VeraSol Standardized Specifications Sheets guidelines

Version 1.0

September 2020

Scope

These are guidelines for creating VeraSol Standardized Specifications Sheets (SSS) that describe the characteristics of off-grid lighting products. The goal of the SSS is to provide clear, verifiable, and accurate information on quality and performance to potential buyers, with a focus on distributors and bulk purchasing agents.

SSS requirements are useful to understand for the broad market, since they are typically the primary way to communicate and share third-party test results. Table 1 lists examples of how SSS could be used:

Table 1 – Applications of Standardized Specification Sheets

Entity	Example(s) of using the Standardized Specification Sheet
General market support (such as VeraSol)	Administer a third-party certification program and provide accurate information about products in the form of a publicly available SSS.
Manufacturing/ distribution	Use SSS to advertise products, compare products, and/or select products for distribution.
Bulk procurement	Use SSS from third-party verified sources to screen potential products for purchase.
Trade regulation	Use SSS from third-party verified sources to screen applicants for import/tax programs.

Qualification Standards and Targets

To qualify for the SSS program, a product shall meet the Quality Standards[1] with Quality Test Method (QTM) test results obtained in accordance with the Quality Test Method (QTM) or Accelerated Verification Method (AVM) of the latest edition of International Electrotechnical Commission (IEC) Technical Specification 62257-9-5.

Test Result Requirements

Original testing

QTM test results, obtained in accordance with IEC 62257-9-5, are required for initial SSS qualification and creation.

[1] VeraSol began referencing *IEC TS 62257-9-8: Integrated systems – Requirements for stand-alone renewable energy products with power ratings less than or equal to 350 W* in place of the Lighting Global Quality Standards in 2020. See https://verasol.org/updates/transition-to-iec-ts-62257-9-8 for detailed transition information. See the Change Log for Quality Standards for details on new requirements and the differences between the Standards.

Retesting and updates

Table 2 lists the requirements for retesting to update a product's SSS.

Table 2. Requirements for retesting to update a product's SSS

Trigger for testing	Scope of testing	Test requirements	Notes
Two years since previous QTM or most recent renewal test according to the MCM	Any element on SSS	MCM Primary Check Test of IEC 62257-9-5 For aspects that have changed, testing with sample sizes equivalent to QTM testing should be conducted.	The SSS will not be updated for elements tested with a sample size of 2 for renewal testing unless the results indicate a decrease in performance.
Product update with minor changes in performance aspects (less than ±10 % change), or changes that improve performance	None required	The SSS will not be updated for elements that are not tested; if the manufacturer requests that the aspect be updated, the aspect must be tested using the sample size of the QTM using randomly procured samples (an MCM Secondary Check Test).	Performance aspects include light output and run time aspects.
Product update that may result in poorer performance (changes in performance aspects greater than ±10 %)	Elements that are different	Aspects related to element that is changing aspect must be tested using the sample size of the QTM using randomly procured samples (an MCM Secondary Check Test).	The SSS will be updated for those elements that are tested.
Product update with changes in quality or durability aspects or new, non-lighting features	Elements that are updated	Aspects related to element that is changing must be tested using the sample size of the QTM using randomly procured samples (an MCM Secondary Check Test).	Quality aspects include water protection, lumen maintenance, drop test, etc. The SSS will be updated for those elements that are tested.
A program-initiated market check test (in accordance with MCM)	Any element on SSS	MCM Primary Check Test	The SSS will not be updated for elements tested with a sample size of 2 for market check testing unless the results indicate a decrease in performance.

Reporting Precision

The qualitative parts of the specification sheet (warranty, manufacturer name, lighting type, etc.) should always be accurate and updated.

Quantitative parts of the specification sheet that are reported on a continuous scale may be rounded for ease of interpretation. Quantitative values include run times (in hours), light output (in lumens), lighting service (in lumen-hours/solar-day), colour rendering (CRI, in Ra), colour temperature (CCT, in K), lumen maintenance (as a percent of initial light output), PV module power (in watts), and battery capacity (in amp-hours). The rounded specification shall be reported to two significant figures[2], with the exception of battery capacity and light ouput, which will be reported to 3 significant figures if the battery capacity is more than 1000mAh or light ouput is more than 1000 lm. The rounding should be according to standard conventions (≥ 0,5 = 1; < 0,5 = 0). For example, a measured run time of 4.33 h would round to 4.3 h, and a measured run time of 36.6 h would round to 37 h.

If the product's performance exceeded advertised values, the manufacturer may request for the values on the SSS to be adjusted to align with advertised values, though adjustments must be in the direction of lower performance. The SSS cannot report performance that is better than what was measured. For example, the measured run time of 36.6 h could be reported as 36 hours or lower, but could not be reported as any value higher than 37 h.

Results Verification

Each SSS includes a unique internet URL that is directed toward a web page that is managed by VeraSol. If one goes to the web page, it is possible to download a current copy of the SSS to ensure the veracity and validity of SSS.

Section Descriptions

The following sections describe in detail what is to be included in each section of the SSS.

Header (required)

This SSS section includes the name of the product, name of the product manufacturer, the SSS expiration date, and a link to verify the SSS in the header area. In addition, there is a sentence that reads "Results based on test procedures detailed in IEC TS 62257-9-5 v.4." The header elements are white text on a dark gray background.

Below the header is a list of key product "features" in the following order:

1. All products will have a green check mark graphic to indicate the product meets either the Lighting Global Pico-PV Quality Standards, Solar Home System Kit Quality Standards, both the Pico-PV and Solar Home Kit System Quality Standards, or IEC TS 62257-9-8;

2. Products that have mobile phone charging capability using the components in the packaging (i.e., the user does not have to purchase extra components) will have a mobile phone graphic next to text that reads, "Mobile Charging";

[2] See the following for a description of significant figures: http://en.wikipedia.org/wiki/Significant_figures

3. Products that have a pay-as-you-go option will have an orange graphic "PAYG" next to text that reads "Pay-As-You-Go Option Available"

4. All products will have a number indicating how many individual light points the product has. All light points that connect to the main battery and light points with their own batteries are included in this count.

5. Products that are plug-and-play will have an extension cord graphic with a play sign in the center next to text that reads, "Plug and play";

6. Products with screw terminals will have a screw driver graphic next to the words, "Electrical connections require tools*"; towards the bottom of this header section, there will be text that reads, "*Some terminals on this product are not plug-and-play. VeraSol certification assesses the performance of the system, but cannot assess proper installation of the product."

7. To the right of the list of key product "features" is a "thumbnail" image of the product (color image on white background with no border), only including items that are included in the package.

In this SSS section, only the content is displayed (the element names are not indicated). Table 3 lists all of the elements that should be included in the header area.

Table 3. Elements in the header SSS section

Element	Display type	Optional or required	Origin of information	Notes
Product name	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	The product name should be "complete" enough to differentiate it from other similar products in the same manufacturing line. *Example: Sunshine Lamp*
Product model/ID number	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	The product model number is often more detailed than the product name and may include a version number. The name and model number from the test report is used on the SSS. The test lab must report the name that is shown on the packaging and/or user manual of the sampled products.
Product manufacturer	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	The name of the manufacturer or "official" marketing firm for the product. *Example: Sunshine Solar*
Verification link	Text	Required	Generated by VeraSol	This unique link points to a webpage where the original, up-to-date SSS is available for verification. *Example: https://data.verasol.org/products/solar-energy-kit/sunshine-lamp*
Expiration date	Text	Required	From QTM report	A month and year is reported. See the "product support expiration policy" for details.

Origin of test procedure statement	Text	Required	Generated by VeraSol	A sentence reading, "Results based on test procedures detailed in IEC 62257-9-5:2018."
Product "features"	Graphic and Text	Required	IEC 62257-9-5 Annex D for PAYG and Annex F for mobile charging capability and number of light points; generated by VeraSol for other items.	An iconographic summary to show that the product meets the Quality Standards, and indicate if the product has mobile phone charging capability, PAYG options, or plug-and-play options. There is also text to indicate how many individual light points the product has, and if the electrical connections require tools.
Thumbnail image	Image	Required	IEC 62257-9-5 Annex D	The image should show the product against a white background.

Warranty information (required)

The warranty information section contains a brief (less than 200 characters) textual description that highlights the duration of warranty coverage for the product. This information is provided by the manufacturer (Annex D of IEC 62257-9-5) or found during the visual inspection (Annex F of IEC 62257-9-5).

Performance details (required)

Table 4 lists the elements in the performance details SSS section for SHS and pico products with and without ports. The solar charging run time is presented for appliances used alone and in combination. For SHS products, it is specified whether the appliances are included in the kit or sold separately.

Table 4. Elements in the performance details section

Element	Display type	Optional or required	Origin of information	Notes
Name and description of the setting or appliance	Text	Required	IEC 62257-9-5 Annex GG, Annex D and/or Annex F	For products with ports, provide name and a succinct description of each appliance included in the performance details table. For products without ports, provide the name and a succinct description of each light output setting that was measured.
Full-battery run time [hr]	Text	Required	IEC 62257-9-5 Annex GG	Specify a full-battery run time for the main unit tested.

Run time per day of solar charging [hr]	Text	Required for solar products	IEC 62257-9-5 Annex GG	For products with ports, specify a solar run time for appliances tested alone and in combination.* The run time for the lights is reported for the brightest setting. Products with ports may also report a "Featured Combination" if requested by the manufacturer, but this is optional. For products with no ports, specify a run time for at least two settings.
Available daily electrical energy [Wh/day]	Text	Required for fully tested products	IEC 62257-9-5 Annex GG	Specify the energy available per day after one day of solar charging. Note: for families of products, this metric may be calculated and reported for products not fully tested for a fee; otherwise, Spec books do not report this metric.
Total light output [lm]	Text	Required	IEC 62257-9-5 Annex I	Specify the light output (in units of lumens) for each setting tested. For products with ports, this will appear in the description of the main lighting and any auxiliary lights. For products without ports this will appear in a separate column.
Total lighting service [lm-hr/solar day]	Text	Required	IEC 62257-9-5 Annex I and either Annex M, Annex O, Annex P, or Annex R	Specify the total lighting service for the highest setting tested. For solar products, this equals the product of solar run time and light output. For AC/central charged products this equals the product of full-battery run time and light output. For electromechanically charged products this equals the product of electromechanical run time and light output. The units are lumen-hours/solar day, lumen-hours/full charge, or lumen-hours/electromechanical charge, respectively.

*Certain appliances will be included in the combination run time for the product if they are advertised for use with the product, regardless of whether they are included in the kit. These appliances include: light points, TV's, fans, radios, torches, basic mobile phones, and smart phones. Individual run times for additional included or advertised appliances may be listed at the request of the manufacturer. An alternate manufacturer specified combination run time can be included if requested.

Lighting details (required)

Table 5 lists the elements in the light output SSS section. Products with ports are only required to report the results for the highest setting. Products without ports are required to report all settings tested (at least two). If multiple settings are tested for any product, however, results for each setting tested must be reported.

Table 5. Elements in the lighting details SSS section

Element	Display type	Optional or required	Origin of information	Notes
Lamp name	Text	Required	IEC 62257-9-5 Annex F	Include the name of the lamp given by the manufacturer.
Number of settings and the setting name	Text	Required	IEC 62257-9-5 Annex F	Include the number of settings and their names as given by the manufacturer, *e.g. High, Bright, Medium, Low, Dim.*
Light output [lm]	Text	Required	IEC 62257-9-5 Annex I	Specify the light output (in units of lumens) for each setting tested.
Lumen efficacy [lm/W]	Text	Required	IEC 62257-9-5 Annex I or Annex CC	Includes the lumen efficacy by dividing the total lumen output by the product of the current and voltage at the product.
Color Characteristics	Text	Required	IEC 62257-9-5 Annex I	Include color rendering index (CRI) and correlated color temperature (CCT) range for brightest setting.
Distribution type	Text	Required	IEC 62257-9-5 Annex T	Indicate the distribution type based on the product's full-width half-max angle: Narrow (<15°), Wide (15°< 270°), or Omni (>270°).
Lumen Maintenance [hr]	Text	Required	IEC 62257-9-5 Annex J	Indicate fraction of original light output remaining at 2,000 hours of operation.

Special features (optional)

Table 6 lists the elements in the special features SSS section. This section is optional.

Table 6. Elements in the special features SSS section

Element	Display type	Optional or required	Origin of information	Notes
Special features	Text	Optional	IEC 62257-9-5 Annex D and/or Annex F	Specify other features, such as housing material, indicators, etc. at the request of the manufacturer.

Ports

Table 7 lists the elements in the ports SSS section. This section is only required for products that have ports.

Table 7: Elements in the ports SSS section.

Element	Display type	Optional or required	Origin of information	Notes
Description of Included Ports	Text	Required	IEC 62257-9-5 Annex F	Lists the type(s) of port(s) the product includes *(USB ports, 12 V barrel jacks, cigarette lighter socket, etc.),* the number of each type, and a description of each type.

Durability (required)

Table 8 lists the elements in the durability SSS section.

Table 8. Elements in the durability SSS section

Element	Display type	Optional or required	Origin of information	Notes
Overall durability and workmanship	Text	Required	IEC 62257-9-5 Annex F and Annex W	Indicate pass (all products shall pass this requirement to have an SSS).
Durability tests passed	Text	Required	IEC 62257-9-5 Annex U, Annex V, and Annex W	List the durability tests the product passed *(e.g., overall level of water protection, level of physical ingress protection, drop test, switch/connector test, gooseneck test, etc.).* The level of water protection is indicated for each component/appliance. If a product or component met the requirements for water protection by providing a warning label or using a technical level of water protection, this will be noted here. If a product did not undergo the drop test, "drop test" will be eliminated from the list.

Solar details (required)

Table 9 lists the elements in the solar details SSS section.

Table 9. Elements in the solar module details SSS section

Element	Display type	Optional or required	Origin of information	Notes
PV module type	Text	Required for solar charged products	IEC 62257-9-5 Annex D and/or Annex F	Indicate the PV chemistry *(e.g., mono-Si)*
PV maximum power [W]	Text	Required for products that provide service for auxiliary loads	IEC 62257-9-5 Annex Q	Specify the PV power at standard test conditions (STC).

Battery details (required)

Table 10 lists the elements in the battery details SSS section.

Table 7. Elements in the battery details SSS section

Element	Display type	Optional or required	Origin of information	Notes
Battery replaceability	Text	Required	IEC 62257-9-5 Annex F	Either "easily replaceable with common tools" or "not easily replaceable with common tools." If a product's warranty is void if the product is opened, this will be also noted in this section.
Battery chemistry	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	Indicate battery chemistry.
Battery package type	Text	Optional	IEC 62257-9-5 Annex D and/or Annex F	Indicate the battery package type and/or size. If the product includes more than one battery, both batteries will be listed here.
Battery capacity [Ah]	Text	Required	IEC 62257-9-5 Annex K	Indicate measured battery capacity.
Battery nominal voltage [V]	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	Indicate the battery's nominal voltage.
Battery Status Indication	Text	Optional	IEC 62257-9-5 Annex F	Indicate how the product indicates the battery's state of charge

Marks and certification (optional)

Table 11 lists the elements in the marks and certifications SSS section. This section is optional, meaning it will not be included in the SSS if the manufacturer does not wish to include any information in this section or does not provide documentation of certifications.

Table 8. Elements in the marks and certifications SSS section

Element	Display type	Optional or required	Origin of information	Notes
Factory certification	Text	Optional	IEC 62257-9-5 Annex D and/or Annex F	*ISO 900x, etc.*
Safety certification	Text	Optional	IEC 62257-9-5 Annex D and/or Annex F	*UL, etc.*
Other certifications	Text	Optional	IEC 62257-9-5 Annex D and/or Annex F	Allowed if they pertain to the particular product and are relevant *(e.g., CE, ROHS, etc.)*.

Product details (required)

Table 12 lists the elements in the product details SSS section

Table 9. Elements in the product details SSS section

Element	Display type	Optional or required	Origin of information	Notes
Manufacturer name	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	The name of the manufacturer or "official" marketing firm for the product. *Example: Sunshine Solar*
Product name	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	The product name should be "complete" enough to differentiate it from other similar products in the same manufacturing line. *Example: Sunshine Lamp*
Product model/ID number	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	The product model number is often more detailed than the product name and may include a version number. The name and model number from the test report is used on the SSS. The test lab must report the name that is shown on the packaging and/or user manual of the sampled products.
Contact information	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	An email address or phone number that can be used to contact the manufacturer.
Website	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	A URL for the manufacturer or product webpage.
Dimensions (entire product in package) [cm]	Text	Required	IEC 62257-9-5 Annex F	The length, width, and height, in centimeters [cm], of the entire product in package. If the components are packaged separately "not applicable" will appear.
Mass [g]	Text	Required	IEC 62257-9-5 Annex F	The mass of the entire product in package.

SSS information

Table 13 lists the elements in the SSS information section.

Table 10. Elements in the SSS information section

Element	Display type	Optional or required	Origin of information	Notes
Specs sheet expiration date	Text	Required	From QTM report	A month and year is reported. See the "product support expiration policy" for details.
Quality Standards framework version	Text	Required	From QTM report	A year indicating the version of the Lighting Global Quality Standards the product met to obtain the SSS (based on test start date).
Revision	Text	Required	Generated by VeraSol	Indicate an SSS revision tracking number of the form: <year>.<month>, where <month> is a two-digit number *(e.g., 2018.05)*

Example sheets

An example SSS for an SHS product with ports and a Pico-PV product without ports are provided on the following pages.

SHS with Ports

Sunny Lamp

2

Sun & Sky Ltd.

Results based on test procedures detailed in IEC 62257-9-5 v.4

Verify online:
www.lightingglobal.org/products/www.lightingglobal.org/products/S&S-
Valid until: September 30, 2021

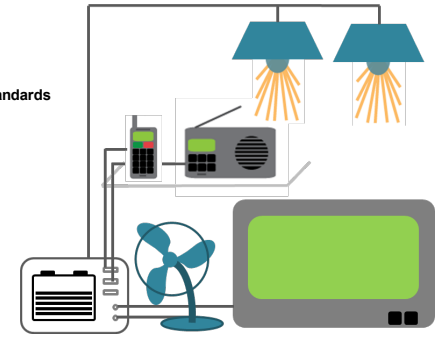
Meets the Lighting Global Solar Home System Kit Quality Standards

Mobile charging

PAYG **Pay-As-You-Go option available**

4 **Light point(s)**

Plug-and-play



WARRANTY INFORMATION

A 2-year warranty covering manufacturing defects in the system and a 1-year warranty for the appliances.

PERFORMANCE DETAILS

			Run time after a typical day of solar charging (assuming 5kWh/m²/day)		
	Appliance[a]	**Description**	**Used alone[b]**	**Used in combination[c]**	**Featured Combination (Fan and all lights)**
included in kit	Main lighting unit	2 LP100 lamps and 2 LP200 lamps totalling to 1200 lumens and 10 W power consumption.	9.5 hours	5.5 hours	3.1 hours
included in kit	Fan	table fan	8 hours	4 hours	4.5 hours
sold separately	Mobile phone	basic phone (3.7 Wh battery)	30 full charge(s)	20 full charge(s)	3 full charge(s)
sold separately	Television	20" diagonal	5.5 hours	3.2 hours	2 hours
sold separately	Radio	portable (3 Wh battery)	5.1 hours	3.6 hours	1 hours

Available daily electrical energy[c] (Wh/day)	115

(Additional energy may be available for daytime use of appliances.)

Performance measure	**Brightness setting: Bright**
Lighting full battery run time[d] for main unit (hours)	10
Total lighting service (lumen-hours/solar-day) (includes the both main lighting unit and any auxiliary lights included with the product)	11400

[a] Only included appliances were tested. Run times and power ratings for appliances sold separately come from manufacturer ratings or standard estimates.

[b] Without any other loads used during the run time

[c] Based on an example use profile with all of the appliances listed in the "Used in combination" column used simultaneously.

[d] Lighting full battery run time estimates do not account for mobile phone charging or other auxiliary loads; the run time is defined as the time until the output is 70% of the initial, stabilized output.

LIGHTING DETAILS

Lamp name	**Number of lamps**	**Number of settings**	**Setting**	**Light output (lm)**	**Lumen efficacy[e] (lm/W)**	**CRI[f]**	**CCT[g]**	**Distribution type**	**Lumen maintenance[h]**
LP100 lamp	2	2	Bright	100	108	72	4000	Wide	91%
LP200 lamp	2	2	Bright	200	120	71	4000	Wide	92%

[e] Lumen efficacy is the power consumption at a light point during the light output test.

[f] Color Rendering Index. An index of 100 is equivalent to vieiwing objects in daylight; above 80 is considered good.

[g] Correlated Color Temperature in degrees Kelvin. Describes color appearance as warm (2700-3000 K), cool (3000-5000 K), or daylight (>5000 K)

[h] Percent of the original light output that remains after 2,000 hours of run time

SPECIAL FEATURES			
PAYG	★	**Pay-As-You-Go enabled**	
LEDs	★	**UV-free LEDs are used to optimize health and safety as well as efficiency.**	
Enclosure	★	**Made from ABS plastic**	
PORTS			
1	**USB 2.0 type A**		Mobile phones and radios can be charged. Adapters are included.
3	**Barrel jack**		12 V ports available to charge devices and power appliances; 5 of these ports are used for light points only.

DURABILITY		
Overall durability and workmanship		Pass
Durability tests passed		Switch test, Drop test, Strain relief test, physical ingress protection.
Level of water protection	Main Lighting Unit	Water ingress protection not tested, meant for indoor use only.
	PV module	Has protection from permanent outdoor exposure; met
	Fan	Water ingress protection not tested, meant for indoor use only.

SOLAR DETAILS	
PV module type	Polycrystalline silicon
PV maximum power	20 watts

BATTERY DETAILS	
Battery replaceability	Not easily replaceable with common tools.
Battery chemistry	Lithium-ion
Battery package type	18650
Battery capacity	6 Ah
Battery nominal voltage	12.6 V
Battery status indication	lights flash when the product needs to be charged.

MARKS AND CERTIFICATIONS	
Factory certification	ISO 9001:2008
Safety certification	UL
Other certification	CE

PRODUCT DETAILS	
Manufacturer name	Sun & Sky Ltd.
Product name	Sunny Lamp
Product model / ID number	2
Contact information	123 apple street, Arcata, CA 95519
Website	sun.com
Co-brand of	--
Dimensions (entire product in package)	36 x 36 x 36 cm
Mass	10000 g

SSS INFORMATION	
Specs sheet expiration date	September 30, 2021
Quality standards framework version	2018
Revision	2019.04

Sunny

220

sun dayz

Results based on test procedures detailed in IEC 62257-9-5 v.4

Verify online:

www.lightingglobal.org/products/www.lightingglobal.org/products/sundayz-

Valid until: September 30, 2021

Meets the Lighting Global Pico-PV Quality Standards

1 **Light point(s)**

Plug-and-play

WARRANTY INFORMATION

A 1 year warranty covering manufacturing defects in the system.

PERFORMANCE DETAILS

Setting	Description	Run time after a typical day of solar charging (assuming 5kWh/m^2/day)	Total light output (lumens)
Bright	4 LEDs on the brightest setting totalling to 95 lumens and 1.5 W.	19 hours	95 lumens
Low	4 LEDs on the lowest setting totalling to 80 lumens and 1.2 W.	22 hours	80 lumens

Available daily electrical energy (Wh/day)	10

Performance measure	Brightness setting: High
Lighting full battery run time (hours)	20
Total lighting service (lumen-hours/solar-day) (includes the both main lighting unit and any auxiliary lights included with the product)	1800

LIGHTING DETAILS

Lamp name	Number of lamps	Number of settings	Setting	Light output (lm)	Lumen efficacy* (lm/W)	CRI**	CCT***	Distribution type	Lumen maintenance****
LP1	1	2	High	95	65	75	4500	Wide	94%
			Low	80	60	75	4510	Wide	--

* Lumen efficacy is the power consumption at a light point during the light output test.

** Color Rendering Index. An index of 100 is equivalent to vieiwing objects in daylight; above 80 is considered good.

*** Correlated Color Temperature in degrees Kelvin. Describes color appearance as warm (2700-3000 K), cool (3000-5000 K), or daylight (>5000 K)

**** Percent of the original light output that remains after 2,000 hours of run time

SPECIAL FEATURES		
LEDs ★	**UV-free LEDs are used to optimize health and safety as well as efficiency.**	
Enclosure ★	**made from ABS plastic.**	
Indicators ★	**1 red LED to indicate battery is at a low state of charge.**	
DURABILITY		
Overall durability and workmanship		Pass
Durability tests passed		Switch test, Drop test, Strain relief test, physical ingress protection.
Level of water protection	Main Lighting Unit	has protection from occasional rain; met with IPX1 and an appropriate warning label
	PV module	Has protection from permanent outdoor exposure; met
SOLAR DETAILS		
PV module type		Monocrystalline silicon
PV maximum power		5 watts
BATTERY DETAILS		
Battery replaceability		Not easily replaceable with common tools.
Battery chemistry		Lithium iron phosphate
Battery package type		18650
Battery capacity		0.1 Ah
Battery nominal voltage		6.4 V
Battery status indication		a red LED indicates when the battery has a low state of charge.
MARKS AND CERTIFICATIONS		
Factory certification		ISO 9001:2008
Safety certification		UL
Other certification		CE
PRODUCT DETAILS		
Manufacturer name		sun dayz
Product name		Sunny
Product model / ID number		220
Contact information		person@email.com
Website		www.sundayz.com
Co-brand of		--
Dimensions (entire product in package)		24 x 15 x 14 cm
Mass		1000 g
SSS INFORMATION		
Specs sheet expiration date		September 30, 2021
Quality standards framework version		2018
Revision		2019.04

About VeraSol

An evolution of Lighting Global Quality Assurance, the VeraSol program 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. Like Lighting Global Quality Assurance, the VeraSol program 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, Good Energies Foundation, and others.

Please visit VeraSol.org for more information.