



**ENERGY STAR TV Stakeholder Conference Calls on
Luminance and Download Acquisition Mode:
Testing Procedures
July 29 – 30, 2009**

**Luminance Testing Discussion Summary
July 29, 2009**

Proposed Test Method

- Conditions
 - The tester shall get prior approval from EPA for any deviations to the measurement conditions described.
 - All luminance testing shall be performed in dark room conditions.
 - Measurements shall be made with the Automatic Brightness Control function, if such a function exists, made it inactive. If the Automatic Brightness Control function exists and cannot be made inactive, then the measurements shall be performed with the light entering directly into the ambient light sensor at a level of 300 lux, or more.
 - Measurements shall be taken perpendicular to the center of the display screen using a Light Measuring Device (LMD).
 - The standard measuring distance is $2.5 \times V$, where V is the screen height or short side dimension of the screen. The measuring distance shall be between $1.6 \times V$ and $2.8 \times V$. The measuring distance shall be recorded.
 - The measuring area to be measured shall cover at least 500 pixels.
 - For any other measurement condition, tester shall follow the instructions and conditions as specified by the LMD as necessary.
- Measuring Luminance
 1. Ensure the television is set to the home mode, or the default mode as shipped.
 2. Stabilization Period: There was not a final conclusion on the most appropriate stabilization period prior to conducting the luminance measurements. Two different options on stabilizing the television are noted below. EPA is seeking stakeholder input on a preferred method.
 - i. Immediately following ON Mode power testing using the dynamic broadcast-content video signal as outlined in Section 4.E.2. of the ENERGY STAR specification.

OR

- ii. Wait 1 hour following the ON Mode power testing using the dynamic broadcast-content video signal as outlined in Section 4.E.2. of the ENERGY STAR specification. After the one hour period, measure the home mode luminance following Steps 3 and 4 below. Then, switch the television to the retail setting, run the IEC

62087 broadcast loop, display the three bar signal, and measure the retail mode luminance.

3. Display the three bar video signal provided in IEC 62087, which displays three bars of white (100 %) over a black (0 %) background.
4. Measure the luminance (L_{home}).
5. Within one minute of measuring L_{home} , set the television to retail mode, or the brightest selectable preset mode, and repeat Steps 3 through 4 to measure the retail mode luminance (L_{retail}).
 - i. When possible, measurements of luminance shall be made without disturbing the LMD's measurement position on the display whilst switching between the home-mode and retail-mode. If this is not possible, the tester should replicate the measurement position of the LMD so that measurements in the home-mode and retail-mode are in the same position on the display.

Test Image Discussion

- Some advantages of the proposed three bar image include
 - Widely available with IEC 62087.
 - White displayed is 100% and centered where the LMD would be measuring.
 - Harmonization with Australia.
- Disadvantage: Power limited technologies will likely be saturated.
- Other test images discussed that would not exceed the APL point where power limiting would occur: VESA targets L10 (10% box 1% of area); L20 (20% box; 4% of area); L30 (30% box; 9% of area).
- Disadvantages of VESA targets include
 - Lack of available test signals.
 - The L10 target is smaller than the head of some LMD probes and backlight dimming may occur which would skew raw luminance measurements.

Other Issues

- Manufacturers should follow IEC 62087, Ed.2.0, Annex A, Verification Procedure as a protocol to address televisions that exceed the 65% requirement.
 - EPA's plans to require submission of the raw luminance measurements for both Home and Retail on Web site and will plan to publish this data with some language to educate the consumer.
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Download Acquisition Mode (DAM) Testing Discussion Summary

July 29, 2009

Proposed Test Method

- Conditions
 - Rovi Corp (formerly Macrovision) noted that they would confirm with their engineers and propose additional details on testing set-up requirements and requisite equipment.
- Measuring DAM

Note: The following test procedure assumes a constant data rate over a four hour period with no interruptions or errors in transmission.

 1. The test should be run 48-hours after initial activation of the television.
 2. Start the 4-hour test stream.
 - a. Rovi Corp noted that they would confirm that they could generate a 4-hour test stream that was representative of nearly all data transmissions. The test stream would assume a fixed data transmission rate.
 3. Using an approved power meter, collect the power consumption (in watts) of the television over the 4-hour period.
 4. Multiple the power consumed over test period by 4 hours to determine the energy consumed in DAM (E_{DAM}). This value must be less than or equal to 80 watt-hours under the Version 4.0 requirements.

Other Notes

- Stakeholders noted their position that if a product meets DAM energy requirements there should be no additional requirement that the DAM function be disabled upon default.
 - EPA is interested in stakeholder feedback on a clear and easy opt-out feature for consumers as an alternative.
 - One stakeholder noted they would look into the possibility of including language upon set-up informing the consumer that activating DAM would increase the power consumed by the television.
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