

# ASU-PTL Photovoltaic Module Qualification

Type Test Certificate C1-USO07001 is awarded to

**Company: United Solar Ovonic**

**Type: PVL-31**

**Models: PVL-33, PVL-31, PVL-29**

**Other Qualified Designs: PVL-144, PVL-136, PVL-128, PVL-131, PVL-124, PVL-116, PVL-72, PVL-68, PVL-64, PVL-66, PVL-62, PVL-58**

**Specifications:** 5-a-Si/a-SiGe United Solar Ovonic cells on stainless steel substrates, potted terminal with cables & connectors, EVA encapsulant, ETFE superstrate, Galvalume metal support frame. Maximum system voltage is 1000 V. (See photos on the back.)

**Tested type:** PVL-31 **Sampling:** Twelve manufacturer-supplied unconditioned test samples

**Tests samples received:** 8/2/07 **To:** 11/24/08

**Tests conducted from:** 8/16/07 **Web:** [www.poly.asu.edu/pi](http://www.poly.asu.edu/pi)

**Tests conducted at:** PTL, 7349 E. Unity Avenue, Mesa, Arizona, 85212 **Manufacturer's Address:** United Solar Ovonic LLC, 3800 Lapeer Road, Auburn Hills, MI, 48326, USA

**Test data and analysis detailed in Test Reports:** R-USO07001 **PTL Project:** USO07001

**Original Certificate Issue Date:** December 17, 2008

**The Arizona State University Photovoltaic Testing Laboratory (ASU-PTL) acknowledges that the above photovoltaic test samples have satisfied the requirements of the following test standard(s):**

- 1. IEC 61646: Thin-film terrestrial photovoltaic (PV) modules – Design qualification and type approval [1996].**

Models listed above qualified based upon IEC Retest Guidelines [12/30/04] and IEC/TC82/WG2 Type and Model Conventions [4/16/02].

All tests in the above listed test standard(s) are within the ASU-PTL's scope of accreditation. Exception(s): None  
Deviations from, additions to, or exclusions from aforementioned test standard(s): The Mechanical Load test was deemed "Not Applicable" for this particular design.

This test certificate may be used by the manufacturing company for its own purposes. However, the ASU-PTL cannot accept any legal responsibility from such use.  
If the tested type undergoes any future design or process modifications, limited re-testing is required to maintain valid certification according to the applicable Retest Guidelines.

This certificate is valid only with accompanying photos on the back.

*G. Tamizhmani*

Dr. Govindasamy Tamizhmani, Director  
Certifying Authority

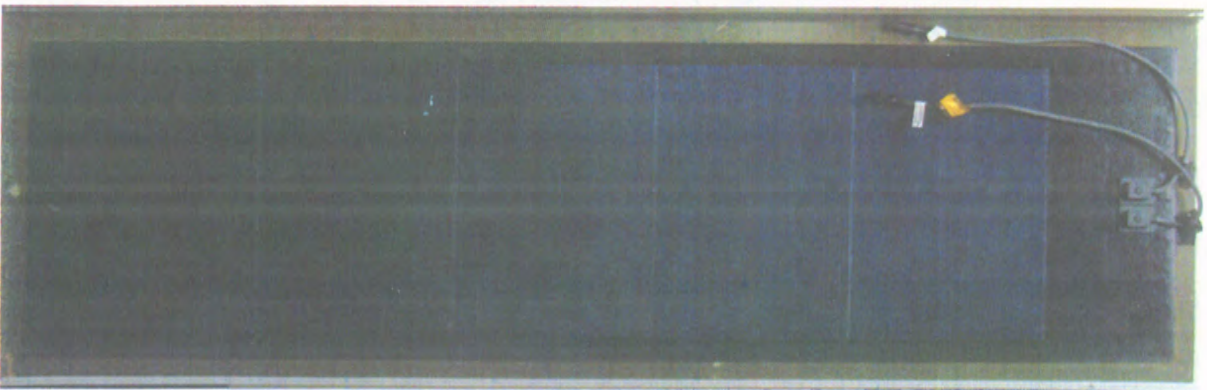
*for G. Tamizhmani*

Joseph M. Kutiche, Operations Manager  
Certifying Witness

*Bo Li*

Bo Li, Test Manager  
Certifying Witness

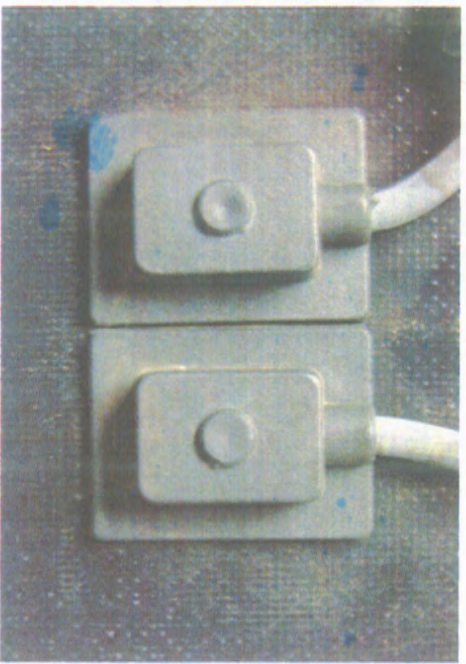




Front



Connectors



Junction Box



Back

These are photos of the United Solar Ovonics PVL-31 module that was tested during project USO 07001.