

Lighting Africa Minimum Standards and Performance Targets

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Lighting Africa maintains two parallel sets of off-grid lighting benchmarks: The Minimum Standards and Performance Targets. The Standards set a baseline level of quality, durability, and truth-in-advertising to protect consumers and the Targets are Lighting Africa's recommended level of performance above the Standards. The Standards and Targets are summarized below and listed in detail on the following page.

Conformance with the Lighting Africa Standards and Targets is based on results from laboratory testing according to the Lighting Africa Quality Test Method (LA-QTM), using randomly procured samples with tests performed at a third-party, approved test center. Information contained in Lighting Africa Standardized Specifications Sheets (SSS) is acceptable for conformity with the Standards and Targets (any product with an up-to-date SSS is required to have passed the Standards).

Summary of Standards and Targets



Minimum Standards for Quality, Durability, and Truth-in-advertising

- 1) **Truth in Advertising:** Accurate consumer-facing labeling (e.g., rated run time, battery capacity, PV power).
- 2) **Lumen Maintenance:** L70 time is > 2000 hours.
- 3) **Quality:** Pass basic durability and quality checks.



Performance Targets recommended by Lighting Africa

Meets all the Minimum Standards, plus the following:

- 1) **Brightness:** 20 lumens or illuminates an area equal to 2 sheets of paper @ 25 lux
- 2) **Run Time:** 8 hour autonomous run time or 4 hour PV run time
- 3) **Quality:** Pass extended durability checks

Category	Sheet Field	 Minimum Standards	 Performance Targets (beyond the Standards)	
<i>Information</i>	Manufacturer	Accurately Specified		
	Product Name & Model #	Accurately Specified		
	Warranty	Accurately Specified, Minimum coverage 6 months on manuf. defects under normal use, including battery.		
<i>Illumination</i>	Light output	Accurately specified at each available level (lumens).	At least one level, which defines the “specified light output” in subsequent testing, must meet one of the following criteria: <ul style="list-style-type: none"> • ≥ 20 lumens • Illuminates a 0.1 m^2 surface at ≥ 25 lux under conditions defined by LA-QTM 	
	Lamp Type	Accurately Specified		
<i>Energy System Performance</i>	Run Times	Accurately specified for each light setting.	Autonomous Run Time (full battery): ≥ 8 hours @ \geq specified light output AND/OR Lighting hours per solar day (PV only): ≥ 4 hours @ \geq specified light output	
<i>Lumen Maintenance</i>	Lumen Maintenance at 2000 Hours	$\geq 70\%$ of specified light output at 2000 hours (depreciated at highest setting)		
<i>Charger</i>	Charger Rating	Charger Power Rating Accurately Specified (e.g. PV power or mechanical charge time)		
<i>Storage</i>	Battery Capacity	Accurately Specified		
<i>Quality and Durability</i>	IP Class (by lamp type ¹)	Fixed Indoor	20	21
		Portable Separate	41	
		Portable Integrated	43	
		Fixed Outdoor	67	
	Drop Test		Pass Drop Test (@ 1m onto concrete)	
	Soldering and Electronics Quality		Pass Soldering and Electronics Inspection (no bad joints, pinched wires, etc.)	
Switch Durability		Pass Switch durability test (functions after 1000 cycles)		

¹ The lamp type is based on the following categories, with category assignment defaulting to the most stringent (highest IP class) unless a less stringent category description is met:

“Fixed Indoor” are non-portable, with a central station and separate light points (battery, energy source, and light sources must be disaggregated); the product can include an external PV module with a cable of ≥ 3 meters.

“Portable Separate” have an integrated battery and light source in a single package with an external PV module or non-PV charging system. If an external PV module is used, the cable length should be ≥ 3 meters.

“Portable Integrated” are like portable separate, but with an integrated PV module or a PV cable length ≤ 3 meters. There is no mounting hardware for permanent outdoor use and the product is sufficiently portable to be carried conveniently.

“Fixed Outdoor” are products designed for permanent fixture outdoors, with an integrated PV module, light, and battery. They have mounting hardware included (e.g. LED streetlighting systems).