



ENERGY STAR® Program Requirements Product Specification for Displays

Eligibility Criteria Final Draft Version 6.0

1 Following is the ENERGY STAR product specification (“specification”) for Displays. A product shall meet
2 all of the identified criteria if it is to earn the ENERGY STAR.

3 **1 DEFINITIONS**

4 A) Product Types:

5 1) Electronic Display (Display): A commercially-available product with a display screen and
6 associated electronics, often encased in a single housing, that as its primary function displays
7 visual information from (1) a computer, workstation or server via one or more inputs (e.g., VGA,
8 DVI, HDMI, Display Port, IEEE 1394, USB), (2) external storage (e.g., USB flash drive, memory
9 card), or (3) a network connection.

10 a) Computer Monitor: An electronic device, typically with a diagonal screen size greater than
11 12 inches and a pixel density greater than 5,000 pixels per square inch (pixels/in²), that
12 displays a computer’s user interface and open programs, allowing the user to interact
13 with the computer, typically using a keyboard and mouse.

14 (1) Enhanced-Performance Display: A computer monitor that has all of the following
15 features and functionalities:
16 (a) A contrast ratio of at least 60:1 measured at a horizontal viewing angle of at least
17 85°, with or without a screen cover glass;
18 (b) A native resolution greater than or equal to 2.3 megapixels (MP); and,
19 (c) A color gamut of at least sRGB as defined by IEC 61966 2-1.

20 **Note:** Several stakeholders requested that only one or two of the three proposed criteria be met as a
21 requirement for a product to be considered an enhanced-performance display. EPA’s intent in
22 proposing a definition for an enhanced-performance display is to distinguish a select group of displays
23 that offer enhanced features, namely improved contrast ratio at extreme angles, high resolution and
24 improved color gamut, and provide them a power allowance for this increased functionality. Doing so
25 acknowledges both the power associated with this functionality and the interest in enhanced-
26 performance displays from market segments such as graphic design and photography. Requiring only
27 one or two of the proposed criteria would not adequately distinguish products with enhanced features.
28 Therefore, EPA proposes retaining all three criteria as required in order to clearly segment traditional
29 displays and enhanced-performance displays. EPA also seeks to continue harmonization with the
30 European Union’s (EU) definition of enhanced-performance, or high performance, displays, which also
31 includes all three criteria.

32 In addition, based on stakeholder feedback noting that contrast ratio measurement at wide angles is
33 difficult to determine with the screen cover glass on, and that contrast ratio measurements are nearly
34 identical with or without the screen glass in place, EPA proposes to allow manufacturers to assess
35 contrast ratio with or without the glass.

36 b) Digital Picture Frame: An electronic device, typically with a diagonal screen size less than
37 12 inches, whose primary function is to display digital images. It may also feature a
38 programmable timer, occupancy sensor, audio, video, or bluetooth or wireless
39 connectivity.

40 c) Signage Display: An electronic device typically with a diagonal screen size greater than
41 12 inches and a pixel density less than or equal to 5,000 pixels/in². It is typically marketed
42 as commercial signage for use in areas where it is intended to be viewed by multiple
43 people in non-desk based environments, such as retail or department stores, restaurants,
44 museums, hotels, outdoor venues, airports, conference rooms or classrooms.

45 B) External Power Supply (EPS): Also referred to as an external power adapter. A component contained
46 in a separate physical enclosure external to a display, designed to convert line voltage ac input from
47 the mains to lesser dc voltage(s) in order to provide power to the display. An EPS connects to the
48 display via a removable or hard-wired male/female electrical connection, cable, cord or other wiring.

49 C) Operational Modes:

50 1) On Mode: The power mode in which the product has been activated, and is providing one or
51 more of its principal functions. The common terms, “active,” “in-use,” and “normal operation” also
52 describe this mode. The power in this mode is typically greater than the power in Sleep Mode and
53 Off Mode.

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

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

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

62 3) Off Mode: The power mode in which the product is connected to a power source, and is not
63 providing any On Mode or Sleep Mode functions. This mode may persist for an indefinite time.
64 The product may only exit this mode by direct user actuation of a power switch or control. Some
65 products may not have this mode.

66 D) Luminance: The photometric measure of the luminous intensity per unit area of light travelling in a
67 given direction, expressed in candelas per square meter (cd/m²). Luminance refers to the brightness
68 settings of a display.

69 1) Maximum Reported Luminance: The maximum luminance the display may attain at an On Mode
70 preset setting, and as specified by the manufacturer, for example, in the user manual.

71 2) Maximum Measured Luminance: The maximum luminance the display may attain by manually
72 configuring its controls, such as brightness and contrast.

73 3) As-shipped Luminance: The luminance of the display at the factory default preset setting the
74 manufacturer selects for normal home or applicable market use. The As-shipped Luminance of
75 displays with Automatic Brightness Control (ABC) enabled by default may vary based on the
76 Ambient Light Conditions of the location in which the display is installed.

77 **Note:** In response to stakeholder feedback requesting clarification on the maximum luminance
78 definitions, EPA has revised the definitions for the Maximum Reported Luminance and Maximum
79 Measured Luminance, providing further clarification on the distinction between the two definitions. In
80 addition, the definition for As-shipped Luminance has been expanded based on stakeholder feedback to
81 accommodate luminance variance of ABC-enabled displays.

82 E) Illuminance: The areal density of the luminous flux incident at a point on a surface. Illuminance refers
83 to the ambient light conditions in the environment in which the display is located.

84 F) Screen Area: The viewable screen width multiplied by the viewable screen height, expressed in
85 square inches (in²).

86 G) Automatic Brightness Control (ABC): The self-acting mechanism that controls the brightness of a
87 display as a function of ambient light.

88 H) Ambient Light Conditions: The combination of light illuminances in the environment surrounding a
89 display, such as a living room or an office.

90 **Note:** EPA proposes definitions for Ambient Light Conditions in response to stakeholder feedback to help
91 inform further references for Dark Room Conditions used in Section 6.2, "Conditions for Power
92 Measurements," in the Displays Test Method.

93 I) Bridge Connection: A physical connection between two hub controllers, typically, but not limited to,
94 USB or FireWire, which allows for expansion of ports typically for the purpose of relocating the ports
95 to a more convenient location or increasing the number of available ports.

96 J) Occupancy Sensor: A device used to detect human presence in front of or in the area surrounding a
97 display. An occupancy sensor is typically used to switch a display between On Mode and Sleep or Off
98 Mode.

99 **Note:** EPA proposes definitions for a Bridge Connection and an Occupancy Sensor in response to
100 stakeholder feedback. The definitions are intended to provide more clarity for testing and qualification.

101 K) Product Family: A group of displays, made under the same brand, sharing a screen of the same size
102 and resolution, and encased in a single housing that may contain variations in hardware
103 configurations.

104 Example: Two computer monitors from the same model line with a diagonal screen size of 21
105 inches and a resolution of 2.074 megapixels (MP), but with variations in features such as built-in
106 speakers or camera, could be qualified as a product family.

107 L) Representative Model: The product configuration that is tested for ENERGY STAR qualification and is
108 intended to be marketed and labeled as ENERGY STAR.

109 2 SCOPE

110 2.1 Included Products

111 2.1.1 Products that meet the definition of a display as specified herein and are powered directly from ac
112 mains, via an external power supply, or via a data or network connection, are eligible for
113 ENERGY STAR qualification, with the exception of products listed in Section 2.2. Typical
114 products that would be eligible for qualification under this specification include:

- 115 i. Computer Monitors;
- 116 ii. Digital Picture Frames;
- 117 iii. Signage Displays; and,
- 118 iv. Additional products including monitors with keyboard, video and mouse (KVM) switch
119 functionality, and other industry-specific displays that meet the definitions and qualification
120 criteria in this specification.

121 2.2 Excluded Products

122 2.2.1 Products that are covered under other ENERGY STAR product specifications are not eligible for
123 qualification under this specification. The list of specifications currently in effect can be found at
124 www.energystar.gov/products.

129 2.2.2 The following products are not eligible for qualification under this specification:

- 130 i. Products with a viewable diagonal screen size greater than 61 inches;
- 131 ii. Products with an integrated television tuner;
- 132 iii. Products that are marketed and sold as televisions, including products with a computer
133 input port (e.g., VGA) that are marketed and sold primarily as televisions;
- 134 iv. Products that are component televisions. A component television is a product that is
135 composed of two or more separate components (e.g., display device and tuner) that are
136 marketed and sold as a television under a single model or system designation. A
137 component television may have more than one power cord;
- 138 v. Dual-function televisions / computer monitors that are marketed and sold as such;
- 139 vi. Mobile computing and communication devices (e.g., tablet computers, slates, electronic
140 readers, smartphones);
- 141 vii. Products that must meet FDA specifications for medical devices that prohibit power
142 management capabilities and/or do not have a power state meeting the definition of Sleep
143 Mode; and,
- 144 viii. Thin clients, ultra-thin clients, or zero clients.

145 **Note:** In response to stakeholder feedback requesting clarification of item 2.2.2.vi, EPA has revised the
146 item to cover all mobile computing and communication devices, providing some specific examples.

147 3 QUALIFICATION CRITERIA

148 3.1 Significant Digits and Rounding

- 149 3.1.1 All calculations shall be carried out with directly measured (unrounded) values.
- 150 3.1.2 Unless otherwise specified, compliance with specification requirements shall be evaluated using
151 directly measured or calculated values without any benefit from rounding.
- 152 3.1.3 Directly measured or calculated values that are submitted for reporting on the ENERGY STAR
153 website shall be rounded to the nearest significant digit as expressed in the corresponding
154 specification requirements.

155 3.2 General Requirements

156 3.2.1 External Power Supply: If the product is shipped with an EPS, the EPS shall meet the level V
157 performance requirements under the International Efficiency Marking Protocol, and include the
158 level V marking. Additional information on the Marking Protocol is available
159 at www.energystar.gov/powersupplies.

- 160 • External Power Supplies shall meet level V requirements when tested using the *Test Method*
161 *for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power*
162 *Supplies, Aug. 11, 2004.*

163 3.2.2 Power Management:

- 164 i. Products shall offer at least one power management feature that is enabled by default, and
165 that can be used to automatically transition from On Mode to Sleep Mode either by a
166 connected host device or internally (e.g., support for VESA Display Power Management
167 Signaling (DPMS), enabled by default).
- 168 ii. Products that generate content for display from one or more internal sources shall have a
169 sensor or timer enabled by default to automatically engage Sleep or Off Mode.

- 170 iii. For products that have an internal default delay time after which the product transitions
171 from On Mode to Sleep Mode or Off Mode, the delay time shall be reported.
- 172 iv. Computer monitors shall automatically enter Sleep Mode or Off Mode within 15 minutes of
173 being disconnected from a host computer.

174 **Note:** According to stakeholder feedback on the power management behavior of monitors when they are
175 disconnected from a computer without being turned off, most monitors on the market today enter Sleep
176 Mode after the connection to a host is discontinued. As such, EPA proposes to require this power
177 management feature for all ENERGY STAR qualified computer monitors.

178 3.3 On Mode Requirements

179 3.3.1 On Mode power (P_{ON}), as measured per the ENERGY STAR test method (referenced in Table 6),
180 shall be less than or equal to the Maximum On Mode Power Requirement (P_{ON_MAX}), as
181 calculated and rounded per Table 1, below.

- 182 i. If the product's pixel density (D_P), as calculated per Equation 1, is more than 14,000
183 pixels/in², then the screen resolution (r) used to calculate P_{ON_MAX} shall be determined per
184 Equation 2.

185 Equation 1: Calculation of Pixel Density

$$D_P = \frac{r \times 10^6}{A}$$

186 Where:

- 187
- 188 ▪ D_P is the pixel density of the product rounded to the nearest integer, in pixels/in²,
 - 189 ▪ r is the screen resolution, in megapixels, and
 - 190 ▪ A is the viewable screen area, in in².
- 191

192 Equation 2: Calculation of Resolution if the Product's Pixel Density (D_P) Exceeds 14,000 pixels/in²

$$r = \frac{14,000 \times A}{10^6}$$

193 Where:

- 194
- 195 ▪ r is the screen resolution, in megapixels, to be used when calculating P_{ON_MAX} ,
 - 196 and
 - 197 ▪ A is the viewable screen area, in in².

198

Table 1: Calculation of Maximum On Mode Power Requirements (P_{ON_MAX})

Product Type and Diagonal Screen Size, d (in inches)	P_{ON_MAX} (in watts) <i>Where:</i> <ul style="list-style-type: none"> ▪ r = Screen resolution in megapixels ▪ A = Viewable screen area in in^2 ▪ The result shall be rounded to the nearest tenth of a watt
$d < 12.0$	$(6.0 \times r) + (0.05 \times A) + 3.0$
$12.0 \leq d < 17.0$	$(6.0 \times r) + (0.01 \times A) + 5.5$
$17.0 \leq d < 23.0$	$(6.0 \times r) + (0.025 \times A) + 3.7$
$23.0 \leq d < 25.0$	$(6.0 \times r) + (0.06 \times A) - 4.0$
$25.0 \leq d \leq 61.0$	$(6.0 \times r) + (0.1 \times A) - 14.5$
$30.0 \leq d \leq 61.0$ <i>(for products meeting the definition of a Signage Display only)</i>	$(0.27 \times A) + 8.0$

199

200 3.3.2 For products meeting the definition of an Enhanced-Performance Display, a power allowance
 201 (P_{EP}), as calculated per Equation 3, shall be added to P_{ON_MAX} , as calculated per Table 1. In this
 202 case, P_{ON} , as measured per the ENERGY STAR test method (referenced in Table 6), shall be
 203 less than or equal to the sum of P_{ON_MAX} and P_{EP} .

204 **Equation 3: Calculation of On Mode Power Allowance for Enhanced-Performance Displays**

$$P_{EP} = 0.30 \times P_{ON_MAX}$$

205

206 *Where:*

- 207 ▪ P_{EP} is the On Mode power allowance for Enhanced-Performance Displays, in
- 208 watts, and
- 209 ▪ P_{ON_MAX} is the maximum On Mode power requirement, in watts.

210 **Note:**

211 **On Mode power levels:**
 212 Based on comments received on the February 22, 2012 webinar, EPA revised the On Mode power
 213 requirements for displays with a diagonal screen size of 0" - 30" and computer monitors with a diagonal
 214 screen size greater than or equal to 30" to allow higher qualification rates in key sizes that are popular
 215 with consumers, namely 19, 20, 22, 23 and 25 inch monitors. The revised On Mode Power levels provide
 216 greater selection of top performing products that remain cost effective.
 217

218 In Draft 3, EPA proposed a modification to the binning of computer monitors and signage displays. Given
 219 that the difference in power allowance between products under 30 inches in diagonal screen size and
 220 those 30 inches and greater is substantial, EPA seeks to guard against the possibility that computer
 221 monitors over 30 inches could be granted up to a threefold increase in power allowance in comparison to
 222 products just under 30 inches. As such, EPA proposes that the On Mode power equation be extended to
 223 computer monitors over 25 inches in diagonal screen size, and that the On Mode power allowance for
 224 displays 30 to 61 inches pertain only to products that meet the proposed signage display definition. Some
 225 stakeholders provided feedback that the proposal in Draft 3 did not provide a sufficient On Mode power
 226 allowance for computer monitors over 30 inches, because they deliver functionality similar to that of a
 227 workstation computer. EPA does not have data to support providing additional power beyond that already
 228 provided as displays increase in screen size. As such, EPA maintains the previously proposed power
 229 limits for computer monitors of 30 to 61 inches. *(continued on next page)*

Resolution: To better account for currently available products that deliver higher resolution image quality than is typical, EPA now proposes to base its allowance structure for higher resolution products on megapixel per square inch. A power allowance not to exceed 6 Watts per megapixel is established based on a device with a resolution of 14,000 pixels per square inch. This change from a megapixel approach more appropriately ties the upper limit to resolution in relation to screen size and is consistent with the overall specification framework which ties allowances to both resolution and screen area. It translates into a slightly larger allowance for products with a very high pixel density than proposed in Draft 3. EPA will continue to monitor the market to understand if and how resolution may increase, especially among larger products, and to determine its impacts on power consumption.

Enhanced-Performance Displays: Based on EPA's dataset and after receiving additional information from stakeholders, EPA proposes to increase the adder to 30% of the On Mode limit, up from 20%, as this will provide more opportunity for larger products to meet the proposed On Mode power levels. EPA proposes to grant this adder to displays that meet all of the criteria for an enhanced-performance display.

3.3.3 For products with Automatic Brightness Control (ABC) enabled by default, a power allowance (P_{ABC}), as calculated per **Equation 5**, shall be added to P_{ON_MAX} , as calculated per Table 1, if the On Mode power reduction (R_{ABC}), as calculated per **Equation 4**, is greater than or equal to 20%.

- i. If R_{ABC} is less than 20%, P_{ABC} shall not be added to P_{ON_MAX} .
- ii. P_{ON} , as measured with ABC disabled per the ENERGY STAR test method, referenced in Table 6 below, shall be less than or equal to P_{ON_MAX} .

Equation 4: Calculation of On Mode Power Reduction for Products with ABC Enabled by Default

$$R_{ABC} = 100 \times \left(\frac{P_{300} - P_{10}}{P_{300}} \right)$$

Where:

- R_{ABC} is the On Mode percent power reduction due to ABC,
- P_{300} is the measured On Mode power, in watts, when tested with an ambient light level of 300 lux, and
- P_{10} is the measured On Mode power, in watts, when tested with an ambient light level of 10 lux.

Equation 5: Calculation of On Mode Power Allowance for Products with ABC Enabled by Default

$$P_{ABC} = 0.10 \times P_{ON_MAX}$$

Where:

- P_{ABC} is the On Mode power allowance, in watts, and
- P_{ON_MAX} is the maximum On Mode power requirement, in watts.

Note: Some stakeholders noted that requiring a 20% power differential for products eligible to use the On Mode Power ABC Allowance may discourage manufacturer participation. When developing the proposed approach to incentivizing ABC, EPA determined the 20% value based on data from qualified displays products and data from the Televisions specification, since many TVs are shipped with ABC enabled. The data indicated that a 20% power difference between high and low lux values was feasible and in place among different models. Therefore, EPA proposes to keep the 20% power reduction requirement.

269 3.3.4 For products powered with a low-voltage dc source, P_{ON} , as calculated per Equation 6, shall be
270 less than or equal to P_{ON_MAX} , as calculated per Table 1.

271 **Equation 6: Calculation of On Mode Power for Products Powered by a Low-voltage Dc Source**

$$P_{ON} = P_L - P_S$$

272
273 Where:

- 274 ▪ P_{ON} is the calculated On Mode power, in watts,
- 275 ▪ P_L is the ac power consumption, in watts, of the low-voltage dc source with the
- 276 unit under test (UUT) as the load, and
- 277 ▪ P_S is the marginal loss of the ac power supply of the source, in watts.

278 **3.4 Sleep Mode Requirements**

279 3.4.1 Measured Sleep Mode power (P_{SLEEP}) for products with none of the data or network capabilities
280 included in Table 3 or 4 shall be less than or equal to the Maximum Sleep Mode Power
281 Requirement (P_{SLEEP_MAX}), as specified in Table 2.

282 **Table 2: Maximum Sleep Mode Power Requirement (P_{SLEEP_MAX})**

P_{SLEEP_MAX} (watts)
0.5

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284 3.4.2 Measured Sleep Mode power (P_{SLEEP}) for products with one or more of the data or network
285 capabilities included in Table 3 or 4 shall be less than or equal to the Maximum Data/Networking
286 Sleep Mode Power Requirement (P_{SLEEP_AP}), as calculated per Equation 7.

287 **Equation 7: Calculation of Maximum Data/Networking Sleep Mode**

$$P_{SLEEP_AP} = P_{SLEEP_MAX} + P_{DN} + P_{ADD}$$

288
289 Where:

- 290 ▪ P_{SLEEP_AP} is the Maximum Sleep Mode Power Requirement, in watts, for products
291 that were tested with additional power-consuming capabilities,
- 292 ▪ P_{SLEEP_MAX} is the Maximum Sleep Mode Power Requirement, in watts, as
293 specified in Table 2,
- 294 ▪ P_{DN} is the power allowance, in watts, as specified in Table 3 for data or
295 networking capability connected during Sleep Mode testing, and
- 296 ▪ P_{ADD} is the power allowance, in watts, as specified in Table 4 for additional
297 capabilities enabled by default that are active during Sleep Mode testing.

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Table 3: Power Allowances in Sleep Mode for Data or Network Capabilities

Capability	Included Types	P _{DN} (watts)
Wired	USB 1.x	0.1
	USB 2.x	0.5
	USB 3.x, DisplayPort (non-video connection), Thunderbolt	0.7
	Fast Ethernet	0.2
	Gigabit Ethernet	1.0
Wireless	Wi-Fi	2.0

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Table 4: Power Allowances in Sleep Mode for Additional Capabilities

Capability	Included Types	P _{ADD} (watts)
Sensor	Occupancy Sensor	0.5
Memory	Flash memory-card/smart-card readers, camera interfaces, PictBridge	0.2

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Note:

Gigabit Ethernet: Based on stakeholder feedback identifying variance in power consumption of Gigabit Ethernet for signage displays in Sleep Mode, EPA proposes to raise the power allowance for Gigabit Ethernet from 0.5 W to 1.0 W. This increment would allow such networking features, including those that ultimately produce energy savings by remotely switching a display into Sleep Mode, to continue functioning during Sleep Mode.

Fast Ethernet: EPA proposes to raise the power allowance for Fast Ethernet from 0.1 W to 0.2 W in response to stakeholder comments requesting consideration of typical physical layer power consumption.

Occupancy Sensor: EPA proposes to keep a power allowance of 0.5 W for occupancy sensors in Sleep Mode since this value is based on data submitted by stakeholders. EPA has further clarified the type of occupancy sensor in Section 1 (Definitions), item J.

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3.4.3 For products that offer more than one Sleep Mode (e.g., “Sleep” and “Deep Sleep”), measured Sleep Mode power (P_{SLEEP}) in any Sleep Mode shall not exceed P_{SLEEP_MAX} in the case of products without data or networking connection capabilities, or P_{SLEEP_AP}, in the case of products tested with additional power-consuming capabilities, such as data bridge connections or networking connections.

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3.5 Off Mode Requirements

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3.5.1 Measured Off Mode power (P_{OFF}) shall be less than or equal to the Maximum Off Mode Power Requirement (P_{OFF_MAX}) specified in Table 5.

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Table 5: Maximum Off Mode Power Requirement (P_{OFF_MAX})

P _{OFF_MAX} (watts)
0.5

324 **3.6 Luminance Reporting Requirements**

325 3.6.1 Maximum reported and maximum measured luminance shall be reported for all products; as-
326 shipped luminance shall be reported for all products except those with ABC enabled by default.

327
328 Note: Products intended for sale in the US market are subject to minimum toxicity and recyclability
329 requirements. Please see ENERGY STAR® Program Requirements for Displays: Partner Commitments
330 for details.

331
332 **Note:** To ensure that product designers are aware of Partner Commitments specific to toxicity and
333 recyclability, EPA has inserted the above note.

334 **4 TEST REQUIREMENTS**

335 **4.1 Test Methods**

336 4.1.1 Test methods identified in Table 6 shall be used to determine qualification for ENERGY STAR.

337 **Table 6: Test Methods for ENERGY STAR Qualification**

Product Type	Test Method
All Product Types and Screen Sizes	ENERGY STAR Test Method for Displays Rev. May 2012
	IEC 62087, Ed 3.0: Methods of Measurement for the Power Consumption of Audio, Video and Related Equipment
	IEC 62301, Ed 2.0: Household Electrical Appliances- Measurement of Standby Power
	VESA Flat Panel Display Measurements (FPDM) Standard, Version 2.0 ¹

338 **4.2 Number of Units Required for Testing**

339 4.2.1 One unit of a Representative Model, as defined in Section 1, shall be selected for testing.

340 4.2.2 For qualification of a product family, the product configuration that represents the worst-case
341 power consumption for each product category within the family shall be considered the
342 Representative Model.

343 **4.3 International Market Qualification**

344 4.3.1 Products shall be tested for qualification at the relevant input voltage/frequency combination for
345 each market in which they will be sold and promoted as ENERGY STAR.

346 **5 USER INTERFACE**

347 5.1.1 Manufacturers are encouraged to design products in accordance with the user interface standard,
348 *IEEE P1621: Standard for User Interface Elements in Power Control of Electronic Devices*
349 *Employed in Office/Consumer Environments*. For details, see <http://eetd.LBL.gov/Controls>. In the
350 event that the manufacturer does not adopt *IEEE P1621*, the manufacturer shall provide EPA with
351 its rationale for not doing so.

¹ To be used only for displays that cannot be tested using IEC 62087.

352 **6 EFFECTIVE DATE**

353 6.1.1 Effective Date: The Version 6.0 ENERGY STAR Display Products specification shall take effect
354 on **April 15, 2013**. To qualify for ENERGY STAR, a product model shall meet the ENERGY
355 STAR specification in effect on its date of manufacture. The date of manufacture is specific to
356 each unit and is the date (e.g., month and year) on which a unit is considered to be completely
357 assembled.

358 6.1.2 Future Specification Revisions: EPA reserves the right to change this specification should
359 technological and/or market changes affect its usefulness to consumers, industry, or the
360 environment. In keeping with current policy, revisions to the specification are arrived at through
361 stakeholder discussions. In the event of a specification revision, please note ENERGY STAR
362 qualification is not automatically granted for the life of a model

363 **Note:** At this time EPA anticipates finalizing Version 6.0 in July 2012, where the specification would then
364 become effective in April 2013.

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366 As of April 15, 2013, only those models that have been certified by an EPA-recognized certification body
367 will remain on the ENERGY STAR Qualified Products List. More information regarding product
368 qualification will be provided along with the release of the final specification. For information on third-party
369 certification, visit www.energystar.gov/3rdpartycert.

370 **7 CONSIDERATIONS FOR FUTURE REVISIONS**

371 **7.1 Displays Larger Than 61" in Diagonal Screen Size**

372 7.1.1 EPA understands that interactive displays greater than 60" in diagonal screen size are currently
373 available in the market and are namely used for commercial and educational purposes. EPA is
374 interested in better understanding the power consumption associated with these products when
375 tested according to the Displays Test Method and will work with stakeholders prior to, and during,
376 the next specification revision development process to access the information. DOE may also
377 explore testing of these products. EPA is interested in exploring expanding the scope of products
378 to those greater than 61" in diagonal screen size in the next specification revision.

379 **7.2 Touch Screen Functionality**

380 7.2.1 EPA is committed to continuing to develop performance levels for displays that account for new
381 features and functionality, and anticipates that displays with touch screen functionality, which are
382 included in the scope of this specification, will become more prevalent in the market, especially
383 among signage displays. Going forward, EPA and DOE will explore with stakeholders whether
384 touch screen functionality impacts On Mode power consumption to determine to what extent the
385 next specification development process should address touch screen functionality.