TEST REPORT

Product Name : Hybrid inverter
Model Number : HPS30, HPS50, HPS100, HPS120, HPS150

Prepared for	:	Shenzhen Atess Power Technology Co., Ltd.
Address	:	2nd Floor, No.23 Zhulongtian Road, Shuitian Community, Shiyan Street, Baoan District, Shenzhen
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	:	ENS2305110124E00101R
Date(s) of Tests	:	August 01, 2017 to August 30, 2017 & May 11, 2023 to May 23, 2023
Date of Report	:	May 24, 2023

TABLE OF CONTENT

TEST REPORT DESCRIPTION

Applicant	:	Shenzhen Atess Power Technology Co., Ltd.
Manufacturer	:	Shenzhen Atess Power Technology Co., Ltd.
Trademark	:	ATESS
EUT	:	Hybrid inverter
Model No.	:	HPS30, HPS50, HPS100, HPS120, HPS150
Power Supply	:	360-440V, 150kVA, 50/60Hz

Measurement Procedure Used:

EN IEC 61000-6-4: 2019
EN IEC 61000-6-2: 2019
(IEC61000-4-2:2008, IEC61000-4-3:2006+A1:2007+A2:2010, IEC 61000-4-4:2012, IEC61000-4-5:2014, IEC61000-4-6:2013, 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 EN 61000-6-4 and EN 61000-6-2 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	:	August 01, 2017 to August 30, 2017 & May 11, 2023 to May 23, 2023
Prepared by	:	Jessie Hu/Editor
Reviewer	:	Kaimin Guo/Supervisor
Approved & Authorized Signer	:	Lisa Wang/Manager

EMTEK (SHENZHEN) CO., LTD. TESTING

Modified Information

Version	Report No.	Revision Date	Summary
Ver.1.0	ENS2305110124E00101R	/	Original Report

1. SUMMARY OF TEST RESULT

EMISSION				
Description of Test Item		Standard	Limits	Results
Conducted Disturbance at Mains Terminals	AC Mains port	EN IEC 61000-6-4:2019	Table 4	Pass
	DC Power port		Table A.1	N/A
Telecommunication/network port		Cited from CISPR 32	Table 5	N/A
Radiated emissions at frequencies up to 1 GHz		EN IEC 61000-6-4:2019	Table 3	Pass
Radiated emissions at frequencies above 1 GHz		EN IEC 61000-6-4:2019	Table 3	N/A
IMMUNITY (EN IEC 61000-6-2: 2019)				
Description of Test Item		Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)		IEC61000-4-2:2008	B	Pass
Radio-Frequency, Continuous Radiated Disturbance		IEC61000-4-3:2006+A1:2007+A2:2010	A	Pass
EFT/B Immunity		IEC 61000-4-4:2012	B	Pass
Surge Immunity		IEC61000-4-5:2014	B	Pass
Conducted RF Immunity		IEC61000-4-6:2013	A	Pass
Power Frequency Magnetic Field		IEC 61000-4-8:2009	A	Pass
Voltage Dips and Voltage Interruptions		IEC 61000-4-11:2004	B,C	Pass
Note: N/A is an abbreviation for Not Applicable.				

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	Hybrid inverter
Model Number	:	HPS30, HPS50, HPS100, HPS120, HPS150 (These models are identical in circuitry and electrical, mechanical and physical construction; the only difference are the model number and power. for trading purpose. We prepare HPS150 for test.)
Test Voltage	:	AC 400V/50Hz & DC 600V
Applicant	:	Shenzhen Atess Power Technology Co., Ltd.
Address	:	2nd Floor, No.23 Zhulongtian Road, Shuitian Community, Shiyan Street, Baoan District, Shenzhen
Manufacturer	:	Shenzhen Atess Power Technology Co., Ltd.
Address	:	2nd Floor, No.23 Zhulongtian Road, Shuitian Community, Shiyan Street, Baoan District, Shenzhen
Date of Received	:	August 01, 2017 & May 11, 2023
Date of Test	:	August 01, 2017 to August 30, 2017 & May 11, 2023 to May 23, 2023

Note: This report change address and update standard is based on ES170725041E-1, retest CE, R/S, EFT, other data and records refer to ES170725041E-1.

2.2. Description of Test Facility

Site Description
EMC Lab. : **Accredited by CNAS**
The Certificate Registration Number is L2291.
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017)

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

Accredited by A2LA
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	:	2.96dB(9k~150kHz Conduction 1#) 2.74dB(150k-30MHz Conduction 1#)
Radiated Emission Uncertainty (10m Chamber)	:	3.96dB (30M~1GHz Polarize: H) 4.04dB (30M~1GHz Polarize: V)
Uncertainty for C/S Test	:	1.45(Using CDN 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

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	EMI Test Receiver	Rohde & Schwarz	ESCI	101045	May 13, 2023	1 Year
☑	PULSE LIMITER	Rohde & Schwarz	ESH3-Z2	100107	May 13, 2023	1 Year
☑	AMN	Schwarzbeck	NNLK 8129	8129203	May 13, 2023	1 Year
☑	DC LISN	Schwarzbeck	PVDC 8301	00075	May 10, 2023	1 Year

3.2. For 10m Radiated Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	EMI Test Receiver	Rohde & Schwarz	ESR3	1316.3003K03-101706-HN	May 21, 2017	1 Year
☑	EMI Test Receiver	Rohde & Schwarz	ESR3	1316.3003K03-101707-Z1	May 21, 2017	1 Year
☑	Pre-Amplifier	Lunar EM	LNA10M1G-40	J1011130912001	May 20, 2017	1 Year
☑	Pre-Amplifier	Lunar EM	LNA10M1G-40	J1011131126002	May 20, 2017	1 Year
☑	Bilog Antenna	Schwarzbeck	VULB9163	659	May 20, 2017	1 Year
☑	Bilog Antenna	Schwarzbeck	VULB9163	661	May 21, 2017	1 Year
☑	Cable	Times Microwave	LMR-240 N-N 1m	SS26-P1	May 21, 2017	1 Year
☑	Cable	Times Microwave	LMR-240 N-N 1m	SS26-P2	May 21, 2017	1 Year
☑	Cable	Times Microwave	LMR-240 N-N 1.5m	N/A	May 21, 2017	1 Year
☑	Cable	Times Microwave	LMR-240 N-N 1.5m	N/A	May 21, 2017	1 Year
☑	Cable	Times Microwave	LMR-240 N-N 12m	N/A	May 21, 2017	1 Year
☑	Cable	Times Microwave	LMR-240 N-N 11m	N/A	May 21, 2017	1 Year

3.3. For Electrostatic Discharge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	ESD Tester	TESEQ AG	NSG 438A	130	May 21, 2017	1 Year
☑	Impulse Module	TESEQ AG	IN NSG 438A A 4380-150pF/330Ohm	403-550/1712	May 21, 2017	1 Year

3.4. For RF Strength Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Signal Generator	Agilent	N5181A	MY50145187	May 13, 2023	1 Year
☑	Log.-Per. Antenna	SCHWARZBECK	VULP 9118E	811	N/A	N/A
☑	Signal Generator	Agilent	N5181A	MY50145187	May 13, 2023	1 Year
☑	50ohm Diode Power Sensor	BOONTON	51011EMC	36164	May 13, 2023	1 Year
☑	Broad-Band Horn Antenna	SCHWARZBECK	STLP 9149	9149-227	N/A	N/A
☑	Field Strength Meter	DARE	RSS1006A	10I00037SNO22	May 19, 2023	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 13, 2023	1 Year
☑	Power Amplifier	Vectawave	VBA 1000-600C	133627	Oct. 31, 2022	1 Year

3.5. For Electrical Fast Transient / Burst Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Burst Tester	Partner	IMU-MGS	109938-1635	Nov. 01, 2022	1 Year
☑	Coupling Clamp	HAEFELY	IP-4A	147147	May 11, 2023	1 Year
☑	Three phase CDN	Teseq	CDN 163	202	May 13, 2023	1 Year

3.6. For Surge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Surge Controller	HAEFELY	Psurge 8000	174031	May 21, 2017	1Year
☑	Impulse Module	HAEFELY	PIM 100	174124	May 21, 2017	1Year
☑	Coupling Decoupling Filter	HAEFELY	PCD 130	172181	May 21, 2017	1Year
☑	Coupling Module	HAEFELY	PCD122	174354	May 21, 2017	1Year
☑	Surge Impulse Module	HAEFELY	PIM 120	174435	May 21, 2017	1Year
☑	Coupling Module	HAEFELY	PCD 126A	174387	May 21, 2017	1Year
☑	Impulse Module	HAEFELY	PIM 110	174391	May 21, 2017	1Year
☑	Impulse Module	HAEFELY	PIM 150	178707	May 21, 2017	1Year

3.7. For Injected Current Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Simulator	EMTEST	CWS500C	0900-12	May 21, 2017	1Year
☑	CDN	EMTEST	CDN-M2	5100100100	May 21, 2017	1Year
☑	CDN	EMTEST	CDN-M3	0900-11	May 21, 2017	1Year
☑	Injection Clamp	EMTEST	F-2031-23MM	368	May 21, 2017	1Year
☑	Attenuator	EMTEST	ATT6	0010222A	May 21, 2017	1Year
☑	Three phase CDN	Teseq	CDN M332S	32655	May 21, 2017	1 Year

3.8. For Magnetic Field Immunity Test

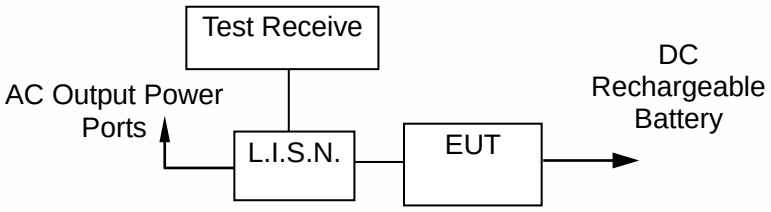
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Magnetic Field Tester	HAEFELY	MAG100	250040.1	May 20, 2017	1Year

3.9. 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 20, 2017	1 Year
☐	Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 20, 2017	1 Year
☐	Three phase impedance network	Teseq/Germany	INA2197/37A	1305A02873	May 20, 2017	1 Year
☐	Three phase impedance network	Teseq/Germany	INA 2196/75A	1305A02874	May 20, 2017	1 Year
☑	Profline 2100 AC Switching Unit	Teseq/Germany	NSG2200-3	A22714	May 20, 2017	1 Year

4. CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



4.2. Measuring Standard

EN IEC 61000-6-4: 2019

4.3. Conducted Emission Limits

☑ AC Mains port:

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0
0.50 ~ 30.00	73.0	60.0
NOTE 1-The lower limit shall apply at the transition frequencies.		

☑ DC Power port:

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	89.0	76.0
0.50 ~ 30.00	83.0	70.0
NOTE 1-The lower limit shall apply at the transition frequencies.		

4.4. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN 61000-6-4 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Hybrid inverter
Model Number : HPS150

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 (PV in & AC ON Grid) and measure it.

4.6. Test Procedure

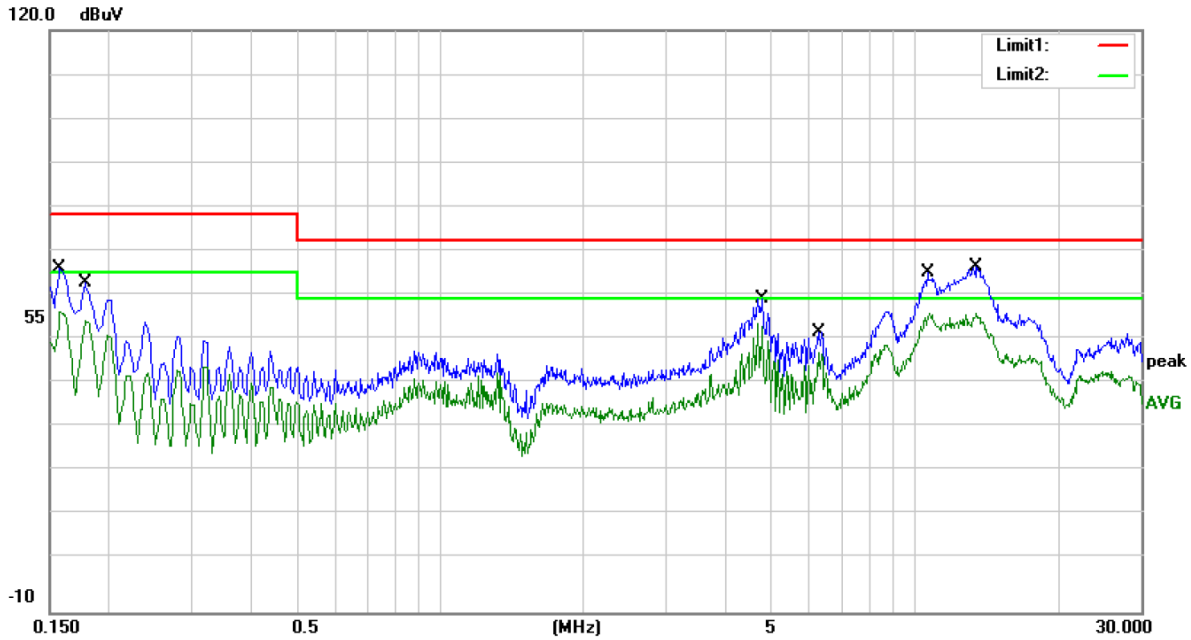
The EUT is put on the plane 0.1m high above the ground by insulating support and the AC Output Power Ports connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. All of the output lines are investigated to find out the maximum conducted emission according to the EN 61000-6-4 regulations during conducted emission measurement.
The bandwidth of the field strength meter (R&S Test Receiver ESCS30) 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 see the attached pages.

Temperature	:	25 °C
Humidity	:	49%
Atmospheric Pressure	:	101kpa
Test Engineer	:	LJ
Test Date	:	2023-05-15

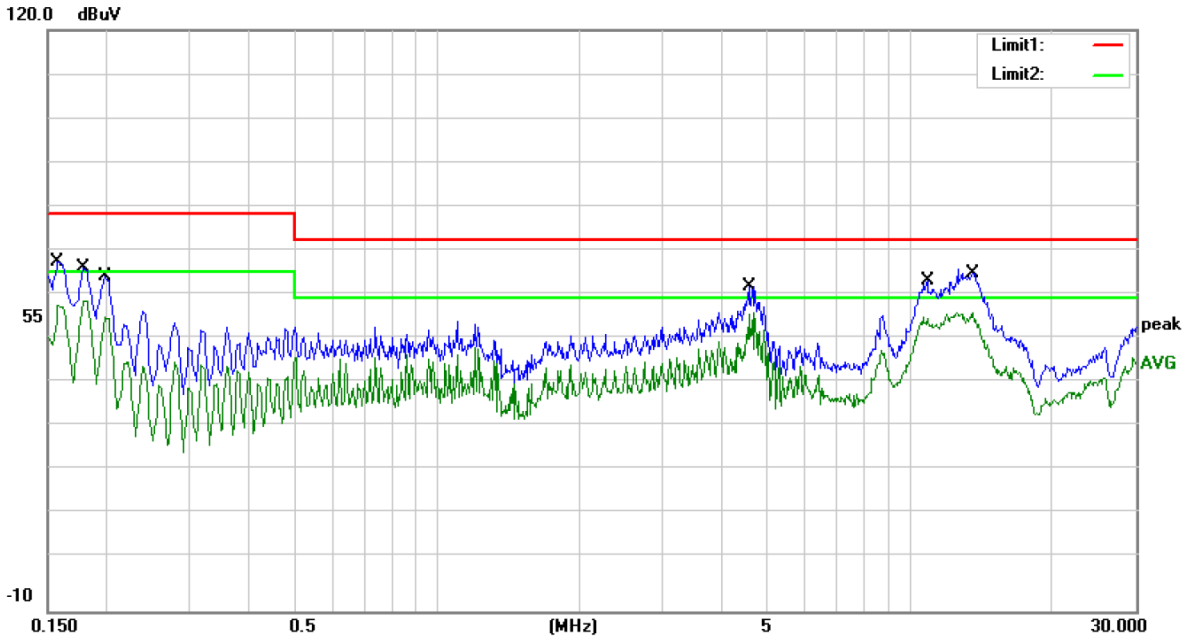


Site 10m Chamber 1#
Limit: (CE)EN61000-6-4_QP
Mode: PV IN&AC ON Grid
Note:

Phase: *L1*
Power: AC 400V/50Hz&DC600V

Temperature: 25.0
Humidity: 49 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1580	57.07	9.90	66.97	79.00	-12.03	QP	
2		0.1580	47.22	9.90	57.12	66.00	-8.88	AVG	
3		0.1780	53.69	9.90	63.59	79.00	-15.41	QP	
4		0.1780	45.26	9.90	55.16	66.00	-10.84	AVG	
5		4.7820	50.23	9.95	60.18	73.00	-12.82	QP	
6		4.7820	44.54	9.95	54.49	60.00	-5.51	AVG	
7		6.2820	42.48	9.98	52.46	73.00	-20.54	QP	
8		6.2820	37.91	9.98	47.89	60.00	-12.11	AVG	
9		10.6460	55.93	10.02	65.95	73.00	-7.05	QP	
10	*	10.6460	46.68	10.02	56.70	60.00	-3.30	AVG	
11		13.5380	55.26	10.04	65.30	73.00	-7.70	QP	
12		13.5380	46.63	10.04	56.67	60.00	-3.33	AVG	

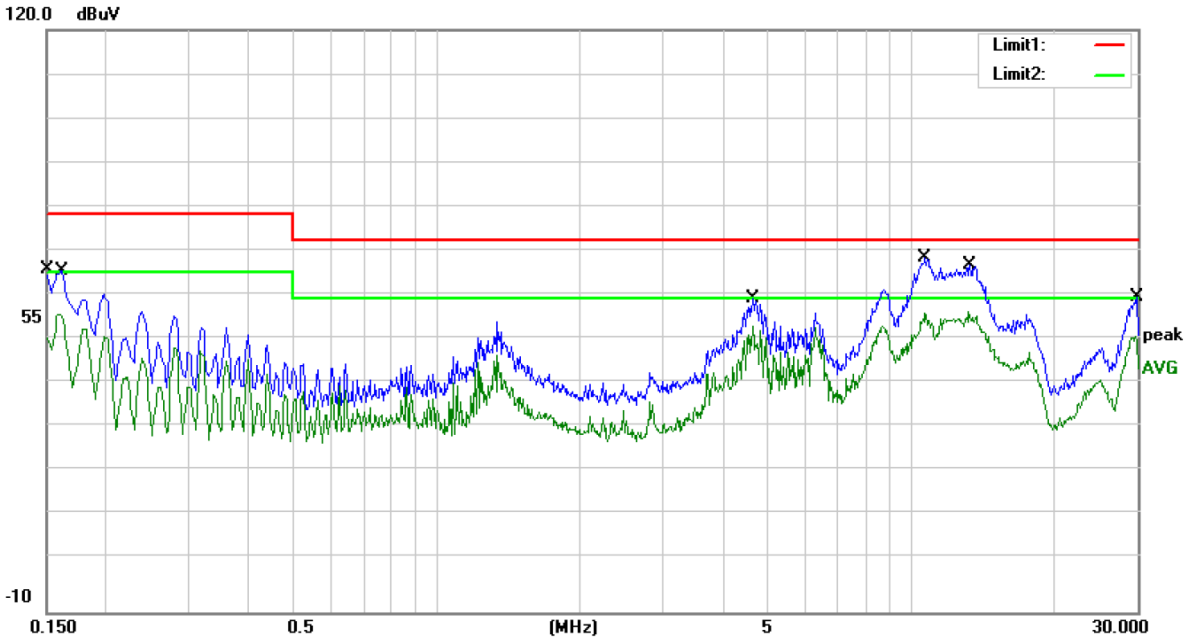


Site 10m Chamber 1#
Limit: (CE)EN61000-6-4_QP
Mode: PV IN&AC ON Grid
Note:

Phase: *L2*
Power: AC 400V/50Hz&DC600V

Temperature: 25.0
Humidity: 49 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1580	58.21	9.90	68.11	79.00	-10.89	QP	
2		0.1580	48.39	9.90	58.29	66.00	-7.71	AVG	
3		0.1780	56.87	9.90	66.77	79.00	-12.23	QP	
4		0.1780	49.56	9.90	59.46	66.00	-6.54	AVG	
5		0.1980	54.99	9.90	64.89	79.00	-14.11	QP	
6		0.1980	45.77	9.90	55.67	66.00	-10.33	AVG	
7		4.5620	52.80	9.95	62.75	73.00	-10.25	QP	
8		4.5620	46.86	9.95	56.81	60.00	-3.19	AVG	
9		10.8860	54.01	10.02	64.03	73.00	-8.97	QP	
10		10.8860	45.86	10.02	55.88	60.00	-4.12	AVG	
11		13.5820	55.58	10.04	65.62	73.00	-7.38	QP	
12	*	13.5820	46.82	10.04	56.86	60.00	-3.14	AVG	

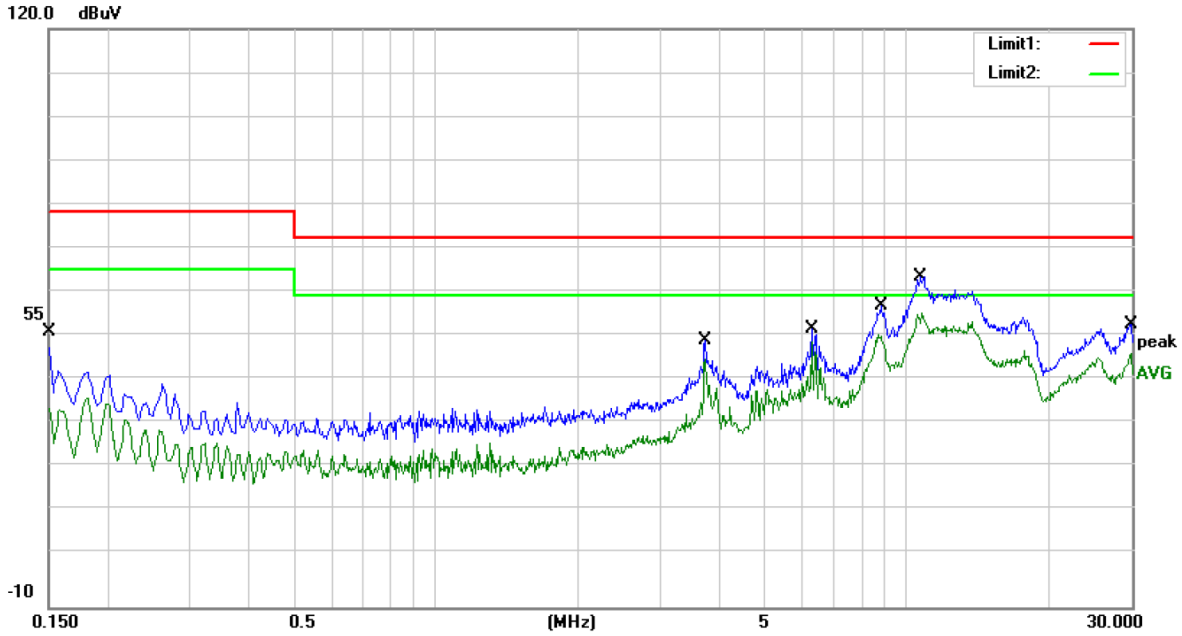


Site 10m Chamber 1#
Limit: (CE)EN61000-6-4_QP
Mode: PV IN&AC ON Grid
Note:

Phase: *L3*
Power: AC 400V/50Hz&DC600V

Temperature: 25.0
Humidity: 49 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	56.51	9.89	66.40	79.00	-12.60	QP	
2		0.1500	42.10	9.89	51.99	66.00	-14.01	AVG	
3		0.1620	56.38	9.90	66.28	79.00	-12.72	QP	
4		0.1620	46.53	9.90	56.43	66.00	-9.57	AVG	
5		4.6420	49.98	9.95	59.93	73.00	-13.07	QP	
6		4.6420	43.81	9.95	53.76	60.00	-6.24	AVG	
7		10.6860	56.78	10.02	66.80	73.00	-6.20	QP	
8		10.6860	46.73	10.02	56.75	60.00	-3.25	AVG	
9		13.3260	55.26	10.04	65.30	73.00	-7.70	QP	
10	*	13.3260	46.93	10.04	56.97	60.00	-3.03	AVG	
11		29.9460	50.09	10.31	60.40	73.00	-12.60	QP	
12		29.9460	41.35	10.31	51.66	60.00	-8.34	AVG	



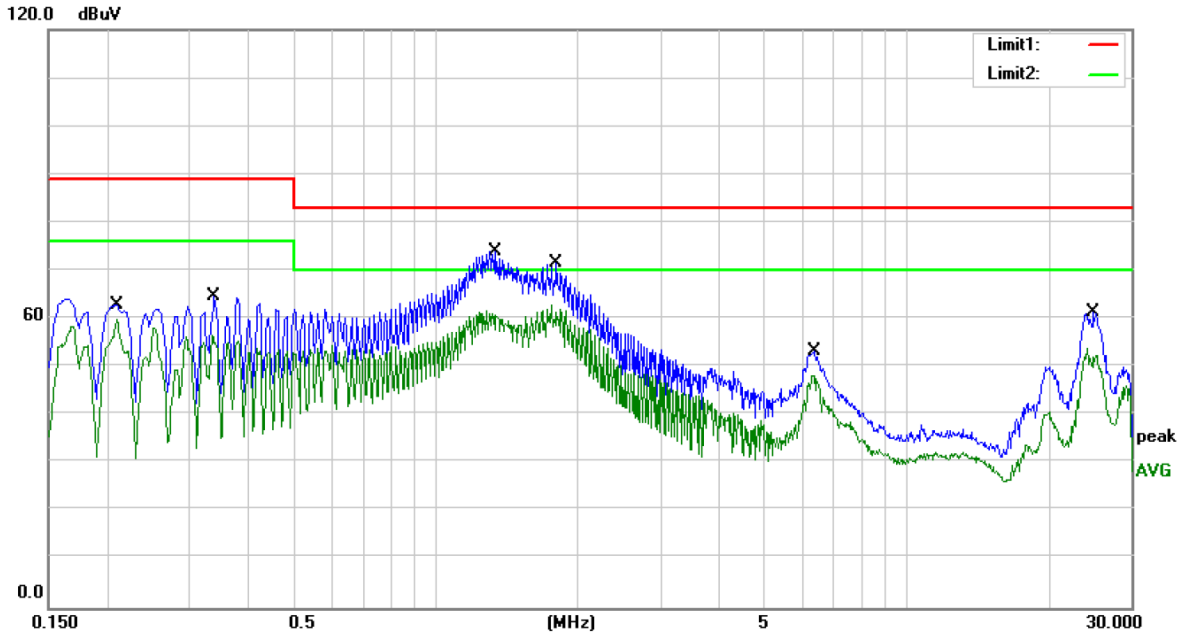
Site 10m Chamber 1# Phase: N Temperature: 25.0

Limit: (CE)EN61000-6-4_QP Power: AC 400V/50Hz&DC600V Humidity: 49 %

Mode: PV IN&AC ON Grid

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	41.92	9.89	51.81	79.00	-27.19	QP	
2		0.1500	26.81	9.89	36.70	66.00	-29.30	AVG	
3		3.7220	40.14	9.94	50.08	73.00	-22.92	QP	
4		3.7220	35.83	9.94	45.77	60.00	-14.23	AVG	
5		6.2820	42.47	9.98	52.45	73.00	-20.55	QP	
6		6.2820	39.66	9.98	49.64	60.00	-10.36	AVG	
7		8.8220	47.63	10.00	57.63	73.00	-15.37	QP	
8		8.8220	41.12	10.00	51.12	60.00	-8.88	AVG	
9		10.7060	54.15	10.02	64.17	73.00	-8.83	QP	
10	*	10.7060	46.20	10.02	56.22	60.00	-3.78	AVG	
11		29.9780	43.35	10.31	53.66	73.00	-19.34	QP	
12		29.9780	36.83	10.31	47.14	60.00	-12.86	AVG	



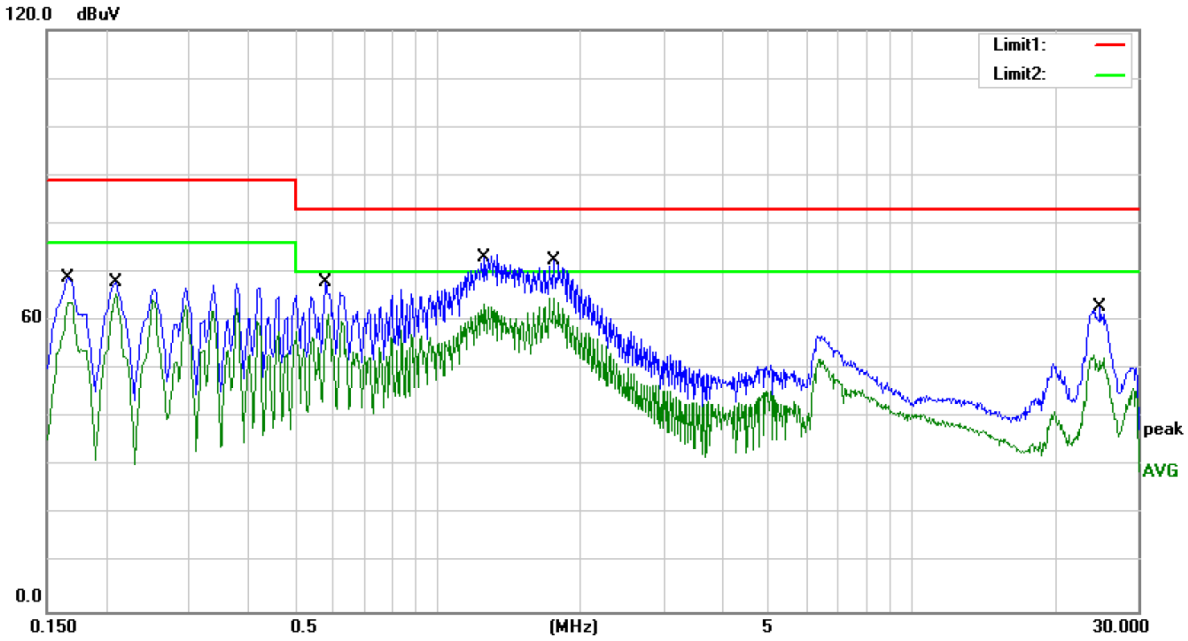
Site 10m Chamber 1# Phase: + Temperature: 25.1

Limit: (CE)EN61000-6-4_QP_DC POWER Power: AC 400V/50Hz&DC600V Humidity: 45 %

Mode: PV IN&AC ON Grid

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2094	42.92	19.96	62.88	89.00	-26.12	QP	
2		0.2094	39.92	19.96	59.88	76.00	-16.12	AVG	
3		0.3371	44.79	19.78	64.57	89.00	-24.43	QP	
4		0.3371	36.81	19.78	56.59	76.00	-19.41	AVG	
5		1.3378	54.22	19.70	73.92	83.00	-9.08	QP	
6		1.3378	41.00	19.70	60.70	70.00	-9.30	AVG	
7		1.8000	51.57	19.86	71.43	83.00	-11.57	QP	
8	*	1.8000	43.11	19.86	62.97	70.00	-7.03	AVG	
9		6.3520	33.66	19.70	53.36	83.00	-29.64	QP	
10		6.3520	28.44	19.70	48.14	70.00	-21.86	AVG	
11		24.9221	41.67	19.56	61.23	83.00	-21.77	QP	
12		24.9221	34.35	19.56	53.91	70.00	-16.09	AVG	



Site 10m Chamber 1# Phase: - Temperature: 25.1

Limit: (CE)EN61000-6-4_QP_DC POWER Power: AC 400V/50Hz&DC600V Humidity: 45 %

Mode: PV IN&AC ON Grid

Note:

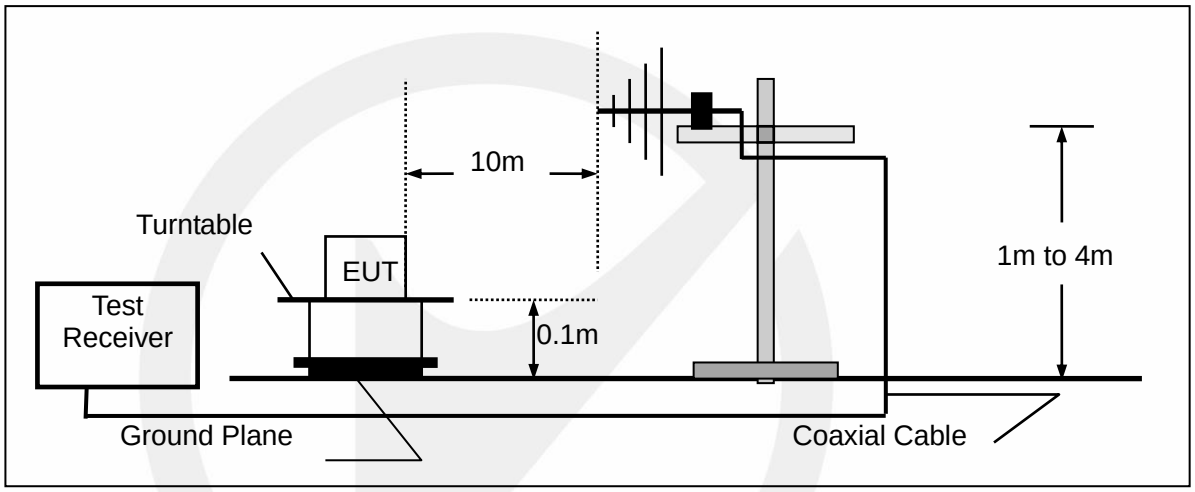
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1658	48.92	20.04	68.96	89.00	-20.04	QP	
2		0.1658	43.83	20.04	63.87	76.00	-12.13	AVG	
3		0.2094	48.09	19.96	68.05	89.00	-20.95	QP	
4		0.2094	45.72	19.96	65.68	76.00	-10.32	AVG	
5		0.5792	48.46	19.54	68.00	83.00	-15.00	QP	
6		0.5792	41.91	19.54	61.45	70.00	-8.55	AVG	
7		1.2554	53.34	19.68	73.02	83.00	-9.98	QP	
8		1.2554	43.82	19.68	63.50	70.00	-6.50	AVG	
9		1.7530	52.47	19.84	72.31	83.00	-10.69	QP	
10	*	1.7530	44.84	19.84	64.68	70.00	-5.32	AVG	
11		24.9221	43.20	19.56	62.76	83.00	-20.24	QP	
12		24.9221	33.51	19.56	53.07	70.00	-16.93	AVG	

5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup

5.1.1. Block diagram of EUT System

5.1.2. Block diagram of test setup (In chamber)



5.2. Measuring Standard

EN IEC 61000-6-4: 2019

5.3. Radiated Emission Limits

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	10	40
230 ~ 1000	10	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 on Measurement

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

EUT	:	Hybrid inverter
Model Number	:	HPS150

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 (PV in & AC ON Grid) and measure it.

5.6. Test Procedure

The EUT is placed on a turntable which is 0.1 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 10 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 is set at 120kHz.

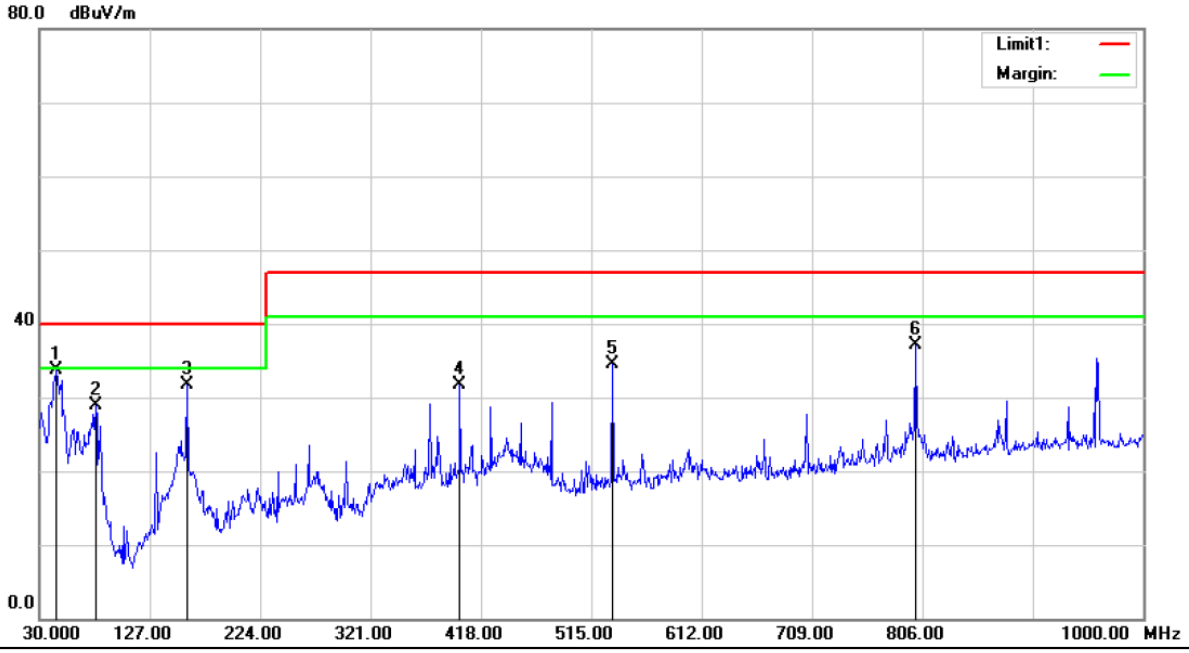
All the modes were tested and the data of the worsted mode(ON) are attached in the following pages.

5.7. Measuring Results

PASS.

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

Please see the attached pages.



Site :10m Chamber #1 Polarization: *Horizontal* Temperature: 26

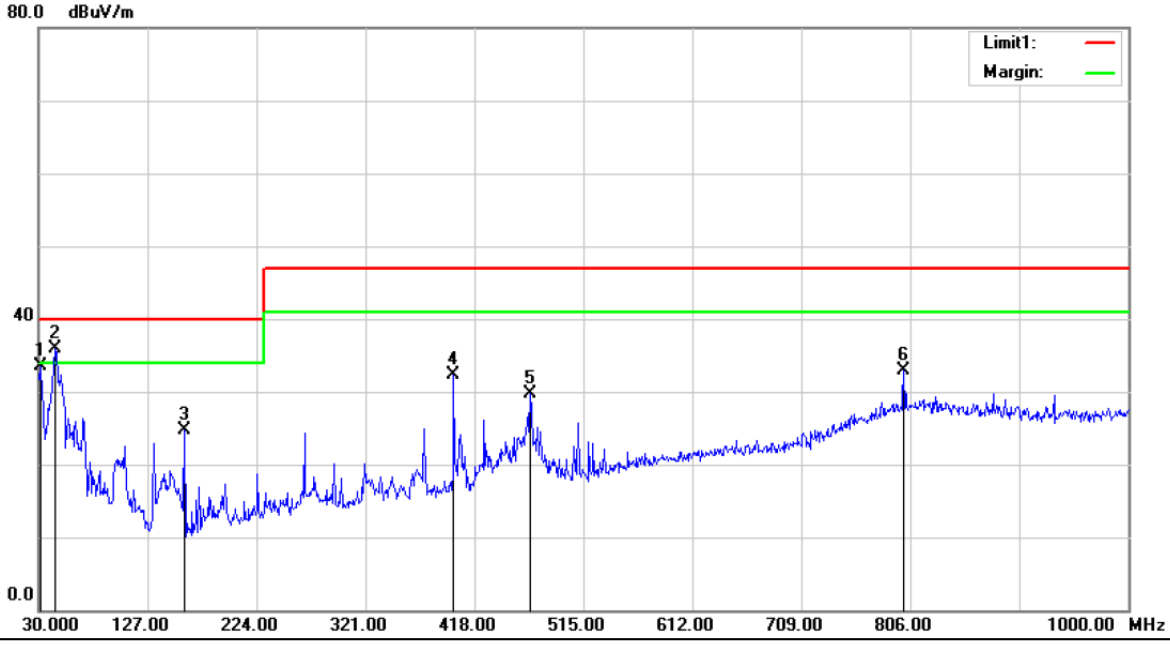
Limit: (RE 10M)EN61000-6-4 Power: AC 380V/50Hz Humidity: 60 %

Mode:ON

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	*	44.5500	63.14	-29.35	33.79	40.00	-6.21	QP	158	41	
2		79.4700	63.99	-35.18	28.81	40.00	-11.19	QP	303	0	
3		159.9800	65.14	-33.41	31.73	40.00	-8.27	QP	303	8	
4		399.5700	54.99	-23.29	31.70	47.00	-15.30	QP	158	51	
5		533.4300	55.01	-20.42	34.59	47.00	-12.41	QP	303	10	
6		800.1800	53.30	-16.21	37.09	47.00	-9.91	QP	158	339	

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



Site :10m Chamber #1 Polarization: *Vertical* Temperature: 26

Limit: (RE 10M)EN61000-6-4 Power: AC 380V/50Hz Humidity: 60 %

Mode:ON

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		31.9400	64.89	-31.34	33.55	40.00	-6.45	QP	100	17	
2	*	44.5500	66.36	-30.44	35.92	40.00	-4.08	QP	200	289	
3		159.9800	57.69	-33.05	24.64	40.00	-15.36	QP	100	3	
4		399.5700	54.78	-22.43	32.35	47.00	-14.65	QP	200	322	
5		467.4700	50.35	-20.72	29.63	47.00	-17.37	QP	200	349	
6		800.1800	42.48	-9.59	32.89	47.00	-14.11	QP	100	324	

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

6. 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:

Definition: normal performance within limits specified by the manufacturer, requestor and purchaser.
The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment 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, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Criterion B:

Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention.

After the test, the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena 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. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the EUT if used as intended.

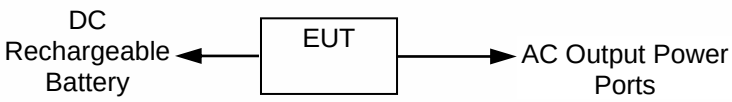
Criterion C:

Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention.
Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

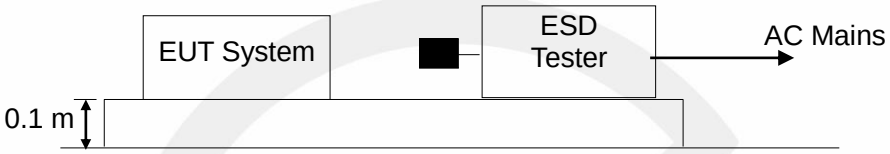
7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

7.1. Block Diagram of Test Setup

7.1.1. Block diagram of EUT System



7.1.2. Block diagram of ESD test setup



7.2. Test Standard

EN IEC 61000-6-2: 2019
(IEC61000-4-2:2008 Severity Level: 3 / Air Discharge: ±8kV;
Level: 2 / Contact Discharge: ±4kV)

7.3. Severity Levels and Performance Criterion

7.3.1. 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

7.3.2. Performance criterion: B

7.4. Operating Condition of EUT

7.4.1. Setup the EUT as shown on Section 7.1.

7.4.2. Turn on the power of all equipment.

7.4.3. Let the EUT work in test mode (PV in & AC ON Grid) and test it.

7.5. Test Procedure

7.5.1. 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.

7.5.2. Contact Discharge:

All the procedure shall be same as Section 7.5.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

7.5.3. 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.

7.5.4. 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.

7.6. Test Results

PASS.

Please refer to the following page.

Electrostatic Discharge Test Results

EMTEK (SHENZHEN) CO., LTD.

Applicant :	Shenzhen Atess Power Technology Co., Ltd.		
EUT :	Hybrid inverter	Test Date :	August 28, 2017
M/N :	HPS150	Temperature :	22℃
Power Supply :	AC 400V/50Hz & DC 600V	Humidity :	50%
Air discharge :	± 8.0kV	Test Mode :	PV in & AC ON Grid
Contact discharge:	± 4.0kV	Criterion :	B

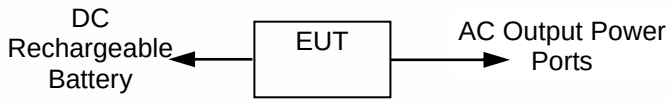
Location	**Kind** A-Air Discharge C-Contact Discharge	**Result**
Slot	A	A
Metal	C	A
Screw	C	A
Screen	A	A
HCP of all sides	C	A
VCP of front	C	A
VCP of rear	C	A
VCP of left	C	A
VCP of right	C	A

Note:

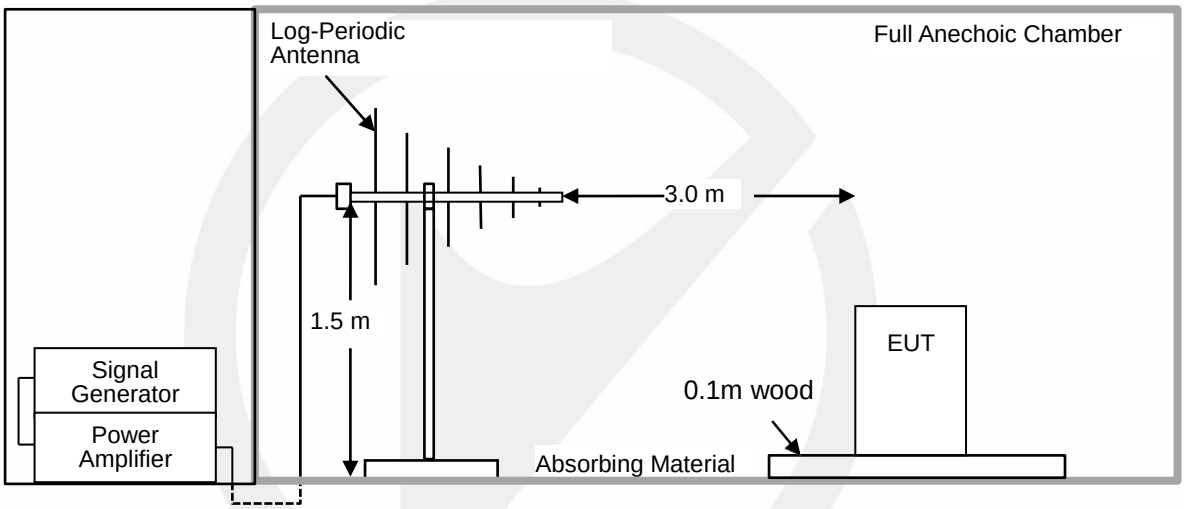
8. RF FIELD STRENGTH SUSCEPTIBILITY TEST

8.1. Block Diagram of Test Setup

8.1.1. Block diagram of EUT System



8.1.2. Block diagram of RS test setup



8.2. Test Standard

EN IEC 61000-6-2: 2019 (IEC61000-4-3:2006+A1:2007+A2:2010,
Severity Level: 3 V/m, 10 V/m)

8.3. Severity Levels and Performance Criterion

8.3.1. Severity Levels

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

8.3.2. Performance Criterion: A

8.4. Operating Condition of EUT

8.4.1.Setup the EUT as shown on Section 8.1.

8.4.2.Turn on the power of all equipment.

8.4.3.Let the EUT work in test mode (PV in & AC ON Grid) and test it.

8.5. Test Procedure

The EUT are placed on a table that is 0.1 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	3V/m (Severity Level 2) 10V/m (Severity Level 3)
2. Radiated Signal	Modulated
3. Scanning Frequency	80-6000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

8.6. Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

EMTEK (SHENZHEN) CO., LTD.

Applicant	: Shenzhen Atess Power Technology Co., Ltd.		
EUT	: Hybrid inverter	Test Date :	May 18, 2023
M/N	: HPS150	Temperature :	20.9℃
Field Strength	: 10 V/m	Humidity :	55%
Power Supply	: AC 400V/50Hz & DC 600V	Criterion :	A
Test Mode	: PV in & AC ON Grid	Frequency Range :	80MHz to 1000MHz, 1400MHz to 6000MHz

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

	Frequency Rang 1: 80~ 1000MHz		Frequency Rang 2: 1400MHz to 6000MHz	
Field Strength	10V/m		3V/m	
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

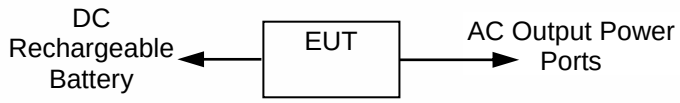
Test Equipment:
1. Signal Generator: 2023B (AEROFLEX)
2. Power Amplifier: AS0102-55 (MILMEGA) & AP32MT215 (PRANA)
3. Log.-Per. Antenna: VULP9118E (SCHWARZBECK)
4. Broad-Band Horn Antenna: BBHA 9120L3F (SCHWARZBECK)
5. RF Power Meter. Dual Channel: 4232A (BOONTON)
6. Field Strength Meter: HI-6005 (HOLADAY)

Note:

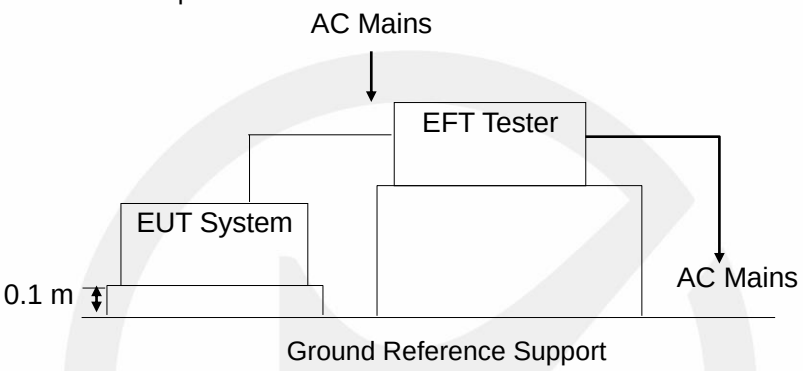
9. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

9.1. Block Diagram of Test Setup

9.1.1. Block Diagram of EUT System



9.1.2. EFT Test Setup



9.2. Test Standard

EN IEC 61000-6-2: 2019 (IEC 61000-4-4:2012, Severity Level:
AC Output Power Ports: 2kV)

9.3. Severity Levels and Performance Criterion

9.3.1. 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

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 (PV in & AC ON Grid) and test it.

9.5. Test Procedure

The EUT is put on the table that is 0.1 meter 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.

9.5.1. 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 DC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.5.2. For signal lines and control lines ports:

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

9.5.3. For DC output line ports:

The AC Output Power Ports of EUT are connected to the AC power mains by using a coupling device that couples the EFT interference signal to AC power lines (AC Output Power Ports). All of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.6. Test Results

PASS.

Please refer to the following page.

Electrical Fast Transient/Burst Test Results

EMTEK (SHENZHEN) CO., LTD.

Applicant : Shenzhen Atess Power Technology Co., Ltd.

EUT : Hybrid inverter

M/N : HPS150

Power Supply : AC 400V/50Hz & DC 600V

Test Mode : PV in & AC ON Grid

Test Date : May 18, 2023

Temperature : 23.8℃

Humidity : 48%

Criterion : B

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

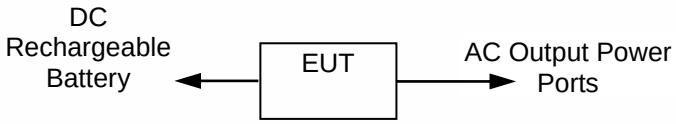
Line	Test Voltage	Result(+)	Result(-)
L1, L2, L3, N, PE	2kV	A	A
L1-L2, L1-L3, L2-L3, L1-N, L2-N, L3-N	2kV	A	A
L1-PE, L2-PE, L3-PE, N-PE	2kV	A	A
L1-L2-PE, L1-L3-PE, L2-L3-PE, L1-L2-L3, L1-L2-N, L1-L3-N, L2-L3-N, L1-N-PE, L2-N-PE, L3-N-PE	2kV	A	A
L1-L2-L3-PE, L1-L2-L3-N, L1-L2-N-PE, L1-L3-N-PE, L2-L3-N-PE	2kV	A	A
Signal Line			
DC Line	2kV	A	A

Note:

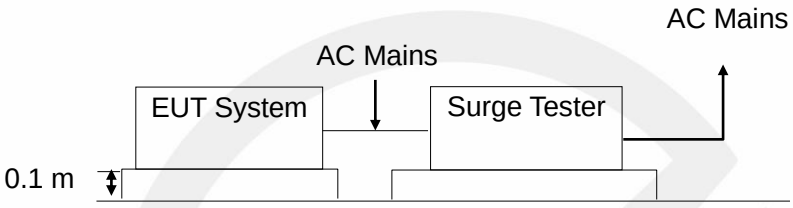
10. SURGE IMMUNITY TEST

10.1.Block Diagram of Test Setup

10.1.1.Block Diagram of EUT System



10.1.2.Surge Test Setup



10.2.Test Standard

EN IEC 61000-6-2: 2019
(IEC61000-4-5:2014, Severity Level**:** AC Output Power Ports:
Line to Line: Level 2, 1.0kV; Line to earth, Level 3, 2.0kV, DC Line, Level 1, 0.5kV)

10.3.Severity Levels and Performance Criterion

10.3.1.Severity level

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

10.3.2.Performance criterion: B

10.4.Operating Condition of EUT

10.4.1.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 (PV in & AC ON Grid) and test it.

10.5.Test Procedure

1) Set up the EUT and test generator as shown on Section 10.1.2.
2) For AC Output Power Ports: For line to line coupling mode, provide a 1.0 kV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points. 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.1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
   For DC line coupling mode, provide a 0.5 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.

10.6.Test Results

PASS.

Please refer to the following page.

Surge Immunity Test Results

EMTEK (SHENZHEN) CO., LTD.

Applicant : Shenzhen Atess Power Technology Co., Ltd.

EUT : Hybrid inverter

M/N : HPS150

Power Supply : AC 400V/50Hz & DC 600V

Test Mode : PV in & AC ON Grid

Test Date : August 28, 2017

Temperature : 22℃

Humidity : 50%

Criterion : B

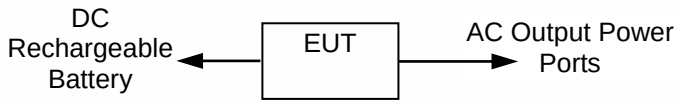
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (kV)	Result
L1-L2, L1-L3, L2-L3	+	0°, 90°, 180°, 270°	5	1.0	A
	-	0°, 90°, 180°, 270°	5	1.0	A
L1-N, L2-N, L3-N	+	0°, 90°, 180°, 270°	5	1.0	A
	-	0°, 90°, 180°, 270°	5	1.0	A
L1-PE, L2-PE, L3-PE	+	0°, 90°, 180°, 270°	5	2.0	A
	-	0°, 90°, 180°, 270°	5	2.0	A
N-PE	+	0°, 90°, 180°, 270°	5	2.0	A
	-	0°, 90°, 180°, 270°	5	2.0	A

Remark:

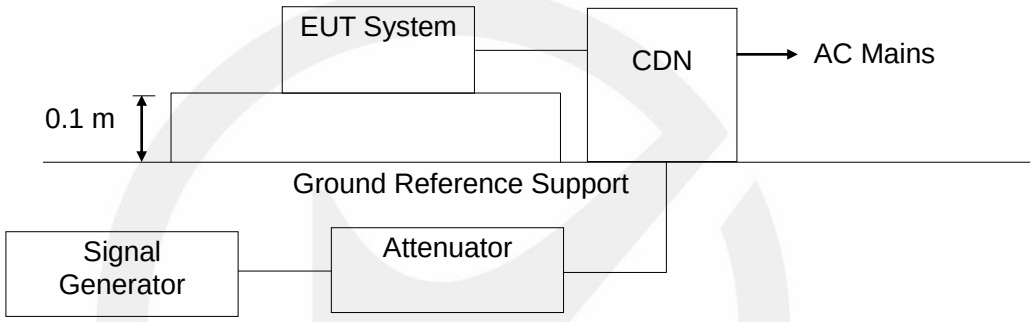
11. INJECTED CURRENTS SUSCEPTIBILITY TEST

11.1.Block Diagram of Test Setup

11.1.1.Block Diagram of EUT System



11.1.2.Block Diagram of Test Setup



11.2.Test Standard

EN IEC 61000-6-2: 2019
(IEC61000-4-6:2013, Severity Level: Level 3, 10V (r.m.s.), 0.15MHz ~ 80MHz)

11.3.Severity Levels and Performance Criterion

11.3.1.Severity level

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

11.3.2.Performance criterion: A

11.4.Operating Condition of EUT

11.4.1.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 (PV in & AC ON Grid) and test it.

11.5.Test Procedure

1) Set up the EUT, CDN and test generators as shown on Section 11.1.2.
2) Let the EUT work in test mode and measure it.
3) The EUT are placed on an insulating support 0.8m 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 EUT are placed on an insulating support 0.8m high above a ground reference plane. EM-Clamp is placed on the ground plane about 0.3m from EUT.
5) The disturbance signal described below is injected to EUT through CDN.
6) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
7) The frequency range is swept from 150kHz to80MHz using 10V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
8) 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.
9) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

11.6.Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

EMTEK (SHENZHEN) CO., LTD.

Applicant： Shenzhen Atess Power Technology Co., Ltd.

EUT： Hybrid inverter　　Test Date: August 28, 2017

M/N： HPS150　　Temperature：22℃

Power Supply：AC 400V/50Hz & DC 600V　　Humidity ：58%

Test Engineer： ZCJ

Test Mode: PV in & AC ON Grid

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Output Power Ports	10V	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 500 (SWITZERLAND EMTEST)
CDN : ☐ CDN-M2 (SWITZERLAND EMTEST)
☒ CDN-M4 (SWITZERLAND EMTEST)
☐ EM-Clamp (SWITZERLAND EMTEST)

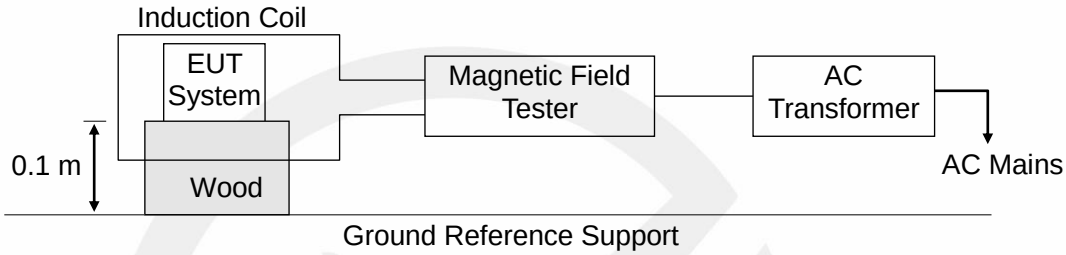
Note:

12. MAGNETIC FIELD SUSCEPTIBILITY TEST

12.1.Block Diagram of Test Setup

12.1.1.Block diagram of EUT System

12.1.2.Magnetic field test setup



12.2.Test Standard

EN IEC 61000-6-2: 2019
(IEC 61000-4-8:2009, Severity Level: Level 4, 30 A/m)

12.3.Severity Levels and Performance Criterion

12.3.1.Severity Levels

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

12.3.2.Performance Criterion: A

12.4.Operating Condition of EUT

12.4.1.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 (PV in & AC ON Grid) and test it.

12.5.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.

12.6.Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Results

EMTEK (SHENZHEN) CO., LTD.

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

Applicant : Shenzhen Atess Power Technology Co., Ltd.
EUT : Hybrid inverter
M/N : HPS150
Input Voltage : AC 400V/50Hz & DC 600V
Date of Test : August 28, 2017 Test Engineer: ZCJ
Ambient Condition : Temp : 22℃ Humid: 55%
Criterion: A

Operation Mode: PV in & AC ON Grid

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

Operation Mode: N/A

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

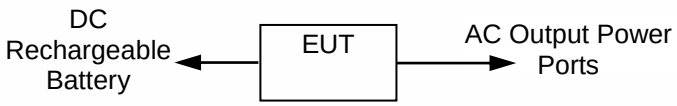
Test Equipment	Magnetic Field Test: HEAFELY MAG 100.1

Note:

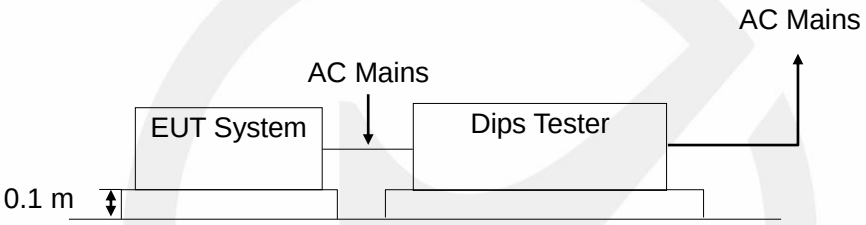
13. VOLTAGE DIPS AND INTERRUPTIONS TEST

13.1.Block Diagram of Test Setup

13.1.1.Block Diagram of EUT System



13.1.2.Dips Test Setup



13.2.Test Standard

EN IEC 61000-6-2: 2019 (IEC 61000-4-11:2004)

13.3.Severity Levels and Performance Criterion

13.3.1.Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5 1 5 10 25 50 *
40	60	
70	30	

13.3.2.Performance criterion: B&C

13.4.Operating Condition of EUT

13.4.1.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 (PV in & AC ON Grid) and test it.

13.5.Test Procedure

1) Set up the EUT and test generator as shown on Section 13.1.2.
2) The interruption is introduced at selected phase angles with specified duration.
3) Record any degradation of performance.

13.6.Test Results

PASS.

Please refer to the following page.

Voltage Dips and Interruptions Test Results

EMTEK(SHENZHEN) CO., LTD.

Applicant : Shenzhen Atess Power Technology Co., Ltd.

EUT : Hybrid inverter | Test Date : August 28, 2017

M/N : HPS150 | Temperature : 24℃

Power Supply : AC 400V/50Hz & DC 600V | Humidity : 53%

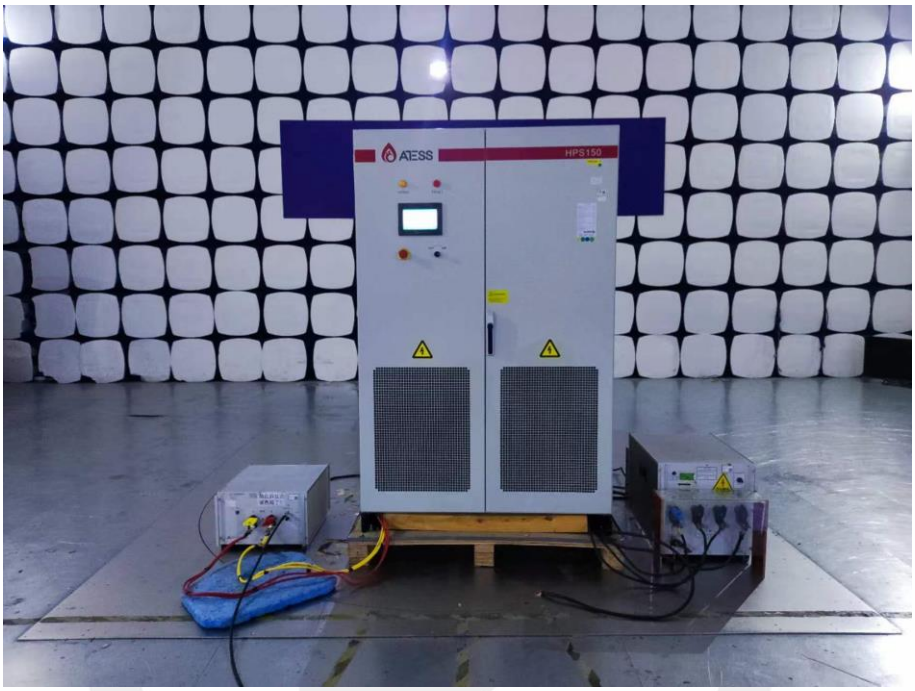
Test Mode: PV in & AC ON Grid

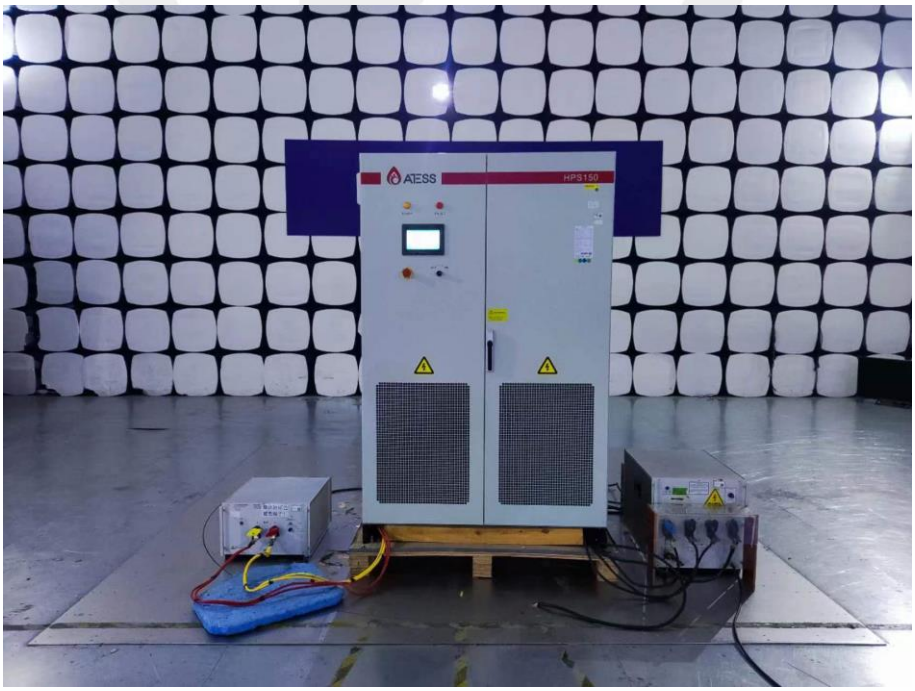
Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in periods)	Criterion ☐A ☐☒B ☒C ☐☐D	Result
0	100	1P	B	A
40	60	10P	C	A
70	30	25P	C	A
0	100	250P	C	B

Note: Test in 0%, 250P, EUT stop work, but could be recoverable by itself.

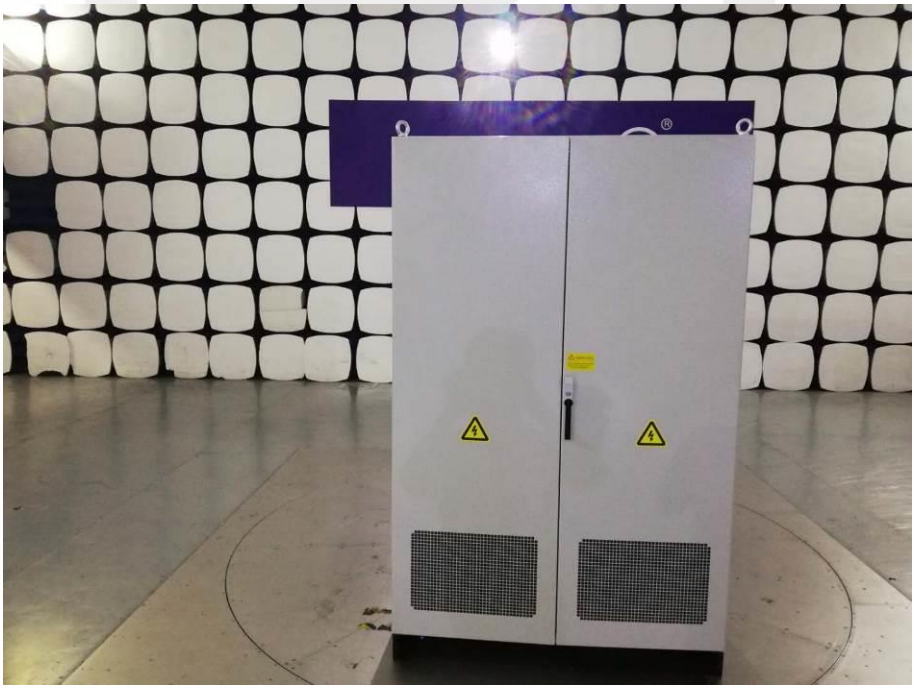
14. PHOTOGRAPHS

14.1.Photos of Conducted Emission Measurement



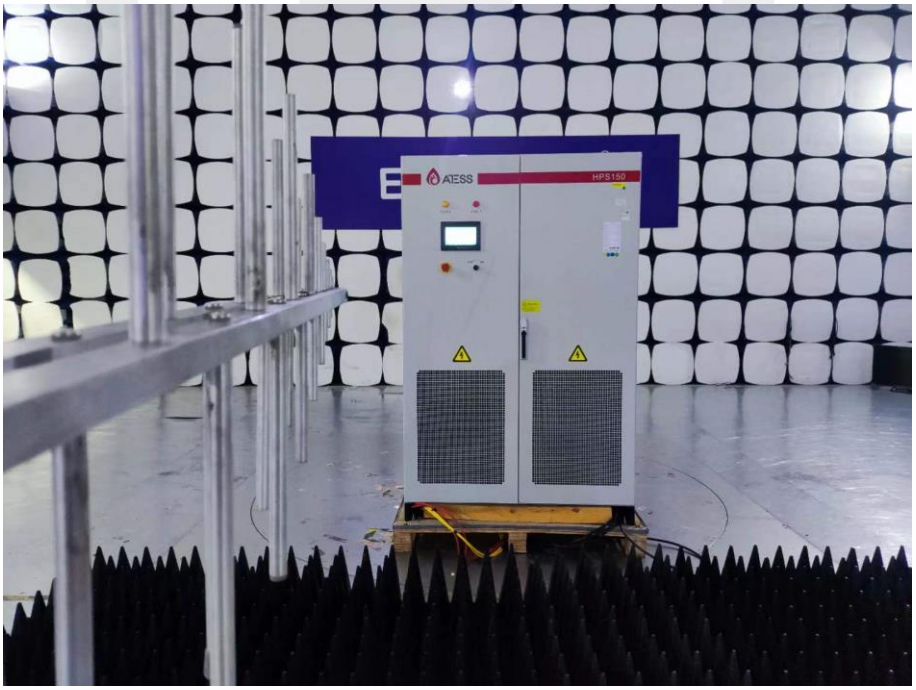


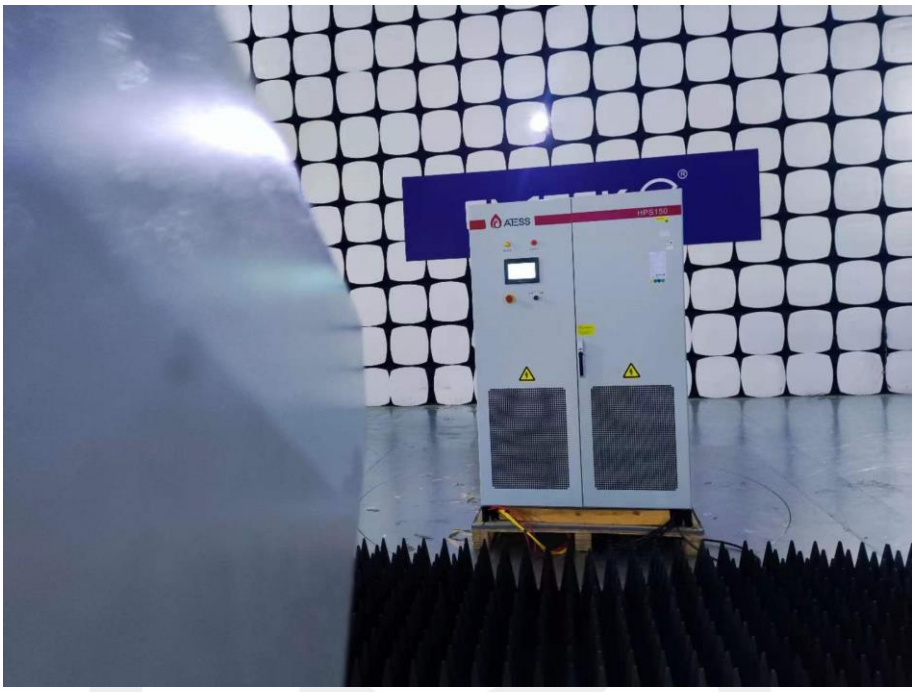
14.2.Photos of Radiation Emission Measurement



14.3.Photo of Electrostatic Discharge Test

14.4.Photo of RF Field Strength Susceptibility Test



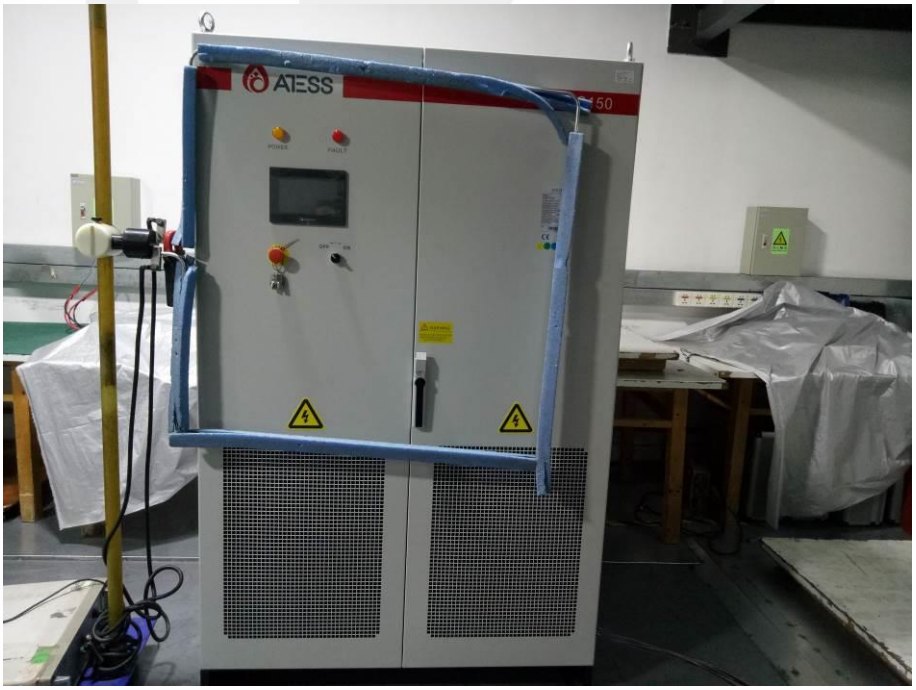


14.5.Photo of Electrical Fast Transient / Burst Immunity Test

14.6.Photo of Surge Test

14.7.For Injected Current Susceptibility Test

14.8.Photo of Magnetic Field Immunity Test

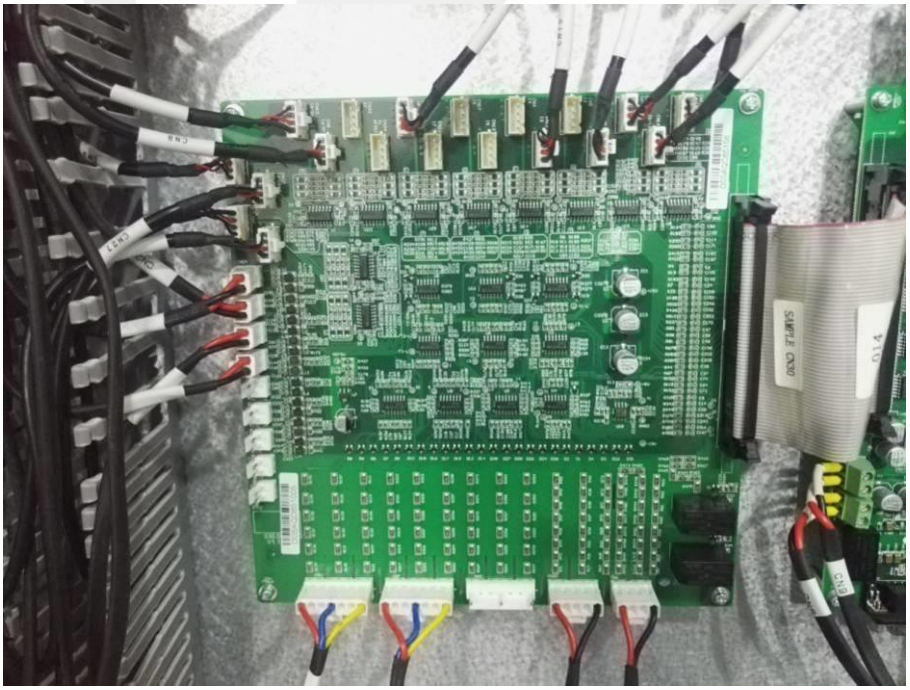


14.9.Photo of Voltage Dips and Interruption Immunity Test

APPENDIX
(Photos of EUT)


ATESS
HPS150


TK6070iQ

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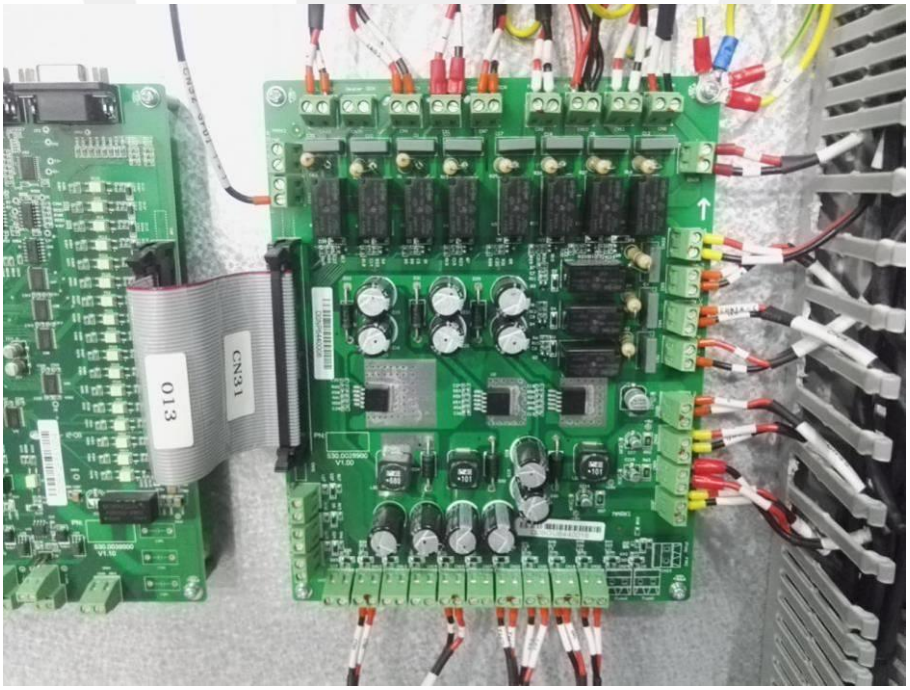
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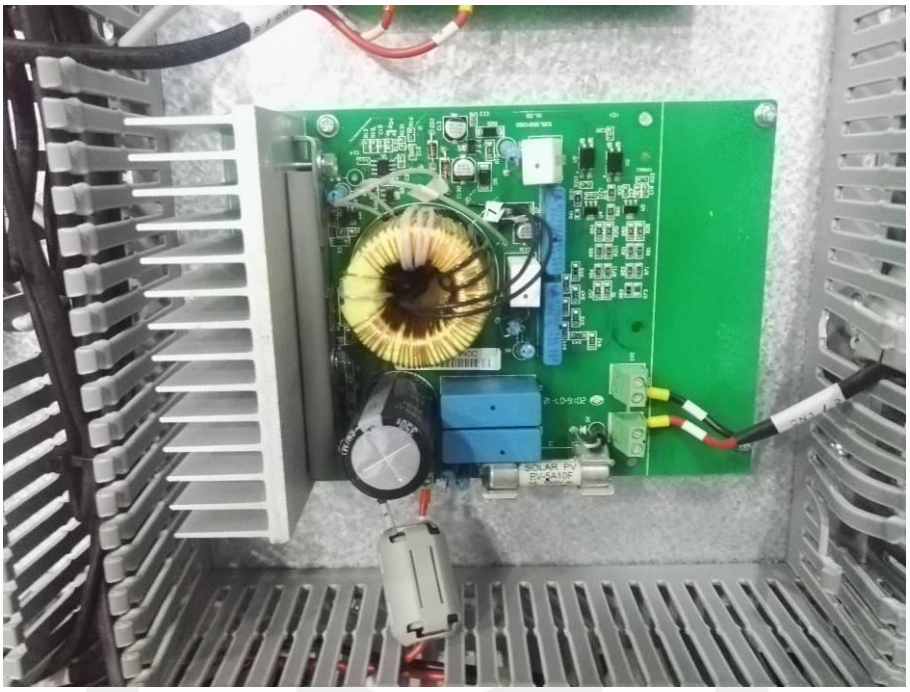
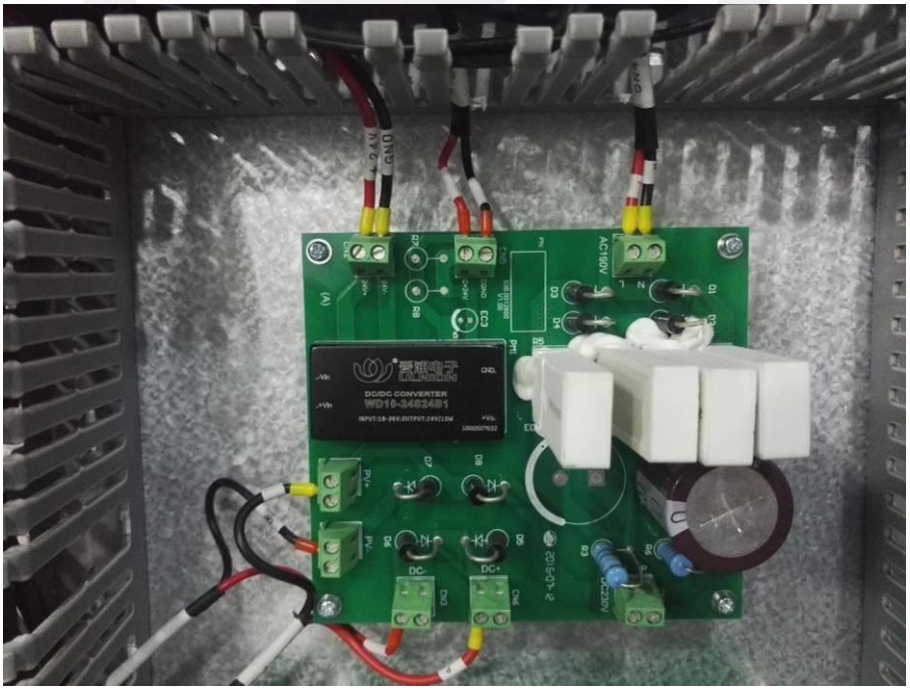
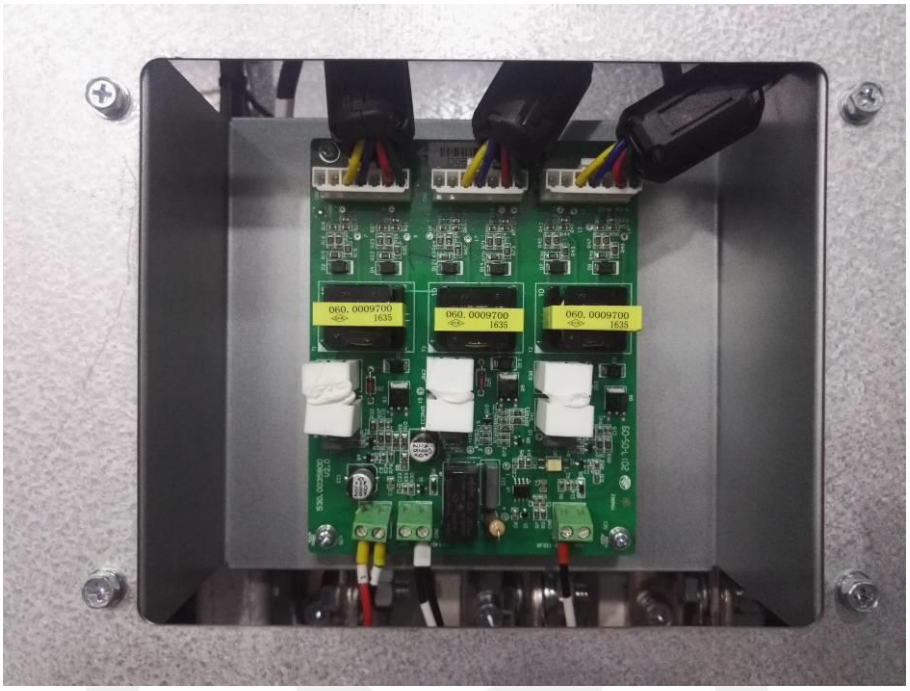



DC/DC CONVERTER
WD10-24S24B1
AC110V
AC220V
DC-
DC+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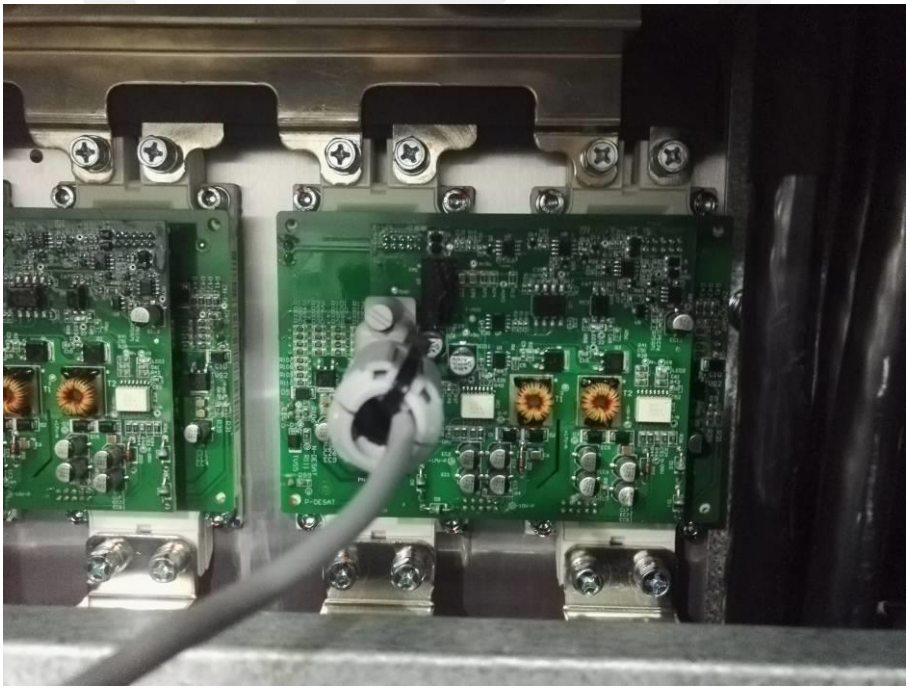

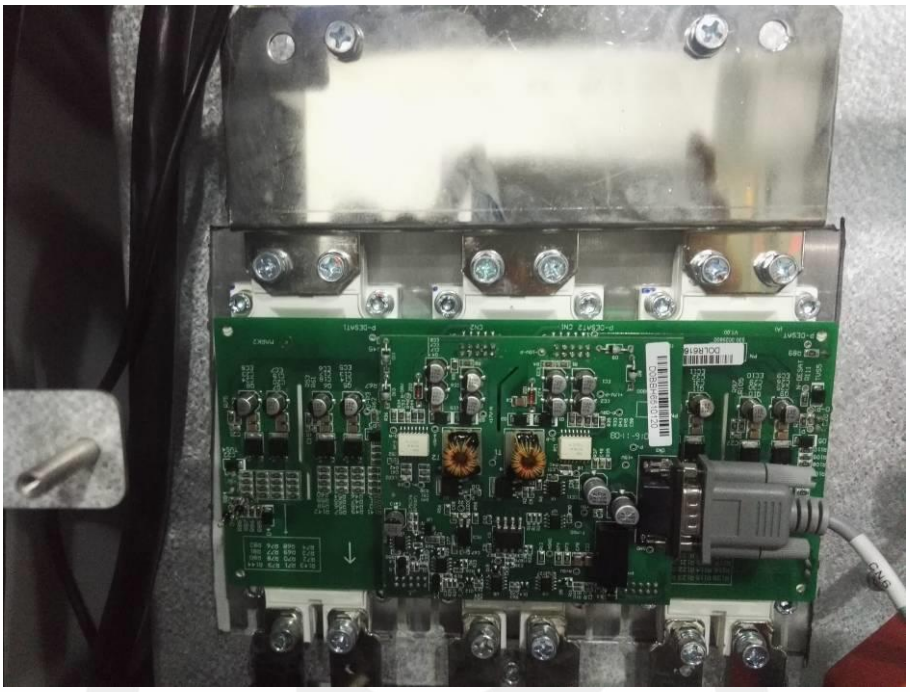

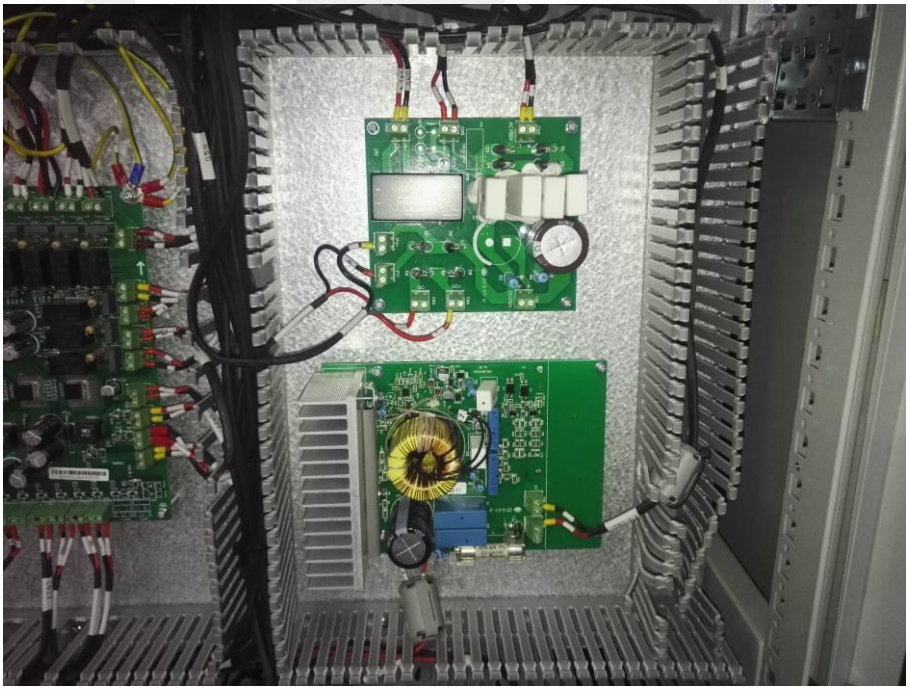

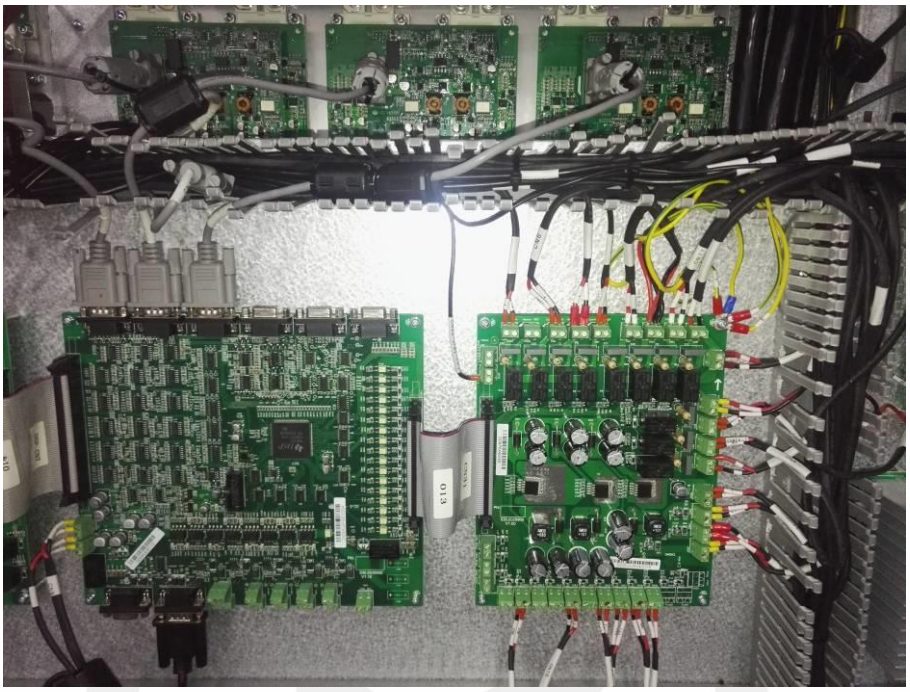

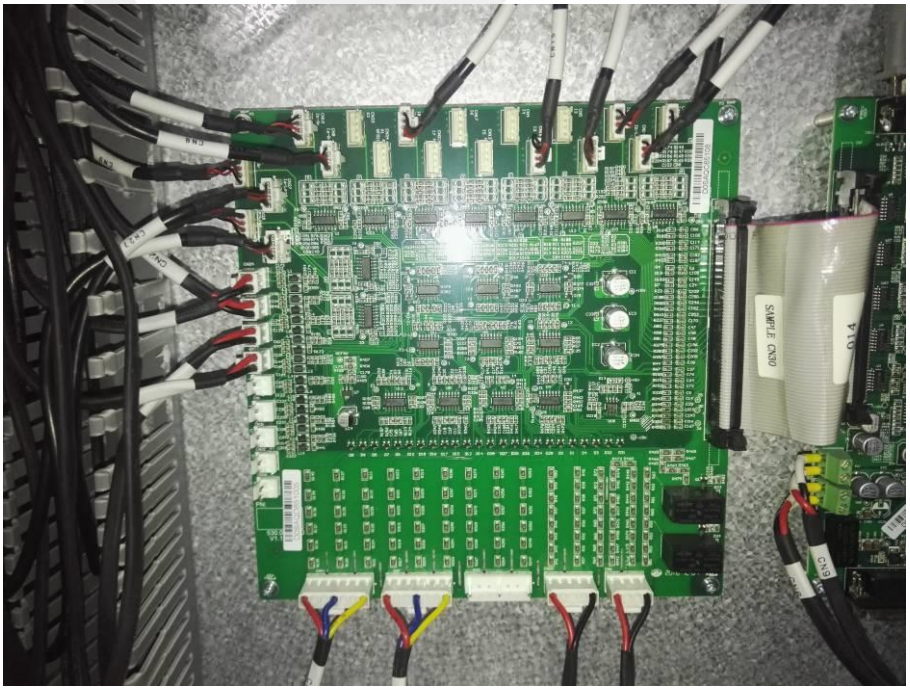

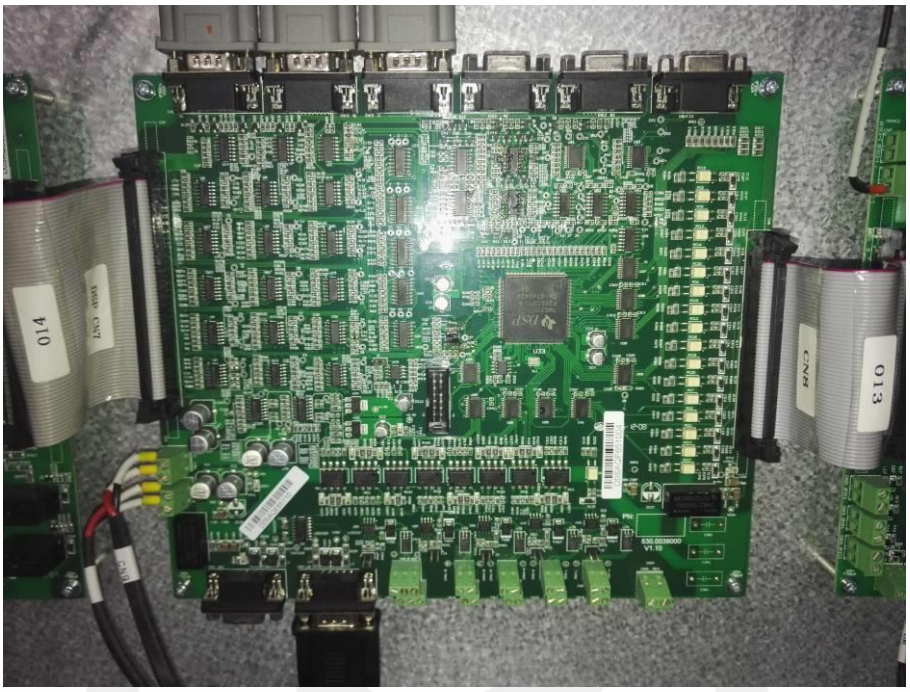
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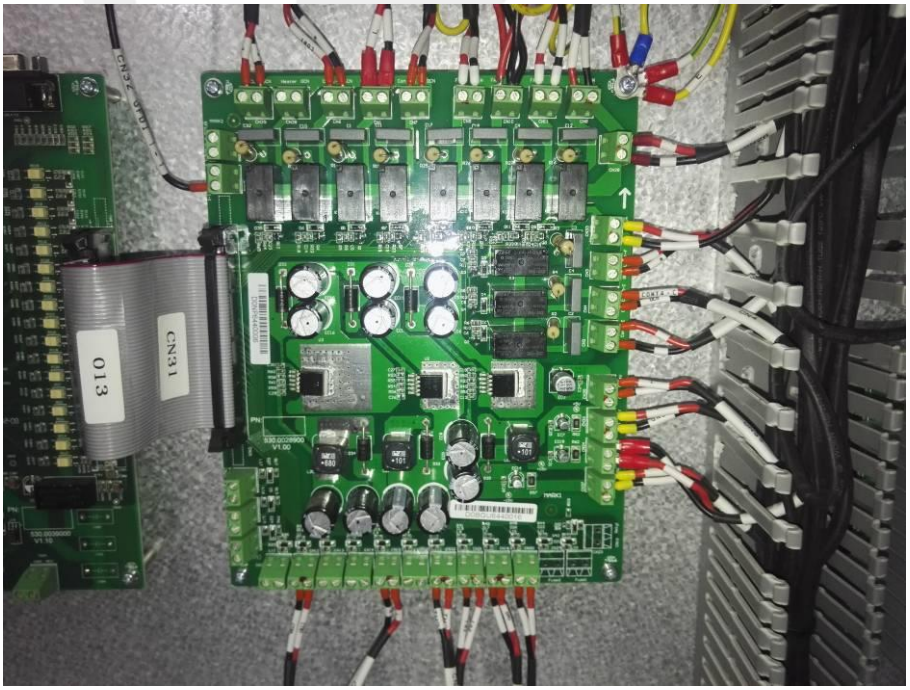
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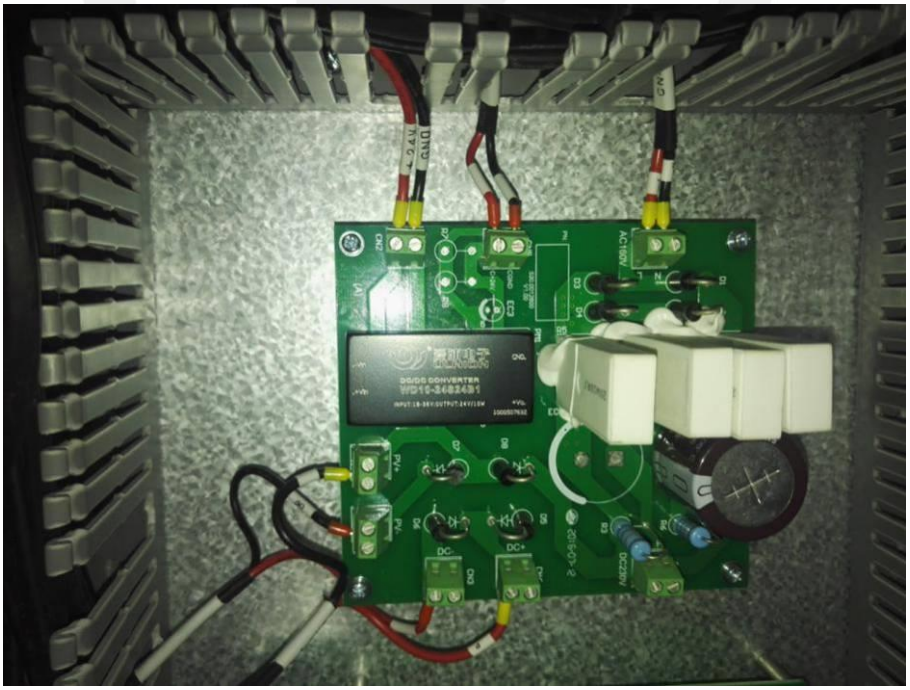

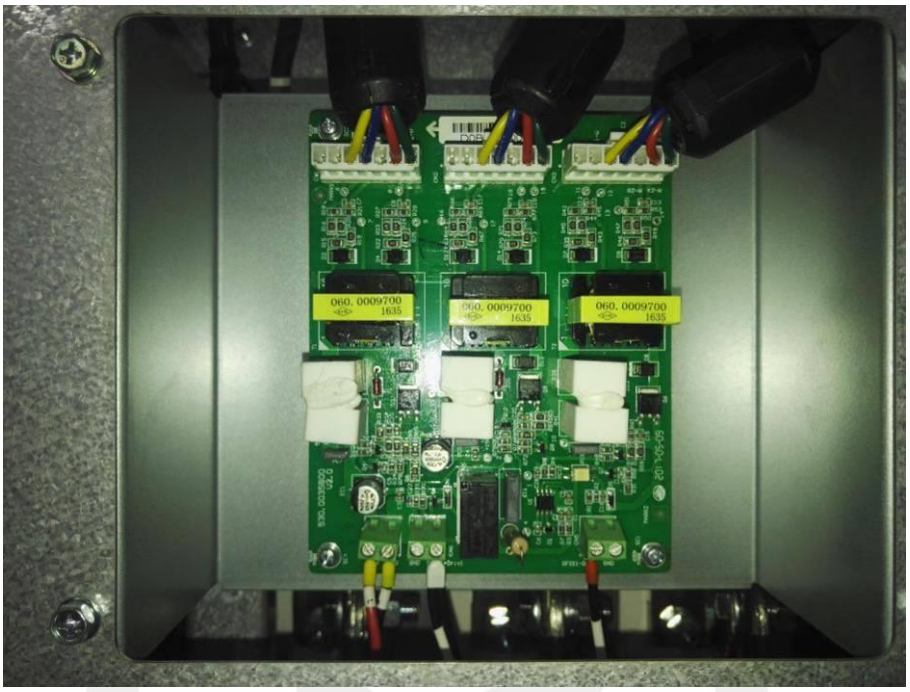
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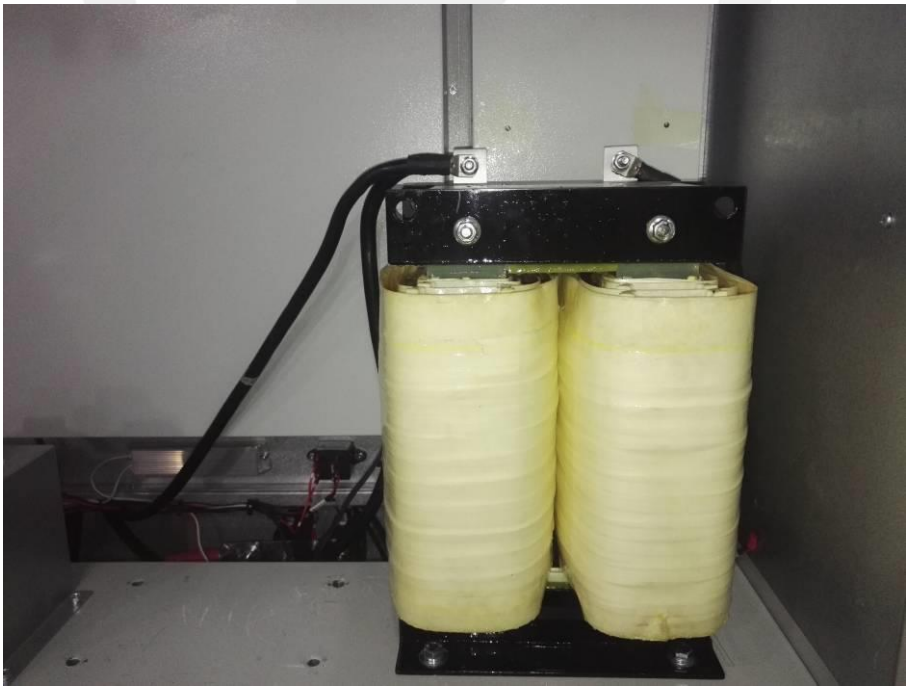

End of Report

Statement

1． This report is invalid without the signature of the authorized approver and "special seal for testing".

2． This report shall not be copied partly without authorization.

3． The test results or observations are applicable only to tested sample. Client shall be responsible for representativeness of the sample and authenticity of the material.

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6． Objections shall be raised within 20 days from the date receiving the report.