



ENERGY STAR[®] Program Requirements Product Specification for Audio/Video

Eligibility Criteria Final Draft Version 3.0

1 Following is the Version 3.0 product specification for ENERGY STAR qualified Audio/Video products. A
2 product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

3 **1 DEFINITIONS**

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5 A) Audio/Video (AV) Product: A mains-connected product that offers Audio Amplification and/or Optical
6 Disc Player functions.

7 B) Auto Power Down (APD): The capability to automatically switch a device from On Mode to Sleep
8 Mode after a predetermined period of time (APD timing) has elapsed. APD timing begins when both:

9 1) The device has ceased performance of all Primary Functions, and

10 2) The last user input has been received (e.g., remote control signal, volume adjustment).

11 If either a Primary Function resumes or a user input is received, the APD timing will reset. The intent
12 of APD is that products will automatically power down into Sleep Mode when they are not being
13 adjusted by the user and are not performing a Primary Function.

14 **Example 1**: A DVD player is by definition performing a Primary Function during active video playback
15 from the disc; and thus is not required to APD for the duration of active video playback. The same
16 DVD player is expected to power down to Sleep Mode within the APD time setting when video
17 content playback concludes, such that the product does not indefinitely remain in On Mode while in a
18 disc menu screen.

19 **Example 2**: An amplifier that is playing music is performing a Primary Function and thus is not
20 required to APD. Once the music has stopped playing, and the user is not interacting with the
21 product, the product will be expected to power down.

22 **Note**: The intent of Auto Power Down is to transition the product from On Mode to Sleep Mode when it is
23 not in use. This means that a product should Auto Power Down if it is not performing any function (i.e.,
24 playing music) and the user is not interacting with it.

25 C) Loss of Signal (LOS):

26 1) For audio signals, LOS is defined as:

27 a) Analog Inputs: Signal dropping below that required for MUP by a factor of not less than
28 30dB and not more than 70dB. For products without audio amplification, Signal less than
29 1dB above the measured noise floor for 60 seconds.

30 **Note**: The definition of Loss of Signal has been modified for additional clarity. The intent of this definition
31 is to provide guidance on what constitutes a lost signal and ensure that signal noise will not interfere with
32 the Auto Power Down function.

33 b) HDMI: Receive <Inactive Source> or <Standby> signal over the CEC channel, or [Power
34 Status] of an upstream device goes to "Standby" or "In Transition to Standby" over the
35 CEC channel;

- 36 c) Other Digital Inputs (e.g., Ethernet): No audio information in the data stream; or
 37 d) Detectable cable disconnects.
- 38 2) For video signals, LOS is defined as:
 39 a) Analog Inputs: Loss of either the horizontal or vertical sync signal
 40 b) HDMI: Receive <Inactive Source> or <Standby> signal over the Consumer Electronics
 41 Control (CEC) channel, or [Power Status] of an upstream device goes to “Standby” or “In
 42 Transition to Standby” over the CEC channel; or detection of a disabled TMDS link, a
 43 TMDS clock line signal below 22.5 MHz for more than one second, or a TMDS link
 44 operating outside of the valid frequency range;
 45 c) DVI: Detection of a disabled TMDS link, a TMDS clock line signal below 22.5 MHz for
 46 more than one second, or a TMDS link operating outside of the valid frequency range;
 47 d) Other Digital Inputs (e.g., Ethernet): No video information in the data stream; or
 48 e) Detectable cable disconnects.
- 49 D) Primary Function: Any discrete, dynamic device function that can be perceived by an end user,
 50 including the delivery or processing of audio/video content, and excluding the following:
 51 1) Continuous device functions (e.g., clocks, Status Displays, indicator lamps),
 52 2) Static device functions, such as:
 53 a) No active audio or video processing or output;
 54 b) Playback paused or stopped;
 55 c) No optical disc media in disc drive; or
 56 d) Waiting in disc menu or other menu for user input.
- 57 E) Operational Modes:
 58 1) On Mode: Where the product is connected to a mains power source, has been activated and
 59 is capable of providing one or more Primary Functions. The common terms “active”, “in-use”
 60 and “normal operation” also describe this mode.
 61 a) Active State: A state within On Mode in which a product is performing a Primary Function.
 62 b) Idle State: A state within On Mode in which a product is not performing a Primary
 63 Function and no content is actively being delivered to the end-user.
 64 2) Sleep Mode: Where the product is connected to a mains power source, is incapable of
 65 providing a Primary Function, and offers one or more of the following user oriented or
 66 protective functions which may persist for an indefinite time. The common term “standby”
 67 may also describe this mode.
 68 a) To facilitate the activation of other modes (including activation of On Mode) by remote
 69 switch (including remote control), internal sensor, or timer;
 70 b) Continuous function: information or Status Displays including clocks;
 71 c) Continuous function: sensor-based functions.
 72 For purposes of this specification, Sleep Mode is defined as the condition where the product
 73 is connected to a power source, produces neither sound nor picture, neither transmits nor
 74 receives program information and/or data (excluding data transmitted to change the unit’s
 75 condition from Sleep Mode to On Mode), and is waiting to be switched to On Mode by a
 76 direct or indirect signal from the consumer (e.g., with the remote control).
 77 3) Off Mode: Where the product is connected to a mains power source, is not providing any On
 78 Mode or Sleep Mode functions, and cannot be switched into any other mode except by user
 79 actuation of a manual power switch. An indicator that only shows the user that the product is
 80 in the off position is included within the classification of an Off Mode.

81 F) External Power Supply (EPS): Also referred to as External Power Adapter. A component contained in
82 a separate physical enclosure external to the AV Product, designed to convert line voltage AC input
83 from the mains to lower dc voltage(s) in order to provide power to the AV Product. An EPS connects
84 to the AV Product via a removable or hard-wired male/female electrical connection, cable, cord or
85 other wiring.

86 G) High-Definition Multimedia Interface (HDMI): A compact audio/video interface for transmitting
87 uncompressed digital data.

88 1) Consumer Electronics Control (CEC) Protocol: A single-conductor wire or bus technology that
89 is an optional feature in the HDMI specification. CEC is meant to carry IR/remote and/or
90 control commands between interconnected HDMI devices.

91 H) High Definition Resolution (HD): Video output with resolution greater than 480 lines (480 i/p).

92 I) Standard Definition Resolution (SD): Video output with resolution less than or equal to 480 lines
93 (480 i/p).

94 J) Multi-component System: A product consisting of several components with separate enclosures that
95 are sold as and intended for use as a single system. A "Home Theater in a Box" is an example of a
96 Multi-component System.

97 K) Audio Amplifier Type Classifications:

98 1) Full-spectrum Audio Amplifier: An amplifier capable of full audible frequency range (20 Hz to
99 20 kHz) output on all channels.

100 2) Limited-bandwidth Audio Amplifier: An amplifier limited to less than full audible frequency
101 range (20 Hz to 20 kHz) output on one or more channels.

102 L) Audio Amplifier Use Classifications:

103 1) Consumer Amplifier: An amplifier product that possesses 4 of the following 5 characteristics:

104 a) Digital inputs use a S/PDIF, HDMI, or portable music player dock connector(s), or a
105 standard wireless technology (e.g., a Bluetooth receiver supporting A2DP);

106 b) Analog inputs utilize RCA connections, TRS connections (1/4" or 1/8"), and/or spring clip
107 style connectors;

108 c) Analog inputs have -5 dBV input sensitivity to achieve full output power when using a
109 1kHz sine wave input;

110 d) Ac plug has two conductors and no grounding connection and is limited to 15 amperes ac
111 current (e.g., NEMA 1);

112 e) An IR remote control is included with or can control the product.

113 2) Commercial Amplifier: All amplifier products that do not meet the defining criteria for a
114 Consumer Amplifier will be considered a Commercial Amplifier.

115 **Note:** EPA has learned that IEC TC100 is working on a SPL (sound pressure level) test for compact
116 audio and will look to evaluate its use with the ENERGY STAR specification if and/or when the test
117 procedure is finalized.

118 M) Product Functions:

119 1) Audio Amplification: A function by which a device increases the amplitude of an audio signal
120 for purposes of sending the signal to a transducer for playback.

121 2) Audio Signal Processing: A function by which a device modifies an audio signal for a purpose
122 other than amplification.

123 3) High Resolution Display: A function by which a device converts a video signal into a visual
124 output (e.g., LCD panel, plasma display panel). This definition does not include Status
125 Displays.

- 126 4) Status Display: A function by which a product provides a visual display of less than 480x234
 127 pixel resolution or 5 inches diagonal screen size, including a back-lit alphanumeric clock or
 128 channel indicator. This definition does not include single indicator lamps.¹
- 129 5) IP Video Tuner: A function by which a device can play back streaming digital video content
 130 packetized or downloaded over an IP network.
- 131 6) Networking / Control Protocol: A function by which a device can connect to a network for
 132 transmission and receipt of data. The connection may be wired or wireless (e.g., IR
 133 communications, Ethernet, Bluetooth, RS-232, USB).
- 134 7) Wi-Fi and Gigabit Ethernet Protocols: Networking connections that have been defined to
 135 require additional power for transmission and receipt of data in Audio/Video products.
 136 Connections are limited to Gigabit Ethernet and Wi-Fi.
- 137 8) Optical Disc Player / Recorder: A function by which a device can read and/or write data to
 138 removable disk media (e.g., CD, DVD, Blu-ray Disc).
- 139 N) Total Harmonic Distortion (THD): The ratio of the sum of the powers of all harmonic components to
 140 the power of the fundamental frequency of a signal.
- 141 O) Maximum Undistorted Power (MUP): The amplifier output power at which the THD of any output
 142 channel is 1.0% or greater for a given input.
- 143 P) Product Family: A group of product models that are (1) made by the same manufacturer, (2) subject
 144 to the same ENERGY STAR qualification criteria, and (3) of a common basic design. Product models
 145 within a family differ from each other according to one or more characteristics or features that either
 146 (1) have no impact on product performance with regard to ENERGY STAR qualification criteria, or (2)
 147 are specified herein as acceptable variations within a Product Family. For Audio/Video, acceptable
 148 variations within a Product Family include:
- 149 1) Color, and
 150 2) Housing.

151 2 SCOPE

152 2.1 Included Products

- 153 2.1.1 Products that meet the definition of an AV Product as specified herein are eligible for ENERGY
 154 STAR qualification, with the exception of products listed in Section 2.2.

155 2.2 Excluded Products

- 156 2.2.1 Products that are covered under other ENERGY STAR product specifications are not eligible for
 157 qualification under this specification. The list of specifications currently in effect can be found at
 158 www.energystar.gov/specifications.

- 159 2.2.2 The following products are excluded from qualification under this specification.

- 160 i. Products whose primary video playback capability is via IP Video Tuner and which are sold or
 161 provided outside of a dedicated service contract,
 162 ii. Primarily battery-powered products (e.g., MP3 players, portable DVD players, portable
 163 gaming systems),
 164 iii. Products for use in automotive applications,
 165 iv. Video projectors,

¹ Note that single indicator lamps are not provided power allowances under this specification.

- 166 v. Home and building automation and control products,
- 167 vi. Whole-house and whole-building audio and/or video systems,
- 168 vii. Videoconferencing systems,
- 169 viii. Wireless microphone systems,
- 170 ix. A/B selector switches, and
- 171 x. Media servers.

172 **3 QUALIFICATION CRITERIA**

173 **3.1 Significant Digits and Rounding**

- 174 3.1.1 All calculations shall be carried out with directly measured (unrounded) values.
- 175 3.1.2 Unless otherwise specified, compliance with specification limits shall be evaluated using directly
176 measured or calculated values without any benefit from rounding.
- 177 3.1.3 Directly measured or calculated values that are submitted for reporting on the ENERGY STAR
178 website shall be rounded to the nearest significant digit as expressed in the corresponding
179 specification limit.

180 **3.2 General Qualification Criteria**

- 181 3.2.1 External Power Supply: If the product is shipped with an EPS, the EPS shall meet the level V
182 performance requirements under the International Efficiency Marking Protocol and include the
183 level V marking. Additional information on the Marking Protocol is available at
184 www.energystar.gov/powersupplies.
- 185 3.2.2 Multi-component Systems: Each power-consuming component in a Multi-component System
186 shall be assessed independently. To qualify for ENERGY STAR, each component shall meet
187 applicable ENERGY STAR criteria.
- 188 3.2.3 Networking / Control Protocols: To qualify for ENERGY STAR, AV Products that offer one or
189 more Networking / Control Protocol options shall meet all applicable ENERGY STAR criteria in all
190 possible control protocol configurations.
- 191 3.2.4 Networking / Control Protocol Allowances: The following guidance shall be used for allowances
192 provided for Sleep Mode, Idle State and On Mode Power requirement calculation. This guidance
193 applies to Networking / Control Protocols and Wi-Fi and Gigabit Ethernet Protocols as defined in
194 Section 1.
 - 195 a) Each different and distinct in-use and active protocol will receive an allowance.
 - 196 b) In the case that multiple instances of the same protocol are implemented in a single
197 product, a single allowance will be awarded for the first instance. In addition, a single
198 allowance will be awarded for each subsequent set of five (or fewer if less than a multiple
199 of 5+1 exist) in-use and active networking/control protocols.

200 **Example 1:** A product that implements both RS-232 and Bluetooth would receive two
201 allowances, one for each protocol.

202 **Example 2:** A product that implements 10 iterations of RS-232 would receive three allowances
203 (one for the first iteration, one for the next set of five, and one for the remaining four).

204 **3.3 Auto Power Down (APD) Requirements**

- 205 3.3.1 APD functionality shall be available on all products except those that are subject to third-party
206 performance standards that prohibit APD, including those used for Mass Notification and
207 Emergency Communications Systems and those subject to ANSI/UL 2572.

- 208 3.3.2 APD functionality shall be enabled by default, with APD timing less than or equal to 2 hours,
 209 subject to the following exceptions:
- 210 i. Products may offer users the option (e.g., via system menu or physical switch) to modify APD
 211 timing in 10 minute intervals, or to disable APD entirely.
 - 212 ii. Products may initiate APD immediately upon receipt of authoritative control instruction via an
 213 active Networking / Control Protocol.
 - 214 iii. Commercial Amplifiers as defined in Section 1 may be shipped with APD disabled. If APD is
 215 disabled, the product shall meet the Idle State power requirements.

216 **Note:** The Auto Power Down requirement may be a barrier for some commercial amplifiers as they are
 217 required by their customers to be on and ready at any time. In the interest of ensuring ENERGY STAR
 218 products deliver on consumer expectations, EPA has amended the requirements for Commercial
 219 Amplifiers to allow products to ship with APD disabled as long as the products meet the Idle Mode
 220 requirements.

- 221 3.3.3 APD Timing Default Settings shall be as follows:
- 222 i. APD Timing ≤ 30 minutes: This timing option is acceptable for use as a default setting. If APD
 223 timing is set by default to no more than 30 minutes and APD cannot be disabled or increased
 224 to greater than 30 minutes, products do not have to meet Idle State power requirements.
 - 225 ii. 30 minutes < APD Timing ≤ 2 hours: This timing option is acceptable for use as a default
 226 setting. If APD can be disabled, or if APD timing can be set to greater than 30 minutes,
 227 products shall meet Idle State power requirements.
 - 228 iii. APD Timing > 2 hours: This timing option may only be enabled by the end user and is not
 229 available for use as a default setting. If APD can be disabled, or if APD timing can be set to
 230 greater than 30 minutes, products shall meet Idle State power requirements.

231 **3.4 Sleep Mode Requirements**

- 232 3.4.1 Measured Sleep Mode power (P_{SLEEP}) shall be less than or equal to the Maximum Sleep Mode
 233 Power Requirement (P_{SLEEP_MAX}), as calculated per Equation 1.
- 234 i. If a product's Idle State meets the Sleep Mode power requirements, a distinct and separate
 235 Sleep Mode is not required to be implemented.

236 **Equation 1: Calculation of Maximum Sleep Mode Power Requirement**

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$$P_{SLEEP_MAX} = P_{SLEEP_BASE} + \sum_{i=1}^n P_{WAKE_i}$$

238 *Where:*

- 239 ▪ P_{SLEEP_MAX} is the Maximum Sleep Mode Power Requirement;
- 240 ▪ P_{SLEEP_BASE} is the base Sleep Mode power allowance for all
 241 products, as specified in Table 1;
- 242 ▪ P_{WAKE_i} is the Sleep Mode power allowance for each active, in-use
 243 networking/control protocol that provides remote hosts with the
 244 capability to wake the product from Sleep Mode, as specified in
 245 Table 1, for a total of n such allowances.

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Table 1: Sleep Mode Power Allowances

Product Function	Sleep Mode Power Allowance (watts)
Base Allowance for All Products ($P_{SLEEP\ BASE}$)	1.0
In-use Networking / Control Protocol with Wake Capability ($P_{WAKE\ i}$)	1.0
In-use Wi-Fi and Gigabit Ethernet Protocols with Wake Capability ($P_{WAKE\ i}$)	2.0

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Note: An additional allowance has been added to address the power consumption of modern networking protocols. This allowance applies only to the protocols listed in the Wi-Fi and Gigabit Ethernet Protocols definition as written in Section 1.

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3.5 Optical Disc Player On Mode Requirements

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3.5.1 Measured On Mode power (P_{ON}) for products with Optical Disc Players, shall be less than or equal to the Maximum On Mode Power requirement (P_{ON_MAX}), as calculated per Equation 2, subject to the following requirements:

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i. Measured On Mode power for Optical Disc Players capable of processing both SD and HD video content shall be the average of the On Mode power when processing SD content and the On Mode power when processing HD content, as measured per the test procedure.

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ii. On Mode power allowances specified in Table 2 shall be applied only once per product. The highest applicable allowance may be used.

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iii. The Networking / Control Protocol On Mode power allowance shall be applied only to active, in-use Networking / Control Protocols.

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Equation 2: Calculation of Maximum On Mode Power Requirement

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$$P_{ON_MAX} = P_{ON} + \sum_{i=1}^n P_{ADD_i}$$

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Where:

- P_{ON_MAX} is the Maximum On Mode Power Requirement, in watts;
- P_{ON} is the On Mode power base allowance for each applicable product function listed in Table 2, Note: only one P_{ON} shall be applied per product; and
- P_{ADD_i} is the On Mode Power Function Adder for each applicable product function listed in Table 3, rounded to the nearest 0.1 watts, for a total of n such allowances.

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Table 2: On Mode Power Base Allowances

Product Function	On Mode Power Allowance, P_{ON} (watts)
SD or Audio Source Optical Disc Player: Playback Test	6.0
SD Source to HD Output "Upconversion" Optical Disk Player: Playback Test	10.0
HD Source Optical Disc Player: Playback Test	10.5

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Table 3: On Mode Power Function Allowances

Product Function	On Mode Power Allowance, $P_{ADD i}$ (watts)
High Resolution Display	$P_{ON} = (6 \times R) + (0.05 \times A) + 3.0$ <p>Where:</p> <p>R is the display resolution (x * y) in megapixels</p> <p>A is the viewable screen area in square inches</p>
In-use Networking / Control Protocol	1.0
In-use Wi-Fi and Gigabit Ethernet Protocols	2.0
Audio Amplification	5.0
<i>Where:</i> P_{OUT} is the output power at 1/8 MUP with 1kHz sinusoidal input	$P_{OUT} \leq 50$ watts $P_{OUT} > 50$ watts $(0.1 \times P_{OUT})$

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Note: To ensure a level playing field, EPA proposes an adjustment to the structure of the ENERGY STAR On Mode Power requirements for products with both Optical Disc Players and Audio Amplification such as Home Theater in a Box products. EPA has added an Audio Amplification adder to the On Mode Power function adders to address the idle power of the Audio Amplification circuitry while the Optical Disc Player is being tested.

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Example: The Maximum On Mode power requirement for an AV Product with an integrated display, HD Blu-ray Disc player, and an active Ethernet network connection would be calculated as follows:

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(1) The HD Optical Disc Player would receive 10.5 watts during playback;

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(2) A display with 480 x 234 pixel resolution (0.112320 MP) and a 7 inch diagonal screen (viewable area of 20.9 square inches), would receive $(6 \times 0.112320) + (0.05 \times 20.9) + 3.0 = 4.7$ watts; and

286 (3) The Ethernet connection would receive 1.0 watts. The On Mode power limit during playback
 287 of video content from the disc would be 10.5 W + 4.7 W + 1.0 W = 16.2 watts.

288 **3.6 Idle State Requirements**

289 3.6.1 Measured Idle State power (P_{IDLE}), shall be less than or equal to the Maximum Idle State Power
 290 requirement (P_{IDLE_MAX}), as calculated per Equation 3, subject to the following requirements:

- 291 i. Products with a default APD timing less than or equal to 30 minutes and that cannot be
 292 disabled or increased to greater than 30 minutes shall be excluded from the requirement.

293 **Equation 3: Calculation of Maximum Idle State Power Requirement**

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$$P_{IDLE_MAX} = \sum_{i=1}^n P_{IDLE_i}$$

295 *Where:*

- 296 ▪ P_{IDLE_MAX} is the Maximum Idle State Power Requirement, in
 297 watts; and
- 298 ▪ P_{IDLE_i} is the Idle State power allowance for each applicable
 299 product function listed in Table 4, for a total of n such
 300 allowances.

301 **Table 4: Idle State Power Allowances**

Product Function		Idle State Power Allowance, P_{IDLE_i} (watts)
Base (All Products)		5.0
In-use Networking / Control Protocol		1.0
In-use Wi-Fi and Gigabit Ethernet Protocols with Wake Capability		2.0
Audio Amplification <i>Where: P_{OUT} is the output power at 1/8 MUP with 1kHz sinusoidal input</i>	$P_{OUT} \leq 50$ watts	5.0
	$P_{OUT} > 50$ watts	(0.1 x P_{OUT})

302 **Note:** EPA understands that a networking protocol increases the required power when a product is in Idle
 303 Mode, thus an allowance for active and in-use networking has been added to the Idle Mode requirement.

304 **3.7 Amplifier Efficiency Requirements**

305 3.7.1 Measured amplifier efficiency (η) of products that offer Audio Amplification, as calculated per
 306 Equation 4, shall be greater than or equal to the On Mode amplifier efficiency requirements
 307 specified in Table 5.

- 308 i. If no AV inputs are available and the Optical Disc Player is used for audio signal input (per
 309 ENERGY STAR test method Section 5.E), the power consumption of the Optical Disc Player,
 310 P_{DISC} , as measured in Section 8.2 of the test procedure, may be subtracted from the total
 311 measured power consumption of the device for the audio amplifier efficiency calculation.
- 312 ii. If the amplifier is tested with an AV input, then $P_{DISC} = 0$

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Equation 4: Calculation of Amplifier Efficiency

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$$\eta = \frac{P_{OUT}}{P_{IN} - P_{DISC}}$$

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Where:

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- η is the amplifier efficiency;

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- P_{OUT} is the output power at 1/8 MUP with 1 kHz sinusoidal input, in watts;

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- P_{IN} is the input power at 1/8 MUP with 1 kHz sinusoidal input, in watts; and

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- P_{DISC} is the power consumption from the Optical Disc Player, as measured in Section 8.2 of the test procedure, for products without AV inputs.

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Table 5: Amplifier Efficiency Requirements

Amplifier Input Power at 1/8 MUP with 1 kHz Sinusoidal Input, P_{IN} (W)	Version 3.0 Minimum Amplifier Efficiency, η
$P_{IN} < 20$	N/A
$20 \leq P_{IN} < 100$	0.44
$P_{IN} \geq 100$	0.55

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Note: Products intended for sale in the US market are subject to minimum toxicity requirements. Please see ENERGY STAR Program Requirements for Audio/Video Products: Partner Commitments for details.

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Note: To ensure that product designers are aware of Partner Commitments specific to toxicity, EPA has inserted the above note.

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4 TESTING

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4.1 Test Methods

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4.1.1 When testing Audio/Video products, the test methods identified in Table 6 shall be used to determine ENERGY STAR qualification.

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Table 6. Test Methods for ENERGY STAR Qualification

Product Type	Test Method
All	ENERGY STAR Test Method for Audio/Video, Rev. May-2012
External Power Supply	Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies, Aug. 11, 2004. (Available for download from www.efficientpowersupplies.org).

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4.2 Number of Units Required for Testing

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4.2.1 Representative Models shall be selected for testing per the following requirements:

339 i. For qualification of an individual product model, a product configuration equivalent to that
340 which is intended to be marketed and labeled as ENERGY STAR is considered the
341 Representative Model;

342 ii. For qualification of a Product Family, any product configuration within the family may be
343 considered the Representative Model.

344 4.2.2 A single unit of each Representative Model shall be selected for testing.

345 4.3 International Market Qualification

346 4.3.1 Products shall be tested for qualification at the relevant input voltage/frequency combination for
347 each market in which they will be sold and promoted as ENERGY STAR.

348 5 USER INTERFACE

349 5.1.1 Partners are encouraged to design products in accordance with the user interface standard IEEE
350 P1621: Standard for User Interface Elements in Power Control of Electronic Devices Employed in
351 Office/Consumer Environments. For details, see <http://eetd.LBL.gov/Controls>.

352 6 EFFECTIVE DATE

353 6.1.1 Effective Date: The Version 3.0 ENERGY STAR Audio/Video specification shall take effect on
354 **April 1, 2013**.

355 **Note:** The Version 3.0 requirements, when final, will replace the Version 2.0 Tier 3 requirements initially
356 scheduled to go into effect March 30, 2012. The current Version 2.0 Tier 2 requirements will stay in effect
357 until the Version 3.0 requirements go into effect. Additional information about the schedule for transition
358 between Version 2.0 and Version 3.0 will be distributed with the Final Version 3.0 documents.

359 6.1.2 To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in
360 effect on its date of manufacture. The date of manufacture is specific to each unit and is the date
361 (e.g., month and year) on which a unit is considered to be completely assembled.

362 6.1.3 Future Specification Revisions: EPA reserves the right to change this specification should
363 technological and/or market changes affect its usefulness to consumers, industry, or the
364 environment. In keeping with current policy, revisions to the specification are arrived at through
365 stakeholder discussions. In the event of a specification revision, please note that the ENERGY
366 STAR qualification is not automatically granted for the life of a product model.