety for high-place work ・Maintaining working conditions ・Securing safety for wiring work □ Securing safety for disassembling ・Preventive measures against electric shocks and burns		

4-2. Quality criteria

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-2.(26)	5-2.(26)	[Corresponding quality criteria] Photovoltaic module □JIS C8918 1998／□JIS C8938 1995	Certificate for quality Entry Table 135-6 * A copy of JET Certificate is acceptable.	Finished product manufacturing/ assembly plant or quality control manager

4-1-7. Category F：Power conditioners for small-output photovoltaic power generation

List of power conditioners included in the applied brand (Attached sheet is acceptable.)

Name of type	Rated output	Efficiency before shipment *1	Name of finished product manufacturing/ assembly plant
(Example) EcoY01	kW	Rated load efficiency: % Partial load efficiency under half load: %	

*1 For the calculation of rated load efficiency and partial load efficiency, it shall follow the measuring method described in JIS C 8961.

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-1-7.(25)	5-1-7.(25)	[Conversion efficiency of power conditioner] Regarding the rated load efficiency and partial load efficiency with half of the load, the power conditioner shall be designed and manufactured to maintain 90% or more of its efficiency for a service period of five years or longer. □ Yes ／ □ No	Certificate for long-use design Entry Table 135-4	Finished product manufactur-ing/ assembly plant or quality control manager

4-2. Quality criteria

Item No. of Certification Criteria	Item No. of Certification Procedure	Fill in this Column * Check the appropriate box	Documents to be submitted	Issued by
4-2.(26)	5-2.(26)	[Corresponding quality criteria] Power conditioners for small-output photovoltaic power generation □JIS C8980 1997	Certificate for quality Entry Table 135-6 * A copy of JET Certificate is acceptable.	Finished product manufactur-ing/ assembly plant or quality control manager

Entry Table 135-1【For Category B-F】

Eco Mark Office, Japan Environment Association

Explanatory Document for Maintenance and Repair System

Date: Year Month Day
(Issuer: Company name) (Company seal)

* Issuer is an applicant.

The followings show the maintenance and repair system of the applied product of the brand name ( ).

Contact address for users, maintenance and repair system, and guarantee system are as follows.

Applied category [ ]

Description of the responsibilities for contacting, repair and guarantees

Company / Content of share		
Equipment manufacturing		
Equipment repairing		
Instruction manual(users' manual)		
Installation manual (for Category E)		
Equipment guarantee		
Distribution		
Contact by the users		

* Refer to Certification Criteria, 5. Certification procedure, (6) Table 4-2 when filling in.

【Category E: Photovoltaic module (Only for photovoltaic modules for residential photovoltaic power systems)】

Output guarantee of modules described in Certification Criteria 4-1-6(23)
* Describe contact address or repair/guarantee system for output of photovoltaic module. Example: Accepting the complaint from users about output of power, we inspect/repair as needed, and confirm whether the lowering of output was caused by failure of module.

Entry Table 135-2【For Category A: Residential photovoltaic power generation system】

Eco Mark Office, Japan Environment Association

Explanatory Document for Maintenance and Repair System

Date:	Year	Month	Day

(Issuer: Company name)

(Company seal)

* Issuer is an applicant.

The followings show the maintenance and repair system of the applied product of the brand name ( ).

Description of the responsibilities of related companies, such as equipment manufacturer, sales agent and constructor, is as follows.

Description of the responsibilities for contacting, maintenance, repair and guarantee

Company / Content of share				
Equipment manufacturing				
Equipment repairing				
Instruction manual				
Seminars for designing and construction				
Standard specifications and construction specifications				
Equipment guarantee				
Distribution				
Design system				
Guarantee system				
Management of construction				
Construction				
Maintenance and repairs				
Installation and repair of wiring				
Contact by users				

* Refer to Certification Criteria, 5. Certification procedure, (7) Table 4-1 when filling in.

Output guarantee of modules described in Certification Criteria 4-1-2(11)
* Describe contact address, repair and guarantee system regarding output of photovoltaic module. Example: Accepting the complaint from users about output of power, we inspect/repair as needed, and confirm whether the lowering of output was caused by failure of module.

Entry Table 135-3

Eco Mark Office, Japan Environment Association

Certificate for Supplied or Consumed Power

Date: Year Month Day
(Issuer: Company name) (Company seal)

* Issuer is an applicant.

This is to certify that regarding the applied product of the brand name ( ), the power supplied by photovoltaic cells shall be as follows.

Product Category (Check the appropriate box)

□ 1. Photovoltaic cells only are used

□ 2. Photovoltaic cells and parts with storage function, such as secondary batteries and condenser, are used

□ 3. Photovoltaic cells are used in combination with primary batteries or other power sources

(Type of power sources used with:)

Total power supplied by the product under the standard operating conditions expected from the product specifications

Name of type	①	②	③ (=②／①×100)
	Supplied (consumed) power of the product	Expected power generated by photovoltaic cell loading	Ratio of power supplied by photovoltaic cell
	(Unit) Wh/ *	(Unit) Wh/ *	(Unit) %

※Unit shall be filled in based on the specification such as Wh/h, Wh/day, etc.

As the basis for the above calculation, the following materials are attached.

□ Basis for calculation of supplied power (or consumed power) of the product in accordance with specification

□ Basis for calculation of the capacity of the photovoltaic cells loading (including the expected amount of power generation) in accordance with specification

□ Changing the conditions from photovoltaic cells to other power sources, and changing the conditions from other power sources to photovoltaic cells (only for Category 3 product)

□ Methods for charging the secondary battery (if used)

□ Electric power supplied from photovoltaic cells (including the equations and conditions for the calculation) that is calculated based on the information (only for Category 3 product)

Entry Table 135-4

Eco Mark Office, Japan Environment Association

Certificate for Long-use Design of Power Conditioner

Date:	Year	Month	Day

(Issuer：Company name)

(Company seal)

* Issuer is a finished product manufacturing/assembly plant or quality control manager.

We hereby declare that the power conditioner for residential photovoltaic power generation systems of the brand name (　　) of the applied product shall be properly designed and manufactured to maintain 90% or more of its efficiency for a service period of five years or longer, regarding the rated load efficiency and partial load efficiency with half of the load.

* The calculation of the rated load efficiency and the partial load efficiency before shipment shall follow the description in JIS C 8961 1993.

Condition of use:
Condition of installation:
Condition for use with the other equipment (Photovoltaic module, etc.):
Other condition:

* If the above column is not enough, attached sheets are also available. In this case, fill the name of the sheets in the column.

Entry Table 135-5

Eco Mark Office, Japan Environment Association

Environmental Laws and Regulations Compliance Certificate

Date:	Year	Month	Day

(Issuer：Company/plant name)

(Company seal)

* Issuer is a finished product manufacturing/assembly plant.

This is to certify that manufacturer shall meet the following requirements:

The production process has been conforming to relevant environmental laws/regulations and antipollution agreements on water contamination, noise, vibration, odor, emission of hazardous materials, and occupational health and safety in the past five years (*) after application.

Name of relevant environmental laws and regulation	Note
□ Air Pollution Control Law	* Check the relevant law for the plant
□ Water Pollution Control Law	
□ Noise Regulation Law	
□ Vibration Regulation Law	
□ Offensive Odor Control Law	
Example) XX Prefecture XX Environmental Conservation Regulation	* If there are regional regulations or agreements in the area where the plant is located, indicate the names of them.
□	
□	
□	

(*) "No law/regulation has been violated since the establishment of the company" is acceptable.

* The validity of this certificate is nearly three month after the Eco Mark application.

Entry Table 135-6

Eco Mark Office, Japan Environment Association

Certificate for Quality

Date:	Year	Month	Day

(Issuer：Company name)

(Company seal)

* Issuer is a finished product manufacturing/assembly plant or quality control manager.

We hereby certify that the applied product of the brand name (_____) shall meet the following JIS.

Category A：Residential photovoltaic power generation system

(Check the appropriate box)

Photovoltaic array
□ JIS C8951 1996: (General rules for photovoltaic array) □ JIS C 8952 1996: (Indication of photovoltaic array performance)
Photovoltaic module
□ JIS C8918 1998: (Crystalline photovoltaic modules) □ JIS C8990 2004: (Crystalline silicon terrestrial photovoltaic (PV) modules-Design qualification and type approval) □ JIS C8938 1995: (Amorphous photovoltaic modules) □ JIS C8991 2004: (Thin-film terrestrial photovoltaic (PV) modules-Design qualification and type approval) (Check the appropriate box)
Power conditioners for small-output photovoltaic power generation
□ JIS C8980 1997: (Power conditioners for small-output photovoltaic power generation)

□ **Category E：Photovoltaic module**

□ JIS C8918 1998: (Crystalline photovoltaic modules)
□ JIS C8938 1995: (Amorphous photovoltaic modules)

(For residential or industrial use of photovoltaic modules for photovoltaic power generation system, fill in the followings)

□ JIS C8990 2004: (Crystalline silicon terrestrial photovoltaic (PV) modules-Design qualification and type approval)

□ JIS C8991 2004: (Thin-film terrestrial photovoltaic (PV) modules-Design qualification and type approval)

(Check the appropriate box)

□ **Category F：Power conditioners for small-output photovoltaic power generation**

□ JIS C8980 1997: “Power conditioners for small-output photovoltaic power generation”

Entry Table 135-7

Eco Mark Office, Japan Environment Association

Certificate of Quality Control

Date:	Year	Month	Day

(Issuer：Company name)

(Company seal)

* Issuer is a finished product manufacturing/assembly plant or quality control manager.

We hereby certify that the product of Eco Mark brand name (　　) shall be properly managed in accordance with the quality control items listed in Attachment *1 (documents to explain the actual quality control items) and shipped only when the product conforms to the quality control standard.

(Attachment *1)

1. Quality control items such as JIS, etc. or in-house quality control items
2. Test results based on the quality control items

Entry Table 135-8

Eco Mark Office, Japan Environment Association

Approval of Eco Mark Use Application

Date:	Year	Month	Day

(Issuer：Company name)

(Company seal)

* Issuer is a product manufacturing company (a person who approved the application).

We hereby approve that the company (_____) applies the product name [(_____) :Eco Mark Certification No.(_____)] for "Approval of Eco Mark Use Application" under the brand name of (_____).