

# Sharp Labs of America

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Ms. Katharine Kaplan  
United States Environmental Protection Agency  
Office of Air and Radiation  
Washington, DC 20460

Dear Ms. Kaplan:

Thank you for your efforts in developing the next tier Energy Star specification for televisions. The comments that follow are on behalf of ("SHARP") Sharp Electronics Corporation, Sharp Laboratories of America and Sharp Corporation.

SHARP would like to affirm our support for CEA's written comments regarding the ENERGY STAR TV Specification, Draft 1 Version 3.1 proposal. This includes CEA's position on luminance, Download Acquisition Mode, and On Mode power consumption.

Our main concern is the coupling of Retail and Home Modes. SHARP agrees with CEA's position that there are currently no televisions on the market that are tuned to be overly dim in order to gain Energy Star compliance. As requirements become more stringent, manufacturers might be tempted to set their TVs at dimmer and dimmer levels. Though we believe that manufacturers will not compromise their reputations in order to gain compliance, we understand that EPA might want to take a preemptive stance against such a possibility.

If EPA chooses to couple Retail and Home Modes, SHARP's position is that this should be done on the basis of power, rather than measured luminance. Our reasons are as follows:

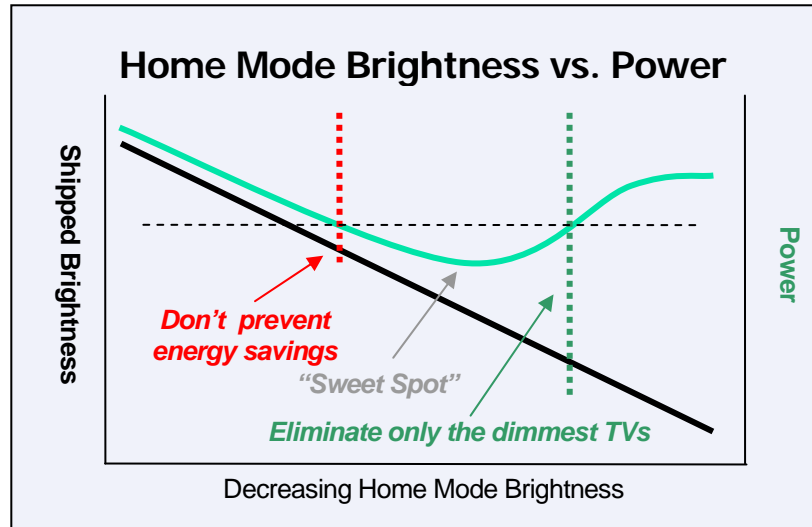
- Practical luminance measurement methods do not correlate with the signal levels and content standardized in the IEC 62087 broadcast loop.
- The proposed luminance measurement method is not technology neutral
- Any luminance measurement will require additional equipment, expertise, and a dark environment. This makes testing difficult at retail locations and increases costs.
- The proposed luminance measurement method can be "gamed".
- The proposed luminance restriction is a performance limit. Performance limits do not necessarily encourage efficiency.

By measuring IEC power, rather than brightness, in Retail and Home Modes, all of the above difficulties are avoided.

Additionally, SHARP is concerned that the proposed ratio (Home Mode within 80% of the most consumptive selectable mode) is far too restrictive. The goal should simply be to ensure that inefficient

televisions are not set to be overly dim in order to comply with Energy Star. Any Retail to Home Mode relationship should avoid being prescriptive of power, and therefore, brightness settings.

The following chart demonstrates the problem with too tight a limit.



If manufacturers are not allowed to adequately reduce brightness in their TVs, 100 percent of TVs will be prevented from providing the maximum possible energy savings. On the other hand, if the limit is loose, many TVs can be tuned near the "sweet spot" with only the outliers being on the dim side.

It is important to note that at the "sweet spot", some small number of viewers might feel that the TV is too dim, and they may adjust the brightness (and power) upwards. The number of viewers who adjust their brightness upward must be a significant number in order to negatively affect power savings. A small number of claims that a TV is too dim should be acceptable. Dimness only becomes a problem if it becomes a consensus view.

SHARP's position is that – if a Home Mode/Retail Mode relationship is required at all - the ratio restricting the relationship between Home Mode power and Retail Mode power should be no higher than 50%. This recommendation is based on data collected and conclusions made in a recently published IS&T/SPIE paper (T.Fujine, Y.Yoshida, M.Sugino, "The relationship between preferred luminance and TV screen size", IS&T/SPIE Electronic Imaging Conference 2008, 6808, pp.Z1-Z12 (2008).) The paper concludes that an ideal backlight setting for an LCD television in a home setting provides a white level of approximately 240 cd/m<sup>2</sup>. According to published specifications from various manufacturers, peak luminance for LCD TVs is generally 350 – 500 cd/m<sup>2</sup>. A 50% power ratio between Home and Retail Modes would allow Energy Star qualified televisions to compete at retail and also be able to provide ideal home backlight settings that will potentially maximize power savings.

Note that any limit on the Home/Retail Mode relationship should not be prescriptive of a recommended brightness level. If needed at all, it should only preclude TVs that are unacceptably dim.

SHARP also takes the position that Energy Star 3.1 should be structured so that there are no gaps in the power measurement procedure for TVs that exceed the allowable gap between home and retail modes. By avoiding a Home/Retail Mode restriction, such a gap will not exist, and the market will not face a situation of lower power TVs (in Home Mode) not qualifying for Energy Star certification.

Regarding DAM, SHARP's concern is that some markets and certain technologies and features require more power than would be allowed if DAM is time limited. Such a hard limit could eliminate Energy Star qualified products from some markets and could stifle innovation.

In the case of the hospitality market, it would make sense to treat the hotel-related functions as an "additional function" as defined in IEC 62087 Ed. 2.0 subclause 11.4.5. That would allow integrated televisions to compete against televisions with separate set-top-boxes in the hotel market.

In order to allow flexibility for manufacturers to innovate, EPA should not restrict DAM time or maximum power. Rather, the limit should be based on overall energy consumed in the DAM mode during a 24-hour period. Such an approach provides benefits to the consumer, whether the manufacturer chooses to reduce DAM time, power, or a combination of the two.

Regarding the proposed equation for  $P_{max}$ , SHARP is concerned that the result is not well-balanced between large and small TVs. The 30.8% reduction in power allowed for 19-inch TVs is reasonable. The 50.6% reduction in power allowed for 52-inch TVs; however, is overly-aggressive. The relative number of televisions in the database that comply with the proposed limits at the two sizes clearly shows this imbalance when applied to actual products.

To summarize:

- Current televisions are not overly dim
- Power is a superior measurement to brightness
- Home and Retail Modes should not be tightly coupled, if coupled at all
- The formulas for calculating power should be able to be applied to all televisions, regardless of Energy Star compliance
- Integrated hotel features should be considered "additional functions."
- Products should be allotted an energy budget for DAM, rather than maximum power or time.
- The On-Mode power limit,  $P_{max}$ , should be set with a balance among all television screen sizes.

Thank you for your efforts in developing the next tier of Energy Star for televisions. SHARP looks forward to continued power savings across the industry, and fully supports the Energy Star program.

If you have any questions or concerns, please contact me by phone at 360.817.8496 or by e-mail at [jonf@sharplabs.com](mailto:jonf@sharplabs.com).

Sincerely,



Jon Fairhurst  
Sharp Laboratories of America