

# EL145. Notebook Computers

[EL145-2000/7/2012-36]



## 1. Scope

The criteria shall apply to notebook computers (hereinafter referred to as “notebook PC”), including laptop computers, typically designed and manufactured for the purpose of using in multiple locations.

## 2. Definitions

### 2.1

“Operating mode” refers to the mode in which the notebook PC is running upon the user input such as keyboard input or touch pad input.

### 2.2

“Idle mode” refers to the mode in which the notebook PC does not perform the function and is waiting to be functioned by user input such as keyboard input or touch pad input.

### 2.3

“Touch pad” refers to a built-in device corresponded to the function of a mouse for carrying and use at a small place.

### 2.4

“Sleep mode” refers to the low-power mode that the notebook PC automatically enters from the standby mode.

### 2.5

“Default mode-change time” refers to the time period needed to enter the sleep mode from the time the last user input was made.

### 2.6

“Off mode” refers to the status in which a user finishes the use of notebook PC system using the power switch.

## 2.7

“Ozone Depletion Potential (ODP)” refers to the value indicating the relative impact of ozone depleting substances when the ozone depletion impact of CFC-11 is set to be 1.

### 3. Certification Criteria

#### 3.1 Environmental Criteria

##### 3.1.1

With respect to noise emission at use stage, noise of the notebook PC [sound pressure level or sound power level] shall comply with the following requirements.

Items	Minimum noise condition	Normal noise condition	Maximum noise condition
Sound power level [dB(A)]	≤ 32	≤ 38	≤ 43

##### 3.1.2

The power consumption and implementation time should satisfy the operation regulation of the standby power saving program in accordance with the Energy Use Rationalization Act, which is applicable at the time of certification application, with regard to energy consumption at the use stage. However, in case the product meets the requirements of the International Energy Star Program applicable at the time the application for eco-label is made, it is regarded as equivalent.

##### 3.1.3

With respect to use of chemical substances in manufacturing process and recyclability of the parts of the product at disposal stage, the product shall comply with the following requirements.

Note) the criteria of this item are not applied to the objects excluded from the harmful substance usage restriction of EU guideline 2002/95/EC and the solders of printed circuit boards (PCB). However, when EU guideline 2002/95/EC is revised, the revised EU guidelines to be applied at the time period of application for the certification shall be followed.

##### 3.1.3.1

Lead, cadmium, mercury and their compounds, and hexavalent chromium compounds shall not be used in the product.

##### 3.1.3.2

Content of lead, cadmium, mercury and hexavalent chromium in the parts of the

product shall comply with one of the following requirements.

a) The applicant shall have an appropriate system to control the content of hazardous substances as following requirements.

Substance	Pb	Cd	Hg	Cr <sup>6+</sup>
Content [mg/kg]	≤1000	≤100	≤1000	≤1000

b) Provided that the applicant does not have an appropriate system for the control of hazardous substances, the content of hazardous substances in the parts of the product shall comply with the following requirements.

Substance	Pb	Cd	Hg	Cr <sup>6+</sup> (note)
Content [mg/kg]	≤1000	≤100	≤1000	≤1000

Note) In case the content of total chromium (Cr) is 1000 mg/kg or less, it is regarded as equivalent

#### 3.1.3.3

PBBs (polybrominated biphenyls), PBDEs (polybrominated diphenyl ethers) and short-chain chlorinated paraffins (C= 10~13) whose chlorine concentration is 50% or more shall not be used in the product.

#### 3.1.3.4

The content of lead(Pb), cadmium(Cd), and mercury(Hg) and their compounds used in the batteries used in products shall conform to EU guideline 2006/66/EC.

#### 3.1.3.5

Halogenated plastics such as PVC shall not be used for the plastic case parts weighing 25g or more, and also halogenated compounds shall not be contained in the plastic parts. Exempted from this criterion are the fluorogranic additives with less than 0.5 wt% (e.g. anti-dripping).

#### 3.1.3.6

Hazardous materials in the product shall be easily detachable.

#### 3.1.4

With respect to recycling in manufacturing process and recyclability of the product at disposal stage, the product shall comply with the following requirements.

#### 3.1.4.1

Separable plastic parts (weighing 25g or more and covering a flat surface of 200mm<sup>2</sup> or more) shall be visibly marked with material identification to facilitate separation and collection in disposal.

#### 3.1.4.2

Shock-absorbing materials in packaging shall be made of recycled pulp or paper such as pulp mold. However, following materials are regarded as equivalent.

a) Shock-absorbing materials certified according to 'EL 606. Packaging Materials'

b) Shock-absorbing materials manufactured by using more than 50wt% of recycled plastics

c) EPS (expanded polystyrene), EPE (expanded polyethylene) and EPP (expanded polypropylene) whose foaming agent has zero ODP

d) Air cell packing bubble wrap that injects air into synthetic resin.

#### 3.1.4.3

The applicant shall have a system to take-back and recycle waste products (including shock-absorbing materials). In case the applicant assigns a company to take-back and recycle waste products and submits the relevant result, it is regarded as equivalent.

#### 3.1.4.4

The reuse rate of subject products in accordance with 「Act on the Resources Circulation of Electric Electronics Products and Automobiles」 shall be 65weight% or more.

#### 3.1.5

The product shall be designed and manufactured with a perspective on resource- and energy-saving, reduction of pollutant emission and hazardous substance use, recycled material use, recyclability, lifespan extension, etc. in order to reduce environmental impacts throughout the life cycle. Furthermore, the system unit of PC shall comply with the following requirements.

#### 3.1.5.1

Disassembly of the system unit shall be done by a single person in order to enhance the recyclability.

#### 3.1.5.2

Facility of replacement and upgrade

a) The system unit shall have a modular design.

b) The system unit shall be accessible with generally available tools and the modules shall be replaceable by the user without the use of special tools.

c) The system unit shall be so designed as to facilitate replacement of modules and upgrade.

### **3.2 Quality Criteria:**

The quality of products shall conform to the following items.

#### 3.2.1

Electric product safety standards in accordance with 「Electric Product Safety Management Act」

#### 3.2.2

Specification Approval Standards of Electric Telecommunications Equipment

### **3.3 Consumer Information**

#### 3.3.1

Printed user's manual, which provides the information on the product and services to the users, shall be supplied along with the product.

#### 3.3.2

The following information shall be provided to the users for energy-saving.

##### 3.3.2.1

Power consumption in the operating mode, idle mode, sleeping mode and manual off

mode

### 3.3.2.2

Information that power consumption can only be zero if the product is unplugged. Exempted from this is the product equipped with an on/off switch that completely disconnects the power.

## 4. Test Methods

Certification Criteria		Test and Verification Methods	
Environmental Criteria	3.1.1	The test results of the officially recognized agency according to the “Appendix 2. EM601. 601. Noise measurement method based on computer operation conditions.”	
	3.1.2	Test report by an accredited testing laboratory in accordance with the test method of the ‘Energy Standby Program’ or ‘International Energy Star Program” or certificate of equivalent	
	3.1.3	3.1.3.1	Verification of submitted documents
		3.1.3.2	Verification of submitted documents in accordance with the test method specified in 4.2
		3.1.3.3~3.1.3.6	Verification of submitted documents
3.1.4 ~ 3.1.5	Verification of submitted documents		
Quality Criteria	3.2.1	Test report by an accredited testing laboratory in accordance to the safety standards of electric appliances or the equivalent certificates	
	3.2.2	Specification certification in accordance with certification standards of telecom equipment or certification for equivalent standards or above	
Information for Consumer		Verification of submitted documents	

### 4.1 General Matters

#### 4.1.1

One test sample for each applied product is required.

#### 4.1.2

Test sample shall be collected at random by eco-label certification body from products on the market or those in storage at the production site.

#### 4.1.3

The temperature shall be adjusted to  $25 \pm 2^{\circ}\text{C}$  during the measurement.

#### 4.1.4

All measuring shall be done at the stable state after the product reaches the steady state under the normal operating condition.

#### 4.1.5

Test result shall be numerically set according to KS Q 5002 (Statistical interpretation method of the data – Part 1: Statistical description of the data).

### **4.2 Compliance verification and test method regarding the control of hazardous substances**

#### 4.2.1

Verification method for the hazardous substance management system

Note) This is the method to verify the compliance with the requirement of the restriction of the use of lead, cadmium, mercury and their compounds, and hexavalent chromium compounds in the parts of the product. This method is applicable to verify that the applicant properly controls PBBs (polybrominated biphenyls), PBDEs (polybromodiphenyl ethers) and short-chain chlorinated paraffins (C=10~13).

##### 4.2.1.1

Compliance verification shall be done by one of the following documents or more.

a) Explanatory note on the management system, established by the manufacturer on purpose to control the hazardous substances when each part of the product is supplied from the suppliers, and relevant documents

b) Test result conducted by the manufacturer in order to control the hazardous substances when each part of the product is supplied from the suppliers (In this case, test method including pre-conditioning method applied shall be specified in detail)

c) Certificate issued by the accredited third party showing that each part of the product satisfies the relevant requirements (e.g. Certificate of eco-label according to 'EL 763. Electric and Electronic Parts')

d) Other documents showing that the manufacturer properly controls the hazardous substances when each part of the product is supplied from the suppliers.

#### 4.2.1.2

In case the compliance of the management system cannot be verified by '4.3.1.1' or the test result for specific parts of the product is required by deliberation committee of eco-label certification, compliance verification shall be done by the following '4.3.2 Test method for measuring the content of the hazardous substances' for the parts collected at random by eco-label certification body.

#### 4.2.2

Test method for measuring the content of the hazardous substances

Note) This is one of the test methods applicable to verify the content of lead (Pb), cadmium (Cd), mercury (Hg) and hexavalent chromium ( $\text{Cr}^{+6}$ ) contained in the parts of the product. The content of the hazardous substances can be also verified according to the internationally recognized test methods. In this case, test method including pre-conditioning method shall be specified in detail and the specified test method shall be approved by deliberation committee of eco-label certification.

##### 4.2.2.1

Test samples shall be homogenized by pre-conditioning method such as pulverization of each part.

##### 4.2.2.2

Analysis method of lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium ( $\text{Cr}^{+6}$ ), total chromium (Cr)

a) Lead (Pb), cadmium (Cd): KS M 0016 (General rules for atomic absorption spectrochemical analysis), KS M 0032 (General rules for ICP emission spectrochemical analysis) and Inductively coupled plasma mass spectrometry (ICP-MS)

b) Mercury (Hg): Atomic absorption spectrochemical analysis by using gold amalgamation method and KS M 0016 (General rules for atomic absorption spectrochemical analysis)

c) Hexavalent chromium ( $\text{Cr}^{+6}$ ): Ultraviolet spectrophotometric analysis by



diphenylcarbazide and Ultraviolet spectrophotometric analysis by lead acetate trihydrate

d) Total chromium (Cr): KS M 0016 (General rules for atomic absorption spectrochemical analysis), KS M 0032 (General rules for ICP emission spectrochemical analysis) and inductively coupled plasma mass spectrometry (ICP-MS)

## **5. Reasons for Certification**

“Power-saving, low noise, design for environment”

## **Common Criteria, Notice No. 2012-36, the Ministry of Environment**

1. Eco-label products must follow the following provisions with regard to the proper treatment of environmental pollution substances, such as air and water wastes and noxious chemical substances emitted in the process of manufacturing or service operation.

A. When first applying for certification, the product manufacturer should observe the environment related laws and agreements pertaining to the region where the production factory or the place of service operation is located for a period of one year prior to the date of application. Any case of violation of the penalty clause will be verified by confirming documents involved during a period of one year to the date of application. Regarding any violation not related to the penalty clause, confirmation will be made on the completion of appropriate measures.

B. A person who has received a certification of eco-labeling shall observe the environment related laws and agreements pertaining to the region where the production factory or the place of service operation is located during the period of certification. However, regarding any violation besides a penalty, confirmation will be made on the completion of appropriate measures.

2. As a general rule, information for consumers shall be indicated on the surface of the product in such a way not to be easily erased. However, in case that indication on the surface of the product is impossible or undesirable, it can be indicated on the appropriate part such as product packaging, product guidebook and user's manual that consumers can recognize. However, the service information should be indicated inside and outside of the place of service operation. In case that indication inside and outside of the place of service operation is impossible or undesirable, it can be indicated on the appropriate part such as an agreement, letter of delivery, letter of guarantee, and PR materials that consumers can recognize.

3. In order to establish fair trade and to protect consumer, the applicant for eco-label and the holder of eco-label license shall observe the Act on the Fairness of

Indication and Advertisement with respect to the environmental aspects of the product.

4. For Various standards referred in the certification criteria by target product, the latest revised edition applies at the date of application, if not specified otherwise.

5. In applying the quality related criteria for each target product, if no standard is available that can be applied as the quality criteria, the president of Korea Environmental Industry & Technology Institute (KEITI) (hereafter referred to as "president of KEITI") may establish and operate the quality criteria for the product involved after review by a competent committee.