ENERGY STAR Audio Video Draft 2 Version 3.0 Webinar

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Agenda

Topic	Time
Introduction	3:00 - 3:10
Draft 2 Version 3.0 Information	3:10 - 3:30
Definition Clarifications	3:30 - 3:40
On Mode and Efficiency Requirements	3:40 - 4:00
Toxicity Requirements	4:00 - 4:10
Additional Questions	4:10 - 4:30

Webinar Details

- Webinar and related materials will be available on the ENERGY STAR Audio Video PD page:
  - www.energystar.gov/productdevelopment
  - *Revisions to Existing Specifications*

- Audio provided via conference call in:

  Call in: +1.877.423.6338 (inside US)

  Code: 424891

- Please keep phone lines on mute while not speaking.

- Please refer to the agenda for approximate discussion timing

Draft 2 Version 3.0 Audio Video Specification

- The Draft 2 Version 3.0 Audio Video specification and related documents were distributed on September 7
- All materials related to the specification revision process can be found on the ENERGY STAR Audio Video Product Development Page:
  - www.energystar.gov/revisedspecs
  - Audio Video

Draft 2 Version 3.0 Audio Video Specification

- Responses to the Draft 1 Version 3.0 specification:
  - The scope of this specification has been retained.
  - The Test Method remains unchanged.
    - Input signal for Amplifier Efficiency testing remains a 1kHz sine wave.
  - Reference to HDMI CEC has been removed from this Draft 2.

Draft 2 Version 3.0 Audio Video Specification

- Optical Disc Drive On Mode Power levels have been retained.

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

Definition Clarifications

- Loss of Signal
  - Updated definition for analog inputs
    - Signal dropping below that required for MUP by a factor of not less than 30dB and not more than 70dB.
  - This definition eliminates the possibility that signal noise will prevent a product from entering Auto Power Down.

Definition Clarifications

- Automatic Power Down (APD)
  - The definition of auto power down does require that the product transition from an active mode to a Sleep Mode as defined by this specification.
  - A product is never required to power down if it is providing some primary function to the user.

Optical Disc Drive On Mode Power Requirements

- An On Mode Power Function Adder has been added to cover the idle power consumed by an audio amplifiers.
- Applies specifically to Optical Disc Players testing.
- This adder will apply only to products that contain both an audio amplifier and optical disc drive such as Home Theater in a Box products.
- The adder is intended to account for the idle mode power consumed by an integrated audio amplifier while the optical disc drive On Mode Power is being measured.

Product Function		On Mode Power Allowance, P_{ADD_i} (watts)
High Resolution Display		$P_{ON} = (6.0 \times R) + (0.05 \times A) + 3.0$ Where: R is the display resolution (x * y) in megapixels A is the viewable screen area in square inches
In-use Networking / Control Protocol		1.0
Audio Amplification *Where: P_{OUT} is the output power at 1/8 MUP with 1kHz sinusoidal input*	$P_{OUT} \leq 50.0$ watts	5.0
	$P_{OUT} > 50.0$ watts	(0.10 x P_{OUT})

Amplifier Efficiency Requirements

- The amplifier efficiency requirements from Version 2.1 have been retained for Version 3.0.
- EPA will continue to develop energy efficiency requirements for the Small Amplifiers category.

Equation 4: Calculation of Amplifier Efficiency

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

Where:

- *η is the amplifier efficiency*
- *P_{OUT} is the output power at 1/8 MUP with 1 kHz sinusoidal input, in watts*
- *P_{IN} is the input power at 1/8 MUP with 1 kHz sinusoidal input, in watts*
- *P_{DISC} is the power measured during the audio playback test in the test method for products without AV inputs that must rely on an Optical Disc Player for audio signal input.*

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

Amplifier Efficiency Requirements

- Many stakeholder comments indicated that the test method should reflect real world operating conditions for amplifiers and should focus on power consumption or sound output.
- Amplifier Efficiency requirement is intended to measure efficiency, not power consumption. The efficiency benchmark allows different sized products to be compared.

Amplifier Efficiency Testing

- The amplifier efficiency testing requirements are designed for simplicity and ease of testing while still remaining a common metric for comparing energy efficiency.
- Test procedure is consistent with IEEE safety testing
- The sine wave has been retained as the Input Signal for this test.

Toxicity Requirements: Question for stakeholders

- RoHS Directive allows exemptions for specific materials and provides expiration dates for these exemptions.

- Are any materials that are exempted for a given time period under the RoHS Directive typically found in A/V products?

- See Annex III for list of exemptions at:

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:174:0088:0110:EN:PDF

Next Steps

- Stakeholder comments due to EPA
  - September 27th, 2011
- Draft Final Specification released in early October

- Please note these dates are subject to change.

Outstanding questions?

Contact Information

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Thank you!