



VeraSol* Product Certificate

*Previously Lighting Global Quality Assurance

Mobisol SHS Family

Expiration Date: July 31, 2021¹

This document verifies that the Mobisol SHS Family product family was tested according to the following test methods and conformed with the following standards. The product family includes the following kits:

80 W Mobisol SHS Basic, 80 W Mobisol Family SHS - 24" TV, 100 W Mobisol SHS Basic, 100 W Mobisol Family SHS - 24" TV, 120 W Mobisol SHS Basic, 120 W Mobisol Family SHS - 24" TV, 120 W Mobisol Family SHS - 32" TV, 120 W Mobisol Family SHS - 43" TV, 200 W Mobisol SHS Basic, 200 W Mobisol Family SHS - 24" TV, 200 W Mobisol Family SHS - 32" TV**, 200 W Mobisol Family SHS - 43" TV, 200 W Bright Future SHS - 32" TV, 200 W Bright Future SHS - 43" TV, 240W Mobisol SHS Basic, 240W Mobisol SHS - 24" TV, 240W Mobisol SHS - 32" TV, 240W Mobisol SHS - 43" TV

Test methods:

IEC TS 62257-9-5:2018²

Quality standards:

Lighting Global Quality Standards³

Testing Details

| | |
|----------------------------|---|
| Product Name: | Mobisol SHS Family |
| Model Number: | See list above |
| Company Name: | Engie Mobisol GmbH. |
| Country of Origin: | China |
| Company Contact: | Li Feng, communications@plugintheworld.com |
| Original QTM Sample Size: | n=4 |
| Renewal Test Conducted: | yes |
| Sample Procurement Method: | Random warehouse sampling |
| Testing Laboratory: | Shenzhen Academy of Metrology and Quality Inspection, Shenzhen, China |

Documentation

Specifications book with verified test results and original version of this verification:

<https://data.verasol.org/sek/mb-shsfamily>

Specifications sheets with verified test results for selected systems within this product family:

<https://data.verasol.org/sek/mb-bf200>

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

Mobisol SHS Family

Verify here: <https://data.verasol.org/sek/mb-shsfamily>

| 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 | SHS Kits: 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 4 samples maintain \geq 95% of initial light output at 1,000 hours Pico PV: 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 |
| Wiring and Connector Safety | SHS Kits: Wires, cables and connectors are appropriately sized for the expected current and voltage. | Pass |
| Hazardous Substances Ban | No battery contains cadmium or mercury at levels greater than trace amounts | Pass |

Type Approval Continued

Mobisol SHS Family

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| Category | Quality Standard | Verdict |
|---------------------------------------|--|---------|
| Battery Protection | <p>Protected by an appropriate charge controller that prolongs battery life and protects the safety of the user. All samples must meet the requirements outlined in Lighting Global Quality Standards.</p> <p>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.</p> | Pass |
| Battery Durability | <p>The average capacity loss of all 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</p> | Pass |
| PV Overvoltage Protection | <p>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.</p> | Pass |
| Miswiring Protection | <p>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.</p> | Pass |
| Physical Ingress Protection | <p>IP2X for all products, IP3X (or 2X + circuit protection) for PV modules, IP5X for fixed outdoor products</p> | Pass |
| Water Ingress Protection | <p>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</p> | Pass |
| Drop Test | <p>Fixed separate (indoor): No requirement All other products: All samples are functional after drop test; none result in dangerous failures.</p> | Pass |
| Soldering and Electronics Workmanship | <p>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.</p> | Pass |
| Mechanical Durability | <p>All samples and included appliances are functional after Switch, Connector, Gooseneck and Strain Relief tests; none result in dangerous failures</p> | Pass |
| Cable Specifications | <p>SHS Kits: Any outdoor cables must be outdoor-rated and UV resistant.</p> | Pass |

Type Approval Continued

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| Category | Quality Standard | Verdict |
|---|--|---------|
| User Manual | SHS Kits: User manual must present instructions for installation, use, and troubleshooting of the system. Installation instructions must include appropriate placement and installation of the PV module. Basic electrical safety and system maintenance must also be covered. Installation and operation instructions should be presented using language and graphics that can be understood by the typical consumer. | Pass |
| Component Specification and Replacement | SHS Kits: Consumer information must provide at least one of the following options: 1) specifications for components that may require replacement (fuses, lights, PV, batteries) and instructions for replacement, OR 2) directions as to how the consumer can get components, including the battery, replaced at service centers, both during and post warranty, OR 3) a clear consumer-facing statement that the batteries and other components are not replaceable. A clear statement regarding the battery replacement must be included on the consumer-facing packaging or user agreement. | Pass |
| Minimum Warranty Terms | Accurately specified and consumer-facing Pico PV: Minimum coverage of at least one-year on manufacturing defects under normal use, including the battery. SHS Kits: Minimum coverage of at least two years for the system and one year for included appliances. Detailed requirements are specified in the Lighting Global Quality Standards. | Pass |
| Performance Reporting | Pico PV: Light output and the corresponding solar run time are reported on the product packaging for at least the brightest setting. | Pass |
| | Pico PV: Impact of mobile phone charging on product performance is described on packaging. | Pass |
| | SHS Kit: PV Power must be accurately reported on the product packaging. | Pass |

Test Methods & Quality Standards

Kits in the product family with peak power ratings less than or equal to 10 W are tested with a sample size of n=6 according to the test methods described in IEC TS 62257-9-5:2018 and meet the Lighting Global Pico-PV Quality Standards.

Kits in the product family with peak power ratings greater than 10 W are tested with a sample size of n=4 according to the test methods described in IEC TS 62257-9-5:2018 and meet the Lighting Global Solar Home System Kit Quality Standards.

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

Type Approval Continued

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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 for more information.

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