

**AITL comments/questions regarding the  
ENERGYSTAR Criteria\_CFLs\_Version4.0\_8-30-05**  
Revised 9-29-2005

Page 3,4 Item 2, Definitions

There are a number of new terms, which should be defined in the Definitions section such as:

1. Illuminance
2. Reflector Initial elevated temperature light output \*1
3. Elevated temperature 1,000-hour lumen maintenance \*2
4. Elevated temperature lumen maintenance at 40% of rated life. \*2

\*1 What can be misleading is that in 5d page 12 where they describe the Initial elevated temperature light output as a ratio of illuminance measurements. This ratio is not a ratio of lumen measurements.

\*2 In table 5A), page 9 this term is used under the Criteria item and Submission column but in 5E, page 13 where they describe elevated temperature testing procedure they mix the terms lumen and illuminance. In 5E they describe a ratio of illuminance measurements and call the ratio lumen maintenance. This procedure is more correctly illuminance maintenance.

Reflector lamp lumen maintenance

Is the traditional procedure for measuring 1000 hour and 40% lumen maintenance no longer required? That is, burning the lamps open rack.

Is the traditional way of measuring reflector lamp life, open rack, no longer required?

5D Initial Elevated Temperature Light Output Testing procedure, page 12

The 1<sup>st</sup> measurement as describe in step 4 of 5D stipulates: Allow the system to reach steady-state illuminance. Steady state needs further definition to ensure standardization and repeatability. The 2<sup>nd</sup> measurement as described in step 9 stipulates: At 6 hours of burning record the 2<sup>nd</sup> photometer measurement. Why can't the 2<sup>nd</sup> measurement be taken at steady state condition like step 4? Again steady state needs further definition.

5E Elevated temperature testing procedure, page 13

The industry standard for measuring lumen maintenance is based on lumens measured in an integrating sphere. This technique is widely employed and is based on industry standards.

The reliability and repeatability of illuminance measurements particularly in a non-standard life-testing device has not been demonstrated. The

concern is the illuminance maintenance measurements will be highly variable both within a test lab and lab to lab.

It is suggested that lumen maintenance as measured in an integrating sphere be retained as the test method for the Elevated temperature lumen maintenance tests. The effect of the ambient temperature on the LM % is cancelled out as long as both the initial and internal lumen measurements are taken at the same temperature whether it is 25 °C or 55 °C.

If the illuminance measurement technique is retained the following questions/comments are proposed:

1. What must be done to prevent individual illuminance readings from being affected by the neighboring lamps or the lack of a neighboring lamp? If not, as the lamp distribution changes in the array so will the illuminance measurements.
2. The optical/geometric design must be accurately and made to close tolerances to ensure that the photometer views the same part of the lamp for maintenance measurements. The photometer must be placed in the identical position with respect to distance and optical alignment. This apparatus is likely to be an optically precise device.
3. For the thermostatically controlled exhaust to control the temperature to 55 +/- 5 °C the lamp load must be relatively constant.
4. For what range of wattage and number of lamps will this concept work. If the number of lamps or the wattage is low keeping the temperature above 45 °C may not be achievable. If not properly designed if the wattage is too high controlling to less than 60 °C may not be achievable.
5. Are these apparatus commercially available? Are labs expected to design/build their own custom apparatus?
6. There are no industry standards on the design and operation of such devices. How will standardization and repeatability between labs be ensured and managed?
7. Currently AITL has approximately 700 reflector lamps on life test. This is an average number and that at times it has been higher. My estimate is that AITL would have to plan on testing 1000 lamps in such an apparatus. 10- 100 lamp units would be required.

**Proposed alternative:**

**As an alternative reflector lamps could be life tested in “slumper cans”. Lamps would be operated in sized cans with the only opening at the face aperture. Temperature studies would need to be done to establish the can size needed to achieve 55 ° C operating environment. These “slumper cans’ could be adapted to existing life test racks with relative ease. The cans themselves are low cost. Lumen maintenance would be measured using the integrating sphere technique.**

- 12) Independent third party testing and verification program, page 16  
C. Third party testing verification program, 2. Technical and research committee. I would be willing to be part of this committee.