Summary and Response to Stakeholder Comments
ENERGY STAR Program Test Method for Displays Version 6.0 Draft Final (Rev. Jun-2012)

I. TEST SETUP

Comment #	Topic	Comment	Response
1	Bridging and Networking	A stakeholder commented that a display may have different kinds of peripheral and network connections. **Case1**: The UUT has a Display Port and a USB port The stakeholder's concern is whether the DisplayPort on the UUT shall be connected, in addition to loading the USB dongle, or they do not need to connect both these ports while testing for sleep mode power consumption. **Case2**: The display has a Display Port, USB port, Fast Ethernet port and WiFi The stakeholder's concern is whether the UUT's DisplayPort, the USB port, the Ethernet port and the WiFi must be activated and connected for sleep mode testing or if just a single data port and a single network port are required for sleep mode testing.	In section 6.2 of Version 6.0 Test Method for Displays Final Draft (Rev. June-2012), DOE specified that if the unit under test (UUT) has both data and network capabilities the UUT shall be configured and connected to a single active data source **or** a single network source, while maintaining a video signal connection. However the intent of this section is to configure and connect the UUT to one data source (bridging) **and** to one network source (networking). DOE has modified this section in the Final Test Method (Sep-2012). In addition, DOE has added clarifying language in section 5.2 of the Final Test Method (Sep-2012) for Displays to better define what constitutes a bridge (data) connection and what constitutes a network connection. In the Final Test Method (Sep-2012), DOE specifies that for UUT's having bridging capabilities, a bridge connection shall be made between the UUT and the host system. DOE has also provided examples to clarify what constitutes a bridge connection and what constitutes a network connection. **Case 1:** In the case where a DisplayPort is used as an input signal interface, the Final Test Method (Sep-2012) requires that the DisplayPort, along with the USB, shall be connected while testing in sleep mode. **Case2:** In the case where the DisplayPort is used as an input signal interface, the Final Test Method (Sep-2012) requires that the DisplayPort, the WiFi (if the display is capable of exchanging data over the network without the connection of an additional client) and USB (if the UUT has bridging capabilities) shall be connected while testing in sleep mode. The USB port shall be connected to the host system so that the UUT and the host system act as two hub controllers. In the Final Test Method (Sep-2012), the UUT shall not be connected to the WiFi if the Display is a standalone unit and is not capable of exchanging data over the network.

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2	Bridging and Networking	The Test Method Section 6.1)A) <u>Testing at Factory Default Settings</u> requires power measurements be performed with the product in its as-shipped condition except as otherwise specified by the Test Method. Regarding the measurement of the On Mode and Sleep Mode power of signage displays, we believe the data and network capabilities should remain in their as-shipped condition. These signage displays are designed and marketed for professional applications as opposed to consumer use. The factory defaults are implemented to match the usage requirements of the majority of these professional installations. Consequently, the stakeholder agrees that signage displays should be tested in their as-shipped condition. However, the stakeholder does not recommend these signage displays be taken out of their default condition in order to enable data or network capabilities during On Mode or Sleep Mode power measurements.	DOE understands that professional/signage displays are implemented to match the usage requirements of professional applications. However, DOE believes that the use of any network/bridging capabilities in the displays require additional configuration by the end user to be enabled regardless of the as-shipped status of the device. For example, a WiFi connection cannot be simply enabled by default, as the user must choose which network to connect to and enter security information related to the WiFi connection. Thus, the as-shipped configuration of these capabilities is not typical of real world usage. As such, DOE recommends that displays be tested with network and bridging capabilities configured and connected even if these are not activated as-shipped for the display. DOE has made no changes to sections 6.4 and 6.5 in the Final Test Method (Sep-2012).
3	Bridging and Networking	As per the test conditions mentioned in section 6.2 C) of the final draft of the test method, either one of the data or network capabilities should be configured and connected during the On Mode and Sleep Mode testing, correct?	See response to comment # 1.
4	Bridging and Networking	A stakeholder had questions regarding the definition of USB capabilities of the display. The UUT must have bridging capability similar to two USB hub controllers, correct? For the purpose of testing no other peripherals (like mouse, keyboard, external HDD…etc.) are considered as data connections, right?	There shall be no peripheral devices like mouse, keyboard, etc. attached to the USB port. The simplest way of using a USB bridge connection would be to connect the USB port of the UUT to the USB port of the host system; this allows the host machine, along with the UUT, to act as USB bridged controllers. Section 5.2 C) of the Final Test Method (Sep-2012) has been updated to clarify that no peripheral devices shall be attached to the USB port during testing.

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5	Bridging and Networking	If the product has network capability, should it be activated no matter if it's enabled in default mode or not?	Yes. If the UUT has network capability it shall be activated and connected to a live network during On Mode and Sleep Mode testing, even if network capability is not activated as the default for the UUT. While the network capability is activated and connected, there is no active transfer of data over the network during the test.
6	Bridging and Networking	As per the final draft test method, if the product has numerous ports, we could choose either one of the bridging or network capabilities to proceed with the test rather than connecting both of them at the same time. Is that correct?	See response to comment # 1.
7	Bridging and Networking	A stakeholder had a question on the DisplayPort being used for network connectivity. For a display having an Ethernet connection for the use of monitor control and a DisplayPort providing DDC/CI function via the aux channel, will the DisplayPort act as a single connection for signal interface and data capability? Note: The DDC/CI function is used for monitor control.	As per the final draft of the test method (Rev. June-2012), the additional connections beyond the video connection are connected to support either networking or bridging functionality. These definitions do not include just any type of data connection. The DisplayPort in this example does not actually provide network or bridging functionality as defined in the Final Test Method (Sep-2012) and specification. Thus, the DisplayPort connection would only be connected for the video signal connection, but would not fulfill the networking or bridging connection requirement. The Ethernet connection would need to be made if it supported connection to a live network.

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8	Light Source and Illuminance Levels	The direct light method defined by DOE does not reflect typical overhead lighting in offices and residences. When the display is installed in an office or residence, the angle of the overhead lighting in relation to the display results in much lower levels of light detected by the ambient light sensor in the display. Consequently, the display automatically adjusts the brightness using sensor data that indicates the room is very dimly lit, when in fact, the room is well lit from overhead lighting. The end result is that the display luminance is very dim and the user is forced to override the default luminance settings. In some cases, users actually return their displays to the manufacturer under the incorrect assumption that the display is defective. We recommend that the test method be changed to reflect real world lighting conditions by either changing the angle of the lighting to better reflect overhead lighting conditions or by reducing the illuminance of horizontal lighting to compensate for the reduced level of lighting that is measured by the display's ambient light sensor in a real-world office or residence. Ultimately, the display's automatic brightness control should perform in a similar manner when tested using the Energy Star test method and when tested in a real-world 300 lux ambient lighting of an office or residence.	DOE recognizes that the ABC sensor is likely to respond differently to direct versus diffuse light. However, substantial testing by DOE indicates that testing with diffuse lighting or diffuse light set ups may result in increased test variability. DOE is further investigating the relationship between lux values seen by the unit's sensor when created by direct and diffuse test setups, as well as methods to minimize variability in diffuse light set ups. However, the test approach outlined in the Final Draft Test Method (Rev. June-2012) is consistent with DOE's Test Procedure Notice of Proposed Rulemaking (NOPR) for TVs, and DOE believes the Displays and TVs test procedures should be harmonized as much as possible. However, to address these concerns EPA has removed the requirement to test and report the On Mode power consumption at 100 lux and 500 lux for products that qualify with ABC enabled by default in the Version 6.0 Final specification. As such, DOE has removed testing of ABC enabled displays at lighting levels of 100 and 500 lux from the Final Test Method (Sep-2012). Going forward, DOE and EPA will reevaluate the need for data at additional illuminance points and will likely reach out to its Partners to gather necessary information to inform the next specification revision.

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9	Light Source Alignment	The stakeholder generally supports the clarification details presented in the Test Method Section 5)G)2) Light Source Alignment. However, Figures 1 and 2 include a note requiring that "D1=D2 with respect to vertical reference plane". We understand that the dimensions, D1 and D2, are from the front of the UUT to the rear wall. Many of the test laboratories implement a dark room for these measurements using blackout curtains forming "walls" which are not always square. Panasonic recommends this note either be removed, or relaxed by allowing a reasonable tolerance. A single measurement from the center of the front of the UUT to the rear wall would suffice. We also recommend modifying the D1 and D2 dimensions shown in Figures 1 and 2 in accordance with our request.	In section 5 G) of the Test Method Final Draft (Rev. June-2012) DOE specifies that the center of the lamp shall be aligned at a horizontal angle of 0° with respect to the center of the UUT's automatic brightness control (ABC) sensor. This specification was based on DOE's observation that On Mode power consumed by the UUT varied with a small variation in the horizontal angle of the lamp with respect to the ABC sensor. In order to maintain this alignment of the UUT's ABC sensor with the lamp, DOE requires that all four corners of the UUT be an equal distance from a vertical reference plane. A single measurement from the center of the front of the UUT will not assure that the UUT's ABC sensor is horizontally aligned with the lamp. However, DOE understands that black out curtains may be used to implement a dark room, in which case the curtains may not serve as a reference plane. As such, DOE has relaxed the maximum distance criteria of 2.5 ft specified in the final draft of the test method. Section 4 F) of the Final Test Method (Sep-2012) states that "All four corners of the face of the Unit Under Test shall be equidistant from a vertical reference plane".
10	Occupancy Sensor	Could you tell us how to measure the power consumption in sleep mode with an occupancy sensor? Shall the occupancy sensor be active during sleep mode measurement? Shall the video signal connection be maintained while you measure the sleep mode power consumption with an occupancy sensor?	For UUT's with the occupancy sensor enabled as-shipped, no person shall be within close proximity of the occupancy sensor for the duration of the Sleep Mode test. This is to prevent the UUT from entering a higher power state (e.g. On Mode). DOE has added clarification language to section 5.2 of the Final Test Method (Sep-2012) specifying additional testing conditions for products shipped with the occupancy sensor enabled. The Video signal connection shall be maintained for the duration of the Sleep Mode test period.
11	Connectivity	Should a monitor with a HDMI connector, having the capability to support a cable used to charge mobile phones, be tested with DVI port present as the signal interface? Note: A Blu-ray player can feed signal to the display via the HDMI port.	Since the UUT supports HDMI connectivity (i.e. to a Blu-ray player), the HDMI port shall be used for testing **all** power mode tests as indicated by the Final Draft of the ENERGY STAR Test Method (Rev. June-2012).