工業技術研究院
Industrial Technology
Research Institute

Test Report

Date Issued：2022-02-11
Report No .：11055C01031-2-5-02
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 10 pages. The validity of this report no longer exists if signature page and content are separated.

Industrial Technology Research Institute Measurement Service Report Industrial Technology Research Institute

Chao Yang Huang

Vice President and General Director
Green Energy and Environment
Research Laboratories

Department Manager

Commission Information:

Sample name：Pyranometer
Brand name、Model no.、Serial no.：Refer to table 1
Duration of test：August 10 to December 31, 2021

Laboratory Information:

Lab. name: Photovoltaics System Testing Laboratory
Address of Lab.: Rm. 415, BF., No. 360, Gaofa 2nd Rd., Guiren Dist., Tainan City 711, Taiwan (R.O.C.)
Tel: +886-6-3636861
Fax: +886-6-3032029

宋洪義

Approval Signatory

宋洪義

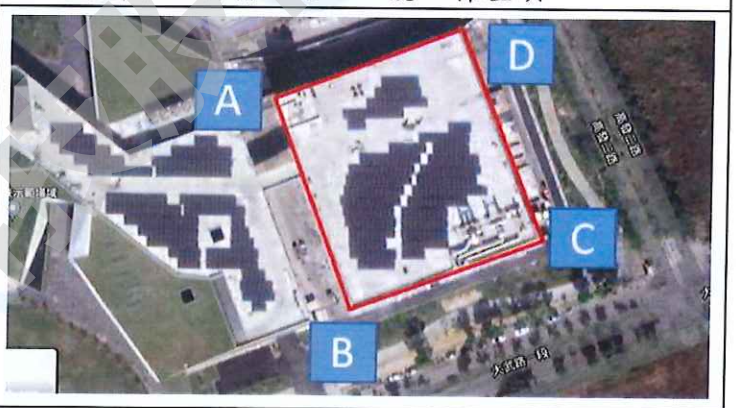
Testing Lab. Head

I. Test Results and Descriptions:

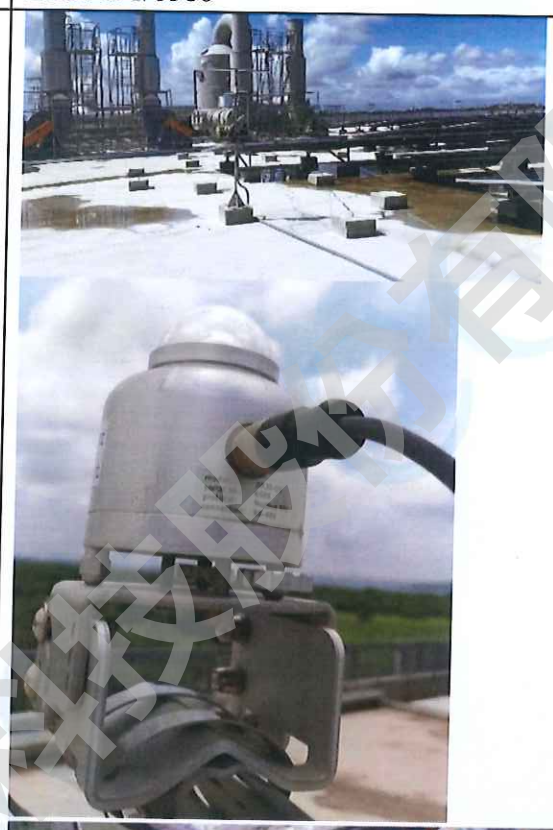
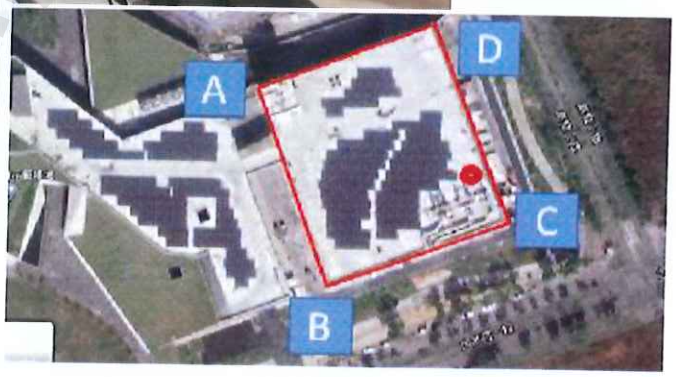
1. Information of pyranometer

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

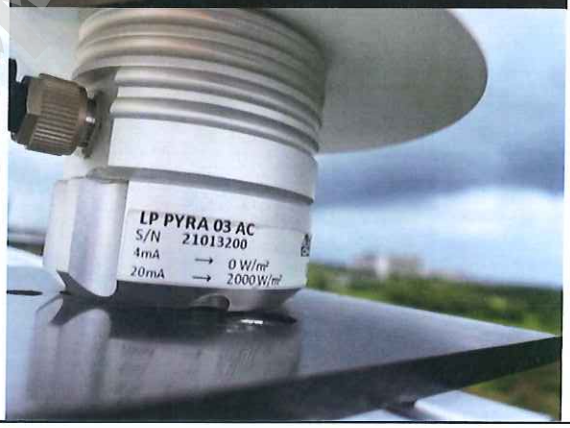
2. Documentation:

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	2021/08/10~2021/12/31
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.: N/A
Sensor type	Classified	

■ Thermopile pyranometers	■ Class A	■ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	☐ Class C	Any:_____
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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	 

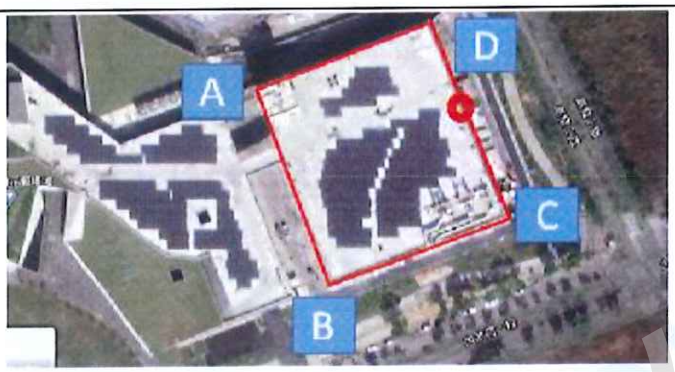
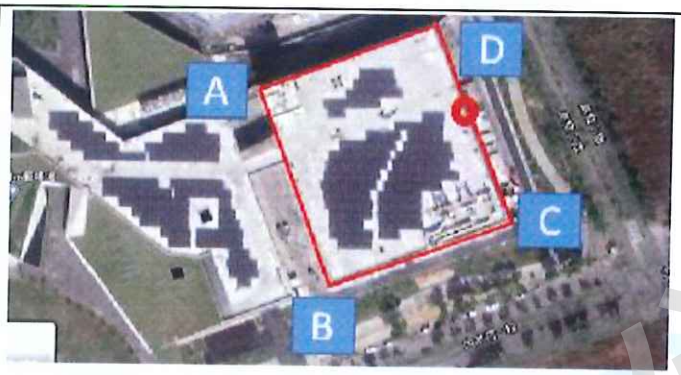
	 Pyranometer at the red circle	
Sensor maintenance	Recalibration	N/A
Sensor type	Classified	
■ Thermopile pyranometers	☐ Class A	☐ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide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

4. Test result:

Date(summation the irradiance in the reporting period)	Summing the irradiance (kWh/m^2)		
	Model:SR30-D1	Model:LPPYRA03AC	Model:SR05-D2A2
	SN:6586	SN:21013200	SN:9379
2021/08/10~2021/08/28	70.19	66.85	70.13
2021/09/03~2021/09/30	145.22	138.58	145.12
2021/11/04~2021/11/30	103.73	100.46	103.68
2021/12/01~2021/12/31	113.36	108.57	111.10
2021/08/10~2021/12/31	432.50	414.46	430.03
Deviation (Benchmark:SR30-D1)	N/A	3.1%	1.6%

Note:
(1) The power system of the test site will be repaired during the period from October 01, 2021 to October 31, 2021.
(2) 2021/08/10~2021/08/28 Testing report NO. : 11055C01031-2-1-02-RPT-1
(3) 2021/09/03~2021/09/30 Testing report NO.: 11055C01031-2-2-02-RPT-1
(4) 2021/11/04~2021/11/30 Testing report NO.: 11055C01031-2-3-02-RPT-1
(5) 2021/12/01~2021/12/31 Testing report NO.: 11055C01031-2-4-02-RPT-1

II. Descriptions:

1. Date and Location of Test

The test was performed at the site address in table2, ITRI during the period from August 10, 2021 to December 31, 2021.

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.

工業技術研究院
Industrial Technology
Research Institute

Test Report

Date Issued：2022-02-11
Report No .：11055C01031-2-6-02
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

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Industrial Technology Research Institute Measurement Service Report Industrial Technology Research Institute

Chao Yang Huang

Vice President and General Director
Green Energy and Environment
Research Laboratories

Department Manager

Commission Information:

Sample name：Pyranometer
Brand name、Model no.、Serial no.：Refer to table 1
Duration of test：January 01 to January 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, Taiwan (R.O.C.)
Tel: +886-6-3636861
Fax: +886-6-3032029

宋洪義

Approval Signatory

宋洪義

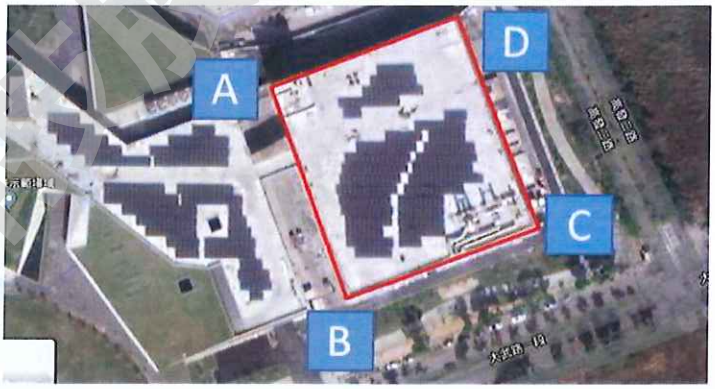
Testing Lab. Head

I. Test Results and Descriptions:

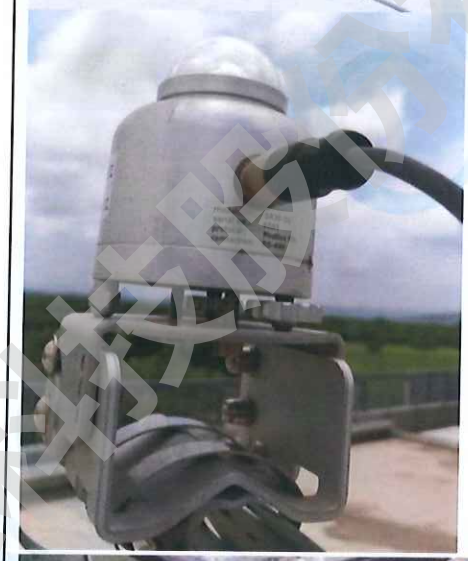
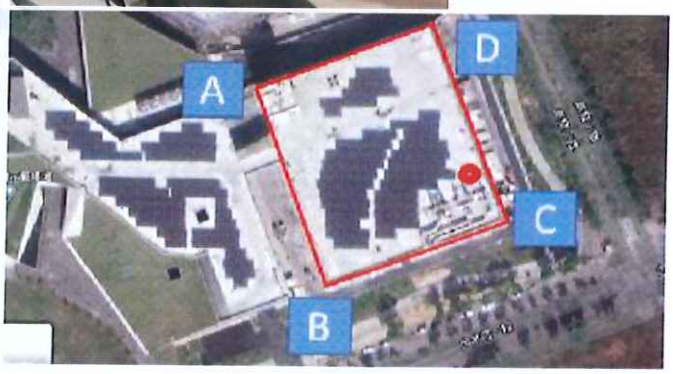
1. Information of pyranometer

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:

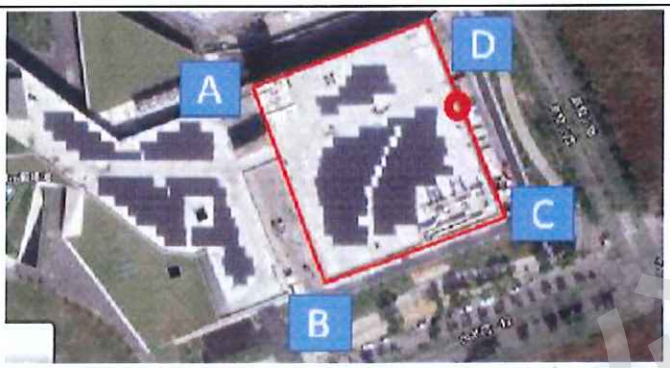
Table 2		
Customer information	日灝能源科技股份有限公司	
Test site address	Roof of Building C, No. 360, Gaofa 2nd Rd., Guiren Dist., Tainan City 郵遞區號 , Taiwan (R.O.C.) 台南市歸仁區高發二路 360 號 C 棟屋頂	
Site information		
Latitude，Longitude	A(22°55'15.4"N 120°17'29.6"E) B(22°55'13.0"N 120°17'30.6"E) C(22°55'13.8"N 120°17'32.8"E) 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 (2022/01/01~2022/01/31)
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.: N/A
Sensor type	Classified	

■ Thermopile pyranometers	■ Class A	■ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	☐ Class C	Any:_____
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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 ≤ 3 % for hourly totals)
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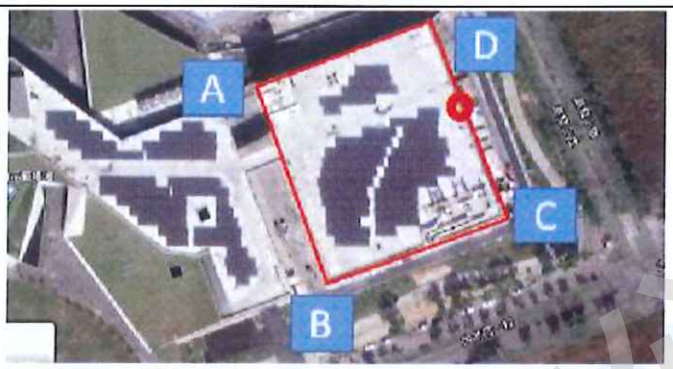
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·m^2
	☐ Class C	Any:_____
☐ Photodiode sensors	☐ Class A	Not applicable:_____
	☐ Class B	Not applicable:_____
	☐ 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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
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	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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
2022/01/01[Note 2]	06:59:21~17:08:12	4.83	4.68	4.76
2022/01/02	06:57:00~17:08:00	4.69	4.56	4.64
2022/01/03	06:56:15~17:09:06	4.66	4.49	4.58
2022/01/04	07:04:06~17:01:00	3.77	3.65	3.71
2022/01/05	07:18:30~16:51:45	2.86	2.76	2.81
2022/01/06	07:21:27~16:49:36	3.06	2.95	2.99
2022/01/07	07:08:12~17:02:45	4.29	4.18	4.23
20220/1/08	07:04:21~17:17:48	4.40	4.26	4.35
2022/01/09	07:00:48~17:19:12	4.59	4.42	4.53
2022/01/10	06:56:33~17:21:15	4.50	4.35	4.45
2022/01/11	07:16:12~18:06:27	3.11	3.21	3.06
2022/01/12	07:09:21~17:23:15	1.98	1.92	1.96
2022/01/13	06:53:09~17:11:48	4.52	4.39	4.48
2022/01/14	06:54:27~17:16:03	4.50	4.33	4.43
2022/01/15	06:57:06~17:21:00	4.61	4.44	4.58
2022/01/16	06:56:57~17:09:51	4.51	4.37	4.47
2022/01/17	06:54:51~16:50:06	3.92	3.79	3.86
2022/01/18	07:15:06~17:20:51	1.79	1.72	1.74
2022/01/19	07:07:42~17:23:24	3.82	3.73	3.81
2022/01/20	07:01:33~17:18:03	3.97	3.81	3.89
2022/01/21	06:56:57~17:20:03	3.45	3.32	3.40
2022/01/22	07:55:39~16:36:15	1.71	1.65	1.68
2022/01/23	07:00:42~16:57:15	3.23	3.11	3.21
2022/01/24	07:32:54~17:17:45	2.56	2.50	2.55
2022/01/25	06:58:39~17:27:27	4.33	4.20	4.33
2022/01/26	06:56:24~17:27:27	4.62	4.45	4.61
2022/01/27	07:25:12~17:24:33	4.35	4.22	4.35
2022/01/28	07:00:24~16:13:51	1.87	1.79	1.81
2022/01/29	07:48:36~17:24:03	1.26	1.22	1.22
2022/01/30	07:06:03~17:03:15	1.88	1.78	1.83
2022/01/31	07:06:27~17:08:39	4.28	4.20	4.25
2022/01/01~2022/01/31 Summing the irradiance		111.93	108.42	110.59
Deviation(Benchmark:SR30-D1)		N/A	3.14%	1.20%

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 ≥ 20 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 January 01, 2022 to January 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.

工業技術研究院
Industrial Technology Research Institute

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

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Industrial Technology Research Institute Measurement Service Report Industrial Technology Research Institute

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：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, Taiwan (R.O.C.)
Tel: +886-6-3636861
Fax: +886-6-3032029

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:

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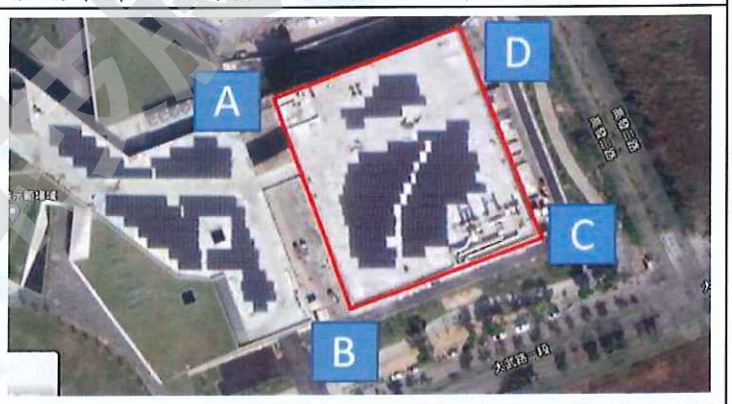
Customer information	日灝能源科技股份有限公司	
Test site address	Roof of Building C, No. 360, Gaofa 2nd Rd., Guiren Dist., Tainan City 郵遞區號 , Taiwan (R.O.C.) 台南市歸仁區高發二路 360 號 C 棟屋頂	
Site information		
Latitude，Longitude	A(22°55'15.4"N 120°17'29.6"E) B(22°55'13.0"N 120°17'30.6"E) C(22°55'13.8"N 120°17'32.8"E) D(22°55'16.1"N 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:

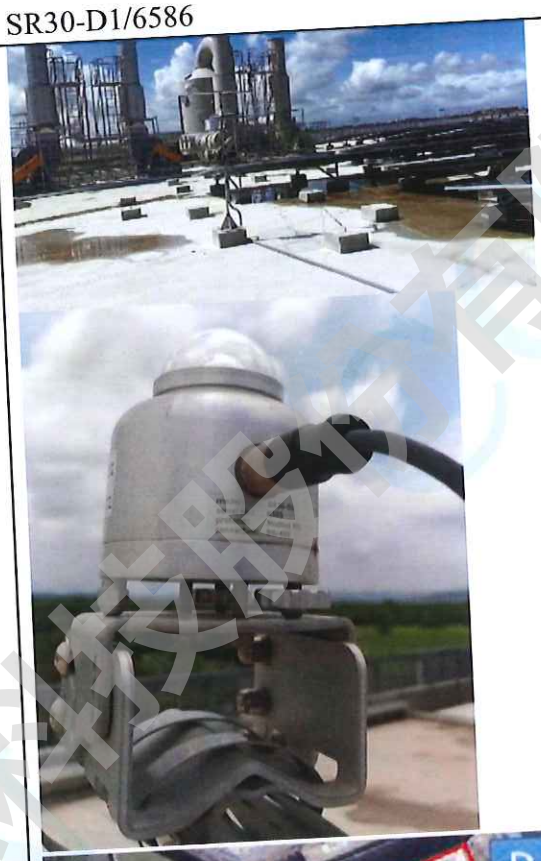
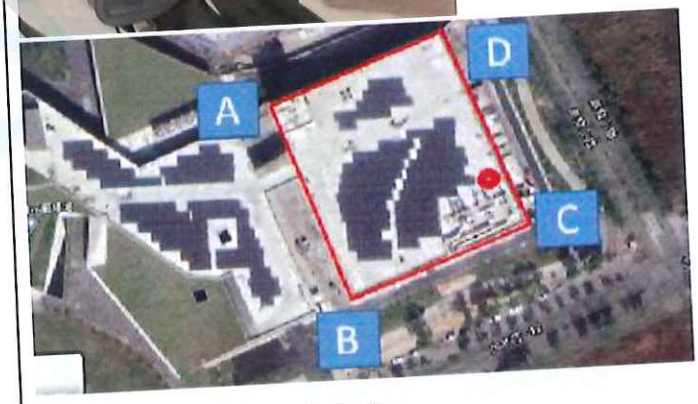
Table A		
Measured parameters	Global horizontal irradiance	
Number of sensor	1 pcs	
Manufacturer	Hukseflux	
Mode/Serial No.	SR30-D1/6586	
Sensor locations	  Pyranometer at the red circle	
Sensor maintenance	Recalibration	(1) Once per year (2) Report No.: 11107C00444-1-1-03
Sensor type	Classified	

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

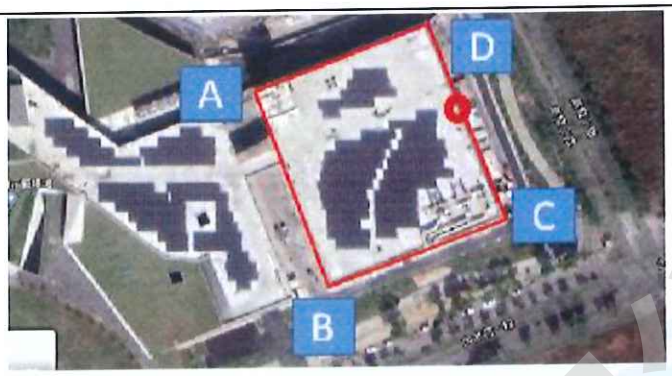
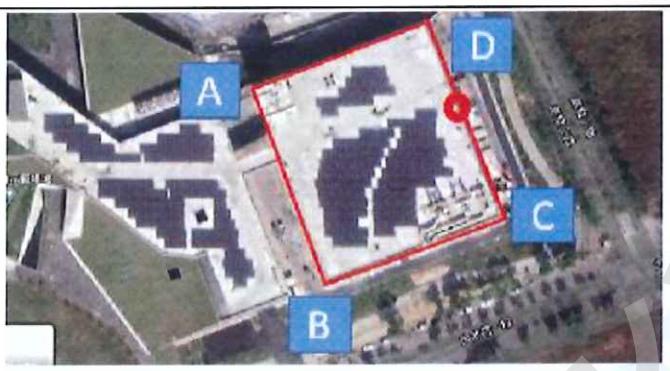
	 Pyranometer at the red circle	
Sensor maintenance	Recalibration	N/A
Sensor type	Classified	
■ Thermopile pyranometers	☐ Class A	☐ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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 ≥ 20 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.

工業技術研究院
Industrial Technology Research Institute

Test Report

Date Issued：2022-04-12
Report No .：11055C01031-2-8-02
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.

Industrial Technology Research Institute Measurement Service Report Industrial Technology Research Institute

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：March 01 to March 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, Taiwan (R.O.C.)
Tel: +886-6-3636861
Fax: +886-6-3032029

宋洪義

Approval Signatory

宋洪義

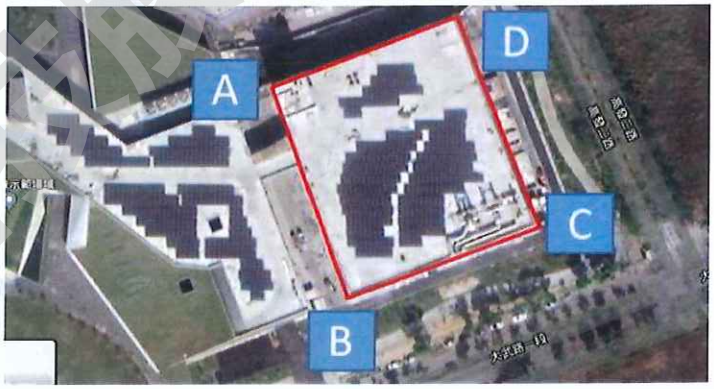
Testing Lab. Head

I. Test Results and Descriptions:

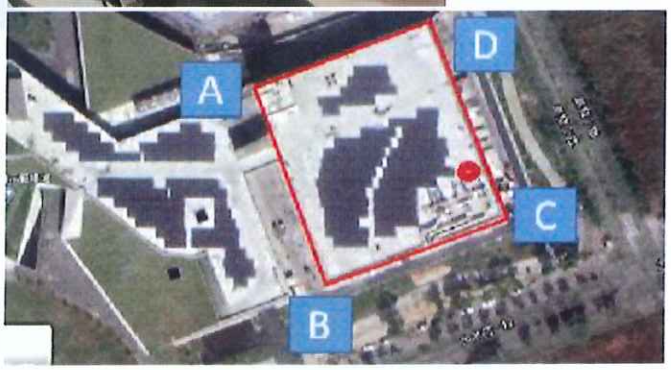
1. Information of pyranometer

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 (2022/03/01~2022/03/31)
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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	☐ Class C	Any:_____
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) $W \cdot m^2$
	☐ Class B	Uncertainty ≤ 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 B	
Measured parameters	Global horizontal irradiance
Number of sensor	1 pcs
Manufacturer	Deltaohm
Mode/Serial No.	PYRA03AC/21013200
Sensor locations	 

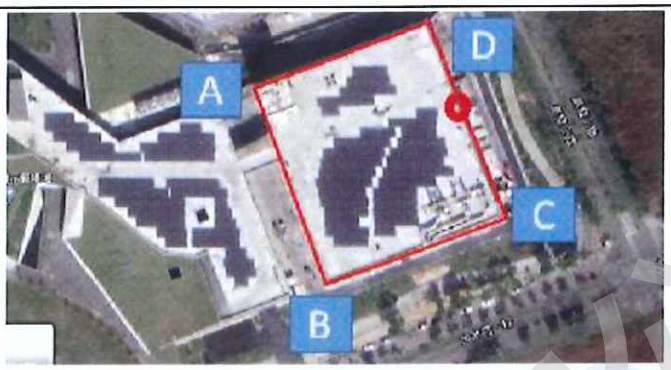
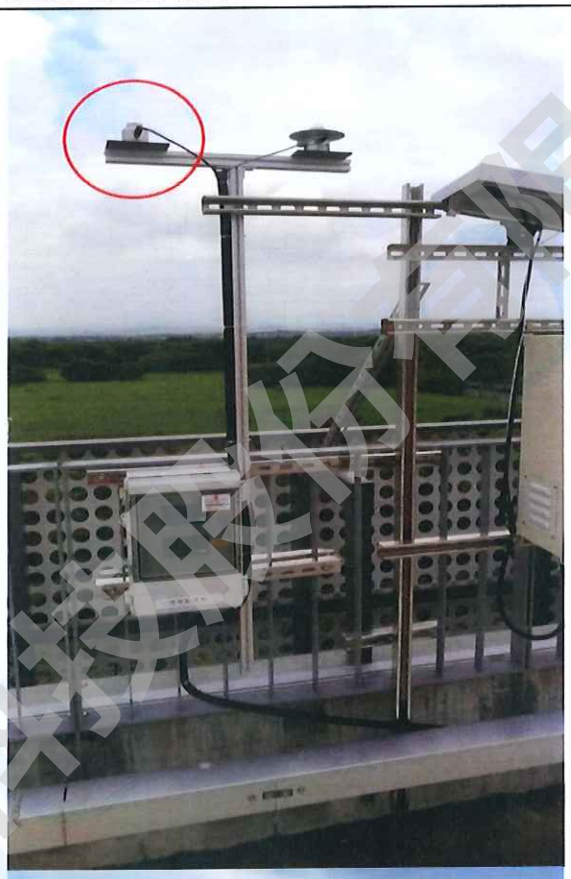
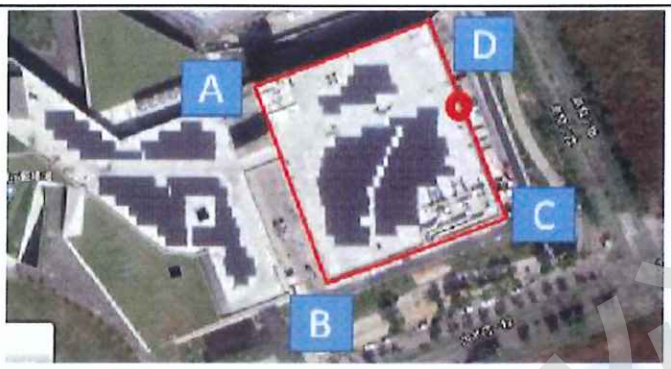
	 Pyranometer at the red circle	
Sensor maintenance	Recalibration	N/A
Sensor type	Classified	
■ Thermopile pyranometers	☐ Class A	☐ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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
2022/03/01[Note 2]	07:00:48~17:30:03	5.96	5.71	5.90
2022/03/02	06:37:00~17:42:54	6.10	5.87	6.09
2022/03/03	06:46:12~17:40:24	5.79	5.50	5.76
2022/03/04	06:40:39~17:43:48	5.85	5.56	5.83
2022/03/05	06:45:09~17:35:15	5.36	5.09	5.35
2022/03/06	06:43:36~17:38:39	5.41	5.14	5.40
2022/03/07	07:03:51~17:06:27	1.40	1.33	1.36
2022/03/08	06:29:42~17:45:00	6.76	6.42	6.75
2022/03/09	06:28:30~17:44:27	6.67	6.34	6.68
2022/03/10	06:31:33~17:39:39	6.43	6.11	6.40
2022/03/11	06:26:51~17:42:27	6.56	6.23	6.53
2022/03/12	06:30:39~17:38:06	6.39	6.07	6.37
2022/03/13	06:29:48~17:37:03	6.33	6.01	6.34
2022/03/14	06:44:45~17:37:48	5.52	5.24	5.53
2022/03/15	06:36:21~17:42:24	6.11	5.80	6.12
2022/03/16	06:42:09~17:37:42	5.43	5.16	5.41
2022/03/17	07:29:21~17:46:24	3.10	2.95	3.08
2022/03/18	06:36:27~17:53:15	5.59	5.31	5.56
2022/03/19	06:32:15~17:07:18	4.36	4.17	4.33
2022/03/20	06:20:36~17:42:12	4.11	3.92	4.07
2022/03/21	07:18:24~17:48:03	3.64	3.51	3.64
2022/03/22	06:25:18~17:55:09	5.92	5.62	5.86
2022/03/23	07:02:57~17:07:09	1.07	1.02	1.04
2022/03/24	06:23:39~17:28:03	2.27	2.02	2.22
2022/03/25	06:25:00~18:00:48	6.21	5.45	6.23
2022/03/26	06:20:36~17:59:00	4.85	4.34	4.82
2022/03/27	06:15:48~17:34:36	2.84	2.60	2.80
2022/03/28	06:20:24~16:57:33	2.54	2.35	2.50
2022/03/29	06:12:48~18:04:18	5.29	4.87	5.26
2022/03/30	06:17:33~17:45:15	4.21	4.00	4.18
2022/03/31	06:27:27~17:44:51	6.53	6.20	6.54
2022/03/01~2022/03/31 Summing the irradiance		154.58	145.93	153.95
Deviation(Benchmark:SR30-D1)		N/A	5.60%	0.41%

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 ≥ 20 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 March 01, 2022 to March 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.

工業技術研究院
Industrial Technology Research Institute

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.

Industrial Technology Research Institute Measurement Service Report Industrial Technology Research Institute

General Director
Green Energy & Environment Lab

Chao Yang Huang

Department Manager

工業技術研究院
Industrial Technology
Research Institute

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, Taiwan (R.O.C.)
Tel: +886-6-3636861
Fax: +886-6-3032029

宋洪義

Approval Signatory

宋洪義

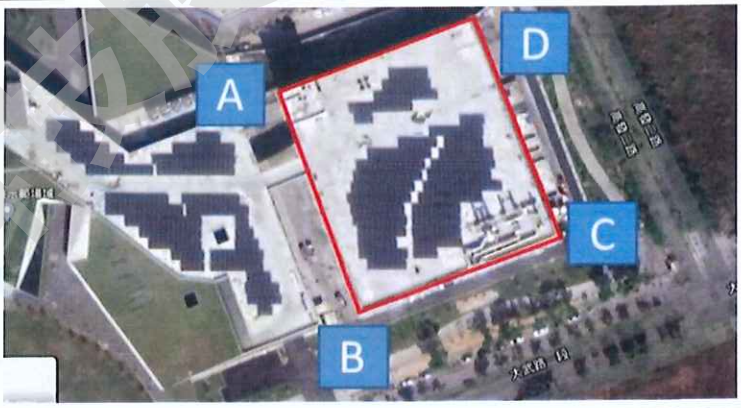
Testing Lab. Head

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	   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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	☐ Class C	Any:_____
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·m^2
	☐ Class C	Any:_____
☐ Photodiode sensors	☐ Class A	Not applicable:_____
	☐ Class B	Not applicable:_____
	☐ Class C	Any:_____

工業技術研究院
Industrial Technology
Research Institute

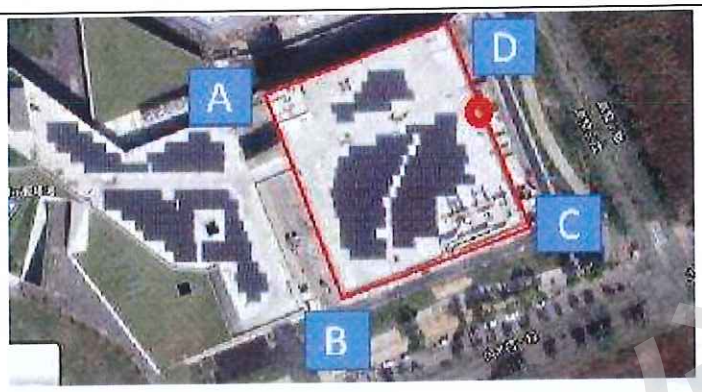
Table B	
Measured parameters	Global horizontal irradiance
Number of sensor	1 pcs
Manufacturer	Deltaohm
Mode/Serial No.	PYRA03AC/21013200
Sensor locations	 

	 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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W ·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W ·m^2
	☐ Class C	Any:_____
☐ Photodiode sensors	☐ Class A	Not applicable:_____
	☐ Class B	Not applicable:_____
	☐ Class C	Any:_____

工業技術研究院
Industrial Technology
Research Institute

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

工業技術研究院
Industrial Technology Research Institute

	 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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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 ≥ 20 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 April 01, 2022 to April 30, 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.

工業技術研究院
Industrial Technology Research Institute

Test Report

Date Issued：2022-06-20
Report No .：11055C01031-2-11-02
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.

Industrial Technology Research Institute Measurement Service Report Industrial Technology Research Institute

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：May 01 to May 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, Taiwan (R.O.C.)
Tel: +886-6-3636861
Fax: +886-6-3032029

宋洪義

Approval Signatory

宋洪義

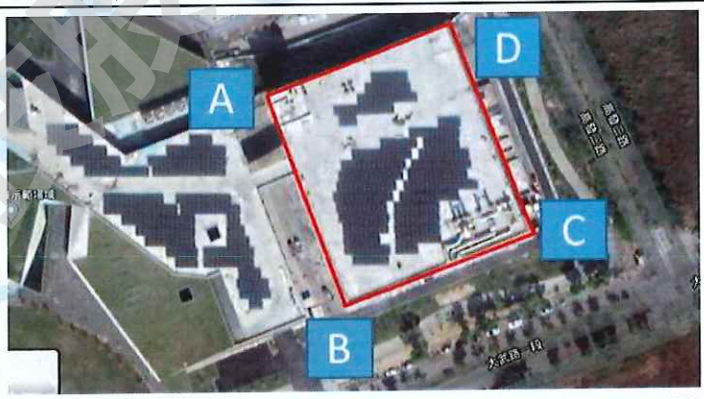
Testing Lab. Head

I. Test Results and Descriptions:

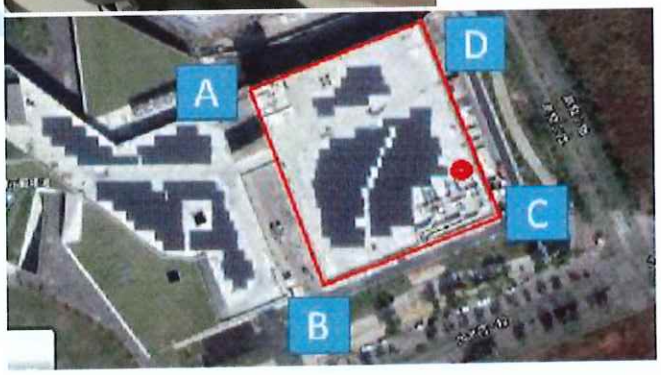
1. Information of pyranometer

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	31days (2022/05/01~2022/05/31)
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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	☐ Class C	Any:_____
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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	 

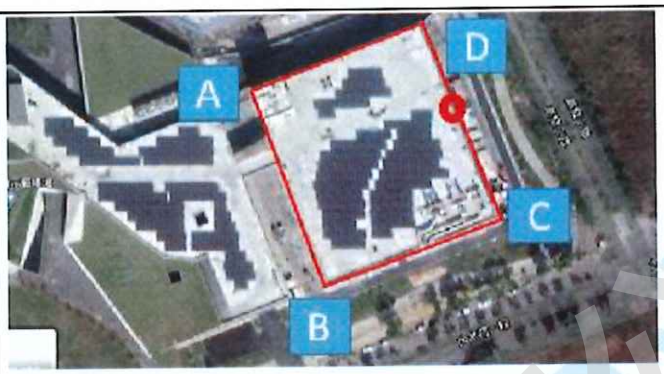
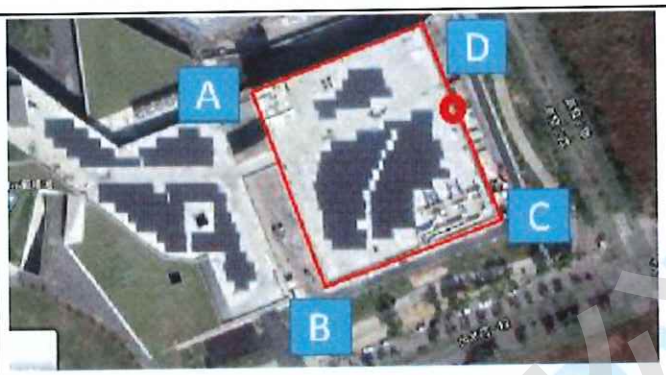
	 Pyranometer at the red circle	
Sensor maintenance	Recalibration	N/A
Sensor type	Classified	
■ Thermopile pyranometers	☐ Class A	☐ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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
2022/05/01[Note 2]	05:39:18~17:59:24	3.22	3.07	3.18
2022/05/02	06:31:15~17:35:21	1.08	1.04	1.06
2022/05/03	06:09:51~17:47:21	2.52	2.37	2.46
2022/05/04	05:54:27~18:05:51	6.77	6.42	6.71
2022/05/05	06:05:03~18:12:33	6.59	6.28	6.55
2022/05/06	05:56:09~18:04:39	6.09	5.81	6.05
2022/05/07	05:39:51~18:01:27	5.60	5.32	5.55
2022/05/08	05:48:51~18:11:21	4.70	4.46	4.64
2022/05/09	05:58:18~18:02:36	5.00	4.73	4.97
2022/05/10	05:40:42~17:47:09	6.43	6.12	6.39
2022/05/11	05:55:06~17:59:09	2.81	2.66	2.78
2022/05/12	05:46:15~17:43:00	2.18	2.07	2.15
2022/05/13	05:46:54~17:59:21	3.58	3.40	3.54
2022/05/14	07:06:54~17:20:12	0.88	0.85	0.88
2022/05/15	05:48:33~16:47:24	1.96	1.88	1.93
2022/05/16	06:00:18~17:11:36	1.48	1.44	1.45
2022/05/17	05:48:54~18:18:42	4.61	4.43	4.57
2022/05/18	05:52:27~18:06:00	5.87	5.59	5.83
2022/05/19	05:49:36~18:14:33	6.57	6.27	6.55
2022/05/20	05:34:21~18:11:36	6.99	6.69	7.00
2022/05/21	05:34:48~18:09:27	6.46	6.17	6.45
2022/05/22	05:44:54~18:22:03	4.81	4.56	4.76
2022/05/23	05:32:48~18:06:09	4.23	4.00	4.19
2022/05/24	05:33:45~18:15:39	2.33	2.23	2.32
2022/05/25	06:06:33~18:02:51	4.17	3.94	4.12
2022/05/26	05:24:03~18:05:48	3.24	3.09	3.21
2022/05/27	06:12:51~18:05:12	2.80	2.65	2.77
2022/05/28	05:29:24~18:27:30	7.39	7.06	7.38
2022/05/29	05:30:24~18:23:24	7.34	6.99	7.31
2022/05/30	05:33:15~18:25:24	5.94	5.66	5.93
2022/05/31	05:33:03~18:24:33	7.16	6.83	7.16
2022/05/01~2022/05/31 Summing the irradiance		140.81 kWh/m^2	134.06 kWh/m^2	139.85 kWh/m^2
Deviation(Benchmark:SR30-D1)		N/A	4.79 %	0.68 %

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 ≥ 20 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 May 01, 2022 to May 30, 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.

工業技術研究院
Industrial Technology Research Institute

Test Report

Date Issued：2022-07-05
Report No .：11055C01031-2-12-02
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.

Industrial Technology Research Institute Measurement Service Report Industrial Technology Research Institute

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：June 01 to June 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, Taiwan (R.O.C.)
Tel: +886-6-3636861
Fax: +886-6-3032029

宋洪義

Approval Signatory

宋洪義

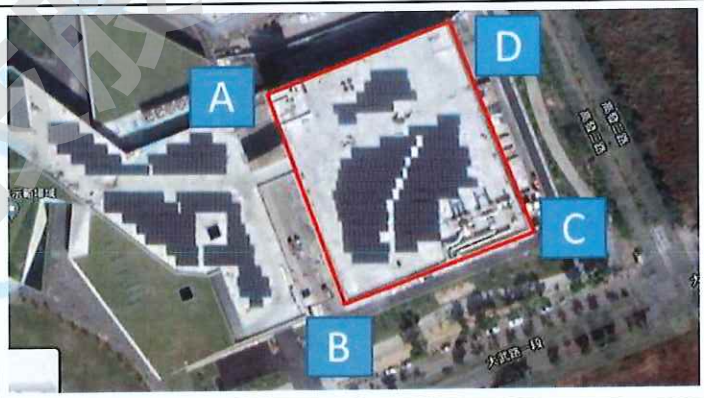
Testing Lab. Head

I. Test Results and Descriptions:

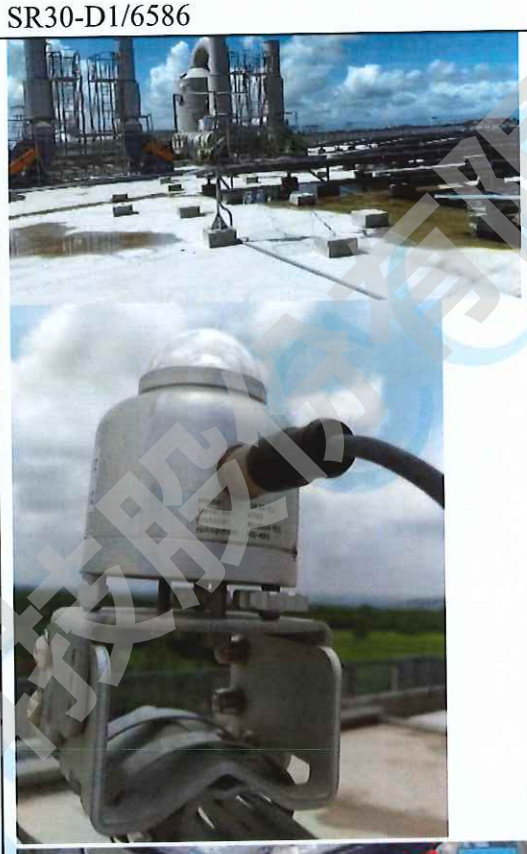
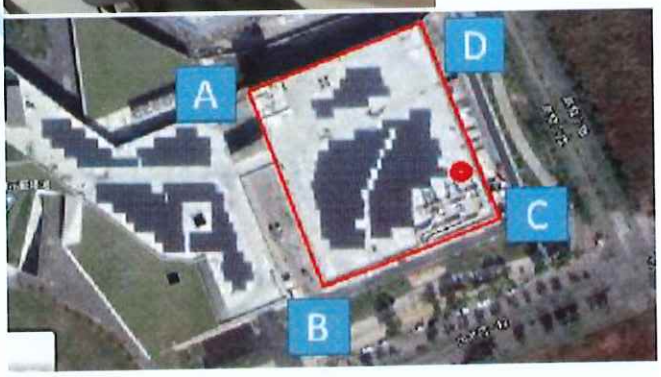
1. Information of pyranometer

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	30days (2022/06/01~2022/06/30)
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	  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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	☐ Class C	Any:_____
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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	 

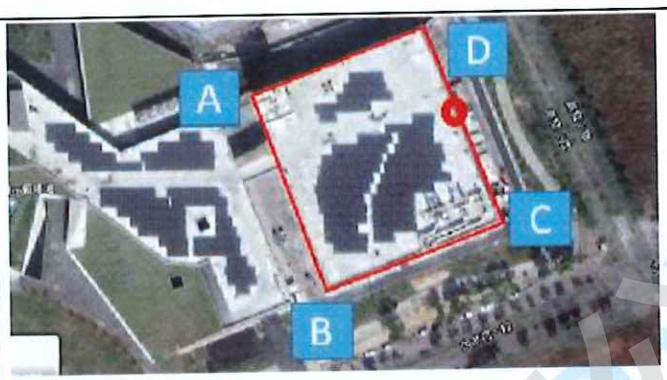
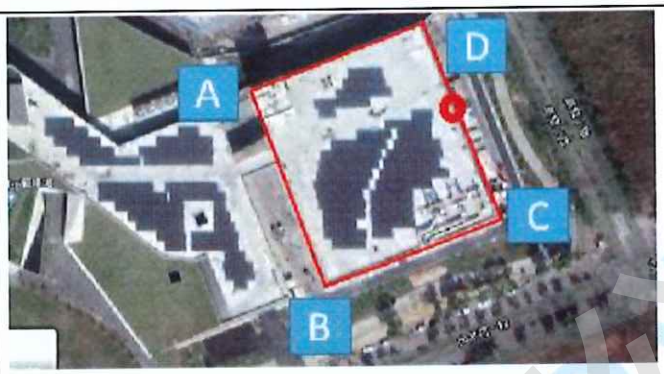
	 Pyranometer at the red circle	
Sensor maintenance	Recalibration	N/A
Sensor type	Classified	
■ Thermopile pyranometers	☐ Class A	☐ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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
2022/06/01[Note 2]	05:28:51~18:24:33	7.83	7.45	7.81
2022/06/02	05:31:06~18:24:36	7.42	7.11	7.42
2022/06/03	05:31:27~18:19:24	7.88	7.55	7.89
2022/06/04	05:31:51~17:06:24	5.03	4.81	5.02
2022/06/05	05:31:45~18:18:15	6.42	6.15	6.43
2022/06/06	05:38:18~18:19:39	5.29	4.99	5.25
2022/06/07	06:22:27~17:54:42	2.29	2.17	2.28
2022/06/08	05:44:09~17:39:21	2.90	2.75	2.87
2022/06/09	06:07:39~17:57:54	3.74	3.57	3.70
2022/06/10	05:31:45~18:29:30	3.52	3.35	3.50
2022/06/11	05:31:27~17:42:42	3.63	3.44	3.59
2022/06/12	05:50:12~18:24:03	6.90	6.54	6.87
2022/06/13	05:26:12~18:28:57	6.92	6.49	6.85
2022/06/14	05:31:57~18:29:54	5.62	5.30	5.58
2022/06/15	05:29:03~18:32:06	6.47	6.12	6.45
2022/06/16	05:27:51~18:25:54	6.91	6.52	6.88
2022/06/17	05:31:12~18:51:51	7.13	6.71	7.07
2022/06/18	05:31:27~18:19:24	7.78	7.45	7.83
2022/06/19	05:32:45~18:26:06	7.75	7.34	7.75
2022/06/20	05:31:15~18:27:57	7.80	7.38	7.80
2022/06/21	05:34:09~18:32:24	7.58	7.16	7.58
2022/06/22	05:32:57~18:32:03	7.27	6.85	7.24
2022/06/23	05:28:12~18:29:27	8.02	7.58	8.02
2022/06/24	05:29:33~17:14:21	6.38	6.00	6.36
2022/06/25	05:41:48~18:05:36	5.58	5.28	5.56
2022/06/26	05:30:33~18:50:06	7.15	6.74	7.11
2022/06/27	05:30:18~18:03:03	5.47	5.08	5.40
2022/06/28	05:31:48~17:24:39	5.32	4.99	5.29
2022/06/29	05:46:39~17:36:18	2.81	2.61	2.76
2022/06/30	05:28:15~18:34:33	6.43	6.13	6.42
2022/06/01~2022/06/30 Summing the irradiance		181.24 kWh/m^2	171.62 kWh/m^2	180.58 kWh/m^2
Deviation(Benchmark:SR30-D1)		N/A	5.31 %	0.36 %

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 ≥ 20 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 June 01, 2022 to June 30, 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.

工業技術研究院
Industrial Technology Research Institute

Test Report

Date Issued：2022-08-04
Report No .：11055C01031-2-13-02
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.

Industrial Technology Research Institute Measurement Service Report Industrial Technology Research Institute

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：July 01 to July 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, Taiwan (R.O.C.)
Tel: +886-6-3636861
Fax: +886-6-3032029

宋洪義

Approval Signatory

宋洪義

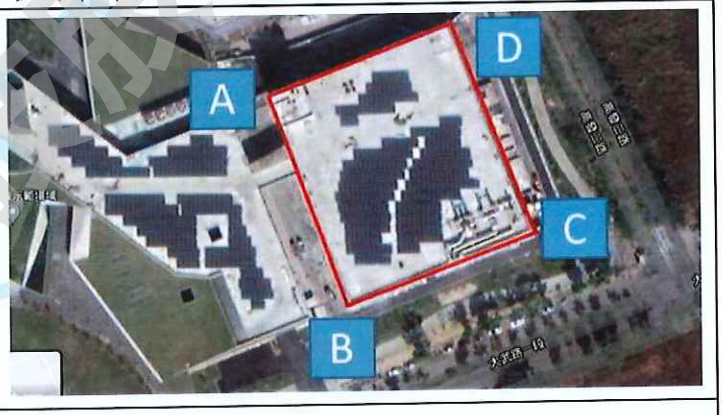
Testing Lab. Head

I. Test Results and Descriptions:

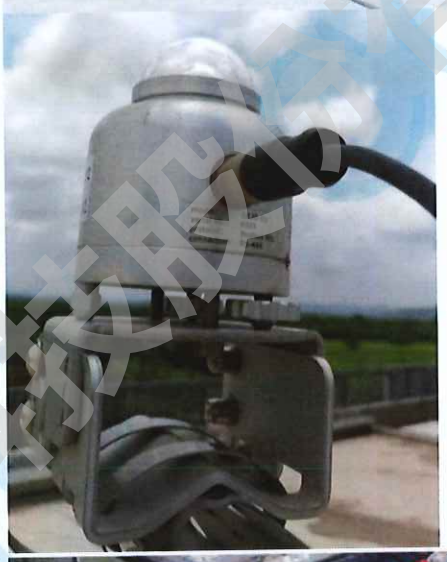
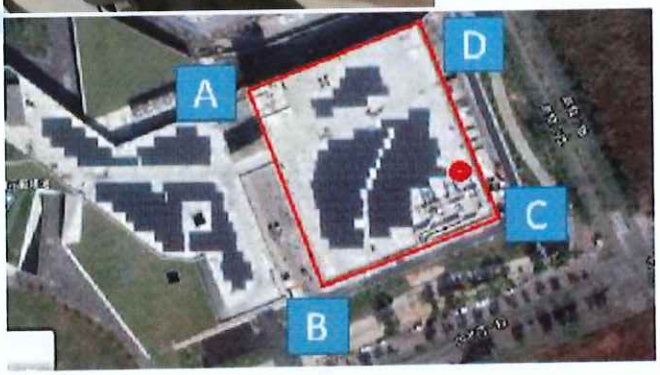
1. Information of pyranometer

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 (2022/07/01~2022/07/31)
Angle of pyranometer	Global horizontal irradiance	

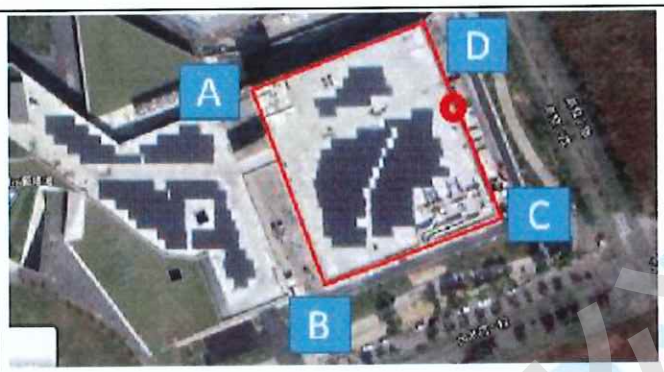
3. Measured parameters:

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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	☐ Class C	Any:_____
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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	 

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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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
2022/07/01[Note 2]	05:38:51~16:02:18	4.33	4.11	4.32
2022/07/02	05:45:39~18:27:36	3.43	3.26	3.13
2022/07/03	05:43:03~18:27:48	4.55	4.33	4.45
2022/07/04	05:34:45~18:23:30	4.97	4.72	4.91
2022/07/05	05:53:51~17:24:03	3.22	3.06	3.19
2022/07/06	05:07:21~18:26:15	6.92	6.56	6.90
2022/07/07	05:13:54~18:01:12	6.27	5.96	6.17
2022/07/08	05:49:33~17:59:54	4.86	4.62	4.77
2022/07/09	05:02:12~18:33:36	7.05	6.69	6.99
2022/07/10	05:01:00~18:33:36	7.51	7.12	7.45
2022/07/11	05:01:27~18:36:45	7.62	7.21	7.60
2022/07/12	05:05:39~18:29:39	7.18	6.82	7.10
2022/07/13	05:59:48~18:36:21	5.49	5.22	5.48
2022/07/14	07:24:27~17:41:30	2.93	2.78	2.83
2022/07/15	06:12:48~18:03:03	3.07	2.91	3.04
2022/07/16	06:01:03~18:00:21	4.04	3.83	3.94
2022/07/17	06:24:09~18:07:42	4.72	4.49	4.69
2022/07/18	05:27:27~18:16:18	6.40	6.09	6.31
2022/07/19	05:08:57~18:22:51	6.88	6.53	6.82
2022/07/20	05:26:42~18:38:09	7.85	7.45	7.79
2022/07/21	05:31:18~18:15:12	6.57	6.25	6.56
2022/07/22	05:27:06~17:45:51	6.81	6.46	6.79
2022/07/23	05:02:54~18:39:42	7.71	7.31	7.61
2022/07/24	06:03:27~18:16:30	5.96	5.65	5.88
2022/07/25	05:18:42~18:18:24	6.51	6.19	6.46
2022/07/26	05:21:03~18:16:00	6.41	6.09	6.30
2022/07/27	05:32:33~18:06:06	6.10	5.79	5.90
2022/07/28	05:06:27~18:29:48	7.05	6.68	6.95
2022/07/29	05:26:36~18:21:18	6.65	6.29	6.45
2022/07/30	05:55:06~17:21:33	3.81	3.62	3.61
2022/07/31	05:09:06~18:08:51	6.38	6.07	6.18
2022/07/01~2022/07/31 Summing the irradiance		179.27 kWh/m^2	170.17 kWh/m^2	176.58 kWh/m^2
Deviation(Benchmark:SR30-D1)		N/A	5.08 %	1.50 %

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 ≥ 20 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 July 01, 2022 to July 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.

工業技術研究院
Industrial Technology
Research Institute

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.

Industrial Technology Research Institute Measurement Service Report Industrial Technology Research Institute

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：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, Taiwan (R.O.C.)
Tel: +886-6-3636861
Fax: +886-6-3032029

宋洪義

Approval Signatory

宋洪義

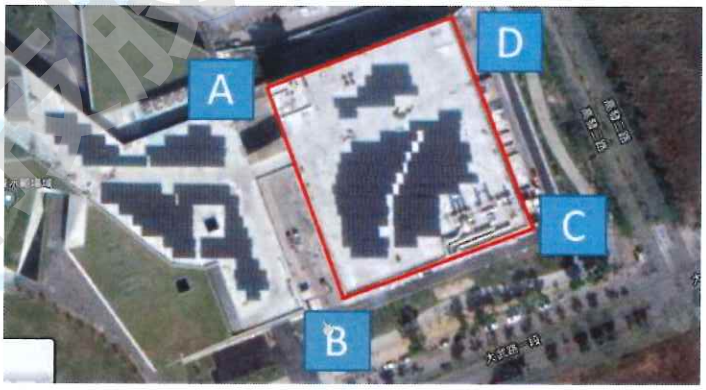
Testing Lab. Head

I. Test Results and Descriptions:

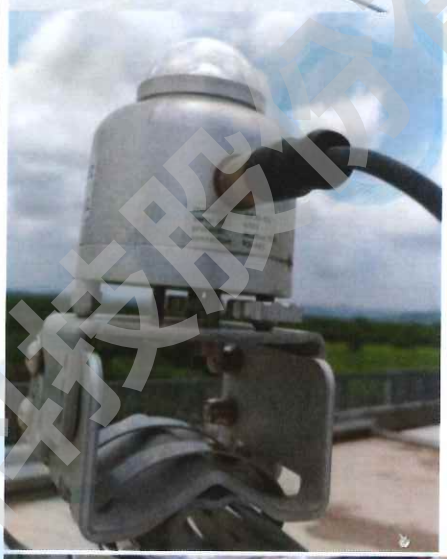
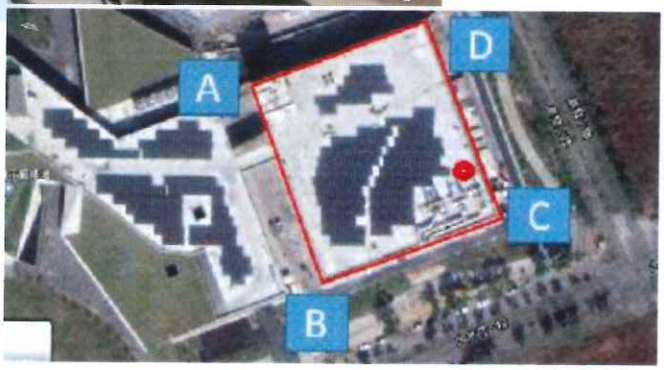
1. Information of pyranometer

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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	☐ Class C	Any:_____
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) $W \cdot m^2$
	☐ Class B	Uncertainty ≤ 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 B	
Measured parameters	Global horizontal irradiance
Number of sensor	1 pcs
Manufacturer	Deltaohm
Mode/Serial No.	PYRA03AC/21013200
Sensor locations	 

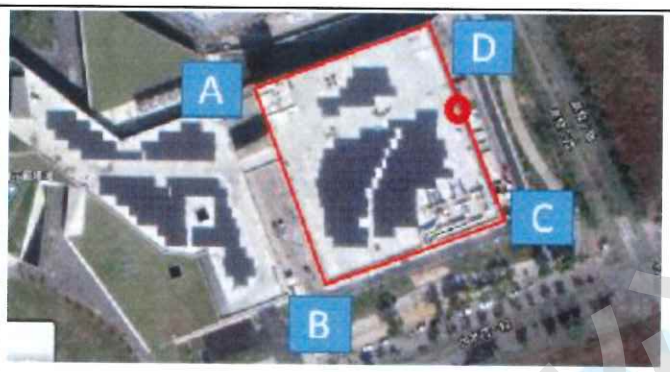
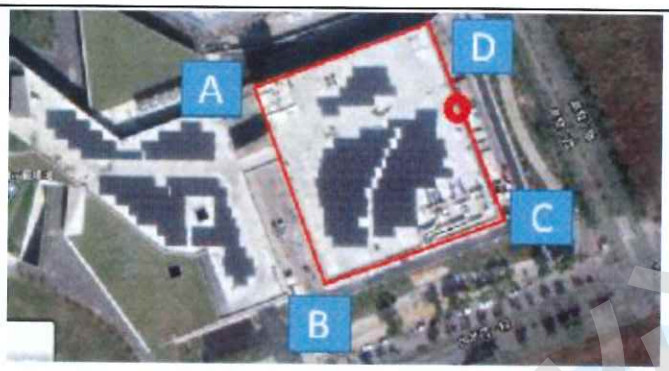
	 Pyranometer at the red circle	
Sensor maintenance	Recalibration	N/A
Sensor type	Classified	
■ Thermopile pyranometers	☐ Class A	☐ Secondary standard per ISO 9060 ☐ High quality per WMO Guide No. 8 (Uncertainty ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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 ≤ 3 % for hourly totals)
	☐ Class B	☐ First class per ISO 9060 ☐ Good quality per WMO Guide No. 8 (Uncertainty ≤ 8 % for hourly totals)
	■ Class C	Any: Second class pyranometer according to ISO 9060.
☐ PV reference cell ☐ PV reference module	☐ Class A	Uncertainty ≤ 3 % from (100 ~1500) W·m^2
	☐ Class B	Uncertainty ≤ 8 % from (100 ~1500) W·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
2022/08/01[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 ≥ 20 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.