Bridgelux, Inc.
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April 3, 2015

RE: ENERGY STAR Luminaires V2.0 Draft 2 Comments

To Whom It May Concern:

On behalf of Bridgelux, Inc., I am pleased to submit these comments on the draft guidance document entitled "ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures)" which was issued for comment on March 6, 2015. Bridgelux is a U.S. based lighting component manufacturer, and a leading developer chip-on-board LED array technology. The Bridgelux team appreciates the opportunity to submit these comments.

The comments below are issued in chronological order by section as they appear in the document. If a section is not listed, there were no comments at this time to be made.

1-4. General information

- The definition for LED light engine needs to be clarified: What is the proposition to perform LM-82 testing on a LED light engine that relies on the luminaire for thermal management?

5. Testing criteria for luminaires

- **Section 5.2** - Per our comments in relation to Sections 1-4, General Information, could you please add clarification to the definition of an LED light engine? The definition of this is key to our understanding of this section.

7. Methods of measurements & reference documents

- The EU Directive should be updated to 2011/65/EU

8. Shipping with energy star certified lamps

- Clarification is needed in this section: Does this mean that by utilizing an Energy Star certified lamp in a fixture it qualifies the fixture to be Energy Star certified? This would be problematic for customers given that there is no testing performed on the entire system (combined lamp + fixture).
- What is the basis for setting the minimum lumen limit to 800 lumens?

9. Photometric performance requirements

- **9.3 Correlated Color Temperature** - The current CCTs in the standard (2700K, 3000K, 3500K, 4000K and 5000K) do not include all of the CCTs in ANSI C78.377-2008. It is recommended to add 5700K and 6500K CCTs as defined by ANSI C78.377-2008. This will allow the Energy Star specification to cover luminaires which use these CCTs. 5700K is very popular in medical, entertainment, outdoor and high bay applications and 6500K is being used in outdoor and cold storage in supermarkets.

- **9.5. Color Angular Uniformity** - The color angular uniformity specification does not accurately portray a luminaires' color angular uniformity in various applications. A specific example would be a luminaire in a wall wash application. We have performed this test on track fixtures that are available on the market, while they meet the color angular uniformity specification, when placed in a wall wash application the uniformity and aesthetics associated with the metric were very poor. However, an LED COB array which is not in a fixture and does not include an optic and does not meet the color angular uniformity specification, placed in the same wall wash application showed acceptable uniformity and aesthetics associated with this metric. Due to this it is recommended that this specification either be removed from the Energy Star specification until a better test methodology is developed or require that this information is tested and provided to the customer in a format similar to the Lighting Facts label.

10. Lumen maintenance and rated life requirement

- A standard is lacking for color maintenance. Neither LM-84 or LM-82 have a model. It is suggested that a TM document be developed to project/predict color maintenance. Even if you collect beyond 6000 hours, there is no model to predict. This will delay design of products.

11. Electrical performance requirements

- There is ambiguity between sections 11.5 and section 15. The definition of 'connected' is slightly different in 15.2.1 than what is defined in section 11.5. Please define 'connected' in only one section or put the definition in Section 4 Definitions.
- In section 11.5 please clarify what 'off state' is when multiple luminaires are connected to one power supply. Does it mean that all luminaires in the system are off or does it refer to individual luminaires?
- In section 11.5 please clarify if the 1.5W off state power consumption requirement is in addition to the 0.5W per fixture requirement.
- Sections 11.5 and 15.2 seem to be enforcing the same standard. The standard should be removed from 15.2 due to the redundancy.

13. Thermal performance requirements

- **Section 13.1 Solid State Retrofit** – The second column of the third row mentions TMP(d), should this be TMP(c)? If not TMP(d) should be defined for clarification.

15. Control requirements

- The 0.5W limit for both connected (network) and controls (standalone sensors, etc.) may stifle innovation. It is suggested that there be separate power consumption requirements from standalone occupancy sensors and light sensors (from the connected functionality); get an extra 0.5W leeway by having a connected luminaire.
- Clarify definition of what interoperable / open means? If using proprietary communication protocol, can they not apply to Energy Star? For example, is BLE considered an open standard? ENOcean is somewhat open but also proprietary.

16. Product labeling & packaging

- If comments in section 9 are accepted, please update this section accordingly.

18. Lighting toxics reduction requirements

- Hyperlink to RoHS needs to be updated to the latest Directive 2011

We appreciate the process by which EPA is soliciting feedback from the industry. Thank you for your consideration of our comments.

Sincerely,

David Gentry