



September 20, 2010

Cree, Inc. provides the following comments in response to the request for comments contained in Section VII of the Appliance Labeling Rule of 16 CFR Part 305.

1. Should the Appliance Labeling Rule be amended to include a directional light disclosure?

Yes. Merely providing lumen output does not provide consumers of directional lamps sufficient information to make an informed purchase decision. For example, two directional lamps that may fit within the PAR-38 form factor may have very different photometric characteristics yet output the same total lumens. Directional lamps should include at least a disclosure of beam angle (either a specific angle or a category such as spot, flood, etc.) and center-beam candle power.

2. Should standards for Watt equivalence-claims be established, including whether Watt equivalence claims for bulbs that do not meet such standards can be qualified to avoid deception, and if so, how should such claims be qualified?

No. Watt equivalency claims should not be established as such claims, from a policy perspective, may be counterproductive to moving consumers away from using power as a shorthand measure of light output characteristics of a lamp.

If a Watt equivalency is established, it must include more than merely lumen output as the metric. Any such Watt equivalency comparisons that do not take into account light quality and distribution, as well as quantity, could raise consumer expectations that a product with substantially different output characteristics is equivalent to the incandescent lamp with which they are familiar. For example, a lamp may have the same light output level and a CCT of 2700K but if the lamp's color point is not near the black body locus its light output may be perceived as substantially different from the light output of an incandescent lamp. This difference in color point would need to be taken into account in any equivalency if Watt equivalent is used as a comparison to incandescent lamps.

Similarly, lamps having a Color Rendering Index (CRI) of 75, 85 and 100, for the same lumen level, will be perceived as 15%, 25% and 40% brighter, respectively, than a lamp with a 60 CRI. See e.g., Kanaya, S., Hashimoto, K., and Kichize, E. (1979) Subjective balance between general color rendering index, color temperature, and illuminance of interior lighting. Proc. CIE 19th Session (Kyoto) 274-278 as reported by Dale K Tiller at <http://www.nrc-cnrc.gc.ca/eng/ibp/irc/bsi/92-lighting-quality.html>. Thus, differences in CRI can be perceived,

even above 80, and that difference in perception would need to be taken into account in any equivalency metric.

As a final example, the light distribution of the lamp can affect whether two lamps are perceived as equivalent. If an A lamp replacement only puts out light in 180 degrees from nadir, in some applications, such as in a table lamp with a lamp shade, the lamp may not be acceptable. Likewise, in other applications, such as in a pendant fixture, the lamp may be acceptable but may seem brighter than a conventional A lamp with the same lumen output. Thus, equivalency to an incandescent lamp may depend on the application and the light distribution of the replacement lamp.

3. Should the disclosure of the power factor rating of a bulb be reconsidered if the Commission reopens rulemaking as permitted by the EPCA?

No. Very few consumers will understand the significance of power factor. Furthermore, as power factor does not affect a consumer's energy costs, it may not even be material to their purchase decision. While power factor should remain a requirement for programs such as Energy Star, providing power factor on a consumer label uses valuable real estate to provide information that is essentially meaningless to the consumer. It would be more appropriate to reopen the consideration of light quality for the label as, contrary to the assertions in the original rulemaking, consumers can and do distinguish differences in products with a CRI of 80 and products with a CRI of, for example, 90.

4. Should the IES LM79 test be required for measuring light output, efficacy and color characteristics of LED bulbs?

Yes. In order to meaningfully compare products a common methodology for measuring the meaningful characteristics of the products should be used. LM79 provides this methodology and has been in place long enough that manufacturers are familiar with its procedures, testing labs are available to make the measurements and consumers, at least in the commercial space, are being educated to ask for the data resulting from these tests.

CREE, INC.

Timothy J. O'Sullivan
Cree LED Lighting Director of IP and Business Development