



VeraSolSM

VeraSol* Product Certificate

*Previously Lighting Global Quality Assurance

Home+ SUNSHINE

Expiration Date: November 30, 2022¹

Verify here: <https://data.verasol.org/products/sek/bio-hps>

This document verifies that the Home+ SUNSHINE was tested according to the following test methods and conformed with the following standards:

Test methods: IEC TS 62257-9-5:2018²
Quality standards: Lighting Global Pico PV Quality Standards³

Testing Details

Product Name: Home+ SUNSHINE
Model Number: TKB001
Company Name: Total
Country of Origin: China
Company Contact: Florent Giorgi, florent.giorgi@total.com
Original QTM Sample Size: n/a
Sample Procurement Method: Random warehouse sampling

Documentation

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

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

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| Category | Quality Standard | Verdict |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Truth In Advertising | Manufacturer, 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 mislead buyers or end users about the utility of the product. Numeric ratings deviate no more than 15% from actual performance (note that it is acceptable for actual performance to exceed advertised performance). | Pass |
| | Port voltage and current specifications, if provided, are accurate. Included appliances function when connected to ports. Power output of ports is sufficient to power appliances that are advertised but not included. Ports that are intended for a function other than providing power, such as data ports, are not required to meet this standard. | Pass |
| Lumen Maintenance | 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 |
| Circuit and Overload Protection | Products include a current limiting mechanism to prevent irreversible damage to the system. The mechanism is easily resettable or replaceable by the user, or automatically resets. If replaceable fuses are used for circuit protection, sizes are labeled on the product and listed in the user manual, and, if fuses are replaceable by the user, at least one spare fuse is included with the product. Included appliances are not required to meet this standard unless they have ports that are intended to provide power. | Pass |
| AC-DC Charger Safety | Any included AC-DC charger carries approval from a recognized consumer electronics safety regulator | n/a |
| Hazardous Substances Ban | No battery contains cadmium or mercury at levels greater than trace amounts | Pass |

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| Category | Quality Standard | Verdict |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Battery Protection | Protected by an appropriate charge controller that prolongs battery life and protects the safety of the user. 5 out of 6 samples meet the requirements outlined in Lighting Global Quality Standards. Lithium batteries carry IEC 62281, IEC 62133-2, UL 1642 or UN 38.3 certification 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 | 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 |
| PV Overvoltage Protection | 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 | The user interface is designed to minimize the likelihood of making improper connections. If improper or reversed connections can easily be made, they cause no damage to the system or harm to the user. | Pass |
| Physical Ingress Protection | IP2X for all products, IP3X (or 2X + circuit protection) for PV modules, IP5X for fixed outdoor products | Pass |
| Water Ingress Protection | 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 | Fixed separate (indoor): No requirement All other products: 5 out of 6 samples are functional after drop test; none result in dangerous failures. | Pass |
| Soldering and Electronics Workmanship | 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 |
| Mechanical Durability | All samples and included appliances 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 and included appliances. | Pass |

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| Category | Quality Standard | Verdict |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|---------|
| 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 described on 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 Lighting Global Pico PV Quality Standards.

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.

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