

Interpretation

## “BD/DVD Recorder/Player Version 1”

Established on January 15, 2012

**1. Background for Setting of the Product Category**

BD/DVD recorders/players are products familiar to consumers, and used to record and play back television programs, view video software, etc. in private households. As shown in Table 1<sup>1</sup>, its adoption rate in private households reached 72.8% and the quantities held per 100 households amounted to 133.1 units in March 2011. Sales volume of the BD recorders increased as they were often purchased, as a suite, with digital television sets whose sales was boosted by the eco-point system (which ended in March 2011). In addition, with the transition to the digital terrestrial broadcasting in July 2011, the BD/DVD recorders/players have been rapidly spreading due to demands for replacement of conventional VCR (Video Cassette Recorder) or DVD recorders that incorporate tuners for receiving analog broadcasting with recorders that incorporate tuners for receiving digital terrestrial broadcasting.

Table 1. Adoption Rate in and Number of Units Held by Private Households (As of end of March 2011)

	Optical Disk Players/Recorders	DVD Players (Playback-only Equipment)	DVD Recorders (Playback-Recording Equipment)	BD Players/Recorders
Adoption Rate (%)	72.8	38.0	45.4	27.1
Quantities Held per 100 Households (Units)	133.1	45.3	57.1	30.6

According to the survey<sup>2</sup> conducted by Fuji Chimera Research Institute, Inc., situation of the domestic BD recorder/player market is as shown in Table 2. Although size of the BD player market is about 10% smaller than the BD recorder market, it has been growing in the wake of introduction of low-priced products. Accompanying the shift of video software from DVD to BD, a shift to BD players is also gaining speed. The volume of shipments of DVD recorders/players in 2010 was approximately 2.5 million units/year-on-year decrease to 85%<sup>3</sup>, and is on a declining trend. In 2011, there was no new DVD recorder product released by a domestic manufacturer. In addition, it is expected that the price reduction of the BD players, which has been steadily proceeding, will reverse the DVD player market.

Table 2. Domestic Market of BD Recorders/Players (Volume of Shipment)

	Year 2010	Estimate for Year 2011	Forecast for Year 2015	Compared with 2010
BD Recorders	5.0 million units	6.0 million units	4.8 million units	96.00%

BD Players	0.3 million units	0.6 million units	1.4 million units	466.70%
<b>TOTAL</b>	5.3 million units	6.6 million units	6.2 million units	117.00%

For related domestic regulations/standards, although the Act on the Rational Use of Energy (Rationalization in Energy Use Law) (Revised by the Ministry of Economy, Trade and Industry Public Notice No. 290 dated November 26, 2007) defines the DVD recorders from the standpoint of consumption energy, this does not apply to the BD recorders. In addition, they are not covered by designated procurement items in the “Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities” (Law on Promoting Green Purchasing). In addition, the Product Category Rule (PCR) has not been set in the type III Environment Label “Eco-Leaf” (Japan Environmental Management Association for Industry) based on ISO 14025 or carbon foot print (CFP Pilot Project Secretariat).

General Incorporated Association, Japan Electronics and Information Technology Industries Association (JEITA) has developed the guideline conforming to the Rationalization in Energy Use Law “Method for Measuring Annual Consumed Power (Energy Efficiency) of Next Generation Optical Disk Recorders” (August, 2008).

As described above, although BD/DVD recorders/players are equipment close to consumers, so far no criterion that considers environmental load in the entire life cycle of the products in a comprehensive manner has been established. Thus, it is of great significance to improve standards for judgment related to the environmental aspect of the BD/DVD recorders/players, which assist general consumers in selecting a product.

Hence, in this product category, it was decided to formulate the certification criteria for BD/DVD recorders/players with the objective of promoting product designing that is aimed to reduce environmental load in a comprehensive manner, such as resource consumption, energy saving, restriction on the use of hazardous substances, recycling/disposal of used products, recycling of rare metals, etc.

As the BD/DVD recorders/players are products being internationally distributed, it is necessary to give consideration to overseas markets as well. Table 3 shows import/export volume of the recorders/players (DVD equipment) in Japan for January to December 2010. Compared with 2009, the import volume is on rise, while the export volume is on decline. In Japan, as it is a common practice to record television programs, the share of recorders is high. However, in foreign countries except for a part of EU bloc, as there is no habit of recording television programs, almost no recorders are being sold, while the players have been widespread. Some cases are also seen in which some models of the BD/DVD players which are sold in Japan are marketed in China or South Korea without change.

Table 3 Status of Import/Export of DVD equipment in 2010 (According to Trade Statistics of Japan, Ministry of Finance)

	Import (Overseas → Japan)		Export (Japan → Overseas)	
	Number of Products	Amount of Money (1,000 yen)	Number of Products	Amount of Money (1,000 yen)
Recording-Playback Equipment	13,171,022	187,660,318	237,085	22,713,068

Among three countries of Japan, China, and Korea, since 2005, in the Tripartite Round-table Meeting on Environmental Industry between China, Korea and Japan and its concomitant working-level talks<sup>4</sup>, etc., discussions towards common standardization of Eco Mark, the Chinese Environmental Labelling system, and the Korean Eco-Label system and implementation of mutual recognition<sup>5</sup> have continued. In the discussions, the DVD equipment was adopted as an item subject to common standardization among Japan, China, and Korea in the Japan, China and Korea eco-label working (working-level talks) in September 2010. As the markets in Japan, China and Korea are leading Asia and the world, it is expected that joint efforts of the three countries in the approaches described above will not only contribute to considerable reduction of environmental loads accompanying further development of the tripartite market economy in the future but also be a good example of advancement for other foreign countries.

In the type I environmental labeling programs abroad, “Blue Angel” of Germany, “Nordic Swan” of the five Nordic countries, “Korea Eco-Label” of Korea, “Green Label” of Thailand, and “Environmental Choice” of Australia have set the criteria related to the DVD equipment. In the “Chinese Environmental Labelling” of China, criteria for the “DVD players” are now being prepared and institution is scheduled at the end of 2011. Among other related laws or regulations, the ErP Directive of EU (Eco-design requirements for energy related products), the Regulation on Standby Power Reduction Program 13. DVD Products of Korea, and the Energy Star Program of the United States have set the standard values for consumption energy. In this formulation of the criteria, the review was made in consideration of harmonization with the eco-labelling criteria (or proposals on criteria) of Korea/China, etc.

## 2. Applicable Scope

This product category shall cover video equipment of stationary type whose main functions are to record and play back BD, DVD, etc. or to play back only. However, it shall not include equipment, listed below, that have similar functions:

### 1) Equipment whose main functions are not to record and play back optical disks

All-in-one BD/DVD television sets were excluded because evaluation of the

environmental performance of television sets as the main function was required. Listed below are similar product families:

<List of equipment not included in the applicable scope of this product category>

- All-in-one BD/DVD television sets
- STB (Set Top Box)<sup>6</sup>
- Personal Computers (type with built-in BD/DVD) and BD/DVD drives for personal computers (external type, built-in type)
- AV amplifier
- Automotive navigation equipment
- Gaming machines

Note) Personal computers having BD/DVD drives are covered by Eco Mark Product Category No.119 “Personal Computer Version 2”.

## **2) Equipment that has no optical disk drive**

It was reviewed whether or not to include the HDD recorders in the applicable scope as they might be optional when consumers purchase a BD recorder. Annual shipment of the HDD recorders is about several tens of thousands, and the market size is not large when compared with the BD recorders. It is also believed that the market of the BD recorders demonstrates an upward trend as in the past one year, as products such as an external HDD connecting a television set with USB, external HDD connecting a BD recorder, etc. were released. On the other hand, however, in the category of the HDD recorders, there is now equipment that has built-in HDD in STB or that enables recording of television programs by connecting a game machine incorporating the HDD with a digital tuner. Thus, the market is now fluctuating widely and product characteristics are varied depending on equipment. For this reason, it was decided that at the present stage, the HDD recorders were not treated as the applicable scope of this product category. In addition, as the CD/MD players do not fall under video equipment covered by this product category although they have an optical disk drive, they are excluded from the applicable scope. Listed below are similar product families:

<List of equipment not included in the applicable scope of this product category>

- HDD recorders
- Television with a built-in HDD
- VCR (video cassette recorder) \*Excluding all-in-one BD/DVD type.
- CD/MD players
- Portable AV players

## **3) Portable products**

Portable BD/DVD players have a display or secondary batteries, and their product characteristics or use environment are different from those of stationary type. In addition, when compared with the stationary type, the market of the portable BD/DVD players will not expand in the future. In this review, it was decided to exclude them from the applicable scope of this product category because review of the environment load which differs from the stationary type is required.

### 3. Terminology

The terminology was created, by referring to the ErP Directive of EU and the certification criteria of Eco Mark product categories related to other electronic devices. In addition, it was decided to follow the ErP Directive for a method for testing power consumption in off mode and standby mode, and the Home Electrical Appliances and Material Safety Law for a method for testing power consumption in use.

## 4. Certification Criteria and Certification Procedure

### 4.1 Details of Developing Certification Criteria and Certification Procedure

To set the criteria, reference was made to “Table for Selection of Product Life Stage Environmental Evaluation Items”, and environmental loads throughout life stages of products were considered from the environmental standpoint. Evaluation items which were considered important in defining the certification criteria were selected, and qualitative and quantitative criteria for those items were formulated.

The environmental evaluation items considered in the product category “BD/DVD recorders/players” are as listed in the “Table for Selection of Product Life Stage Environmental Evaluation Items” (◎,○). The items that were finally selected are A-1, B-3, C-1, D-2, D-3, E-1, E-3, F-1, and F-3. (◎ in the table: Criterion item, item to be considered)

In addition, the columns with ■ mark in the table show items that were not covered by the review or those that were reviewed together with other items. The development of formulation of the environmental criteria will be described in the following:

**Table “Table for Selection of Product Life Stage Environmental Evaluation Items”**

Environmental Evaluation Item	Product Life Stage					
	A. Resource Collection	B. Manufactu ring	C. Distribut ion	D. Use Consumpti on	E. Recyclin g	F. Disposal
1.Resource Saving and Resource Recycling	◎	■	◎	■	◎	◎

2. Prevention of Global Warming				◎		
3. Restriction and Control of Hazardous Substances		◎		◎	◎	◎
4. Preservation of Biodiversity	○					

## A. Resource Collection Phase

### A-1 (Resource Saving and Resource Recycling)

Under this item, the following points were reviewed:

- (1) A product main body shall have light weight.
- (2) A supply period for spare parts shall be ensured.
- (3) Repair subcontract system shall be available, and repairs shall be carried out as requested by the users.
- (4) Replacement or removal of a battery mounted on equipment shall be possible without the need to replace an entire printed circuit board when the battery life ends or when any repair work is necessary.
- (5) 3R design of a product main body (easiness to disassemble, easiness of recycling, etc.)
- (6) Selection of plastic materials for a product main body
- (7) Consideration in product designs for usage of rare metals
- (8) 3R design of packaging materials
- (9) Environment-consciousness for instruction manuals, etc.

For the point (1), in one example of life cycle assessment (LCA) of the BD recorder (excluding waste product transportation, collection, and recycling phases), the greenhouse gas emission rate was about 24% in the material stage, about 0% in the production stage, about 0% in the product transportation stage, and about 76% while the product was used. In addition, it is considered that about 70% of materials resulted from manufacturing of electronic components. Thus, it was reviewed whether weight reduction of products was a factor that had an effect on reduction of environmental loads.

As a result<sup>7</sup> of the survey on main body weights of products marketed in Japan for the past five years, average product weight of the equipment has been declining year after year (For your reference, Fig. 1 and Table 4 show data on the BD player.). On the one hand, among some models called high-quality products that place an emphasis on the high quality sound/picture, there were some products that are great in weight due to measures such as a structure for strengthening a casing or chassis or for reducing external influence on a device or

substrate in the casing, etc. In addition, in a press release or on website of operators of plasma display televisions or DVD recorders, some cases are seen in which they advocate “Weight reduction through circuit integration”.

It is estimated that the number of discharged units<sup>8</sup> of the DVD players in 2010 is 5.92 million units and the total discharge weight is 20,000 tons (if the potentially collectable volume of players were collected 100%). Given the present situation in which most of the disposed DVD players are finally landfilled, it is believed that weight reduction of products is effective as a waste reduction measure. It was also pointed out that use of a special material/component might make recycling difficult even if it is collected together with other BD/DVD equipment.

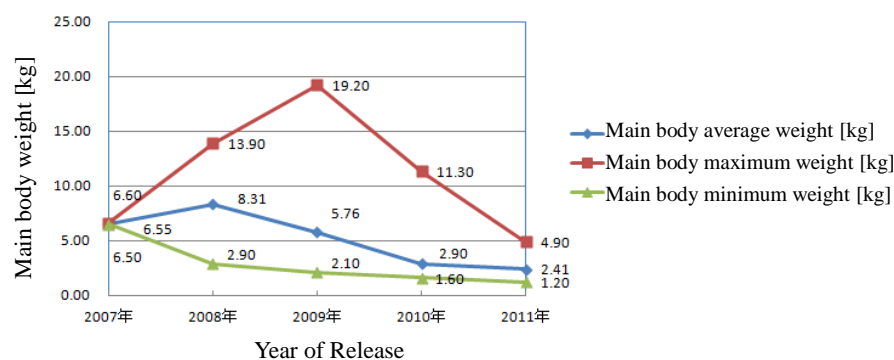


Fig. 1 Release Years of BD Players and Transition in Main Body Weight

Table 4 Release Years of BD Players and Transition in Main Body Weight

	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011	All data
Main body average weight [kg]	6.6	8.3	5.8	2.9	2.4	4.4
Main body maximum weight [kg]	6.6	13.9	19.2	11.3	4.9	19.2
Main body minimum weight [kg]	6.5	2.9	2.1	1.6	1.2	1.6
Number of products	2	8	18	24	13	65

In the Criteria Formulation Committee, it was pointed out that as volume reduction of products, the higher loading efficiency during transportation of products was effective in reducing the environmental loads. However, since reduction of product volume is correlated with reduction of weight, and weight criteria are easier for consumers to understand, it was decided to set the criteria on product weight with the objective of promoting measures to reduce wastes, improvement of material efficiency, and selection of easily recyclable materials. According to LCA of products, however, as the impact in use is largest, criteria items related to

resource saving shall be minimally checked, and standard values have been set to the level to which about 80% of models released after January 2010 could conform. [Formulation of Certification Criteria, 4-1-1(1)]

For electrical and electronic products in the point (2), “Indication Target Items of Service Parts and Availability Period” has been defined in “Fair Competition Codes Concerning Labeling in Home Electric Appliance Manufacturing Industry and Enforcement Regulations” by General Incorporated Association, Home Electrical Appliance Fair Trade Conference, and, depending on an item, an availability period from five to nine years after production stops has been set. Although the recorders/players are not listed as a target item, an availability period for color televisions has been specified as eight years. In addition, according to the survey conducted by the Cabinet Office<sup>9</sup>, the average years of use of “optical disk players/recorders” is 6.0 years. However, considering that the optical disk players/recorders are used as a suite with color televisions, it is desirable that they are used for a longer period of time. Thus, it was determined that supply of spare parts shall be ensured for eight years after production stops, and the criterion was set accordingly. [Formulation of Certification Criteria, 4-1-1(2)]

The point (3) was set as a criterion, because it is indispensable that repair subcontract system is improved, to promote a longer period of use of products. [Formulation of Certification Criteria, 4-1-1(3)]

As for the point (4), consumers cannot replace batteries mounted on equipment. In addition, because no case that needs replacement of batteries is generally assumed during a period till use of the product ends, the point (4) was not set as a criterion. Any hazardous substance of batteries embedded in equipment was reviewed in F-3.

The points (5) and (6) were selected as an item for formulating the criteria, because consideration to 3R (reduce, reuse, and recycle) in product designing can promote product reuse or material recycling or extend product life, thereby contributing to reduction of resource consumption and wastes. [Formulation of Certification Criteria, 4-1-1(4)]

The checklist for product designing was prepared with Eco Mark Product Category No.145 “Projector Version 1” as a reference for the format, and the requirement items were reviewed based on the existing checklists thereof.

The items in the checklists are divided into those that must be implemented (Must items) and those that should be implemented (Should items). While all the Must items must be satisfied as with the criterion items in the Criteria text, the Should items, if they have not been implemented, do not affect examination. The Should items are positioned as items that are to be studied next time when the criteria are revised, by closely monitoring the technology development trend in the future. The Should items have significance of communicating environmental goals to operators and consumers.



The product design checklist includes, as standpoints of the criteria, easiness to disassemble, reduction in types of plastic materials and common use thereof, coloring/painting of plastic materials, use of reused/recycled plastics, design techniques for determining components in which rare metals are contained/types/quantities and for reusing, etc.

The point (7) was reviewed collectively in E-1.

The point (8) was selected as a criterion item with the objectives of saving resource of packaging materials and facilitating recycling. [Formulation of Certification Criteria, 4-1-1(5)]

The point took the form of a checklist which includes, as criteria items, comparison of weight reduction/volume reduction of packaging materials with conventional equipment, consideration of reprocessed materials reduction in ink usage for printing, sharing of materials to be used, facilitated recycling, avoidance/reduction of use of chemical substances that affect the environment. Weight reduction of packaging materials contribute to reduction of wastes, and volume reduction contributes to improvement of the loading efficiency during transportation.

For the point (9), when compared with environment load of a product main body, environmental load of an instruction manual supplied therewith is not great. In order to encourage waste paper recycling promoted by Eco Mark, it was decided to set items such as promotion of use of recycled paper, binding forms that can be easily recycled, etc., as items to be considered. [Formulation of Certification Criteria, 5 (2)]

#### **A-4 (Preservation of Biodiversity)**

Under this item, the following point was reviewed:

- (1) Paper to be used in an instruction manual shall have less influence on preservation of biodiversity.

Materials to be used in instruction manuals were collectively reviewed in A-1. It was decided not to set a criterion because at the present moment, it is difficult to provide a criterion by tracing back to forest management that directly contributes to preservation of biodiversity,

### **B. Manufacturing Stage**

#### **B-3 (Restriction and Control of Hazardous Substances)**

Under this item, the following points were reviewed:

- (1) During the manufacturing process, release of air pollutants, discharge of water pollutants, and use of hazardous substances shall be less, or consideration shall be given thereto.
- (2) No solvent such as specified chlorofluorocarbon/chlorofluorocarbon alternatives shall

- be used in manufacturing processes of products.
- (3) Specified chlorofluorocarbon/chlorofluorocarbon alternatives shall not be used in packaging materials.

The point (1) was selected as an item for formulating the criteria, because it was determined that environmental loads of air pollutants, etc. to be released from manufacturing processes could be alleviated by observing relevant environmental regulations and pollution prevention agreements, including regulations related to industrial safety and hygiene. For this item, the eco-labelling in China and Korea also requests legal compliance. [Formulation of Certification Criteria, 4-1-3 (12)]

In addition, although it is requested as an essential condition that the environment related regulations, etc. be observed for all manufacturing processes of individual components, it is not realistic to trace back to all the processes and check materials/components. Thus, it was decided that application of this item was limited to final process (assembly) plants.

The point (2) is the item specified in the proposal on criteria in the Chinese Environmental Labelling system. Substances such as toluene, xylene, etc. are also listed as solvents other than ozone depleting substances. It was decided not to set the ozone depleting substances as a criterion, because the international treaty has already been concluded based on “Montreal Protocol on Substances that Deplete the Ozone Layer”. Although toluene and xylene are considered a measure against volatile organic compounds (VOC), no harmonization was made because the intent of confining to and addressing these substances was not clear.

Although the point (3) is the item specified in the proposal on criteria in the Chinese Environmental Labelling system, it was decided not to set the point (3) as a criterion, as it cannot be assumed under the current circumstances that any ozone depleting substance is used for packaging material.

### **C. Distribution Stage**

#### **C-1 (Resource Saving and Resource Recycling)**

Under this item, the following point was reviewed:

- (1) Weight reduction of packaging materials

The point (1) was collectively reviewed in A-1.

### **D. Use and Consumption Stage**

#### **D-2 (Prevention of Global Warming)**

Under this item, the following points were reviewed:

- (1) Power consumption in use (operation) shall be low.
- (2) Power consumption shall be low in off-mode or in standby mode.

- (3) Annual power consumption of BD/DVD recorders shall be low.
- (4) A product shall have the capability of shifting to the low power mode, when a certain period of time, during which the product has not been operated, has elapsed with the main functions such as recording and playback, etc. stopped.
- (5) For any equipment with the fast startup mode, it shall be initially set (factory default) to the standby mode.
- (6) BD/DVD players shall have no capability of fast startup mode.
- (7) Information on an appropriate method for using to reduce environmental load shall be provided to consumers.

For the point (1), it is in the use stage that the environmental load is highest throughout the life cycle. The point (1) was selected as an item for formulating the criteria because reduction of power consumption in use makes a great contribution to prevention of global warming. [Formulation of Certification Criteria, 4-1-2 (6)]

Power consumption in use shall be in rated power consumption [W] based on the Electrical Appliances and Material Safety Law. The rated power consumption is maximum operating power when the equipment is in available playback and recording (standalone or combined) condition. However, since power supply to external devices through USB or to BS/CS antenna cannot be assumed as operating condition in normal use, it was decided to follow Section 1 of the Electrical Appliances and Material Safety Law. In addition, the “Fair Competition Codes Concerning Labeling in Home Electric Appliance Manufacturing Industry and Enforcement Regulations” (DVD-Video) specifies that rated power consumption is indicated as “indication item of specification and indication criteria thereof”.

The standard values of power consumption were set to the level to which top 20 to 30% of models released after January 2010 (after January 2009, for DVD recorders) conform. For the BD/DVD recorders, the standard values were classified, depending on capacity of HDD (two sections of equal to or greater than 1TB and more than 1TB). In the Rationalization in Energy Use Law (DVD recorders, revised in 2007 (Heisei 19)), in view of the technology level at the time of revision, the standard energy consumption efficiency was classified with 500GB of HDD as a border. In addition to this, although classification is done given added functions, recently, added functions have become diversified, and in general it is believed that the highly-functional models with larger HDD capacity have more added functions. In the current technology, the HDD having the capacity up to 1TB comprises one platter (metal disk), while the HDD having higher capacity comprises 2 or more platters and in general consumes more electric power as motors, etc. for rotating the platters increase. Although the technology level for HDD capacity advances in a cycle of one year, under present circumstances, power consumption changes depending on whether the HDD capacity is above or below 1TB. Thus,

it was believed that classification based on 1TB was justified.

For DVD recorders and BD/DVD recorders with a built-in VCR (all-in-one equipment), as almost no new product has been marketed since January 2011, it was decided to make adjustment for them to match the standard values for the BD recorders although they were included as a target.

For power consumption of the BD recorders in use, the average power consumption (average of models) declined by 25% for four years from 2008 to 2011 (Table 5<sup>10</sup>). Thus, it was decided to review the possibility of resetting the standard values of the criterion item in 4-1-2(6) every two years during the valid period, to keep up with technological advancement of products. The standard values were set to the level, as a guide, to which top 20 to 30% of models released in Japan in the previous year conform. When revision of the standard values is decided, it will be published on the Eco Mark home page about six months prior to a date of revision.

Table 5 Release Years of BD Recorders and Average Power Consumption

Release year	Year 2008	Year 2009	Year 2010	Year 2011
Average power consumption in use [W]	40.0	33.5	32.3	30.4
Number of models	21	27	51	31

For the point (2), the ErP Directive of EU (2009/125/EC) defines that the power consumption is equal to or lower than 1W (0.50 W for products to be shipped as a new product after January 2013) in off mode and standby mode, respectively. In addition, the Energy Star Program of the United States, or eco-labelling criteria of China, Korea, Germany, and the Nordic five countries have similarly set the numeric values of 1W or lower. In the Eco Mark criteria, it was set to 1W or lower in line with the ErP Directive. For example, similar to the ErP Directive, it was decided that the standard value of 1W or lower does not apply to so-called network standby state, that is to say, the condition in which a network system line is activated so that access can be made via network through wireless LAN, etc. (intermediate power consumption between on-mode and standby mode). [Formulation of Certification Criteria 4-1-2(7)]

In addition, for a method of measuring, etc., it was decided to follow “COMMISSION REGULATION (EC) No. 1275/2008 of 17 December 2008 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment” and its guidelines.

For the point (3), “Order for Enforcement of the Act on the Rational Use of Energy (Rationalization in Energy Use Law)” (Standards for Judgment, etc. on improvement of

performance of DVD recorders, (revised by the Ministry of Economy, Trade and Industry Public Notice No. 290 of November 26, 2007) has determined annual power consumption of DVD recorders. The annual power consumption shall be calculated based on average method of use, assuming that daily hours of use of a DVD recorder are 20.5 hours of stand-by hours and 3.5 hours of operating hours. (The standby conditions were set assuming that hours excluding those for acquiring a program listing table (EPG) of the stand-by hours consist of those corresponding to 80% which is clock displayed on the recorder main body and 20% not clock displayed. In addition, the standby conditions are set assuming that of the operating hours of 3.5 hours, 2 hours are spent for HDD recording, 1.0 hour for HDD playback, and 0.5 hour for DVD playback.) Although the Rationalization in Energy Use Law does not define the BD recorders, the JEITA guideline adopts the same concept.

In the discussions of the Criteria Formulation Committee, the following was pointed out: When there is a difference between annual electric power consumption in two devices, for example, annual power consumption based on a scenario and actual annual power consumption may reverse, depending on a method for using or a device (a difference in recording mode or capacity of a drives, etc.), even if they are used similarly. This is because the annual electric power consumption is a trial calculation based on the scenario. (Annual electric power consumption based on the scenario: Device A = large, Device B = small → Actual annual power consumption: Device A = small, Device B = Large) In addition, although it is advantageous to consumers that they can make a comparison of target devices when purchasing, there were some views that a detailed explanation about the conditions of calculation and about the annual power consumption being different from the actual power consumption is needed, or that a priority should be given to provision of information on a method for using to further reduce power consumption, rather than on the annual power consumption.

The power consumption in use of recorders released after January 2010 is obviously correlated with the annual power consumption. Thus, it was concluded that if criteria for the power consumption in use were set, almost same result could be obtained even if the annual power consumption was not set.

Therefore, it was decided not to set the annual electric power consumption of equipment as an item for formulating the criteria.

In addition, for players, as the basic function is to play back optical disks, and annual power consumption depends on playback hours of an optical disk, the players are not covered by the Rationalization in Energy Use Law.

It was decided to set the point (4) as a criterion, for the purpose of controlling power consumption due to negligence to turn off the power. However, when users are browsing Internet contents on equipment, for example, a case is assumed in which the equipment is left

with its main functions stopped and not operated more than 30 minutes. It would be acceptable if the equipment shifted to the standby mode as the users consciously set the shift to the standby mode. Given that if the equipment automatically entered the standby mode while the user was not aware, it might lead to complaints, and that if the capability of shifting to the low power mode was set as initial setting (factory default), it might hinder future technology development of the equipment in view of evolution of product features in the future, it was decided not to request that the capability of shifting to the low power mode is set as initial setting. [Formulation of Certification Criteria 4-1-2(8)]

For the points (5) and (6), there are some models with the fast startup mode (mode to shift to on-mode in a short time) aimed to allow users to use the equipment with shorter time to wait till the equipment starts. Although the fast startup mode appears to users to be similar to the standby mode, the circuit in the body of the equipment works even in the fast startup mode, and thus electric power consumption is generally higher than the standby mode. Although the Committee first studied the possibility of setting as a criterion that the equipment may not have the fast startup mode, it decided not to set because it may hinder the technology development in the future. Nevertheless, in order to cut down power consumption, in the Eco Mark criteria, it decided to turn off the fast startup mode at initial setting (factory default) to prevent users who do not need the feature from unintentionally using it, and set this as a criterion. [Formulation of Certification Criteria 4-1-2(9)]

The point (7) was selected as an item for formulating the criteria because provision of information on an appropriate method for using to reduce environmental load through instruction manuals, etc. contributes to prevention of global warming. It was decided that as items to be provided, content related to the Certification Criteria 4-1-2(6) to (9) are stated. [Formulation of Certification Criteria 4-1-4(14)]

### **D-3 (Restriction and Control of Hazardous Substances)**

Under this item, the following points were reviewed:

- |   |
|---|
| <ul style="list-style-type: none"> <li>(1) Restriction on use of any substance having carcinogenicity, mutagenicity, reproductive toxicity, etc. in plastic components</li> <li>(2) Restriction on use of phthalate ester plasticizers (DINP, DNOP, DEHP, DIDP, BBP, DBP) in plastic casing components</li> <li>(3) Environment consciousness to cables, etc.</li> <li>(4) Restriction on use of carcinogenic substances in displays</li> </ul> |
|---|

The point (1) was not selected as an item for formulating the certification criteria.

For this item, from the standpoint of avoiding use of any substance that affects human bodies, “Blue Angel” of Germany or “Nordic Swan” of the Nordic five countries defines that

plastic components that weighs 25 g or more shall not contain any substance classified into carcinogenic substances, mutagenic substances, or reproductive toxic substances, persistent bio-accumulative toxic substances (PBT), or very persistent and very bio-accumulative substances (vPvB) stipulated in EU Directive. A review was made on whether to adopt them as criterion items for Eco Mark. However, in more than 1,000 substances of the list of target substances above, there exist many substances that may not be used in the equipment to be covered by the criteria. It was also determined that at present, it was difficult to check all the substances for all components. Thus, it was decided not to select the item as a criterion, and instead, to set a criterion focusing on possible influence on the environment when they are disposed/recycled. In addition, the item has not been set in the Chinese or Korean eco-labelling system.

For the point (2), as it has been set in the Chinese Environmental Labelling system, it was reviewed whether it was necessary to set the substance as a criterion in Eco Mark. For phthalate ester used as a plasticizer for plastics, no apparent endocrine disrupting action (environmental endocrine disrupter) was found in the risk analysis carried out recently (EXTEND2010), and thus it is not regulated on the ground of endocrine disrupting action. However, some plasticizers (DBP, DEHP, and BBP) are listed as a candidate for Substances of Very High Concern (SVHC) of REACH, and there are some substances whose reproductive toxicity on animals is pointed out.

In Japan, phthalate esters (DINP, DNOP, DEHP, DIDP, BBP, and DBP) have been regulated by the Food Sanitation Act (appliances or container packages that are in contact with foods, toys). This is because of the concern that the chemicals may dissolve when children put a product in their mouth. However, in general, as it is highly unlikely that children put a casing of a recorder/player in their mouth, it was decided not to select (2) as a criterion item at this moment.

For the point (3), as environment consciousness for cables, etc., there are “EM electric wire/cable” standardized (1998) by the Japanese Electric Wire & Cable Makers’ Association, based on “Guidelines for Environment-Conscious Agency Facilities (Green Agency Building) Plans” of the Ministry of Construction (currently, Ministry of Land, Infrastructure, Transport, and Tourism). EM means eco-materials and burning resistance, and flame retardant polyethylene containing no halogen or heavy metals is used for cladding. As a flame retardant,  $\text{Al}(\text{OH})_3$  and  $\text{Mg}(\text{OH})_2$  are mainly used, and generate no harmful halogen gas or corrosive gas in case of a fire. In addition, there is a characteristic that recycling is easy as materials are unified to polyethylene materials. According to the statistics of the same Association, shipment was 37,700 tons in 2009, and the spread rate was a dozen percent. In addition, materials to be used for EM wires/cables contain no substance stipulated by the RoHS Directive.

In addition, environment-friendly cables other than the EM wires/cables include RoHS compatible products using non-lead PVC insulations/sheaths (jackets).

Considering the current spread rate, etc., the hurdle is high for requesting adoption of the EM wires/cables as cables to be used in the equipment in this product category. Thus, as described in E-3, it was decided to request compliance with RoHS as a criterion.

For the point (4), it is the item set in the criteria for No. 119 “Personal Computer Version 2”. As it was decided not to include portable BD/DVD players having a display in the applicable scope of this product category, the point was not selected as a criterion.

## E. Recycling Stage

### E-1 (Resource Saving and Resource Recycling)

Under this item, the following points were reviewed:

- (1) 3R design of a product main body and packaging materials (easiness to disassemble, easiness of recycling, etc.)
- (2) Collection/recycling of products shall be in place.
- (3) A recycling system of rare metals shall be established.
- (4) Provision of information on disposal or recycling of used products

The point (1) was collectively reviewed in A-1.

For the points (2) and (3), the review is under way in the “Central Environmental Council, Waste and Recycling Task Force, Subcommittee on Recycling System of Used Small Electric and Electronic Appliances and Reuse of “Urban Mines” that Contains a lot of Useful Metals” of the Ministry of Environment. According to the Sub-committee and “Summary of Study Group on Recycling and Appropriate Handling of Rare Metals from Used Small Home Electrical Equipment (April 2011, Ministry of Environment, Ministry of Economy, Trade and Industry)”, percentage of destinations of discharged products or status of collection/recycling are summarized as follows.

#### 1) Status on hoarding/discharging of DVD players, etc.

The percentage of hoarding<sup>11</sup> of video/DVD players/recorders is as high as 39.9%. In addition, Table 6 shows destinations of discharged players/recorders and percentage thereof.

Table 6 Percentage of Destinations of Discharged DVD/Video Players/Recorders (%)

N	Retail Stores	Remarketing/Recycling Shop	Autonomous Body	Disused Article Collection Trader/Disused Article Collection	Mover	Free Market/Bazar	Internet Auction	Friends/Acquaintance/Relatives	Others



126	8.7	7.1	34.9	23.0	2.4	0.0	4.0	19.0	0.8
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## 2) Status of disposal/collection/recycling of small home electrical appliances

[1] Many of used small home electrical appliances are collected by the municipalities as “general wastes (incombustibles or large refuse)”, and most of collected items are finally landfilled. (Those to be directly landfilled: 10.2%, those whose residues after combustion are landfilled: 13.7%, those whose residues after being crushed are landfilled: 49.5%, those to be reused/disposed of after being melted into slag: 7.6%, and those to be sold as valuables: 13.3%)

In addition, about 60% of the municipalities recover resources such as metals, etc. from collected waste electrical and electronic devices. While about 50% of them collect irons, those who collect aluminum are about 35%, and those who collect copper are about 6%. The municipalities who collect nonferrous metals other than aluminum and copper are less than 2%. Hazardous metals contained in substrates are directly landfilled or landfilled after being incinerated according to the processing standard of the Waste Disposal Law.

[2] It is estimated that the number of discharged units of DVD players in 2010 was 5.92 million units, and the total discharge weight was 20,000 tons (if the potentially collectable volume of players were collected 100%).

While the residual time of final disposal sites has been increasing recently, the residual capacity has been decreasing. Thus, the situation is still tight, and further reduction in waste discharge is requested.

## 3) Status of rare metals contained in DVD players, etc.

According to the survey on content of rare metals, etc. in video players/DVD players, content of nickel, chromium and tantalum is high, followed by tungsten, cobalt, and neodymium. However, individual variability is high, depending on a target sample.

Based on the above, setting of the Eco Mark criteria was summarized as follows:

A review on collection and recycling of the small home electrical appliances has just been started by the national government and industries, and there is no case in which the collection and recycling system has been created and operating. On the one hand, it is believed that the collection and recycling system will be essential to create a recycling society in the near future (from the standpoints of securing/depletion of resources, reduction of wastes, resource recycling, and environment management). Therefore, at present, the item was set as an item to be considered, with the objective of guiding towards creation in the future. [Formulation of

### Certification Criteria 5(1)]

For collection and recycling of rare metals, tracking of members or types in which rare metals are contained/quantities, designing that facilitates dismantlement, and methods for providing product information are important. However, there are many cases in which the information is not understood, and it is not realistic at present to standardize recycling of rare metals. Thus, it was decided to set the item as an item to be considered, and set in a product design checklist as Should items (items that should be implemented) members or types in which rare metals are contained/quantities, and designing that facilitates dismantlement. [Formulation of Certification Criteria 4-1-1-(4)]

For the point (4), as the hoarding percentage of video/DVD players/recorders shows a high value of 39.9%, it is considered important to provide consumers with information on an appropriate disposal/recycling method of used equipment through instruction manuals, etc. Thus, it was set as an item for formulating the criteria. [Formulation of Certification Criteria 4-1-4(14)]

### **E-3 (Restriction and Control of Hazardous Substances)**

Under this item, the following points were reviewed:

- (1) Compliance with the RoHS Directive
- (2) Requirements for plastic materials for casings and casing components

Under this item, the following points were reviewed:

The point (1) was selected as an item for formulating the certification criteria. [Formulation of Certification Criteria 4-1-3(10)] In the EU member states, the RoHS Directive (Restriction of the use of the certain Hazardous Substances in Electrical and Electronic Equipment) was officially notified in 2003, and it was decided that marketing (sale) of any electrical and electronic product containing lead, cadmium, mercury, hexavalent chromium, PBB (Polybrominated biphenyl), and PBDE (Polybrominated diphenylether) would be prohibited after July 2006. The RoHS Directive has been established to prevent electrical and electronic equipment from containing any hazardous substance so that when they are finally landfilled or incinerated, they will not affect the environment or human bodies. As the requirements of the RoHS Directive have also been defined in the Chinese and Korean eco-labelling criteria, it was decided to harmonize with them. In addition, in the provision on the “flame retardant” in the Guidelines for Eco Mark Program Implementation, it is defined that a flame retardant of PBB (Polybrominated biphenyl), PBDE (Polybrominated diphenylether), and short-chained chlorinated paraffin (the number of chained Cs is 10 to 13 and concentration of contained chloride is equal to or greater than 50%) shall not be contained in reference to “Blue Angel” of Germany, etc. The similar criterion item has been set in foreign

environmental labelling including China and Korea.

The RoHS Directive was officially notified and revised on July 1, 2011 (Revised RoHS Directive (2011/65/EU)). Accordingly the target fields were expanded and parts to which the Directive applies became more definitive. Eco Mark reviewed accessories of the equipment as well, and decided to apply the criterion item to remote controls and cables. It also decided to cover painting of plastic components.

The point (2) was selected as an item for formulating the certification criteria. [Formulation of Certification Criteria 4-1-3 (11)]

In “Blue Angel” of Germany, for plastic casing components weighing 25 g or more, use of polymers containing halogens and addition of organic halogen compounds as a flame retardant are not approved from the standpoint of avoiding use of any substance that may generate dioxin or furan, etc. As the similar criterion has also been set in the Korean environmental labelling, Eco Mark also decided to harmonize with them and set the criterion.

## **F. Disposal Stage**

### **F-1 (Resource Saving and Resource Recycling)**

Under this item, the following points were reviewed:

(1) A disposal amount of used product shall be small.
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The point (1) was collectively reviewed in the item A-1 on Product Weight.

### **F-3 (Restriction and Control of Hazardous Substances)**

Under this item, the following points were reviewed:

(1) Compliance with the RoHS Directive
(2) Requirements for plastic for casings and casing components
(3) No mercury, etc. shall be used in batteries.
(4) No hazardous substance shall be used as packaging materials.
(5) Provision of information on disposal or recycling of used products

The points (1) and (2) were collectively reviewed in E-1.

The point (3) was selected as an item for formulating the Certification Criteria. [Formulation of Certification Criteria 4-1-3 (13)] Batteries used in this product include primary batteries (mainly, button batteries) built in a main body device and primary batteries (mainly, dry cells) used in remote controls. As consumers replace batteries used in remote controls while using them, it was decided not to set them as a criterion item. There are some cases in which batteries built in a product main body are used for recording in case of a power failure or displaying time. In light of the current circumstances in which they are landfilled, etc. when equipment is disposed, it was decided to conform to the EU Directive on batteries, set

a criterion for heavy metals, etc. such as mercury contained in batteries, and harmonize with the Korean environmental labelling.

The point (4) was collectively reviewed in A-1.

The point (5) was collectively reviewed in E-1.

### **Other environmental load**

Under this item, the following point was reviewed:

(1) Equipment shall generate low noise.
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It was reviewed whether or not to select a noise control measure in indoor conditions as an item for formulating Certification Criteria. According to operators, as the recorders/players are used with television sets, they have had received almost no complaint about the recorders/players alone. However, they have had received a few complaints about sound of revolving fans when the equipment obtains a program listing table in the standby mode. Nevertheless, a method for measuring noise of recorders/players has not been standardized, and the method for measuring in ISO 7779 defined for other electronic devices does not cover measurement of the sound of revolving fans when the equipment obtains a program listing table in the standby mode. In this product category, it was decided to place an emphasis on preservation of the global environment and not to set it as a setting criterion.

End

<sup>1</sup> The Economic and Social Research Institute (ESRI), Cabinet Office, “Monthly Consumer Confidence Survey Covering All of Japan, Percentages of Household Possessing of Major Durable Consumer Goods (Private Households), Quantities of Possessed Major Durable Consumer Goods (Private Households) (As of end of March, 2011 (Heisei 23))”

<sup>2</sup> Fuji Chimera Research Institute, Inc., “Digital AV Equipment 2011 – Marketing Handbook”

<sup>3</sup> General Incorporated Association, Japan Electronics and Information Technology Industries Association, “Statistics of domestic Shipments of Consumer Electronic Equipment 2010 (DVD/Videos)”

<sup>4</sup> Based on the agreement of the first Tripartite Environment Ministers Meeting Among China, Japan and Korea (TEMM) in 1999, the Tripartite Round-table Meeting on Environmental Industry between China, Korea and Japan (hereinafter referred to as “RTM”) has been held annually since 2001 as a forum to exchange information on the promotion of cooperation in environmental industries and environmental technologies. Working-level officials in charge of environmental administration, researchers involved in the environmental industry, staff members of certification bodies, etc. participate, exchange views and have discussions. In the fifth RTM, the specific approaches to (1) Green Procurement, (2) Dissemination of Environmental Management for small-and-medium-sized businesses, and (3) Label certification system were adopted. In response to this, the eco-labelling organizations in the three countries have held the eco-label working (working-level meetings) on a regular basis and discussed the mutual recognition.

<sup>5</sup> “Mutual Recognition” refers to the system in which in a common product category, examination results of one labelling organization shall be accepted by other labelling organization provided that some requirements and methods for certification thereof are identical. Introduction of the mutual recognition simplifies examination or test procedures, accelerates the process to certification, and reduces costs. This is expected to be a great benefit for a business that wishes to obtain both Eco Mark and environmental labels of foreign countries. If requirements and methods for certification thereof are exactly same, acquisition of multiple labels only with examination result of one labelling organization will be possible.

<sup>6</sup> A device receiving broadcasting signals such as cable television broadcasting or satellite broadcasting, terrestrial broadcasting (digital broadcasting and analog broadcasting), IP broadcasting (broadband VOD, etc.) and converting them into signals that can be viewed by

general television sets (some STB may incorporate a BD recorder, etc.).

<sup>7</sup> The list was created based on the market data as of end of April 2011. For the main body weight, the Secretariat compiled data listed in catalogues of various companies or on the web site. It calculated the average, maximum, and minimum values by model.

<sup>8</sup> Based on the distributed material of “Central Environment Council, Wastes and Recycling Subcommittee, Recycling System of Used Small Electric and Electronic Appliances and Reuse of “Urban Mines” that Contains a lot of Useful Metals”

<sup>9</sup> The Economic and Social Research Institute (ESRI), Cabinet Office, “Monthly Consumer Confidence Survey Covering All of Japan, Status of Replacement of Major Durable Consumer Goods (Private Households)” (As of end of March, 2011 (Heisei 23))

<sup>10</sup> The list was created based on the market data as of August 12, 2011. For the power consumption, the Secretariat compiled data listed in catalogues of various companies or on the web site.

<sup>11</sup> Hoarding refers to products in households which have gone out of use for their intended purposes within one year (including those which have broken), and the hoarding percentage means the percentage of households which hoard one or more unit for each item.