



VeraSolSM

VeraSol* Product Certificate

*Previously Lighting Global Quality Assurance

Sun King Tube

Expiration Date: October 31, 2023¹

Verify here: <https://data.verasol.org/products/sek/glp-sktube>

This document verifies that the Sun King Tube was tested according to the following test methods and conformed with the following standards:

Test methods: IEC TS 62257-9-5:2018² and IEC TS 62257-9-8:2020³
Quality standards: IEC TS 62257-9-8:2020³

Testing Details

| | |
|----------------------------|--|
| Product Name: | Sun King Tube |
| Model Number: | SK-343 |
| Company Name: | Greenlight Planet, Inc. |
| Country of Origin: | China |
| Company Contact: | Nicky Xing, sales@greenlightplanet.com |
| Original QTM Sample Size: | n=6 |
| Renewal Test Conducted: | no |
| Sample Procurement Method: | Random warehouse sampling |
| Testing Laboratory: | Shenzhen Academy of Metrology and Quality Inspection, Shenzhen, China |

Documentation

Specifications sheet with verified test results and original version of this verification:
<https://data.verasol.org/products/sek/glp-sktube>

Ari Reeves
Senior Manager, CLASP

¹ VeraSol 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.

² <https://verasol.org/solutions/test-methods>

³ <https://verasol.org/solutions/quality-standards>

Type Approval

Sun King Tube

Verify here: <https://data.verasol.org/products/sek/glp-sktube>

| Category | Quality Standard | Verdict |
|---|---|---------|
| Truth In Advertising (IEC TS 62257-9-8: 5.2.1, 5.2.2, 5.2.5, and 5.2.6) | All reported information is accurate and all advertised features function as advertised. Numeric ratings deviate no more than 15% from actual performance (note that it is acceptable for actual performance to exceed advertised performance). | Pass |
| Information and Performance Reporting Requirements (IEC TS 62257-9-8: 5.2.3) | Manufacturer name and uniquely identifiable name of product or model number are presented on the packaging or user agreement | Pass |
| | Required component specifications are displayed on the packaging or user manual, PV module label includes required specifications and capacity and voltage are marked on the battery | Pass |
| | 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 described on packaging. | Pass |
| PAYG Requirements (IEC TS 62257-9-8: 5.2.4) | Adequate instructions are included in the user manual and manufacturer has declared operational details of the system | Pass |
| Port Functionality and Truth in Advertising (IEC TS 62257-9-8: 5.3) | Ports are accurately advertised and meet voltage requirements | Pass |
| Lumen Maintenance (IEC TS 62257-9-8: 5.4) | Average relative light output $\geq 90\%$ of initial light output at 2,000 hours with only one sample allowed to fall below 85% OR All 6 samples maintain $\geq 95\%$ of initial light output at 1,000 hours | Pass |
| AC/DC Charger Safety (IEC TS 62257-9-8: 5.5.1) | Any included AC/DC chargers carries a recognized consumer electronics safety certification | n/a |
| Hazardous Substances Ban (IEC TS 62257-9-8: 5.5.2) | No battery contains cadmium or mercury at levels greater than trace amounts | Pass |
| Circuit and Overload Protection (IEC TS 62257-9-8: 5.5.3) | Products include a current limiting mechanism to prevent irreversible damage to the system. Included appliances are not required to meet this standard unless they have ports that are intended to provide power. | Pass |
| Wiring and Connector Safety (IEC TS 62257-9-8: 5.5.4) | Wires, cables and connectors are appropriately sized for the expected current and voltage. | Pass |

Type Approval

Sun King Tube

Verify here: <https://data.verasol.org/products/sek/glp-sktube>

| Category | Quality Standard | Verdict |
|--|--|---------|
| PV Module Safety (IEC TS 62257-9-8: 5.5.5) | PV module wiring size is sufficient and all connections and joints are robust, module shows no significant visual defects, and markings are legible, and no safety hazards were observed. | Pass |
| Battery Protection and Safety (IEC TS 62257-9-8: 5.6.1, 5.6.2, and 5.6.3) | Protected by an appropriate charge controller that prolongs battery life and protects the safety of the user. 5 out of 6 samples meet the charge control requirements. Lithium batteries carry adequate safety documentation and have overcharge protection for individual cells or sets of parallel-connected cells. Batteries of included appliances must also meet this standard. | Pass |
| Battery Durability (IEC TS 62257-9-8: 5.6.4) | The average capacity loss of 6 samples does 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 | Pass |
| Physical Ingress Protection (IEC TS 62257-9-8: 5.7.2.2) | IP2X for all products, IP3X (or 2X + circuit protection) for PV modules, IP5X for fixed outdoor products | Pass |
| Water Protection (IEC TS 62257-9-8: 5.7.2.3) | Degree of protection required is based on product type: Fixed separate (indoor): No protection required Portable separate: Occasional exposure to rain Portable integrated: Frequent exposure to rain Fixed integrated (outdoor): Permanent outdoor exposure PV modules: Outdoor rooftop installation | Pass |
| Drop Test Durability (IEC TS 62257-9-8: 5.7.3) | Fixed separate (indoor): No requirement All other products: 5 out of 6 samples are functional after drop test; none result in dangerous failures. | Pass |
| Workmanship Quality (IEC TS 62257-9-8: 5.7.4) | The system and any included appliances are rated "Good" or "Fair" for workmanship quality as defined in Annex F of IEC TS 62257-9-5. At most, one sample may fail to function when initially evaluated. | Pass |
| Switch, Connector, and Strain Relief Durability (IEC TS 62257-9-8: 5.7.5 and 5.7.6) | All samples and included appliances are functional after Switch, Connector, Gooseneck and Strain Relief tests; none result in dangerous failures | Pass |
| PV Overvoltage Protection (IEC TS 62257-9-8: 5.7.8) | If the battery is disconnected or isolated, the system must not be damaged and the load terminals shall maintain a voltage that is safe for their intended uses. | Pass |
| Miswiring Protection (IEC TS 62257-9-8: 5.7.9) | If the battery is disconnected or isolated, the system must not be damaged and the load terminals shall maintain a voltage that is safe for their intended uses. | Pass |

Type Approval

Sun King Tube

Verify here: <https://data.verasol.org/products/sek/glp-sktube>

| Category | Quality Standard | Verdict |
|--|---|---------|
| Warranty (IEC TS 62257-9-8: 5.8.1) | Accurately specified and consumer-facing; minimum coverage of at least one year on manufacturing defects under normal use, including the battery and included appliances. | Pass |
| Date of Manufacture (IEC TS 62257-9-8: 5.8.2) | Reported with precision to at least the month and year on the product or the packaging | Pass |

Test Methods & Quality Standards

Products are tested according to the test methods described in IEC TS 62257-9-5:2018 and meet the requirements of IEC TS 62257-9-8.

Additional details on the requirements listed above are available here:
<https://verasol.org/solutions/quality-standards>

About VeraSol

An evolution of Lighting Global Quality Assurance, VeraSol supports high-performing, durable off-grid products that expand access to modern energy services. VeraSol builds upon the strong foundation for quality assurance laid by the World Bank Group and expands its services to encompass off-grid appliances, productive use equipment, and component-based solar home systems. VeraSol is managed by CLASP in collaboration with the Schatz Energy Research Center at Humboldt State University. Foundational support is provided by the World Bank Group's Lighting Global program, UKaid, IKEA Foundation, and others. Please visit [VeraSol.org](https://verasol.org) for more information.

Disclaimer

To the extent permitted by law, CLASP makes no (and expressly disclaims all) warranties, express, implied or statutory, with respect to the product(s) certified under this agreement, including without limitation any implied warranty of merchantability, fitness for a particular purpose, noninfringement, or arising from course of performance, dealing, usage or trade. Additionally, CLASP disclaims that the product will perform in certain ways and that it meets any national standards. Without limiting the generality of the foregoing, CLASP makes no claim, representation, or warranty of any kind as to the utility of the products for customer's intended uses.

Contact

info@verasol.org