Comments on
the ENERGY STAR Program Requirement
Product Specification for Audio/Video Product
Eligibility Criteria Criteria Draft Version 2.1

Oct.1.2010
JEITA
Audio Networks Committee
AV Storage Networks Committee
DEFINITIONS

1. Question, Line 113 N) Product Family
   - Who what time decides the products family?

On Mode requirements

1. -Line 221, Table 2: On mode Power Allowance.
   “In –use Networking/Control” on Product Function.
   We propose to amend to “Each In –use Networking/Control”
   (Same as “Table 1” Line 196,)

2. -Line 221, Table 2: “Optical Disc Player; Record” on “Product function”
   Our understanding of this meaning is “Optical Disc Player/Recorder’s Recording mode”.
   Because Version 2.0 mentioned followings expression on Table4.
   Please confirm it. We think it is better to use more clearer expression.

<Version 2.0>

<table>
<thead>
<tr>
<th>Product Function</th>
<th>Tier 1 Consumer AV Products</th>
<th>Tier 1 All Other Products</th>
<th>Tier 2 All Products</th>
<th>Tier 3 All Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Resolution Display (480x234 pixel resolution and 5 inches diagonal screen size)</td>
<td>N/A</td>
<td>P = 6*(R) + 0.05*(A) + 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-use Networking /Control Protocol</td>
<td>N/A</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Definition (SD) Source Optical Disc Player/Recorder</td>
<td>N/A</td>
<td>6.0 (Playback)</td>
<td></td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 (Recording)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Line 221, The limits of “Table 2”.

[“Optical disc player on mode power consumption” at HTiB.]

-The optical disc player power consumption of audio product is difficult to meet the limits on technically.

[Cause]

-This limit is already very tight for the Blu-ray disc (or DVD) player. (Fig.1)

-Idle state power consumption is prepared as the additional power consumption for audio amplification products. The requirements for optical disc player power consumption should be the same condition. (Fig.2)

-Audio amplification products necessitate more power consumption on current technology. If EPA feel necessity of our latest data, we will send the data from each company. (Fig.3)

4. Line 247, Equation 4: Calculation Audio Amplifier Efficiency

-We have felt the doubt in the calculation on technically.

[Cause] (Fig.4,5,6,)

-We found some cases that the power consumption does not meet the ratio on the calculation.

5. Line 273,

-We want you to clarify the meaning of 10%.

-It means plus / minus 10% or 10% margin?

-How to treat additional samples?
- This limit is already very tight for the DVD (or Blu-ray) player.

This limit is tight for Blu-ray disc players.
Idle state power consumption is prepared the additional power consumption for audio amplification products. Optical disc player power consumption should be same condition.

Table 3: Idle State Power Allowances

<table>
<thead>
<tr>
<th>Product Function</th>
<th>Tier 2 Idle State Power Allowance, $P_{\text{IDLE}_j}$ (watts)</th>
<th>Tier 3 Idle State Power Allowance, $P_{\text{IDLE}_j}$ (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base (All Products)</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Audio Amplification</td>
<td>$P_{\text{out}} \leq 50.0$ watts</td>
<td>$P_{\text{out}} \leq 50.0$ watts</td>
</tr>
<tr>
<td></td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>$P_{\text{out}} &gt; 50.0$ watts</td>
<td>$(0.10 \times P_{\text{out}})$</td>
</tr>
<tr>
<td></td>
<td>$(0.10 \times P_{\text{out}})$</td>
<td>$(0.10 \times P_{\text{out}})$</td>
</tr>
</tbody>
</table>

Where, $P_{\text{out}}$ is the output power at 1/8 MUP with 1kHz sinusoidal input.
**Example of**

“Blu-ray disc Player” vs. “HTIB”

Why HTIB need more power for the optical disc player power consumption?

@ It is different from circuit size and extra feature functions.

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**Blu-ray Player**

- Non active
- Optical disc driver
- Blu-ray decoder 5W

**Idle mode**

- System controller
- Power supply block
- Optical disc player’s Idle consumption = 5W
- Standby power consumption = 1W

**HTIB with an integrated Blu-ray Player.**

- Non active
- Optical disc driver
- Blu-ray decoder 5W
- Radio tuner
- Analog audio input A/D converter
- Digital audio processing
- Audio amplifier Driver 5W Or 0.1*Pout
- Analog audio output D/A converter

**Idle mode**

- HTIB and audio products is not same as the Optical disc player’s power consumption.
- 5W + 5W (or 0.1*Pout)
- Is too small.
- It is necessary power consumption for yellow parts.
14) This is not fair to all kinds of products. The power consumption from optical disc player and or idle power consumption, as measured in Section 4.3.a) should be subtracted from the total power consumption of the device for all audio amplifier efficiency calculations.

JEITA members propose “Idle power consumption” or “All optical player power consumption with audio input and without audio input” may be subtracted from total power consumption.

“Because, Section 4.3.a)” is included idle power consumption.

[20W ≤ Pin<100W]
Efficiency= Pout/(Pin \times 0.8 - Idle)

or

Efficiency= Pout/(Pin \times 0.8 - Section 4.3.a)

[Pin ≤ 100W]
Efficiency= Pout/(Pin - Idle)

or

Efficiency= Pout/(Pin - Idle - Section4.3.a)

Example for explanation.
Example for explanation.

Compact audio system with AV input.

- CD player
- Audio decoder
- Volume
- Audio power amplifier
- System controller
- Power supply block
- AV input with switcher (Passive circuit.)

Compact audio system without AV input.

- CD player
- Audio decoder
- Volume
- Audio power amplifier
- System controller
- Power supply block

**Pout=30W**

**Pin=70W**

- Efficiency = \( \frac{30}{70} \times 0.8 = 54\% \) = **NG**
- Idle power consumption = 5W
- Efficiency = \( \frac{30}{70} \times 0.8 - 5W = 59\% \) = **OK**

JEITA members propose exclude idle power consumption for fair comparison.
Down size of the audio amplifier for energy saving.

Example for explanation.

1: There is a good energy efficiency audio amplifier.
Pin=80W
Pout=44W
Efficiency=44/80*0.8=68.75%------OK!

2: There is a good energy efficiency audio amplifier and add to Blu-ray disc player circuit. ( Blu-ray disc play with Networking, the idle power consumption is 15W. )
Pin=80W(Amplifier)+15W(Idlle of Blu-ray disc player with Networking)=95W
Pout=44W
Efficiency=44/95*0.8=57.9%------OK!

3: When the amplifier made the half output power for energy saving, the energy efficiency does not meet the efficiency.
The amplifier changed to half output power.
Pin=40W, Pout=22W, The energy efficiency=22/40*0.8=68.75% (Same condition)
Add the same Blu-ray disk player circuit.
Efficiency=22/(40+15)*0.8=50%----NG!?

This calculation cold not save the energy of audio amplifier.

<table>
<thead>
<tr>
<th>Product</th>
<th>Pin (Amplifier)</th>
<th>Pin (idle of player)</th>
<th>Total Pin</th>
<th>Pout</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:Amplifier</td>
<td>80W</td>
<td>-</td>
<td>80W</td>
<td>44W</td>
<td>68.75%</td>
</tr>
<tr>
<td>2;Amplifier+Blu-ray</td>
<td>80W</td>
<td>15W</td>
<td>95W</td>
<td>44W</td>
<td>57.9%</td>
</tr>
<tr>
<td>3;1/2Amplifier+Blu-ray</td>
<td>40W</td>
<td>15W</td>
<td>55W</td>
<td>22W</td>
<td>50%</td>
</tr>
</tbody>
</table>