



Govt. of India
Ministry of New & Renewable Energy,
Solar Energy Centre
P.O & Village Gwalpahari, Distt: Gurgaon
Haryana, India
2012-2013

Test Report No. 42/157/SEC/2012-Module

Date: 02 / 07 / 2012

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A.SCOPE

| | | |
|----|--|--|
| 1. | Service Request No. | 42/12 |
| 2. | Requested By (Name & Address of the organization) | M/S – TITAN ENERGY SYSTEM LIMITED 16, ARUNA ENCLAVE, TRIMULHGERRY SECUNDERABAD-500015, INDIA |
| 3. | Details of the test item | |
| | a. Nomenclature | PV Module |
| | b. Manufactured By | M/S. – TITAN ENERGY SYSTEM LIMITED |
| | c. Model / Type No. | Ref. page no. 02 to 4 |
| | d. Serial No. | Ref. page no. 02 to 4 |
| 4. | Date of Submission of Samples | 11/ 06 / 2012 |
| 5. | Condition of samples on receipt | Good |
| 6. | Date of Completion of Tests | 28 / 06 / 2012 |
| 7. | Applicable test specifications | Customer's |
| 8. | Test category | STC Performance Test as per IEC-60904-1 |

B.MAJOR EQUIPMENTS USED

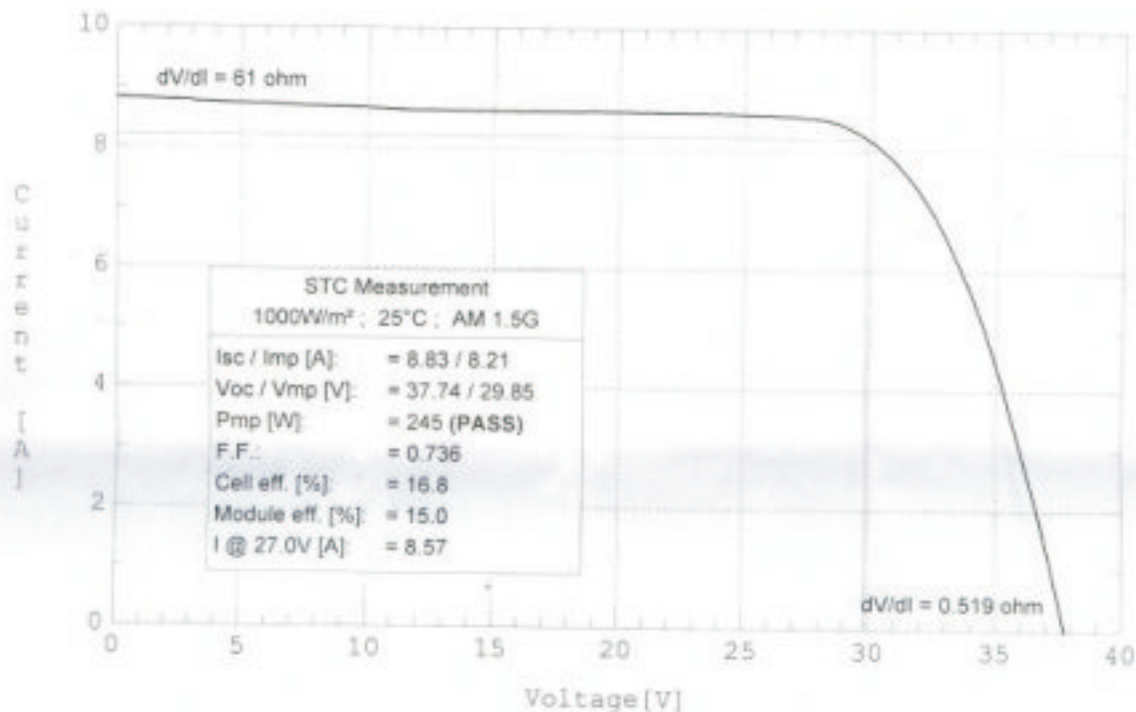
| S.N. | NOMENCLATURE | MAKE | MODEL | CAL VALIDITY |
|------|---------------|--------|---------------|--------------|
| 1. | SUN SIMULATOR | ENDEAS | QUICKSUN 700A | NOV 2012 |

NOTE:

1. This test report refers only to the particular items submitted for testing as per specifications/requirements stipulated by the customer.
2. The results reported in the Test Report are valid at the time of and under the stipulated conditions of measurements.
3. The test report shall not be reproduced except in full, unless written permission for the publication of an approved abstract has been obtained from the Director, Solar Energy Centre.
4. The client is requested to collect the tested sample back within 30 days from the date of issue of the report

Prabhakar
2.7.12





| | | | |
|---|----------------------|---------------------------------------|-------------|
| Module: | 1 | Operator: | VK |
| Name: | Multi C-Si 42/12/MOD | # | M6-60-240 |
| Bin #: | Yr-2012 | | |
| Manufacturer: | TITAN | Product ID: | 12050017438 |
| Current temp. coeff. (microA/cm ² /°C): | 15.00 | Voltage temp. coeff. (mV/cell/°C): | -2.10 |
| Curve correction fac. (mOhm/cell/°C): | 0.00 | Series resistance. (mOhm/cell): | 6.00 |
| Cell area (cm ²): | 243.36 | Module area (m ²): | 1.638104 |
| Cells parallel: | 1 | Cells serial: | 60 |
| Ambient temp. (°C): | 24.9 | Sensor temp. (°C): | 24.9 |
| Irradiance (W/m ²): | 1000 | Corrected temp. (°C): | 25.0 |
| Isc (A): | 8.83 | Imp (A): | 8.21 |
| Voc (V): | 37.74 | Vmp (V): | 29.85 |
| Pmp (W): | 245 | F.F.: | 0.736 |
| Cell eff. (%): | 16.8 | Module eff. (%): | 15.0 |
| Est. shunt resistance. (ohm) | 61 | Est. series resistance. (mohm) | 519 |

Notes:

Prabhakar



Certificate

Registration No.: PV 60028679

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Report No.: 21145946.001

License Holder:
TITAN Energy Systems Ltd
16, Aruna Enclave, Trimulgherry
Secunderabad 500 015
India

Product:
PV Module
Type:
TITAN-M6-72
250–305 Wp in steps of 5 Wp
TITAN-M6-60
210–255 Wp in steps of 5 Wp
TITAN-M6-54
185–225 Wp in steps of 5 Wp
TITAN-M6-36
125–150 Wp in steps of 5 Wp

Manufacturing Plant:
TITAN Energy Systems Ltd
Sy No. 753/G, Ravalkole village,
Medchal Mandal,
Ranga Reddy district-501401
India

Basis:

IEC 61215:2005
EN 61215:2005
"Crystalline silicon terrestrial
photovoltaic (PV) modules - Design
qualification and type approval"



- Qualified, IEC 61215
- Periodic Inspection

Factory Inspection
To document the consistent quality of
the product factory inspections are
performed periodically.

Remarks:
The details of the factory inspection are documented in report no. 1403006077.

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 has a validity of 5 years counting from date of issue.



Cologne, 1 February 2010

Dipl.-Ing. M. Adrian

Certificate

Registration No.: PV 60028680

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Report No.: 21145947.001

License Holder:
TITAN Energy Systems Ltd
16, Aruna Enclave, Trimulgherry
Secunderabad 500 015
India

Manufacturing Plant:
TITAN Energy Systems Ltd
Sy No. 753/G, Ravalkole village,
Medchal Mandal,
Ranga Reddy district-501401
India

Product:
PV Module
Type:
TITAN-M6-72
250–305 Wp in steps of 5 Wp
TIATN-M6-60
210–255 Wp in steps of 5 Wp
TITAN-M6-54
185–225 Wp in steps of 5 Wp
TITAN-M6-36
125–150 Wp in steps of 5 Wp

Basis:

- IEC 61730-1:2004
IEC 61730-2:2004
EN 61730-1:2007
EN 61730-2:2007
"Photovoltaic (PV) module safety qualification"
- Factory Inspection**
To document the consistent quality of the product factory inspections are performed periodically.



- Qualified, IEC 61215
- Safety tested, IEC 61730
- Periodic inspection

Remarks:

- IEC EN 61730 consists of part 1 (Requirements for construction) and part 2 (Requirements for testing).
- The above listed PV modules fulfil the requirements of Application Class A (Safety Class II). They may be used in PV plants at a maximum system voltage (Voc at STC) of up to 1000 VDC.
- The fire test (IEC 61730-2 / MST 23) was not performed.
- The details of the factory inspection are documented in report no. 1403006077.

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 valid until 1 February 2015.

Cologne, 1 February 2010



Dipl.-Ing. M. Adrian