

ASU-PTL Photovoltaic Module Qualification

Test Certificate C2-TPS05003 is awarded to

Manufacturer: Shanghai Topsolar Green Energy Co., Ltd.

Type: TSM-160M

Models: TSM-165M, TSM-160M, TSM-150M

Specifications: 72 monocrystalline silicon cells, Yukita potted junction box, EVA encapsulant, TPT backsheet, tempered glass superstrate, and anodized aluminum alloy frame. Maximum system voltage is 1000 V. (See photos on back.)

Tested type: TSM-160M Sampling: Eight unconditioned test samples
Samples received: 6/20/05
Tests conducted from: 6/21/05 To: 9/26/05
Tests conducted at: PTL, 7349 E. Unity Avenue, Mesa, Arizona, 85212 Web: www.poly.asu.edu/ptl



Certificate #0921-01
Since 6/23/97

Manufacturer's Address: Shanghai JTU Topsolar Green Energy Co., Ltd., 951 Jianchuan Road, Minhang District, Shanghai, China, 200240

Test data and analysis detailed in Test Report #: 05092601 PTL Projects: TPS05002, TPS05003

Original Certificate Issue Date: September 26, 2005

Rev. #1 Date: October 31, 2005

Rev. #2 Date: August 8, 2006

Revision #1: The TSM-165M is added as a model. Certificate 05103101 replaces certificate 05092601.

Revision #2: The TSM-160M is added as a model. Certificate C2-TPS05003 replaces certificate 05103101.

The **Arizona State University Photovoltaic Testing Laboratory (ASU-PTL)** acknowledges that the above model(s) of photovoltaic modules have been subjected to and passed the minimum requirements defined in test standard(s):

1. IEC 61215: Design qualification and type approval for crystalline silicon terrestrial photovoltaic (PV) modules [1993-04].

Models listed above qualified based upon IEC/TC82/WG2 Retest Guidelines [5/17/00] 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): None

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.

Dr. Govindasamy Tamizh-Mani, Director
Certifying Authority

Joseph M. Kuitche, Test Engineer
Certifying Witness

Todd Arends, Test Manager
Certifying Witness

Certificate

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Report No.: 21205212-1

License Holder:**Shanghai Topsolar Green
Energy Co., Ltd.**951 Jianchuan Road
Minhang District, Shanghai
China, 200240**Product:****PV Modules**Type: **TSM-160M (140 to 165W)****Manufacturing Plant:**Shanghai JTU Topsolar Green Energy Co., Ltd.
951 Jianchuan Road
Minhang District, Shanghai
China, 200240**Basis:** **TÜV Spec TZE/2.572.09**
"Safety Class II Test on
Photovoltaic (PV) Modules" **Factory Inspection**
To document the consistent quality of
the product factory inspections are
performed periodically.

- Safety tested,
TUV-Spec 931/2.572.9
- Periodic Inspection

Remarks:

The above mentioned PV module may be used in PV plants at a total voltage (maximum system voltage) of up to **1000 VDC**. The modules consist of glass / EVA / cells / PET- AL Oxide -PET Kaiwa WPWP250 (0.25 mm) foil, Yukita junction box, Yukita cable 4mm², Yukita connectors YS-188x/YS-189y and aluminium frame. The module types which are listed above differ in: electrical rating and contain 72 mono silicon solar cells (125 mm x 125 mm).

Conditions:

The product test is voluntarily according to technical regulations. Any change of the design, materials, components or processing may require the repetition of some of the qualification tests in order to retain type approval. The certificate is only valid in conjunction with proof of the mechanical suitability of the modules in accordance with IEC 61215 (or similar procedure).

The certificate has a validity of 3 years counting from the date of issue, provided that the testing basis remains unchanged. The series production is not subject to a control and is not part of the assessment.

Renewable Energies


Dipl.-Ing. W. Vaßen

Cologne, 3 August 2006