Changes to Lighting Global testing: Transition to IEC 62257-9-5:2018 (ed. 4)

July 2018

In June 2018 the International Electrotechnical Commission (IEC) published a new edition of the test methods used for testing solar products, IEC 62257-9-5:2018 (also written as IEC 62257-9-5 ed. 4). It will take our program and the associated test labs some time to phase in use of this new document; this memo describes the associated changes and expected timelines.

For SHS kits (products larger than 10 W):
We started to conduct testing according to IEC 62257-9-5:2018 in June 2018. The new tests are very similar to the Lighting Global Test Protocols for SHS Kits, Version 2, but include a few small changes to improve the accuracy of the run time estimates and the flexibility of the test methods to handle special cases.

As of July 2018, there are two labs in our network that have capacity to test SHS kits: SMQ in Shenzhen, China and the Schatz Center in California, USA. The Schatz Center will be able to issue accredited test reports for IEC 62257-9-5:2018 tests of SHS kits immediately. SMQ will be able to conduct accredited tests immediately, but there may be a delay of a month or two between when the test finishes and when they can issue the accredited, signed and sealed report. They will be able to issue an unaccredited report in the interim. Any of these reports will be accepted by Lighting Global. Additionally, other labs may be ready to start testing SHS kits within the next year; we will alert you when new options become available.

For pico-PV products (products 10 W and smaller):
We are providing a 6-month transition period and will allow testing according to either the previous edition of the test methods (ed. 3, IEC 62257-9-5:2016) or the new methods (ed. 4, IEC 62257-9-5:2018) at each test laboratory's discretion according to their accreditation schedule. We are offering this transition period to ensure that labs are able to produce accredited test reports because governments or other programs that have adopted standards for pico-PV products often require accredited reports. Products that are tested according to IEC 62257-9-5:2018 must undergo additional tests to assess ports, power consumption, circuit protection, and overall system performance that are not required if tested to IEC 62257-9-5:2016, but will only need to undergo the full-battery run time and solar run time tests for one setting because the new methods will allow the lab to estimate performance for all other settings. Any product that begins testing during this transition period will be held to the current Lighting Global Pico-PV Quality Standards, regardless of which method was used for the testing. This transition period will end December 1, 2018.

All tests of pico-PV products that begin on or after December 1, 2018 must be conducted according to IEC 62257-9-5:2018 at a test lab that is accredited to conduct the new methods. If you are interested in testing at a specific laboratory after December 1, please contact the lab or

our team to ensure that your chosen lab can perform accredited tests to IEC 62257-9-5:2018. All pico-PV products that start testing after December 1, 2018 will be held to revised Quality Standards that include requirements for ports and circuit protection. We have discussed these changes through stakeholder outreach over the past two years. These requirements have been in place for SHS kits and will now be applied to pico-PV products as well, starting with tests that begin on or after December 1, 2018.

In August 2018, we will share a draft of the revised Pico-PV Quality Standards to enable companies to ensure their products will comply with the new standards. In summary, the key additions include:

- **Ports**: Port voltage and current specifications, if provided, must be accurate. Included appliances must function when connected to output ports. Power output of ports must be sufficient to power appliances that are advertised but not included. (Specific requirements for USB and 12 V ports are described in the Quality Standards for SHS Kits - these same requirements will be extended to pico-PV products). [This standard will only apply to products with ports (DC power outlets, sockets, jacks, or receptacles, including USB charging ports).]
- **PV Overvoltage Protection**: If the battery is disconnected or isolated, the system must not be damaged and PV open-circuit voltage must not be present on load terminals. [This standard will only apply to products with ports.]
- **Miswiring Protection**: The user interface should be designed to minimize the likelihood of making improper connections. If improper or reversed connections can easily be made, they should cause no damage to the system or harm to the user.
- **Circuit and Overload Protection**: The system must pass an overcurrent and an overload protection test. Products must include a current limiting mechanism to prevent irreversible damage to the system. The mechanism must be easily resettable or replaceable by the user, or must automatically reset. If replaceable fuses are used for circuit protection, sizes must be labeled on the device and listed in the user manual, and, if fuses are replaceable by the user, at least one spare fuse must be included with the product. Included appliances are not required to meet this standard. [This standard will only apply to products with ports.]
- **Battery Protection for Lithium Batteries**: Lithium batteries must carry UN 38.3 certification and have overcharge protection for individual cells or sets of parallel-connected cells. [This standard will only apply to products with lithium-based batteries, including lithium iron phosphate batteries.] Note that this change will require that product manufacturers provide additional documentation to verify that their multi-cell lithium batteries have individual cell protection.

Note, the Quality Standards for SHS kits are not changing at this time, and there will still be several key differences between the Quality Standards for SHS kits and the upcoming Quality Standards for pico-PV products. These requirements are only applicable to SHS kits as they are generally larger products with longer expected life spans:

  - SHS kits must provide a declaration regarding wire and cable sizing or provide documentation regarding the rating of any outdoor cables.
  - SHS kits must include a statement on their packaging regarding component/battery replacement.
  - SHS kits must meet more extensive user manual requirements.

- SHS kits must provide a warranty of 2 years for the system, PV module, battery, cables, and light points and 1 year for any included appliances, USB charging adapters or similar accessories. (Pico-PV product must provide a 1-year warranty for the entire product).
- To meet the performance reporting requirements, SHS kits must report PV power on the product packaging (pico-PV products must report the light output and solar run time on the highest setting).

For more detail on these requirements, please see the current Quality Standards for SHS Kits.

If you have additional questions on any of the changes discussed above, please reach out to our team at testing@lightingglobal.org. Also, if you are interested in purchasing the new version of the test methods, first check to see if you qualify for a discount on this and other key IEC documents.