

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460



OFFICE OF
AIR AND RADIATION

October 21, 2016

Dear ENERGY STAR[®] Partner or other Interested Stakeholder:

With this letter, the U.S. Environmental Protection Agency (EPA) announces the release of **ENERGY STAR Requirements for the Use of LM-80 Data** (referred to as “*Use of LM-80 document*”) for stakeholder review. Once final, this document will replace the “*ENERGY STAR Program Guidance Regarding LED Package, LED Array and LED Module Lumen Maintenance Performance Data Supporting Qualification of Lighting Products*” dated September 9, 2011.

This document includes minor technical updates based on developments in technology and understanding that have materialized in the last five years with input from LED package manufacturers. Stakeholders will have four weeks to review and provide comment. (Please feel free to request a meeting in lieu of or in addition to submitting comments.) The goal is to publish a more useful set of requirements as soon as possible to help facilitate broader and clearer use of LM-80 data for certification of ENERGY STAR solid-state lighting products.

Users of the existing guidance will notice that the biggest update is in format. Key substantive updates are summarized below, and note boxes throughout the document explain the updates made.

- It is noted that EPA intends to adopt updated industry standards that address LM-80 testing and projections in upcoming specification revisions (i.e., V2.1). That includes Addendum A to IES LM-80-08, ANSI/IES LM-80-15, and Addendum B to IES TM-21-11. The “*Use of LM-80 document*” will be applicable to test reports produced in line with these newer standards once V2.1 specifications are released.
- Updates to the Content of LM-80 Test Reports for ENERGY STAR Certification (Section 3):
 - This section now clearly delineates the requirements for chip-on-board (COB) LED packages and for LED arrays constructed as an assembly of LED packages on a printed circuit board (PCB). It also calls for reporting spectral power distribution or color rendering index of the sample.
- For chip-on-board (COB) LED packages:
 - The requirement that LM-80 testing be conducted on “the largest LED array that the manufacturer believes will be used in a product” was replaced with a new requirement that the same LM-80 report can represent packages having average current density per LED die less than or equal to the tested LED package.
 - The requirement that models for which the test data are deemed applicable to exhibit electrical power density less than or equal to the tested LED package was clarified;
 - The requirement in item 7.b.iii was clarified to not be constrained by the quantity of phosphor; and

- The requirement that models for which the test data are deemed applicable exhibit “equal or fewer LED dies” was removed in order to not limit industry use of greater quantities of smaller dies, which typically results in lower overall electrical and thermal stress on the epitaxial structures which improves lumen maintenance.
- The requirement that models for which the test data are deemed applicable exhibit “die spacing greater than or equal to the tested LED array” was removed because it was deemed overly burdensome and unrealistic to expect a laboratory to remove LED package encapsulant(s) and take accurate measurements of the die spacing dimensions.
- For Application of LM-80 Test Reports for ENERGY STAR Certification (Section 4):
 - Previous item #2 that stated “A minimum of one reported case temperature (T_s) greater than or equal to the in situ measured TMP_{LED} value must be included in the LM-80 test report for the employed subcomponent(s)” was removed because this is addressed in IES TM-21-11;
 - The correlated color temperature applicability section was restructured for clarity and expanded to include 2200K and 2500K;
 - Average current density per LED die was added as an option for meeting item 4; and
 - Item 6b was revised to be based on “average current density per LED die” rather than “average calculated current per die.”

Transition Timeline and Next Steps:

EPA seeks feedback on the following proposed timeline for implementation:

On the date of final publication of this document, these requirements may apply to LM-80 testing already completed, currently underway or in the final planning stages.

90 days after final publication of this document, these requirements for reporting of LM-80 test data apply to all issued or revised reports. Preexisting test reports issued prior to that date may be referenced as existing without any changes.

Partners and stakeholders are encouraged to submit comments on the document to lighting@energystar.gov by **Friday November 18, 2016**. Please indicate “Comments – ENERGY STAR Requirements for the Use of LM-80 Data” in the email subject line. Please note that comments received will be posted to the ENERGY STAR website unless marked “Do Not Post” or similar request.

Please feel free to contact me with questions, comments or to set up a meeting at (202) 343-9042 or Jantz-Sell.Taylor@epa.gov or Daniel Rogers, ICF, at (908) 233-0554 or lighting@energystar.gov.

Thank you for your continued support of ENERGY STAR.

Sincerely,



Taylor Jantz-Sell
ENERGY STAR Lighting Program Manager
U.S. Environmental Protection Agency