



Technical Report No. 61.410.19.044.01

Rev. 0

Dated 2020-01-22

Client: Win Win Precision Technology Co., Ltd. (001256)
4F., No.180, Sec/2, Gongdao 5th Road, East., Dist., Hsinchu City,
300, Taiwan, R.O.C.
Jeff Chiu / +886 (0)3-568-8699 ext. 26306 / email: c.jeff@winaico.com

Manufacturing place: 075392

Test subject: Product:
Mono-crystalline Silicon Photovoltaic (PV) Module(s)
Type: WSP-340MX

Test specification: IEC 61215-2:2016 MQT 17 (Hail impact test)

Purpose of examination:

- Test according to the test specification

Test result: The test results show that the presented product is in compliance with the specified requirements.

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1 Description of the test subject

1.1 Function

Manufacturer's specification for intended use:

Use sunlight to generate electricity through PV modules with maximum system voltage of 1000V DC.

1.2 Consideration of the foreseeable misuse

- Not applicable
- Covered through the applied standard
- Covered by the following comment
- Covered by attached risk analysis

1.3 Technical Data

Model	: WSP-340MX
Rated Voltage	: 1000 Vdc
Rated Power	: 340W
Protection Against Moisture	: Yes
Construction	: Framed
Supply connection	: Junction box, Cable and Connectors
Module dimension	: 1705 x 1028 x 35 [mm]
Weight	: 20.6KG

1.4 General product information of test samples

Product Electrical Ratings:

Type or model number	WSP-340MX
Voc (Vdc)	40.61
Vmp (Vdc)	32.85
Imp (Adc)	10.35
Isc (Adc)	10.74
Pmp (W)	340
Min. Value of Pmax, Voc, Isc or Deviation at STC	±3%(Pmax); ±10%(Voc); ±10%(Isc)
Maximum over-current protection rating (A)	20



List of test samples:

Sample No.	Type / model	Sample S/N	Remark
1	WSP-340MX	W19C65H192725135	Hail impact test

Copy of marking plate (representative):

		WSP-340MX  Serial No.: W19C65H192725135																				
<table border="0"> <tr><td>Maximum power (Pmax)</td><td>340 W</td></tr> <tr><td>Power tolerance</td><td>-0/+5 W</td></tr> <tr><td>Open circuit voltage (Voc)</td><td>40.61 V</td></tr> <tr><td>Short circuit current (Isc)</td><td>10.74 A</td></tr> <tr><td>Maximum power voltage (Vmp)</td><td>32.85 V</td></tr> <tr><td>Maximum power current (Imp)</td><td>10.35 A</td></tr> <tr><td>Maximum system voltage IEC/UL</td><td>1000 V</td></tr> <tr><td>Maximum series fuse</td><td>20 A</td></tr> <tr><td>Maximum load (Positive/Negative)</td><td>5400/3600 pa</td></tr> <tr><td>Safety factor</td><td>1.5</td></tr> </table> <p>All electrical data at Standard Test Condition (STC): 1000 W/m² irradiance, AM 1.5 spectrum, cell temperature 25°C. Power measurement tolerance: ±3%. Tolerance of Voc/Isc data: ±10%.</p> <p>Module Fire Performance Type 4 Application Class A Class II (IEC 61140) System fire class rating: see installation instructions for installation requirements to achieve a specified system fire class rating with this product. For field connections, use minimum No. 12 AWG copper wires insulated for a minimum 90°C.</p>	Maximum power (Pmax)	340 W	Power tolerance	-0/+5 W	Open circuit voltage (Voc)	40.61 V	Short circuit current (Isc)	10.74 A	Maximum power voltage (Vmp)	32.85 V	Maximum power current (Imp)	10.35 A	Maximum system voltage IEC/UL	1000 V	Maximum series fuse	20 A	Maximum load (Positive/Negative)	5400/3600 pa	Safety factor	1.5	<p>CONNECTOR MATING SEE MODULE INSTALLATION INSTRUCTIONS FOR APPROPRIATE MATING CONNECTORS.</p> <p>APPROVED PRODUCT  Certificate Number BAPT 8529 Solar Photovoltaic Products</p> <p>CE</p> <p> Tested to IEC 61215-2:2016 and IEC 61730-1:2016</p> <p> CONFORMS TO UL .1703 CERTIFIED TO UL/CORD . C1703-01</p> <p> Intertek 5001697</p> <p>3F, No. 96, Xinhe Rd., Xinfeng Township, Hsinchu County 304, Taiwan, ROC</p>	
Maximum power (Pmax)	340 W																					
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Safety factor	1.5																					
<p>WARNING - ELECTRIC HAZARD AVERTISSEMENT - RISQUE ÉLECTRIQUE</p> <p> This unit produces electricity if exposed to light. DO NOT disconnect under load.</p> <p> Cette unité produit de l'électricité si elle est exposée à la lumière. NE PAS se déconnecter sous charge.</p>																						
Win Win Precision Technology Co., Ltd.		www.winaico.com																				

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2 Order

2.1 Date of Purchase Order, Customer's Reference

2020-01-21, Order No.: 718848955

2.2 Receipt of Test Sample, Location

Telecom Technology Center Communication and Photovoltaic Laboratory - Telecom
Technology Center
No.3, Luke 1'st Rd., Lujhu, Kaohsiung city, Taiwan CHINESE TAIPEI

2.3 Date of Testing

2020-01-02 ~ 2020-01-21

2.4 Location of Testing

Telecom Technology Center Communication and Photovoltaic Laboratory - Telecom
Technology Center
No.3, Luke 1'st Rd., Lujhu, Kaohsiung city, Taiwan CHINESE TAIPEI

2.5 Points of Non-compliance or Exceptions of the Test Procedure

N/A



Test Voltage applied [V]	1000	—	
Solution temperature [°C]	23.9	—	
Size of module [m²]	1.75	—	
Required Resistance [MΩ]	22.86	—	
Sample #	Measured [MΩ]	Required Resistance [MΩ]	Result
1	8766	22.86	P
Supplementary information: Size of module [m²] = 1.75m² Required Resistance = 40 MΩ* m² /1.75 m² = 22.86MΩ			

TABLE 06: MQT 17 - Hail impact test							P
Test Date [YYYY-MM-DD]	2020-01-09 ~ 2020-01-17						—
Sample #	1						—
Ice ball size [mm]	1	2	3	4	5	6	—
	34.3	34.7	34.6	34.5	34.4	34.8	
	7	8	9	10	11		
	34.5	34.6	34.6	34.6	34.6		
Ice ball weight [g]	1	2	3	4	5	6	—
	19.9	20.2	20.3	20.2	20.1	20.3	
	7	8	9	10	11		
	20.1	20.3	20.1	20.3	20.1		
Ice ball velocity [m/s]	1	2	3	4	5	6	—
	28.3	28.5	28.5	28.1	28.3	28.5	
	7	8	9	10	11		
	28.3	28.4	28.1	28.2	28.2		
Number of impact locations	11 points						—

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Supplementary information:

Shot No.	Location
1	Any corner of the module window, not more than one radius from the module edge.
2	Any edge of the module, not more than one radius of ice-ball from the module edge.
3, 4	Over edges of the circuit (e.g. individual cells).
5, 6	Over the circuit near interconnects (i.e. cell interconnects and bus ribbons).
7, 8	On the module window, not more than half diameter of ice ball from one of the points at which the module is mounted to the supporting structure.
9, 10	On the module window, at points farthest from the points selected above.
11	Any points which may prove especially vulnerable to hail impact like over the junction box.

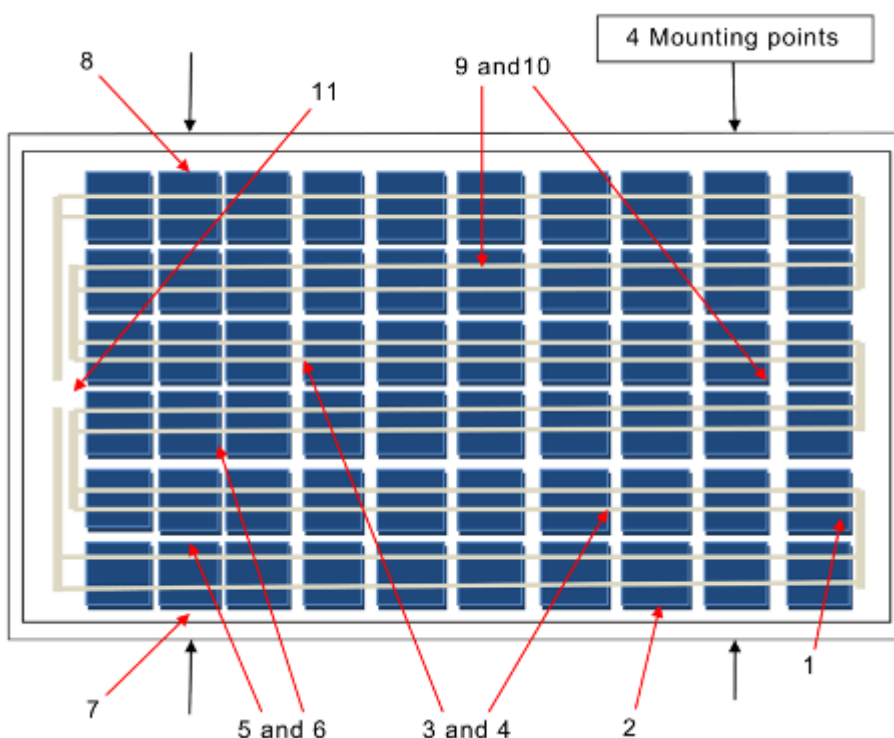


TABLE 07: MQT 01 - Visual inspection after hail impact test

Test Date [YYYY-MM-DD].....: 2020-01-17		P
Sample #	Nature and position of initial findings – comments or attach photos	—
1	No changes	P
Supplementary information: N/A		

TABLE 08: MQT 06.1: Final Performance at STC

P



5 Documentation

N/A

6 Summary

The test specification(s) is (are) met

TÜV SÜD Asia Ltd. Taiwan Branch
TÜV SÜD Group

Engineer:

Charles Lin
Project Handler

Technical Report checked:

Michael Chen
Designated Reviewer