



June 15, 2010

Dear Mr. Baker and other parties:

Thank you for the opportunity to comment on V1.0 Draft 1 of the Energy Star Program Requirements for Luminaires and the helpful webinar held recently. My comments are below.

### NOMENCLATURE

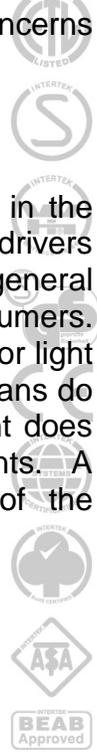
The EPA now has a unique opportunity to organise revised specs into clearer formats. Many programs and documents (for example, EPACKT) often refer to older, published specifications or requirements. Currently there is already a Version 1.0 for LED replacement lamps, CFLs, etc. I would respectfully request that the EPA consider a clearer definition of titles, include those titles prominently on each publication, and use the subsequent number for future revisions (ie: 4.2...4.3...4.4.)

### GU-24S

I understand that this category was originally included in the luminaire requirements due to their prominent use in luminaires but the same can be said with all light sources and this causes confusion in the industry as well as within the Energy Star Quality Assurance program. This category should be moved to the future revision of the CFL spec and concerns for use in luminaires can be addressed there as are indoor reflectors.

### FAMILY GROUPINGS

Understanding allowed family groupings is still a huge problem for all parties in the industry. Intertek supports the draft 1 restrictions. Allowing different model ballasts/drivers without at least a check of the maximum ballast case temperature and the general performance given to the light source is detrimental to the program and consumers. Grouping color temperatures to only the lowest CCT does not ensure that the other color light sources meet the efficacy, CRI, chromaticity, or color temperature requirements. Humans do not see colors equally, and running a different color source at the exact same current does not produce the same lumens and does not ensure the color meets the requirements. A simple photometric test can be performed in these cases without testing all of the requirements.





## FAMILY GROUPINGS, cont'd

Further suggested additions to definitions of family groupings in regards to “Reflector/Trim” and “Shade/Diffuser” on page 6:

1. Change from “allowed” to “allowed, w/ conditions”
  - a. (allowed if light output is not affected.)
  - b. (allowed if volume and air flow of shade/diffuser are similar)

## LUMINAIRES TESTED AS A UNIT

While controversial, there are large pros to testing luminaires as an entire product, regardless of light source. Traditionally light sources have been tested separately from the unit, due to interchangeability of those light sources and traditional published test methods. However, there are many more light sources to choose from now, and fixture manufacturers are largely required to partner with a lamp or led manufacturer for inclusion in their packaging, so these traditional methods are no longer necessary.

Under the traditional test methods of allowing the source to represent the entire fixture, a CFL fixture, for example, could be marketed with a bucket over it and still be marketed as 65 LPW, including on the packaging. For life ratings, the light source is tested outside the fixture, not subjected to the heat buildup or any other stresses contributed by the fixture in real conditions. This stands true today.

With the advent of LED systems, which are not easily interchangeable, the industry is moving away from these traditional test methods with many other product, and this is the more accurate way to proceed.

With the manufacturer’s help and organizations such as NEMA and others, data has been collected on many products, giving the baselines noted on the specifications.

For these and many more reasons, Intertek supports the inclusion of fluorescents and solid state sources grouped together in many of the requirements in the draft and the categories should be expanded to include any energy-efficient sources in the non-directional luminaires as well.

## POWER FACTOR

I do not have access to all the arguments regarding power factor. After testing thousands of products, I can report that products that have low power factors have much higher ATHD% on average, and on a laboratory level we have to replace the variacs at a faster rate on the life test banks that hold low-power factor CFLs than other products. The variac manufacturer reports this is due to the higher current on the neutral line due to low power factor products, and the local utility company states that we can protect our variacs by installing a capacitor bank to correct the power factor. Regardless, whatever power factor is chosen for this specification from thorough research should be the same for all products.



## LUMEN MAINTENANCE

Option 1, the substitution of a LM-80 report from a LED chip manufacturer with a luminaire in-situ test, should only be allowed to early label a product. All luminaires with pre-packaged light sources (including those with fluorescent sources) should have a minimal lumen maintenance test period on the entire luminaire to accurately judge the entire product that the consumer will receive. This lumen maintenance period can be as low as 1000 or 3000 hours. A sample size of three fixtures is adequate for this test, and will also give valuable data and insight into early life failures due to fixture stresses not being taken into account now. The lumen maintenance times can be adjusted in later versions after adequate data has been collected.

## COLOR UNIFORMITY

An excellent point was brought up in the recent webinar that was not in previous versions of the specification. Color non-uniformity is most noticeable near field, on an illuminated surface. Currently LM-79 does not include a test distance in the test method, and allows for 10° on the vertical angles. It is my opinion that the tolerance of 0.004 is very tight compared to the human eye response. One degree increments is also very burdensome as few goniometers in the United States are equipped with equipment that reads spectral wavelengths, and this test is normally done manually. This will increase this cost tremendously to manufacturers and laboratories on a requirement where many questions still exist.

## OPERATING FREQUENCY

If operating frequency is to be kept in the specification as a test method for flicker, clarification needs to be made on where and how to measure, as this is not in a published specification. Many laboratories and manufacturers are not testing in the same spot. LED circuits can be very noisy electronically, and testing the ac ripple on the dc lines at the LEDs themselves sometimes leaves open the option of choosing from more than one harmonic line.

I thank you for the opportunity to comment on this draft.

Best regards,

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