



Test Report

Date Issued : 2022-09-06

Report No. : 11055C01031-2-14-02

Version : A

Service Item : 日照計累積照度比對英文測試報告

Brand Name : ----

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

Serial No. : ----

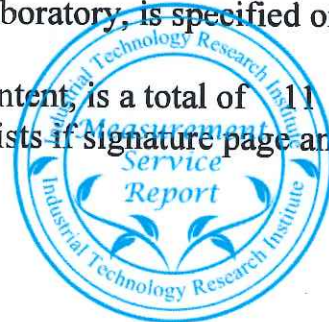
Client

Company Name : 日灝能源科技股份有限公司

Address : 新北市板橋區溪福里金門街 369 巷 11 號 7 樓

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 11 pages. The validity of this report no longer exists if signature page and content are separated.



General Director
Green Energy & Environment Lab

Department Manager



Commission Information:

Sample name : Pyranometer

Brand name 、 Model no. 、 Serial no. : Refer to table 1

Duration of test : August 01 to August 31, 2022

Laboratory Information:

Lab. name: Photovoltaics System Testing Laboratory

Address of Lab.: Rm. 415, BF., No. 360, Gaofa 2nd Rd., Guiren Dist., Tainan City 711,
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宋洪義

Approval Signatory

宋洪義

Testing Lab. Head

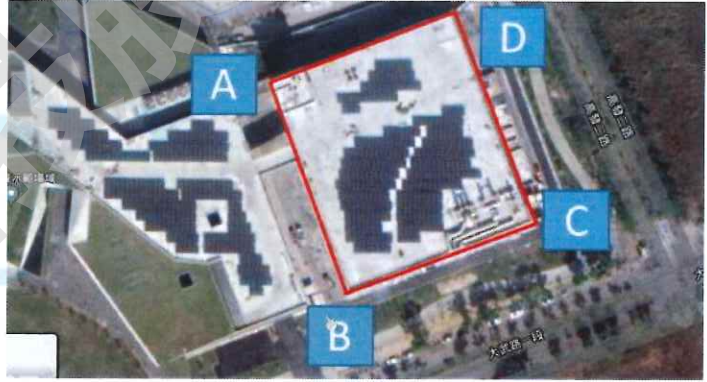


I. Test Results and Descriptions:

1. Information of pyranometer

Table 1				
Item	Brand name	Model no.	Serial no.	Provider
Table A	Hukseflux	SR30-D1	6586	ITRI-GEL-R300- Photovoltaics System Testing Laboratory
Table B	Deltaohm	PYRA03AC	21013200	日灝能源
Table C	Hukseflux	SR05-D2A2	9379	日灝能源

2. Documentation:

Table 2	
Customer information	日灝能源科技股份有限公司
Test site address	Roof of Building C, No. 360, Gaofa 2nd Rd., Guiren Dist., Tainan City 郵遞區號, Taiwan (R.O.C.) 台南市歸仁區高發二路 360 號 C 棟屋頂
Site information	
Latitude , Longitude	A(22°55'15.4"N 120°17'29.6"E) B(22°55'13.0"N 120°17'30.6"E) C(22°55'13.8"N 120°17'32.8"E) D(22°55'16.1"N 120°17'31.8"E)
Data acquisition timing and reporting	Sampling 3 seconds
	Recording 1 minute
	Reporting 31 days (2022/08/01~2022/08/31)
Angle of pyranometer	Global horizontal irradiance



3. Measured parameters:

Table A		
Measured parameters	Global horizontal irradiance	
Number of sensor	1 pcs	
Manufacturer	Hukseflux	
Mode/Serial No.	SR30-D1/6586	
Sensor locations	 Pyranometer at the red circle	
Sensor maintenance	Recalibration	(1) Once per year (2) Report No.: 11107C00444-1-1-03
Sensor type	Classified	



☒ Thermopile pyranometers	☒ Class A	☒ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty $\leq 3\%$ for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty $\leq 8\%$ for hourly totals)
	☐ Class C	Any: _____
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty $\leq 3\%$ from (100 ~1500) $\text{W}\cdot\text{m}^2$
	☐ Class B	Uncertainty $\leq 8\%$ from (100 ~1500) $\text{W}\cdot\text{m}^2$
	☐ Class C	Any: _____
☐ Photodiode sensors	☐ Class A	Not applicable: _____
	☐ Class B	Not applicable: _____
	☐ Class C	Any: _____

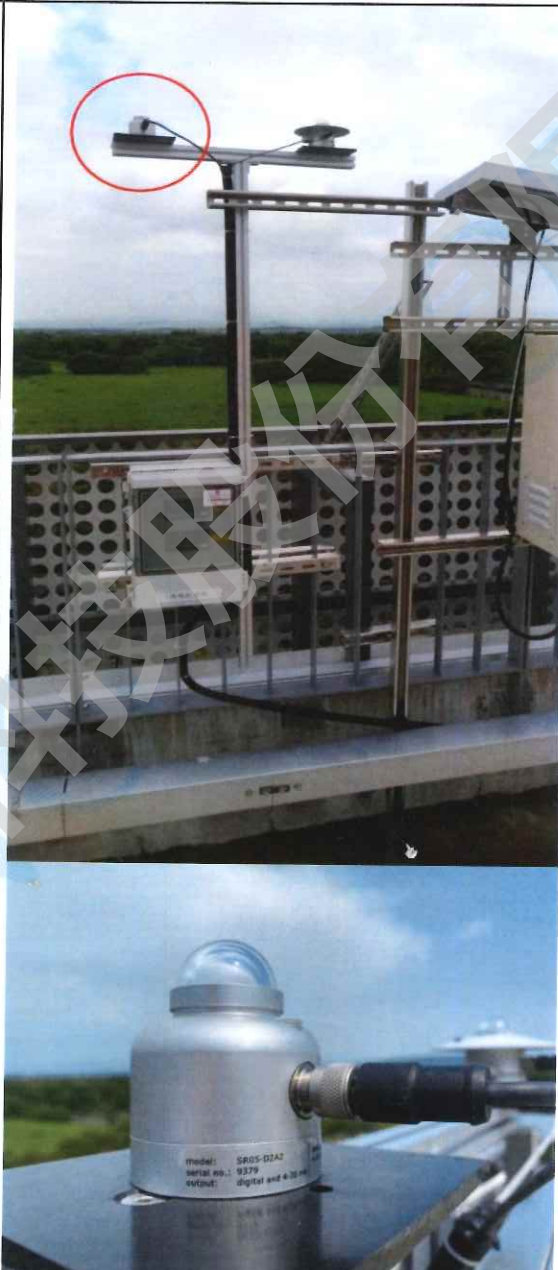


Table B	
Measured parameters	Global horizontal irradiance
Number of sensor	1 pcs
Manufacturer	Deltaohm
Mode/Serial No.	PYRA03AC/21013200
Sensor locations	

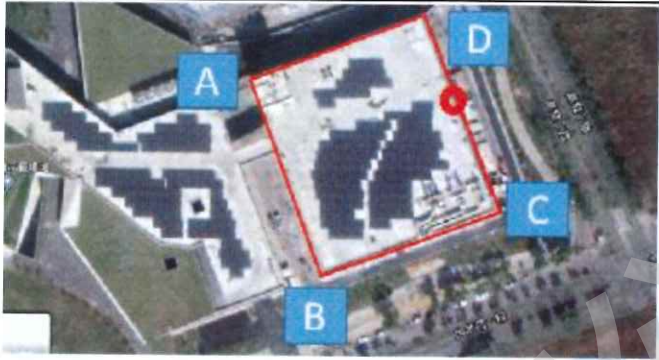


		
Pyranometer at the red circle		
Sensor maintenance	Recalibration	N/A
Sensor type	Classified	
☒ Thermopile pyranometers	☐ Class A	☐ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty $\leq 3\%$ for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty $\leq 8\%$ for hourly totals)
	☒ Class C	Any: <u>Second class pyranometer according to ISO 9060.</u>
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty $\leq 3\%$ from (100 ~1500) $W \cdot m^2$
	☐ Class B	Uncertainty $\leq 8\%$ from (100 ~1500) $W \cdot m^2$
	☐ Class C	Any: _____
☐ Photodiode sensors	☐ Class A	Not applicable: _____
	☐ Class B	Not applicable: _____
	☐ Class C	Any: _____



Table C	
Measured parameters	Global horizontal irradiance
Number of sensor	1 pcs
Manufacturer	Hukseflux
Model/Serial No.	SR05-D2A2/9379
Sensor locations	



		
	Pyranometer at the red circle	
Sensor maintenance	Recalibration	N/A
Sensor type	Classified	
☒ Thermopile pyranometers	☐ Class A	☐ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty $\leq 3\%$ for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty $\leq 8\%$ for hourly totals)
	☒ Class C	Any: <u>Second class pyranometer according to ISO 9060.</u>
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty $\leq 3\%$ from (100 ~1500) $W \cdot m^2$
	☐ Class B	Uncertainty $\leq 8\%$ from (100 ~1500) $W \cdot m^2$
	☐ Class C	Any: _____
☐ Photodiode sensors	☐ Class A	Not applicable: _____
	☐ Class B	Not applicable: _____
	☐ Class C	Any: _____



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4. Test result:

Date	Duration ^{Note 1}	Module no./SN		
		SR30-D1	LPPYRA03AC	SR05-D2A2
		6586	21013200	9379
2022/08/01 ^{Note 2}	05:42:33~18:30:39	3.83	3.43	3.82
2022/08/02	07:29:33~17:01:03	1.76	1.56	1.76
2022/08/03	05:54:18~17:20:12	3.56	3.31	3.52
2022/08/04	05:18:00~17:55:18	5.99	5.59	5.91
2022/08/05	05:22:30~18:18:06	6.28	5.88	6.26
2022/08/06	05:58:48~18:20:24	5.38	5.20	5.34
2022/08/07	05:51:54~17:26:27	3.83	3.43	3.80
2022/08/08	05:12:51~18:02:24	6.30	5.90	6.29
2022/08/09	05:32:51~16:00:21	4.03	3.63	4.00
2022/08/10	05:31:00~18:07:09	6.10	5.70	6.08
2022/08/11	00:00:00~00:00:00	5.14	4.74	5.14
2022/08/12	05:49:18~18:12:27	5.55	5.15	5.53
2022/08/13	05:40:00~18:20:51	5.99	5.88	5.89
2022/08/14	05:39:36~18:18:21	5.89	5.49	5.88
2022/08/15	06:00:00~17:16:21	3.24	2.84	3.20
2022/08/16	05:55:03~18:18:48	5.36	4.96	5.31
2022/08/17	06:23:12~18:01:45	4.91	4.51	4.89
2022/08/18	07:08:00~17:05:39	2.51	2.11	2.49
2022/08/19	05:52:03~18:13:00	7.40	7.23	7.38
2022/08/20	05:51:39~18:15:48	7.46	7.06	7.45
2022/08/21	05:52:33~18:13:51	6.97	6.61	6.98
2022/08/22	05:57:12~18:07:15	7.18	6.79	7.17
2022/08/23	06:02:57~18:01:03	6.69	6.30	6.67
2022/08/24	06:25:27~17:25:30	3.12	2.73	3.10
2022/08/25	05:55:39~18:08:42	7.28	7.00	7.28
2022/08/26	05:53:21~18:04:03	7.15	6.89	7.14
2022/08/27	06:04:00~17:59:24	6.55	6.16	6.54
2022/08/28	05:50:39~17:27:54	3.86	3.47	3.86
2022/08/29	05:43:09~18:13:33	5.70	5.31	5.68
2022/08/30	05:40:24~18:19:03	5.86	5.47	5.81
2022/08/31	05:50:27~18:11:51	5.18	4.79	5.10
2022/08/01~2022/08/31 Summing the irradiance		166.08 kWh/m ²	155.14 kWh/m ²	165.26 kWh/m ²
Deviation(Benchmark:SR30-D1)		N/A	6.58 %	0.49 %

Note 1: According to process data for irradiance and PV-generated power should be restricted to the daylight hours of each day (sunrise to sunset, irradiance $\geq 20 \text{ W/m}^2$) to avoid extraneous night-time data values that introduce errors in analyses, unless such errors have been



demonstrated to be negligible.

Note 2: Start to tset.

II. Descriptions:

1. Date and Location of Test

The test was performed at the site address in table2, ITRI during the period from August 01, 2022 to August 31, 2022.

2. Test Methods : According to the IEC 61724-1:2017.

III. References:

1. IEC 61724-1 : 2017, first edition, Photovoltaic system performance –Part 1: Monitoring.

