EMC Test Report

Report No.	:	**1813C50056412601**
Applicant	:	**Dongguan Lianghong Electronic Technology Co., Ltd.**
Address	:	**No. 6, Xingye 5th Road, Qingxi Town, Dongguan,Guangdong**
Product Name	:	**Switching power supply**
Report Date	:	**Mar. 07, 2025**

Shenzhen Anbotek Compliance Laboratory Limited

Contents

TEST REPORT

Applicant	:	Dongguan Lianghong Electronic Technology Co., Ltd.
Manufacturer	:	Dongguan Lianghong Electronic Technology Co., Ltd.
Product Name	:	Switching power supply
Model No.	:	S-2000-24, S-10-X, S-12-X, S-15-X, S-20-X, S-25-X, S-30-X, S-36-X, S-40-X, S-45-X, S-50-X, S-60-X, S-75-X, S-80-X, S-100-X, S-120-X, S-150-X, S-180-X, S-200-X, S-220-X, S-250-X, S-300-X, S-350-X, S-400-X, S-420-X, S-480-X, S-500-X, S-550-X, S-600-X, S-720-X, S-800-X, S-900-X, S-1000-X, S-1100-X, S-1200-X, S-1300-X, S-1400-X, S-1500-X, S-1600-X, S-1700-X, S-1800-X, S-1900-X, S-2000-X, S-2500-X, S-3000-X, S-3500-X, S-4000-X, S-4500-X, S-5000-X, S-6000-X, S-9000-X, S-12000-X, S-15000-X, S-18000-X (X representative: 0~300)
Trade Mark	:	LOHODIZI
Rating(s)	:	Input: 195V-260V 50/60Hz 20A Max Output: 24VDC,83.3A
Test Standard(s)	:	**EN 55032:2015+A1:2020** **EN IEC 61000-3-2:2019+ A1:2021** **EN 61000-3-3:2013+A2: 2021** **EN 55035:2017+A11:2020**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited 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 Shenzhen Anbotek Compliance Laboratory Limited 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 above listed standard(s) requirements.
This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt: Feb. 19, 2025

Date of Test: Feb. 19, 2025 to Feb. 27, 2025

Prepared By: _____

(Yee Huang)

Approved & Authorized Signer: _____

(KingKong Jin)

1. General Information

1.1. Client Information

Applicant	:	Dongguan Lianghong Electronic Technology Co., Ltd.
Address	:	No. 6, Xingye 5th Road, Qingxi Town, Dongguan,Guangdong
Manufacturer	:	Dongguan Lianghong Electronic Technology Co., Ltd.
Address	:	No. 6, Xingye 5th Road, Qingxi Town, Dongguan,Guangdong
Factory	:	Dongguan Lianghong Electronic Technology Co., Ltd.
Address	:	No. 6, Xingye 5th Road, Qingxi Town, Dongguan,Guangdong

1.2. Description of Device (EUT)

Product Name	:	Switching power supply
Model No.	:	S-2000-24, S-10-X, S-12-X, S-15-X, S-20-X, S-25-X, S-30-X, S-36-X, S-40-X, S-45-X, S-50-X, S-60-X, S-75-X, S-80-X, S-100-X, S-120-X, S-150-X, S-180-X, S-200-X, S-220-X, S-250-X, S-300-X, S-350-X, S-400-X, S-420-X, S-480-X, S-500-X, S-550-X, S-600-X, S-720-X, S-800-X, S-900-X, S-1000-X, S-1100-X, S-1200-X, S-1300-X, S-1400-X, S-1500-X, S-1600-X, S-1700-X, S-1800-X, S-1900-X, S-2000-X, S-2500-X, S-3000-X, S-3500-X, S-4000-X, S-4500-X, S-5000-X, S-6000-X, S-9000-X, S-12000-X, S-15000-X, S-18000-X (X representative: 0~300)
Trade Mark	:	LOHODIZI
Test Power Supply	:	AC 230V, 50Hz
Test Sample No.	:	1-1-1
Adapter	:	N/A
Remark: (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. (2) All samples are the same except the model number, so we prepare "S-2000-24" for test only.		

1.3. Auxiliary Equipment Used During Test

Title	Manufacturer	Model No.	Serial No.
/	/	/	/

1.4. Description of Test Modes

Pretest Modes	Descriptions
TM1	Full load(DC 24V,82A)

For Mode 1 Block Diagram of Test Setup

1.5. Measurement Uncertainty

Parameter	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	3.2dB
Radiated emissions (30MHz~1000MHz)	Horizontal: 3.88dB; Vertical: 4.14dB
Harmonic current emissions	4.26%
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

1.6. Test Summary

Test Items	Test Modes	Status
Conducted emissions from AC mains power ports (150kHz-30MHz)	Mode1	P
Radiated emissions (30MHz-1GHz)	Mode1	P
Harmonic current emission	Mode1	P
Voltage fluctuations and flicker	Mode1	P
Electrostatic discharges	Mode1	P
RF electromagnetic field disturbances	Mode1	P
Electrical fast transients / burst for AC mains power ports	Mode1	P
Surges for AC mains power ports	Mode1	P
Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz)	Mode1	P
Voltage dips and interruptions	Mode1	P
Note: P: Pass N: N/A, not applicable		

1.7. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.:434132
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 434132.

ISED-Registration No.: 8058A
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location
Shenzhen Anbotek Compliance Laboratory Limited.
Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

1.8. EMS Performance Criteria

General Performance Criteria

Performance Criteria A
The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state 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.

Performance Criteria B
During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.
After the test, 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), or recovery time, 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.

Performance Criteria C
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. A reboot or re-start operation is allowed.
Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

1.9. Test Equipment List

Conducted emissions from AC mains power ports (150kHz-30MHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	2024-09-09	2025-09-08
2	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040DT001	2025-01-13	2026-01-12
3	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	/	/
4	EMI Test Receiver(CE2#)	Rohde & Schwarz	ESPI3	100926	2024-09-09	2025-09-08

Radiated emissions (30MHz-1GHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Pre-amplifier	Schwarzbeck	BBV-9745	9745-075	2025-01-14	2026-01-13
2	Bilog Broadband Antenna	SCHWARZBECK	VULB 9163	01109	2022-10-16	2025-10-15
3	Software Name EZ-EMC	Farad Technology	EMEC-3A1	N/A	/	/
4	EMI Test Receiver(RE1#)	Rohde & Schwarz	ESPI3	100297	2025-01-13	2026-01-12

Harmonic current emission Voltage fluctuations and flicker						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Programmable AC Power source	IVYTECH	APS-5005A	632734	2024-09-09	2025-09-08
2	Harmonic and Flicker Analyzer	EMC-PARTNER	HMONICS 1000-1P	164	2024-09-11	2025-09-10
3	Harmonics-1000	N/A	Ed.3.0+4.0	N.A	/	/

Electrostatic discharges						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	ESD Simulators	emtest	ESD NX30.1	11936	2024-03-11	2025-03-10

RF electromagnetic field disturbances						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Signal Generator	Agilent	N5181A	MY50143107	2025-01-13	2026-01-12
2	Power Meter	Agilent	E4417A	MY45101384	2025-01-13	2026-01-12
3	Amplifier	Micotop	MPA-80-1000-600	MPA2110318	2025-01-13	2026-01-12
4	Amplifier	Micotop	MPA-1000-6000-100	MPA2110327	2025-01-13	2026-01-12
5	Log.-Per.-Antenna	Schwarzbeck	VULP 9118E	01012	/	/
6	Microwave Log.-Per. Antenna	Schwarzbeck	STLP 9149	00788	/	/
7	Power Sensor	KEYSIGHT	E9323A	US40410647	2025-01-13	2026-01-12
8	Power Sensor	KEYSIGHT	E9323A	MY53100007	2025-01-13	2026-01-12
9	Electric field Probe	Narda S.T.S /PMM	EP 601	811ZX10351	2025-01-13	2026-01-12
10	Software	EMtrace	EM 3	/	/	/

Electrical fast transients / burst for AC mains power ports						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Surge Generator	TESEQ	NSG 3060	1480	2025-01-13	2026-01-12
2	CDN	TESEQ	CDN 3061	1408	2025-01-13	2026-01-12
3	EFT-Clamp	PRIM	EFT61004B	PR10114282	2025-01-13	2026-01-12

Surges for AC mains power ports						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Combined Wave Lightning Surge Simulator	3Ctest	CCS600	ES3771702	2025-01-13	2026-01-12
2	Three Phase Power Coupling Network	3Ctest	SEPN69100T	ES0801757	2025-01-13	2026-01-12
3	Telecom port surge generator	PMI	TW101	190411	2025-01-14	2026-01-13

Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	CDN	FRANKONIA	CDN - M2+ M3	A2210178/ 2012	2025-01-13	2026-01-12
2	6dB Attenuator	FRANKONIA	DAM 26W	1172202	2024-09-09	2025-09-08
3	EM-Clamp	FRANKONIA	EMCL-20	18101728-0103	2025-01-13	2026-01-12
4	Signal Generator	R&S	SMC100A	104424	2025-01-13	2026-01-12
5	Software	EMtrace	EM 6	/	/	/
6	Power Meter	Agilent	E4419B	GB43312730	2025-01-13	2026-01-12
7	Amplifier	Micotop	MPA-0.15-230-110	MPA2110317	2025-01-14	2026-01-13
8	Power Sensor	Agilent	E9304	/	2025-01-13	2026-01-12
9	Power Sensor	Agilent	E9304	MY41498663	2025-01-13	2026-01-12
10	CDN	TESEQ	CDN M432-3LN	33659	2025-01-13	2026-01-12

Voltage dips and interruptions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	CYCLE SAG Simulator	PRIMA	DRP61011AG	PR12046234	2025-01-13	2026-01-12

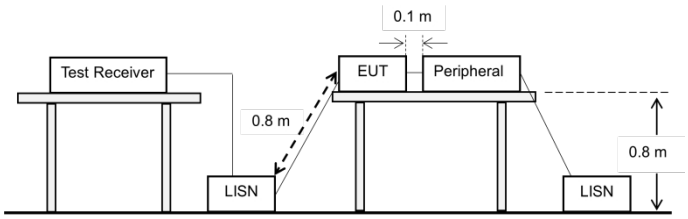
2. Conducted emissions from AC mains power ports (150kHz-30MHz)

Test Requirement:	Class B
Test Limit:	**Frequency Range** / **Limit (Quasi-Peak)** / **Limit (Average)** 0.15MHz to 0.5MHz: 66dB(μV) to 56dB(μV) / 56dB(μV) to 46dB(μV) 0.5MHz to 5MHz: 56dB(μV) / 46dB(μV) 5MHz to 30MHz: 60dB(μV) / 50dB(μV) Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz
Test Method:	Clause 7 of CISPR 16-2-1:2014/AMD1:2017
Procedure:	An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected. Remark: Level= Read Level+ Cable Loss+ LISN Factor

2.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Full load(DC 24V,82A)

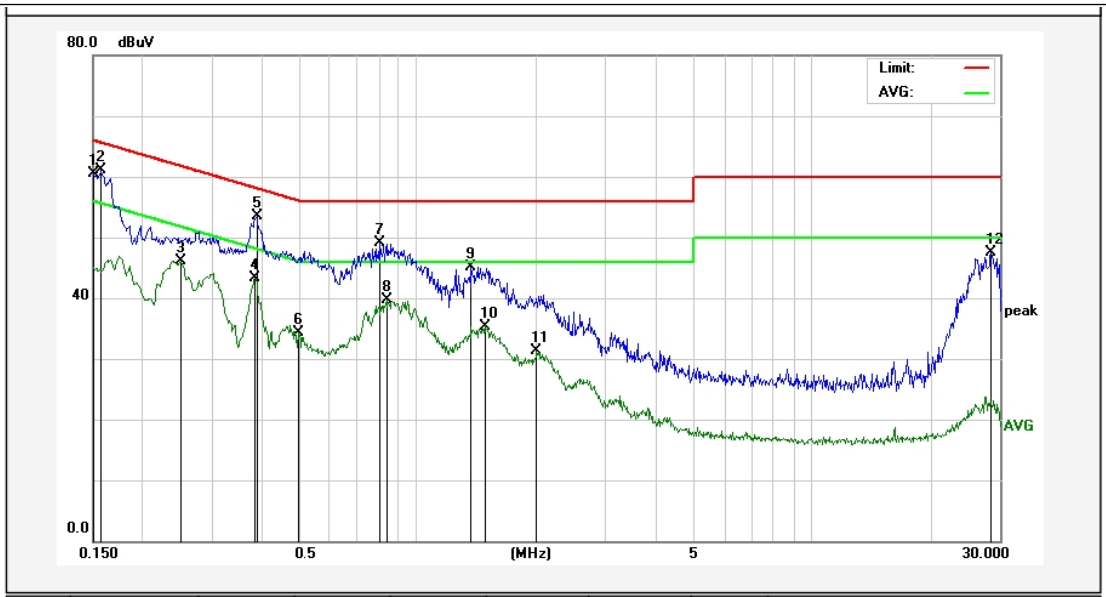
2.2. Test Setup



2.3. Test Data

Temperature:	23.8 °C	Humidity:	53 %	Atmospheric Pressure:	101 kPa

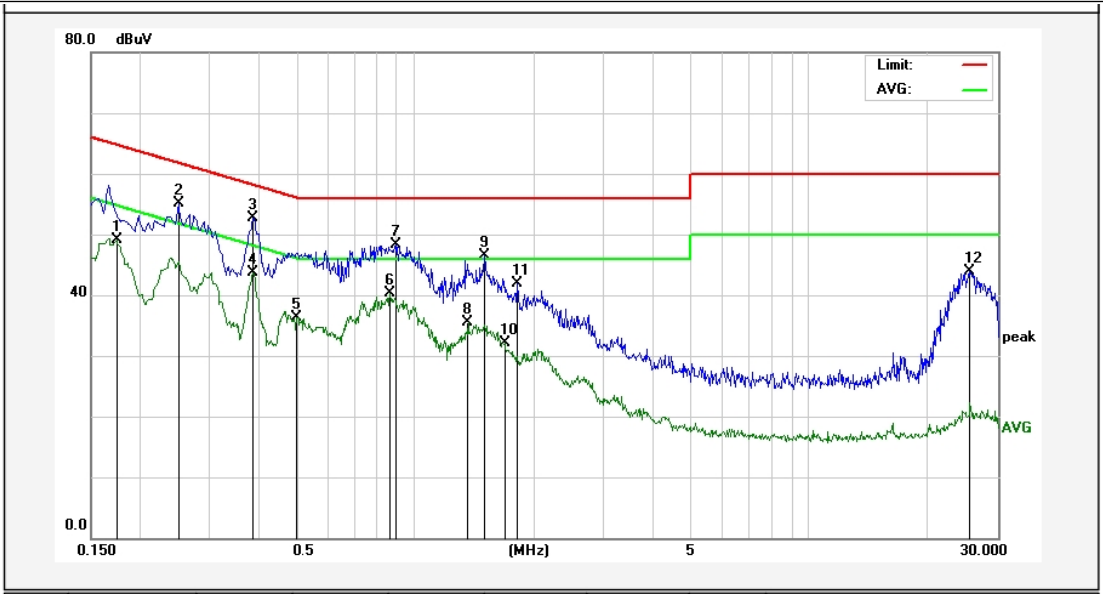
TM1 / Line: Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1499	42.73	17.82	60.55	66.00	-5.45	QP	
2	0.1580	43.24	17.83	61.07	65.56	-4.49	QP	
3	0.2500	28.37	17.82	46.19	51.75	-5.56	AVG	
4	0.3860	25.46	17.81	43.27	48.15	-4.88	AVG	
5	0.3899	35.63	17.81	53.44	58.06	-4.62	QP	
6	0.4979	16.37	17.86	34.23	46.03	-11.80	AVG	
7	0.8020	31.16	17.87	49.03	56.00	-6.97	QP	
8	0.8379	21.77	17.87	39.64	46.00	-6.36	AVG	
9	1.3700	27.28	17.86	45.14	56.00	-10.86	QP	
10	1.4859	17.54	17.86	35.40	46.00	-10.60	AVG	
11	2.0059	13.40	17.85	31.25	46.00	-14.75	AVG	
12	28.5339	28.84	18.66	47.50	60.00	-12.50	QP	

Temperature:	23.8 °C	Humidity:	53 %	Atmospheric Pressure:	101 kPa

TM1 / Line: Neutral



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1739	31.30	17.83	49.13	54.77	-5.64	AVG	
2	0.2500	37.29	17.82	55.11	61.75	-6.64	QP	
3	0.3860	34.91	17.81	52.72	58.15	-5.43	QP	
4	0.3860	25.99	17.81	43.80	48.15	-4.35	AVG	
5	0.4979	18.52	17.86	36.38	46.03	-9.65	AVG	
6	0.8619	22.37	17.86	40.23	46.00	-5.77	AVG	
7	0.8980	30.43	17.86	48.29	56.00	-7.71	QP	
8	1.3619	17.67	17.86	35.53	46.00	-10.47	AVG	
9	1.5020	28.59	17.85	46.44	56.00	-9.56	QP	
10	1.6819	14.32	17.85	32.17	46.00	-13.83	AVG	
11	1.8180	24.12	17.86	41.98	56.00	-14.02	QP	
12	25.5060	25.46	18.51	43.97	60.00	-16.03	QP	

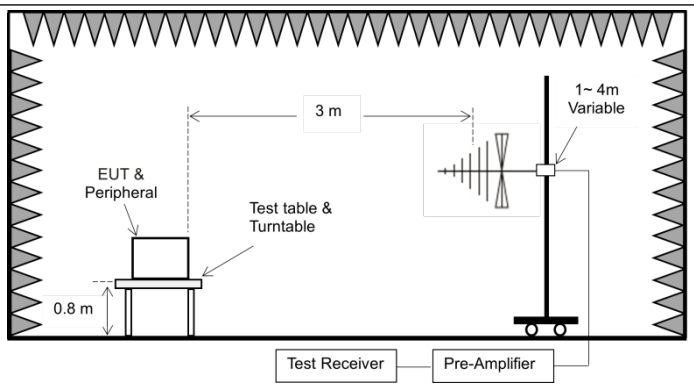
3. Radiated emissions (30MHz-1GHz)

<table>
<tr><td>Test Requirement:</td><td>Class B</td></tr>
<tr><td>Test Limit:</td><td>
<table>
<tr><th>Frequency (MHz)</th><th>Limit [dB(uV/m) at 10m]</th><th>Limit [dB(uV/m) at 3m]</th></tr>
<tr><td>30 to 230</td><td>30</td><td>40</td></tr>
<tr><td>230 to 1000</td><td>37</td><td>47</td></tr>
<tr><td>Detector:</td><td colspan="2">Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz</td></tr>
</table>
</td></tr>
<tr><td>Test Method:</td><td>Clause 7.3 of CISPR 16-2-3:2016</td></tr>
<tr><td>Procedure:</td><td>An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.
Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</td></tr>
</table>

3.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Full load(DC 24V,82A)

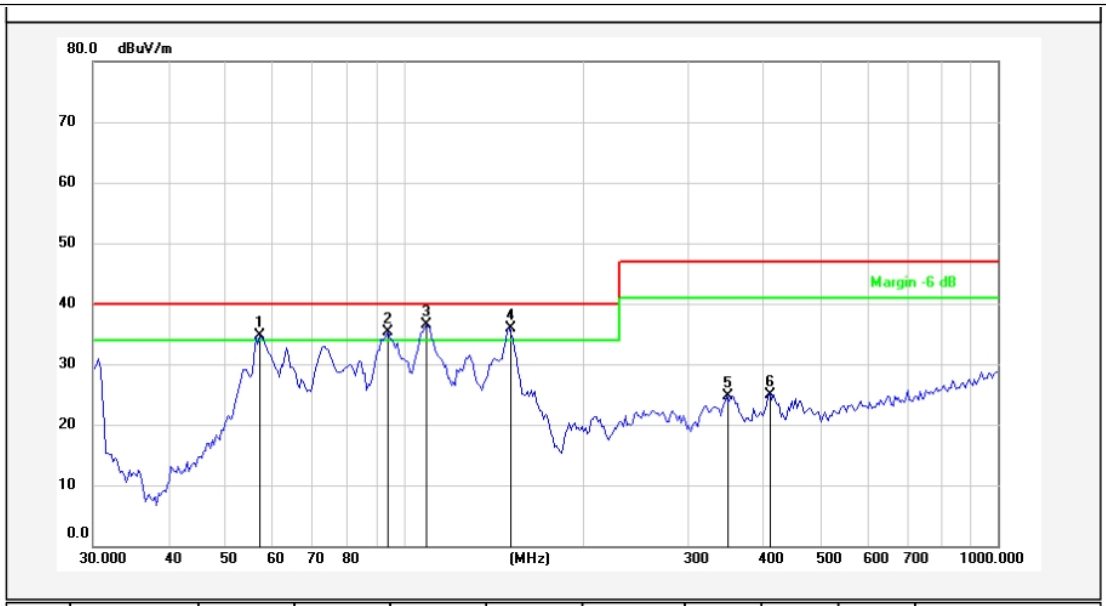
3.2. Test Setup



3.3. Test Data

Temperature:	25.1 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa

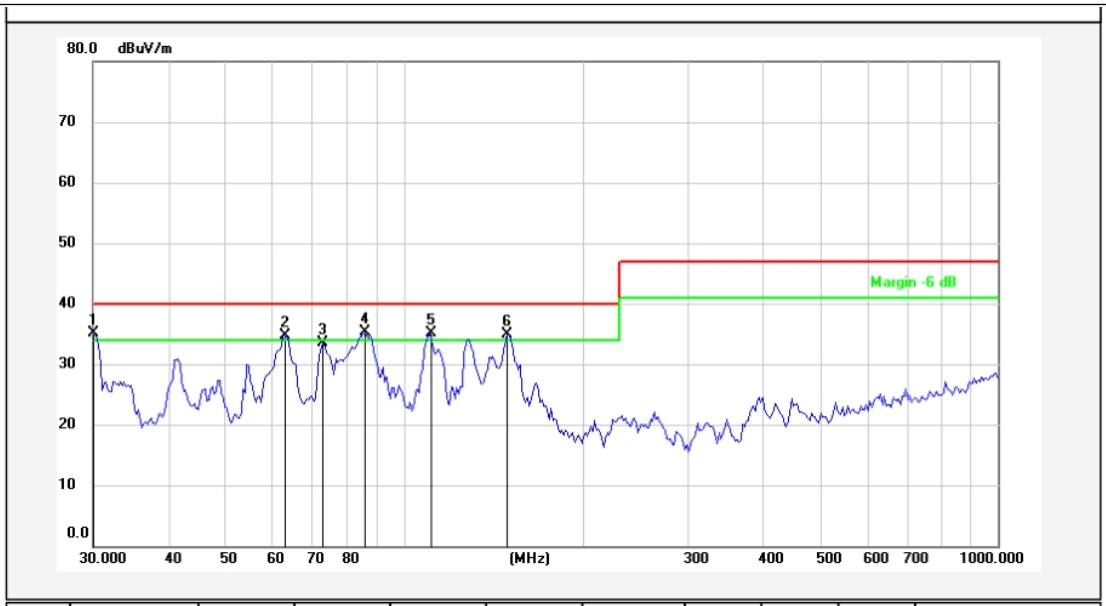
TM1 / Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	57.1914	51.30	-16.64	34.66	40.00	-5.34	QP			
2	94.0978	53.30	-18.05	35.25	40.00	-4.75	QP			
3	109.0284	54.99	-18.43	36.56	40.00	-3.44	QP			
4	150.5378	57.22	-21.38	35.84	40.00	-4.16	QP			
5	349.2500	38.88	-14.15	24.73	47.00	-22.27	QP			
6	413.2706	37.75	-12.75	25.00	47.00	-22.00	QP			

Temperature:	25.1 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa

TM1 / Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	30.0000	60.65	-25.54	35.11	40.00	-4.89	QP			
2	62.6507	53.77	-18.98	34.79	40.00	-5.21	QP			
3	73.1025	55.42	-21.91	33.51	40.00	-6.49	QP			
4	85.8983	55.19	-19.97	35.22	40.00	-4.78	QP			
5	110.5687	53.78	-18.63	35.15	40.00	-4.85	QP			
6	149.4857	55.51	-20.53	34.98	40.00	-5.02	QP			

4. Harmonic current emission

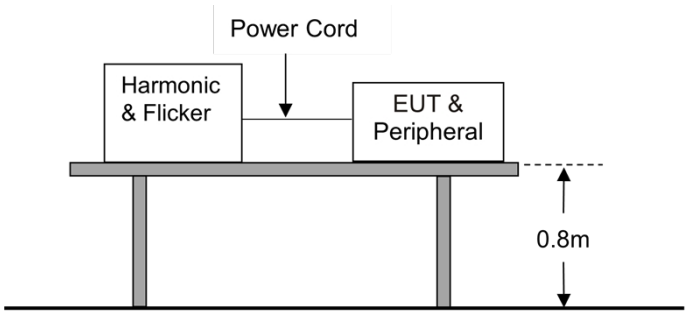
Test Requirement:	Class A
Test Limit:	See table below
Test Method:	EN IEC 61000-3-2:2019+A1:2021

Harmonic order h	Maximum permissible harmonic current A
Odd harmonics	
3	2,30
5	1,14
7	0,77
9	0,40
11	0,33
13	0,21
$15 \le h \le 39$	$0{,}15\frac{15}{h}$
Even harmonics	
2	1,08
4	0,43
6	0,30
$8 \le h \le 40$	$0{,}23\frac{8}{h}$

4.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Full load(DC 24V,82A)

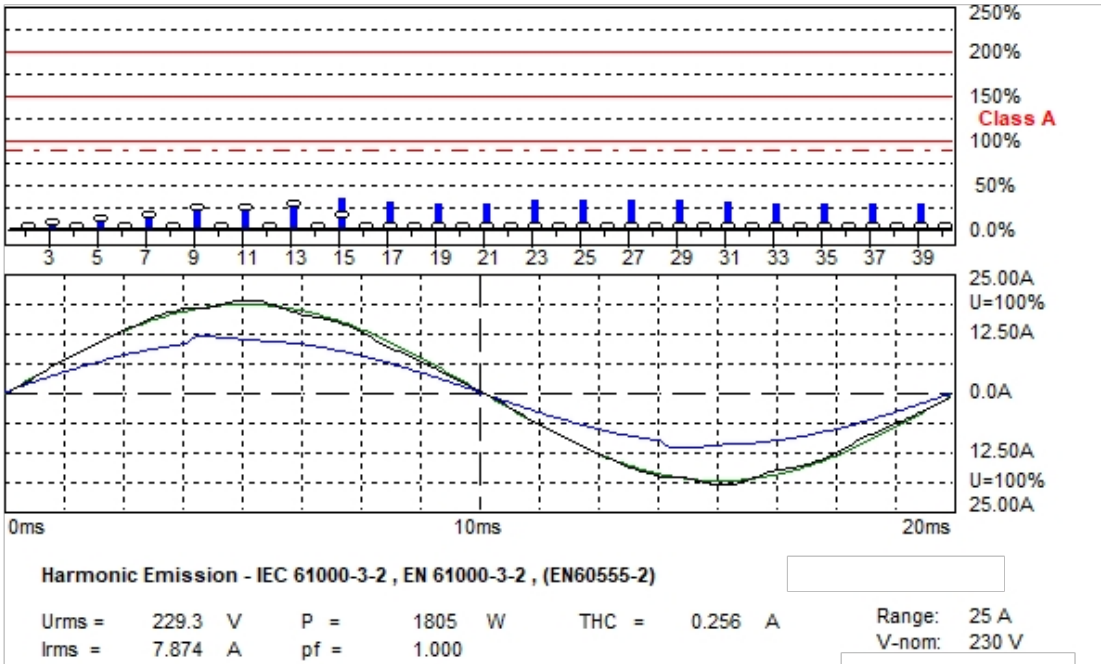
4.2. Test Setup



4.3. Test Data

Temperature:	24.2 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa

Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2)



Full Bar : Actual Values
Empty Bar : Maximum Values
Blue : Current , Green : Voltage , Red : Failed

Urms = 229.3V Freq = 50.000 Range: 25 A
Irms = 7.874A Ipk = 11.88A cf = 1.509
P = 1805W S = 1806VA pf = 1.000
THDi = 3.30 % THDu = 0.10 % Class A

Test - Time : 3min (100 %)

Test aborted, Result: PASSED

Order	Freq.	Iavg	Iavg%L	Irms	Irms%	Irms%L	Imax	Imax%L	Limit	Status	Vmax
	[Hz]	[A] [%]	[A] [%]	[%]	[A] [%]	[A]	[%]	[V]			
1	50	7.4787	7.8720	99.981		7.8720		229.22			
2	100	0.0000	0.0000	0.0046	0.0581	0.4239	0.0046	0.4239	1.0800		0.1718
3	150	0.1205	5.2391	0.1236	1.5698	5.3737	0.1236	5.3737	2.3000		0.0491
4	200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4300		0.0245
5	250	0.1102	9.6647	0.1114	1.4147	9.7710	0.1129	9.9048	1.1400		0.0491
6	300	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3000		0.0000
7	350	0.1012	13.149	0.1038	1.3178	13.475	0.1038	13.475	0.7700		0.0245
8	400	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2300		0.0000
9	450	0.0863	21.575	0.0885	1.1240	22.125	0.0885	22.125	0.4000		0.0245
10	500	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1840		0.0245
11	550	0.0732	22.195	0.0748	0.9496	22.657	0.0748	22.657	0.3300		0.0245
12	600	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1533		0.0000
13	650	0.0585	27.846	0.0610	0.7752	29.064	0.0610	29.064	0.2100		0.0000
14	700	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1314		0.0000
15	750	0.0195	12.985	0.0473	0.6008	31.535	0.0473	31.535	0.1500		0.0245
16	800	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1150		0.0000
17	850	0.0000	0.0000	0.0381	0.4845	28.822	0.0381	28.822	0.1324		0.0000
18	900	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1022		0.0000
19	950	0.0000	0.0000	0.0305	0.3876	25.770	0.0320	27.059	0.1184		0.0000
20	1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0920		0.0000
21	1050	0.0000	0.0000	0.0290	0.3682	27.059	0.0290	27.059	0.1071		0.0000
22	1100	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0836		0.0000
23	1150	0.0000	0.0000	0.0275	0.3488	28.076	0.0290	29.636	0.0978		0.0000
24	1200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0015	1.9903	0.0767		0.0000
25	1250	0.0000	0.0000	0.0275	0.3488	30.518	0.0275	30.518	0.0900		0.0000
26	1300	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0708		0.0000
27	1350	0.0000	0.0000	0.0259	0.3295	31.128	0.0259	31.128	0.0833		0.0000
28	1400	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0657		0.0000
29	1450	0.0000	0.0000	0.0229	0.2907	29.500	0.0229	29.500	0.0776		0.0000
30	1500	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0613		0.0000
31	1550	0.0000	0.0000	0.0214	0.2713	29.433	0.0214	29.433	0.0726		0.0000
32	1600	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0575		0.0000
33	1650	0.0000	0.0000	0.0183	0.2326	26.855	0.0183	26.855	0.0682		0.0000
34	1700	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0541		0.0000
35	1750	0.0000	0.0000	0.0168	0.2132	26.109	0.0168	26.109	0.0643		0.0000
36	1800	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0511		0.0000
37	1850	0.0000	0.0000	0.0168	0.2132	27.601	0.0168	27.601	0.0608		0.0000
38	1900	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0484		0.0000
39	1950	0.0000	0.0000	0.0153	0.1938	26.449	0.0153	26.449	0.0577		0.0000
40	2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0460		0.0000

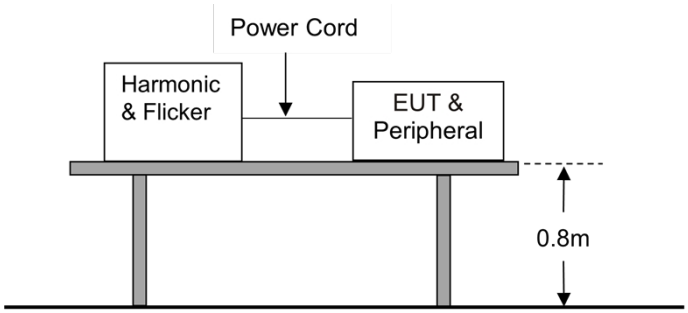
5. Voltage fluctuations and flicker

Test Requirement:	Clause 4
Test Limit:	EN 61000-3-3, Clause 5
Test Method:	EN 61000-3-3:2013+A2:2021

5.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Full load(DC 24V,82A)

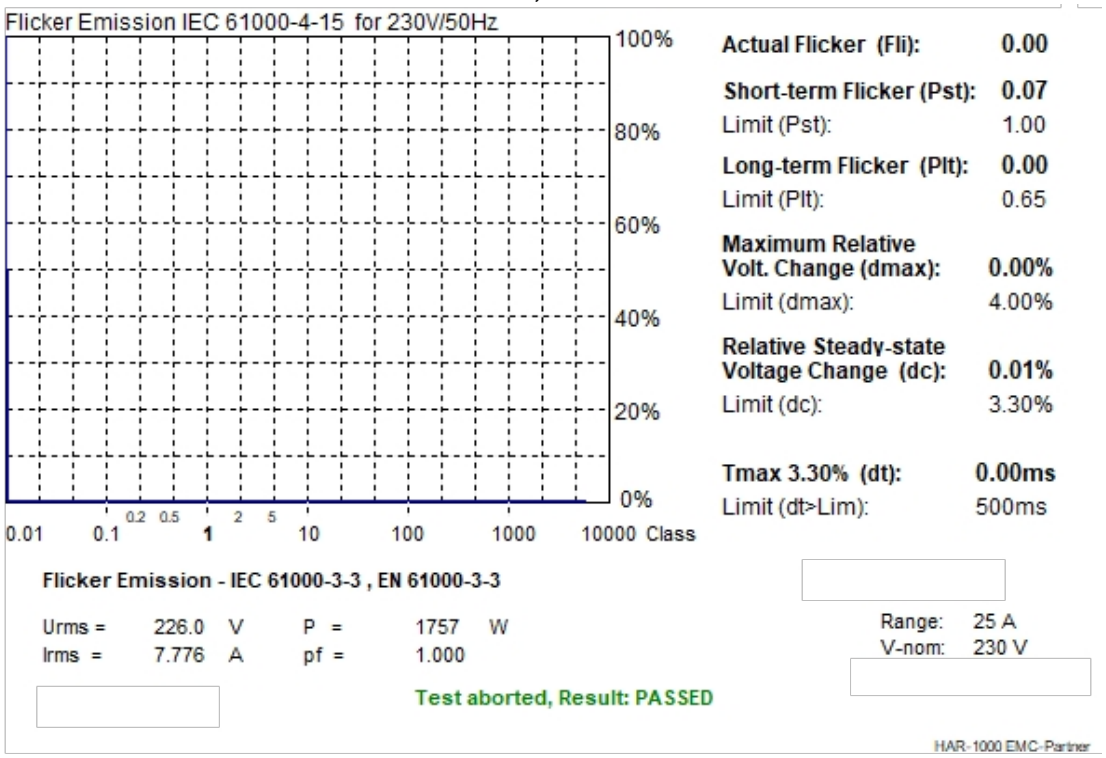
5.2. Test Setup



5.3. Test Data

Temperature:	24.2 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3



Full Bar : Actual Values
Empty Bar : Maximum Values
Circles : Average Values
Blue : Current , Green : Voltage , Red : Failed

Urms = 226.0V Freq = 50.000 Range: 25 A
Irms = 7.776A Ipk = 12.08A cf = 1.554
P = 1757W S = 1757VA pf = 1.000

Test - Time : 10 x 1min = 10min (100 %)

LIN (Line Impedance Network) : L: 0.24ohm +j0.15ohm N: 0.16ohm +j0.10ohm

Limits : Plt : 0.65 Pst : 1.00
dmax : 4.00 % dc : 3.30 %
dtLim: 3.30 % dt>Lim: 500ms

Test aborted, Result: PASSED

	P3s	dmax [%]	dc [%]	dt>Lim [ms]
1	0.000	0.000	0.000	0.000

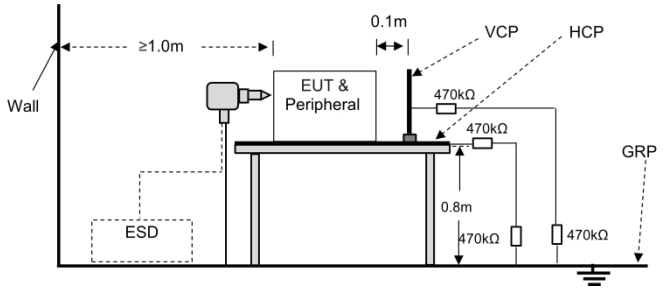
6. Electrostatic discharges

Test Requirement:	Contact Discharge: +/- 4kV Air Discharge: +/- 8kV
Test Method:	EN 61000-4-2: 2009
Procedure:	Discharge Impedance: 330Ω/150pF Number of Discharge: Minimum 10 times at each test point Discharge Mode: Single Discharge Discharge Period: 1 second minimum
Performance Criteria:	B

6.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Full load(DC 24V,82A)

6.2. Test Setup



6.3. Test Data

Temperature:	23.1 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa

Discharge type	Volt (kV)	Polarity	Test Point	Result/ Observations
Air discharge	2,4,8	+	1	A
Air discharge	2,4,8	-	1	A
Contact discharge	4	+	2	A
Contact discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

Test Point: 1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side.
A: No degradation in the performance of the EUT was observed.

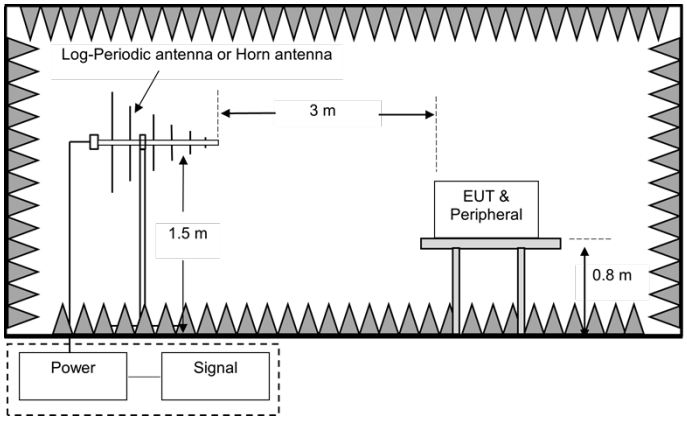
7. RF electromagnetic field disturbances

Test Requirement:	3V/m, 80%, 1kHz Amp. Mod.
Test Method:	EN IEC 61000-4-3: 2020
Procedure:	Frequency Range: 80MHz to 1GHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz Antenna Polarisation: Vertical and Horizontal Modulation: 1kHz,80% Amp. Mod,1% increment
Performance Criteria:	A

7.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Full load(DC 24V,82A)

7.2. Test Setup



7.3. Test Data

Temperature:	23.5 °C	Humidity:	50 %	Atmospheric Pressure:	101 kPa

Frequency	Field Strength (V/m)	EUT face	Dwell time	Result/ Observations
80MHz-1GHz	3	Front	3s	A
80MHz-1GHz	3	Back	3s	A
80MHz-1GHz	3	Left	3s	A
80MHz-1GHz	3	Right	3s	A
80MHz-1GHz	3	Top	3s	A
80MHz-1GHz	3	Bottom	3s	A
1800MHz	3	Front	3s	A
1800MHz	3	Back	3s	A
1800MHz	3	Left	3s	A
1800MHz	3	Right	3s	A
1800MHz	3	Top	3s	A
1800MHz	3	Bottom	3s	A
2600MHz	3	Front	3s	A
2600MHz	3	Back	3s	A
2600MHz	3	Left	3s	A
2600MHz	3	Right	3s	A
2600MHz	3	Top	3s	A
2600MHz	3	Bottom	3s	A
3500MHz	3	Front	3s	A
3500MHz	3	Back	3s	A
3500MHz	3	Left	3s	A
3500MHz	3	Right	3s	A
3500MHz	3	Top	3s	A
3500MHz	3	Bottom	3s	A
5000MHz	3	Front	3s	A
5000MHz	3	Back	3s	A
5000MHz	3	Left	3s	A
5000MHz	3	Right	3s	A
5000MHz	3	Top	3s	A
5000MHz	3	Bottom	3s	A

A: No degradation in the performance of the EUT was observed.

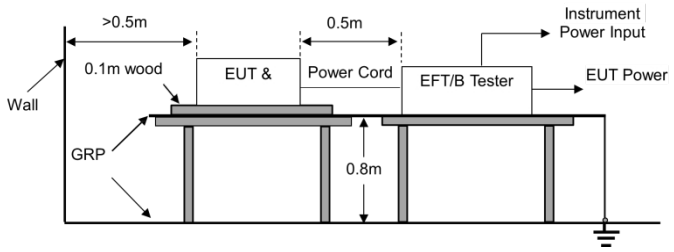
8. Electrical fast transients / burst for AC mains power ports

Test Requirement:	1kV; 5/50ns Tr/Th; 5kHz Repetition Frequency
Test Method:	EN 61000-4-4: 2012
Procedure:	Repetition Frequency: 5kHz Burst Period: 300ms Test Duration: 2 minute per level & polarity
Performance Criteria:	B

8.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Full load(DC 24V,82A)

8.2. Test Setup



8.3. Test Data

Temperature:	24.2 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa

Port	Volt (kV)	Polarity	CDN/ Clamp	Result/ Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

A: No degradation in the performance of the EUT was observed.

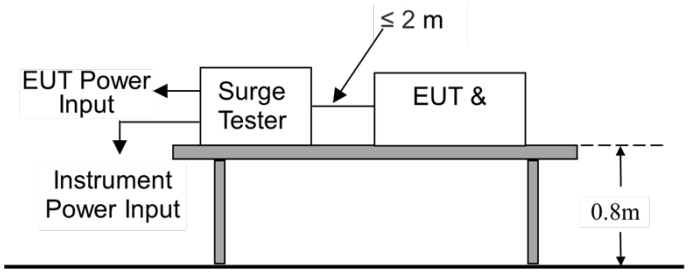
9. Surges for AC mains power ports

Test Requirement:	1.2/50μs Tr/Td; 1kV Line to Line; 2kV Line to Ground
Test Method:	EN 61000-4-5: 2014 +A1: 2017
Procedure:	Interval: 60s between each surge No. of surges: 5 positive, 5 negative at 90°, 270°
Performance Criteria:	B

9.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Full load(DC 24V,82A)

9.2. Test Setup



9.3. Test Data

Temperature:	24.2 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa

Port	Volt (kV)	Polarity	Phase(degree)	Result/ Observations
L-N	1	+	90°	A
L-N	1	-	270°	A
L-PE	2	+	90°	A
L-PE	2	-	270°	A
N-PE	2	-	90°	A
N-PE	2	+	270°	A

A: No degradation in the performance of the EUT was observed.

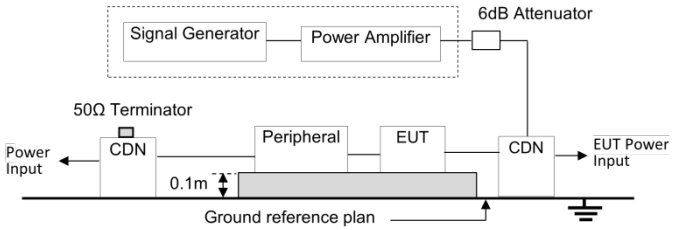
10. Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz)

Test Requirement:	0,15 to 10MHz 3Vrms (emf), 10 to 30MHz 3V to 1Vrms(emf), 30 to 80MHz 1Vrms(emf), 80%,1kHz Amp. Mod.
Test Method:	EN 61000-4-6: 2014
Procedure:	Frequency Range: 0.15MHz to 80MHz Modulation: 80%, 1kHz Amplitude Modulation Step Size: 1%
Performance Criteria:	A

10.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Full load(DC 24V,82A)

10.2. Test Setup



10.3. Test Data

Temperature:	24.2 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa

Port	Strength (Vrms)	CDN/Clamp	Dwell time	Result/ Observations
AC power port	3(0.15MHz-10MHz)	CDN	3s	A
AC power port	3 to 1(10MHz-30MHz, Lines)	CDN	3s	A
AC power port	1(30MHz-80MHz)	CDN	3s	A

A: No degradation in the performance of the EUT was observed.

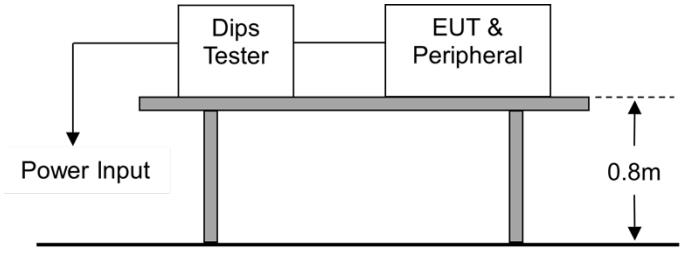
11. Voltage dips and interruptions

Test Requirement:	<5% residual voltage for 0.5 periods 70% residual voltage: 25 periods for 50Hz, 30 periods for 60Hz <5% residual voltage: 250 periods for 50Hz, 300 periods for 60Hz
Test Method:	EN IEC 61000-4-11:2020
Procedure:	<5% residual voltage for 0.5 period 70% residual voltage: 25 periods for 50Hz, 30 periods for 60Hz <5% residual voltage: 250 periods for 50Hz, 300 periods for 60Hz No. of Dips / Interruptions: 3 per Level Time between dropout: 10s
Performance Criteria:	B, C, C

11.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Full load(DC 24V,82A)

11.2. Test Setup



11.3. Test Data

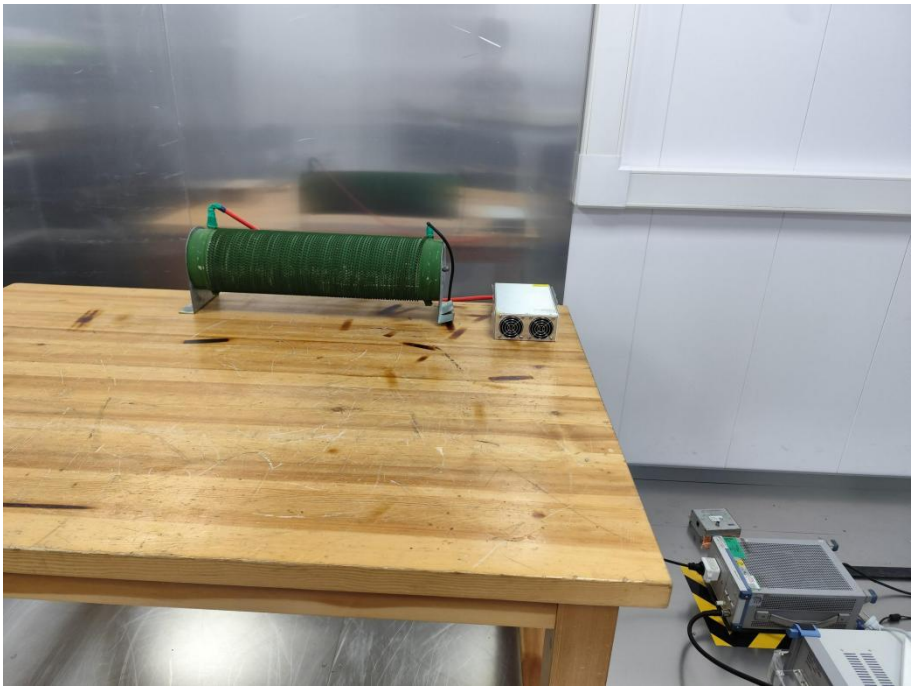
Temperature:	24.2 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa

Level %UT	Phase (degree)	Duration	No. of Dips/ Interruptions	Result/ Observations
0	0°	0.5 Cycles	3	A
0	0°	250 Cycles	3	B
70	0°	25 Cycles	3	A

A: No degradation in the performance of the EUT was observed.

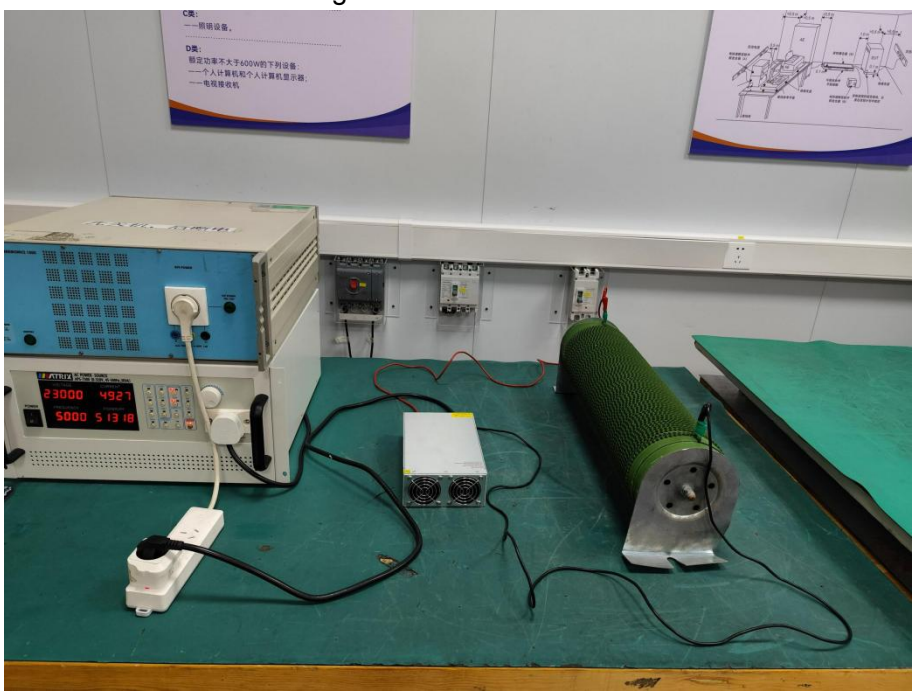
APPENDIX I -- TEST SETUP PHOTOGRAPH

Conducted emissions from AC mains power ports (150kHz-30MHz)



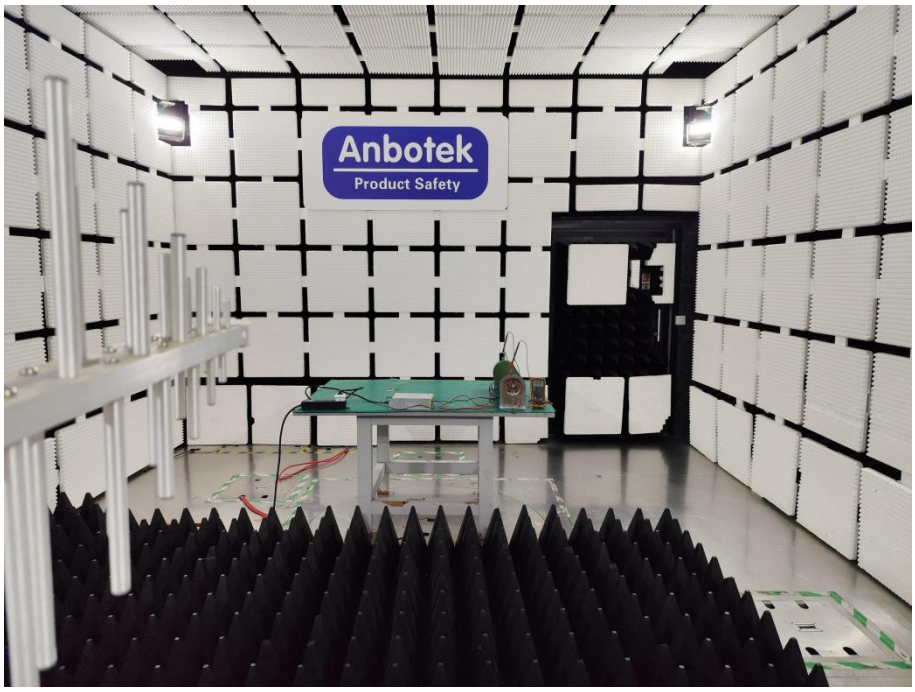
Radiated emissions (30MHz-1GHz)

Harmonic current emission
Voltage fluctuations and flicker

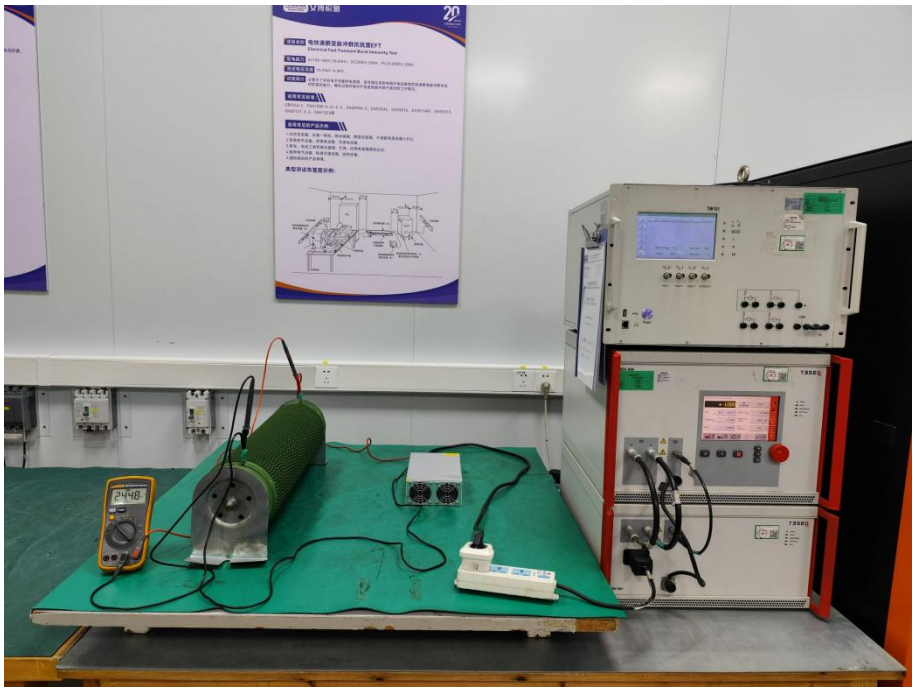


Electrostatic discharges

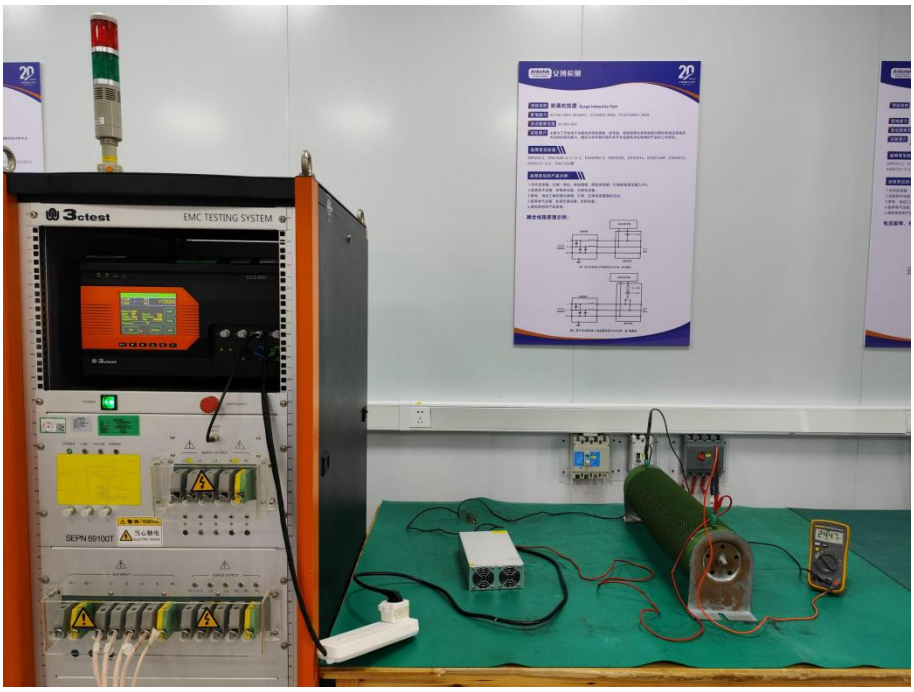
RF electromagnetic field disturbances



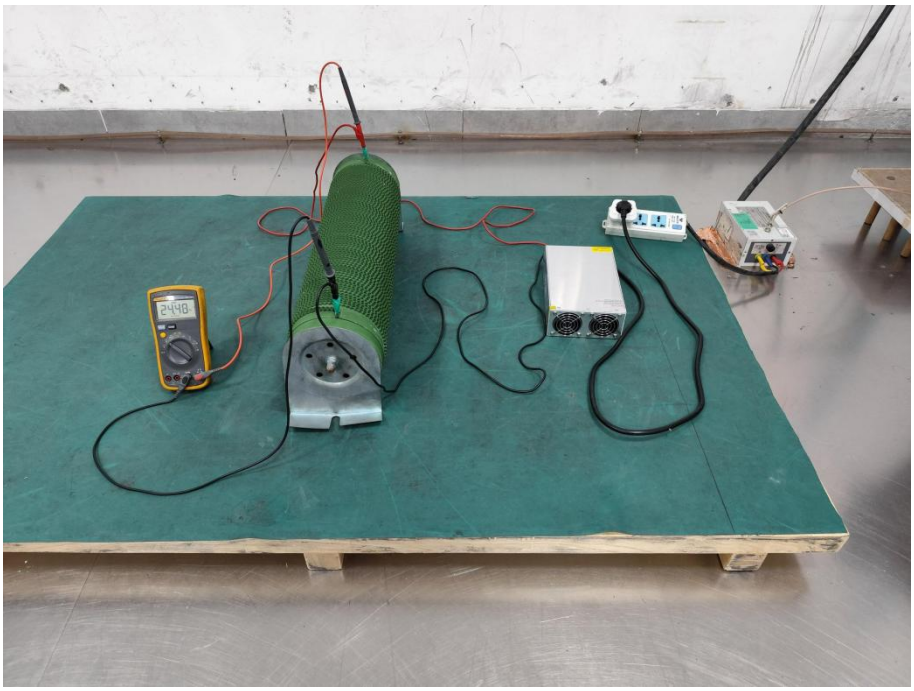
Electrical fast transients / burst for AC mains power ports



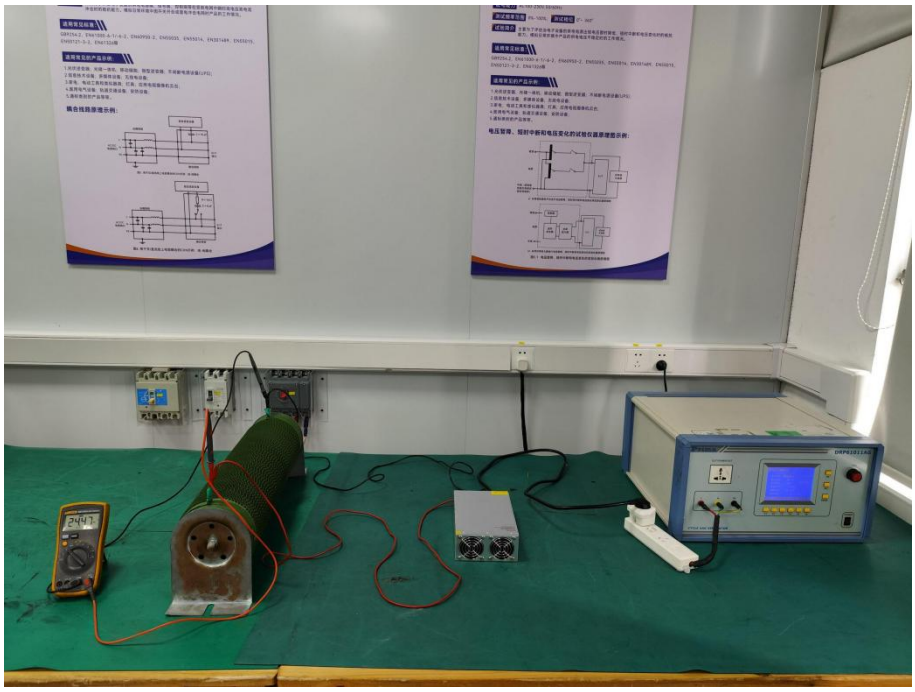
Surges for AC mains power ports



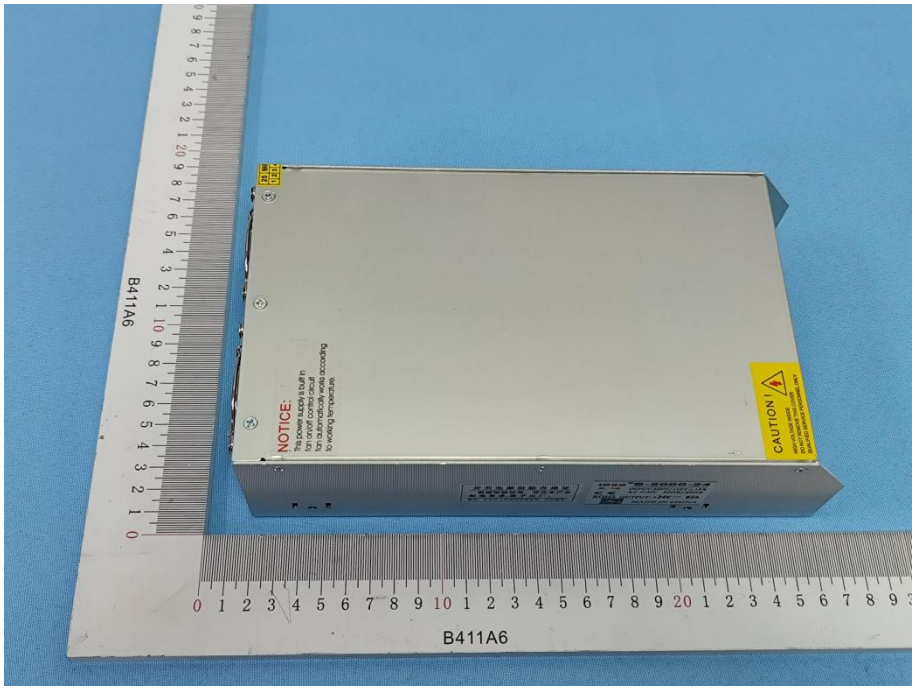
Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz)

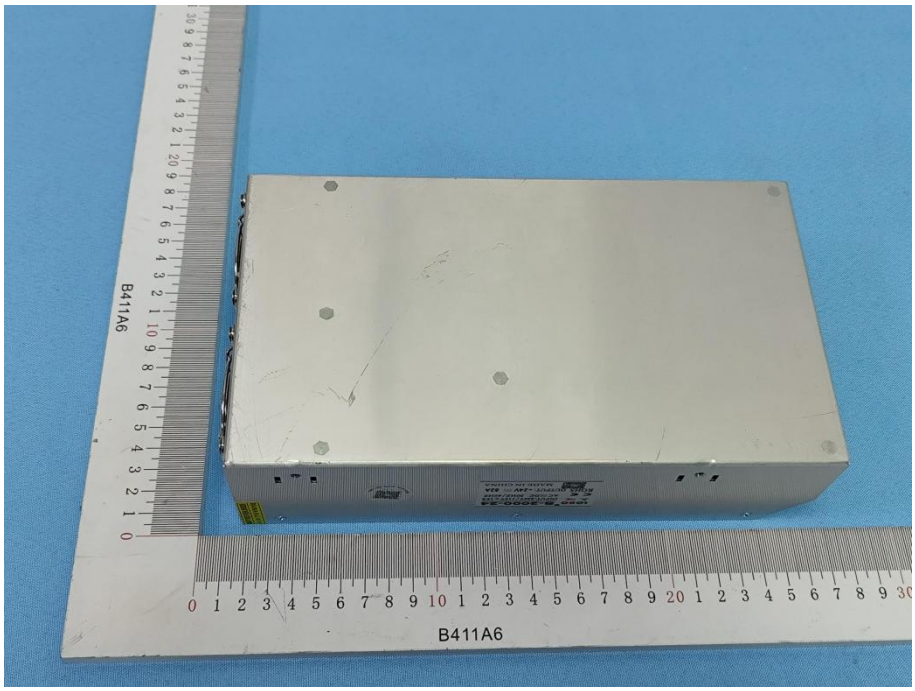


Voltage dips and interruptions

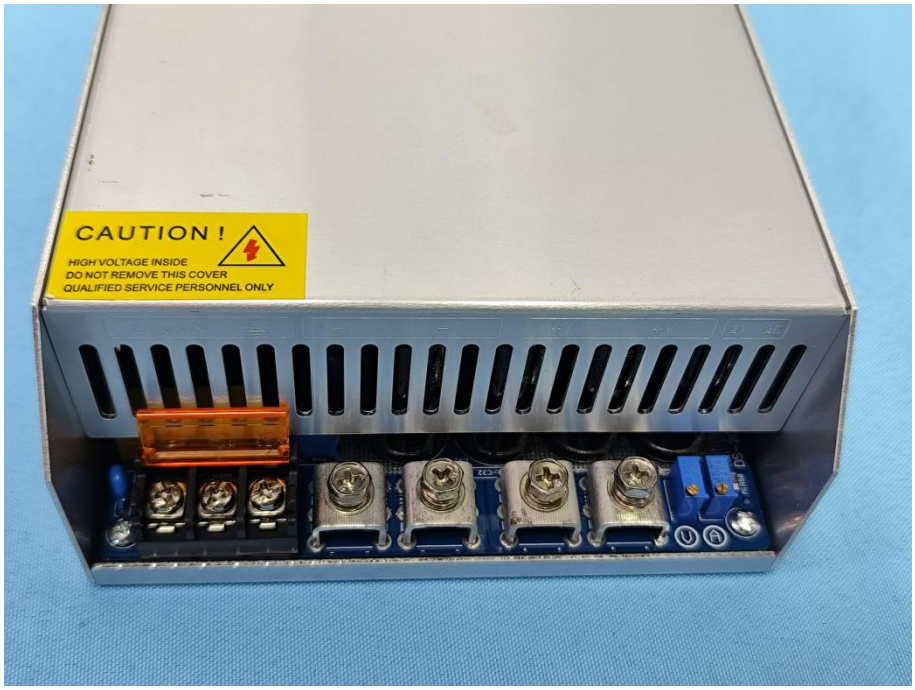


APPENDIX II -- Photo documentation






IOHO®S-2000-24
INPUT:220V/110V±15%
AC⎓DC 50HZ/60HZ
CE
ROHS OUTPUT:+24V⎓ 82A
MADE IN CHINA


CAUTION !
HIGH VOLTAGE INSIDE
DO NOT REMOVE THIS COVER
QUALIFIED SERVICE PERSONNEL ONLY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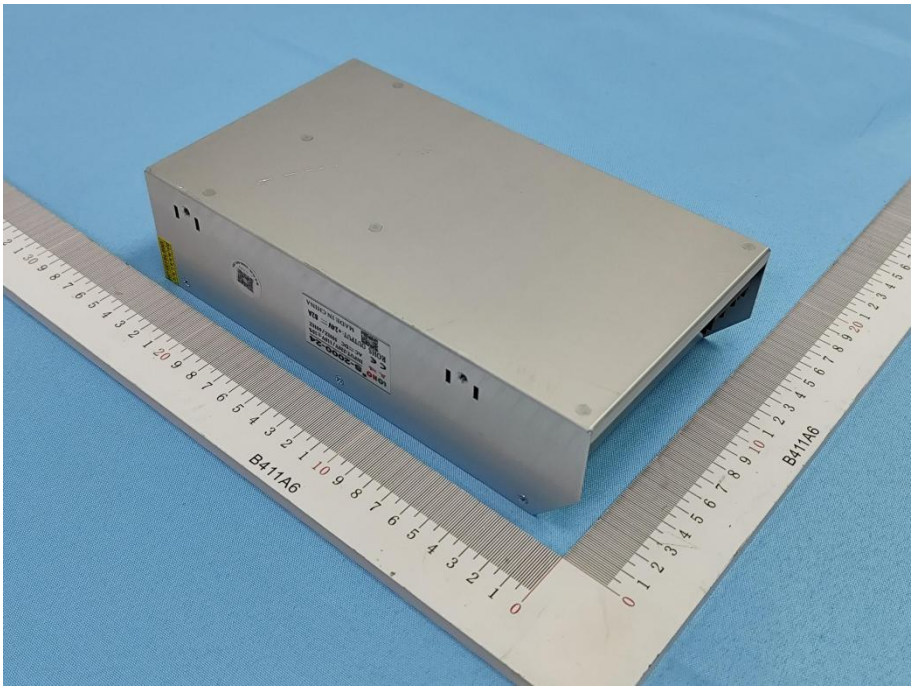
B411A6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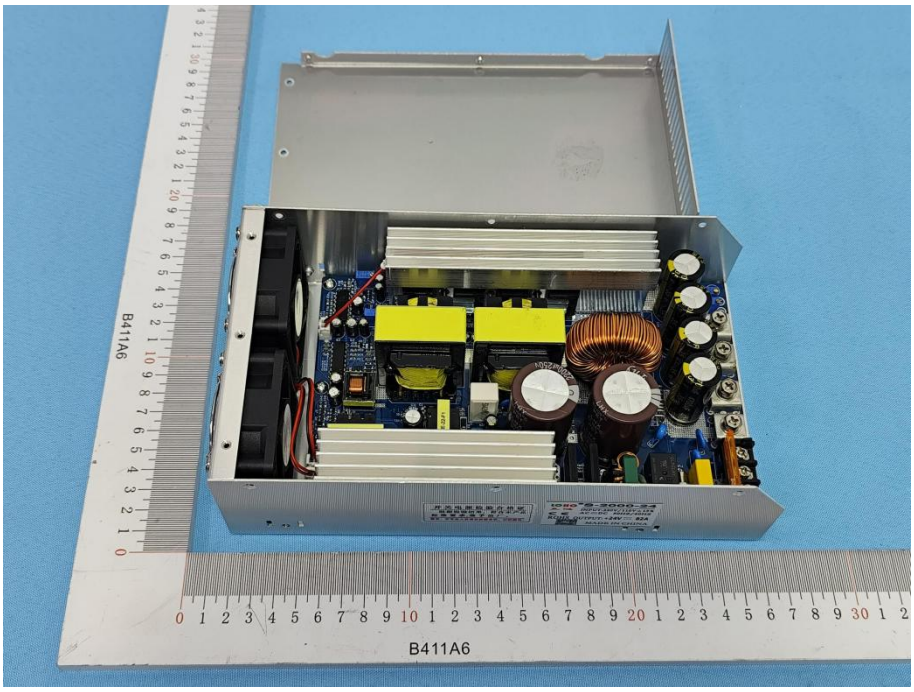
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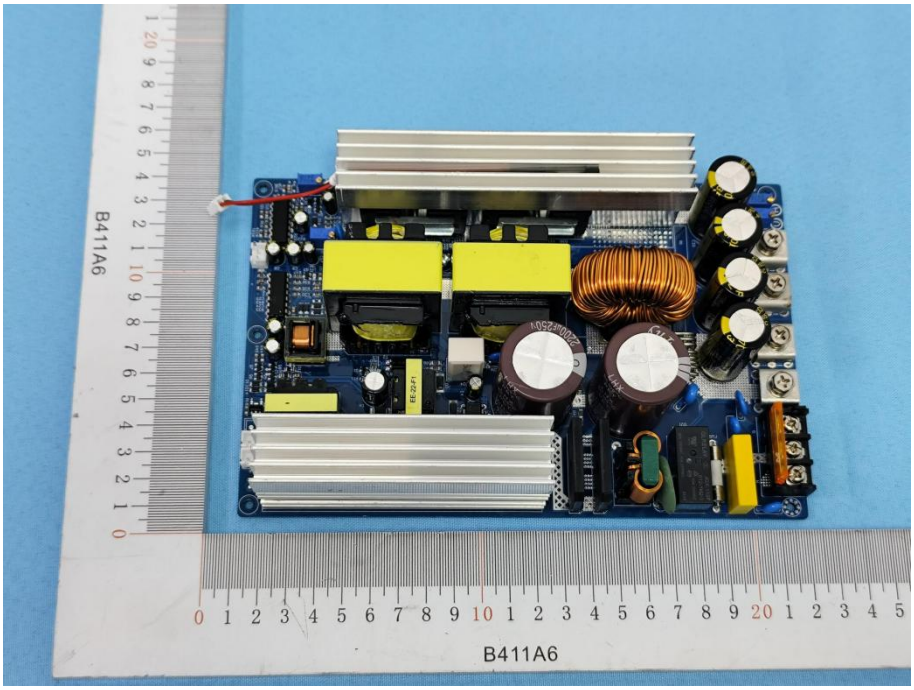
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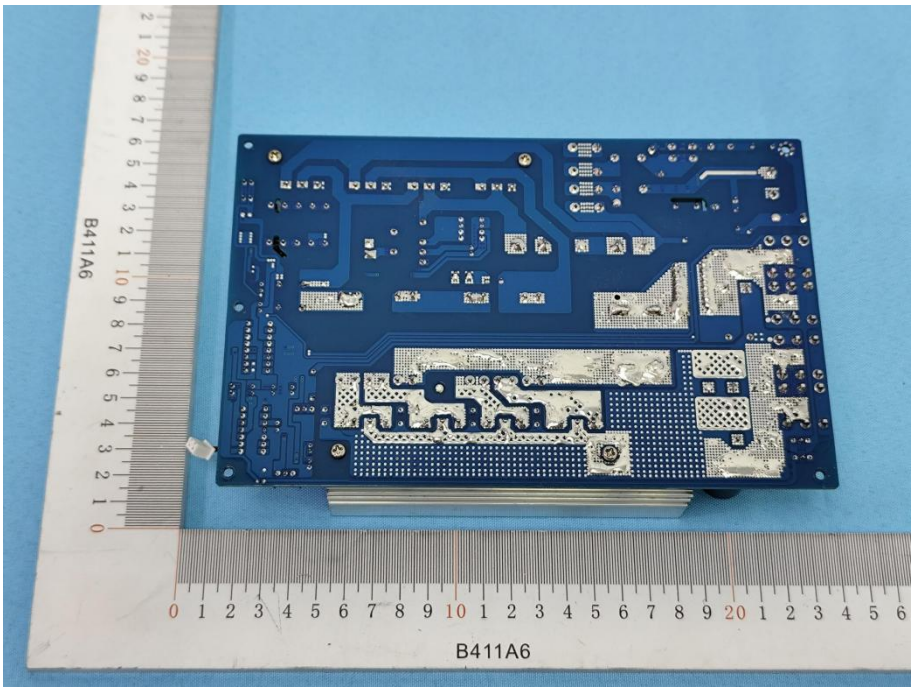
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CE Label

1. The CE conformity marking must consist of the initials ‘CE’ taking the following form:
   If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.
2. The CE marking must have a height of at least 5 mm except where this is not possible on account of the nature of the apparatus.
3. The CE marking must be affixed to the product or to its data plate. Additionally it must be affixed to the packaging, if any, and to the accompanying documents.
4. The CE marking must be affixed visibly, legibly and indelibly.
   It must have the same height as the initials ‘CE’.

---------- End of Report ----------