Ministry of Higher Education
& Scientific Research
National Institute of Standards

وزارة التعليم العالى والبحث العلمى
المعهد القومى للمعايرة

El- Sadat (Tersa) St., El Haram, Giza, Egypt - P.O.Box 136 Giza - Code 12211 - Tel./ Fax: +202 - 33867462 - NIS Tel +202 - 37401113

TEST REPORT
تقرير إختبار

Report No:	560/63C032/6/414/2022

- **NIS Lab** (اسم المعمل) : **Engineering and surface Metrology Lab.**
- **Issued For** (صدر الى) : ايفكا للصناعة
- **Contact Information of the Customer** (بيانات التواصل بالزبون) : **Tel: 01017839210**
- **Sample Specification** (وصف العينة) : Solar Cell Plate_SCRP (Roughness Measurements)
  - **Manufacturer** (اسم الشركة المنتجة) : ------
  - **Code** (كود) : SCRP-01

- **Date of Receipt** (تاريخ الاستلام) : 26/04/2022
- **Date of Test** (تاريخ الإختبار) : 26/04/2022
- **Issue Date** (تاريخ الإصدار) : 08/05/2022

Approved by

Head of Laboratory	NIS President
Prof. Dr. Dahi Abdelsalam	Prof. Dr. Noha E. Khaled

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▪ Report No.	560/63C032/6/414/2022		
▪ Customer	ايفكا للصناعة		
		▪ Date of Receipt	26/04/2022
▪ Tested by	Dr.Eng. Ahmed Elmelegy	▪ Date of Test	26/04/2022
▪ Number of pages	3	▪ Issue Date	08/05/2022
Sample Under Test			
Sample Specification	Solar Cell Plate_SCRP (Roughness Measurements)		
Manufacturer	----		
Code	SCRP-01		

• Enviromental Conditions			
Temperature (°C)	(20±1)	Humidity (%)	(50±5)

• Test Method

The test was carried out according to NIS-63-OP-7.2/32 "Test of Surface Measurements "

• Traceability

Reference Device	Serial Number	Calibration Date	Certificate No.	Expanded uncertainty	Traceability
Roughness Tester	630412	20/09/2021	1928/63/2020	0.06 µm	NIS

• ISO 17025 Statement

All NIS laboratories implement the NIS unified quality management system which was built to be in compliance with ISO 17025:2017.

Tested by Ahmed

Reviewed by Hussain

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• Report No.	560/63C032/6/414/2022		
• Conformity Statement			
Conformity Criterion	Not applicable		
Decision	N/A		

• Test Results

Parameters	Cycles	Average Roughness value Ra (µm)	U (µm)
Ra (µm)	Before cleaning	0.52	0.10
	After 200 Cycles	0.47	0.10
	After 200 Cycles	0.51	0.10
	After 200 Cycles	0.53	0.10
	After 200 Cycles	0.53	0.10
Hair Type		*plastic hair*	



the solar panel was cleaned using a robot with micro-fiber towels, the roughness measurements were carried out befor and after the cleaning process



The data in the above table applies only to those samples specifically listed on this test report

• Uncertainty Statement

The combined standard uncertainty is calculated based onJCGM 100:2008 which include at least the standard uncertainty reported for the reference standard, the standard uncertainty for the measurement process, the standard uncertainty for any uncorrected errors. The combined standard uncertainty is multiplied by a coverage factor (k) of 2 to provide an expanded uncertainty, which defines a level of confidence of approximately 95 percent (95.45 %). The expanded uncertainty presented in this certificate/report is consistent with the ISO/IEC GUIDE 98-3:2008 "Uncertainty of measurement -- Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)".

Tested by Ahmed

Reviewed by Hussein

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