



Test Report

Date Issued : 2022-03-14

Report No. : 11055C01031-2-7-02

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 : February 01 to February 28, 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



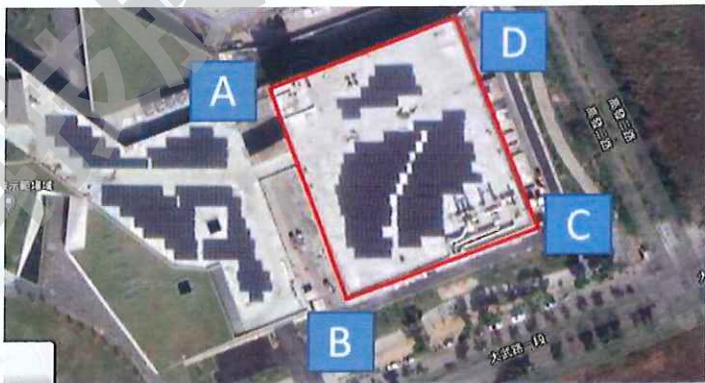


I. Test Results and Descriptions:

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 28 days (2022/02/01~2022/02/28)
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	Recalibration	(1) Once per year (2) Report No.: 11107C00444-1-1-03
Sensor type	Classified	



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



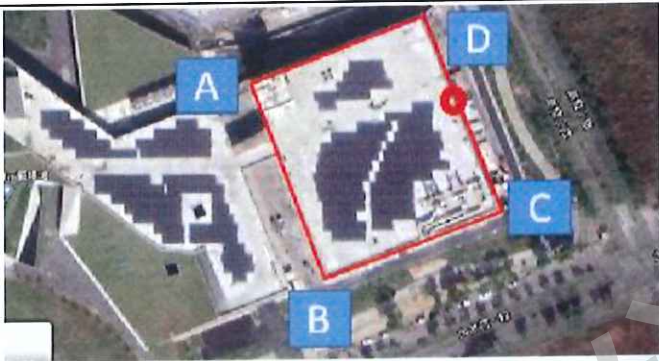
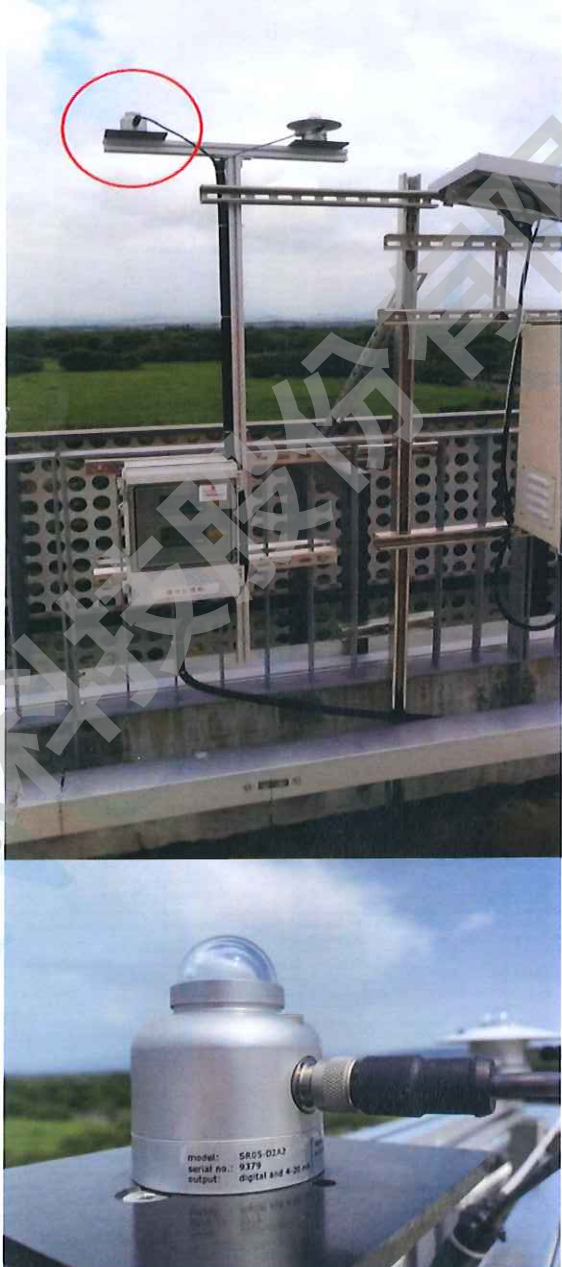
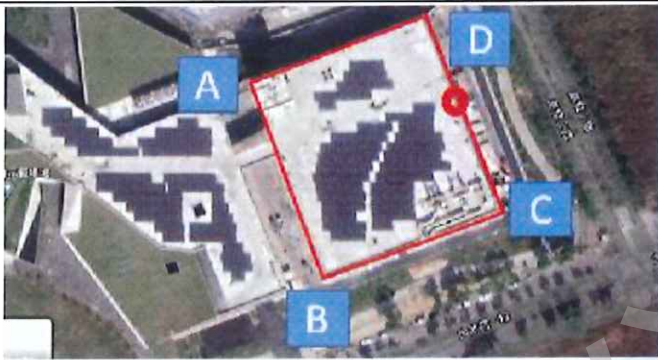
		
	Pyranometer at the red circle	
Sensor maintenance	Recalibration	N/A
Sensor type	Classified	
☒ Thermopile pyranometers	☐ Class A	☐ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty $\leq 3\%$ for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO 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: _____



4. Test result:

Date	Duration ^{Note 1}	Module no./SN		
		SR30-D1	LPPYRA03AC	SR05-D2A2
		6586	21013200	9379
2022/02/01 ^{Note 2}	07:00:48~17:30:03	3.94	3.83	3.92
2022/02/02	07:00:15~17:30:06	4.92	4.78	4.90
2022/02/03	07:03:21~17:25:42	3.28	3.19	3.25
2022/02/04	07:04:12~17:36:45	4.90	4.80	4.92
2022/02/05	06:57:24~17:30:21	4.71	4.60	4.67
2022/02/06	06:47:33~17:37:00	4.68	5.14	5.30
2022/02/07	07:13:24~17:26:27	3.20	3.10	3.17
2022/02/08	06:59:24~17:33:37	4.70	4.57	4.69
2022/02/09	07:20:00~17:37:42	5.10	4.97	5.13
2022/02/10	06:58:51~17:31:03	4.92	4.81	4.89
2022/02/11	07:24:36~17:45:15	4.42	4.31	4.32
2022/02/12	07:00:21~17:39:54	5.11	5.03	5.12
2022/02/13	07:19:36~17:28:48	3.98	3.80	3.70
2022/02/14	07:18:42~17:23:03	2.59	2.50	2.56
2022/02/15	07:13:18~17:26:33	2.69	2.60	2.66
2022/02/16	06:49:39~17:38:12	5.18	5.55	5.21
2022/02/17	07:32:33~17:28:51	1.93	1.86	1.86
2022/02/18	07:35:18~17:42:57	4.30	4.16	4.28
2022/02/19	06:58:45~16:52:03	3.46	3.37	3.39
2022/02/20	07:56:09~16:02:00	0.55	0.54	0.52
2022/02/21	07:41:00~17:19:51	0.81	0.77	0.75
2022/02/22	07:02:03~16:52:00	2.13	2.06	2.04
2022/02/23	07:40:42~17:09:57	0.98	0.95	0.93
2022/02/24	07:11:12~17:23:48	3.22	3.13	3.14
2022/02/25	06:39:39~17:45:48	5.87	5.69	5.59
2022/02/26	06:48:36~17:42:18	6.01	5.85	5.85
2022/02/27	06:47:18~17:48:48	5.73	5.58	5.61
2022/02/28	06:35:51~17:49:21	6.26	6.02	6.15
2022/02/01~2022/02/28 Summing the irradiance		109.57	107.57	108.51
Deviation(Benchmark:SR30-D1)		N/A	1.83%	0.97%

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 February 01, 2022 to February 28, 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.

