

## Lighting Global Product Testing Verification Multi 100 Plus

Expiration Date: August 30, 2018<sup>1</sup>  
Reference #: niwa-multi100-2014

This verifies that the Multi 100 Plus was tested according to the Quality Test Method stipulated in the latest edition of IEC 62257-9-5<sup>2</sup> and complied with the Lighting Global Quality Standards.<sup>3</sup>



### Testing Details:

Product Name: Multi 100 Plus  
Model Number: --  
Company Name: Niwa - Next Energy Products Ltd.  
Country of Origin: China  
Company Contact: Ria Yip, sales@niwasolar.com  
Original QTM Sample Size: n=6  
Renewal Test Conducted: yes  
Sample Procurement Method: Manufacturer-supplied sample  
Testing Laboratory: Schatz Energy Research Center, Arcata, CA USA

### Documentation:

Specifications sheet with verified test results and original version of this verification:  
<http://www.lightingglobal.org/products/niwa-multi100>



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<sup>1</sup> Lighting Global requires re-testing every two years or upon major product revisions, and in special cases reserves the right to grant an extension on results validity.

<sup>2</sup> <http://www.lightingglobal.org/qa/testmethods.html>

<sup>3</sup> <http://www.lightingglobal.org/qa/standards.html>

# Type Approval

## Multi 100 Plus

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Refer to Lighting Global Standardized Specifications Sheet for Summary of Test Results:

<http://www.lightingglobal.org/products/niwa-multi100>

| Category                    | Quality Standard  | Verdict |
|-----------------------------|---|---------|
| Truth In Advertising        | Manufacturer accurately specified   | Pass    |
|                             | Product Name and Model Number accurately specified  | Pass    |
|                             | Performance and Component Ratings accurately specified. Any description of the product that appears on the packaging, inside the package and in any media shall be truthful and accurate. No statements shall mislead buyers or end users about the utility of the product. Numeric ratings must deviate no more than 15% from actual performance (note that it is acceptable for actual performance to exceed advertised performance). | Pass    |
| Lumen Maintenance           | Average relative light output $\geq 85\%$ of initial light output at 2,000 hours with only one sample allowed to fall below 75% OR All 6 samples maintain $\geq 95\%$ of initial light output at 1,000 hours  | Pass    |
| AC-DC Charger Safety        | Any included AC-DC charger carries approval from a recognized consumer electronics safety regulator   | n/a     |
| Battery Composition         | No battery may contain cadmium or mercury at levels greater than trace amounts  | Pass    |
| Battery Protection          | Protected by an appropriate charge controller that prolongs battery life and protects the safety of the user. 5 out of 6 samples must meet the requirements outlined in Lighting Global Quality Standards.  | Pass    |
| Battery Durability          | The average capacity loss of 6 samples must not exceed 25% and only one sample may have a capacity loss greater than 35% following the battery durability storage test as defined in IEC/TS 62257-9-5 Annex BB*<br>*This product also meets the Battery Longevity requirement described in KS 2542:2014: the measured capacity after storage is at least 80% of the measured capacity before storage; no more than 1/6 samples fail     | Pass    |
| Physical Ingress Protection | Minimum IP2X for all products, IP3X for PV modules, and IP5X for fixed integrated outdoor products  | Pass    |
| Water Ingress Protection    | Degree of protection required is based on product type:<br>Fixed separate (indoor): No protection required<br>Portable separate: Occasional exposure to rain<br>Portable integrated: Frequent exposure to rain<br>Fixed integrated (outdoor): Permanent outdoor exposure<br>PV modules: Outdoor rooftop installation  | Pass    |

## Type Approval Continued

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| Category                              | Quality Standard   | Verdict |
|---------------------------------------|--|---------|
| Drop Test                             | Fixed separate (indoor): No requirement<br>All other products: 5 out of 6 samples are functional after drop test; none result in dangerous failures  | Pass    |
| Soldering and Electronics Workmanship | Pass soldering and electronics inspection; the maximum prevalence of bad solder joints, poor wiring or overall workmanship failure is 1 out of 6 samples in each category  | Pass    |
| Mechanical Durability                 | 5 out of 6 samples are functional after Switch, Connector, Gooseneck and Strain Relief tests; none result in dangerous failures  | Pass    |
| Minimum Warranty Terms                | Accurately specified and consumer-facing; minimum coverage of at least one year on manufacturing defects under normal use, including the battery. Detailed requirements are specified in the Lighting Global Quality Standards | Pass    |
| Performance Reporting                 | Light output and the corresponding solar run time are reported on the product packaging for at least the brightest setting.  | Pass    |
|                                       | Impact of mobile phone charging on product performance is qualitatively described on packaging.  | Pass    |

Additional details on the requirements listed above are provided in the Lighting Global Quality Standards, available here: <https://www.lightingglobal.org/qa/standards/>

All Quality Standards are evaluated based on test methods described in the latest edition of IEC/TS 62257-9-5.