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Via e-mail:
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United States Environmental Protection Agency
Washington, D.C. 20460

Subject: **ENERGY STAR® Draft 1 Version 7.0 Specification for Displays**

COMMENTS OF
SHARP ELECTRONICS CORPORATION

SHARP is an enthusiastic ENERGY STAR Partner and is committed to building high-efficiency, environmentally advanced products that deliver top performance to our customers. The ENERGY STAR program continues to be the most effective approach for SHARP to communicate the low power consumption of our products to retailers and consumers.

November 19th, EPA released ENERGY STAR Draft 1 Version 7.0 Specification for Displays

SHARP offers the following comments:

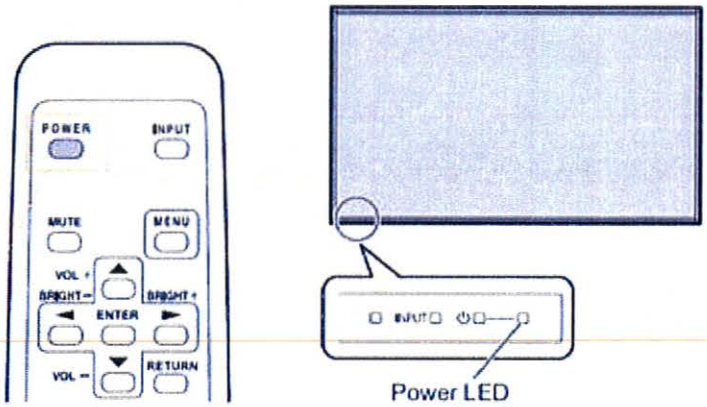
1) Sleep Mode:
We noticed that an expression is different in Version 6.0 and Version 7.0.
Stand-by mode excludes Version 6.0 from a sleep clearly.
Therefore it's understood that a conventional sleep mode assumes VESA DPMS.
e.g. .http://en.wikipedia.org/wiki/VESA_Display_Power_Management_Signaling

However, Version 7.0. can understand also to include power off by IR signal of a remote control.
Because Version 7.0.doesn't restrict power control.

- For example -.

Turning power on/off

Press the POWER button or POWER switch to turn the power ON/OFF.



Status	Status of the monitor
Green lit	Power on
Orange lit	Power off (Standby mode)
Green flashing	Input signal waiting mode

Version 7.0

Version 6.0
VESA DPMS

Displays Specification Version 7.0 Draft 1
http://www.energystar.gov/sites/default/files/Draft1_Version7_Displays_Spec.pdf

2) Sleep Mode: A low-power mode in which the Display provides one or more non-primary protective functions or continuous functions.

Note: Sleep Mode may facilitate the activation of On Mode via remote switch, internal sensor, or timer; provide information or status displays including clocks; support sensor-based functions; or maintain a network presence.

Displays Specification Version 6.0
http://www.energystar.gov/sites/default/files/FINAL%20Version%206.0%20Display%20Program%20Requirements%20(Rev%20Oct-2014).pdf

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2) Sleep Mode: The power mode the product enters after receiving a signal from a connected device or an internal stimulus. The product may also enter this mode by virtue of a signal produced by user input. The product must wake on receiving a signal from a connected device, a network, a remote control, and/or an internal stimulus. While the product is in this mode, it is not producing a visible picture, with the possible exception of user-oriented or protective functions such as product information or status displays, or sensor-based functions.

Note: Examples of internal stimuli are a timer or occupancy sensor.

Note: A power control is not an example of user input.

2) Total Energy Consumption

Signage Display doesn't use a sleep mode (VESA DPMS).
Signage Display would always indicate a picture in case of a mode on.
Owner would set a **stand-by mode** at the time which doesn't indicate a picture.
Therefore when calculating TEC, it's right to estimate a stand-by mode, not a sleep mode (VESA DPMS).

- For example -.

Case 1 : Department store. AM 10::00 - PM 9:00 On, mode.
PM 9:00 - AM 10:00 Stand-by mode.

Case 2 : Station premises. AM 7::00 - PM 10:00 On, mode.
PM 10:00 - AM 7:00 Stand-by mode.

Proposed TEC Approach for ENERGY STAR Version 7.0 Monitors
http://www.energystar.gov/sites/default/files/Draft1_Version7_Displays_SpecTECProposal.pdf

TEC applied to Draft 1 Version 7.0 Requirements

3.3 Energy Requirements

3.3.1 The Total Energy Consumption (TEC) in kWh shall be calculated per Equation 1 based on measured values.

Equation 1: Total Energy Consumption Calculation

$$E_{TEC} = 8.76 \times ((0.35 \times P_{ON}) + (0.65 \times P_{SLEEP}))$$

Where:

- E_{TEC} *is the Total Energy Consumption calculation in kWh*
- P_{ON} *is Measured On Mode Power in watts;*
- P_{SLEEP} *is Measured Sleep Mode Power in watts;*

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Signage Display : Stand-by mode.
This mode is the mode the user shifted intentionally.

PC monitor : Sleep mode
This mode is the mode a display shifts by the specific condition.
(e.g. No signal / VESA DPMS)

This suggestion relates to a definition of a sleep mode.

3) Full Network Connectivity
There is no correlation in the **Test Method** and **Specification Version 7.0** in a sleep mode.
When **Specification** is the condition of **Full Network Connectivity**, **Maximum Sleep Mode Power requirement** is added to **Full Network Connectivity allowance**.
However, the test method makes the live connection of a network required condition.
The **Test Method** should be made based on **Specification**.
Therefore we'd like to limit a live connection of a network to a test procedure of **Full Network Connectivity**.

Displays Specification Version 7.0 Draft 1

2) Full Network Connectivity: The ability of the Display to maintain network presence while in Sleep Mode. Presence of the Display, its network services, and its applications, is maintained even if some components of the Display are powered down. The Display can elect to change power states based on receipt of network data from remote network devices, but should otherwise stay in Sleep Mode absent a demand for services from a remote network device.

Note: Full Network Connectivity is not limited to a specific set of protocols. Also referred to as "network proxy" functionality and described in the Ecma-393 standard.

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3.4 Sleep Mode Requirements

3.4.1 For all Displays, Measured Sleep Mode Power (P_{SLEEP}) in watts shall be less than or equal the calculation of Maximum Sleep Mode Power Requirement (P_{ON_MAX}) with the applicable allowances and adjustments per Equation 5.

Equation 5: Sleep Mode Power Requirement for All Displays

$$P_{SLEEP} \leq (P_{SLEEP\_MAX} + P_N + P_T + P_{OS}) \times eff_{AC\_DC\_SLEEP}$$

Where:

- P_{SLEEP} *is Measured Sleep Mode Power in watts;*
- P_{SLEEP_MAX} *is the Maximum Sleep Mode Power requirement in watts specified in Table 2;*
- P_N *is the Full Network Connectivity allowance in watts specified in Table 3;*
- P_T *is the Touch Technology allowance in watts specified in Table 4;*
- P_{OS} *is the Occupancy Sensor allowance in watts specified in Table 4; and*
- $eff_{AC\_DC\_SLEEP}$ *is the standard adjustment for ac-dc power conversion losses that occur at the device powering the Display in Sleep Mode, and is 1.0 for Ac-powered Displays and 0.81 for displays tested with Standard dc.*
- *The result shall be rounded to the nearest tenth of a watt for reporting.*

Table 2: Maximum Sleep Mode Power Requirement ($P_{SLEEP\ MAX}$)

$P_{SLEEP\ MAX}$ (watts)
0.5

3.4.2 Products with Full Network Connectivity confirmed in Section 6.7 of the ENERGY STAR Test Method shall apply the allowance specified in Table 3.

Table 3: Full Network Connectivity Allowance

P_N (watts)
0.5

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Draft 2 Test Method

http://www.energystar.gov/sites/default/files/Draft2_Version7_Displays_TestMethod.pdf

c) Networking: If the UUT has networking capability (i.e., it has the ability to obtain an IP address when configured and connected to a network) the networking capability shall be activated, and the UUT shall be connected to a live physical network (e.g., WiFi, Ethernet, etc.). The physical network shall support the highest and lowest data speeds of the UUT's network function. An active connection is defined as a live physical connection over the physical layer of the networking protocol. In the case of Ethernet, the connection shall be via a standard Cat 5e or better Ethernet cable to an Ethernet switch or router. In the case of WiFi the device shall be connected and tested in proximity to a wireless access point (AP). The tester shall configure the address layer of the protocol, taking note of the following:

i. Internet Protocol (IP) v4 and IPv6 have neighbor discovery and will generally configure a limited, non-routable connection automatically.

ii. IP can be configured manually or by using Dynamic Host Configuration Protocol (DHCP) with an address in the 192.168.1.x Network Address Translation (NAT) address space if the UUT does not behave normally when autoIP is used. The network shall be configured to support the NAT address space and/or autoIP.

iii. The UUT shall maintain this live connection to the network for the duration of testing, disregarding any brief lapses, (e.g., when transitioning between link speeds). If the UUT is equipped with multiple network capabilities, only one connection shall be made in the following order of preference:

a. WiFi (Institution of Electrical and Electronics Engineers - IEEE 802.11- 2007[2])

b. Ethernet (IEEE 802.3). If the UUT supports Energy Efficient Ethernet (IEEE 802.3az-2010[3]), then it shall be connected to a device that also supports IEEE 802.3az

c. Thunderbolt

d. USB

e. Firewire (IEEE 1394)

f. Other

d) In the case of a UUT that has a single connection capable of performing both bridging and networking functionality, a single connector can be used to meet these functionalities provided it is the highest preferred connection the UUT supports for each functionality.

e) In the case of a UUT that has no data/network capabilities, the UUT shall be tested as-shipped.

f) Built-in speakers and other product features and functions not specifically addressed by the ENERGY STAR eligibility criteria or test method must be configured in the as-shipped power configuration.

g) Availability of other capabilities such as occupancy sensors, flash memory-card/smart-card readers, camera interfaces, PictBridge shall be recorded.

We hope that EPA strongly considers SHARPs comments as we work together to create an effective, accurate, and efficient next version of the ENERGY STAR program for Displays.

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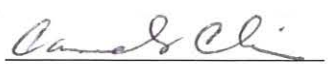
Respectfully submitted,

Sharp Electronics Corporation

By: 

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