LIGHTING GLOBAL
Catalyzing Markets for Modern Lighting

AN INNOVATION OF IFC International Finance Corporation World Bank Group
THE WORLD BANK

Lighting Global Standardized Specifications Sheets guidelines

Version 2.0

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Scope

These are guidelines for creating Lighting Global 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.

Qualification Standards and Targets

To qualify for the SSS program, a product shall meet the Lighting Global Minimum Quality Standards with Quality Test Method (QTM) test results obtained in accordance with clause 6 ("Quality test method") 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 clause 6 of IEC 62257-9-5, are required for initial SSS qualification and creation.

Retesting and updates

Table 1 lists the requirements for retesting to update SSS.

Table 1. Requirements for retesting to update SSS

Trigger for testing	Scope of testing	Test requirements	Notes
Two years since previous QTM or Market Check Method (MCM) testing	Any element on SSS	QTM	--
Product update with changes in performance aspects lower than ±10 %	None required	Self-declaration allowed	Performance aspects include light output and run time aspects
Product update with changes in performance aspects greater than ±10 %	Elements that are different	Aspects related to element that is changing tested according to MCM (clause 7 of IEC 62257-9-5) using randomly procured samples	--
Product update with changes in quality or durability aspects	Elements that are updated	Aspects related to element that is changing tested according to MCM using randomly procured samples	Quality aspects include water protection, lumen maintenance, drop test, etc.
Product update with new, non-lighting features	Elements that are new	Aspects related to element that is changing tested according to MCM using manufacturer-provided samples	--
A programme-initiated market check test (in accordance with MCM indicates an **improvement** in quality or performance)	None required	Accept new results	--
A programme-initiated market check test (in accordance with MCM indicates a **decline** in quality or performance)	Any element that is shown to decline	Aspects related to element that is changing tested according to MCM (clause 7) using randomly procured samples	This essentially means that there is a chance to prove that program-initiated market check results were an anomaly in cases where they indicate a reduction in quality or performance.

Style and Format

Following are the style guidelines for SSS:

a) Dominant colors: black, dark gray, and white.

b) Secondary colors are consistent and harmonized across SSS; the base colors for graphics are drawn from the Lighting Global color palette (Pantone 123, 343, 647, 519).

c) Product images: color image on a white background.

d) Font: Helvetica; 12 pt for most text, 16 pt for product name on headline, 10 pt for notes and graphics.

e) Language: English (optional to create translations in other languages).

f) Style: Write in a way that is clear and understandable by a broad set of potential readers.

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. The rounded specification shall be reported so that it meets the precision guidelines presented in Table 2. The guidelines are in terms of significant figures of reporting (s.f.)[1]. If one is rounding to the maximum precision, the rounding should be according to standard conventions (≥ 0,5 = 1; < 0,5 = 0). Alternatively, if the minimum precision requirements are lower than the maximum, one may round further (to fewer significant figures than the maximum) but any further rounding shall be in the "Allowable direction" as defined in the table, starting from the original measured value plus or minus the percentage adjustment that is allowed before additional rounding (i.e. the standard rounding convention does not apply in that case).

Table 2. Recommended precision requirements for metrics on a continuous scale

Metric	Maximum precision of reporting	Minimum precision of reporting	Maximum adjustment before rounding	Allowable direction for additional rounding	Example(s)
Run time (h)	2 s.f.*	1 s.f.	5 %	Down	4,33 h → 4,3 h or 4 h 36,6 h → 37 h or 30 h
Light output (lm)	2 s.f.	1 s.f.	5 %	Down	19,2 lm → 19 lm or 20 lm
Colour rendering (CRI) (R_a)	2 s.f.	2 s.f.	n/a	n/a	83,2 → 83
Colour temperature (CCT) (K)	2 s.f.	2 s.f.	n/a	n/a	4 678 K → 4 700 K
Light distribution (FWHM)	2 s.f.	2 s.f.	n/a	n/a	87°→87° 178°→180°
Battery capacity (mAh)	2 s.f.	2 s.f.	n/a	n/a	1 432 mAh → 1 400 mAh or 1 000 mAh
Other information	2 s.f.	1 s.f.	5 %	Varies	n/a
* s.f. = "significant figures"					

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

Results Verification

Each SSS includes a unique internet URL that is directed toward a web page that is managed by Lighting Global. 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

General

The following sections should be included in the SSS. Each section should begin with a grey bar with the section name in bold, white type. The elements in each section should be black type on a white background with thin black lines separating the elements.

Header/overall performance (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 62257-9-5, ed. 2.0." The header elements are white text on a dark gray background.

Below that are graphical descriptions of the overall performance for as many product settings as were tested. For each of the settings listed, the lumen output and run time (solar run time for solar charged products, full-battery run time for AC charged or central charging model products, and run time after a particular amount of cranking for electromechanically charged products) are plotted on a bubble plot and horizontal bar chart, respectively. The bubbles in the bubble plot are blue (Pantone 647) with white text on the interior to indicate the lumen output for each setting. The horizontal bar chart has a dark gray background with yellow (Pantone 123) bars.

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

1. All products will have a green (Pantone 343) check mark graphic to indicate the product meets the Lighting Global Minimum Quality Standards;
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";
3. All products will have a number indicating how many individual light points the product has (this value would be 1 for a solar lantern, but generally more than 1 for a mini solar home system).

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/overall performance area.

Table 3. Elements in the header/overall performance 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 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 Lighting Global	This unique link points to a webpage where the original, up-to-date SSS is available for verification. Example: www.lightingglobal.org/specs/sunshine-lamp
Expiration date	Text	Required	From QTM report	The SSS expires two years after the date the manufacturer is sent the product's QTM test results that are the basis for the SSS. A month and year is reported.
Origin of test procedure statement	Text	Required	Generated by Lighting Global	A sentence reading, "Results based on test procedures detailed in IEC 62257-9-5, ed. 2.0."
Results summary plots	Graphic	Required	IEC 62257-9-5 Annex I and either Annex M, Annex O, Annex P, or Annex R	A graphical summary of brightness (bubble plot) and run time (horizontal bar plot) for each tested product setting. The type of run time displayed in the plot will depend on the product's charging mechanism (AC/central, solar, electromechanical).
Product "features"	Graphic and Text	Required	IEC 62257-9-5 Annex F for mobile charging capability and number of light points; generated by Lighting Global for other items	An iconographic summary to show that the product passes the Quality Standards, and if the product has mobile phone charging capability. There is also text to indicate how many individual light points the product has.
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.

Table 4. Elements in the performance details section

Element	Display type	Optional or required	Origin of information	Notes
Full-battery run time	Text	Required	IEC 62257-9-5 Annex M	Specify a full-battery run time for each setting tested.
Run time per day of solar charging	Text	Required for solar products	IEC 62257-9-5 Annex R	Specify a solar run time for each setting tested.
Electromechanical run time	Text	Required for electromechanically-charged products	IEC 62257-9-5 Annex P	Specify an electromechanical run time for each setting tested.
Total light output	Text	Required	IEC 62257-9-5 Annex I	Specify the light output (in units of lumens) for each setting tested.
Total area with illumination > 25 lux	Text	Required	IEC 62257-9-5 Annex T	Specify the total area illuminated with at least 25 lux (in units of square meters) for each setting tested.
Total lighting service	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 each 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.

Lighting details (required)

Table 5 lists the elements in the light output SSS section.

Table 5. Elements in the lighting details SSS section

Element	Display type	Optional or required	Origin of information	Notes
Lamp type	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	Include type of light source(s) (e.g., LED).
Description of light point(s)	Text	Required	IEC 62257-9-5 Annex F	Include brief text describing the light point(s) included with 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	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, meaning it will not be included in the SSS if the manufacturer does not wish to include any information in this section.

Table 6. Elements in the special features SSS section

Element	Display type	Optional or required	Origin of information	Notes
Mobile Charging	Text	Optional	IEC 62257-9-5 Annex D and/or Annex F	Specify the source of the product's mobile charging capability (e.g., battery, solar module, etc.) and describe any mobile charging adaptors included with the product.
Other features	Text	Optional	IEC 62257-9-5 Annex D and/or Annex F	Specify other features, such as housing material.

Durability (required)

Table 7 lists the elements in the durability SSS section.

Table 7. 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 use the 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.).

Solar details (required)

Table 8 lists the elements in the solar module details SSS section.

Table 8. 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	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 9 lists the elements in the battery details SSS section.

Table 9. 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."
Battery chemistry	Text	Required	IEC 62257-9-5 Annex D and/or Annex F	Indicate battery chemistry.
Battery package type	Text	Optional if battery is not easily replaceable. Required if battery is easily replaceable, unless manufacturer opts to include a statement similar to, "Replacement batteries are available from the product manufacturer."	IEC 62257-9-5 Annex D and/or Annex F	Indicate the battery package type and/or size.
Battery capacity	Text	Optional if battery is not easily replaceable. Required if battery is easily replaceable, unless manufacturer opts to include a statement similar to, "Replacement batteries are available from the product manufacturer."	IEC 62257-9-5 Annex K	Indicate measured battery capacity.
Battery nominal voltage	Text	Optional if battery is not easily replaceable. Required if battery is easily replaceable, unless manufacturer opts to include a statement similar to, "Replacement batteries are available from the product manufacturer."	IEC 62257-9-5 Annex D and/or Annex F	Indicate the battery's nominal voltage.

Table 9. Elements in the battery details SSS section (continued)

Element	Display type	Optional or required	Origin of information	Notes
Appropriate battery protection strategy	Text	Required	IEC 62257-9-5 Annex S	Indicate pass (all products shall pass this requirement to use the SSS).

Marks and certifications (optional)

Table 10 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.

Table 10. 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, UV-free LEDs, UV-resistant plastic used, etc.).

Product details (required)

Table 11 lists the elements in the product details SSS section.

Table 11. 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. Example: sl-001

Table 11. Elements in the product details SSS section (continued)

Element	Display type	Optional or required	Origin of information	Notes
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	Optional	IEC 62257-9-5 Annex D and/or Annex F	A URL for the manufacturer or product webpage.

SSS information

Table 12 lists the elements in the SSS information section.

Table 12. 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	The SSS expires two years after the date the manufacturer is sent the product's QTM test results that are the basis for the SSS. A month and year is reported.
Minimum Quality Standards framework version	Text	Required	From QTM report	A year indicating the version of the Lighting Global Minimum Quality Standards the product met to obtain the SSS (based on test start date).
Revision	Text	Required	Generated by Lighting Global	Indicate an SSS revision tracking number of the form: <year>.<month><letter>, where <month> is a two-digit number (e.g., May = 05) and <letter> is a unique letter to designate the revision (this will be "a" for the original SSS, "b" for the first revision, etc.).

Example Sheet

An example SSS is provided on the following pages.

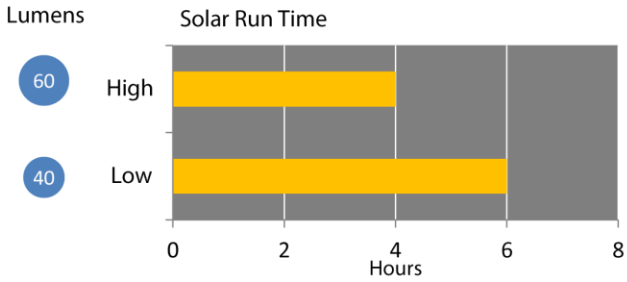
Sunshine Lamp

Sunshine Solar

Results based on test procedures detailed in IEC 62257-9-5, ed. 2.0

Verify Online: www.lightingglobal.org/specs/sunshine-lamp

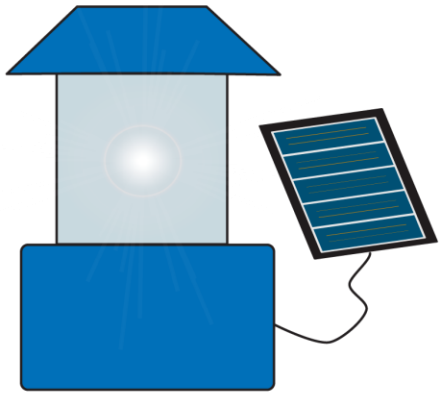
Valid Until: July 2014



Meets Lighting Global Minimum Quality Standards

Mobile Charging

1 **Light Point**



Warranty Information

All parts are protected from manufacturing defects or failure under normal use for a period of one year. The solar module is protected from defects and failure under normal use for two years.

Performance Details

	Brightness Setting***	
Performance Measure	**High**	**Low**
Full battery run time* (hours)	8	12
Run time per day of solar charging* (hours)	4	6
Total light output (lumens)	60	40
Total area with illumination > 25 lux** (m^2)	0.4	0.25
Total lighting service (lumen-hours / solar-day)	240	240

* 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.

** Total area with illumination > 25 lux is determined by the maximum area with adequate illumination at a 0.75 m distance and at the distance from which the product would normally provide task lighting service.

*** Additional brightness settings (not tested): Medium, Bed-light

Lighting Details

Lamp type	LED
Description of light points	Single column containing 15 LEDs
Colour characteristics	CRI 85 CCT "Cool" (5000-7000 K)
Distribution type	Omnidirectional
Lumen maintenance	95% of the original output remains after 2,000 hours run time

Special Features	
Mobile charging	Includes 5 mobile phone adaptor "tips" to charge mobile phone from battery
Housing materials	ABS body

Durability	
Overall durability and workmanship	Pass
Durability tests passed	Drop test, switch and connector cycling, strain relief test, physical ingress protection test, and protection from frequent rain

Solar Details	
PV module type	Polycrystalline silicon
PV maximum power point	2 watts

Battery Details	
Battery replaceability	Easily replaceable with common tools
Battery chemistry	Lithium iron phosphate
Battery package type	2x 1865 package
Battery capacity	2000 mAh mAh
Battery nominal voltage	3.2 V V
Appropriate battery protection circuit	Pass

Marks and Certifications	
Factory certification	ISO 9001:2008
Safety certification	UL
Other certification	CE

Product Details	
Manufacturer name	Sunshine Solar
Product name	Sunshine Lamp
Product model / ID number	sl-001
Contact information	sunny-info@sunshine.com
Website	www.sunshine.com/sunshine-lamp

SSS Information	
Specs sheet expiration date	July 2014
Minimum Quality Standards Framework Version	2013
Revision	2013.07a