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TESTING
CNAS L10160

EMC TEST REPORT

For

SRNE Solar Co., Ltd

Solar Charge Controller

Test Model: MF4860N15

Prepared for	:	SRNE Solar Co., Ltd
Address	:	4-5F,13A Wutong Island, Neihuan Rd, Xixiang, Bao'an, Shenzhen, Guangdong, China
Prepared by	:	Shenzhen Southern LCS Compliance Testing Laboratory Ltd.
Address	:	101-201, No.39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China
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Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com
Date of receipt of test sample	:	September 01, 2020
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	September 01, 2020 ~ September 16, 2020
Date of Report	:	September 16, 2020

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EMC TEST REPORT

EN 61000-6-4:2007-A1:2011
Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments
EN IEC 61000-6-2:2019
Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments

Report Reference No.	:	**LCS200901077BE**
Date of Issue.....	:	September 16, 2020
Testing Laboratory Name.....	:	**Shenzhen Southern LCS Compliance Testing Laboratory**
Address.....	:	101-201, No.39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China.
Testing Location/ Procedure	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name	:	**SRNE Solar Co., Ltd**
Address.....	:	4-5F,13A Wutong Island, Neihuan Rd, Xixiang, Bao'an, Shenzhen, Guangdong, China
Test Specification		
Standard.....	:	EN 61000-6-4:2007-A1:2011 EN IEC 61000-6-2:2019 EN 61000-3-2: 2014 EN 61000-3-3: 2013
Test Report Form No.....	:	LCSEMC-1.0
TRF Originator.....	:	Shenzhen Southern LCS Compliance Testing Laboratory Ltd.
Master TRF.....	:	Dated 2016-08

Test Item Description.....	:	**Solar Charge Controller**
Trade Mark.....	:	N/A
Test Model.....	:	MF4860N15
Ratings	:	Solar Input voltage:≤150V Input power:800W/12V;1600W/24V;2400W/36V;3200W/48V
Result	:	**PASS**

Compiled by:	Supervised by:	Approved by:
Aimee Yang	Dm gu	Cherry Chen
Aimee Yang / File administrators	Dm Gu/ Technique principal	Cherry Chen/ Manager

EMC -- TEST REPORT

Test Report No. : LCS200901077BE	September 16, 2020 Date of issue

Applicant.....	**: SRNE Solar Co., Ltd**
Address.....	: 4-5F,13A Wutong Island, Neihuan Rd, Xixiang, Bao'an, Shenzhen, Guangdong, China
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: SRNE Solar Co., Ltd**
Address.....	: 4-5F,13A Wutong Island, Neihuan Rd, Xixiang, Bao'an, Shenzhen, Guangdong, China
Telephone.....	: /
Fax.....	: /
Factory.....	**: SRNE Solar Co., Ltd**
Address.....	: Room 401, building 2, no. 10, xinju road, shangjiao village, chang'an, dongguan, guangdong
Telephone.....	: /
Fax.....	: /

Test Result	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	September 16, 2020	Initial Issue	Cherry Chen

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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

Emission (EN 61000-6-4:2007-A1:2011)			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at mains terminals	EN 61000-6-4:2007-A1:2011	---------	N/A
Conducted disturbance at telecommunication port	EN 61000-6-4:2007-A1:2011	---------	N/A
Radiated disturbance	EN 61000-6-4:2007-A1:2011	---------	PASS
Harmonic current emissions	EN 61000-3-2: 2014	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3: 2013	---------	N/A
Immunity (EN IEC 61000-6-2:2019)			
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A2: 2010	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	N/A
Surge (Input d.c. power ports)	EN 61000-4-5: 2014+A1: 2017	B	N/A
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014	A	N/A
Power frequency magnetic field	EN 61000-4-8: 2010	A	PASS
Voltage dips, >95% reduction	EN 61000-4-11: 2004+A1: 2017	B	N/A
Voltage dips, 30% reduction		C	N/A
Voltage interruptions		C	N/A
Note 1: N/A is an abbreviation for not applicable. Note 2: systems with nominal voltages less than but not equal to 220 V (line-to-neutral), the harmonic and flicker limits have not yet been considered.			

2.1. Description of Performance Criteria

A functional description and a definition of specific performance criteria, during or as a consequence of immunity testing of equipment under test (EUT), shall be provided by the manufacturer and noted in the test report. They shall be consistent with one of the following general criteria for each test as specified in Table 1 to Table 4:

1.2.1. Performance criterion A

The EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

1.2.2. Performance criterion B

The EUT shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. However, during the test degradation of performance is allowed but no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

1.2.3. Performance criterion C

Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.

If, as a result of the application of the tests defined in this standard, the EUT becomes dangerous or unsafe, it shall be deemed to have failed the test.

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	Solar Charge Controller
Test Model	:	MF4860N15
Power Supply	:	Solar Input voltage:≤150V Input power:800W/12V;1600W/24V;2400W/36V;3200W/48V
EUT Clock Frequency	:	≤108MHz

2.2 Support equipment List

Description	Manufacturer	Model	Serial Number

2.3. Description of Test Facility

EMC Lab.	:	TUV RH Registration Number. is UA 50418075 0001. UL Registration Number. is 100571-492. NVLAP Registration Code is 600112-0.
Test Facilities	:	Shenzhen Southern LCS Compliance Testing Laboratory Ltd. 101-201, No.39 Building,Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China.
RF Field Strength Susceptibility	:	Shenzhen LCS Compliance Testing Laboratory Ltd. 101, 201 Building A and 301 Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, Guangdong, China

2.4. Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.5. Measurement Uncertainty

Test	Parameters	Expanded uncertainty (U_{lab})	Expanded uncertainty (U_{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Power disturbance	Level accuracy (30MHz to 300MHz)	± 2.90dB	± 4.5 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.60 dB	± 3.3 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB
Harmonic	Voltage	± 0.510%	N/A
Voltage Fluctuations & Flicker	Voltage	± 0.510%	N/A
1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus. 2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.			

3. MEASURING DEVICES AND TEST EQUIPMENT

Radiated Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2021-08-05
2	EMI Test Receiver	R&S	ESCI	101010	2021-06-17
3	Log per Antenna	SCHWARZBECK	VULB9163	5094	2022-06-23
4	EMI Test Software	AUDIX	E3	N/A	2021-06-17
5	Positioning Controller	MF	BK8807-4A-2T	2016-0808-008	2021-06-17
6	Horn antenna	EMCO	3115	00034771	2021-06-25
7	Preamplifier	QuieTek	QTK-A2525G	CHM/0809065	2021-06-25

Electrostatic Discharge Immunity Test (ESD)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	ESD Simulator	KIKUSUI	KES4021	KC001311	2021-06-19

Power Frequency Magnetic Field Immunity Test

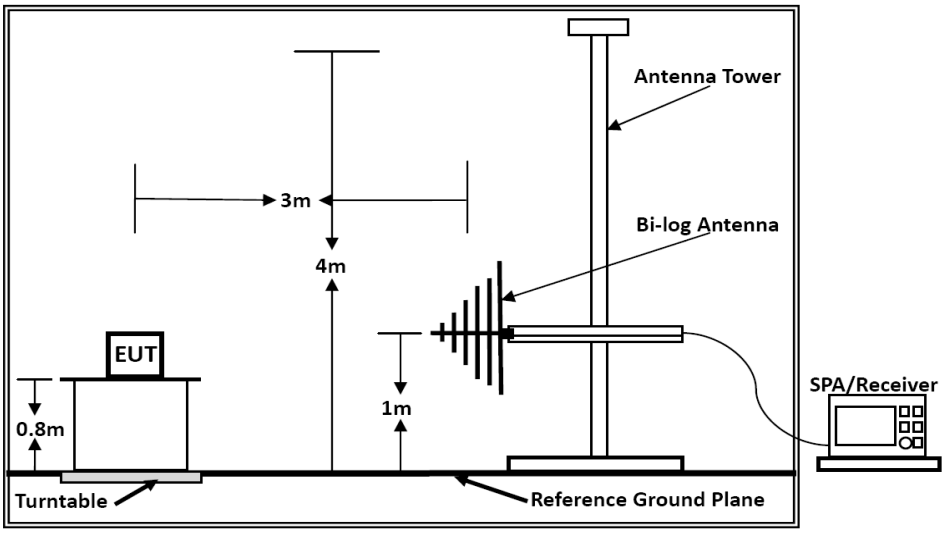
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Power frequency mag-field generator System	HTEC	HPFMF100	100-2400	2021-06-17

Radiated, Radio-Frequency, Electromagnetic Field Immunity Test (RS)-LCS

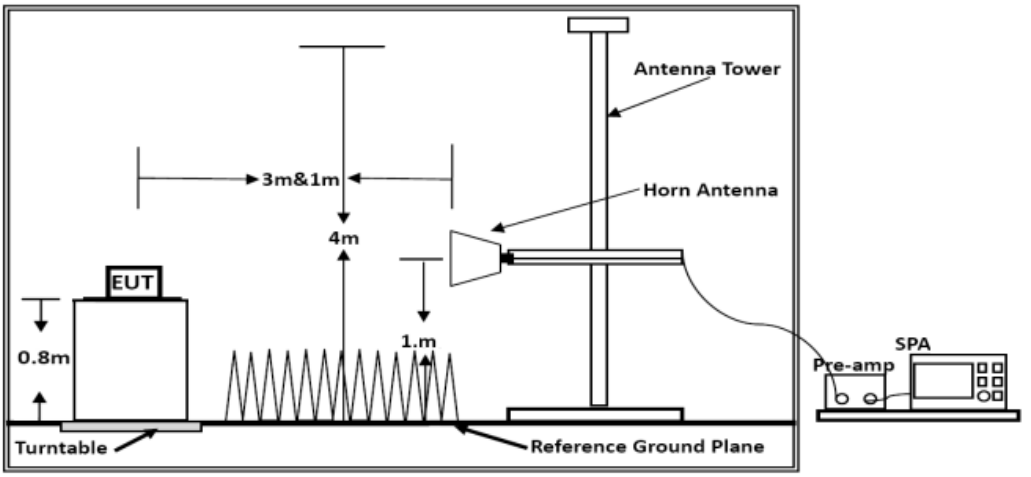
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	RS Test Software	Tonscend	/	/	N/A
2	ESG Vector Signal Generator	Agilent	E4438C	MY42081396	2021-11-14
3	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2023-06-11
4	RF POWER AMPLIFIER	OPHIR	5225R	1052	2020-11-21
5	RF POWER AMPLIFIER	OPHIR	5273F	1019	2020-11-21
6	Stacked Broadband Log Periodic Antenna	SCHWARZBECK	STLP 9128	9128ES-145	2020-11-21
7	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBECK	STLP 9149	9149-484	2020-11-21
8	RS Test Software	Tonscend	/	/	2021-03-24

4. RADIATED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



Below 1GHz



Above 1GHz

4.2. Test Standard

EN 61000-6-4:2007-A1:2011

Limits for Radiated Emission Below 1GHz		
Frequency (MHz)	Distance (Meters)	Field Strengths Limit (dBμV/m)
30 ~ 230	3	50
230 ~ 1000	3	57
Note: (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.		

Limits for Radiated Emission Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)
1000 ~ 3000	3	76	56
3000 ~ 6000	3	80	60
***Note: The lower limit applies at the transition frequency.			

4.3. EUT Configuration on Test

The EN 61000-6-4 regulations test method must be used to find the maximum emission during radiated emission measurement.

4.4. Operating Condition of EUT

1) Turn on the power.
2) Let the EUT work and measure it.

4.5. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.
The bandwidth of the EMI test receiver is set at RBW/VBW=120kHz/1000kHz.
The frequency range from 30MHz to 1000MHz is checked.
The bandwidth of the Spectrum analyzer is set at RBW/VBW=1MHz/3MHz.
The frequency range from 1GHz to the frequency which about 5th carrier harmonic or 6GHz is checked.

4.6. Test Results

PASS.

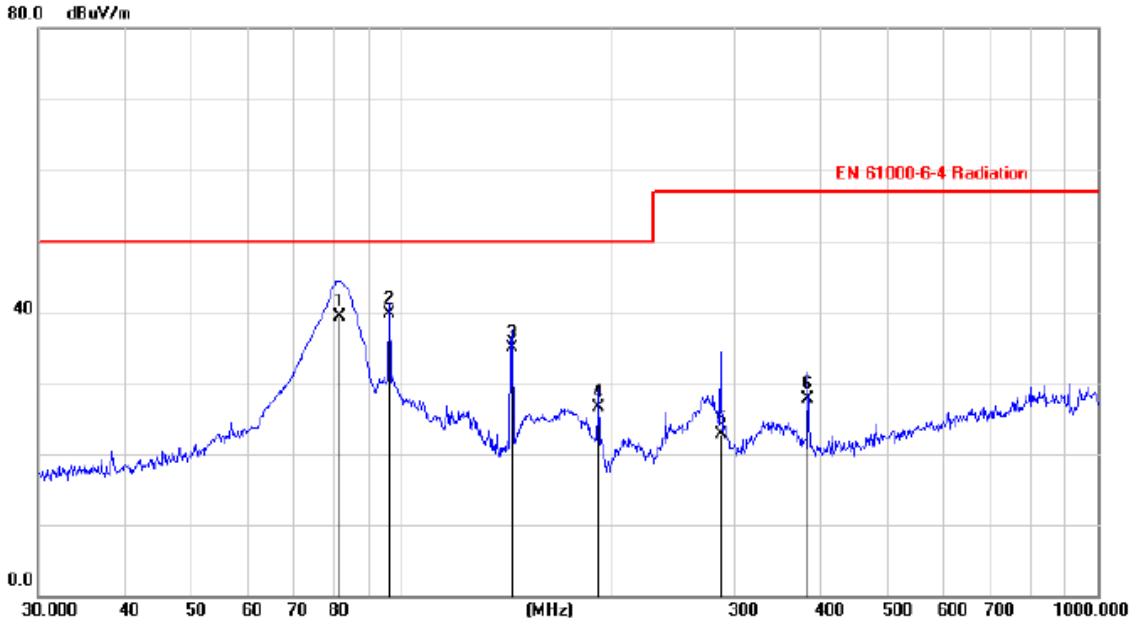
The test result please refer to the next page.

Test Model	MF4860N15	**Test Mode**	Working
Environmental Conditions	23.8℃, 53% RH	**Detector Function**	Quasi-peak
Pol.	Vertical	**Distance**	3m
Test Engineer	Link Li	**Test Voltage**	DC 48V

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		34.2760	13.64	13.84	27.48	50.00	-22.52	QP			
2		81.7833	26.43	9.47	35.90	50.00	-14.10	QP			
3		95.8882	26.31	10.22	36.53	50.00	-13.47	QP			
4	*	143.8295	28.26	13.54	41.80	50.00	-8.20	QP			
5		191.7450	17.33	10.05	27.38	50.00	-22.62	QP			
6		287.7381	8.09	12.42	20.51	57.00	-36.49	QP			

Remark: Pre-San all mode, Thus record worse case mode result in this report

Test Model	MF4860N15	**Test Mode**	Working
Environmental Conditions	23.8℃, 53% RH	**Detector Function**	Quasi-peak
Pol.	Horizontal	**Distance**	3m
Test Engineer	Link Li	**Test Voltage**	DC 48V

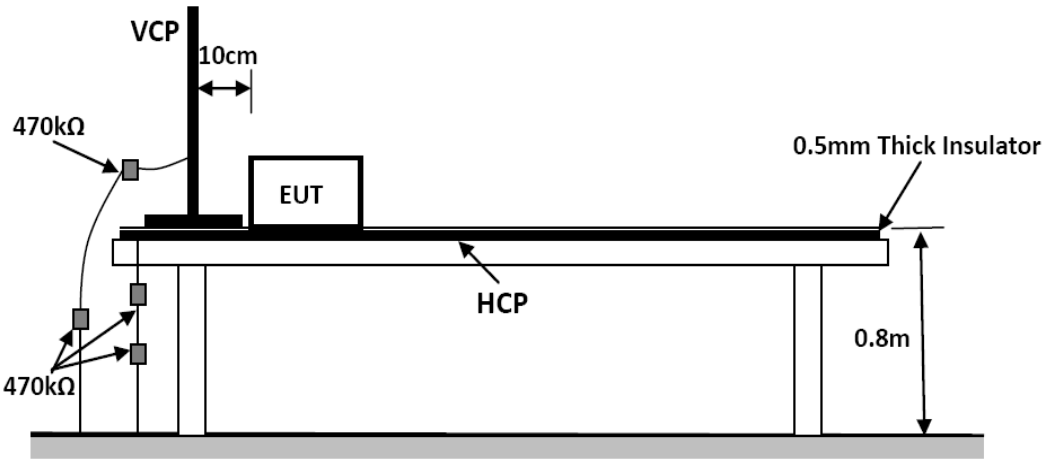


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		81.2117	29.94	9.46	39.40	50.00	-10.60	QP			
2	*	95.8882	27.39	12.41	39.80	50.00	-10.20	QP			
3		143.8295	25.22	9.68	34.90	50.00	-15.10	QP			
4		191.7450	15.18	11.32	26.50	50.00	-23.50	QP			
5		287.7381	9.64	13.06	22.70	57.00	-34.30	QP			
6		383.7636	12.47	15.23	27.70	57.00	-29.30	QP			

Remark: Pre-San all mode, Thus record worse case mode result in this report

5. ELECTROSTATIC DISCHARGE IMMUNITY TEST

5.1. Block Diagram of Test Setup



5.2. Test Standard

EN IEC 61000-6-2:2019

5.3. Severity Levels and Performance Criterion

5.3.1. Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	±2	±2
2	±4	±4
3	±6	±8
4	±8	±15
X	Special	Special

5.3.2. Performance Criterion：B

5.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4.3.

5.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.4. Except the test set up replaced by Section 8.1.

5.6. Test Procedure

5.6.1. Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

5.6.2. Contact Discharge

All the procedure shall be same as Section 9.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

5.6.3. Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

5.6.4. Indirect Discharge For Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

5.7. Test Results

PASS.

The test result please refer to the next page.

Electrostatic Discharge Test Results

Standard	☐ IEC 61000-4-2 ☑ EN 61000-4-2		
Applicant	SRNE Solar Co., Ltd		
EUT	Solar Charge Controller	**Temperature**	23.6℃
M/N	MF4860N15	**Humidity**	53.2%
Criterion	B	**Pressure**	1021mbar
Test Mode	Working	**Test Engineer**	Link Li
Test Voltage	DC 48V		

Air Discharge

Test Points	Test Levels			Results		
	± 2kV	± 4kV	± 8kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☒	☐	☐A ☒B
Top	☒	☒	☒	☒	☐	☐A ☒B
Bottom	☒	☒	☒	☒	☐	☐A ☒B

Contact Discharge

Test Points	Test Levels		Results		
	± 2 kV	±4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B
Top	☒	☒	☒	☐	☐A ☒B
Bottom	☒	☒	☒	☐	☐A ☒B

Discharge To Horizontal Coupling Plane

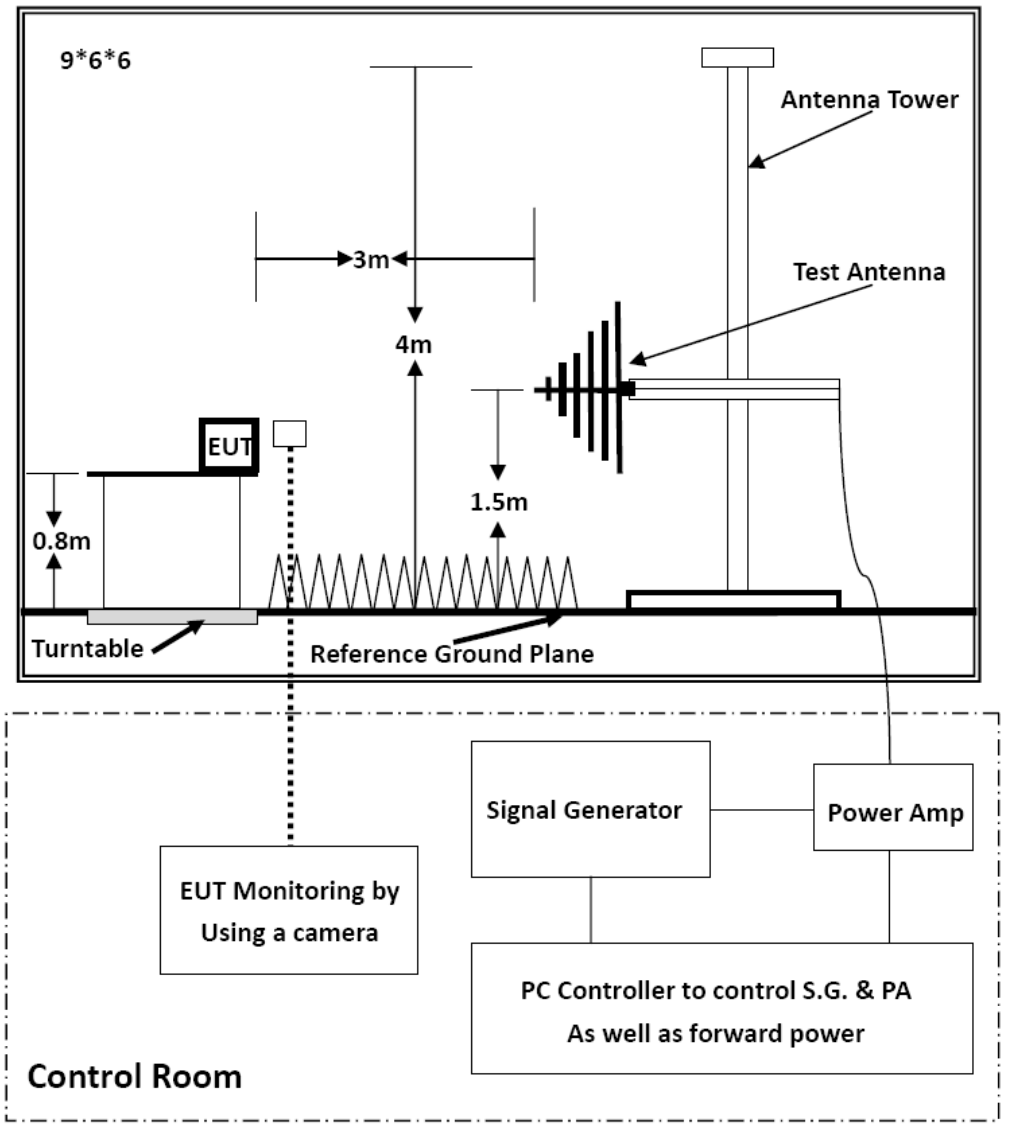
Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B

Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B

6. RF FIELD STRENGTH SUSCEPTIBILITY TEST

6.1. Block Diagram of Test Setup



6.2. Test Standard

EN IEC 61000-6-2:2019

6.3. Severity Levels and Performance Criterion

6.3.1. Severity level

Level	Field Strength (V/m)
1	1
2	3
3	10
X	1

6.3.2. Performance Criterion: A

6.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4.3.

6.5. Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 5.1, except the test setup replaced as Section 9.1.

6.6. Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD Recording is used to monitor its screen.
All the scanning conditions are as following:

Condition of Test	Remark
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Unmodulated
Test Frequency Range (swept test)	80-1000MHz,1400-6000MHz
Dwell time of radiated	0.0015 decade/s
Waiting Time	3 Sec.

6.7. Test Results

PASS.

The test result please refer to the next page.

RF Field Strength Susceptibility Test Results

Standard	☐ IEC 61000-4-3 ☑ EN 61000-4-3		
Applicant	SRNE Solar Co., Ltd		
EUT	Solar Charge Controller	**Temperature**	24.1℃
M/N	MF4860N15	**Humidity**	52.6%
Field Strength	10V/m 3V/m	**Criterion**	A
Test Mode	Working	**Test Engineer**	Jason deng
Test Frequency	80MHz to 1000MHz (10V/m) 1400MHz to 6000MHz (3V/m)	**Test Voltage**	DC 48V
Modulation	☐None ☐ Pulse ☑AM 1KHz 80%		
Steps	1%		

	Horizontal	**Vertical**
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

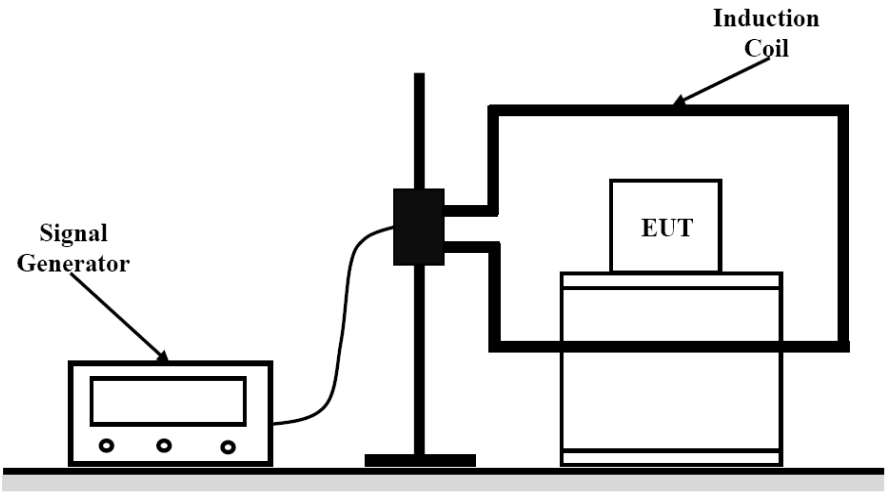
Test Equipment:

1. Signal Generator: 2031 (MARCONI)
2. Power Amplifier: 500A100 & 100W/1000M1 (A&R)
3. Power Antenna: 3108 (EMCO) & AT1080 (A&R)
4. Field Monitor: FM2000 (A&R)

Note:

7. MAGNETIC FIELD SUSCEPTIBILITY TEST

7.1. Block Diagram of Test Setup



7.2. Test Standard

EN IEC 61000-6-2:2019

7.3. Severity Levels and Performance Criterion

7.3.1. Severity level

Level	Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X	Special

7.3.2. Performance Criterion: A

7.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.3.

7.5. Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

7.6. Test Results

PASS.

The test result please refer to the next page.

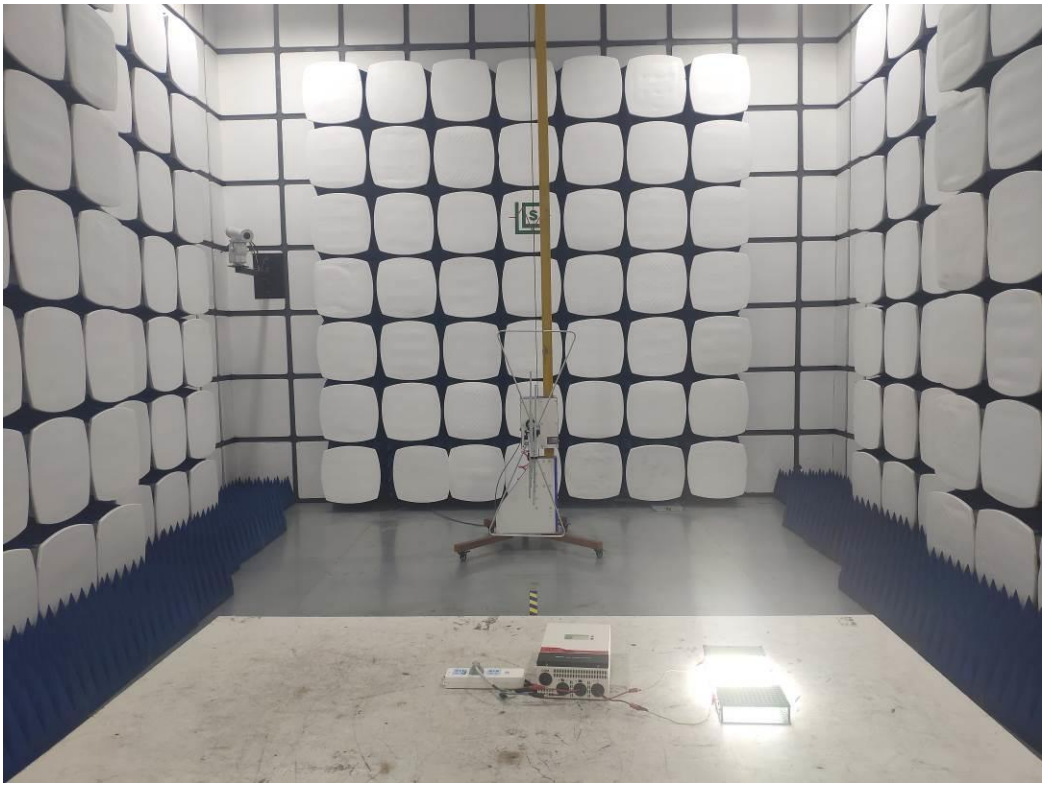
Magnetic Field Immunity Test Result

Standard	☐ IEC 61000-4-8 ☑ EN 61000-4-8		
Applicant	SRNE Solar Co., Ltd		
EUT	Solar Charge Controller	**Temperature**	22.8℃
M/N	MF4860N15	**Humidity**	53.2％
Test Mode	Working	**Criterion**	A
Test Engineer	Link Li	**Test Voltage**	DC 48V

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
30	5 mins	X	A	PASS
30	5 mins	Y	A	PASS
30	5 mins	Z	A	PASS

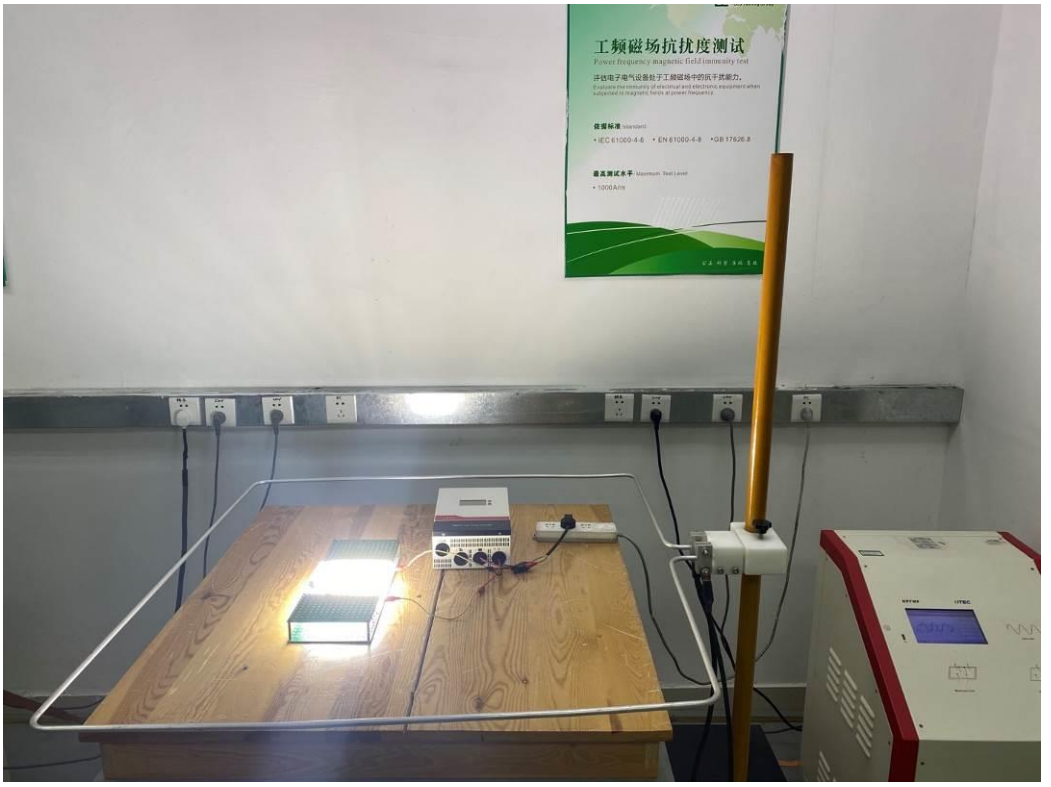
Note:

8. PHOTOGRAPHS OF TEST SETUP



Test Setup Photo of Radiated Measurement (30MHz~1GHz)

Test Setup Photo of Electrostatic Discharge Test



Test Setup Photo of Magnetic Field Immunity Test

8. PHOTOGRAPHS OF THE EUT

Fig. 1

Fig. 2

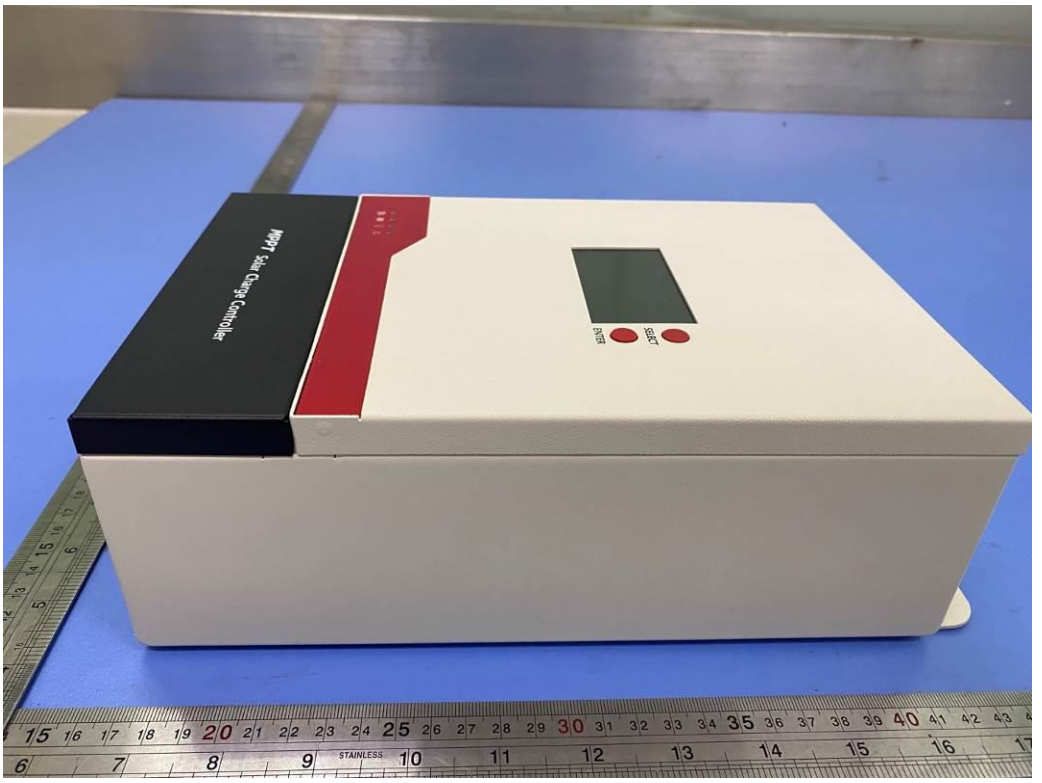


Fig. 3

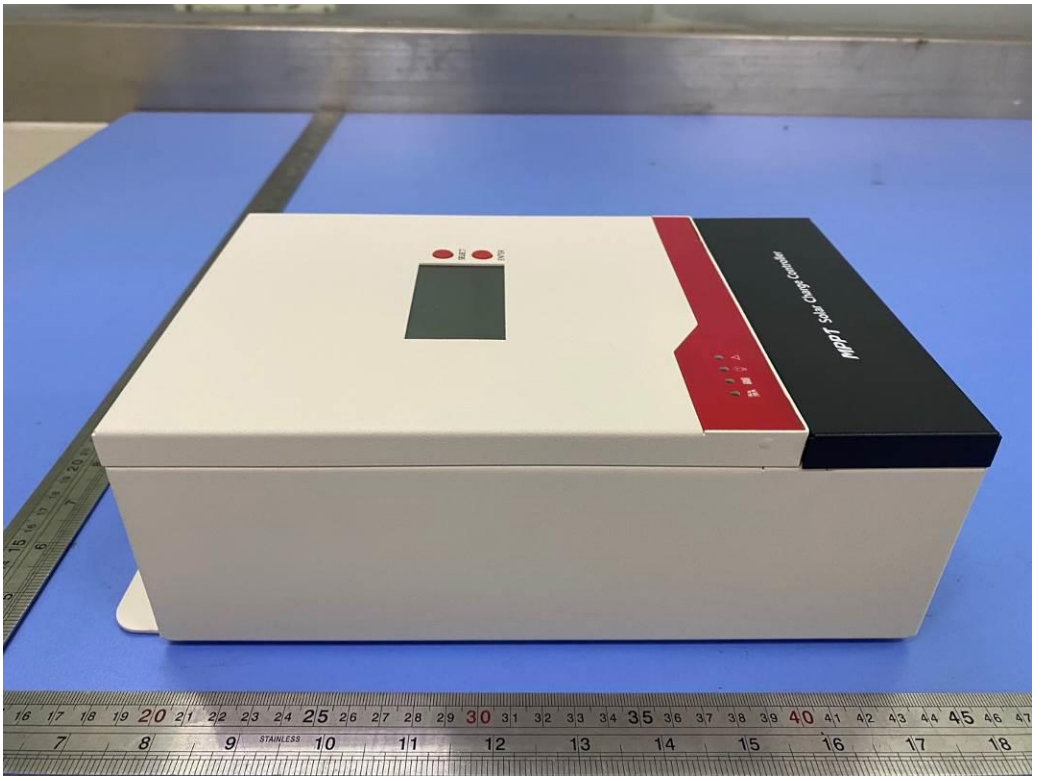


Fig. 4


MPPT Solar Charge Controller
COM.

Fig. 5

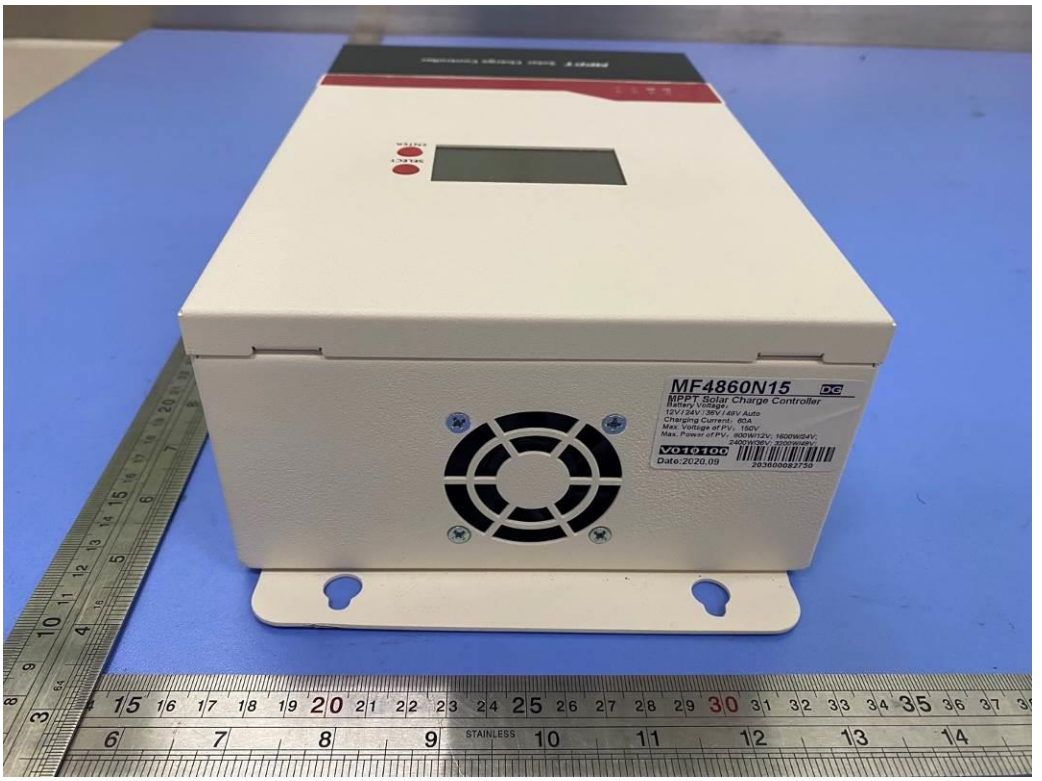

MF4860N15
MPPT Solar Charge Controller
Date:2020.09

Fig. 6

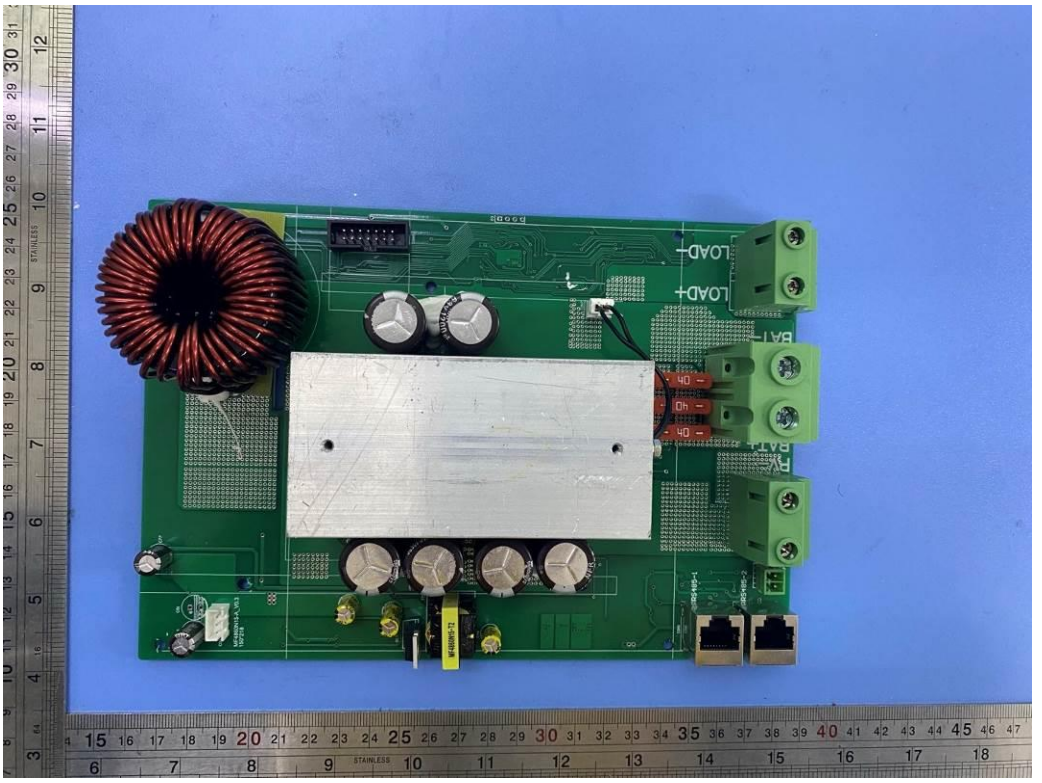


Fig. 7

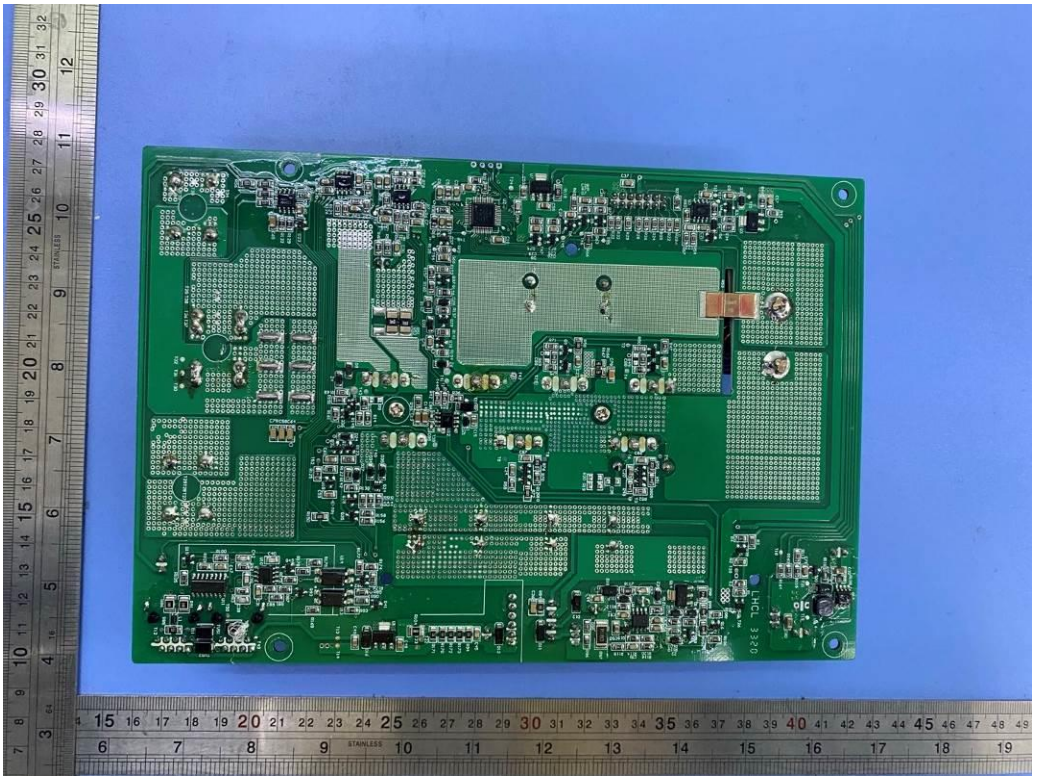


Fig. 8

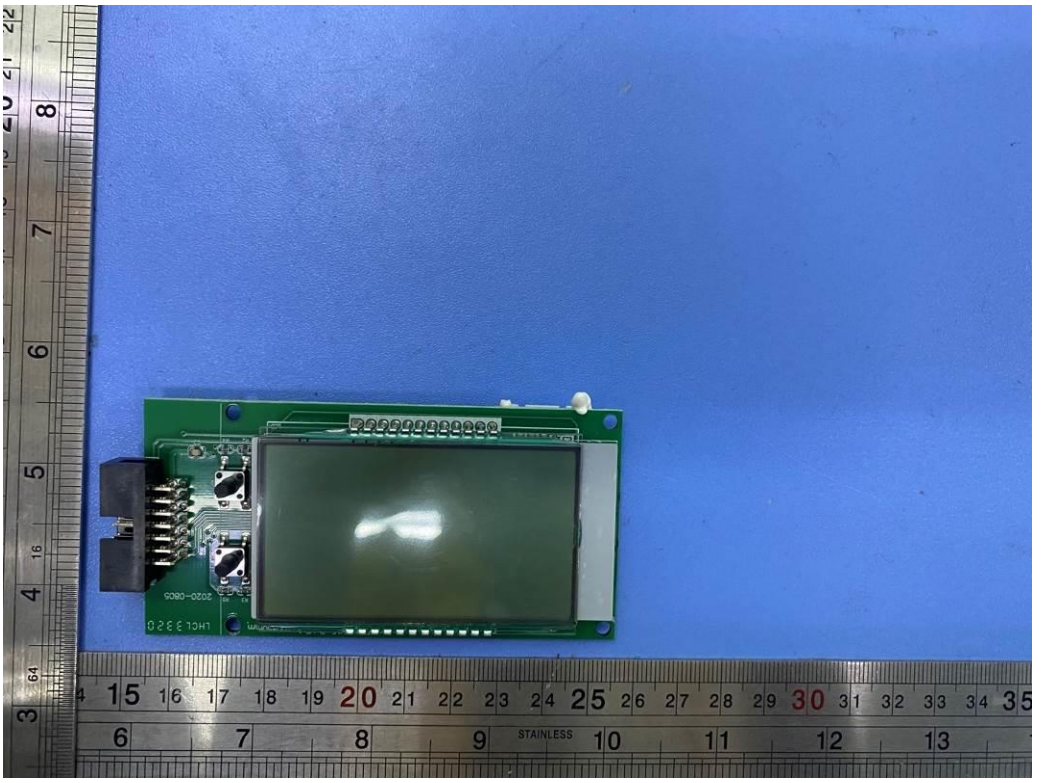


Fig. 9

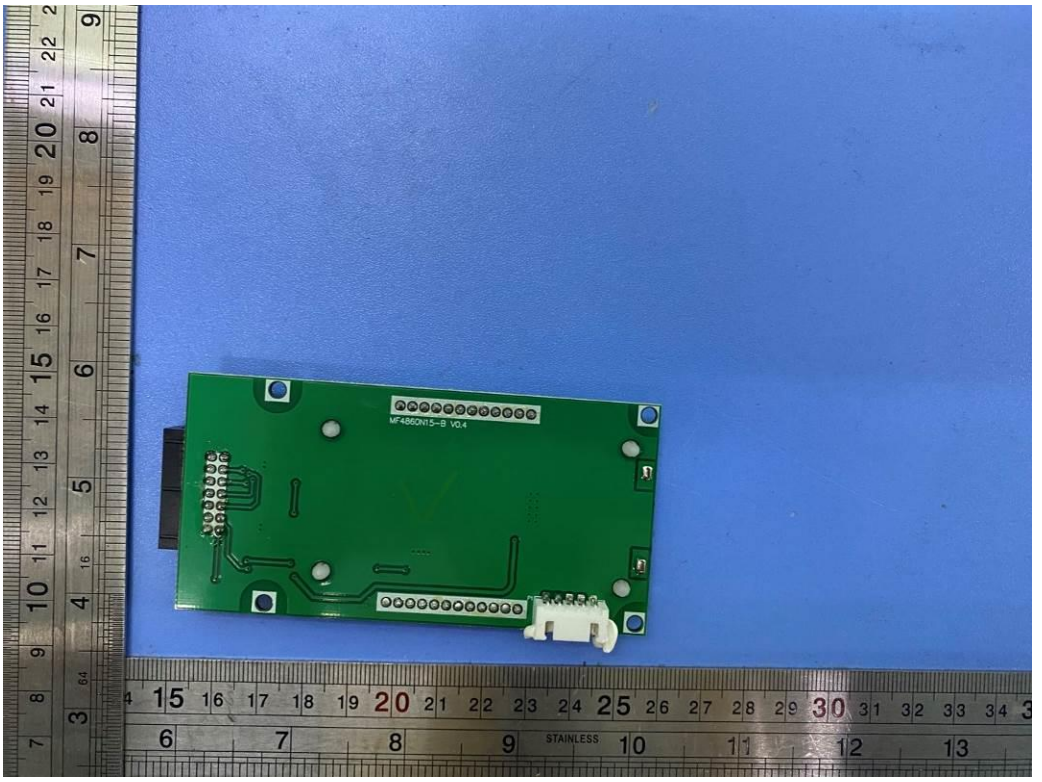


Fig. 10

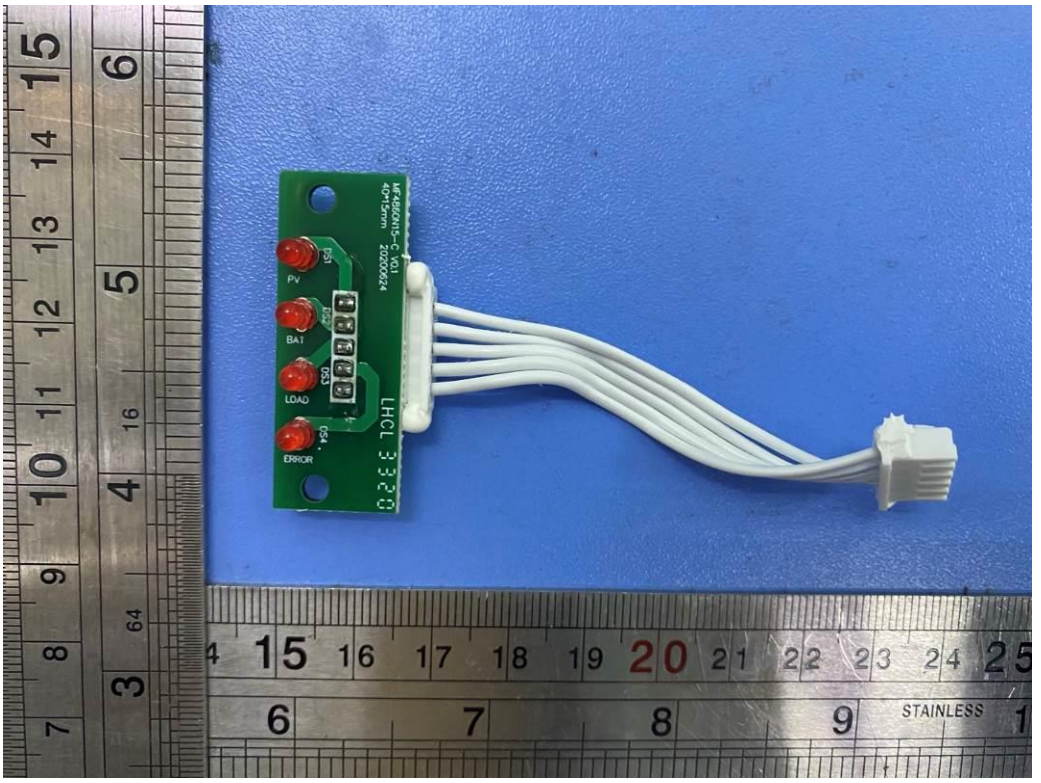


Fig. 11

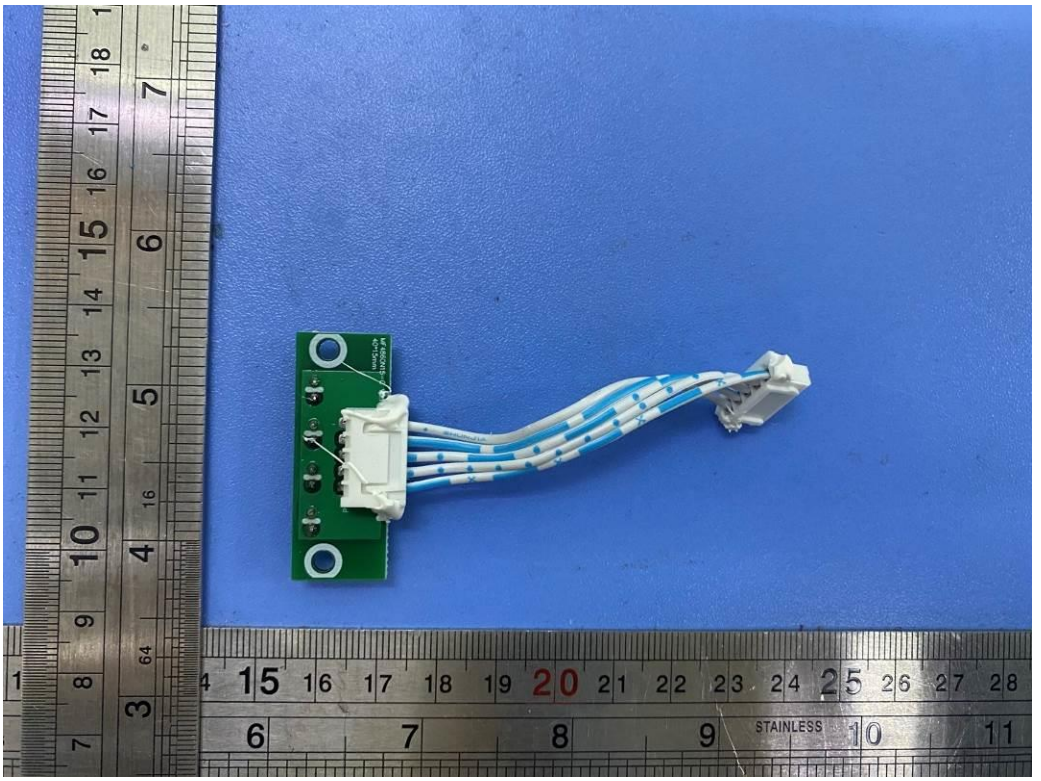


Fig. 12

---------- THE END OF TEST REPORT ----------