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Memo to: Susan Gardner  
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From: Victor Roberts, Principal  
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Date: December 16, 2002

Subject: Comments on ENERGY STAR® Specification for CFLs. Draft of 12/12/02.

Dear Ms. Gardner;

I am a lighting technology consultant who has conducted various projects for the US Department of Energy and other organizations interested in energy efficient lighting. I have 30 years experience conducting research and development on high efficacy compact fluorescent lamps. I am not an ENERGY STAR® Partner, as I understand that Partnership is available only to manufacturers and suppliers of ENERGY STAR® certified products. I have not participated in the development of any prior ENERGY STAR® Specifications for CFLs, so some of the comments I make below may have been discussed and resolved during the development of the existing CFL Specification and/or the new draft Specification. I apologize in advance if I raise issues that have been resolved during prior discussions.

I have read the August 9, 2001 ENERGY STAR® Specifications for CFLs and the December 12, 2002 Draft Specification. The following comments are related to the Draft Specification:

In the third bullet under Performance for Special Distinction on Page 2, the term “qualified monitors” is used. Does this comment refer to computer monitors? If so, perhaps “qualified monitors” should be changed to “qualified computer monitors”.

Section 1C (page 3) refers to “a translucent cover”. Is there any reason why the Specification should not allow lamps with translucent or transparent covers?

Section 4, CFL Requirements for Testing on page 5 does not specify the ambient temperature. Is this because it is assumed that the ambient temperature is specified in ANSI C78.5? I believe it would be better to additionally specify an ambient temperature of 25°C, in the same manner as the input voltage and frequency are specified in footnote 6 on page 6.

Looking again in Section 4, CFL Requirements for Testing on page 5, under Correlated Color Temperature, the Laboratory Requirement is listed as “Self-Certification.” Since validation of lumen output and CRI require measurement by a NAVLAP facility, I do not understand why Correlated Color Temperature is held to a lower standard, especially because Correlated Color Temperature would be measured at the same time and using the same equipment as used to measure CRI. I suggest that Correlated Color Temperature be measured by a NAVLAP facility.

Regarding footnote 2 to the Photometric Performance Requirements table on page 5, can the phrase *Wattage and lumens placed on packages may not be used in calculation and are not governed by this specification* be interpreted to mean that the ENERGY STAR® Specification allows wattage and lumen values to be placed on the packaging that have not relevance to the actual wattage input and lumen output of the CFLs? Perhaps the portion of the footnote I underlined above should be removed from the footnote.

Regarding Operating Frequency and Electromagnetic Interference as discussion in the Electrical Performance Requirements table on page 6, I believe the Sample Size should be the same as for the other measurements listed in this and the previous table. The operating frequency of CFLs can vary from unit to unit and may also not be the same under base-down and base-up operation. A sample size greater than one is required and measurements should be made under both base-down and base-up operation.

A applaud the group who prepared this draft specification for stating that lamp life tests must be completed before CFLs may be submitted for Qualification. However, because there are only 7884 *operating hours* in a calendar year once the standard *3 hour on / 20 minute off* test cycle is taken into account, this could encourage manufactures to market CFLs with a shorter rated life than they are actually capable of providing. I assume the ENERGY STAR® process allows a CFL to be initially certified for a Rated Life of 6000 hours, and then re-certified later for longer rated life once the longer life tests are completed. If there is no provision for such re-certification, I suggest it be added.

I am disappointed that the ENERGY STAR® Specification for CFLs does not include a requirement for a minimum number of starts. Many CFLs used in residential applications do not operate for 3 hours per start, so their life in these applications can be considerably shorter than the Rated Life as defined by the ENERGY STAR® Specification. This leads to customer dissatisfaction and, more importantly, a distrust of published performance specifications. Because ENERGY STAR® has “certified” these specifications, this can, in turn, have an impact the perception of the integrity of the ENERGY STAR® Specification process. I believe we need to add a specification on the number of starts, or move in other ways toward a specification that is more attuned to real world residential applications.

I believe the Luminous Flux levels given in CFL/Incandescent Lamp Equivalency table at the bottom of page 7 are too low. There is concern in the CFL user community that CFL output is overstated in terms of “incandescent equivalent” wattage. This table unfortunately supports those concerns. For example, a standard GE Soft White 100 watt, 120 volt, 750 hour incandescent lamp has a rated output of 1690 lumens. The Philips inside frost 100 watt, 120 volt, 750 hour incandescent lamp has a rated output of 1650 lumens. The Osram Sylvania Standard Coat 100 watt, 120 volt, 750 hour incandescent lamp has a rated output of 1705 lumens. The table on page 7 gives only 1600 lumens. The Typical Luminous Flux values for the other wattage incandescent lamps given in the subject table are also too low. This problem is compounded by the fact that CFL output is given after 100 hours of aging, and the output of CFLs will depreciate significantly over their life. In contrast, the output of incandescent lamps will depreciate only a small amount over their short life. A more meaningful comparison would be to match the mean output of CFLs to the incandescent lamp they are designed to replace. If this cannot be done yet, then the ENERGY STAR® Specification for CFLs should at least use more realistic data for the lumen output of incandescent lamps. Some user-based publications already suggest “derating” CFLs when deciding which incandescent lamps they can replace. I hope that the ENERGY STAR® Specification for CFLs can move the industry to a point where such recommendations will no longer be necessary.

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