



# VeraSol<sup>SM</sup>

## VeraSol\* Product Certificate

\*Previously Lighting Global Quality Assurance

### LUMN Home Family – (MOON Energy) – Moon Community

Expiration Date: July 31, 2025<sup>1</sup>

Verify here: <https://data.verasol.org/products/sek/moon-energy>

This document verifies that the LUMN Home product family was tested according to the following test methods and conformed with the following standards. The product family includes the following kit which is also co-branded by Moon Community: Moon Energy.

|                    |                                                                           |
|--------------------|---------------------------------------------------------------------------|
| Test methods:      | IEC TS 62257-9-5:2018 <sup>2</sup> and IEC TS 62257-9-8:2020 <sup>3</sup> |
| Quality standards: | IEC TS 62257-9-8:2020 <sup>3</sup>                                        |

#### Testing Details

|                            |                                                                                     |
|----------------------------|-------------------------------------------------------------------------------------|
| Product Name:              | Moon Energy                                                                         |
| Model Number:              | SHS40_12W_L22_S2                                                                    |
| Company Name:              | Moon Community                                                                      |
| Brand Name:                | MOON                                                                                |
| Country of Origin:         | China                                                                               |
| Company Contact:           | contact@moon.community                                                              |
| Original QTM Sample Size:  | n=4                                                                                 |
| Renewal Test Conducted:    | n/a                                                                                 |
| Sample Procurement Method: | Random warehouse sampling                                                           |
| Testing Laboratory:        | Shenzhen Academy of Metrology and Quality Inspection,<br>Shenzhen, Guangdong, China |

#### Documentation

Specifications book with verified test results and original version of this verification: <https://data.verasol.org/products/sek/omni-homefam>  
Specifications sheets with verified test results for selected systems within this product family: <https://data.verasol.org/products/sek/omni-lmnhome>

Elisa Lai  
Program Lead

<sup>1</sup> 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.

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

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

# Type Approval

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| Category                                                                        | Quality Standard                                                                                                                                                                                                                                | Verdict |
|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Truth In Advertising<br>(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<br>(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    |
|                                                                                 | Size A (Pico PV): Light output and the corresponding solar run time are reported on the product packaging for at least the brightest setting.                                                                                                   | Pass    |
|                                                                                 | Size A (Pico PV): Impact of mobile phone charging on product performance is described on packaging.                                                                                                                                             | Pass    |
|                                                                                 | Size B (SHS Kits): PV power must be reported on the product packaging and at least one solar run time profile is reported on the packaging or in the user manual                                                                                | Pass    |
| PAYG Requirements<br>(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<br>(IEC TS 62257-9-8: 5.3)          | Ports are accurately advertised and meet voltage requirements                                                                                                                                                                                   | Pass    |
| Lumen Maintenance<br>(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 samples maintain $\geq 95\%$ of initial light output at 1,000 hours                                      | Pass    |
| AC/DC Charger Safety<br>(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<br>(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<br>(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<br>(IEC TS 62257-9-8: 5.5.4)                        | Wires, cables and connectors are appropriately sized for the expected current and voltage.                                                                                                                                                      | Pass    |

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| Category                                                                               | Quality Standard                                                                                                                                                                                                                                                                                                                                                                 | Verdict |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| PV Module Safety<br>(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. Size B (SHS kits) only: Meets requirements of a partial shading or hot-spot endurance test.                                                                                            | Pass    |
| Requirements for Systems with Large PV Modules or Arrays<br>(IEC TS 62257-9-8: 5.5.6)  | Products with a total maximum solar PV power greater than 240 W, open-circuit voltage greater than 35 V, or short-circuit current greater than 8 A meet the requirements of IEC 61730 and IEC 62109 or UL 1741                                                                                                                                                                   | n/a     |
| Battery Protection and Safety<br>(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. All 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<br>(IEC TS 62257-9-8: 5.6.4)                                        | The average capacity loss 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:<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    |
| Drop Test Durability<br>(IEC TS 62257-9-8: 5.7.3)                                      | Fixed/non-portable products: No requirement<br>Size A (Pico PV) portable products: 5 out of 6 samples are functional after drop test<br>Size B (SHS kits) portable products: All samples are functional after drop test<br>Non-lighting portable appliances: All but one sample is functional after modified drop test<br>In all cases, no samples result in dangerous failures. | Pass    |
| Workmanship Quality<br>(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<br>(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    |

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| Category                                                    | Quality Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Verdict |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Outdoor Cable Durability<br>(IEC TS 62257-9-8: 5.7.7)       | Size B (SHS kits) only: Any outdoor cables must be outdoor-rated and UV resistant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Pass    |
| PV Overvoltage Protection<br>(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<br>(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    |
| Non-Plug-and-Play Connections<br>(IEC TS 62257-9-8: 5.7.10) | Systems with non-plug-and-play connections meet additional safety requirements and provide adequate tools, materials, and instructions.                                                                                                                                                                                                                                                                                                                                                                                                               | n/a     |
| Warranty<br>(IEC TS 62257-9-8: 5.8.1)                       | Accurately specified and consumer-facing<br>Size A (Pico PV): Minimum coverage of at least one-year on manufacturing defects under normal use<br>Size B (SHS Kits): Minimum coverage of at least two years for the system and one year for included appliances.                                                                                                                                                                                                                                                                                       | Pass    |
| Date of Manufacture<br>(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    |
| User Manual<br>(IEC TS 62257-9-8: 5.8.3)                    | Size B (SHS Kits) only: 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 covered.                                                                                                                                                                                                                                                                       | Pass    |
| Component Replacement Methods<br>(IEC TS 62257-9-8: 5.8.4)  | Size B (SHS Kits) only: Consumer information must provide at least one of the following options:<br>1) statement that components can be replaced and provide any specifications necessary, OR<br>2) directions as to how the consumer can get components, including the battery, replaced at service centers, OR<br>3) a clear consumer-facing statement that the batteries and other components are not replaceable.<br><br>A clear statement regarding the battery replacement must be included on the consumer-facing packaging or user agreement. | 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 requirements of IEC TS 62257-9-8:2020 for Size A products.

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 requirements of IEC TS 62257-9-8:2020 for Size B products.

Additional details on the requirements listed above are available here:

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

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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 California State Polytechnic University, Humboldt. 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**

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### **Contact**

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