



-Standby Power Program

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Korea Testing Laboratory

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What is e-Standby Power Program?



- The e-Standby Power Program has been implemented since April 1, 1999 for the purpose of enhancing the spreading of the energy-saving products that enable to decrease the electric power consumption during the standby.
- The e-Standby Power Program is controlled by Ministry of Commerce, Industry and Energy (MOCIE) and Korea Energy Management Corporation (KEMCO).
- Voluntary Program (since 1999)
- Standby power of all products should be below 1W from 2010.
If the product doesn't meet standby power criteria, Warning Label should be attached
- The 21 items, such as Computers, Monitors, Printers, Fax Machines, Copiers, Scanners, Multifunction Devices, Energy-Saving & Controlling Devices, External Power Supply, Televisions, VCRs, Home Audio Products, DVD Products, Microwaves, Battery Chargers, Set-top Boxes, Doorphone, Cordless Phones, Bidet, Modem are subject to this program.

What is e-Standby Program?



■ Designated Testing Laboratory

Designated testing institute	Testing Items
Agency for Technology and Standards (ATS)	All
Korea Testing Laboratory (KTL)	All
Korea Electric Testing Institute (KETI)	All
Korea Institute of Energy Research (KIER)	All
Korea Eectrotechnology Research Institute (KERI)	All
EMC Research Institute (ERI)	All
Telecommunications Technology Associations (TTA)	All

Items subject to e-standby Program.



1. Computers
2. Monitor
3. Printers
4. Fax Machine
5. Copiers
6. Scanners
7. Multifunctional Devices
8. Energy-Saving & Controlling Devices
9. Adapters
10. Televisions
11. VCR
12. Home Audio Products
13. DVD Products
14. Radio Cassette Players
15. Microwave Ovens
16. Battery Chargers
17. Set-top Boxes
18. Door phone
19. Cordless/Corded Phones
20. Bidet
21. Modem

The Limits of Standby Power.



1. Computers

Table 1(From 2007.01.01 to 2007.12.31)

Category		Low power mode		Watts in off mode
		default time	Watts in low power mode	
Personal Computers (Laptop)	nameplate output power of power supply $\leq 400W$	≤ 30 min	$\leq 10W$	$\leq 20W$
	nameplate output power of power supply $> 400W$	≤ 30 min	$\leq 10\%$ of nameplate output power	$\leq 20W$
Personal Computers (Desk top)	nameplate output power of power supply $\leq 400W$	≤ 30 min	$\leq 10W$	$\leq 3W$
	nameplate output power of power supply $> 400W$	≤ 30 min	$\leq 10\%$ of nameplate output power	$\leq 3W$
Integrated Computer System		≤ 30 min	$\leq 15W$	$\leq 5W$

- **On mode:** The active mode of operation
- **Low power mode:** The reduced power state that the computer enters after a period of inactivity.
- **Off mode:** The power state when the product is switched off.

The Limits of Standby Power.



2. Monitors

Table 1 (From 2007.01.01)

Category	Watts in low power mode	Watts in off power mode
Monitor	$\leq 2.0W$	$\leq 1.0W$

3. Printers

Table 1 (From 2007.01.01)

Category	Printing speed (ppm)	Low power mode		Watts in off power mode
		default time	Watts	
A. Printer (A3, A4 sized paper, excluding 'B', 'C')	$0 < \text{ppm} \leq 10$	$\leq 5\text{min}$	$\leq 10.0W$	$\leq 1.0W$
	$10 < \text{ppm} \leq 20$	$\leq 15\text{min}$	$\leq 20.0W$	$\leq 1.0W$
	$20 < \text{ppm} \leq 30$	$\leq 30\text{min}$	$\leq 30.0W$	$\leq 1.0W$
	$30 < \text{ppm} \leq 44$	$\leq 60\text{min}$	$\leq 40.0W$	$\leq 1.0W$
	$44 < \text{ppm}$	$\leq 60\text{min}$	$\leq 75.0W$	$\leq 1.0W$
B. Color printers (A3, A4 sized paper)	$0 < \text{ppm} \leq 10$	$\leq 30\text{min}$	$\leq 35.0W$	$\leq 1.0W$
	$10 < \text{ppm} \leq 20$	$\leq 60\text{min}$	$\leq 45.0W$	$\leq 1.0W$
	$20 < \text{ppm}$	$\leq 60\text{min}$	$\leq 70.0W$	$\leq 1.0W$
C. Impact type printers accommodating A3 sized paper		$\leq 30\text{min}$	$\leq 28.0W$	$\leq 1.0W$
D. Printers that do not have off power mode		$\leq 30\text{min}$	$\leq 5.0W$	Not Surveyed

The Limits of Standby Power.



4. Fax machines

Table 1 (From 2001.07.01)

Printing speed (ppm)	Low power mode default time	Watts in low power mode
$0 < \text{ppm} \leq 10$	$\leq 5 \text{min}$	$\leq 10.0 \text{W}$
$10 < \text{ppm}$	$\leq 5 \text{min}$	$\leq 15.0 \text{W}$

Table 1 (From 2001.07.01)

Category	Printing speed (ppm)	Low power mode default time	Watts in low power mode
Combination printer/fax machine	$0 < \text{ppm} \leq 10$	$\leq 5 \text{min}$	$\leq 10.0 \text{W}$
	$10 < \text{ppm} \leq 20$	$\leq 15 \text{min}$	$\leq 20.0 \text{W}$
	$20 < \text{ppm} \leq 30$	$\leq 30 \text{min}$	$\leq 30.0 \text{W}$
	$30 < \text{ppm} \leq 44$	$\leq 60 \text{min}$	$\leq 40.0 \text{W}$
	$44 < \text{ppm}$	$\leq 60 \text{min}$	$\leq 75.0 \text{W}$

The Limits of Standby Power.



5. Copiers

Table 1 (From 2004.11.01)

Copier Speed (Copies per minute)	Watts in low power mode	Low power mode default time	Recovery time	Off mode (watts)	Off mode Default time
$0 < \text{cpm} \leq 20$ (low speed copiers)	NA	NA	NA	$\leq 1.0\text{W}$	$\leq 30\text{min}$
$20 < \text{cpm} \leq 44$ (medium speed copiers)	$\leq 3.85 \times \text{cpm} + 5\text{W}$	$\leq 15\text{min}$	$\leq 30\text{sec}$	$\leq 5.0\text{W}$	$\leq 60\text{min}$
$44 < \text{cpm}$ (high speed copiers)	$\leq 3.85 \times \text{cpm} + 5\text{W}$	$\leq 15\text{min}$	$\leq 30\text{sec}$ (recommended)	$\leq 10.0\text{W}$	$\leq 90\text{min}$

6. Scanners

Table 1 (From 2007.01.01)

Category	Low power mode		Off mode (watts)
	Default time	Watts	
A. Scanners with off mode	$\leq 15\text{min}$	$\leq 12.0\text{W}$	$\leq 1.0\text{W}$
B. Scanners without off mode	$\leq 15\text{min}$	$\leq 5.0\text{W}$	Not Surveyed

7. Multifunctional Devices

(1) Multifunctional Devices

Table 1(From 2001.07.01)

Image Reproduction Speed (ipm: images per minute)	Low power mode (Watts)	Low power mode default time	Recovery time from low power mode	Sleep mode (Watts)	Sleep mode default time	Automatic Duplex mode
$0 < \text{ipm} \leq 10$	NA	NA	NA	$\leq 25.0W$	$\leq 15\text{min}$	NA
$10 < \text{ipm} \leq 20$	NA	NA	NA	$\leq 70.0W$	$\leq 30\text{min}$	NA
$20 < \text{ipm} \leq 44$	$\leq 3.85 \times \text{ipm} + 50W$	$\leq 15\text{min}$	$\leq 30\text{sec}$	$\leq 80.0W$	$\leq 60\text{min}$	optional
$44 < \text{ipm} \leq 100$	$\leq 3.85 \times \text{ipm} + 50W$	$\leq 15\text{min}$	$\leq 30\text{sec}$ (recommended)	$\leq 95.0W$	$\leq 90\text{min}$	optional
$100 < \text{ipm}$	$\leq 3.85 \times \text{ipm} + 50W$	$\leq 15\text{min}$	$\leq 30\text{sec}$ (recommended)	$\leq 105.0W$	$\leq 120\text{min}$	optional

7. Multifunctional Devices

(2) Upgradeable digital copiers

Table 1 (From 2001.07.01)

Image Reproduction Speed (ipm: images per minute)	Low power mode (Watts)	Low power mode default time	Recovery time from low power mode	Off mode (Watts)	Off mode default time	Automatic Duplex mode
$0 < \text{ipm} \leq 10$	NA	NA	NA	$\leq 5.0W$	$\leq 15\text{min}$	NA
$10 < \text{ipm} \leq 20$	NA	NA	NA	$\leq 5.0W$	$\leq 30\text{min}$	NA
$20 < \text{ipm} \leq 44$	$\leq 3.85 \times \text{ipm} + 5W$	$\leq 15\text{min}$	$\leq 30\text{sec}$	$\leq 15.0W$	$\leq 60\text{min}$	optional
$44 < \text{ipm} \leq 100$	$\leq 3.85 \times \text{ipm} + 5W$	$\leq 15\text{min}$	$\leq 30\text{sec}$ (recommended)	$\leq 20.0W$	$\leq 90\text{min}$	optional
$100 < \text{ipm}$	$\leq 3.85 \times \text{ipm} + 5W$	$\leq 15\text{min}$	$\leq 30\text{sec}$ (recommended)	$\leq 20.0W$	$\leq 120\text{min}$	optional

8. Energy-Saving & Controlling Devices

Table 1 (From 2004.02.01)

Category	Controlling type	Auto off (Watts)	Power auto off or standby power blocking default time
Auto power saving multi-tab	- Load sensing type - Light sensing type - Timer type - Combination type (load, light, body sensing)	$\leq 1.0W$	$\leq 3min$
Power saving outlet controlling device			

9. Adapters

Table 1 (From 2007.01.01)

Nameplate output power(P_{no})	On mode energy efficiency
$0 < P_{no} \leq 1W$	$\geq 0.49 \times P_{no}$
$1W < P_{no} \leq 49W$	$\geq [0.09 \times \ln(P_{no})] + 0.49$
$49W < P_{no} \leq 150W$	≥ 0.84

Nameplate output power(P_{no})	No load power
$0 < P_{no} \leq 10W$	$\leq 0.5W$
$10W < P_{no} \leq 150W$	$\leq 0.75W$

10. Televisions

Table 2 (From 2007.07.01)

Category	Passive standby mode (Watts)	Active standby mode (Watts)
Televisions	$\leq 1.0W$	Not Surveyed
Television monitors	$\leq 1.0W$	Not Surveyed
Component television units	$\leq 1.0W$	Not Surveyed
TV/VCR combination units	$\leq 1.0W$	Not Surveyed
TV/DVD combination units	$\leq 1.0W$	Not Surveyed
TV/VCR/DVD combination units	$\leq 1.0W$	Not Surveyed
TV/ Set-top Box (all pay TV broadcasting) Combination Units	Not Surveyed	$\leq 8.0W(+ \text{Maximum } 7W)$

11. VCR

Category	Standby power (Watts)
Videocassette recorder	$\leq 1.0W$
VCR/DVD combination unit	$\leq 1.0W$

12. Home Audio Products

Category	Standby power (Watts)
Audio	$\leq 1.0W$
Audio/DVD combination unit	$\leq 1.0W$

13. DVD Players

Category	Standby power (Watts)
DVD players	$\leq 1.0W$

14. Radio Cassette Players

Table 1(From 2007.01.01)

Category	Standby power (Watts)
Radio Cassette Players	$\leq 1.0W$

15. Microwave Ovens

Category	Standby power (Watts)
Microwave Oven	$\leq 1.0W$

16. Battery chargers

Table 1 (From 2006.01.01)

Category	Power in no-load (Watts)
Battery chargers for mobile phone	$\leq 0.5W$

17. Set-top boxes

Category	Passive Standby Mode	Active Standby Mode	On mode
Simple converter set-top box	$\leq 1.0W$	-	$\leq 8.0W(+ \text{Maximum } 7W)$
All Pay TV set-top box	$\leq 1.0W(\text{option})$	$\leq 8.0W(+ \text{Maximum } 7W)$	-

18. Door phone

Table 1 (2004.11.01~2007.12.31)

Category	Standby power (Watts)
Simple function door phone	$\leq 2.0W$
Multifunction door phone	$\leq 3.0W$

19. Cordless/Corded phones

Category	Heating standby Power mode (W)	Off mode(W)
Bidet that has off mode	$\leq 18.0W$	$\leq 2.0W$
Bidet that does not have off mode	$\leq 15.0W$	Not Surveyed

20. Bidet

Table 1(From 2006.01.01)

Category	Standby power (Watts)
Base set	Without internal battery charger: $\leq 1.0W$ With internal battery charger: $\leq 1.5W$
Portable device battery charger	$\leq 1.0W$

21. Modem

Table 1 (From 2008.01.01)

Category	Standby Power mode (W)	Off mode(W)
xDSL Modem	$\leq 2.0W$	$\leq 0.75W$
Cable Modem	$\leq 5.0W$	$\leq 0.75W$

Peripheral device(Excluding basic Modem components)	Allowable Standby Power mode (W)	Off mode(W)
Multi-port modem	$\leq 1.0W$	-
Wireless LAN AP	$\leq 5.0W$	-

1. Limit of Computer

Category	sleep mode		off mode
	default time	sleep mode	
Personal Computers(Laptop)	≤ 30 min	$\leq 3.0W$	$\leq 2.0W$
Personal Computers (Desk top)	≤ 30 min	$\leq 5.0W$	$\leq 3.0W$
Integrated Computer System	≤ 30 min	$\leq 5.0W$	$\leq 3.0W$

- On mode: The active mode of operation
- Low power mode: The reduced power state that the computer enters after a period of inactivity.
- Off mode: The power state when the product is switched off.
- Wake events: An external event or stimulus (such as movement of the mouse, keyboard activity or a button press on the chassis, stimulus conveyed via a telephone) that causes the computer to transition from its low power mode to its active mode of operation.

2. Test Condition

- 1) The computer shall include one or more mechanisms through which it can activate the low power modes of a monitor.
- 2) The applicant shall set the computer's default to activate the monitor's first low power mode within 30 minutes of user inactivity.
- 3) The applicant shall also set the default time for the next level of power management such that the monitor enters the deep low power mode within 60 minutes of inactivity.
- 4) The combined total of the default times for both low power modes shall not exceed 60 minutes. This monitor control requirement does not apply to integrated computer systems.

3. Test Method

○ Measurement methods at low power mode

- 1) The product should be plugged into a live power line but turned off,
- 2) and stabilized at room ambient conditions for at least 1 hour.
- 3) The product where the computer and the monitor is separable, separate power shall be supplied to respective units,
- 4) The measurement is taken after the monitor is connected to the computer.
- 5) Turn on the power switch to start the booting of the computer and to enter into its initial screen mode.
- 6) Verify and measure the time it takes from the point where there are no induced movements at its initial screen mode to the point where it enters into a low power mode.
- 7) After 5 minutes of low power mode, measure the average power consumption over a 1 hour period when in the low power mode.
- 8) Repeat the above said power consumption measurement procedure in low power mode.
- 9) The average of first and second power consumption measurements in low power modes shall be taken.

1. Limit of Monitor

- The monitors shall automatically enter a low power mode after a period of inactivity and returns to its previous mode, for the convenience of the user, when it reactivates.

Table 1 (From 2007.01.01)

Category	Watts in low power mode	Watts in off power mode
Monitor	$\leq 2.0W$	$\leq 1.0W$

- On mode: The state that the product is connected to a power source and produces an image.
- Low power mode: The reduced power state that the computer monitor enters after receiving instructions from a computer or via other functions.
- Off mode: The power off state by switching off the power source. In case there are more than two power switches, soft switched located in the front of the product is used to create this power off state.

2. Test Method

○ Measurement methods at low power mode

- The product should be plugged into a live power line but turned off and stabilized at room ambient conditions for at least 1 hour.
- The product where the computer and the monitor is separable, separate power shall be supplied to respective units and the measurement is taken after the monitor is connected to the computer.
- Power on the machine by using the power switch and set the machine to initial default settings.
- Input signal takes the testing equipment's maximum horizontal frequency.
- Brightness, contrast, horizontal/vertical screen size settings are adjusted to maximum conditions.
- Verify and measure the time it takes from the point where there are no induced movements at its initial screen mode to the point where it enters into a low power mode.
- After 5 minutes of low power mode, measure the average power consumption over a 1 hour period when in the low power mode.
- Repeat the above said power consumption measurement procedure in low power mode.
- The average of first and second power consumption measurements in low power/off power modes shall be taken.

Thank You!