



Test Report

Date Issued : 2022-05-04

Report No. : 11055C01031-2-9-02

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.



Jaur Way

General Director
Green Energy & Environment Lab

Chao Yang Huang

Department Manager



Commission Information:

Sample name : Pyranometer

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

Duration of test : April 01 to April 30, 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

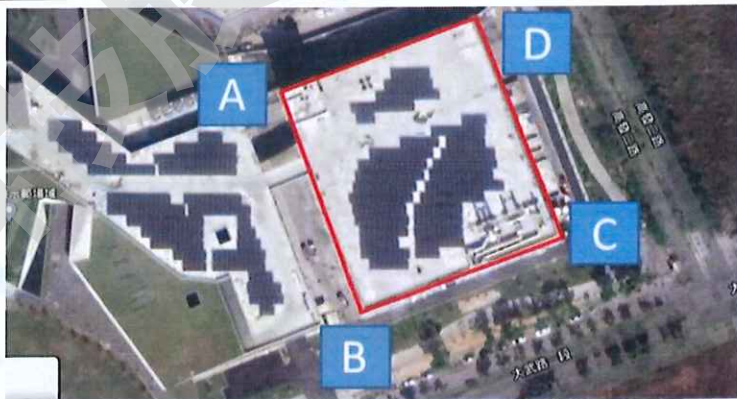


I. Test Results and Descriptions:

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	30 days (2022/04/01~2022/04/30)
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		
		
Sensor maintenance		
	Pyranometer at the red circle	
Sensor type	Recalibration	(1) Once per year (2) Report No.: 11107C00444-1-1-03
	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: _____



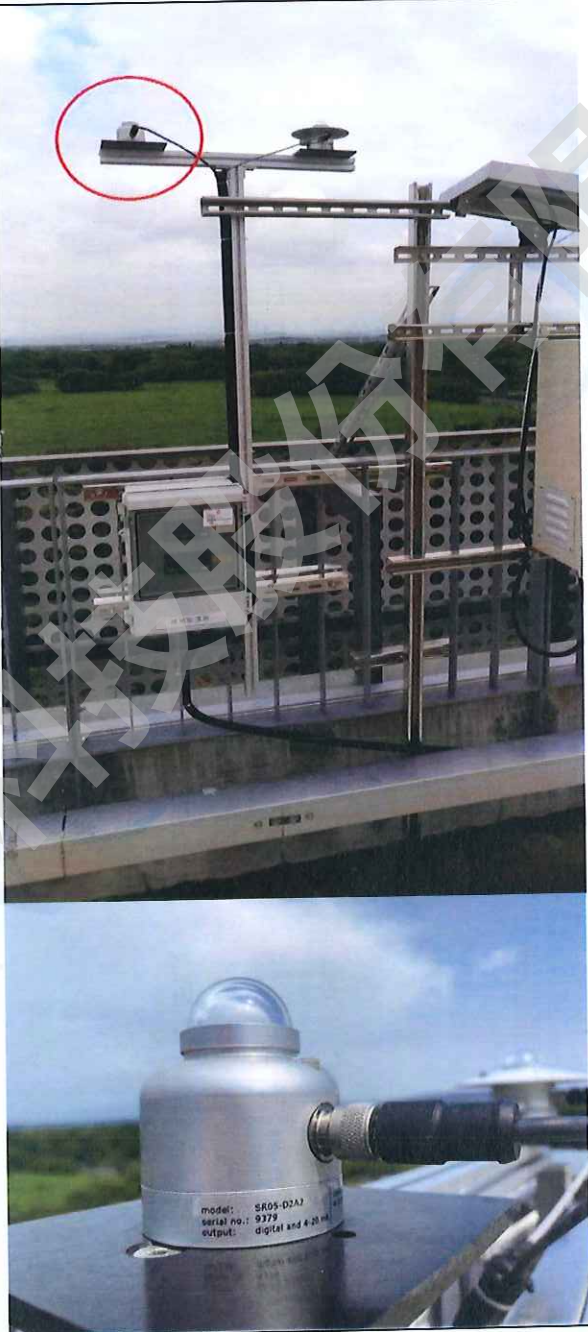


Table B	
Measured parameters	Global horizontal irradiance
Number of sensor	1 pcs
Manufacturer	Deltaohm
Mode/Serial No.	PYRA03AC/21013200
Sensor locations	



	 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
Mode/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: _____



4. Test result:

Date	Duration ^{Note 1}	Module no./SN		
		SR30-D1	LPPYRA03AC	SR05-D2A2
		6586	21013200	9379
2022/04/01 ^{Note 2}	06:24:45~17:13:39	3.35	3.18	3.31
2022/04/02	06:28:51~17:15:30	1.29	1.23	1.24
2022/04/03	06:49:33~17:49:00	2.06	1.97	2.00
2022/04/04	06:04:45~17:59:27	6.97	6.63	6.92
2022/04/05	06:03:15~18:02:09	7.37	7.10	7.42
2022/04/06	06:02:00~18:02:57	6.59	6.29	6.58
2022/04/07	06:11:48~17:49:42	6.19	5.96	6.19
2022/04/08	06:00:54~17:59:18	5.86	5.51	5.76
2022/04/09	05:59:12~17:49:45	6.90	6.61	6.94
2022/04/10	05:57:21~18:01:51	6.88	6.52	6.88
2022/04/11	06:02:00~17:51:39	4.68	4.42	4.63
2022/04/12	05:56:57~18:03:36	6.58	6.31	6.60
2022/04/13	05:56:57~18:03:30	6.13	5.90	6.18
2022/04/14	05:57:30~18:04:24	6.02	5.77	6.03
2022/04/15	06:02:42~18:03:00	7.03	6.79	7.06
2022/04/16	05:58:24~17:59:21	6.51	6.31	6.53
2022/04/17	06:43:21~17:57:36	5.58	5.39	5.56
2022/04/18	05:53:09~18:03:36	2.79	2.69	2.80
2022/04/19	05:54:54~17:56:57	3.11	2.97	3.07
2022/04/20	05:57:39~17:52:15	5.57	5.36	5.56
2022/04/21	05:46:51~18:06:21	6.42	6.21	6.33
2022/04/22	05:45:09~18:07:09	6.46	6.18	6.46
2022/04/23	05:47:33~18:05:42	3.16	2.97	3.11
2022/04/24	06:00:03~18:01:36	7.07	6.75	6.89
2022/04/25	05:49:39~18:05:00	7.68	7.34	7.71
2022/04/26	06:03:21~18:01:48	7.31	7.03	6.94
2022/04/27	06:01:45~18:03:03	7.42	7.12	7.36
2022/04/28	05:44:42~17:59:03	6.18	5.89	6.12
2022/04/29	06:01:54~18:00:27	7.03	6.88	6.91
2022/04/30	05:58:00~18:01:57	6.88	6.58	6.65
2022/04/01~2022/04/30 Summing the irradiance		173.06	165.86	171.74
Deviation(Benchmark:SR30-D1)		N/A	4.16%	0.76%

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.

