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United States Environmental Protection Agency  
Office of Air and Radiation  
Washington, D.C. 20460

Subject: **ENERGY STAR Draft 2 Version 6.0 Specification for Televisions**

**COMMENTS OF  
SHARP LABS OF AMERICA**

SHARP is an enthusiastic ENERGY STAR Partner and is committed to building high-efficiency, environmentally advanced products that deliver top performance to our customers. The ENERGY STAR program continues to be the most effective approach for SHARP to communicate the low power consumption of our products to retailers and consumers.

On February 3rd, EPA released Draft 2 of the Version 6.0 ENERGY STAR Specification for TVs.

SHARP offers the following comments:

**The ABC measurement should be based on 0, 12, 35, and 300 lux**

As Technical Area Manager of IEC TC100's Energy Efficiency Technical Area and as co-chair of CEA's R4 WG13 in development of the update to CEA-2037, I have been directly

involved in data gathering and analysis related to Home Illuminance. Based on a variety of sources, we have determined that the most popular illuminance situations for nighttime viewing are near 0 and 12 lux. We also believe that a measurement at the ABC saturation point can be achieved with a measurement at 300 lux. Further, most TVs saturate around 100 lux, so the 300 lux measurement can be seen as a proxy for a 100 lux measurement. Finally, light being observed logarithmically, a 35 lux measurement is sensible as a logarithmic average between 12 lux and the typical saturation point at 100 lux.

SHARP will make similar comments to DOE regarding the related NOPR. The comments to DOE will include additional details and go into more depth.

The DOE-proposed values of 10, 50, 100, and 300 are not optimal. The proposal misses a key use case near 0 lux. For most TVs, measurements at 100 and 300 lux are redundant. The measurement at 50 is near the linear average of 55 between 10 and 100, but light is not experienced linearly. Note that 50 is five times as large as 10, but 100 is only twice as big as 50. These values are not optimally spaced on a logarithmic scale.

Note that the largest potential power savings for ABC are at low ambient light levels. It is at these low light levels where TVs can dim without sacrificing perceived picture quality. By placing measurement points at 0, 12, and 35 lux, EPA will encourage effective power savings and manufacturers will have the freedom to balance brightness at these points for the best balance of efficiency and performance.

SHARP strongly urges that EPA and DOE not include a measurement at 100 lux. As shown in EPA's data, most TVs' ABC circuits currently saturate at or near 100 lux. If a measurement is taken at 100 lux, manufacturers might be tempted to reduce TV brightness at, say, 110 lux. This would be prescriptive and ill-advised. Data shows that this use case is not

dominant, so reducing power at 100 lux would save relatively little energy in the aggregate. However, this use case does occur, and if TVs are too dim at 100 lux, consumers might get a negative impression of ABC and might be motivated to disable the feature. Instead, manufacturers should be given flexibility in the region between 35 lux and 300 lux in order to deliver an optimal experience to consumers. ABC is simply not intended to save energy at relatively bright and relatively rare lighting levels.

Also note that ABC sensors tend to be more directional than the light meters used in various studies. By measuring ABC with directional light, the typical ABC sensor will tend to see a higher light level than it would with off-axis or diffuse light. For this reason, the light levels used during a unidirectional measurement should lean toward the low side.

### **Automatic Brightness Control Weightings**

SHARP agrees that a 25% weighting for the measured power at the recommended 0, 12, 35, and 300 lux levels is reasonable. Frankly, an equal weighting will produce a somewhat pessimistic result. Studies show that most viewing occurs near the darker levels. However, some consumers will disable ABC. A pessimistic equal weighting takes this into account.

### **Double Prompt During Mode Changes**

Good user interface design strives to avoid annoying users. A double-prompt might tarnish the image of the manufacturer, but it is even more likely to tarnish the Energy Star brand. Many consumers are skeptical of government intrusion. It's not hard to imagine some media outlets showing this as a concrete example of government overreach – with Energy Star getting the blame.

EPA should avoid annoying consumers – especially when the Energy Star brand is at stake.

## **Toxicity**

SHARP prefers that EPA not include toxicity requirements in the product specifications, especially since no link is established between higher energy efficiency and higher toxicity.

SHARP also notes that the toxicity requirements as worded do not include all of the RoHS exemptions. This includes mercury. CCFL-backlit LCD TVs would not qualify under Draft 2. EPA should not remove any RoHS exemptions, including cadmium.

## **Effective Date**

Televisions tend to have a product cycle where new product prototypes are shown in January at CES and manufacturing changes from the old to the new models in mid-year. Product mixes are generally stable through the following holiday sales season to at least Super Bowl Sunday. The effective date does not cause difficulty for 2013 products that might start production in January. The difficulty is for 2012 products that might continue production into the middle of the year.

For the television market, it is best to have an effective date in Q2 or Q3. It would be acceptable for version 6.0 to go into effect in January 2013 for new products if version 5.3 is grandfathered until at least Q2 for older products.

The goal would be to avoid having to change designs in the middle of a manufacturing run in order to remove all Energy Star logos from a product that is nearing the end of its life anyway. Such a practice could motivate manufacturers to not apply Energy Star logos on new, qualifying products for fear of being required to implement running changes to the manufacturing process.

### **Calculation of Maximum On Mode Power**

SHARP is happy to see the end of the power-size cap and applauds EPA for developing a curve based on the hyperbolic tangent function. SHARP supports the new curve.

### **Power Saving Features**

SHARP supports effective power saving features such as ABC; however, EPA should avoid rewards for proprietary features that require licensing agreements.

### **Connectivity**

SHARP recommends that more study is needed before adding network connection requirements to the television specification. Not enough information is available at this time for inclusion in Version 6.0.

### **Retail Picture Setting**

The Retail Picture Setting definition is not precisely correct. It should include the Retail Mode as chosen from the forced menu at start up. This mode is not necessarily the most energy consumptive selectable mode. SHARP also plans to make this comment to DOE.

### **Battery-Powered TVs**

SHARP supports the inclusion of battery-powered TVs in the Energy Star program. Basing the measurement method on Version 5.3 makes sense since the DOE ruling is not yet complete. However, SHARP is concerned that Energy Star does not have a comprehensive solution for measuring the energy used by battery-powered TVs at this time. A full solution would consider the time shift between power drawn during charging and power drawn during use as well as losses in the battery and charging systems. There may be other, as-yet-uncovered challenges to consider.

## Conclusion

SHARP strongly supports the Energy Star program and believes that it is best served by


- ABC lux levels of 0, 12, 35, and 300 lux as SHARP will recommend to DOE,
- equal weighting of the ABC power levels, as proposed,
- not implementing the double-prompt on mode changes,
- not implementing toxicity requirements (and certainly not by removing the full list of RoHS exemptions, including mercury and cadmium),
- avoiding manufacturing run changes by making the effective date in Q2 or Q3,
- using the proposed TANH function rather than a hard cap,
- avoiding power saving features that require licenses,
- avoiding network connectivity requirements until further study is done,
- changing the Retail Picture Mode setting to include the effects of a forced menu, and
- including battery-powered TVs in the future.

We hope that EPA strongly considers SHARP's comments as we work together to create an effective, accurate, and efficient next version of the Energy Star program for televisions.

Respectfully submitted,

SHARP LABORATORIES OF AMERICA

By:

A handwritten signature in black ink, appearing to read 'J. Fairhurst', is written over a horizontal line.

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