TEST REPORT

Product Name : All-in-one solar charge inverter
Model Number : HF2420S40-75, HF2420S60-100, HF2420S60-145, HF2420S80-145, HF2430S40-75, HF2430S60-100, HF2430S60-145, HF2430S80-145, HF2415U60-145, HF2420U60-145 ,HF2430U60-145, HF2420U60-100, HF2430U60-100

Prepared for	:	SRNE Solar Co., Ltd.
Address	:	4-5F, 13A Wutong Island, Neihuan Rd, Xixiang, Bao`an, Shenzhen, Guangdong, China
Prepared by	:	EMTEK (SHENZHEN) CO., LTD.
Address	:	Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China
		Tel: (0755) 26954280
		Fax: (0755) 26954282
Report Number	:	ES200330009E-1
Date of Test	:	March 31, 2020 to March 31, 2020
Date of Report	:	October 19, 2020

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APPENDIX (Photos of EUT) (6 Pages)

TEST REPORT DESCRIPTION

Applicant	:	SRNE Solar Co., Ltd.
Manufacturer	:	SRNE Solar Co., Ltd.
Trade Mark	:	SRNE
EUT	:	All-in-one solar charge inverter
Model No.	:	HF2420S40-75, HF2420S60-100, HF2420S60-145, HF2420S80-145, HF2430S40-75, HF2430S60-100, HF2430S60-145, HF2430S80-145, HF2415U60-145, HF2420U60-145 ,HF2430U60-145, HF2420U60-100, HF2430U60-100
Rating	:	Input: 230VAC, 30A, 50/60Hz Output: 230Vac±5%, 13A, 3000W Battery Input: 20~33VDC

Measurement Procedure Used:

EN 61000-6-3:2007+A1:2011+ AC:2012,
EN 61000-3-2: 2014
EN 61000-3-3: 2013,
EN 61000-6-1:2007
(IEC 61000-4-2:2008, IEC 61000-4-3:2006+A1:2007+A2:2010, IEC61000-4-4:2012,
IEC 61000-4-5:2014, IEC 61000-4-6:2013, IEC 61000-4-8:2009, IEC 61000-4-11:2004)

The device described above is tested by EMTEK (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK (SHENZHEN) CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN61000-6-3, EN61000-3-2, EN61000-3-3 and EN61000-6-1 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK (SHENZHEN) CO., LTD.

Date of Test : March 31, 2020 to March 31, 2020

Prepared by : Kaimin Guo/Editor

Reviewer : Jessie Hu/Supervisor

EMTEK (SHENZHEN) CO., LTD. TESTING

Approved & Authorized Signer : Lisa Wang/Manager

Modified Information

Version	Report No.	Revision Date	Summary
Ver.1.0	ES200330009E	/	Original Report
Ver.1.0	ES200330009E-1	2020-10-19	Add two models

1. SUMMARY OF TEST RESULTS

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted Disturbance at Mains Terminals	EN 61000-6-3:2007+A1:2011 + AC:2012	--	Pass
Radiated Disturbance	EN 61000-6-3:2007+A1:2011 + AC:2012	--	Pass
Harmonic Current Emissions	EN 61000-3-2: 2014	Class A	N/A
Voltage Fluctuation and Flicker	EN 61000-3-3: 2013	Section 5	N/A
IMMUNITY (EN 61000-6-1:2007)			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008	B	Pass
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3:2006+A1:2007 +A2:2010	A	Pass
EFT/B Immunity	IEC61000-4-4:2012	B	Pass
Surge Immunity	IEC 61000-4-5:2014	B	Pass
Conducted RF Immunity	IEC 61000-4-6:2013	A	Pass
Power Frequency Magnetic Field	IEC 61000-4-8:2009	A	Pass
Voltage Dips, >95% Reduction	IEC 61000-4-11:2004	B	Pass
Voltage Dips, 30% Reduction		C	Pass
Voltage Interruptions		C	Pass
Note: N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	All-in-one solar charge inverter
Model Number	:	HF2420S40-75, HF2420S60-100, HF2420S60-145, HF2420S80-145, HF2430S40-75, HF2430S60-100, HF2430S60-145, HF2430S80-145, HF2415U60-145, HF2420U60-145 ,HF2430U60-145, HF2420U60-100, HF2430U60-100 (Note: These models are identical in circuitry and electrical, mechanical and physical construction; the only difference is the model number and power. for trading purpose. We prepare HF2430S80-145 for test.)
Test Voltage	:	AC 230V/50Hz, DC 24V
Applicant	:	SRNE Solar Co., Ltd.
Address	:	4-5F, 13A Wutong Island, Neihuan Rd, Xixiang, Bao`an, Shenzhen, Guangdong, China
Manufacturer	:	SRNE Solar Co., Ltd.
Address	:	4-5F, 13A Wutong Island, Neihuan Rd, Xixiang, Bao`an, Shenzhen, Guangdong, China
Factory	:	SRNE Solar Co., Ltd.
Address	:	4-5F, 13A Wutong Island, Neihuan Rd, Xixiang, Bao`an, Shenzhen, Guangdong, China
Date of Received	:	March 31, 2020
Date of Test	:	March 31, 2020 to March 31, 2020

2.2. Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2018.11.30
The certificate is valid until 2022.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017)
The Certificate Registration Number is L2291.

Accredited by FCC
Designation Number: CN1204
Test Firm Registration Number: 882943

Accredited by A2LA, August 25, 2020
The Certificate Number is 4321.01.

Accredited by Industry Canada
The Conformity Assessment Body Identifier is CN0008

Name of Firm : EMTEK (SHENZHEN) CO., LTD.

Site Location : Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

2.3. Description of Support Device

N/A

2.4. Measurement Uncertainty

Test Item		Uncertainty
Conducted Emission Uncertainty	:	3.16dB(9k~150kHz Conduction 2#) 2.90dB(150k-30MHz Conduction 2#)
Radiated Emission Uncertainty (3m 3# Chamber)	:	4.40dB (30M~1GHz Polarize: H) 5.04dB (30M~1GHz Polarize: V)
Uncertainty for Flicker test	:	0.07%
Uncertainty for Harmonic test	:	1.8%
Uncertainty for C/S Test	:	1.45(Using CDN Test) 2.37(Using EM Clamp Test)
Uncertainty for R/S Test	:	2.10dB(80MHz-200MHz) 1.76dB(200MHz-1000MHz)
Uncertainty for test site temperature and humidity	:	0.6℃ 4%

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Power Line Conducted Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	EMI Test Receiver	Rohde & Schwarz	ESCI	101045	May 19, 2019	1Year
☑	PULSE LIMTER	Rohde & Schwarz	ESH3-Z2	100107	May 18, 2019	1Year
☑	AMN	Schwarzbeck	NNLK 8129	8129203	May 18, 2019	1Year

3.2. For Radiated Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	EMI Test Receiver	Rohde & Schwarz	ESU 26	100154	May 19, 2019	1Year
☑	Pre-Amplifie	Lunar EM	LNA10M1G-40	J1011130912001	May 19, 2019	1Year
☑	Bilog Antenna	Schwarzbeck	VULB9163	659	Nov 10, 2018	2 Year

3.3. For Harmonic Current / Flicker Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	45KVA AC Power source	Teseq	NSG 1007-45/45KVA	1305A02873	May 19, 2019	1 Year
☑	Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 19, 2019	1 Year
☑	Impedance network	Teseq	INA2197/37A	1305A02873	May 19, 2019	1 Year
☑	Impedance network	Teseq	INA 2196/75A	1305A02874	May 19, 2019	1 Year
☐	Profline 2100 AC Switching Unit	Teseq	NSG 2200-3	A22714	May 19, 2019	1 Year

3.4. For Electrostatic Discharge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	ESD Tester	TESEQ AG	NSG 438A	130	May 19, 2019	1 Year

3.5. For RF Strength Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Power Amplifier	MILMEGA	AS0102-55	1018770	May 19, 2019	1 Year
☑	50ohm Diode Power Sensor	BOONTON	51011EMC	34236	May 19, 2019	1 Year
☑	RF Power Meter. Dual Channel	BOONTON	4232A	10539	May 19, 2019	1 Year
☑	Log.-Per. Antenna	SCHWARZBECK	VULP 9118E	811	N/A	N/A
☑	Signal Generator	Agilent	N5181A	MY50145187	May 19, 2019	1 Year
☑	50ohm Diode Power Sensor	BOONTON	51011EMC	36164	May 19, 2019	1 Year
☑	Broad-Band Horn Antenna	SCHWARZBECK	STLP 9149	9149-227	N/A	N/A
☑	Field Strength Meter	DARE	RSS1006A	10I00037SNO22	May 19, 2019	1 Year
☑	Multi-function interface system	DARE	CTR1009B	12I00250SNO72	N/A	N/A
☑	Automatic switch group	DARE	RSW1004A	N/A	N/A	N/A
☑	Power Amplifier	MILMEGA	AS1860-50	1059346	May 19, 2019	1 Year
☑	Power Amplifier	MILMEGA	80RF1000-175	1059345	May 19, 2019	1 Year

3.6. For Electrical Fast Transient / Burst Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Burst Tester	HAEFELY	PEFT4010	080981-16	May 18, 2019	1Year
☐	Coupling Clamp	HAEFELY	IP-4A	147147	May 18, 2019	1Year

3.7. For Surge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Controller	HAEFELY	Psurge 8000	174031	May 18, 2019	1Year
☑	Impulse Module	HAEFELY	PIM 100	174124	May 18, 2019	1Year
☑	Coupling Decoupling	HAEFELY	PCD 130	172181	May 18, 2019	1Year
☐	Coupling Module	HAEFELY	PCD122	174354	May 18, 2019	1Year
☐	Impulse Module	HAEFELY	PIM 120	174435	May 18, 2019	1Year
☐	Coupling Module	HAEFELY	PCD 126A	174387	May 18, 2019	1Year
☐	Impulse Module	HAEFELY	PIM 110	174391	May 18, 2019	1Year

3.8. For Injected Current Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Continuous Wave Simulator	EMTEST	CWS500C	0900-12	May 19, 2019	1Year
☑	CDN	EMTEST	CDN-M2	510010010010	May 18, 2019	1Year
☑	CDN	EMTEST	CDN-M3	0900-11	May 18, 2019	1Year
☐	EM Injection Clamp	EMTEST	F-2031-23MM	368	May 18, 2019	1Year
☑	Attenuator	EMTEST	100W 6dB DC-3G	/	May 18, 2019	1Year
☑	Signal Generator	R&S	SMB100A	103041	May 19, 2019	1Year
☑	Power meter	AGILENT	E4418B	MY45102886	May 19, 2019	1 Year

3.9. For Magnetic Field Immunity Test

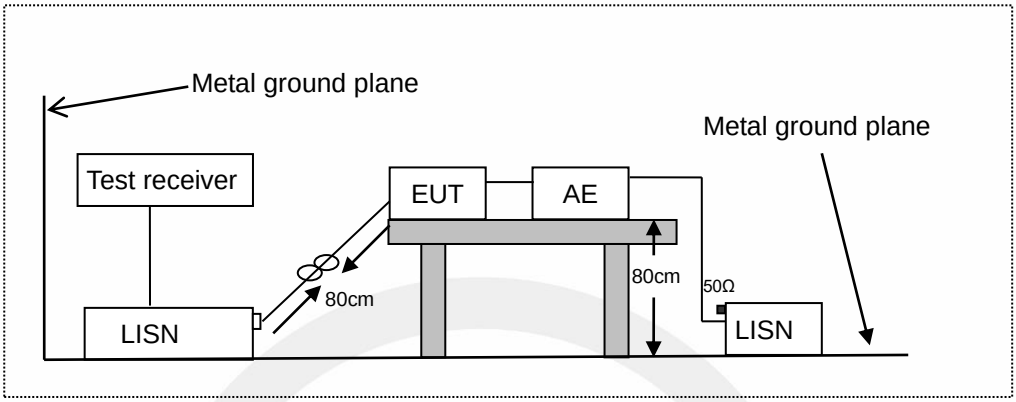
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Magnetic Field Tester	HAEFELY	MAG100	250040.1	May 19, 2019	1Year

3.10. For Voltage Dips and Interruptions Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	45KVA AC Power source	Teseq	NSG 1007-45/45KVA	1305A02873	May 19, 2019	1 Year
☐	Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 19, 2019	1 Year
☐	Impedance network	Teseq	INA2197/37A	1305A02873	May 19, 2019	1 Year
☐	Impedance network	Teseq	INA 2196/75A	1305A02874	May 19, 2019	1 Year
☑	Profline 2100 AC Switching Unit	Teseq	NSG 2200-3	A22714	May 19, 2019	1 Year

4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



LISN: Artificial Mains Network
AE: Associated equipment
EUT: Equipment under test

4.2. Measuring Standard

EN 61000-6-3:2007+A1:2011+ AC:2012

4.3. Power Line Conducted Emission Limits

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

4.4. EUT Configuration of Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN 61000-6-3 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT : All-in-one solar charge inverter
Model Number : HF2430S80-145

4.5. Operating Condition of EUT

4.5.1.Setup the EUT as shown on Section 4.1.

4.5.2.Turn on the power of all equipment.

4.5.3.Let the EUT work in measuring mode (AC mode, Bat mode) and measure it.

4.6. Test Procedure

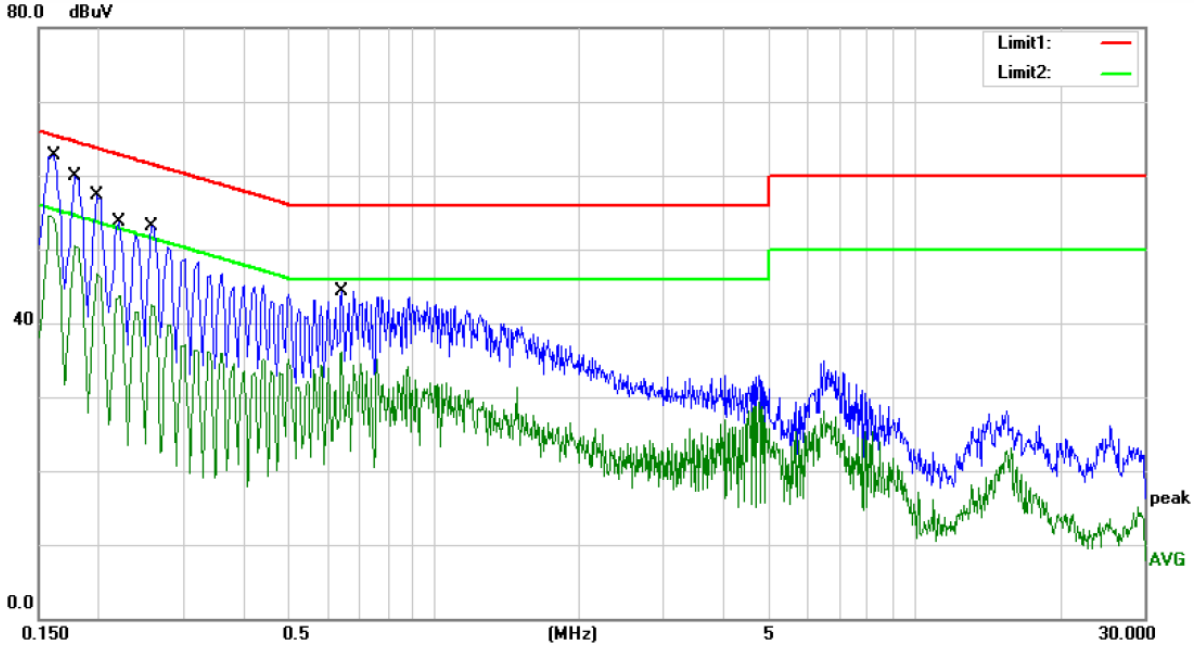
The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN61000-6-3 regulations during conducted emission measurement.
The bandwidth of the field strength meter (R&S Test Receiver) is set at 9kHz in 150kHz~30MHz and 200Hz in 9kHz~150kHz.
The frequency range from 150kHz to 30MHz is investigated.

All the scanning waveform is put in the following pages.

4.7. Measuring Results

PASS.

Please reference to the following pages.



Site Conduction #2 Phase: *L1* Temperature: 25.0

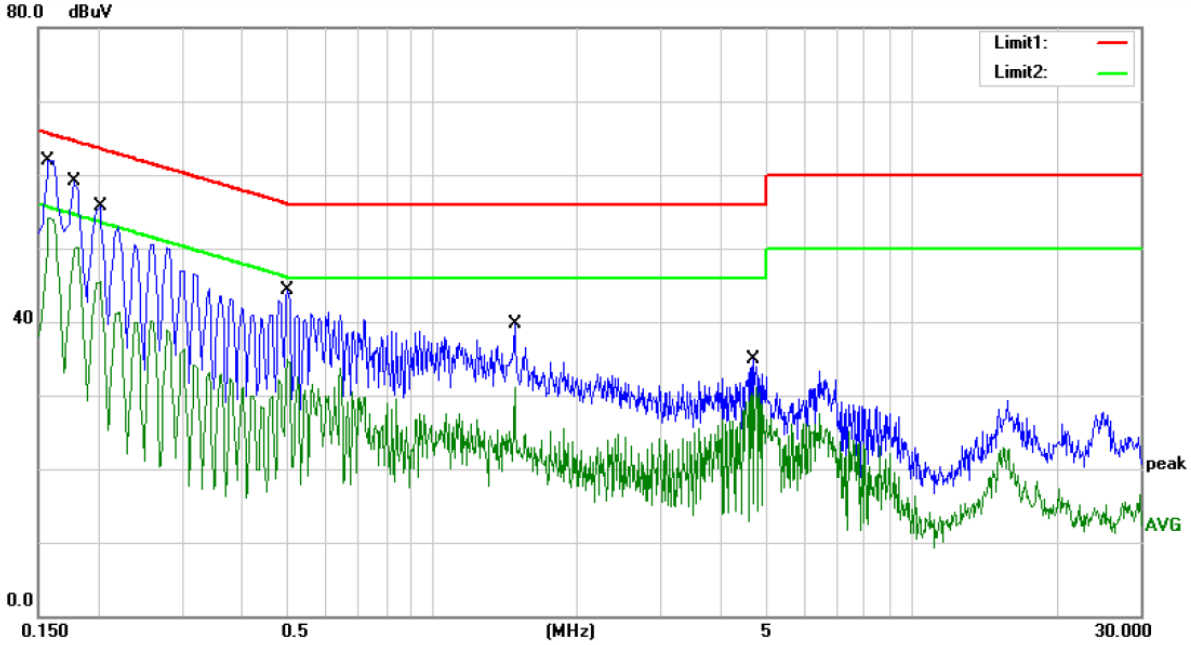
Limit: (CE)EN61000-6-3_QP Power: AC 230V/50Hz Humidity: 49 %

Mode: AC mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	49.30	9.90	59.20	65.36	-6.16	QP	
2	*	0.1620	44.64	9.90	54.54	55.36	-0.82	AVG	
3		0.1780	45.40	9.90	55.30	64.58	-9.28	QP	
4		0.1780	40.58	9.90	50.48	54.58	-4.10	AVG	
5		0.1980	47.41	9.90	57.31	63.69	-6.38	QP	
6		0.1980	36.82	9.90	46.72	53.69	-6.97	AVG	
7		0.2220	43.77	9.90	53.67	62.74	-9.07	QP	
8		0.2220	33.76	9.90	43.66	52.74	-9.08	AVG	
9		0.2580	43.23	9.91	53.14	61.50	-8.36	QP	
10		0.2580	32.55	9.91	42.46	51.50	-9.04	AVG	
11		0.6420	34.47	9.92	44.39	56.00	-11.61	QP	
12		0.6420	26.12	9.92	36.04	46.00	-9.96	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator:



Site Conduction #2 Phase: N Temperature: 25.0

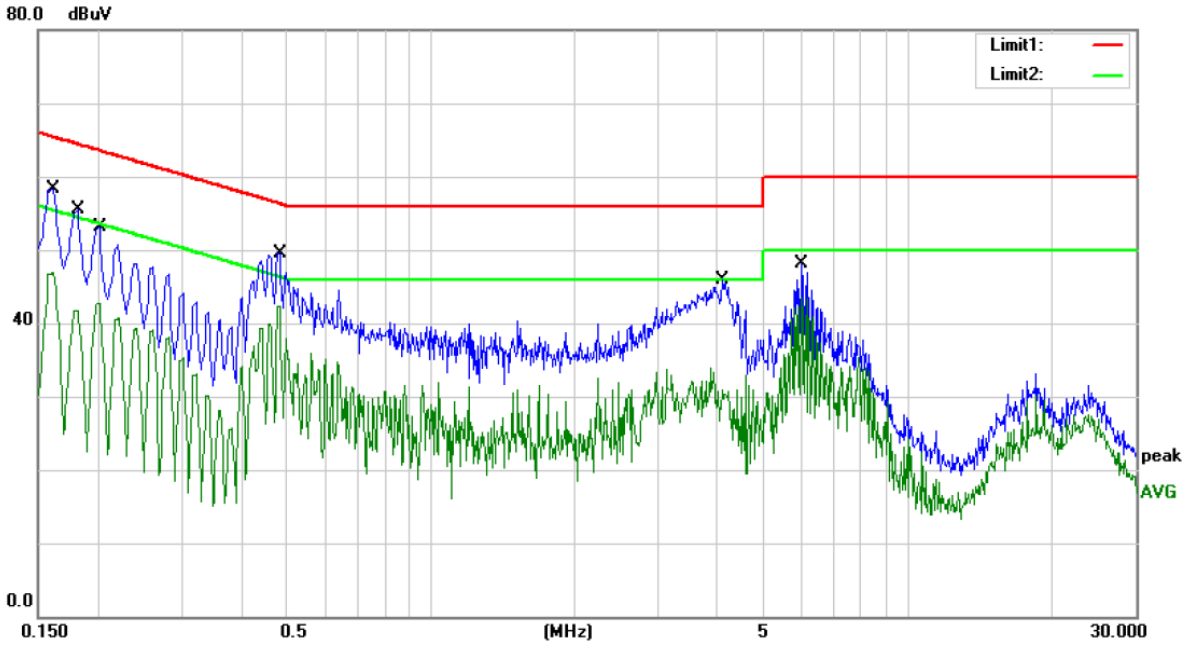
Limit: (CE)EN61000-6-3_QP Power: AC 230V/50Hz Humidity: 49 %

Mode: AC mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1580	49.20	9.90	59.10	65.57	-6.47	QP	
2	*	0.1580	44.14	9.90	54.04	55.57	-1.53	AVG	
3		0.1780	45.40	9.90	55.30	64.58	-9.28	QP	
4		0.1780	40.18	9.90	50.08	54.58	-4.50	AVG	
5		0.2020	45.74	9.90	55.64	63.53	-7.89	QP	
6		0.2020	35.52	9.90	45.42	53.53	-8.11	AVG	
7		0.4980	34.35	9.92	44.27	56.03	-11.76	QP	
8		0.4980	24.97	9.92	34.89	46.03	-11.14	AVG	
9		1.4820	29.74	9.93	39.67	56.00	-16.33	QP	
10		1.4820	21.24	9.93	31.17	46.00	-14.83	AVG	
11		4.6820	24.89	9.95	34.84	56.00	-21.16	QP	
12		4.6820	21.25	9.95	31.20	46.00	-14.80	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator:



Site Conduction #2 Phase: *L1* Temperature: 25.0

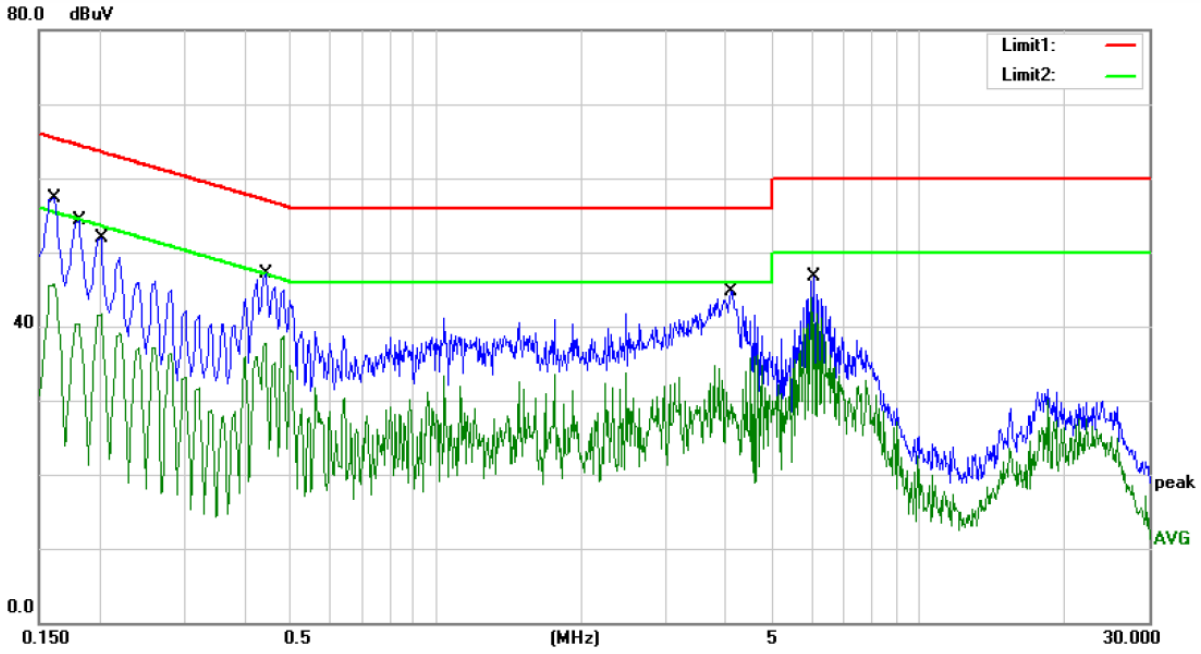
Limit: (CE)EN61000-6-3_QP Power: DC 24V Humidity: 49 %

Mode: Bat mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	48.43	9.90	58.33	65.36	-7.03	QP	
2		0.1620	36.97	9.90	46.87	55.36	-8.49	AVG	
3		0.1820	45.52	9.90	55.42	64.39	-8.97	QP	
4		0.1820	31.82	9.90	41.72	54.39	-12.67	AVG	
5		0.2020	43.26	9.90	53.16	63.53	-10.37	QP	
6		0.2020	32.86	9.90	42.76	53.53	-10.77	AVG	
7		0.4820	39.61	9.92	49.53	56.30	-6.77	QP	
8	*	0.4820	32.38	9.92	42.30	46.30	-4.00	AVG	
9		4.0820	35.93	9.95	45.88	56.00	-10.12	QP	
10		4.0820	23.91	9.95	33.86	46.00	-12.14	AVG	
11		5.9820	38.05	9.97	48.02	60.00	-11.98	QP	
12		5.9820	33.59	9.97	43.56	50.00	-6.44	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator:



Site Conduction #2 Phase: N Temperature: 25.0

Limit: (CE)EN61000-6-3_QP Power: DC 24V Humidity: 49 %

Mode: Bat mode

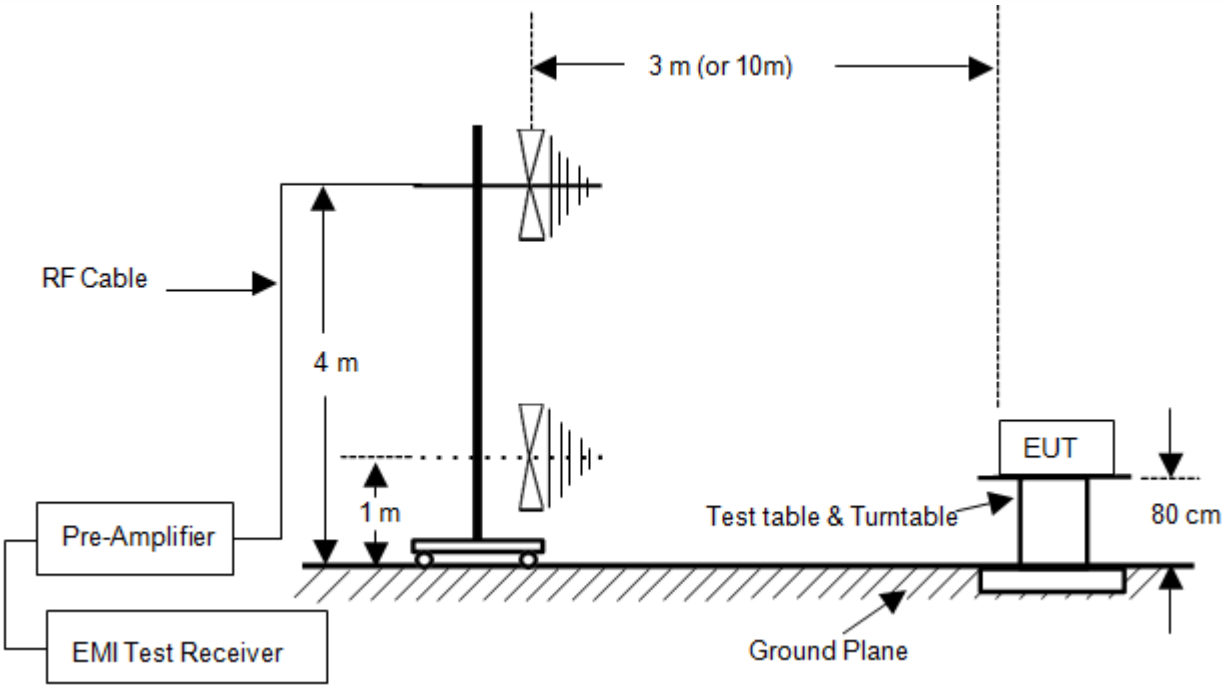
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	47.43	9.90	57.33	65.36	-8.03	QP	
2		0.1620	35.76	9.90	45.66	55.36	-9.70	AVG	
3		0.1820	44.42	9.90	54.32	64.39	-10.07	QP	
4		0.1820	30.45	9.90	40.35	54.39	-14.04	AVG	
5		0.2020	42.07	9.90	51.97	63.53	-11.56	QP	
6		0.2020	31.72	9.90	41.62	53.53	-11.91	AVG	
7		0.4460	37.18	9.92	47.10	56.95	-9.85	QP	
8		0.4460	28.76	9.92	38.68	46.95	-8.27	AVG	
9		4.0820	34.83	9.95	44.78	56.00	-11.22	QP	
10		4.0820	24.75	9.95	34.70	46.00	-11.30	AVG	
11		6.0620	36.80	9.97	46.77	60.00	-13.23	QP	
12	*	6.0620	33.87	9.97	43.84	50.00	-6.16	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator:

5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup



5.2. Measuring Standard

EN 61000-6-3:2007+A1:2011+ AC:2012

5.3. Radiated Emission Limits

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.

5.4. EUT Configuration of Measurement

The EN 61000-6-3 regulations test method must be used to find the maximum emission during radiated emission measurement.

EUT : All-in-one solar charge inverter
Model Number : HF2430S80-145

5.5. Operating Condition of EUT

5.5.1. Setup the EUT as shown on Section 5.1.

5.5.2. Turn on the power of all equipment.

5.5.3. Let the EUT work in measuring mode (AC mode, Bat mode) and measure it.

5.6. 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 that 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. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver (ESU 26) is set at 120kHz.

All the scanning waveform is put in the following pages.

5.7. Measuring Results

PASS.

The frequency range from 30MHz to 1000MHz is investigated.

Please reference to the following pages.

Site 3m Chamber #3 Polarization: *Horizontal* Temperature: 22.5 C

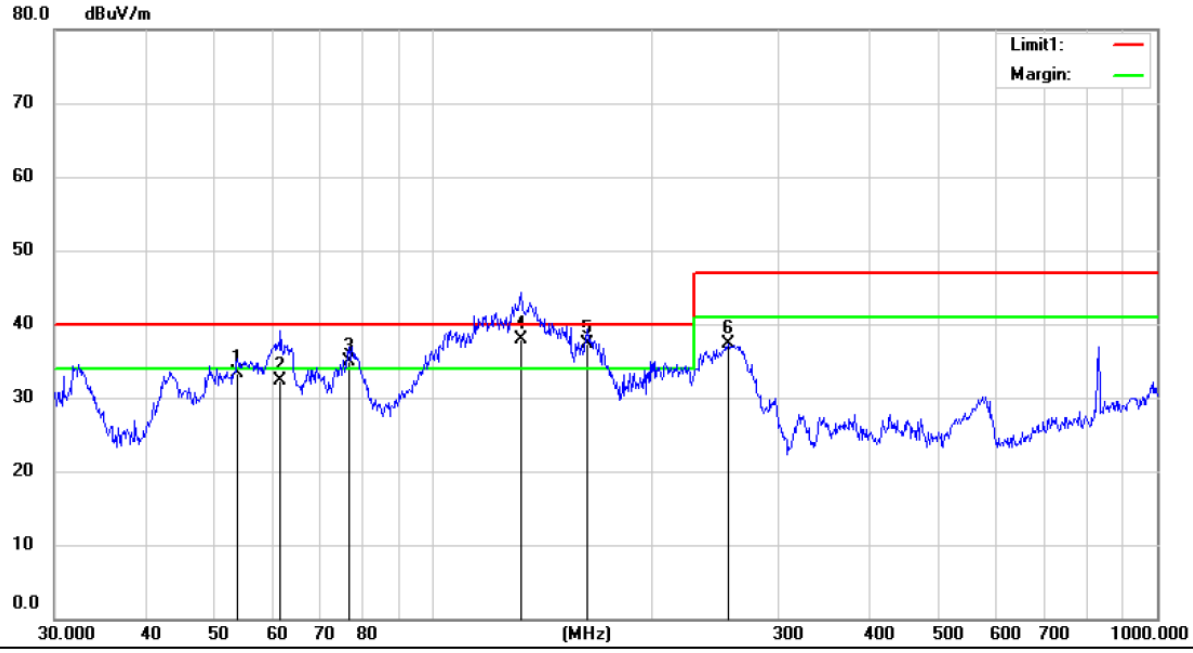
Limit: (RE)EN61000-6-3 Power: AC 230V/50Hz Humidity: 45 %

Mode:AC mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		63.3132	50.15	-16.35	33.80	40.00	-6.20	QP			
2		68.3908	50.24	-16.84	33.40	40.00	-6.60	QP			
3	*	108.6470	49.80	-14.40	35.40	40.00	-4.60	QP			
4	!	163.1817	52.41	-17.21	35.20	40.00	-4.80	QP			
5		193.0944	47.90	-14.10	33.80	40.00	-6.20	QP			
6		262.8955	52.64	-12.04	40.60	47.00	-6.40	QP			

*:Maximum data x:Over limit !:over margin Operator: whz



Site 3m Chamber #3 Polarization: *Vertical* Temperature: 22.5 C

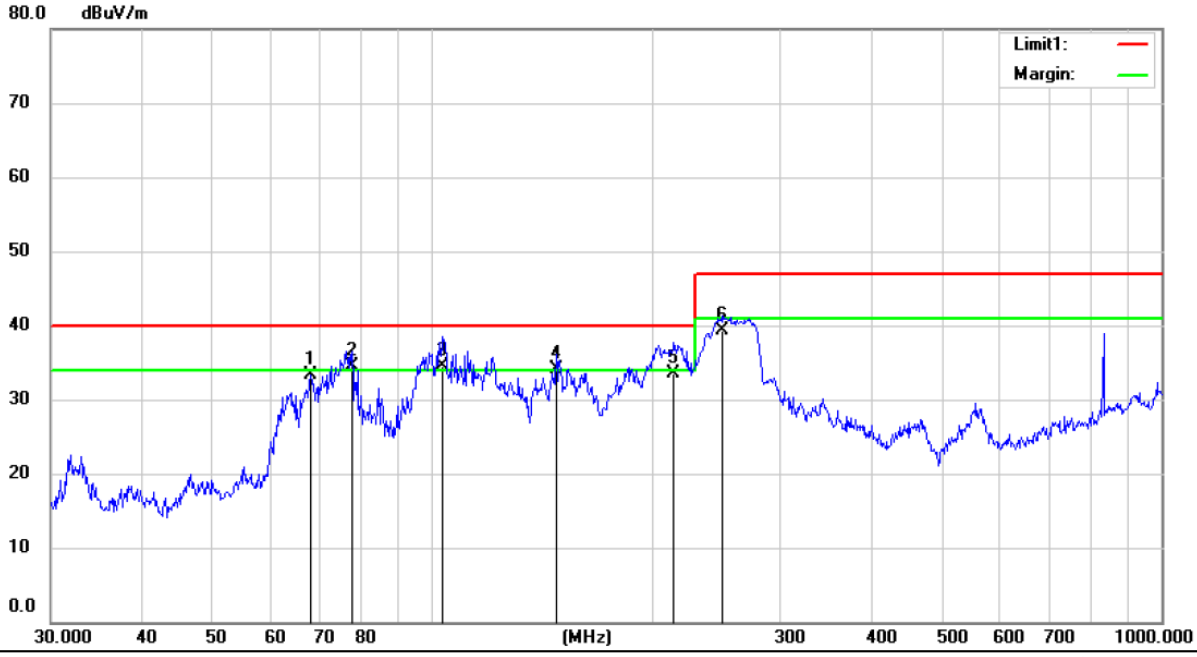
Limit: (RE)EN61000-6-3 Power: AC 230V/50Hz Humidity: 45 %

Mode: AC mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		53.6931	47.07	-13.77	33.30	40.00	-6.70	QP			
2		61.5618	48.39	-16.09	32.30	40.00	-7.70	QP			
3	!	76.5121	52.72	-17.82	34.90	40.00	-5.10	QP			
4	*	132.2206	54.37	-16.47	37.90	40.00	-2.10	QP			
5	!	163.1817	54.51	-17.21	37.30	40.00	-2.70	QP			
6		255.6231	49.89	-12.60	37.29	47.00	-9.71	QP			

*:Maximum data x:Over limit !:over margin Operator: whz



Site 3m Chamber #3 Polarization: *Horizontal* Temperature: 22.5 C

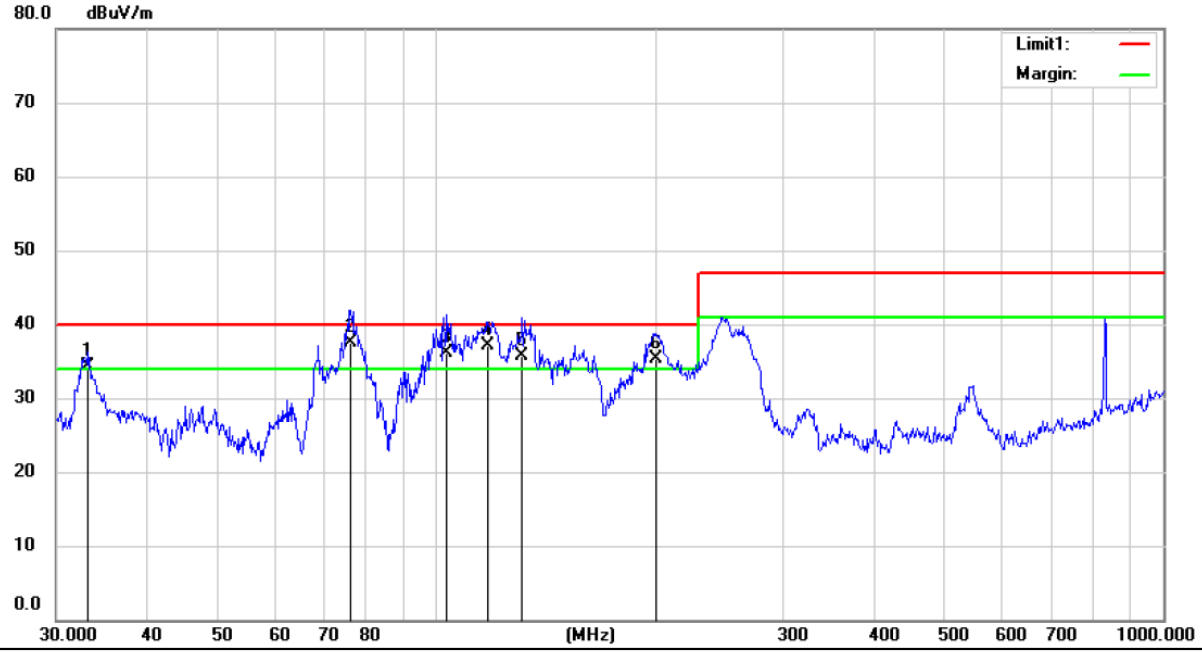
Limit: (RE)EN61000-6-3 Power: DC 24V Humidity: 45 %

Mode: Bat mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		68.1512	50.18	-16.82	33.36	40.00	-6.64	QP			
2	*	77.5928	52.60	-18.00	34.60	40.00	-5.40	QP			
3	!	103.4421	48.96	-14.46	34.50	40.00	-5.50	QP			
4	!	147.9214	51.85	-17.65	34.20	40.00	-5.80	QP			
5		214.5143	47.05	-13.45	33.60	40.00	-6.40	QP			
6		249.4250	52.05	-12.75	39.30	47.00	-7.70	QP			

*:Maximum data x:Over limit !:over margin Operator: whz



Site 3m Chamber #3 Polarization: *Vertical* Temperature: 22.5 C

Limit: (RE)EN61000-6-3 Power: DC 24V Humidity: 45 %

Mode: Bat mode

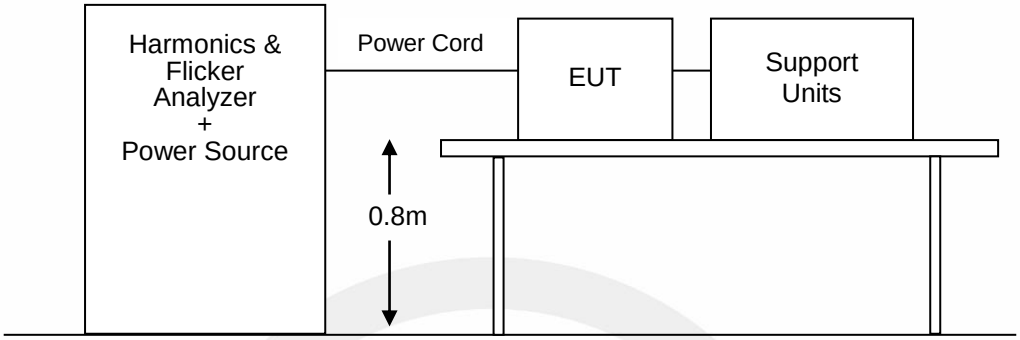
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	!	33.2112	50.24	-15.94	34.30	40.00	-5.70	QP			
2	*	76.2442	55.28	-17.78	37.50	40.00	-2.50	QP			
3	!	103.4421	50.56	-14.46	36.10	40.00	-3.90	QP			
4	!	117.7725	52.12	-15.02	37.10	40.00	-2.90	QP			
5	!	131.2965	52.17	-16.37	35.80	40.00	-4.20	QP			
6	!	200.6881	48.46	-13.06	35.40	40.00	-4.60	QP			

*:Maximum data x:Over limit !:over margin Operator: whz

6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. Measuring Standard

EN 61000-3-2: 2014 CLASS A

6.3. Operation Condition of EUT

6.3.1. Setup the EUT as shown on Section 6.1.

6.3.2. Turn on the power of all equipment.

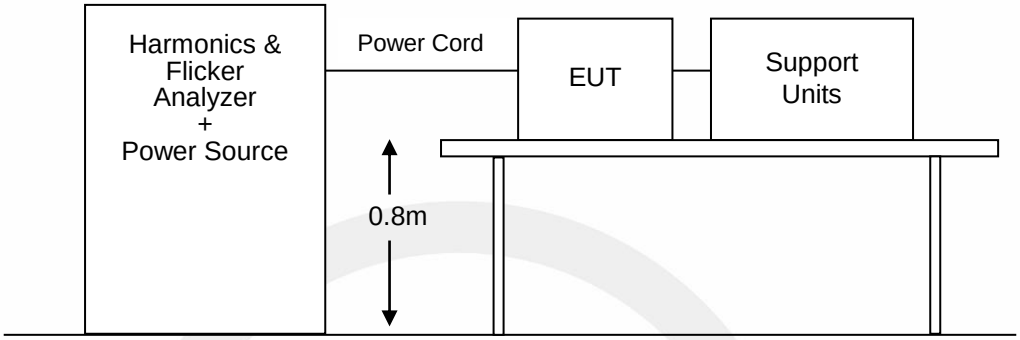
6.3.3. Let the EUT work in measuring mode (AC mode) and measure it.

6.4. Measuring Results

N/A.

7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Measuring Standard

EN 61000-3-3: 2013

7.3. Operation Condition of EUT

7.3.1.Me Setup the EUT as shown on Section 7.1.

7.3.2.Turn on the power of all equipment.

7.3.3.Let the EUT work in measuring mode (AC mode) and measure it.

7.4. Measuring Results

N/A.

8. IMMUNITY PERFORMANCE CRITERIA DESCRIPTION

Performance Level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level by its manufacturer or the requestor of the test, or the agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level:
1. Based on the used product standard
2. Based on the declaration of the manufacturer, requestor or purchaser

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.

Criterion B:

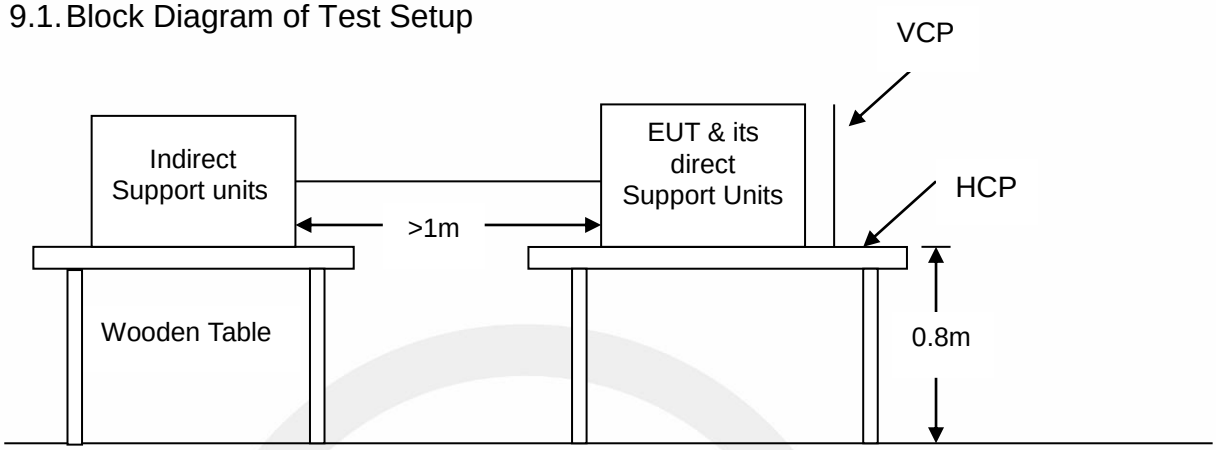
The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. 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.

Criterion C:

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

9. ELECTROSTATIC DISCHARGE IMMUNITY TEST

9.1. Block Diagram of Test Setup



9.2. Test Standard

EN 61000-6-1:2007
(IEC 61000-4-2:2008 Severity Level: 3 / Air Discharge: ±8kV
Level: 2 / Contact Discharge: ±4kV)

9.3. Severity Levels and Performance Criterion

9.3.1. 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

9.3.2. Performance criterion: B

9.4. Operating Condition of EUT

9.4.1. Setup the EUT as shown on Section 9.1.

9.4.2. Turn on the power of all equipment.

9.4.3. Let the EUT work in test mode (AC mode) and test it.

9.5. Test Procedure

9.5.1. 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.

9.5.2. Contact Discharge:

All procedure shall be the same as Section 9.5.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

9.5.3. 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.

9.5.4. Indirect discharge for vertical coupling plane

At least 10 singles 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×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.

9.6. Test Results

PASS.

Please refer to the following page.

Electrostatic Discharge Test Result

EMTEK (SHENZHEN) CO., LTD.

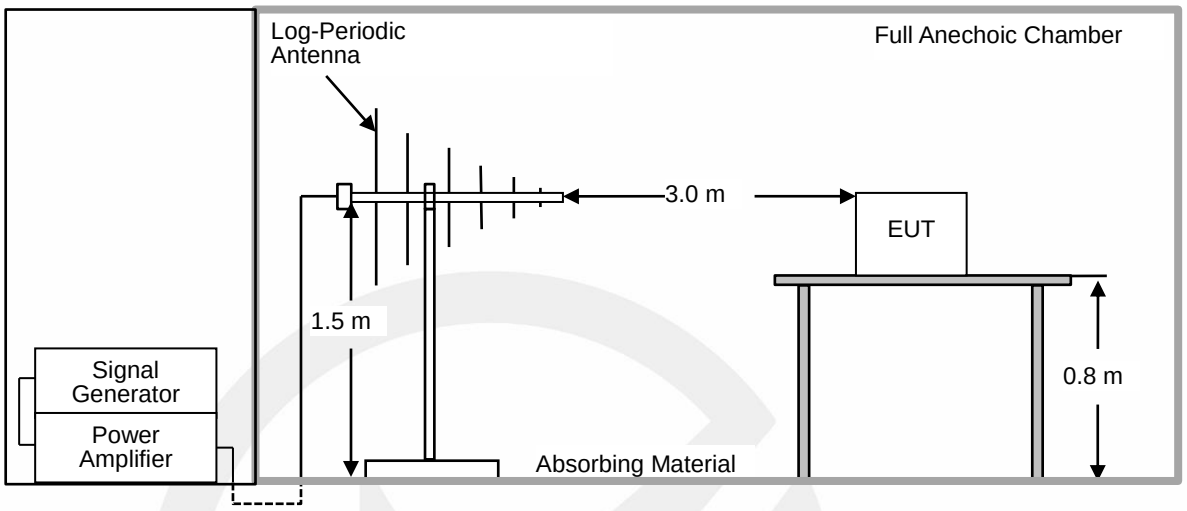
Applicant	:	SRNE Solar Co., Ltd.			
EUT	:	All-in-one solar charge inverter	Test Date	:	2020-04-20
M/N	:	HF2430S80-145	Temperature	:	26.1℃
Power Supply	:	AC 230V/50Hz	Humidity	:	51%
Air discharge	:	± 8.0kV	Test ode	:	AC mode
Contact discharge:		± 4.0kV	Criterion	:	B

Location	Kind A-Air Discharge C-Contact Discharge	Result
Metal	C	A
Screw	C	A
Slot	A	A
Screen	A	A
HCP	C	A
VCP of front	C	A
VCP of rear	C	A
VCP of left	C	A
VCP of right	C	A

Note:

10. RF FIELD STRENGTH SUSCEPTIBILITY TEST

10.1.Block Diagram of Test Setup



10.2.Test Standard

EN 61000-6-1:2007
(IEC 61000-4-3:2006+A1:2007+A2:2010, Severity Level: 1V/m, 3V/m)

10.3.Severity Levels and Performance Criterion

10.3.1.Severity Levels

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

10.3.2.Performance Criterion: A

10.4.Operating Condition of EUT

10.4.1.Me Setup the EUT as shown on Section 10.1.

10.4.2.Turn on the power of all equipment.

10.4.3.Let the EUT work in test mode (AC mode) and test it.

10.5.Test Procedure

The EUT is placed on a table that is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna that 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 camera is used to monitor it.
All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	1V/m (Severity Level 1) 3V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80-2700MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

10.6.Test Results

PASS.

Please refer to the following pages.

RF Field Strength Susceptibility Test Results

EMTEK (SHENZHEN) CO., LTD.

Applicant	:	SRNE Solar Co., Ltd.			
EUT	:	All-in-one solar charge inverter	Test Date	:	2020-04-20
M/N	:	HF2430S80-145	Temperature	:	23.5℃
Field Strength	:	3 V/m	Humidity	:	56%
Power Supply	:	AC 230V/50Hz	Criterion	:	A
Test Mode	:	AC mode	Frequency Range	:	80 MHz to 1000 MHz 1400 MHz to 2000 MHz

Modulation: ☐ None ☐ Pulse ☒ AM 1kHz 80%

	Frequency Rang 1: 80~ 1000MHz		Frequency Rang 2: 1400~ 2000 MHz	
Steps	1%			
	Horizontal	Vertical	Horizontal	Vertical
Front	A	A	A	A
Right	A	A	A	A
Rear	A	A	A	A
Left	A	A	A	A

Test Equipment：
1. Signal Generator : N5181A (Agilent)
2. Power Amplifier : AS0102-55 (MILMEGA) & 80RF1000-175 (MILMEGA) & AS1860-50 (MILMEGA)
3. Log.-Per.Antenna: VULP9118E (SCHWARZBECK)
4. Broad-Band Horn Antenna: STLP 9149 (Schwarzbeck)
5. RF Power Meter. Dual Channel: 4232A (BOONTON)
6. Field Strength Meter: RSS1006A (DARE)

Note:

RF Field Strength Susceptibility Test Results

EMTEK (SHENZHEN) CO., LTD.

Applicant	:	SRNE Solar Co., Ltd.			
EUT	:	All-in-one solar charge inverter	Test Date	:	2020-04-20
M/N	:	HF2430S80-145	Temperature	:	23.5℃
Field Strength	:	1 V/m	Humidity	:	56%
Power Supply	:	AC 230V/50Hz	Criterion	:	A
Test Mode	:	AC mode	Frequency Range	:	2000 MHz to 2700 MHz

Modulation: ☐ None ☐ Pulse ☒ AM 1kHz 80%

	Frequency Rang 1: 2000~ 2700 MHz		Frequency Rang 2: N/A	
Steps	1%			
	Horizontal	Vertical	Horizontal	Vertical
Front	A	A		
Right	A	A		
Rear	A	A		
Left	A	A		

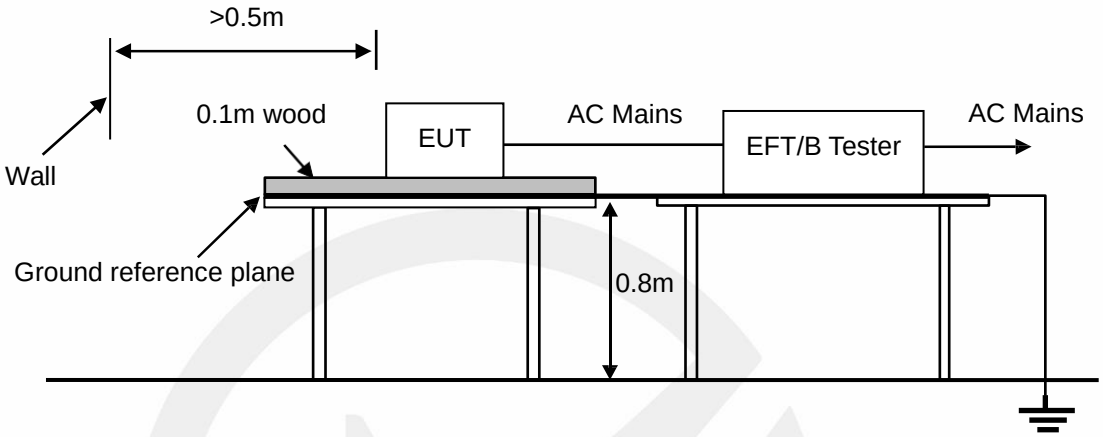
Test Equipment：

1. Signal Generator : N5181A (Agilent)
2. Power Amplifier : AS0102-55 (MILMEGA) & 80RF1000-175 (MILMEGA) & AS1860-50 (MILMEGA)
3. Log.-Per.Antenna: VULP9118E (SCHWARZBECK)
4. Broad-Band Horn Antenna: STLP 9149 (Schwarzbeck)
5. RF Power Meter. Dual Channel: 4232A (BOONTON)
6. Field Strength Meter: RSS1006A (DARE)

Note:

11. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

11.1.Block Diagram of Test Setup



11.2.Test Standard

EN 61000-6-1:2007
(IEC61000-4-4:2012, Severity Level: 2: 1kV)

11.3.Severity Levels and Performance Criterion

11.3.1.Severity level

Open Circuit Output Test Voltage ±10%		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1	0.5 kV	0.25 kV
2	1 kV	0.5 kV
3	2 kV	1 kV
4	4 kV	2 kV
X	Special	Special

11.3.2.Performance criterion: B

11.4.Operating Condition of EUT

11.4.1.Me Setup the EUT as shown on Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in test mode (AC mode) and test it.

11.5.Test Procedure

The EUT is put on the table that is 0.8meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

11.5.1.For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device that couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

11.5.2.For signal lines and control lines ports:

No I/O ports. It's unnecessary to test.

11.5.3.For DC output line ports:

It's unnecessary to test.

11.6.Test Results

PASS.

Please refer to the following page.

Electrical Fast Transient/Burst Test Results

EMTEK (SHENZHEN) CO., LTD.

Standard: ☒ IEC 61000-4-4	Result: ☒ PASS / ☐ FAIL

Applicant : SRNE Solar Co., Ltd.

EUT : All-in-one solar charge inverter

M/N : HF2430S80-145

Input Voltage: AC 230V/50Hz

Criterion : B

Ambient Condition : 23 ℃ 51% RH

Operation Mode: AC mode, Bat mode

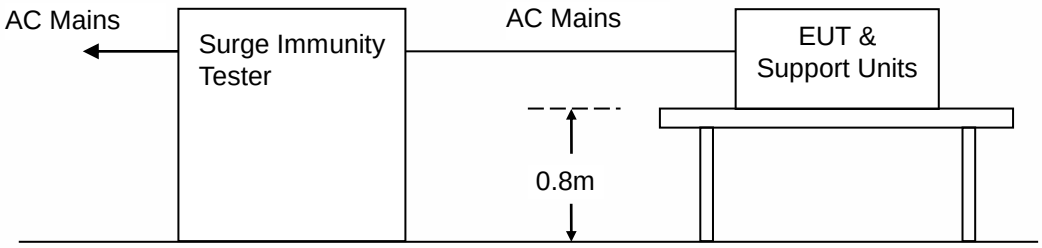
Line : ☒ AC Mains	Line : ☐ Signal ☐ I/O Cable
Coupling : ☒ Direct	Coupling : ☐ Capacitive
Test Time : 120s	

Line	Test Voltage	Result(+)	Result(-)
L	1kV	A	A
N	1kV	A	A
PE	1kV	A	A
L、N	1kV	A	A
L、PE	1kV	A	A
N、PE	1kV	A	A
L、N、PE	1kV	A	A
Signal Line			
DC Line			

Note:

12. SURGE IMMUNITY TEST

12.1.Block Diagram of Test Setup



12.2.Test Standard

EN 61000-6-1:2007
(IEC 61000-4-5:2014, Severity Level**:** Line to Line: Level 2, 1.0KV; Line to Earth: Level 3, 2.0KV)

12.3.Severity Levels and Performance Criterion

12.3.1.Severity level

Severity Level	Open-Circuit Test Voltage kV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

12.3.2.Performance criterion: B

12.4.Operating Condition of EUT

12.4.1.Me Setup the EUT as shown on Section 12.1.

12.4.2.Turn on the power of all equipment.

12.4.3.Let the EUT work in test mode (AC mode) and test it.

12.5.Test Procedure

1) Set up the EUT and test generator as shown on Section 12.1.2.
2) For line to line coupling mode, provide a 1.0 kV 1.2/50us voltage surge
   For line to earth coupling mode, provide a 2.0 kV 1.2/50us voltage surge
   (At open-circuit condition) and 8/20us current surge to EUT selected points.
3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
4) Different phase angles are done individually.
5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

12.6.Test Results

PASS.

Please refer to the following page.

Surge Immunity Test Result

EMTEK (SHENZHEN) CO., LTD.

Applicant : SRNE Solar Co., Ltd.

EUT : All-in-one solar charge inverter

M/N : HF2430S80-145

Power Supply : AC 230V/50Hz

Test Mode : AC mode

Test Date : 2020-04-20

Temperature : 23℃

Humidity : 51%

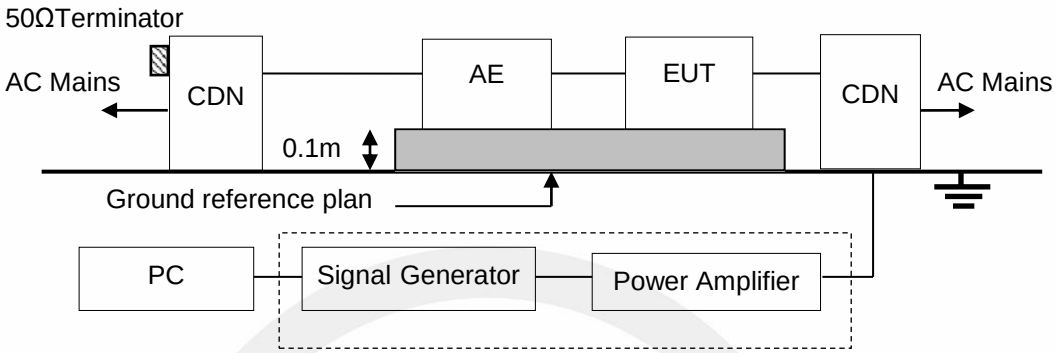
Criterion : B

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (kV)	Result
L-N	+	0°	5	1.0	A
	+	90°	5	1.0	A
	+	180°	5	1.0	A
	+	270°	5	1.0	A
	-	0°	5	1.0	A
	-	90°	5	1.0	A
	-	180°	5	1.0	A
	-	270°	5	1.0	A
L-PE	+	0°	5	2.0	A
	+	90°	5	2.0	A
	+	180°	5	2.0	A
	+	270°	5	2.0	A
	-	0°	5	2.0	A
	-	90°	5	2.0	A
	-	180°	5	2.0	A
	-	270°	5	2.0	A
N-PE	+	0°	5	2.0	A
	+	90°	5	2.0	A
	+	180°	5	2.0	A
	+	270°	5	2.0	A
	-	0°	5	2.0	A
	-	90°	5	2.0	A
	-	180°	5	2.0	A
	-	270°	5	2.0	A

Remark:

13. INJECTED CURRENTS SUSCEPTIBILITY TEST

13.1.Block Diagram of Test Setup



13.2.Test Standard

EN 61000-6-1:2007
(IEC 61000-4-6:2013, Severity Level: Level 2, 3V (r.m.s.), 0.15MHz ~ 80MHz)

13.3.Severity Levels and Performance Criterion

13.3.1.Severity level

Level	Field Strength V
1	1
2	3
3	10
X	Special

13.3.2.Performance criterion: A

13.4.Operating Condition of EUT

13.4.1.Me Setup the EUT as shown on Section 13.1.

13.4.2.Turn on the power of all equipment.

13.4.3.Let the EUT work in test mode (AC mode) and test it.

13.5.Test Procedure

1) Set up the EUT, CDN and test generators as shown on Section 13.1.2.
2) Let the EUT work in test mode and measure it.
3) The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
4) The disturbance signal described below is injected to EUT through CDN.
5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
6) The frequency range is swept from 150kHz to80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
7) The rate of sweep shall not exceed $1.5*10^{-3}$decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

13.6.Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

EMTEK (SHENZHEN) CO., LTD.

Applicant : SRNE Solar Co., Ltd.

EUT : All-in-one solar charge inverter

Test Date: 2020-04-20

M/N : HF2430S80-145

Temperature : 23℃

Power Supply : AC 230V/50Hz

Humidity : 51%

Test Engineer : LQZ

Test Mode: AC mode

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	3V	A	A

Test Mode : N/A

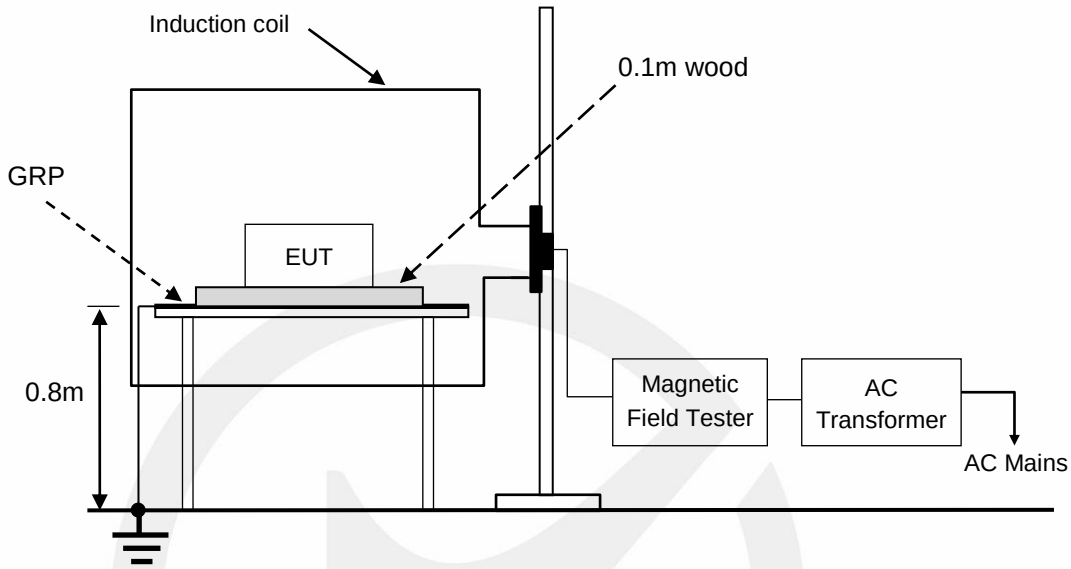
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result

Remark : 1. Modulation Signal:1kHz 80% AM
Measurement Equipment :
Simulator: CWS 500C (SWITZERLAND EMTEST)
CDN : ☐ CDN-M2 (SWITZERLAND EMTEST)
☒ CDN-M3 (SWITZERLAND EMTEST)

Note:

14. MAGNETIC FIELD SUSCEPTIBILITY TEST

14.1.Block Diagram of Test Setup



GRP: Ground reference plane
EUT: Equipment under test

14.2.Test Standard

EN 61000-6-1:2007
(IEC 61000-4-8:2009, Severity Level: Level 2, 3A / m)

14.3.Severity Levels and Performance Criterion

14.3.1.Severity Levels

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

14.3.2.Performance Criterion: A

14.4.Operating Condition of EUT

14.4.1.Me Setup the EUT as shown on Section 14.1.

14.4.2.Turn on the power of all equipment.

14.4.3.Let the EUT work in test mode (AC mode) and test it.

14.5.Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.8m (high) table, this small table is also placed on a larger table, 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.

14.6.Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Result

EMTEK (SHENZHEN) CO., LTD.

Standard: ☒ IEC 61000-4-8	Result: ☒ PASS / ☐ FAIL

Applicant : SRNE Solar Co., Ltd.
EUT : All-in-one solar charge inverter
M/N : HF2430S80-145
Input Voltage : AC 230V/50Hz
Date of Test : 2020-04-20 Test Engineer: LQZ
Ambient Condition : Temp : 23℃ Humid: 51%
Criterion: A

Operation Mode: AC mode

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

Operation Mode: N/A

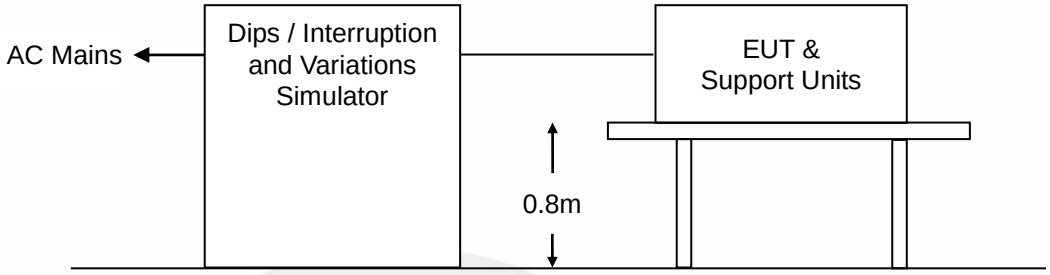
Test Level (A/m)	Testing Duration	Coil Orientation	Criterion	Result

Test Equipment	Magnetic Field Test: HEAFELY MAG 100.1

Note:

15. VOLTAGE DIPS AND INTERRUPTIONS TEST

15.1.Block Diagram of Test Setup



15.2.Test Standard

EN 61000-6-1:2007 (IEC 61000-4-11:2004)

15.3.Severity Levels and Performance Criterion

15.3.1.Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5 1 5 10 25 50 *
70	30	
0	100	

15.3.2.Performance criterion: B&C

15.4.Operating Condition of EUT

15.4.1.Me Setup the EUT as shown on Section 15.1.

15.4.2.Turn on the power of all equipment.

15.4.3.Let the EUT work in test mode (AC mode) and test it.

15.5.Test Procedure

1) Set up the EUT and test generator as shown on Section 15.1.2.
2) The interruption is introduced at selected phase angles with specified duration.
3) Record any degradation of performance.

15.6.Test Results

PASS.

Please refer to the following page.

Voltage Dips and Interruptions Test Results

EMTEK (SHENZHEN) CO., LTD.

Applicant : SRNE Solar Co., Ltd.

EUT : All-in-one solar charge inverter

M/N : HF2430S80-145

Power Supply : AC 230V/50Hz

Test Date : 2020-04-20

Temperature : 23℃

Humidity : 51%

Test Mode: AC mode

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in periods)	Criterion ☐A ☒B ☒C ☐D	Result
0	100	0.5P	B	A
0	100	1P	B	A
70	30	25P	C	A
0	100	250P	C	B

Test Mode : N/A

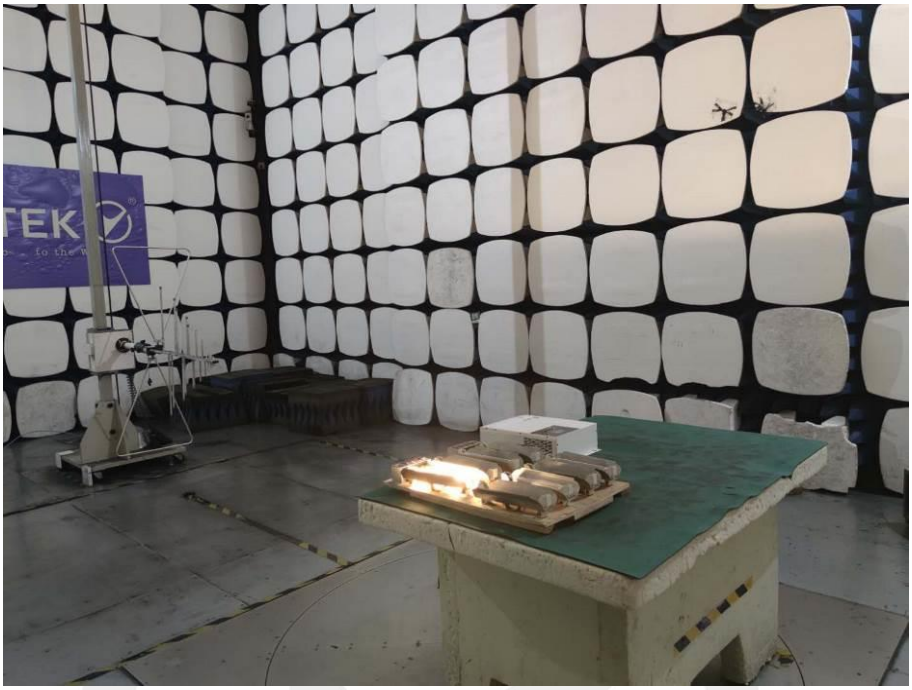
Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in periods)	Criterion ☐A ☐B ☐C ☐D	Result

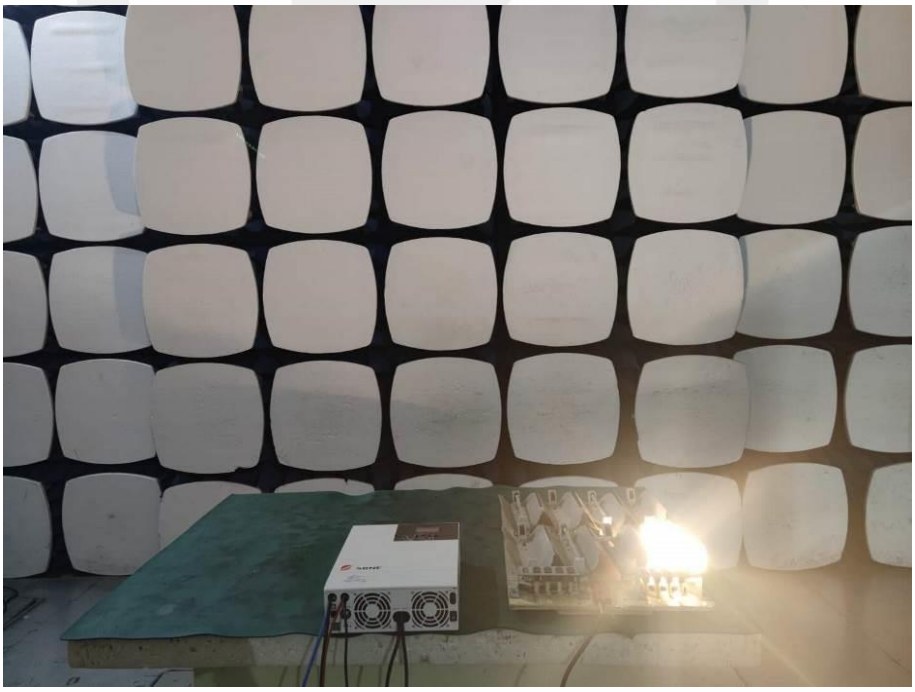
Note: Dips to 0%, Duration 250P, EUT stopped operation, but it can be resumed by itself after test.

16. PHOTOGRAPHS

16.1. Photos of Conducted Emission Measurement

16.2.Photos of Radiation Emission Measurement

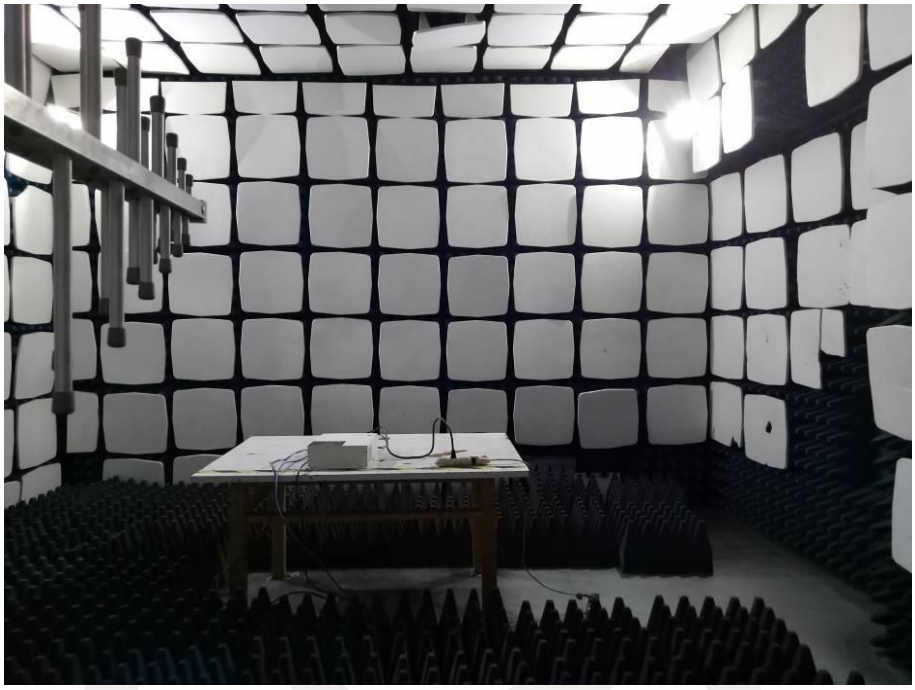


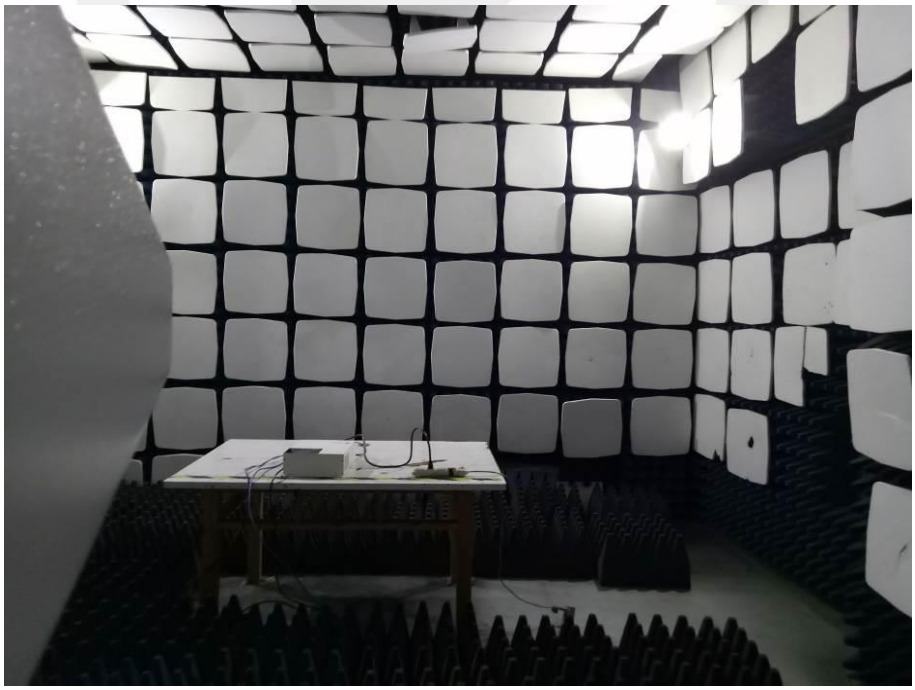


16.3.Photo of Harmonic / Flicker Measurement

16.4.Photo of Electrostatic Discharge Test

16.5.Photo of RF Field Strength Susceptibility Test



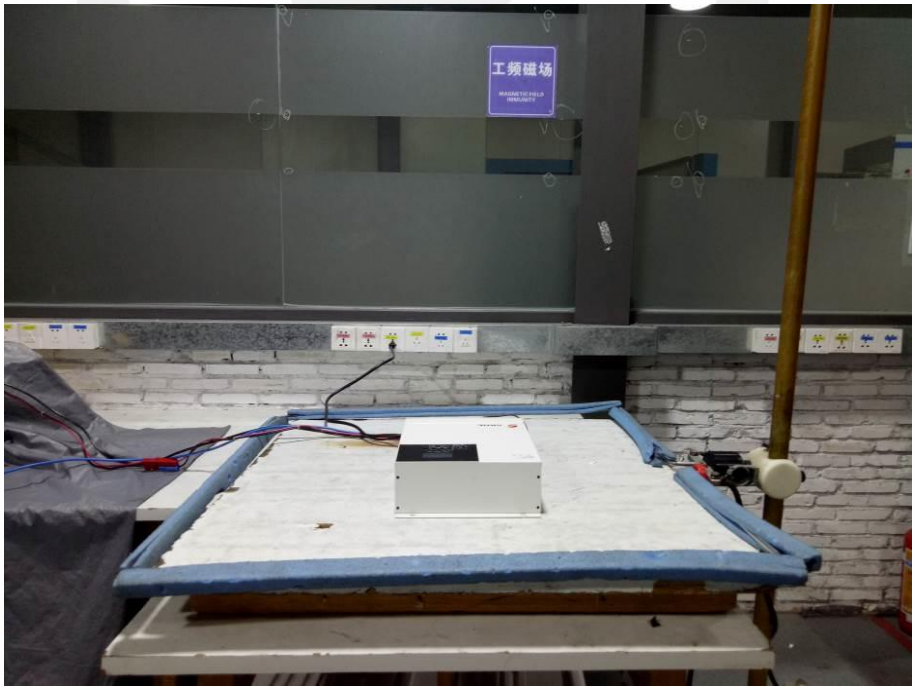


16.6.Photo of Electrical Fast Transient / Burst Test

16.7.Photo of Surge Test

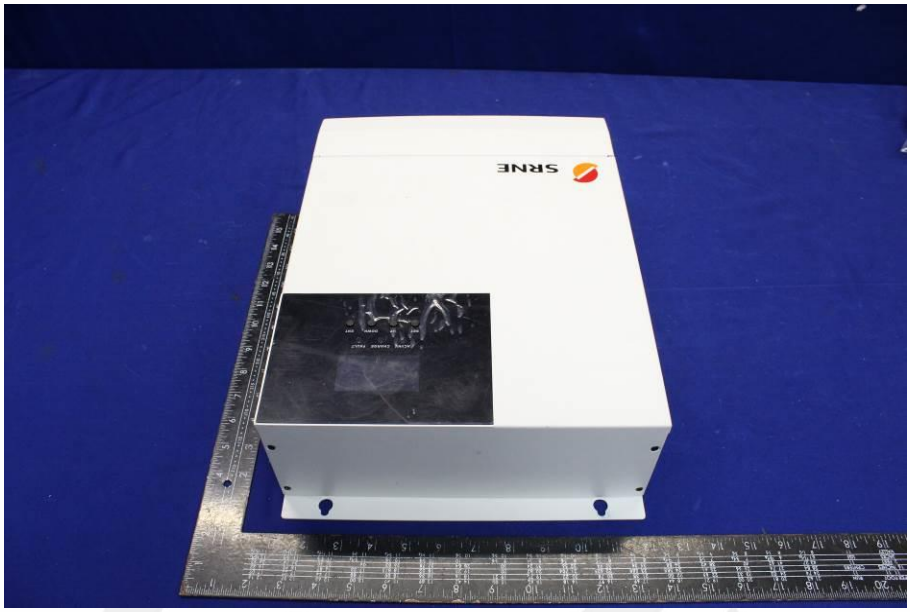
16.8.Photo of Injected Currents Susceptibility Test

16.9.Photo of Magnetic Field Immunity Test

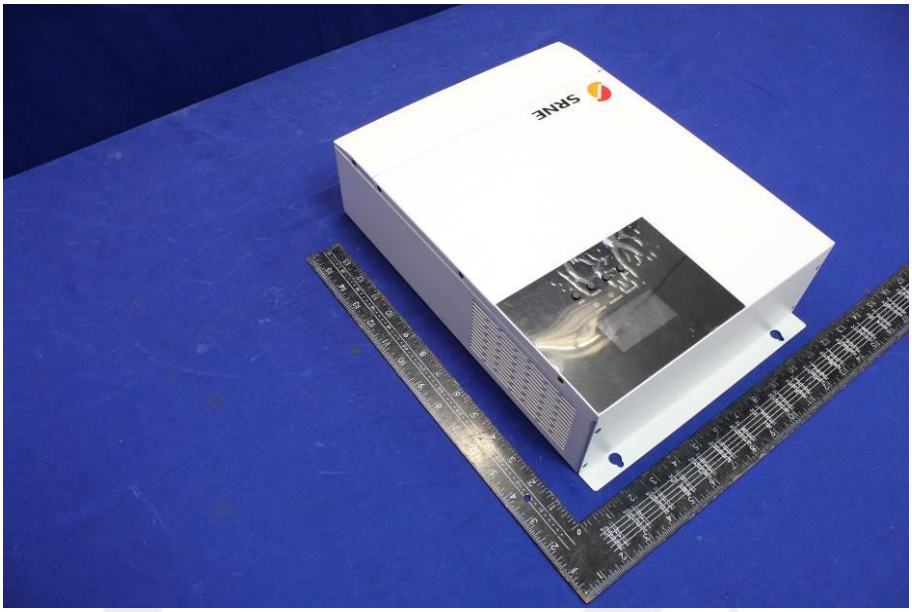


16.10.Photo of Voltage Dips and Interruption Immunity Test

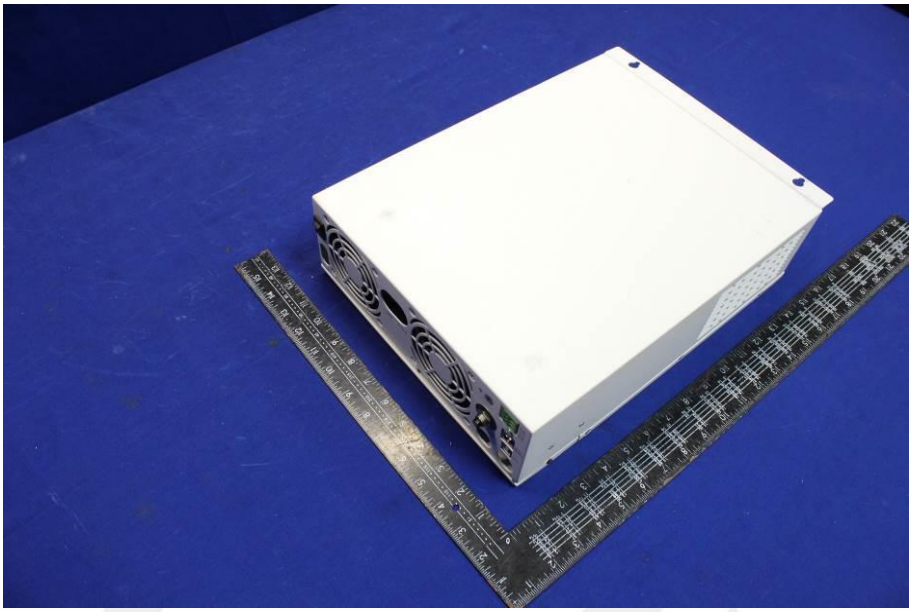
APPENDIX
(Photos of EUT)

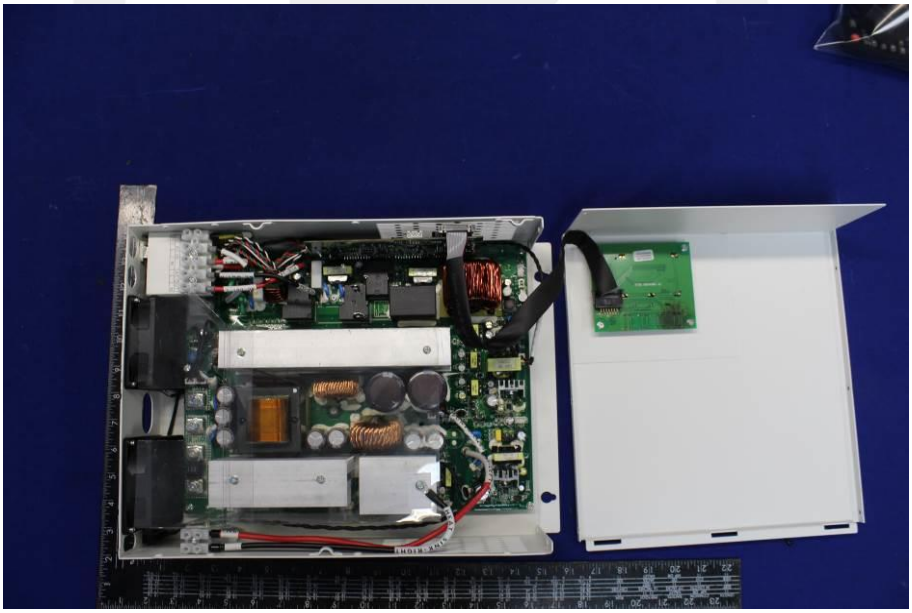

SRNE

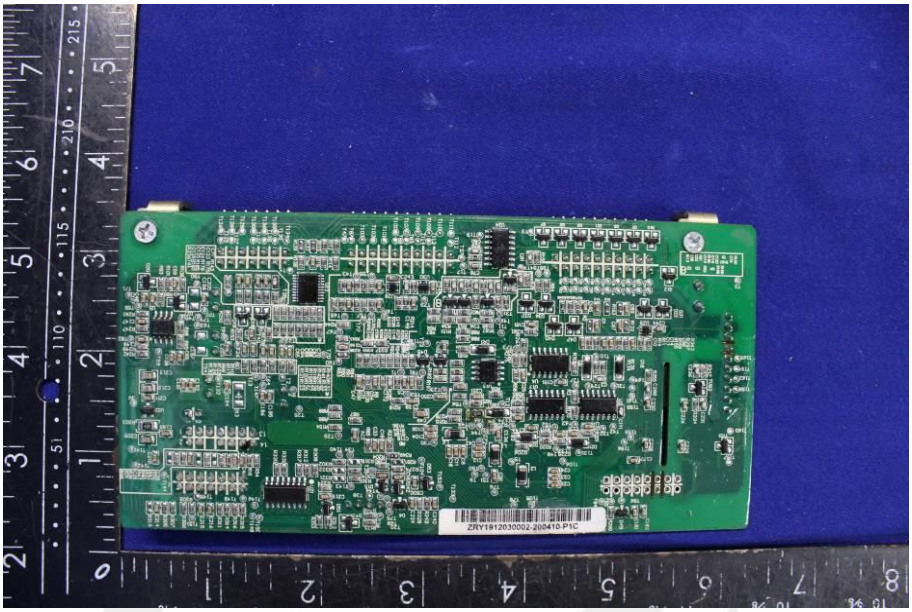

SRNE
AC IN
AC OUT
USB
INPUT BREAKER
BAT+
BAT-
PV+ PV-
ON

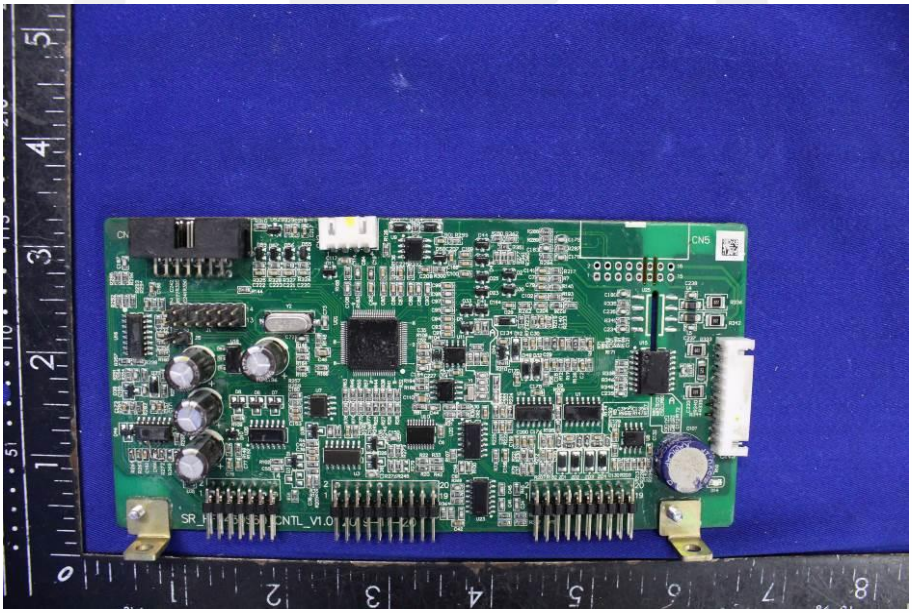

SRNE

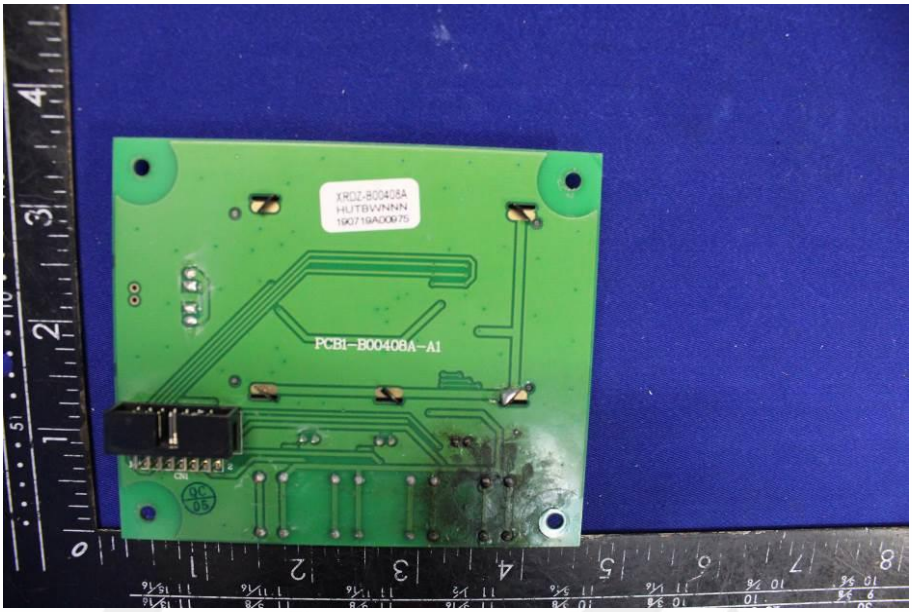

SRNE







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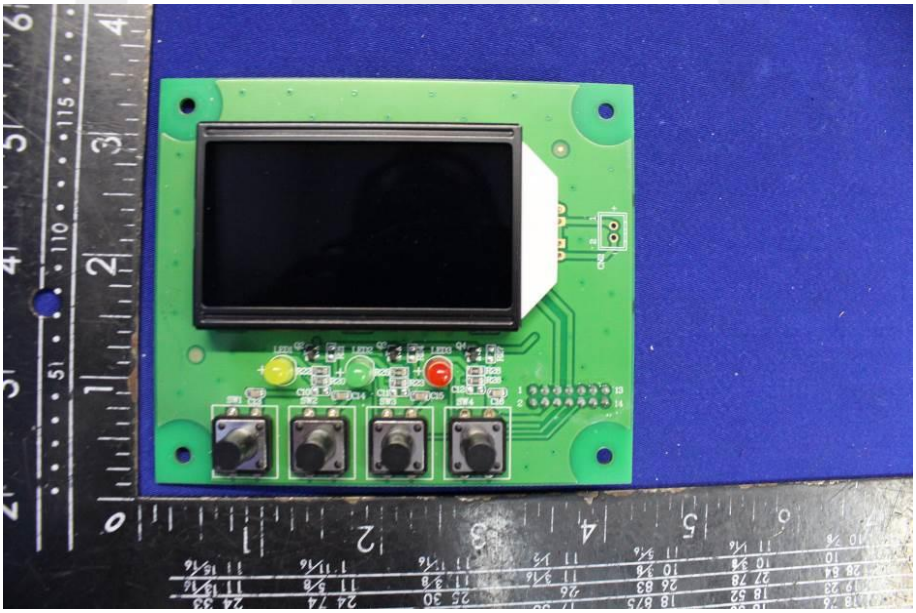

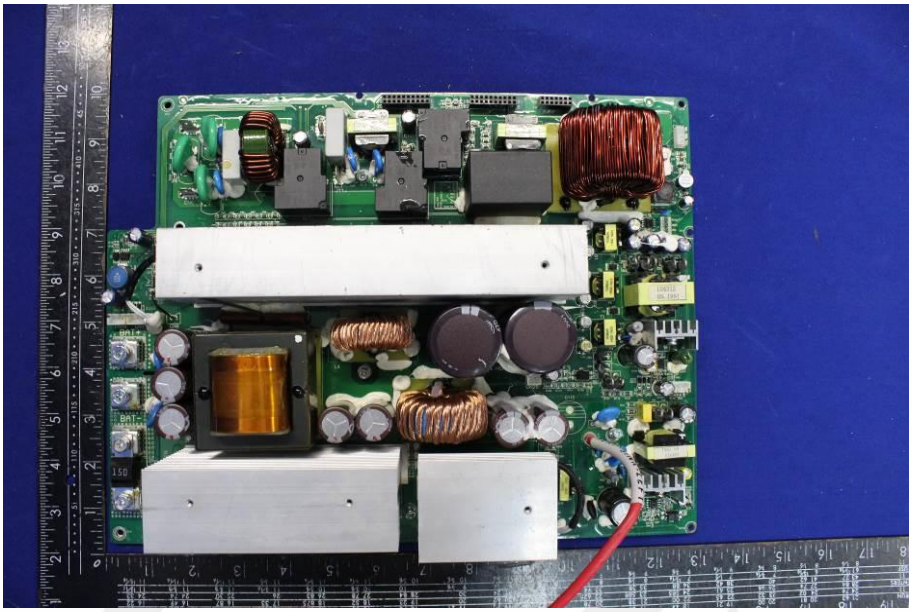

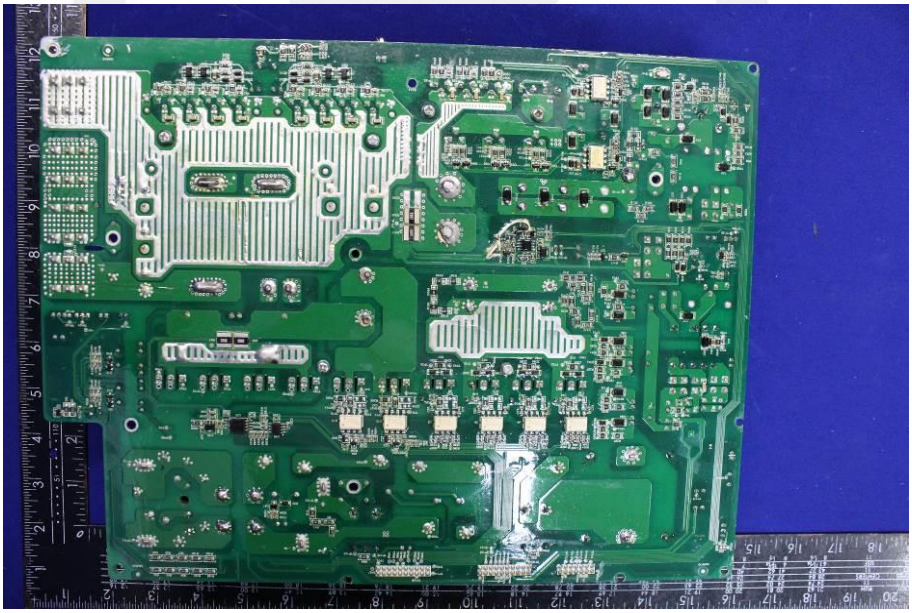

End of Report