



ENERGY STAR®

Audio/Video Version 2.0

Specification Development

**Review of Stakeholder Comments
on Draft 2**

17 September 2009

Agenda



- V2.0 Audio/Video Spec Development Update
- Review of Stakeholder Comments on Draft 2 and Audio Amplifier Proposal
 - Definitions
 - Qualifying Products
 - Energy Efficiency Criteria
 - Test Procedure
- Next Steps

Overview of Comments



1. Definitions

- On Mode & Idle State
- Loss of Signal
- High Resolution Display
- Primary Function

2. Qualifying Products

- AV Product
- Other Products
- Commercial/Prosumer Audio Amp

3. Energy Efficiency Criteria

- Auto Power Down (APD)
- Modal Power Allowances

4. Test Procedure

- Test Durations

5. Implementation

- Effective Date

Definitions

On Mode & Idle State



- On Mode: Where the product is connected to a mains power source, has been activated and is providing one or more primary functions. The common terms “active”, “in-use” and “normal operation” also describe this mode.
 - Active State: A state within On mode in which a product is performing a primary function.
 - Idle State: A state within On mode in which a product is not performing a primary function and no content is actively being delivered to the end-user. This state shall occur within 5 minutes of the loss of signal (LOS) on all active AV inputs.

EPA has added the Idle State definition to address an opportunity for efficiency improvements in audio amplifiers, which may be on for extended periods of time without active signal input to be processed.

Definitions

Loss of Signal (LOS)



- For **audio** signals, LOS is defined as:
 - RCA audio inputs: 40 dB or greater signal reduction for 60 seconds on the active input.
 - HDMI: Receive <Inactive Source> or <Standby> signal over the CEC channel, or [Power Status] of an upstream device goes to “Standby” or “In Transition to Standby” over the CEC channel.
- For **video** signals, LOS is defined as:
 - Composite inputs: 40 dB or greater signal reduction for 60 seconds on the active input.
 - Analog VGA inputs: Loss of either the horizontal or vertical sync signal.
 - HDMI: Receive <Inactive Source> or <Standby> signal over the CEC channel, or [Power Status] of an upstream device goes to “Standby” or “In Transition to Standby” over the CEC channel.
 - DVI: Detection of a disabled TMDS link, a TMDS clock line signal below 22.5 MHz for more than one second, or a TMDS link operating outside of the valid frequency range

These proposals are still open for discussion.

Definitions

High Resolution Display



- COMMENT: Recommend changing the lower limit for high resolution displays to 480 X 234. This is sufficient resolution for a 7-inch portable DVD player. The specification currently defines high resolution displays as being larger than 640 x 480 and 5 inches diagonal screen size.

EPA plans to change the lower limit for “high resolution display” to 480 x 234, which is a common screen resolution for portable DVD players.

Definitions

Primary Function



- COMMENT: Static device functions should be better enumerated to ensure that "delivering audio or video content" has a narrow enough definition. In particular, displaying the DVD main menu for a movie may have moving images and sound, but it should not be considered performing a primary function. Static functions can be defined to be:
 - Paused playback
 - No media in drive
 - Waiting in disc or other menu system for user input
 - Stopped media in drive
 - Other static functions without primary audio or video streams

EPA intends to adopt this more strict definition of “primary functions” to achieve the desired results with APD.

Qualifying Products

Included Products - Examples



- Amplifier (Amplification)
 - Preamp
 - Power Amplifier
 - Commercial/Prosumer Audio Amplifier
 - Consumer Amplifier
- AV Receiver (Amplification)
 - Home theater receiver
 - Commercial receivers
- Home Theater in a Box (Amplification)
- Dedicated Audio DSP Device
- Compact and Portable Audio (Amplification)
 - Compact Shelf System
 - Clock Radio
 - Boombox
 - Home Radio
- Speaker Systems (Amplification)
 - Self-powered subwoofer
 - Wireless speaker system
 - Docking Stations
- Media Players (Optical Disc Drive)
 - BD, DVD, CD/SACD
 - Portable DVD

This is not an exhaustive list, but attempts to capture the majority of types of products we expect to qualify.

Qualifying Products

Excluded Products



- Products covered under separate ES specs
 - Displays
 - Lighting
 - Computers
 - Game Consoles
 - STBs
- Products with an IP video tuner (web video device)
- Primarily battery-powered products
- Products for use in automotive applications
- Video Projectors
- Home and Building automation and control products
- Whole-House and Building AV systems
- Videoconferencing Systems
- Wireless Microphone Systems
- Media Server
- A/B Selector Switching

Products (other than Dedicated Audio DSPs) are excluded if they do not offer audio amplification or optical disc drives functions

Qualifying Products

AV Product



- AV Product: Included are products that offer one or more of the following functions:
 - Audio Amplification
 - Optical Disc Driveand do not meet the definition of:
 - Commercial/Prosumer Audio Amplifier
 - Dedicated Audio DSP Device
- Summary of Proposed Requirements:
 - **APD in 30 minutes** (except Emergency Notification products)
 - **On mode power consumption limits**
 - **Sleep mode power consumption limits**

The ENERGY STAR label is intended for stand-alone products, not customized system installations. There is provision to qualify “products” that are made up of several sub-components in separate enclosures with independent power supplies (i.e. Home Theater in a Box).

Qualifying Products

Other Products



- Commercial/Prosumer Audio Amplifier:
 - Provides audio amplification as its primary function.
 - Provides support for RS232 or similar protocol for hard-wired remote control.
 - Does not provide integrated speakers or one or more separate speakers intended for use as a single product.
 - Does not provide surround sound audio processing.
 - Summary of Proposed Requirements:
 - **APD in 2 hours** (except Emergency Notification products)
 - **On mode amplifier efficiency** (amps > 20W)
 - **Idle State power consumption limits** (10% of On mode power)
 - **Sleep mode power consumption limits**
- Dedicated Audio DSP Device:
 - Stand-alone product that does not provide audio amplification or any other feature identified in the specification.
 - Summary of Proposed Requirements:
 - **APD in 30 minutes** (except Emergency Notification products)
 - **Sleep mode power consumption limits**

Qualifying Products

Commercial/Prosumer Audio Amp



- COMMENT: There are several applications in which an amplifier or powered loudspeaker aren't part of the Emergency System (e.g. theatres and performing art centers) in which there can be parts or breaks with silence and then a sudden need for power. A product with a large amplifier will typically not be able to turn on instantly.
- COMMENT: It is our interpretation that Sleep is the mode to which an amplifier is to go when APD has occurred. It is then expected to wake up if it gets audio in any of its inputs. If this interpretation is correct, then 2W for Sleep mode for a high power amplifier is extremely challenging.

The reason for Idle state requirements is to allow for rapid wake-up. Sleep mode is intended to be further down the power consumption ladder. There is no "expectation" that the system will wake up instantaneously from Sleep with an audio signal input. 2 hours is proposed as sufficient time for a commercial amp to go to Sleep and no longer be expected to wake up instantaneously upon receipt of an audio signal.

Qualifying Products

Commercial/Prosumer Audio Amp



- COMMENT: The Audio Amplification Proposal does not adequately address additional power consumption by equipment that does more than just audio amplification. For example, the limit is the same for a device that is providing an illuminated clock function while playing pink noise through a CD, as it is for a product that is only providing an amplification of the signal.
- COMMENT: Idle state power allowances should be evaluated using amplifier output power rather than input power to avoid penalizing higher efficiency amplifiers.

The test procedures for audio amplifiers are designed to isolate the audio amplification feature so that products may be compared on an even playing field. EPA will investigate further clarifications to the test procedure to allow for fair comparison of systems that provide both audio amplification (which are subject to minimum efficiency requirements) and other functions (which are subject to power consumption limits).

EPA also intends to evaluate the proposal for Idle state power consumption to be based on a percentage of output power, versus a percentage of input power.

Energy Efficiency Criteria

Auto Power Down (APD)



- COMMENT: For APD, the manufacturer should be given the option whether to meet APD after either: (1) product ceases primary functions, OR (2) the last user input. There are many products (such as DVD players) where it is not necessary to monitor for the last user input.
- COMMENT: An exception to the mandatory APD requirement should be provided for systems in which playback of content is paused, because APD after 30 minutes is not user friendly.

EPA intends to make the changes suggested in the first comment, but will not provide an exception to APD for systems with paused content playback. The goal of APD is to shut down systems that are left unattended for long periods of time. EPA will continue to pursue strict requirements around APD to maximize the energy savings potential from ENERGY STAR qualified products.

Energy Efficiency Criteria

Modal Power Limits



- COMMENT: Recommend a 15W On mode limit for DVD players, since the components in both player and player/recorder units are the same.
- COMMENT: The 5W / 4W proposed limits are too aggressive and will force drastic changes to the manufacture of DVD players, which have become low-cost commodity products. Aggressive goals which may involve expensive changes and may result in loss of manufacturer support for the program.
- COMMENT: EPA should concentrate on improving power consumption of new technologies such as Blu-ray Disc players.

EPA is willing to re-evaluate the proposed On mode power consumption limits for DVD players before distribution of the Final Draft specification. Manufacturers are encouraged to submit additional product performance data to support a change to 10W / 8W limits for Tier 1 and Tier 2, respectively.

Energy Efficiency Criteria

Modal Power Limits



- COMMENT: No Sleep mode power consumption limits is provided for status displays such as clocks. Based on user experience and human factors design, an extra 1W in Sleep is sufficient to provide a clock function that meets user requirements.
- COMMENT: No On mode or Sleep mode power allowances are provided for products with on-board Hard Disk Drives (HDD). There are many products with integrated HDD that are candidates to qualify under the Audio/Video specification.

EPA received insufficient test data for several product features that were removed from consideration in Draft 2.

- *The proposed 1W power allowance for Status Displays seems reasonable and will be evaluated for inclusion in the Final Draft specification.*
- *Unfortunately, there is no way for EPA to propose a reasonable On or Sleep mode limit for HDD features. This feature will continue to be considered for future specification revisions. In the meantime, products with HDD are not able to qualify under the Version 2.0 specification as long as the existing qualification criteria are met.*
- *EPA also received no data or comments regarding an appropriate sleep allowance for RS232 functionality. The ability to provide an allowance depends on stakeholder input.*

Test Procedure

Test Durations



- COMMENT: Suggest all audio and video test durations be reduced to 2 minutes. This is equivalent to the test time proposed in the committee draft version of IEC 62087 for STBs currently in development. This reduces the time for this test from 40 minutes to 8 minutes. Preliminary testing on DVD players confirms there is no appreciable difference between the power consumed when measured over the shorter duration.

EPA intends to reduce the duration of the audio and video tests in Section 6 of the test procedure to 2 minutes in all cases, to harmonize with the proposed changes to IEC 62087.

Test Procedure

Optical Disc Drives



- COMMENT: It is unclear how to use the results of removable media test procedures in Section 6 to evaluate a product against the limits in Table 2.
- COMMENT: Recommend eliminating performance of Audio tests for DVD and Blu-ray Disc Players. The main purpose of video products is to watch movies, not to listen to music.

The test procedures in Section 6 are intended to be performed on all devices with an optical media drive. To qualify for ENERGY STAR, a device must meet the applicable power consumption limit for each test that can be performed. EPA intends to clarify this point in the Final Draft specification – devices capable of audio or video playback from other removable media (USB, iPod, etc.) will not subject to testing per Section 6.

Further, audio tests will continue to be required for DVD and Blu-ray Disc devices, since there is no other way to evaluate the audio performance of any surround sound processing, etc.

Test Procedure

Optical Disc Drives



- COMMENT: It is not clear if the criteria for high definition players includes any player that outputs video in a resolution higher than 480i/p, or only players that directly decode HD content. Products that convert SD video to HD resolution usually use an HDMI interface, which will increase power consumption. Recommend including any product that can output HD video under the requirements for HD players.

EPA intends to include this clarification in the Final Draft version of the specification. Any product that can output an HD (>480 i/p) signal, regardless of the source, will therefore be subject to the higher On mode power consumption limits for HD players.

Implementation

Effective Date



- COMMENT: Recommend that products that can qualify under the Version 1.0 specification be given 18 months to qualify for Version 2.0 requirements, instead of 9 months as proposed by EPA.

The 9-month period between finalization and effective dates for revised specifications is typical for ENERGY STAR. Vendors across various consumer electronics product categories have proven their ability to meet these deadlines.

Next Steps



- Review this presentation and send questions and comments to AudioVideo@energystar.gov.
- EPA plans to distribute a Final Draft specification by early October 2009. The specification will be finalized on October 30, 2009.
- EPA intends to continue development of the AV specification on a regular schedule. Approximately 1 year after Version 2.0 becomes effective, additional data will be collected to refine qualification levels and evaluate new product features for inclusion.

Contact Information



- Kathleen Vokes
vokes.kathleen@epa.gov // 202.343.9019
- Steve Pantano
spantano@icfi.com // 202.862.1551
- Tom Bolioli
tbolioli@terranovum.com // 781.334.4074
- Owen Sanford
osanford@icfi.com // 202.862.1141

Email: AudioVideo@energystar.gov

Web: [Audio/Video PD Website](#)