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TESTING  
CNAS L10160

## EMC TEST REPORT

For

SRNE Solar Co., Ltd

Solar Charge Controller

Test Model: HC2430

Additional Models : HC2420, HC2410

Prepared for : SRNE Solar Co., Ltd  
Address : Shenzhen baoan district xixiang hangcheng street sanwei  
community taihua wutongdao industrial zone snow (13A) 4 floor  
5

Prepared by : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.  
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Date of receipt of test sample : December 08, 2020  
Number of tested samples : 1  
Serial number : Prototype  
Date of Test : December 08, 2020 ~December 10, 2020  
Date of Report : December 10, 2020



**EMC TEST REPORT****EN 61000-6-3:2007/A1:2011**

Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

**EN IEC 61000-6-1:2019**

Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments

**Report Reference No. .... : LCS201208014BE****Date of Issue..... : December 10, 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..... : Shenzhen baoan district xixiang hangcheng street sanwei community taihua wutongdao industrial zone snow (13A) 4 floor 5****Test Specification****Standard..... : EN 61000-6-3:2007/A1:2011, EN IEC 61000-6-1:2019  
EN IEC 61000-3-2: 2019, EN 61000-3-3:2013+A1:2019****Test Report Form No..... : LCSEMC-1.0****TRF Originator..... : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.****Master TRF..... : Dated 2016-08****Shenzhen Southern LCS Compliance Testing Laboratory Ltd. All rights reserved.**

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**Test Item Description..... : Solar Charge Controller****Trade Mark..... : N/A****Test Model..... : HC2430****Ratings ..... : Input voltage: ≤50V, 30A  
Battery Input: 12V/24V****Result ..... : PASS****Compiled by:***Aimee Yang***Supervised by:***Dm Gu***Approved by:**

Aimee Yang / File administrators

Dm Gu/ Technique principal

Cherry Chen/ Manager

## EMC -- TEST REPORT

**Test Report No. : LCS201208014BE**December 10, 2020

Date of issue

**Applicant..... : SRNE Solar Co., Ltd**Address..... : Shenzhen baoan district xixiang hangcheng street sanwei  
community taihua wutongdao industrial zone snow (13A) 4  
floor 5

Telephone..... : /

Fax..... : /

**Manufacturer..... : SRNE Solar Co., Ltd**Address..... : Shenzhen baoan district xixiang hangcheng street sanwei  
community taihua wutongdao industrial zone snow (13A) 4  
floor 5

Telephone..... : /

Fax..... : /

**Factory..... : Dongguan Branch for SRNE Solar Co., Ltd**Address..... : Room 301, Building 5, 36 Fuxing Road, Chang'an Town,  
Dongguan City, Guangdong Province, China

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	December 10, 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 61000-6-3:2007/A1:2011)			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	EN 61000-6-3:2007/A1:2011	-----	N/A
Conducted disturbance at telecommunication port	EN 61000-6-3:2007/A1:2011	-----	N/A
Radiated disturbance	EN 61000-6-3:2007/A1:2011	-----	PASS
Harmonic current emissions	EN IEC 61000-3-2: 2019	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3:2013+A1:2019	-----	N/A
Immunity (EN IEC 61000-6-1:2019)			
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

The variety and the diversity of the apparatus within the scope of this standard makes it difficult to define precise criteria for the evaluation of the immunity test results.

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

### 1.2.1. Performance criterion A

The apparatus 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 apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. 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 apparatus if used as intended.

### 1.2.2. Performance criterion B

The apparatus 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 apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. 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 apparatus if used as intended.

### 1.2.3. Performance criterion C

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

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

EUT : Solar Charge Controller  
Test Model : HC2430  
Power Supply : Input voltage:  $\leq 50V$ , 30A  
Battery Input: 12V/24V  
EUT Clock Frequency :  $\leq 108MHz$

### 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 : Shenzhen LCS Compliance Testing Laboratory Ltd.  
Susceptibility 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 ( $U_{cisp}$ )
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	$\pm 2.63$ dB $\pm 2.35$ dB	$\pm 3.8$ dB $\pm 3.4$ dB
Power disturbance	Level accuracy (30MHz to 300MHz)	$\pm 2.90$ dB	$\pm 4.5$ dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	$\pm 3.60$ dB	$\pm 3.3$ dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	$\pm 3.68$ dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	$\pm 3.48$ dB	$\pm 5.3$ dB
Radiated Emission	Level accuracy (above 1000MHz)	$\pm 3.90$ dB	$\pm 5.2$ dB
Harmonic	Voltage	$\pm 0.510\%$	N/A
Voltage Fluctuations & Flicker	Voltage	$\pm 0.510\%$	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

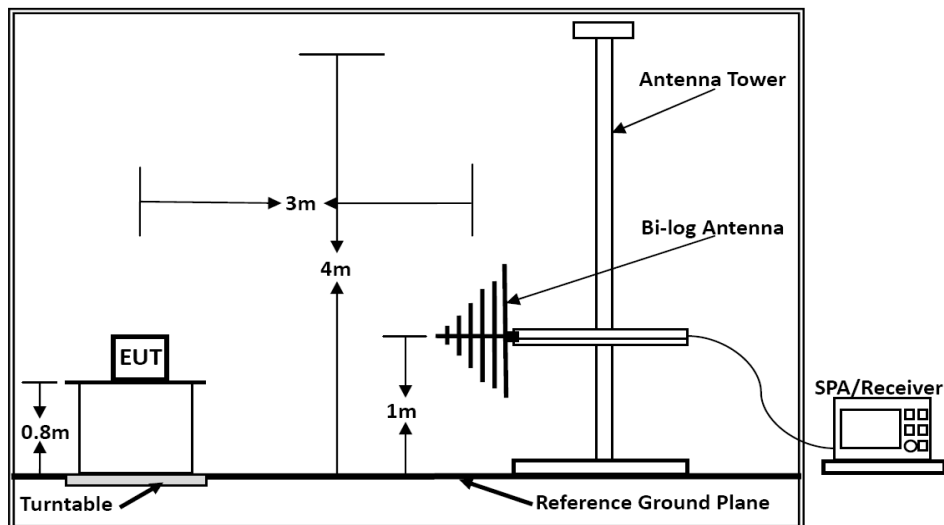
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Power frequency mag-field generator System	HTEC	HPFMF100	100-2400	2021-06-17

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

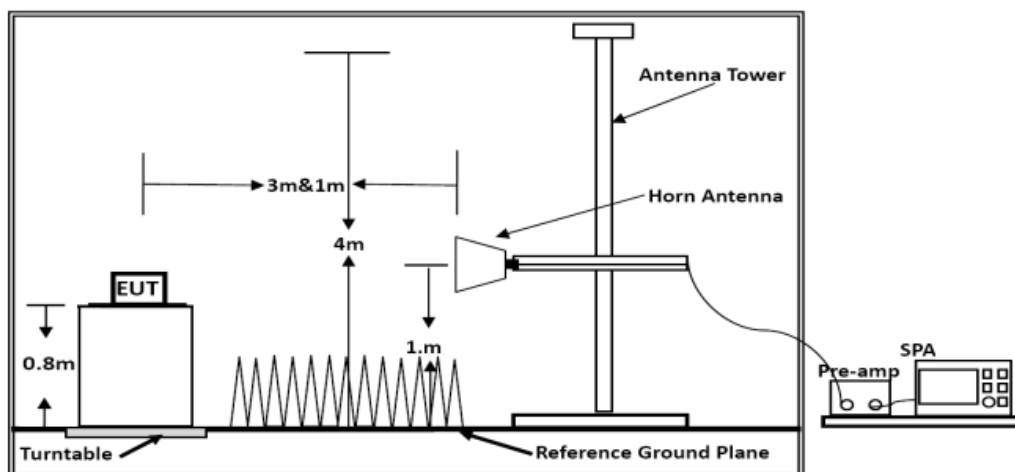
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	RS Test Software	Tonscend	/	/	N/A
2	ESG Vector Signal Generator	Agilent	E4438C	MY42081396	2021-11-14
3	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2023-06-11
4	RF POWER AMPLIFIER	OPHIR	5225R	1052	2021-11-21
5	RF POWER AMPLIFIER	OPHIR	5273F	1019	2021-11-21
6	Stacked Broadband Log Periodic Antenna	SCHWARZBECK	STLP 9128	9128ES-145	2021-11-21
7	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBECK	STLP 9149	9149-484	2021-11-21
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 61000-6-3:2007/A1:2011

Limits for Radiated Emission Below 1GHz			
Frequency (MHz)	Distance (Meters)	Field Strengths Limit (dBμV/m)	
30 ~ 230	3	40	
230 ~ 1000	3	47	
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	70	50
3000 ~ 6000	3	74	54
***Note: The lower limit applies at the transition frequency.			

## 4.3. EUT Configuration on Test

The EN 61000-6-3 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.

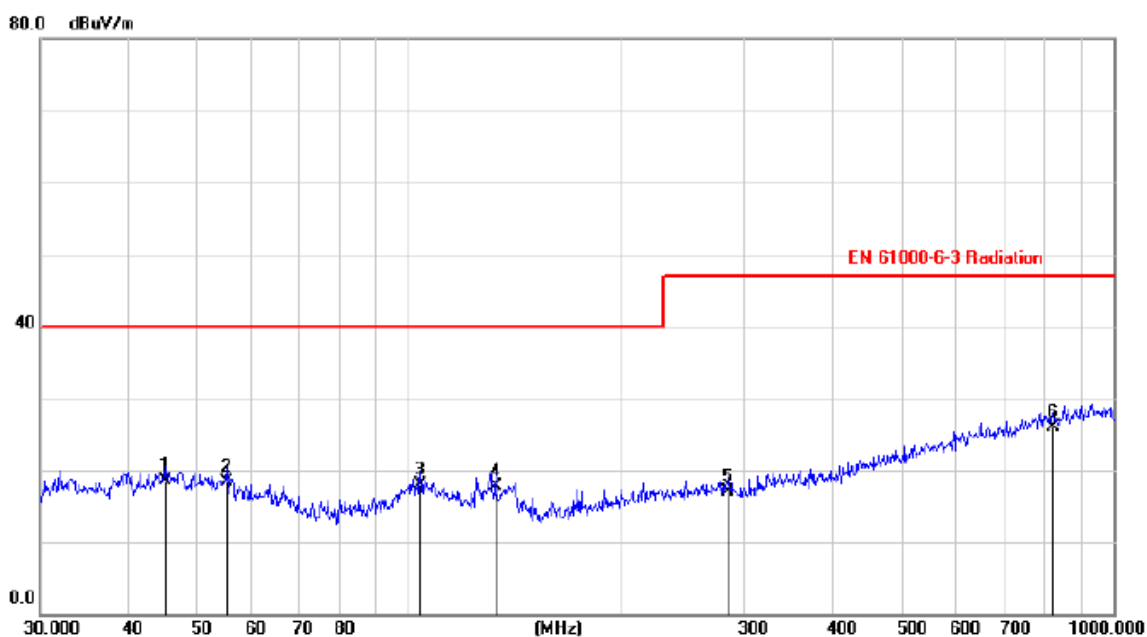
The frequency range from 1GHz to the frequency which about 5th carrier harmonic or 6GHz is checked.

## 4.6. Test Results

**PASS.**

The test result please refer to the next page.

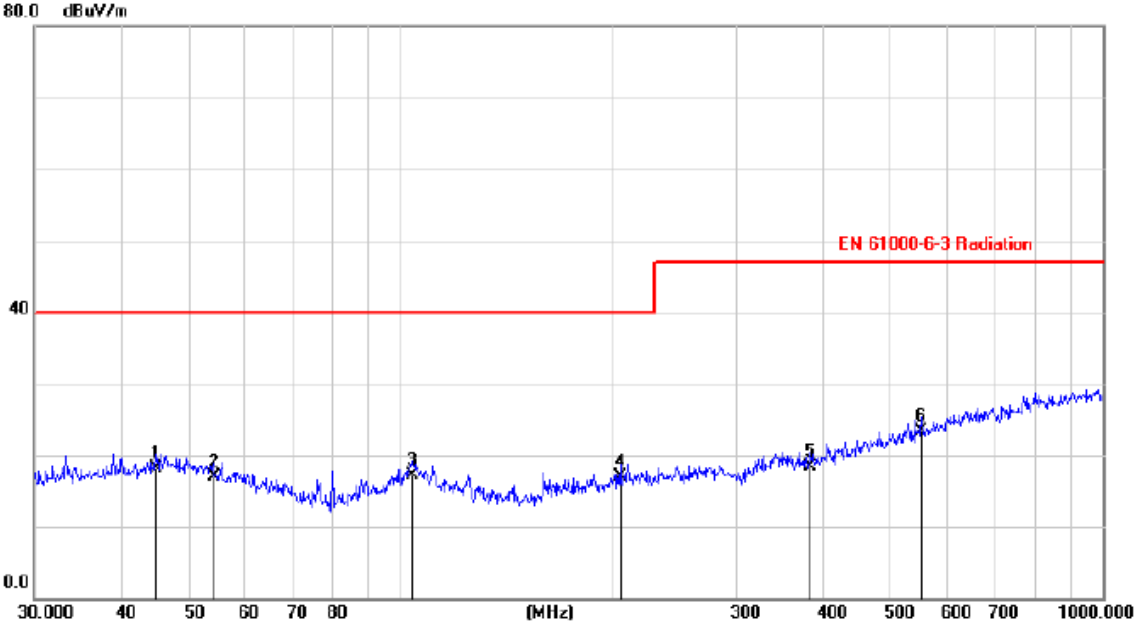
Test Model	HC2430	Test Mode	Working
Environmental Conditions	23.6°C, 51% RH	Detector Function	Quasi-peak
Pol.	Vertical	Distance	3m
Test Engineer	Link Li	Test Voltage	DC 24V



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
1		45.1770	5.33	13.23	18.56	40.00	-21.44	QP		
2		55.2934	5.16	13.08	18.24	40.00	-21.76	QP		
3		104.0332	6.70	11.15	17.85	40.00	-22.15	QP		
4		132.9178	4.72	13.05	17.77	40.00	-22.23	QP		
5		284.2283	4.51	12.33	16.84	47.00	-30.16	QP		
6	*	820.6306	2.31	23.65	25.96	47.00	-21.04	QP		

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

Test Model	HC2430	Test Mode	Working
Environmental Conditions	23.6℃, 51% RH	Detector Function	Quasi-peak
Pol.	Horizontal	Distance	3m
Test Engineer	Link Li	Test Voltage	DC 24V

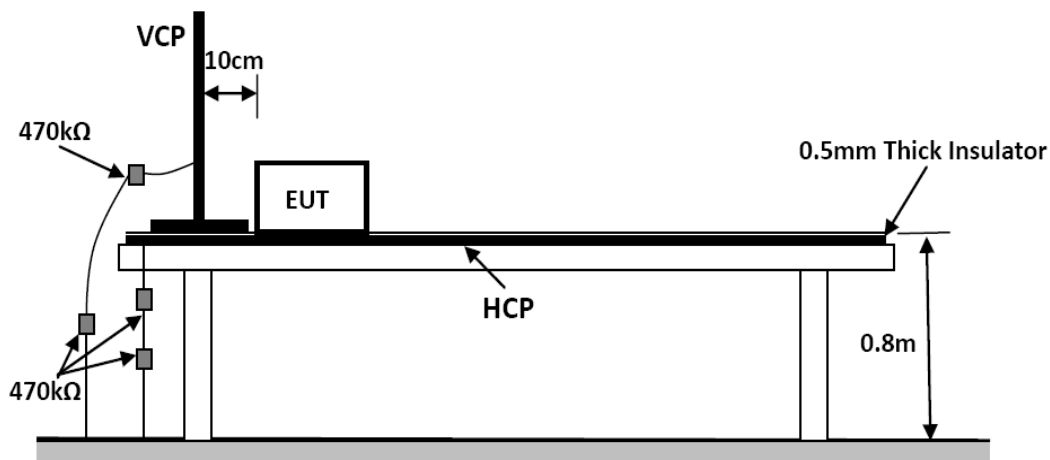


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree degree	Comment
1	*	44.8809	3.57	14.49	18.06	40.00	-21.94	QP		
2		54.1897	3.36	13.54	16.90	40.00	-23.10	QP		
3		103.9877	3.92	13.12	17.04	40.00	-22.96	QP		
4		204.9551	5.03	11.81	16.84	40.00	-23.16	QP		
5		383.4273	3.16	15.23	18.39	47.00	-28.61	QP		
6		550.9480	4.57	18.81	23.38	47.00	-23.62	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 61000-6-1:2019

### 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. Except the test set up replaced by Section 5.1.

## 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

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-2 <input checked="" type="checkbox"/> EN 61000-4-2		
<b>Applicant</b>	SRNE Solar Co., Ltd		
<b>EUT</b>	Solar Charge Controller	<b>Temperature</b>	23.6℃
<b>M/N</b>	HC2430	<b>Humidity</b>	53.2%
<b>Criterion</b>	B	<b>Pressure</b>	1021mbar
<b>Test Mode</b>	Working	<b>Test Engineer</b>	Link Li
<b>Test Voltage</b>	DC 24V		

## Air Discharge

Test Points	Test Levels			Results		
	± 2kV	± 4kV	± 8kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

## Contact Discharge

Test Points	Test Levels		Results		
	± 2 kV	±4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

## Discharge To Horizontal Coupling Plane

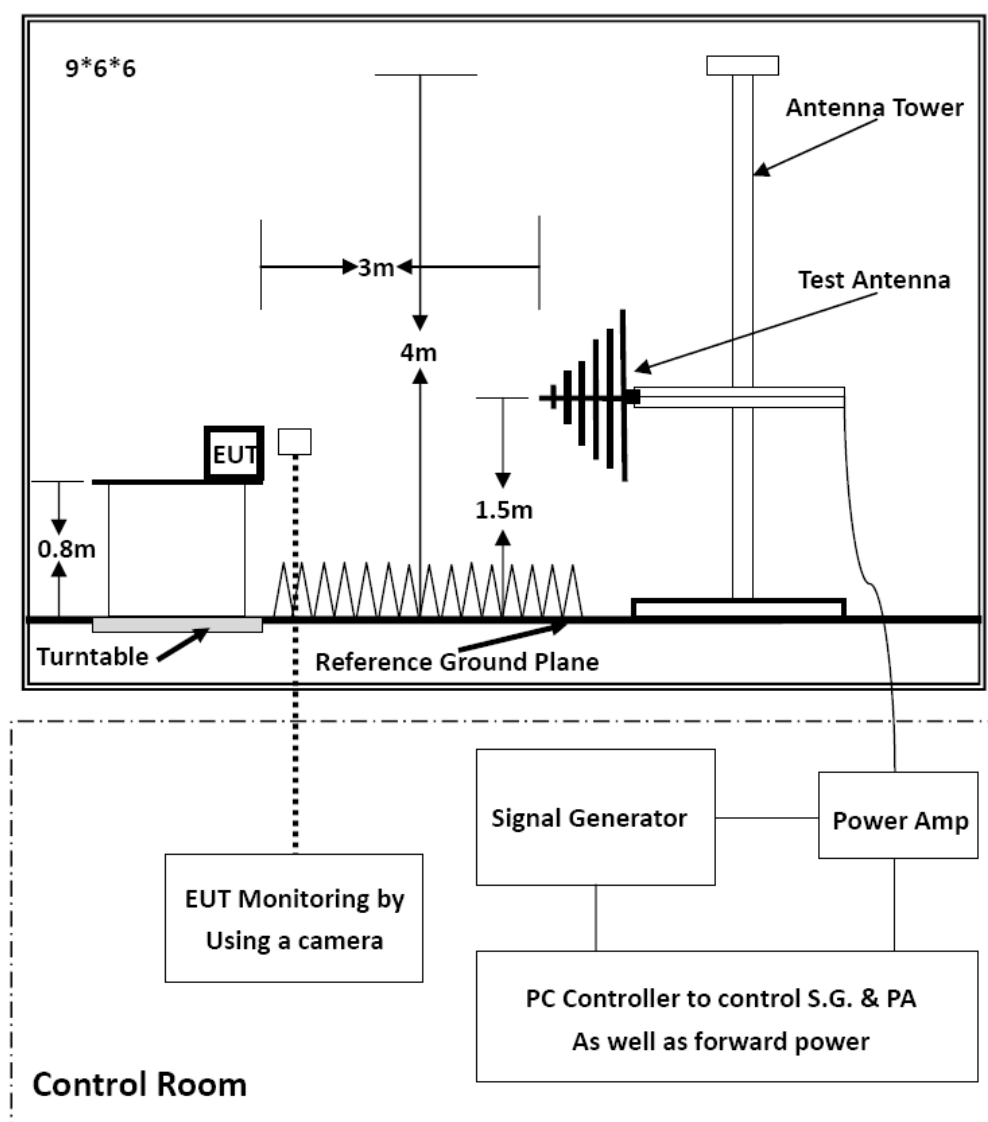
Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

## Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

## 6. RF FIELD STRENGTH SUSCEPTIBILITY TEST

### 6.1. Block Diagram of Test Setup



### 6.2. Test Standard

EN IEC 61000-6-1:2019

### 6.3. Severity Levels and Performance Criterion

#### 6.3.1. Severity level

Level	Field Strength (V/m)
1	1
2	3
3	10
Special	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 4.1, except the test setup replaced as Section 6.1.

#### 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

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-3 <input checked="" type="checkbox"/> EN 61000-4-3		
<b>Applicant</b>	SRNE Solar Co., Ltd		
<b>EUT</b>	Solar Charge Controller	<b>Temperature</b>	24.1℃
<b>M/N</b>	HC2430	<b>Humidity</b>	52.6%
<b>Field Strength</b>	3 V/m	<b>Criterion</b>	A
<b>Test Mode</b>	Working	<b>Test Engineer</b>	Jason Deng
<b>Test Frequency</b>	80MHz to 1000MHz 1400MHz to 6000MHz	<b>Test Voltage</b>	DC 24V
<b>Modulation</b>	<input type="checkbox"/> None <input type="checkbox"/> Pulse <input checked="" type="checkbox"/> AM 1KHz 80%		
<b>Steps</b>	1%		

	Horizontal	Vertical
<b>Front</b>	PASS	PASS
<b>Right</b>	PASS	PASS
<b>Rear</b>	PASS	PASS
<b>Left</b>	PASS	PASS

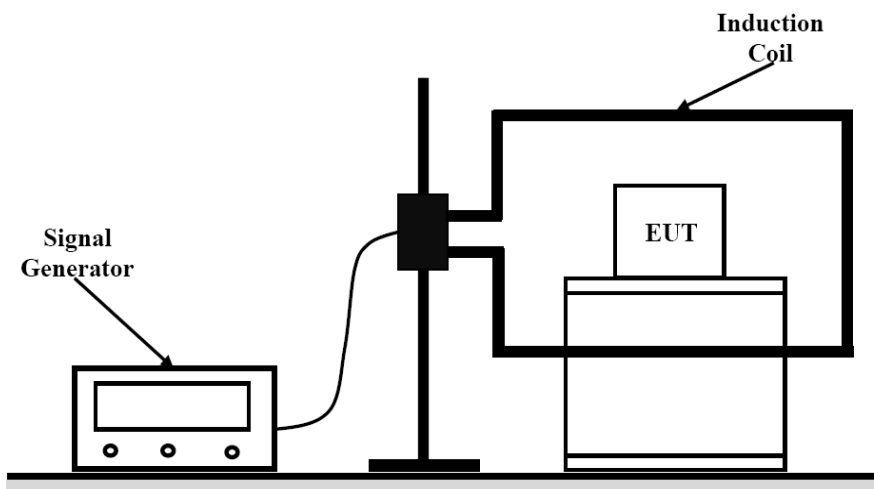
### Test Equipment:

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 61000-6-1:2019

### 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

### 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.

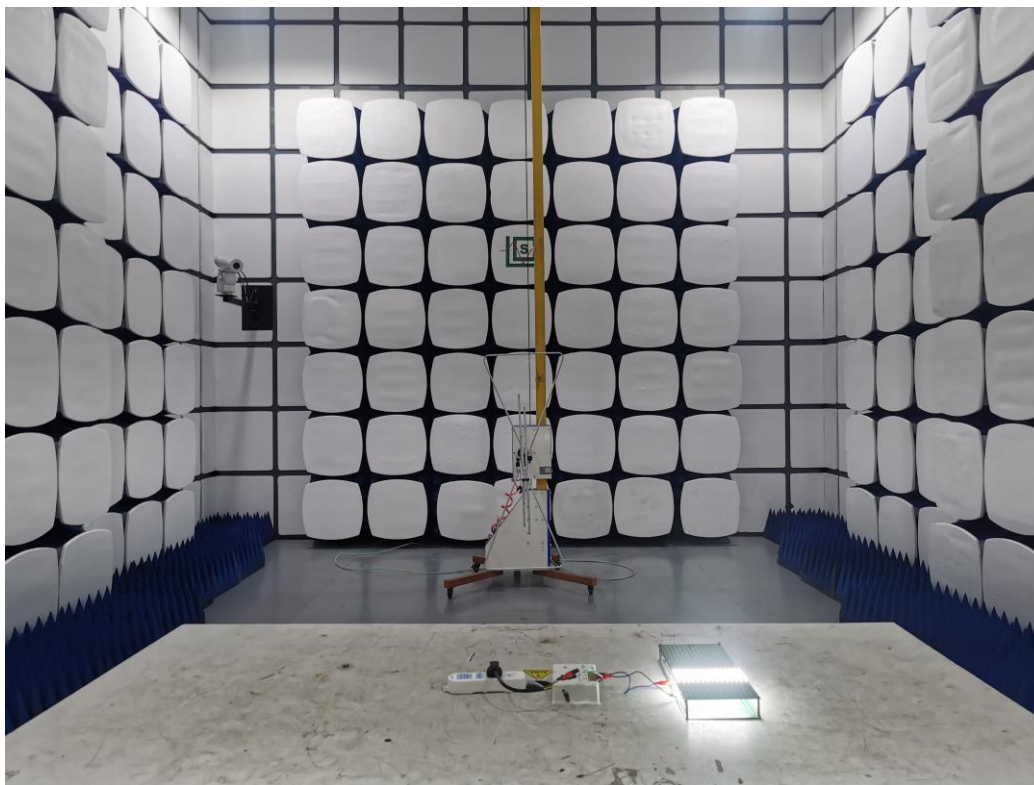
## Magnetic Field Immunity Test Result

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-8 <input checked="" type="checkbox"/> EN 61000-4-8		
<b>Applicant</b>	SRNE Solar Co., Ltd		
<b>EUT</b>	Solar Charge Controller	<b>Temperature</b>	22.8°C
<b>M/N</b>	HC2430	<b>Humidity</b>	53.2%
<b>Test Mode</b>	Working	<b>Criterion</b>	A
<b>Test Engineer</b>	Link Li	<b>Test Voltage</b>	DC 24V

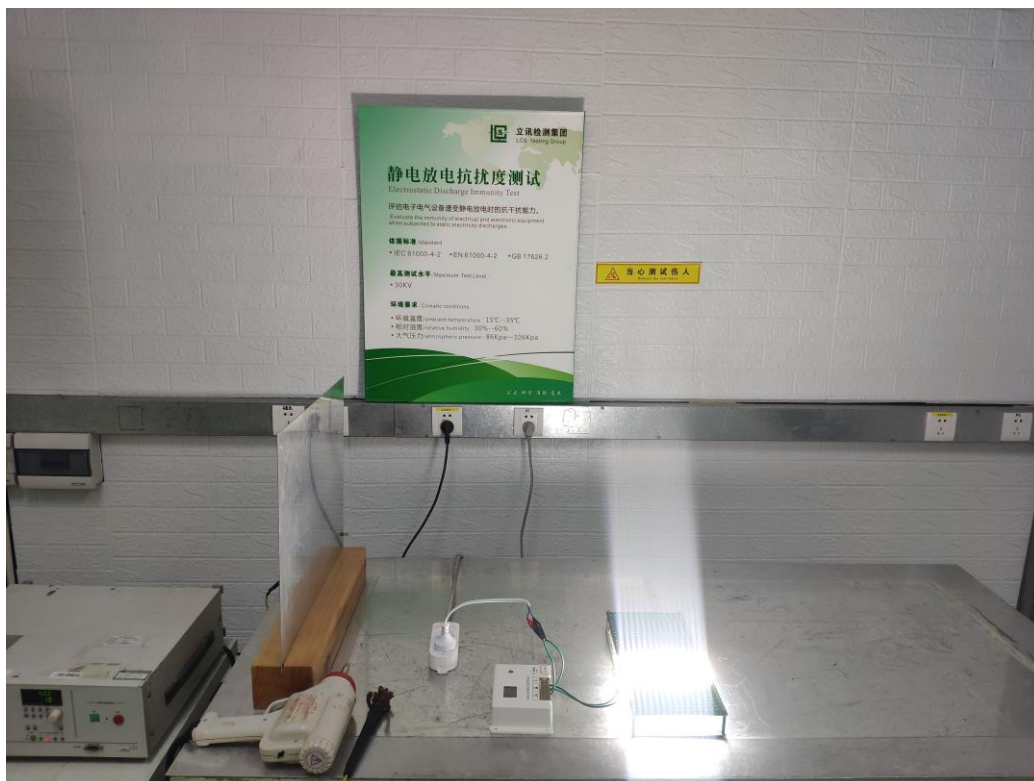
Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
3	5 mins	X	A	PASS
3	5 mins	Y	A	PASS
3	5 mins	Z	A	PASS

Note:

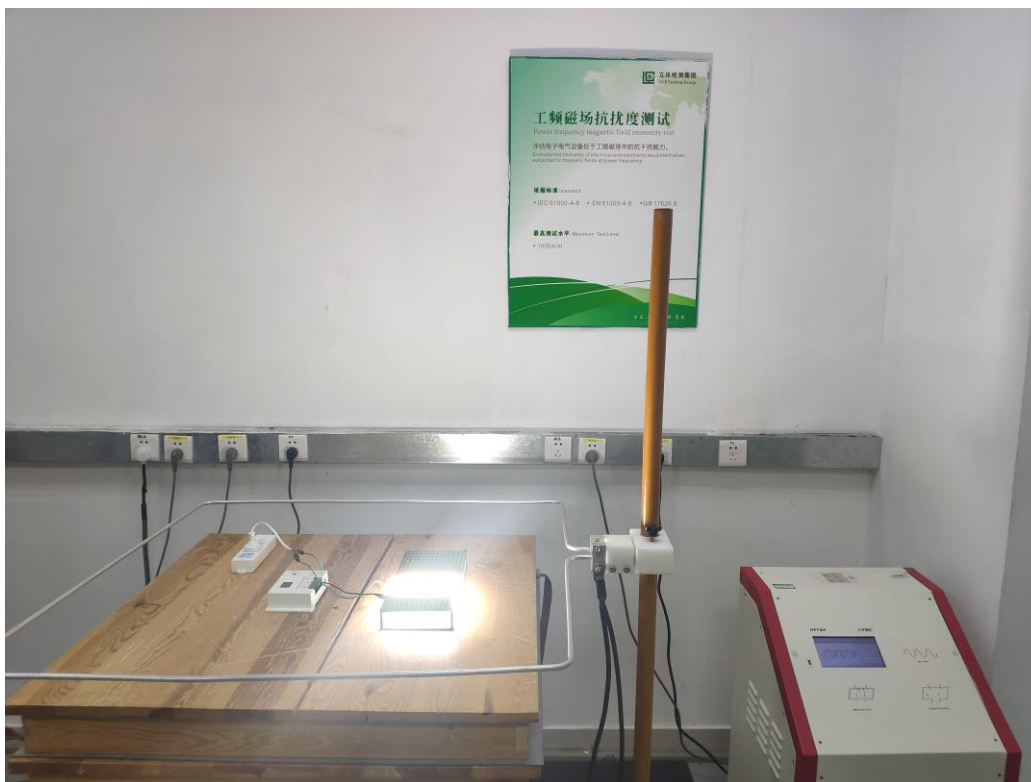
## 8. PHOTOGRAPHS OF TEST SETUP



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

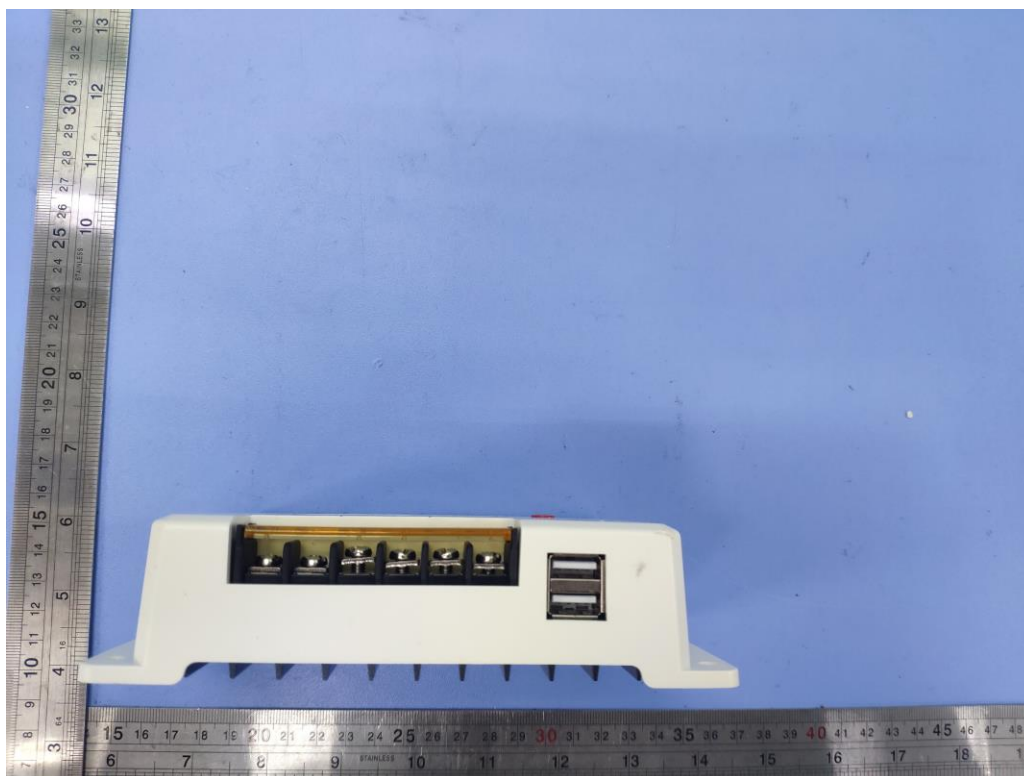


Fig. 2

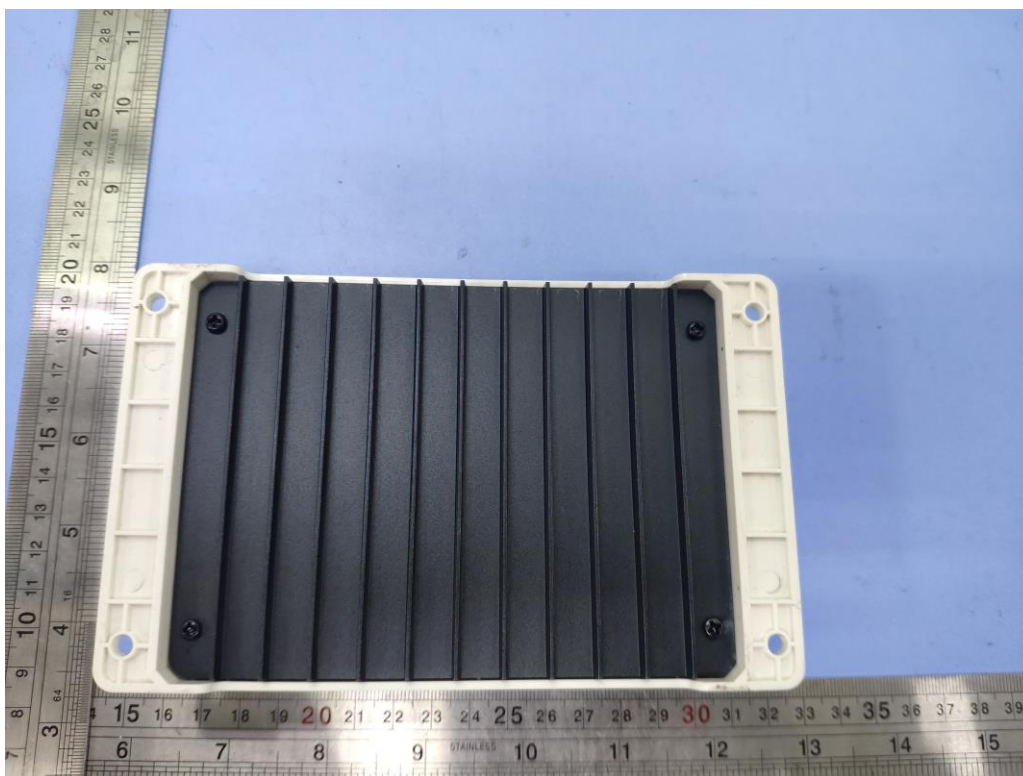


Fig. 3

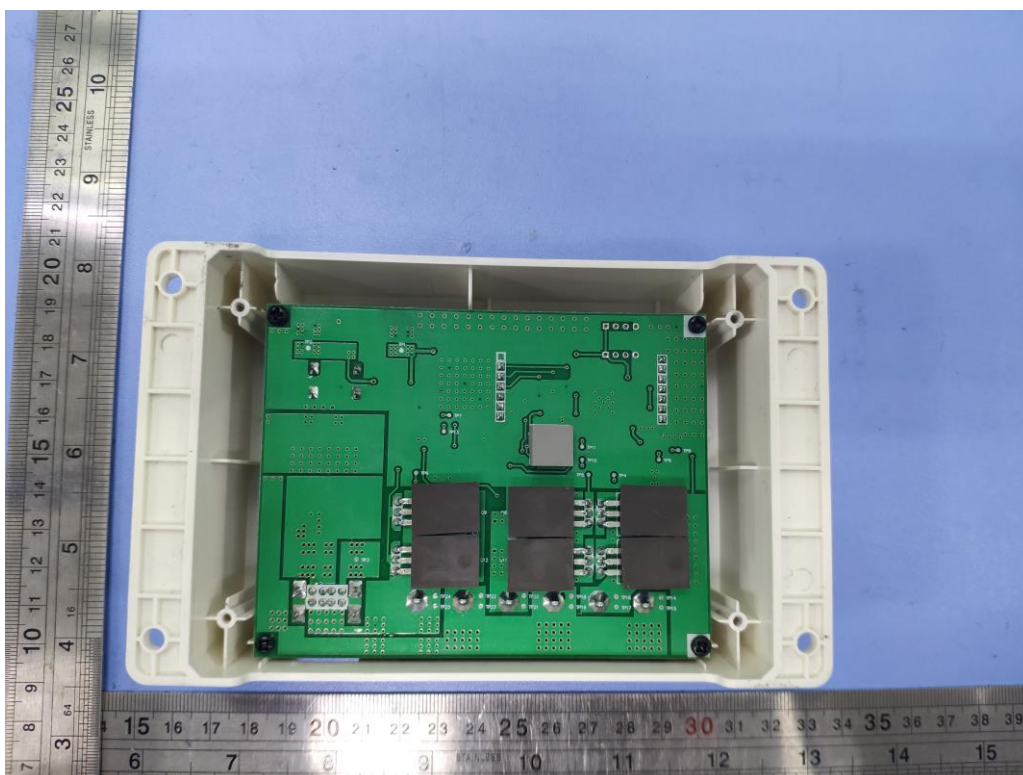


Fig. 4

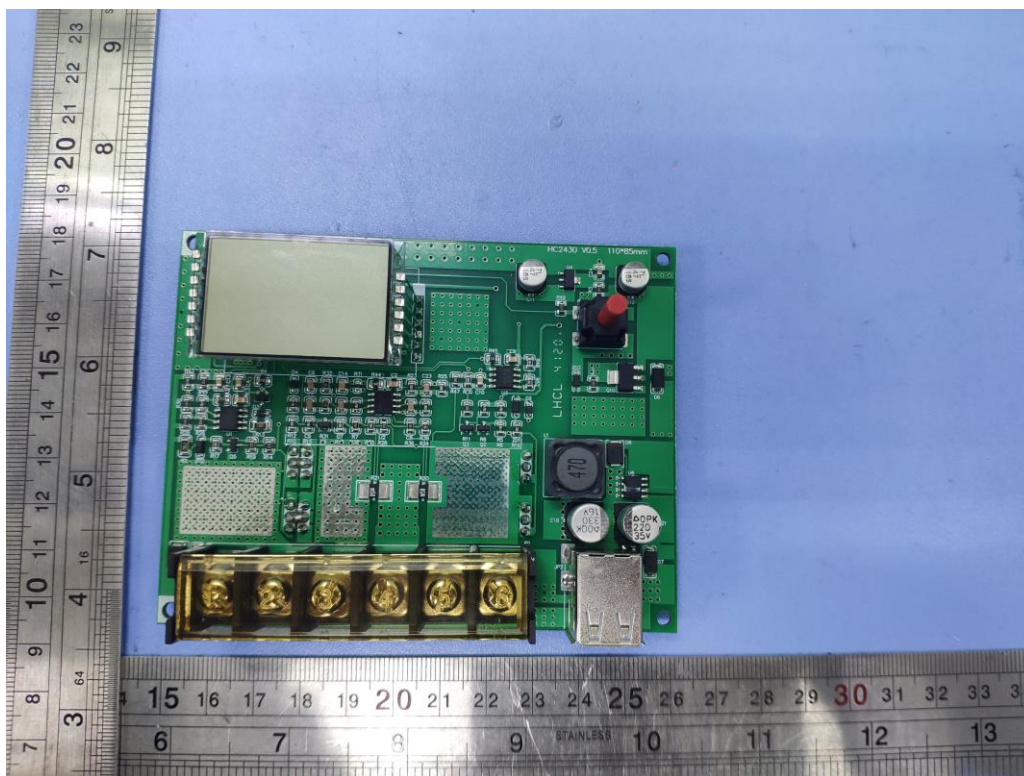


Fig. 5

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