Choose certainty.
Add value.

Technical Report No. 704061704320

Rev. 00

Dated 2018-02-28

Client name:	Risen Energy Co., Ltd.
Client address:	Meilin, Ninghai, 315609 Ningbo, Zhejiang, PEOPLE'S REPUBLIC OF CHINA
Client contact:	Mr. Shubo Yang
Manufacturing place:	Risen Energy Co., Ltd. Meiqiao Industrial park,Ninghai,315609, Ningbo,Zhejiang, PEOPLE'S REPUBLIC OF CHINA
Test subject:	Product: PV module: Small sample with one cell, frameless;
Test specification:	ATSM E 424-1971(2007) Standard test methods for solar energy transmittance and reflectance (Terrestrial) of sheet materials; Clint's requiremnets;
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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TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai branch
TÜV SÜD Group

Telephone : +86 21 6141-0100
Telefax : +86 21 6141-8600

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P. R. China

1 Description of the test subject

1.1 Function

N/A

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

Description of sample construction:		
Key material	**Sample 1#** (See Annex 1 Photos)	**Sample 2#** (See Annex 1 Photos)
Front Cover	Irico Group Electronics Co.,Ltd., Type: AR-coated glass , Thickness: 3.2mm	Irico Group Electronics Co.,Ltd., Type: AR-coated glass , Thickness: 3.2mm
Rear Cover	Jolywood(Suzhou) Sunwatt Co.,Ltd. Type: KFB-30(plus), white, Three layers laminate, PVDF/PET/Fluorine, thickness :20μm / 275μm / 10μm	Jolywood(Suzhou) Sunwatt Co.,Ltd. Type: KFB-30(plus), white, Three layers laminate, PVDF/PET/Fluorine, thickness :20μm / 275μm / 10μm
Encapsulation material	Changzhou Sveck PV New Material Co., Ltd., EVA, type SV-15296 (closed to glass) and SV-15297 (closed to backsheet), thickness 0.5 mm	Changzhou Sveck PV New Material Co., Ltd., EVA, type SV-15296 (closed to glass) and SV-15297 (closed to backsheet), thickness 0.5 mm
Cell (include type)	Risen Energy Co., Ltd., Mono-Si, Cell type: RSTDB156S (5 busbar)	Risen Energy Co., Ltd., Poly-Si, Cell type: RSTPB156S (5 busbar)
Number of cells	1	1
Cell and string connectors	Zhejiang Twinsel Electronic Technology Co.,Ltd. , Cell interconnector : Base Cu(TU1). Purity ≥99.97%, Cross section: 0.25mm x 1.0mm, String connectors: Base Cu(TU2 or better). Purity ≥99.97%, Cross section: 0.35mmx 8.0mm; 3M, Type: Light Redirecting Film (LRF) T80-X;	Zhejiang Twinsel Electronic Technology Co.,Ltd. , Cell interconnector : Base Cu(TU1). Purity ≥99.97%, Cross section: 0.25mm x 1.0mm, String connectors: Base Cu(TU2 or better). Purity ≥99.97%, Cross section: 0.35mmx 8.0mm; 3M, Type: Light Redirecting Film (LRF) T80-X;

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2 Order

2.1 Date of Purchase Order, Customer's Reference

The order dated 2017-06-30.

2.2 Receipt of Test Sample, Location

National Center of Supervision & Inspection on Solar Photovoltaic Products Quality

No. 5 Xinhua Road, WND, Wuxi, Jiangsu, China.

2.3 Date of Testing

2018-01-03.

2.4 Location of Testing

National Center of Supervision & Inspection on Solar Photovoltaic Products Quality

No. 5 Xinhua Road, WND, Wuxi, Jiangsu, China.

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

N/A

3 Test Results

No	Test items	Technical Requirement	Test Results		Judgment
1#	Reflectance (380nm~780nm)	Scan interval 5nm, take the averge value within test band	Position 1 (backsheet area)	50.94%	--
			Position 2 (busbar area)	61.32%	--
			Position 3 (cell area)	5.07%	--
2#	Reflectance (380nm~780nm)	Scan interval 5nm, take the averge value within test band	Position 1 (backsheet area)	52.43%	--
			Position 2 (busbar area)	64.48%	--
			Position 3 (cell area)	6.36%	--
Remark: The light is coming in from the front side in the test process.					

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4 Remark

N/A

5 Appendix

Annex 1 Photos of samples:

Sample 1# front side

Sample 1# back side

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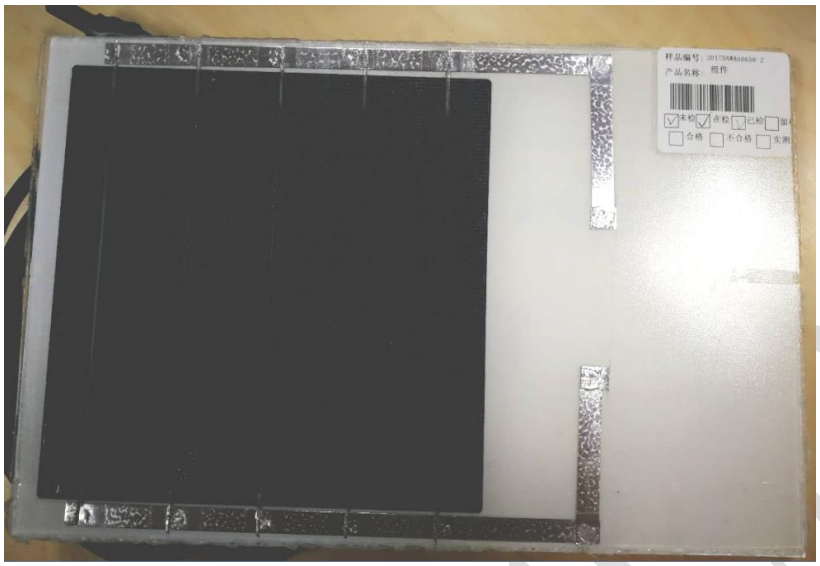

Sample 2# front side

Sample 2# back side

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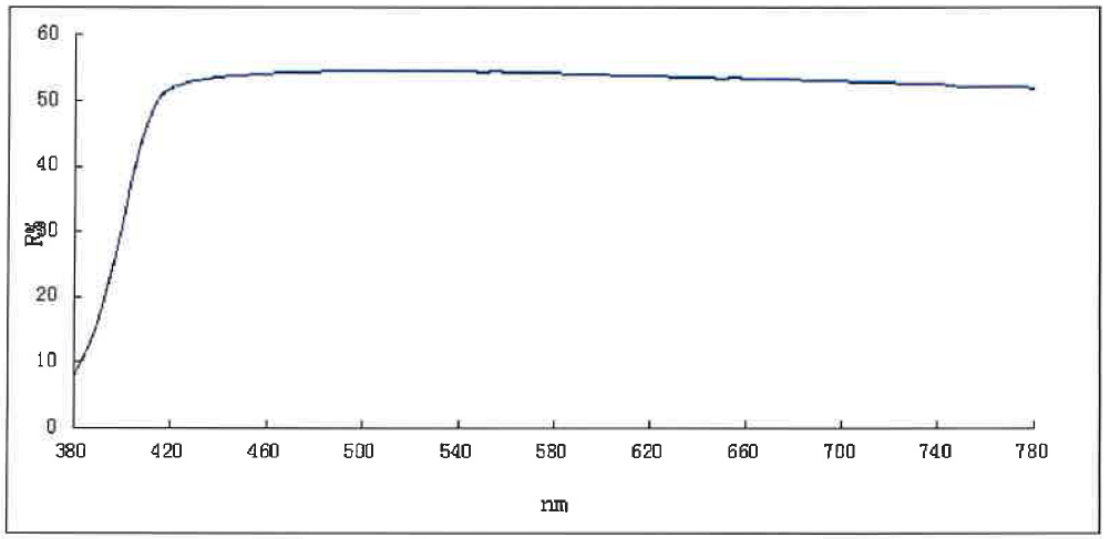
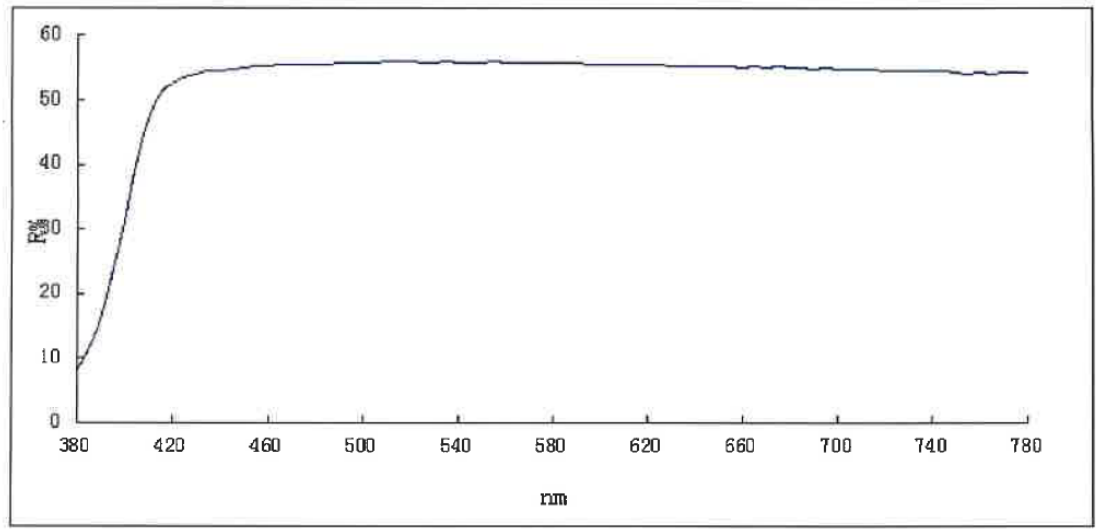
Annex 2 Reflectance spectrum



The reflectance spectrum of 1#-1



The reflectance spectrum of 2#-1

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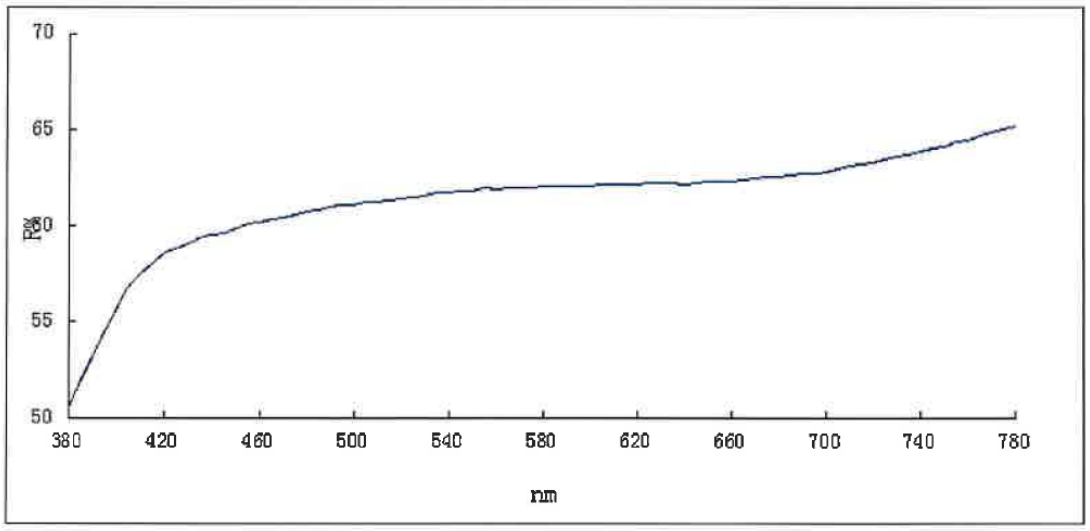
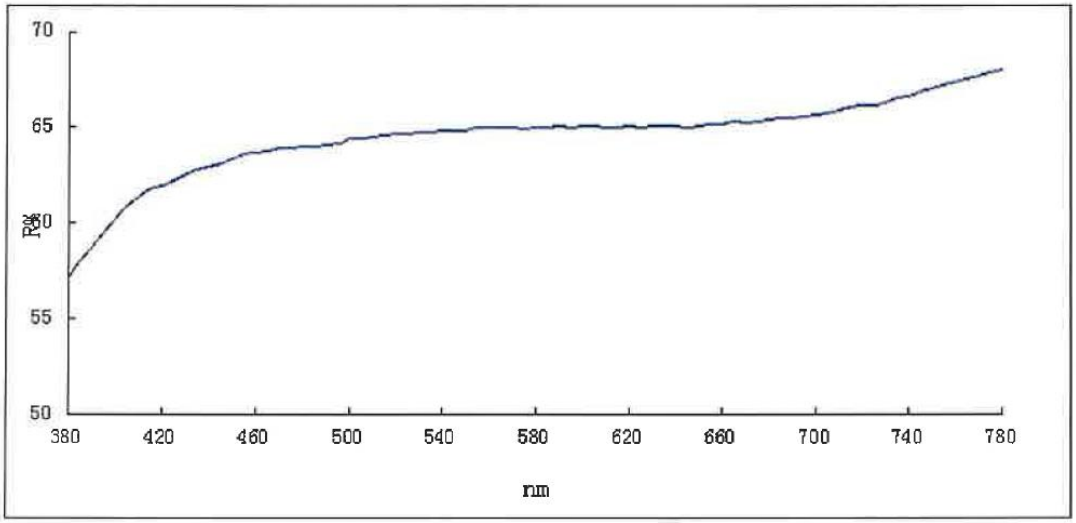


The reflectance spectrum of 1#-2



The reflectance spectrum of 2#-2

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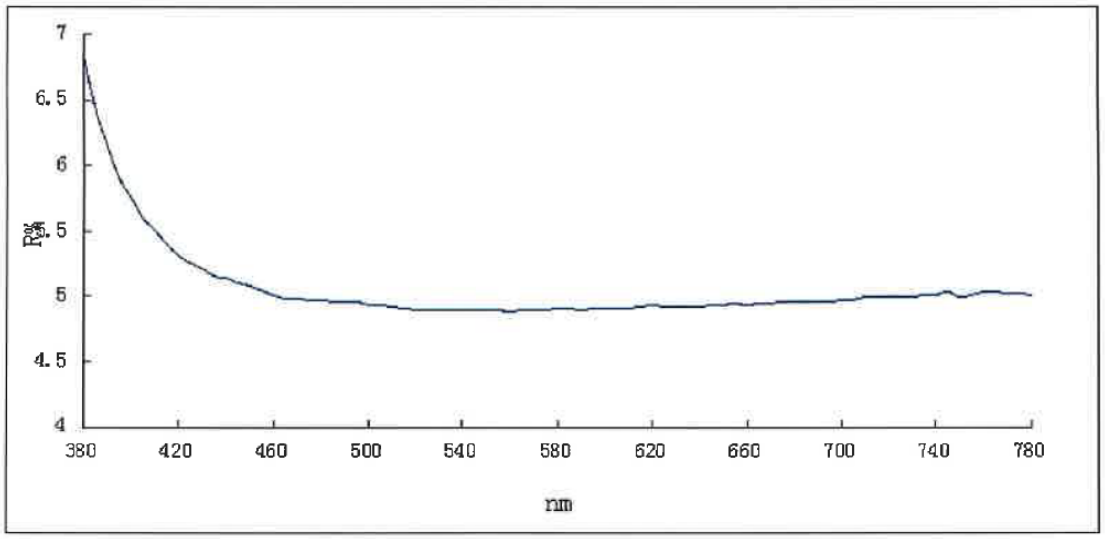
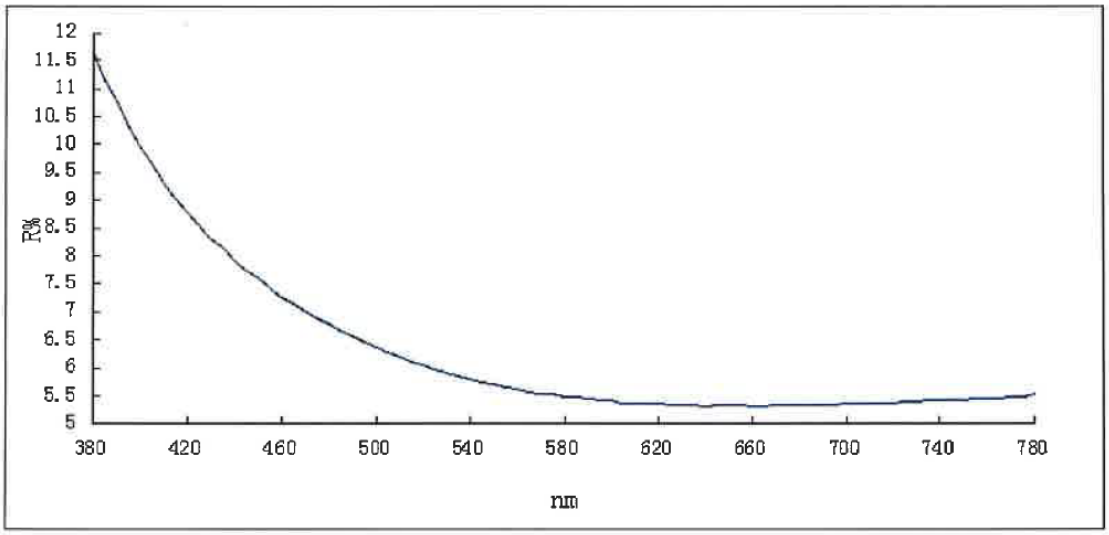


The reflectance spectrum of 1#-3



The reflectance spectrum of 2#-3

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6 Summary

N/A

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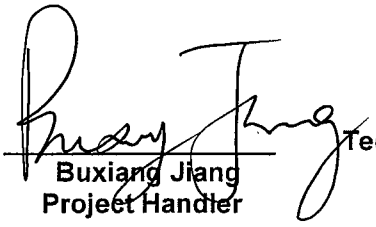
Engineer:  **Technical Report checked:** 

Buxiang Jiang
Project Handler

Ning Tang
Designated Reviewer

Telephone : +86 21 6141-0100
Telefax : +86 21 6141-8600

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TÜV SÜD Certification and Testing
(China) Co., Ltd. Shanghai branch
TÜV SÜD Group

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