



Commission Information:

Sample name: Crystalline silicon PV module

Model no.: -----

Sample serial no.: WSP1008WI8TM05829

Date of request: December 03, 2010

Undertaken company : -----

Project name : -----

Sampling procedure : Prototype samples.

Laboratory Information:

Lab. name: Photovoltaics Test Laboratory

Address of Lab.: RM. 168, Bldg.21, No.195, Sec.4, Chung Hsing Rd., Chu Tung, Hsin
Chu, Taiwan 310, R.O.C.

Tel: 886-3-5913881

Fax: 886-3-5837801

Lab. Approved Signatory

Chen-Wei Chen

Testing Lab. Head

Hung-Sen Wu



Test Results and Descriptions

I. Test Results

1. Module Group Assignment

Sample #	Sample Group ID	Sample S/N
09907C04523-01	A	WSP1008WI8TM05829

2. Description of test procedure

2.1 Group ID A : 10.1-10.2-10.3-SMCT-10.1-10.2-10.3

Table 1 List of test item

Test item	Description
10.1	Visual inspection
10.2	Maximum power determination
10.3	Insulation test
SMCT	Salt mist corrosion testing

3. List of test results

	Initial examination	All modules	Result
10.1	Visual inspection	See table 10.1 Initial	
10.2	Maximum power determination	See table 10.2 Initial	232.779 W
10.3	Insulation test	See table 10.3 Initial	

Group A	1 Module	Sample Group ID A	Result
SMCT	Salt mist corrosion testing	See table SMCT	

	Final examination	All modules	Result
10.1	Visual inspection	See table 10.1 Final	
10.2	Maximum power determination	See table 10.2 Final	233.304 W
10.3	Insulation test	See table 10.3 Final	



4. Data of test results

10.1 Initial	TABLE: Visual inspection (Initial)
Test Date	2010/12/06
Sample #	Nature and position of initial findings – comments or attach photos
09907C04523-01	No major defects.

10.2 Initial	TABLE: Maximum power determination (Initial)						
Module temperature [°C]	25						
Radiant source	<input checked="" type="checkbox"/> Solar simulator, <input type="checkbox"/> Natural sunlight						
Irradiance [W/m ²]	1000						
Sample #	Test Date	Voc [V]	Vmp [V]	Isc [A]	Imp [A]	Pmp [W]	FF [%]
09907C04523-01	2010/12/06	37.384	29.438	8.411	7.907	232.779	74.03
Supplementary information: The results were not corrected by spectral mismatch factor.							

10.3 Initial	Table: Insulation test (Initial)			
Test Date	2010/12/06			
Test Voltage applied [V]	1000			
Sample #	Measured	Required	Dielectric breakdown	
	MΩ	MΩ	Yes (description)	No
09907C04523-01	>9999	>24.02		X
Supplementary information: Size of module [m ²] : 1.665				



SMCT		TABLE: Salt mist corrosion testing	
Test Date (start/end)		2010/12/07~2010/12/11	
Total hours (96)		96	
Module angle[°]		20	
PH of the solution		6.9	
Collect of solution(ml)		1.1	
Chamber temperature[°C]	Max.	36.8	
	Min.	33.8	
	Average	35.1	
Supplementary information:N/A			

10.1 Final		TABLE: Visual inspection (After Salt mist corrosion testing)	
Test Date		2010/12/14	
Sample #		Nature and position of initial findings – comments or attach photos	
09907C04523-01		No major defects.	
Supplementary information:N/A			

10.2 Final		TABLE: Maximum power determination (After Salt mist corrosion testing)					
Module temperature [°C]		25					
Radiant source		<input checked="" type="checkbox"/> Solar simulator, <input type="checkbox"/> Natural sunlight					
Irradiance [W/m ²]		1000					
Sample #	Test Date	Voc [V]	Vmp [V]	Isc [A]	Imp [A]	Pmp [W]	FF [%]
09907C04523-01	2010/12/14	37.353	29.463	8.449	7.919	233.304	73.92
Supplementary information:The results were not corrected by spectral mismatch factor.							



10.3 Final		Table: Insulation test (After Salt mist corrosion testing)		
Test Date		2010/12/15		
Test Voltage applied [V]		1000		
Sample #	Measured	Required	Dielectric breakdown	
	MΩ	MΩ	Yes (description)	No
09907C04523-01	4708	>24.02		X
Supplementary information: Size of module [m ²] : 1.665				

II. Descriptions

1. Date and Location of Test

The test was performed at Rm.168, Bldg.21, Chung Hsing campus, ITRI during the period from December 06, 2010 to December 15, 2010.

2. Test Methods

- 2.1 The test items and test methods listed in this report have been approved by the commissioners and commissioned parties and then been adopted for the test.
- 2.2 Visual inspection was carried out according to IEC 61215 : 2005-10.1, second edition.
- 2.3 Insulation test were carried out according to IEC 61215 : 2005-10.3, second edition. 2005, second edition.
- 2.4 Measurement at STC was carried out according to IEC 60904-01:2006 using pulsed solar simulator.
- 2.5 Salt mist corrosion testing was carried out according to CNS 15196 : 2006 / IEC 61701 : 1995.



3. Equipment of test

Standard equipments	Serial No.	Traceability Unit	Report No.	Traceability Date
PV reference cell	017-2005	PTB	47122-PTB-10	2010/04/17
Safety tester	1310105	CMS	09907C00152-1-1-03	2010/01/19
PH meter	K980717801	MTC	K99-07-282-01	2010/08/13
Climate chamber	T-03-090711	CMS	09807C04464-4-1-03	2009/12/22
Thermal couple	TC10	CMS	09807C03502-2-1-03	2009/10/14

4. Environmental conditions

The test was performed under the following environmental conditions.

Ambient temperature: $(25 \pm 15) ^\circ\text{C}$

Relative humidity: $(60 \pm 20) \%$

III. References.

1. CNS 15196 : 2006, Salt mist corrosion testing of photovoltaic(PV) modules.
2. IEC 61701 : 1995 , Salt mist corrosion testing of photovoltaic(PV) modules.
3. IEC 60904-01:2006 , second edition , Measurement of photovoltaic current-voltage characteristics.
4. IEC 61215 : 2005 , second edition , Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval.



IV. Appendices

1. 09907C04523-01 photos of module before salt mist corrosion test



Figure 1 Label

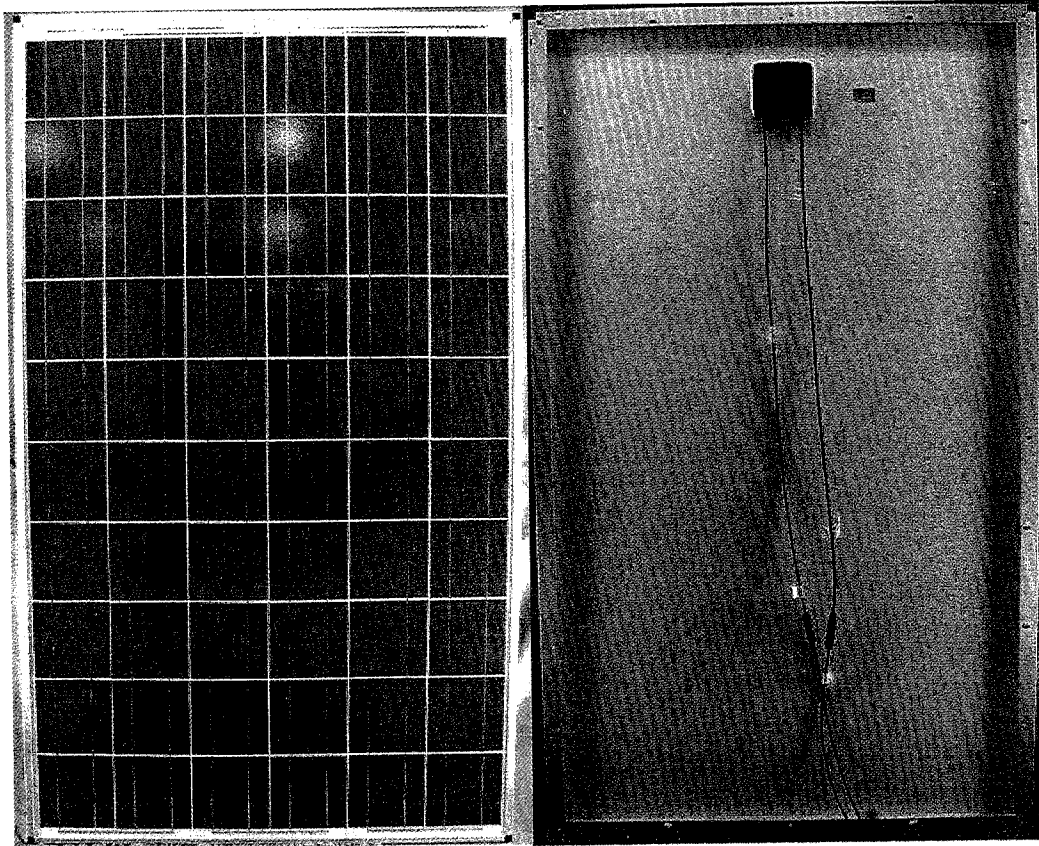


Figure 2 Front side

Figure 3 Back side



Test Report

Date Issued : 2010-12-23

Report No. : 09907C04523-1-1-02

Version : A

Service Item : Crystalline silicon PV module

Brand Name : -----

Model(Item No./Style) : -----

Serial No. : WSP1008WI8TM05829

Client

Company Name : Win Win Precision Technology Co., Ltd

Address : No.218-1, Jhonglun Village, Sinfong Township, Hsinchu
County 304, Taiwan R.O.C.

Result of Service Item, performed by ITRI Laboratory, is specified on the next/ following page(s).

This report, including a signature page and content, is a total of 8 pages.
The validity of this report no longer exists if signature page and content are separated.



Jia-Ruey Duane

General Director
Center for Measurement Standards /
ITRI

Hung-Sen Wu

Department Manager