Quality Assurance for Off-Grid Solar Products: An Emerging International Framework

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Over the past five years, the use of pico-solar products for applications such as lighting and mobile phone charging has grown rapidly in off-grid areas of Africa and South Asia.

Sales of Quality Assured Pico-Solar Products in Africa
Cumulative Sales of Pico-Solar Products in Sub Saharan Africa and South Asia (millions of units)

<table>
<thead>
<tr>
<th>Year</th>
<th>H1</th>
<th>H2</th>
<th>H1</th>
<th>H2</th>
<th>H1</th>
<th>H2</th>
<th>H1</th>
<th>H2</th>
<th>H1</th>
<th>H2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>1.9</td>
<td>3.2</td>
<td>5.0</td>
<td>7.9</td>
<td>13.2</td>
<td>19.1</td>
<td>26.4</td>
<td>34.5</td>
<td>44.2</td>
<td></td>
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</tbody>
</table>

The sales numbers are even larger when non-quality assured products are included.
Key Issues for Successful Implementation of QA in Countries with Large Off-Grid Populations

• Quality assurance is critical for the success of off-grid solar sector; existing QA efforts by LG and IEC have supported market development.
• African governments, including Kenya, Tanzania, and Ethiopia, have adopted or are adopting national standards for off-grid solar products.
• As governments adopt, it is critical to ensure that they use test methods and standards that are harmonized with IEC and Lighting Global.
• National adoption of quality standards provides an opportunity to reduce the presence of low quality products in those markets, but implementation issues must be addressed to achieve success.
Lighting Global Quality Assurance Program Status

Off-Grid Solar QA Partners

Lighting Global Test Laboratory Network

- Schatz Energy Research Center
- SMQ
- Intertek
- Fraunhofer ISE
- United Nations Foundation
- IEC
- U.S. Department of Energy
- LEAP: Lighting and Energy Access Partnership
- GC GLA
- NAVIGANT
- giz
- LIGHTING AFRICA
- LIGHTING ASIA
- LIGHTING PACIFIC
Lighting Global Quality Assurance
Primary Program Elements

Lighting Global QA Framework

Test methods and standards

Test methods and standards

Testing, Verification, & Surveillance

Communicating Quality to Market

Technical Specification 62257-9-5, Ed. 2.0

Quality Standard

ISO 17025 accreditation using ILAC affiliated organizations

www.lightingglobal.org/products

Stakeholder Engagement Consumer Awareness Campaigns

IEC

Schatz Energy Research Center

InterTek (sampling agent)

TERI

ECAE-KIPCE

IEC

Lighting Global

IEC

Quality Standard

IEC

Lighting Global
### Lighting Global QA by the Numbers

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Quality assurance framework adopted by IEC in the form of TS 62257-9-5</td>
</tr>
<tr>
<td>6+</td>
<td>Test laboratories in Lighting Global quality assurance program network</td>
</tr>
<tr>
<td>&gt; 170</td>
<td>Product models tested on a commercial basis (more than 2,000 units tested)</td>
</tr>
<tr>
<td>&gt; 40</td>
<td>Companies have submitted at least one product for testing</td>
</tr>
<tr>
<td>~60</td>
<td>Products currently meet the program’s minimum quality standards</td>
</tr>
<tr>
<td>&gt;45</td>
<td>Products evaluated using market check tests</td>
</tr>
<tr>
<td>&gt; 15 M</td>
<td>Quality assured pico-solar products sold in Africa and Asia to date</td>
</tr>
</tbody>
</table>
Country Adoption of Pico-Solar Quality Assurance

Countries and country programs that have referenced IEC TS 62257-9-5 and/or LG QA

We have had discussions on adoption in Tanzania and Uganda

ECOWAS recently adopted a QA frameworks that references IEC TS 62257-9-5; individual countries can now consider how to use the framework in national regulation

ECOWAS Countries:
Benin, Burkina Faso, Liberia, Gambia, Ghana, Guinea, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo, and Cape Verde.
Lighting Global has Expanded its QA framework to include solar home system kits

- Lighting Global’s focus is on plug-and-play solar home system (SHS) kits
- The preliminary framework has been pilot tested on 10 products
- Six products have met the standards and are listed on the Lighting Global website; additional tests are ongoing
- Methods will be submitted to IEC for review and adoption later this year

Mobisol
Zimpertec
Omnivoltaic
Fosera
SolarWorks

www.lightingglobal.org/products
Rigorous and Harmonized QA Effort is Essential for Long Term Off-Grid Solar Success

Harmonized QA means:
- QA programs utilize a single set of (IEC) test methods and standards
- Companies test their products once at a qualified lab and then can enter multiple markets

Harmonization benefits companies, governments, & end-users by keeping costs low & allowing innovative products quick market entry
Thank You!

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