



EMC TEST REPORT

For

MASSPHOTON LIMITED

UVC Air Sterilizer

Test Model: Q6060

Additional Model No.: Please Refer to Page 9

Prepared for : MASSPHOTON LIMITED
Address : Unit 542, 5F, Building 5W, Phase One, Hong Kong
Science Park, New Territories, HongKong

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
Address : Room 101, 201, Building A and Room 301, Building C,
Juji Industrial Park, Yabianxueziwei, Shajing Street,
Bao'an District, Shenzhen, Guangdong, China

Tel : +(86) 0755-82591330
Fax : +(86) 0755-82591332
Web : www.lcs-cert.com
Mail : webmaster@lcs-cert.com

Date of receipt of test sample : August 5, 2024
Number of tested samples : 1
Serial number : Prototype
Date of Test : August 5, 2024 to August 8, 2024
Date of Report : August 8, 2024



**TEST REPORT****Report No.** : LCSA08054007E**Date of Issue** : August 8, 2024**Testing Laboratory Name** : Shenzhen LCS Compliance Testing Laboratory Ltd.**Address** : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China**Testing Location/ Procedure** : Full application of Harmonised standards ■
Partial application of Harmonised standards □
Other standard testing method □**Applicant's Name** : MASSPHOTON LIMITED**Address** : Unit 542, 5F, Building 5W, Phase One, Hong Kong Science Park, New Territories, HongKong**Test Specification****Standard** : EN IEC 55014-1:2021
EN IEC 55014-2:2021
EN IEC 61000-3-2:2019/A1:2021
EN 61000-3-3:2013/A2:2021**Test Report Form No.** : TRF-4-E-001 A/0**TRF Originator** : Shenzhen LCS Compliance Testing Laboratory Ltd.**Master TRF** : Dated 2011-03**Shenzhen LCS Compliance Testing Laboratory Ltd. All rights reserved.**

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Test Item Description. : UVC Air Sterilizer**Trade Mark** : N/A**Test Model** : Q6060**Result** : Positive**Compiled by:**

Coco Song / File Administrator

Supervised by:

Cary Luo / Technique principal

Approved by:

Gavin Liang / Manager



Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity



TEST REPORT

Test Report No.: LCSA08054007E	<u>August 8, 2024</u> Date of issue
---------------------------------------	--

Test Model	Q6060
EUT	UVC Air Sterilizer
Applicant	MASSPHOTON LIMITED
Address	Unit 542, 5F, Building 5W, Phase One, Hong Kong Science Park, New Territories, HongKong
Telephone	/
Fax	/
Manufacturer	XUZHOU LIYU ADVANCED TECHNOLOGY CO., LTD
Address	1st floor, No.1, Electronic Information Building, No. 5 Jingwei Road, Xuzhou High tech Industrial Development Zone,Xuzhou, Jiangsu 221100, China
Telephone	/
Fax	/
Factory	XUZHOU LIYU ADVANCED TECHNOLOGY CO., LTD
Address	1st floor, No.1, Electronic Information Building, No. 5 Jingwei Road, Xuzhou High tech Industrial Development Zone,Xuzhou, Jiangsu 221100, China
Telephone	/
Fax	/

Test Result	Positive
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



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Revision History

Report Version	Issue Date	Revision Content	Revised By
000	August 8, 2024	Initial Issue	/





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1. TEST STANDARDS

The tests were performed according to following standards:

EN IEC 55014-1:2021: Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission

EN IEC 55014-2:2021: Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard

EN IEC 61000-3-2:2019/A1:2021: Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16A per phase)

EN 61000-3-3:2013/A2:2021: Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16A$ per phase and not subject to conditional connection





2. SUMMARY OF STANDARDS AND RESULTS

2.1 Description of Standards and Results

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

Description of Test Item	Standard	Limits	Result
Disturbance voltage from AC mains port	EN IEC 55014-1:2021	Table 5	Pass
Disturbance power	EN IEC 55014-1:2021	Table 7 & Table 8	Pass
Harmonic current emission	EN IEC 61000-3-2:2019/A1:2021	Class A	Pass
Voltage fluctuations and flicker	EN 61000-3-3:2013/A2:2021	Clause 4	Pass
Electrostatic discharge	EN IEC 55014-2:2021	Clause 7.2	Pass
Fast transients for AC power ports	EN IEC 55014-2:2021	Clause 7.2	Pass
Surges for AC power ports	EN IEC 55014-2:2021	Clause 7.2	Pass
Injected currents for AC power ports	EN IEC 55014-2:2021	Clause 7.2	Pass
Voltage dips	EN IEC 55014-2:2021	Clause 7.2	Pass





2.2 Description of Test Modes

No	Title	Description
TM1	Working(AC 230V/50Hz)	Record

2.3 Description of Performance Criteria

Performance Criteria

Performance criterion A

The apparatus shall continue to operate as intended during the test.

No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. 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 from what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B

The apparatus shall continue to operate as intended after the test.

No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however no change of actual 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 from what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B/C

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 (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however no change of actual 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 from what the user may reasonably expect from the apparatus if used as intended.

C: Temporary loss of function is allowed, provided the function is selfrecoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

Performance criterion C may be applied to toys not using score or data entered by the user.

Performance criterion C

Temporary loss of function is allowed, provided the function is selfrecoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.





3. GENERAL INFORMATION

3.1 Description of Device (EUT)

EUT	: UVC Air Sterilizer
Test Model	: Q6060
Model Lists	: Q6060-A, Q6060-B, Q6060-C
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested
Power Supply	: Input: 110-240V~, 50/60Hz, 3.5A Output: 48V $\bar{\bar{}}$ 5.41A Rated Power: 90W $\pm$ 20W
Highest Internal Frequency	: F $\leq$ 108MHz

3.2 Support equipment List

The EUT was tested as an independent device.

3.3 Description of Test Facility

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

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

3.4 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emission (9kHz to 150kHz)	± 2.63 dB
Conducted Emission (150kHz to 30MHz)	± 2.35 dB
Power Disturbance (30MHz to 300MHz)	± 2.90 dB
Voltage Fluctuations & Flicker	$\pm 0.510\%$
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	





4. MEASURING DEVICES AND TEST EQUIPMENT

Disturbance voltage from AC mains port

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
EMI Test Software	Farad	EZ	/	/	/
Artificial Mains	R&S	ENV216	101288	2024-06-06	2025-06-05
Pulse Limiter	R&S	ESH3-Z2	102750-NB	2023-08-15	2024-08-14
EMI Test Receiver	R&S	ESR3	102312	2024-03-02	2025-03-01

Disturbance power

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
EMI Test Software	Farad	EZ	/	/	/
EMI Test Receiver	R&S	ESR3	102312	2024-03-02	2025-03-01
Power Absorbing Clamp	R&S	MDS21	4033	2024-06-12	2025-06-11
6dB Attenuator	DC-3G	/	/	2023-10-18	2024-10-17

Harmonic current emission

Voltage fluctuations and flicker

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
HARMONICS&FLICKER MEASUREMENT SYSTEM	EVERFINE	HFM-3000	P630850CD14 11116	2024-03-02	2025-03-01
HARMONICS&FLICKER TESTING POWER SOURCE	EVERFINE	HFS-4000	P624486CD14 111124	2024-03-02	2025-03-01

Electrostatic discharge

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
ESD Simulator	SCHLODER	SESD 230	604035	2024-07-15	2025-07-14

Fast transients for AC power ports

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
Electric fast pulse group generator	3ctest	EFT-4001G	EC0461044	2023-10-18	2024-10-17
Immunity Simulative Generator	EM TEST	UCS500-M4	0101-34	2023-08-15	2024-08-14



**Surges for AC power ports**

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
Immunity Simulative Generator	EM TEST	UCS500-M4	0101-34	2023-08-15	2024-08-14

Injected currents for AC power ports

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
Simulator	FRANKONIA	CIT-10/75	A126A1195	2023-08-15	2024-08-14
CDN	FRANKONIA	CDN-M2+M3	A2210177	2024-06-06	2025-06-05
6dB Attenuator	FRANKONIA	DAM25W	1172040	2024-06-06	2025-06-05

Voltage dips

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2024-06-06	2025-06-05





5. EMISSION TEST RESULTS (EMI)

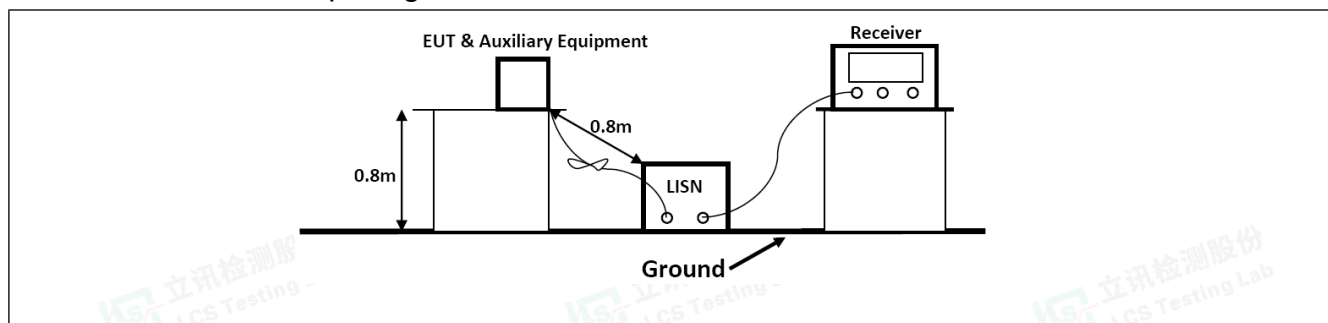
5.1 Disturbance voltage from AC mains port

Test Requirement:	Table 5		
Test Limit:	Frequency range	Mains ports Disturbance voltage	
	MHz	Quasi-peak dBμV	Average dBμV
	0,15 to 0,50	Decreasing linearly with the logarithm of the frequency from:	
		66 to 56	59 to 46
	0,50 to 5	56	46
	5 to 30	60	50
The lower limit applies at the transition frequencies. The test report shall state which test method was used and which limits were applied.			
Test Method:	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[		

5.1.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.5 °C	Humidity:	53.7 %
Pre test mode:	TM1		
Final test mode:	TM1		

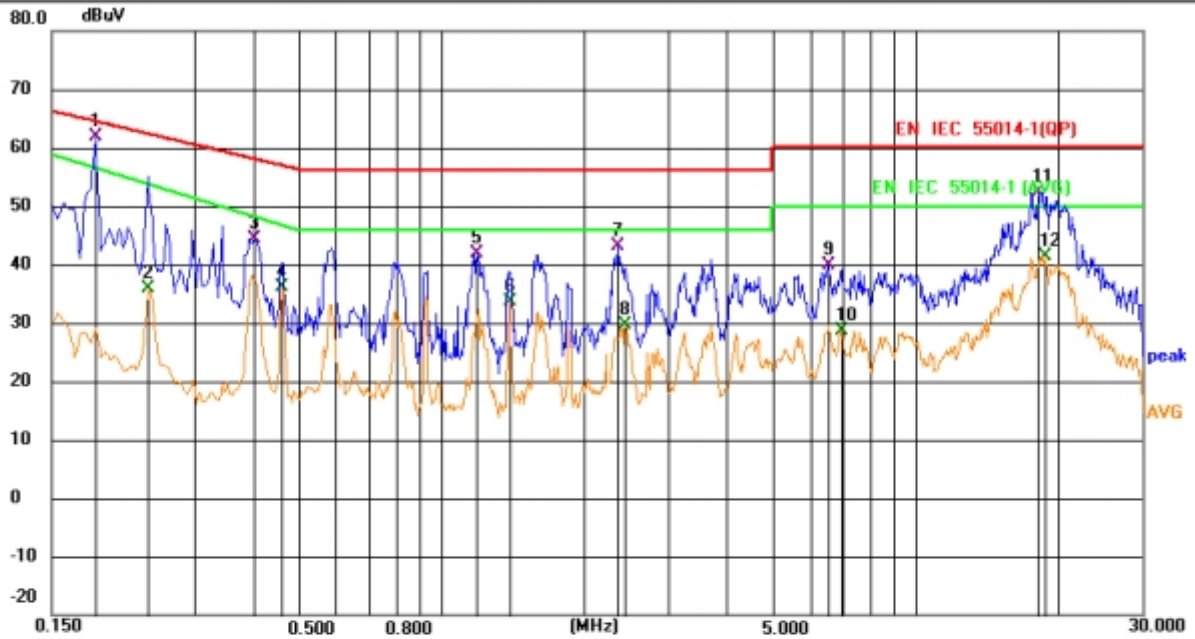
5.1.2 Test Setup Diagram:





5.1.3 Test Data:

TM1 / Line: Line

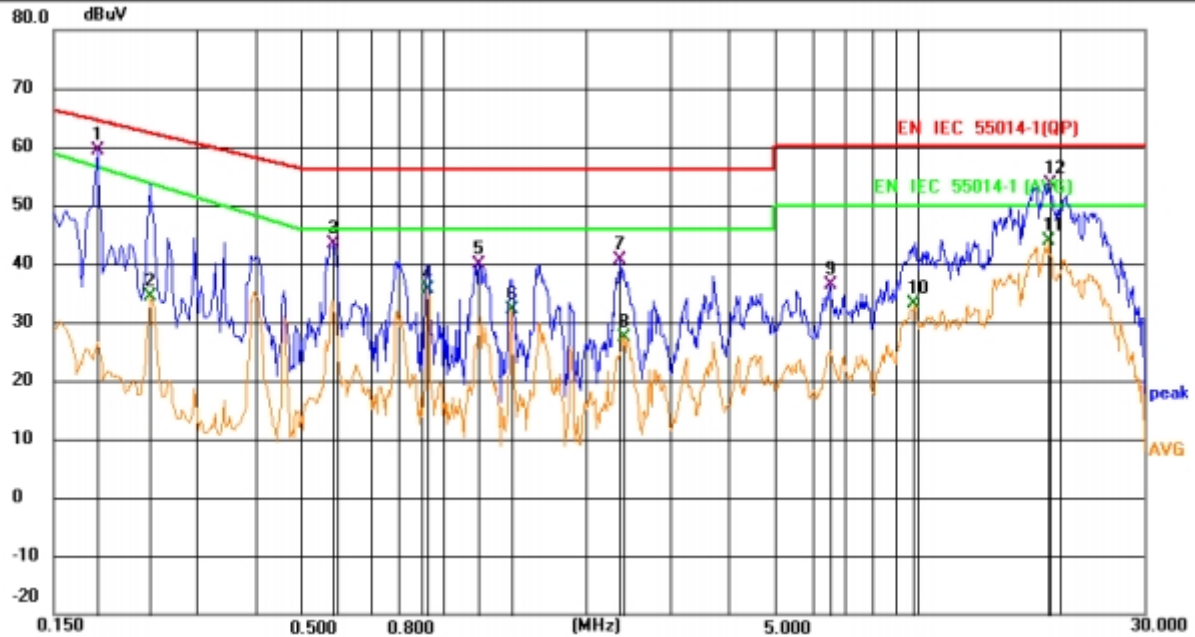


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1860	42.14	19.63	61.77	64.21	-2.44	QP	
2		0.2401	16.28	19.63	35.91	53.92	-18.01	AVG	
3		0.4021	24.87	19.63	44.50	57.81	-13.31	QP	
4		0.4606	16.37	19.64	36.01	46.89	-10.88	AVG	
5		1.1895	22.29	19.66	41.95	56.00	-14.05	QP	
6		1.3919	13.89	19.66	33.55	46.00	-12.45	AVG	
7		2.3549	23.45	19.68	43.13	56.00	-12.87	QP	
8		2.4405	9.93	19.68	29.61	46.00	-16.39	AVG	
9		6.5130	20.07	19.72	39.79	60.00	-20.21	QP	
10		6.9991	9.02	19.72	28.74	50.00	-21.26	AVG	
11		18.1006	32.30	20.16	52.46	60.00	-7.54	QP	
12		18.8025	21.30	20.18	41.48	50.00	-8.52	AVG	





TM1 / Line: Neutral



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Detector	Comment
		MHz	dBuV	Factor	ment	dBuV			
1	*	0.1860	39.64	19.63	59.27	64.21	-4.94	QP	
2		0.2401	14.78	19.63	34.41	53.92	-19.51	AVG	
3		0.5865	23.61	19.66	43.27	56.00	-12.73	QP	
4		0.9240	15.98	19.65	35.63	46.00	-10.37	AVG	
5		1.1895	20.29	19.66	39.95	56.00	-16.05	QP	
6		1.3919	12.39	19.66	32.05	46.00	-13.95	AVG	
7		2.3549	20.95	19.68	40.63	56.00	-15.37	QP	
8		2.4000	7.70	19.68	27.38	46.00	-18.62	AVG	
9		6.5130	16.57	19.72	36.29	60.00	-23.71	QP	
10		9.8116	13.35	19.84	33.19	50.00	-16.81	AVG	
11		18.8926	23.74	20.18	43.92	50.00	-6.08	AVG	
12		18.9240	33.47	20.18	53.65	60.00	-6.35	QP	





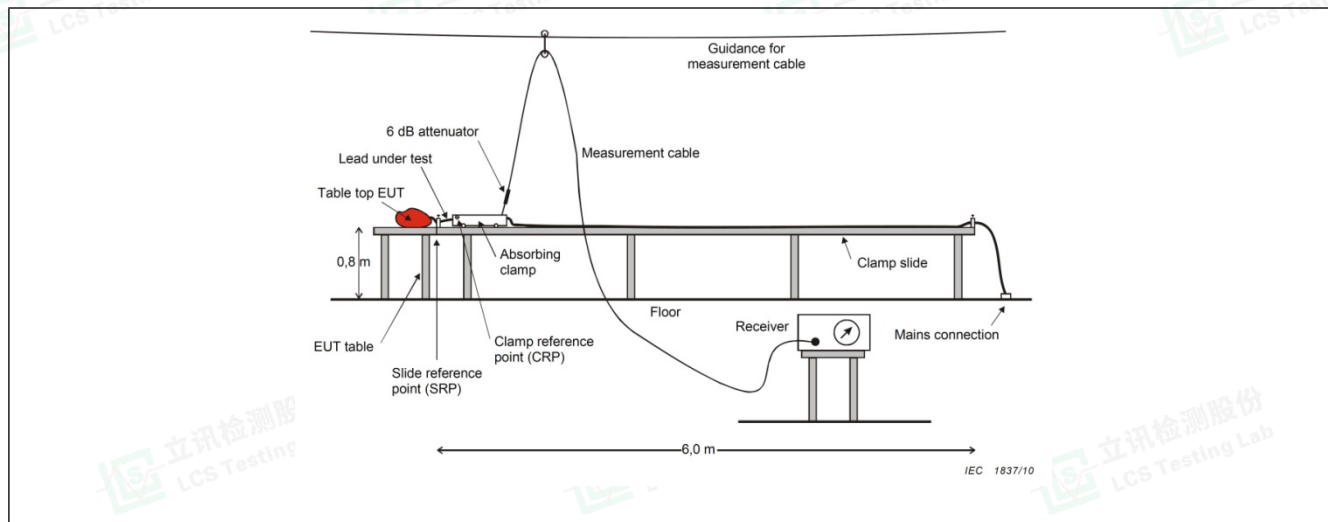
5.2 Disturbance power

Test Requirement:	Table 7 & Table 8		
Test Limit:	Frequency range	General	
	MHz	Quasi-peak dBpW	Average dBpW
	30 to 300	Increasing linearly with the frequency from:	
		45 to 55	35 to 45
	200 to 300	0 to 10	0
Key P = rated power of the motor only. Additional limits of 200 to 300 for reduction applicable to Table 7 limits.			
Test Method:	Clause 7 of CISPR 16-2-2:2010 and Clause 5.3.3 of EN IEC 55014-1		
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. Measured Level = Read level + Cable Loss + Clamp Factor		

5.2.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.7 °C	Humidity:	53.7 %
Pre test mode:	TM1		
Final test mode:	TM1		

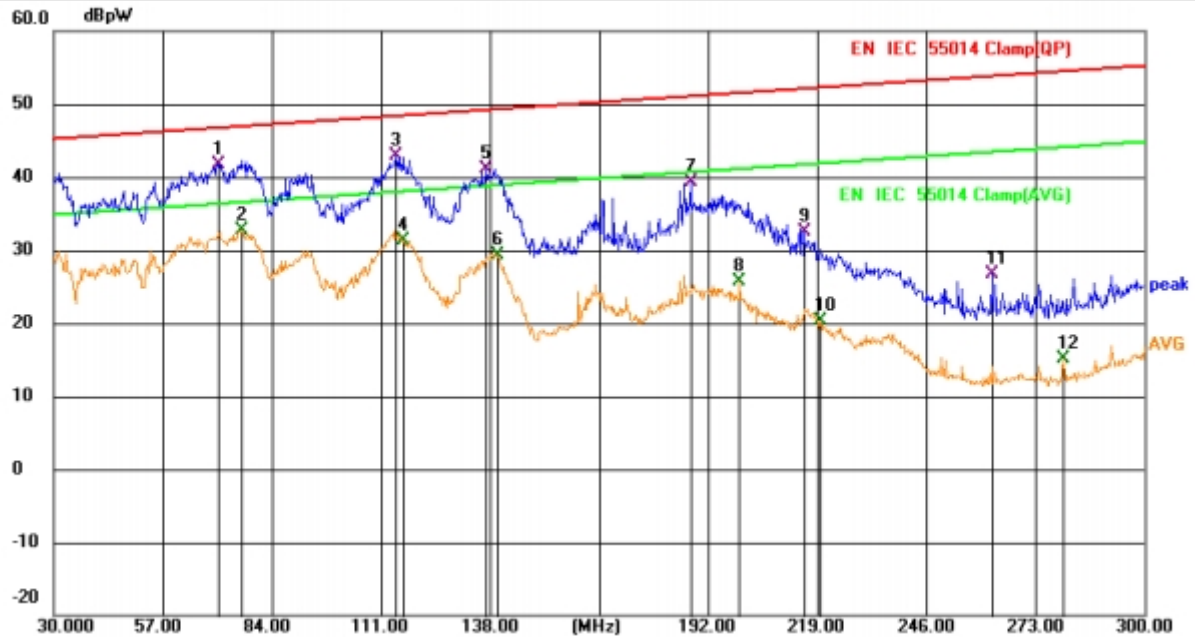
5.2.2 Test Setup Diagram:





5.2.3 Test Data:

TM1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBpW	Limit dBpW	Margin dB	Detector	Position cm	Comment
1		70.9800	33.39	8.25	41.64	46.52	-4.88	QP		
2	*	76.8000	25.30	7.45	32.75	36.73	-3.98	AVG		
3		115.0200	32.73	10.15	42.88	48.15	-5.27	QP		
4		116.7000	21.09	10.27	31.36	38.21	-6.85	AVG		
5		137.4000	35.70	5.46	41.16	48.98	-7.82	QP		
6		139.9200	23.54	5.82	29.36	39.07	-9.71	AVG		
7		187.8600	31.49	7.81	39.30	50.85	-11.55	QP		
8		199.9800	17.23	8.56	25.79	41.30	-15.51	AVG		
9		216.0000	25.48	7.05	32.53	51.89	-19.36	QP		
10		219.9600	13.71	6.67	20.38	42.04	-21.66	AVG		
11		262.4400	22.42	4.28	26.70	53.61	-26.91	QP		
12		280.0200	10.87	4.21	15.08	44.26	-29.18	AVG		





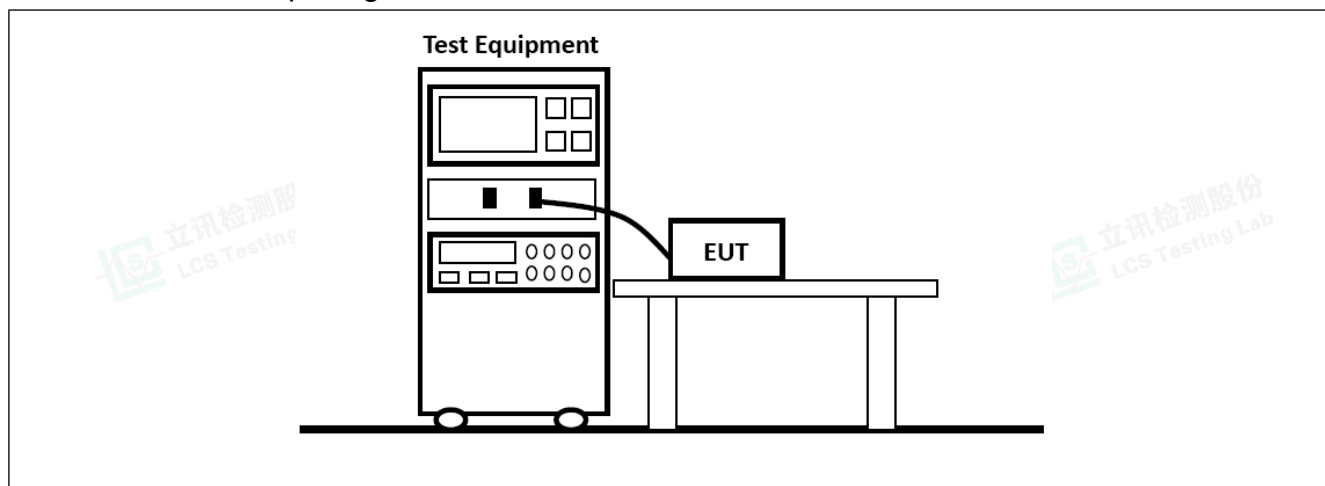
5.3 Harmonic current emission

Test Requirement:	Class A																												
Test Limit:	<table><tr><th>Harmonic order h</th><th>Maximum permissible harmonic current A</th></tr><tr><td colspan="2">Odd harmonics</td></tr><tr><td>3</td><td>2,30</td></tr><tr><td>5</td><td>1,14</td></tr><tr><td>7</td><td>0,77</td></tr><tr><td>9</td><td>0,40</td></tr><tr><td>11</td><td>0,33</td></tr><tr><td>13</td><td>0,21</td></tr><tr><td>$15 \leq h \leq 39$</td><td>$0,15 \frac{15}{h}$</td></tr><tr><td colspan="2">Even harmonics</td></tr><tr><td>2</td><td>1,08</td></tr><tr><td>4</td><td>0,43</td></tr><tr><td>6</td><td>0,30</td></tr><tr><td>$8 \leq h \leq 40$</td><td>$0,23 \frac{8}{h}$</td></tr></table>	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	$15 \leq h \leq 39$	$0,15 \frac{15}{h}$	Even harmonics		2	1,08	4	0,43	6	0,30	$8 \leq h \leq 40$	$0,23 \frac{8}{h}$
Harmonic order h	Maximum permissible harmonic current A																												
Odd harmonics																													
3	2,30																												
5	1,14																												
7	0,77																												
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Even harmonics																													
2	1,08																												
4	0,43																												
6	0,30																												
$8 \leq h \leq 40$	$0,23 \frac{8}{h}$																												
Test Method:	EN IEC 61000-3-2:2019/A1:2021																												

5.3.1 E.U.T. Operation:

Operating Environment:			
Temperature:	25 °C	Humidity:	55 %
Pre test mode:	TM1		
Final test mode:	TM1		

5.3.2 Test Setup Diagram:

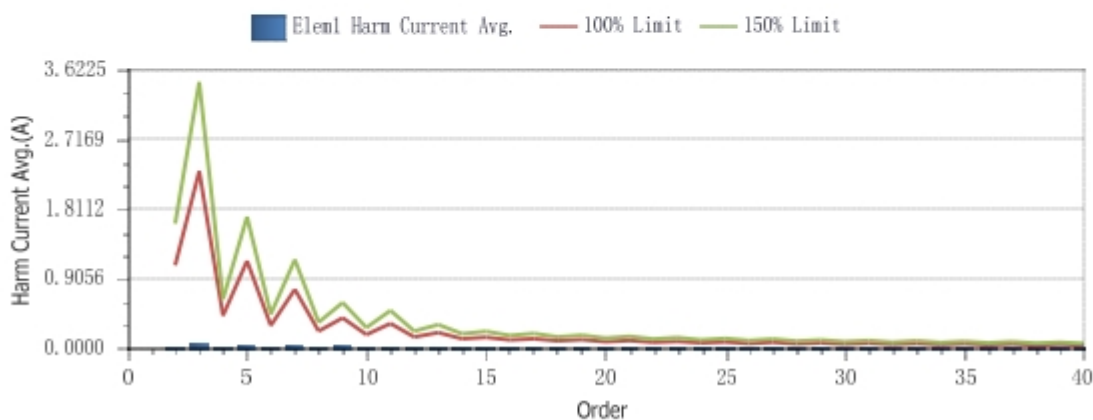
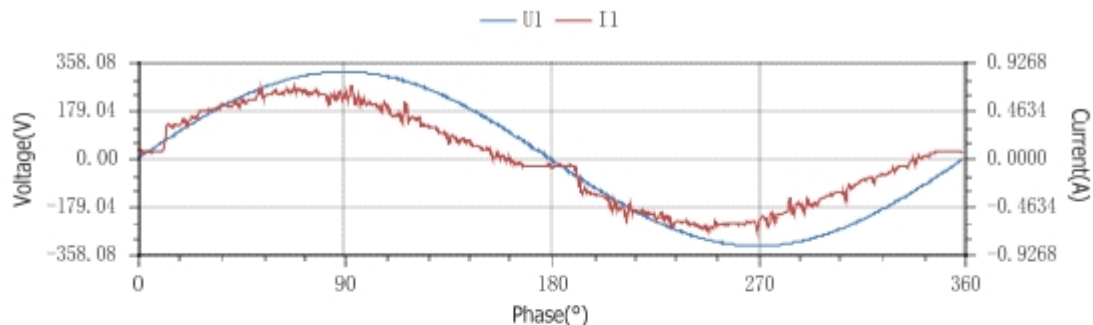




5.3.4 Test Data:

Customer : xxx

Result : Pass





Customer : xxx

Result : Pass

Total Current Harmonic ans Some Odd Harmonic Parameters

THC(A)	0.0549	THD(%)	13.29	POHC(A)	0.0142	POHC Limit(A)	0.2514
--------	--------	--------	-------	---------	--------	---------------	--------

Maximum Value of Relevant Parameter During Test Period

U _{rms} (V)	230.04	Freq(Hz)	49.999
I _{rms} (A)	0.4341	I _{peak} (A)	0.8622
T ₁ (A)	0.4298	ICF	2.4265
P(W)	94.753	λ	0.9487

Determination of Harmonics and Limits

Order(n)	Harmonics Current Avg. (A)	100% Limit(A)	Limit Percent (%)	Harmonics Current Max. (A)	150% Limit(A)	Limit Percent (%)	Result
2	0.0006	1.0800	N/A	0.0008	1.6200	N/A	Pass
3	0.0413	2.3000	1.80	0.0422	3.4500	1.22	Pass
4	0.0018	0.4300	N/A	0.0022	0.6450	N/A	Pass
5	0.0162	1.1400	1.42	0.0165	1.7100	0.96	Pass
6	0.0017	0.3000	N/A	0.0019	0.4500	N/A	Pass
7	0.0165	0.7700	2.14	0.0171	1.1550	1.48	Pass
8	0.0017	0.2300	N/A	0.0019	0.3450	N/A	Pass
9	0.0155	0.4000	3.88	0.0158	0.6000	2.63	Pass
10	0.0018	0.1840	N/A	0.0020	0.2760	N/A	Pass
11	0.0113	0.3300	3.42	0.0119	0.4950	2.40	Pass
12	0.0018	0.1533	N/A	0.0021	0.2300	N/A	Pass
13	0.0075	0.2100	3.57	0.0079	0.3150	2.51	Pass
14	0.0018	0.1314	N/A	0.0020	0.1971	N/A	Pass
15	0.0052	0.1500	3.47	0.0061	0.2250	2.71	Pass
16	0.0017	0.1150	N/A	0.0019	0.1725	N/A	Pass
17	0.0060	0.1324	4.53	0.0067	0.1985	3.38	Pass
18	0.0018	0.1022	N/A	0.0024	0.1533	N/A	Pass
19	0.0055	0.1184	4.65	0.0061	0.1776	3.43	Pass
20	0.0017	0.0920	N/A	0.0021	0.1380	N/A	Pass
21	0.0052	0.1071	4.86	0.0057	0.1607	3.55	Pass
22	0.0016	0.0836	N/A	0.0018	0.1255	N/A	Pass
23	0.0052	0.0978	5.32	0.0056	0.1467	3.82	Pass
24	0.0015	0.0767	N/A	0.0018	0.1150	N/A	Pass
25	0.0055	0.0900	6.11	0.0059	0.1350	4.37	Pass
26	0.0015	0.0708	N/A	0.0017	0.1062	N/A	Pass
27	0.0047	0.0833	N/A	0.0056	0.1250	N/A	Pass
28	0.0015	0.0657	N/A	0.0017	0.0986	N/A	Pass
29	0.0057	0.0776	7.35	0.0060	0.1164	5.15	Pass
30	0.0015	0.0613	N/A	0.0017	0.0920	N/A	Pass
31	0.0046	0.0726	N/A	0.0050	0.1089	N/A	Pass
32	0.0015	0.0575	N/A	0.0017	0.0863	N/A	Pass
33	0.0033	0.0682	N/A	0.0036	0.1023	N/A	Pass
34	0.0015	0.0541	N/A	0.0017	0.0812	N/A	Pass
35	0.0026	0.0643	N/A	0.0035	0.0964	N/A	Pass
36	0.0015	0.0511	N/A	0.0017	0.0767	N/A	Pass
37	0.0032	0.0608	N/A	0.0038	0.0912	N/A	Pass
38	0.0015	0.0484	N/A	0.0018	0.0726	N/A	Pass
39	0.0035	0.0577	N/A	0.0039	0.0865	N/A	Pass
40	0.0016	0.0460	N/A	0.0018	0.0690	N/A	Pass



Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity



Customer : xxx

Result : Pass

Determination of Voltage Relevant Parameter During Test Period

Item	Nominal Value	Tested Value	Error Value	Allowable Error Value	Result
Urms(V)	230.00	230.06	0.06	±2.0%	Pass
Frequency(Hz)	50.000	49.998	0.002	±0.5%	Pass

Determination of Voltage Harmonics and Limits

Order(n)	Uhdf	Limit(%)	Limit Percent(%)	Result
1	100%	---	---	---
2	0.01%	0.20	5.75%	Pass
3	0.01%	0.90	1.00%	Pass
4	0.00%	0.20	1.20%	Pass
5	0.00%	0.40	1.06%	Pass
6	0.00%	0.20	1.34%	Pass
7	0.00%	0.30	1.19%	Pass
8	0.00%	0.20	1.23%	Pass
9	0.01%	0.20	3.09%	Pass
10	0.00%	0.20	2.03%	Pass
11	0.00%	0.10	2.89%	Pass
12	0.00%	0.10	4.14%	Pass
13	0.01%	0.10	5.41%	Pass
14	0.00%	0.10	2.51%	Pass
15	0.01%	0.10	5.34%	Pass
16	0.00%	0.10	1.93%	Pass
17	0.00%	0.10	2.66%	Pass
18	0.00%	0.10	1.83%	Pass
19	0.01%	0.10	5.90%	Pass
20	0.00%	0.10	1.75%	Pass
21	0.01%	0.10	9.03%	Pass
22	0.00%	0.10	1.76%	Pass
23	0.01%	0.10	9.44%	Pass
24	0.00%	0.10	1.96%	Pass
25	0.01%	0.10	8.99%	Pass
26	0.00%	0.10	1.78%	Pass
27	0.01%	0.10	9.86%	Pass
28	0.00%	0.10	1.89%	Pass
29	0.01%	0.10	9.08%	Pass
30	0.00%	0.10	1.94%	Pass
31	0.01%	0.10	8.07%	Pass
32	0.00%	0.10	1.77%	Pass
33	0.01%	0.10	7.19%	Pass
34	0.00%	0.10	1.88%	Pass
35	0.01%	0.10	5.19%	Pass
36	0.00%	0.10	1.97%	Pass
37	0.00%	0.10	4.16%	Pass
38	0.00%	0.10	1.90%	Pass
39	0.00%	0.10	3.87%	Pass
40	0.00%	0.10	1.91%	Pass





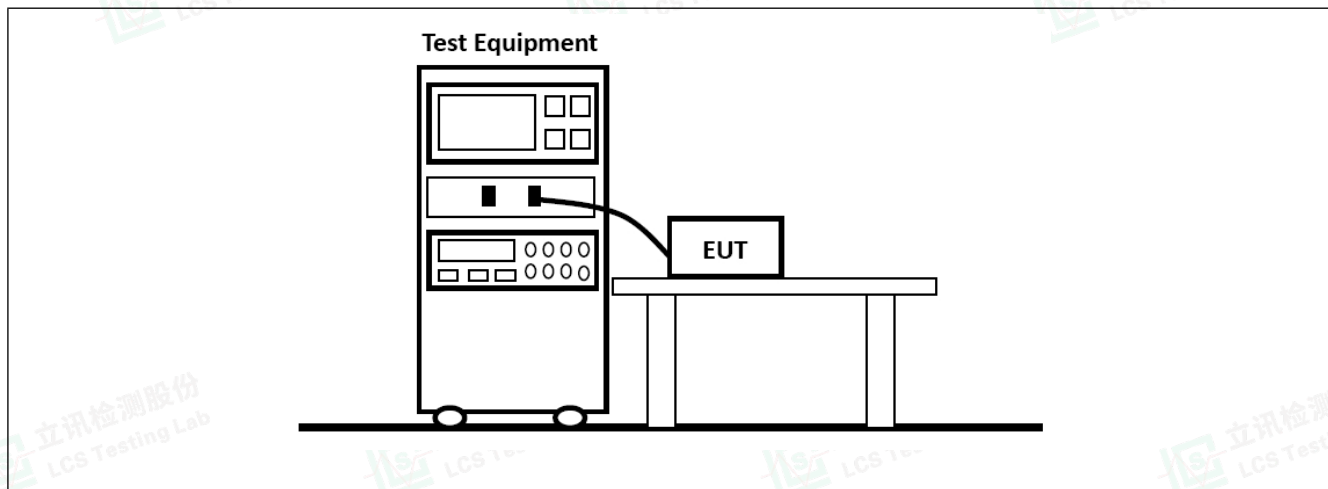
5.4 Voltage fluctuations and flicker

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

5.4.1 E.U.T. Operation:

Operating Environment:			
Temperature:	25 °C	Humidity:	55 %
Pre test mode:	TM1		
Final test mode:	TM1		

5.4.2 Test Setup Diagram:



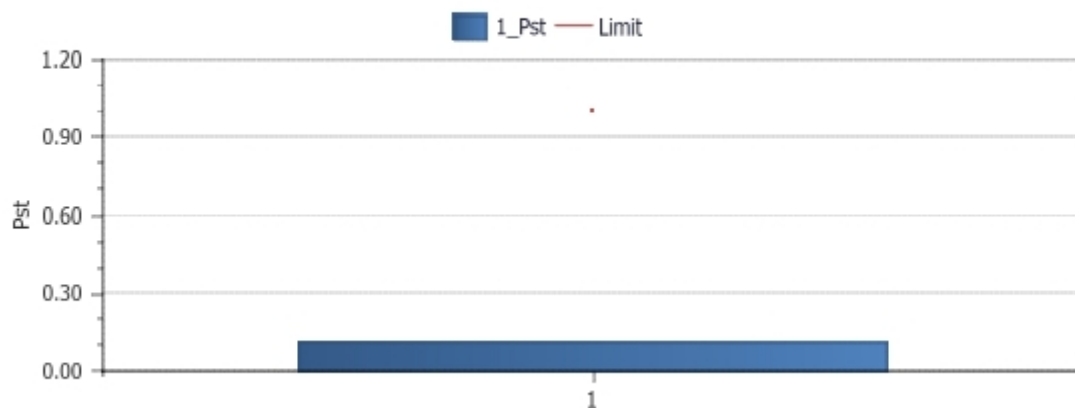


5.4.3 Test Data:

TM1

Customer : Result : Pass

Pst and Limit



Relevant Parameter and Judgement During Test Period

Vrms at the end of test (V) 229.92

Error Max (%)		Test Limit (%)		
T-max (ms)	0.00	Test Limit (ms)	500	Pass
dc (%)	0.00	Test Limit (%)	3.30	Pass
dmax (%)	0.00	Test Limit (%)	4.00	Pass
Pst	0.108	Test Limit	1.000	Pass

Elem1 Test Parameters

Num	dc (%)	dmax (%)	Tmax (ms)	Pst
1	0.00	0.00	0.00	0.108





6. IMMUNITY TEST RESULTS (EMS)

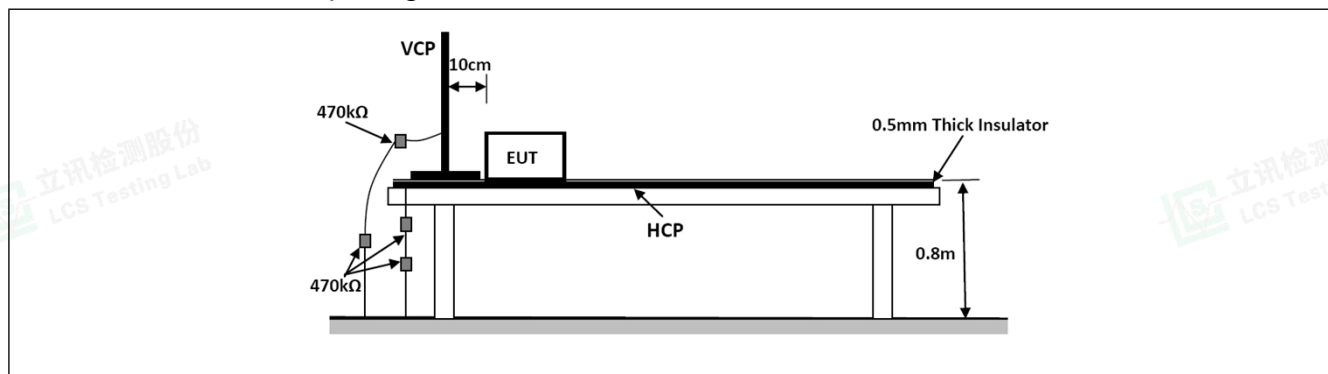
6.1 Electrostatic discharge

Test Requirement:	Clause 7.2
Test Method:	EN 61000-4-2:2009
Procedure:	Discharge Impedance: 330 Ω / 150 pF Discharge Voltage: Air Discharge: 8 kV; Contact Discharge: 4 kV; VCP/HCP: 4 kV. Polarity: Positive & Negative Number of Discharge: Minimum 10 times at each test point Discharge Mode: Single Discharge Discharge Period: 1 second minimum
Performance Criteria:	B

6.1.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.9 °C	Humidity:	47.6%
Pre test mode:	TM1		
Final test mode:	TM1		

6.1.2 Test Setup Diagram:





6.1.3 Test Data:

Discharge type	Volt (kV)	Polarity	Test Point	Result/ Observations
Air discharge	8	+	10	B
Air discharge	8	-	10	B
Contact discharge	4	+	10	B
Contact discharge	4	-	10	B
Horizontal Coupling	4	+	10	B
Horizontal Coupling	4	-	10	B
Vertical Coupling	4	+	10	B
Vertical Coupling	4	-	10	B





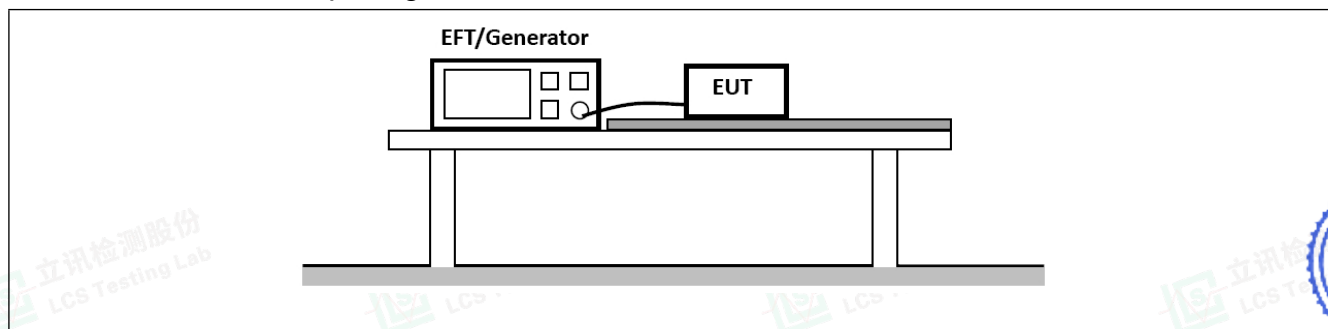
6.2 Fast transients for AC power ports

Test Requirement:	Clause 7.2
Test Method:	EN 61000-4-4:2012
Procedure:	Repetition Frequency: 5kHz Burst Period: 300ms Test Duration: 2 minute per level & polarity Test Level: 1.0kV Polarity: Positive & Negative
Performance Criteria:	B

6.2.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.9 °C	Humidity:	47.6%
Pre test mode:	TM1		
Final test mode:	TM1		

6.2.2 Test Setup Diagram:





6.2.3 Test Data:

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





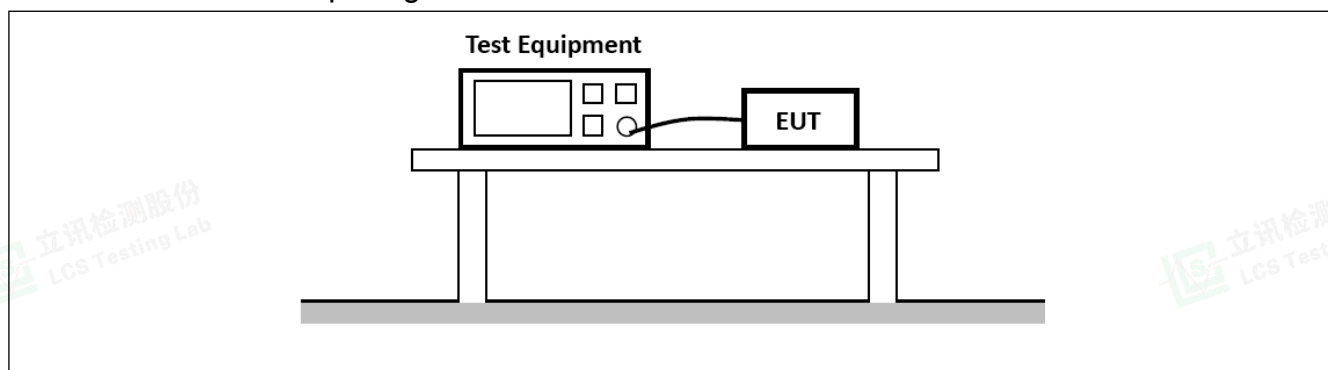
6.3 Surges for AC power ports

Test Requirement:	Clause 7.2
Test Method:	EN 61000-4-5:2014+A1:2017
Procedure:	Interval: 60s between each surge Test Level: $\pm 1\text{kV}$ Live to Neutral Polarity: Positive & Negative Generator source impedance: 2Ω Trigger Mode: Internal No. of surges: 5 positive at 90° , 5 negative at 270° .
Performance Criteria:	B

6.3.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.9 °C	Humidity:	47.6%
Pre test mode:	TM1		
Final test mode:	TM1		

6.3.2 Test Setup Diagram:





6.3.3 Test Data:

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





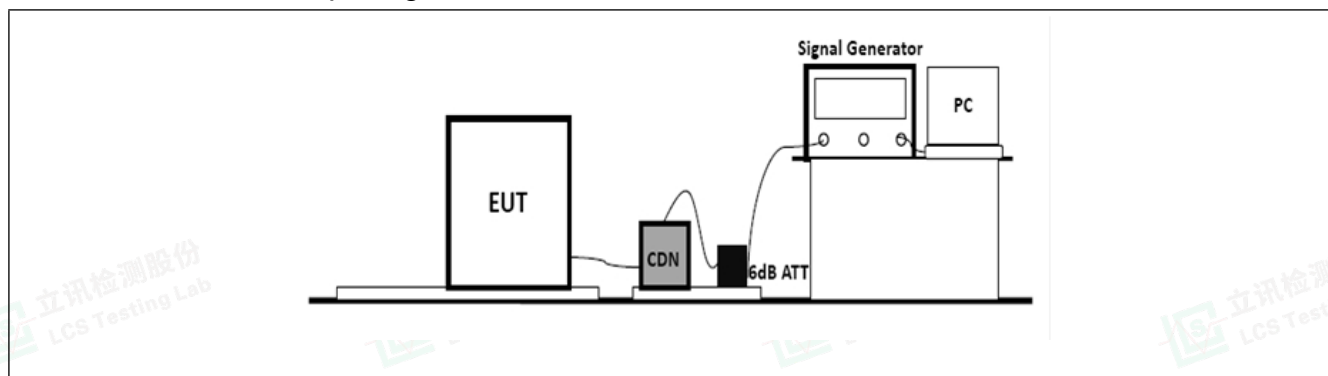
6.4 Injected currents for AC power ports

Test Requirement:	Clause 7.2
Test Method:	EN 61000-4-6:2014
Procedure:	0,15 MHz to 230 MHz RF current common mode 1 kHz, 80 % AM 3 V (RMS) (unmodulated) 150 Ω source impedance
Performance Criteria:	A

6.4.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.9 °C	Humidity:	47.6%
Pre test mode:	TM1		
Final test mode:	TM1		

6.4.2 Test Setup Diagram:





6.4.3 Test Data:

Port	Strength (Vrms)	CDN/Clamp	Dwell Time	Result /Observation
AC port	3	CDN	2s	A





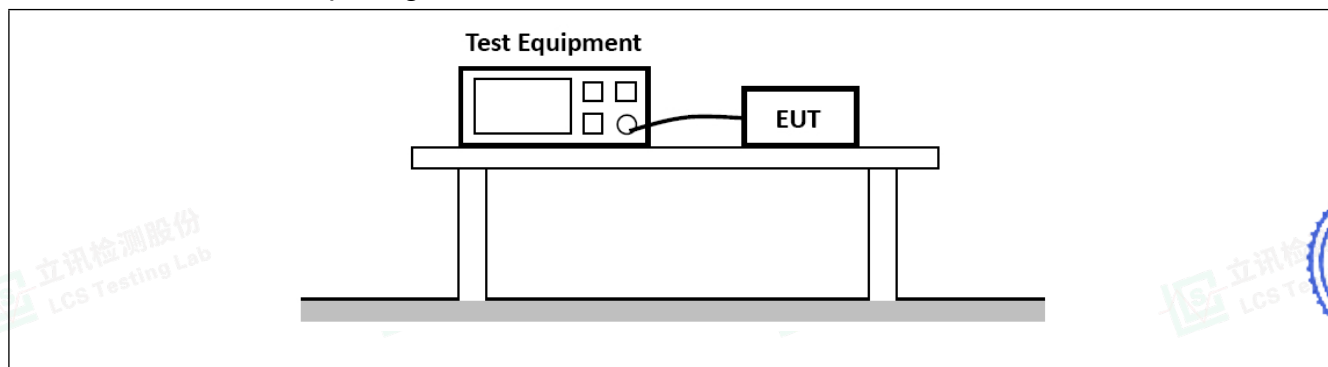
6.5 Voltage dips

Test Requirement:	Clause 7.2
Test Method:	EN IEC 61000-4-11:2020
Procedure:	0% of UT for 0.5 Cycle(50Hz) & 0.5 Cycle(60Hz) 40% of UT for 10 Cycle(50Hz) & 12 Cycle(60Hz) 70% of UT for 25 Cycle(50Hz) & 30 Cycle(60Hz) No. of Dips / Interruptions: 3 per Level Time between dropout 10s
Performance Criteria:	C

6.5.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.9 °C	Humidity:	47.6%
Pre test mode:	TM1		
Final test mode:	TM1		

6.5.2 Test Setup Diagram:





6.5.3 Test Data:

Level %UT	Phase (degree)	Duration	No. of Dips/ Interruptions	Result/ Observations
0	0°	0.5 Cycles	3	C
0	180°	0.5 Cycles	3	C
40	0°	12 Cycles	3	C
40	180°	12 Cycles	3	C
70	0°	30 Cycles	3	C
70	180°	30 Cycles	3	C





7. TEST SETUP PHOTOS

Disturbance voltage from AC mains port



Disturbance power

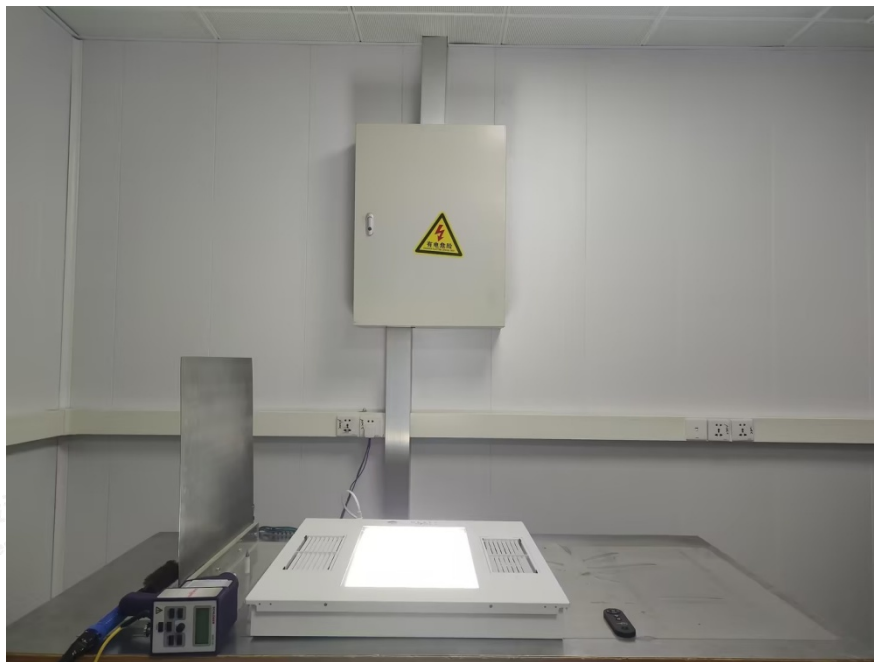




Voltage fluctuations and flicker



Electrostatic discharge

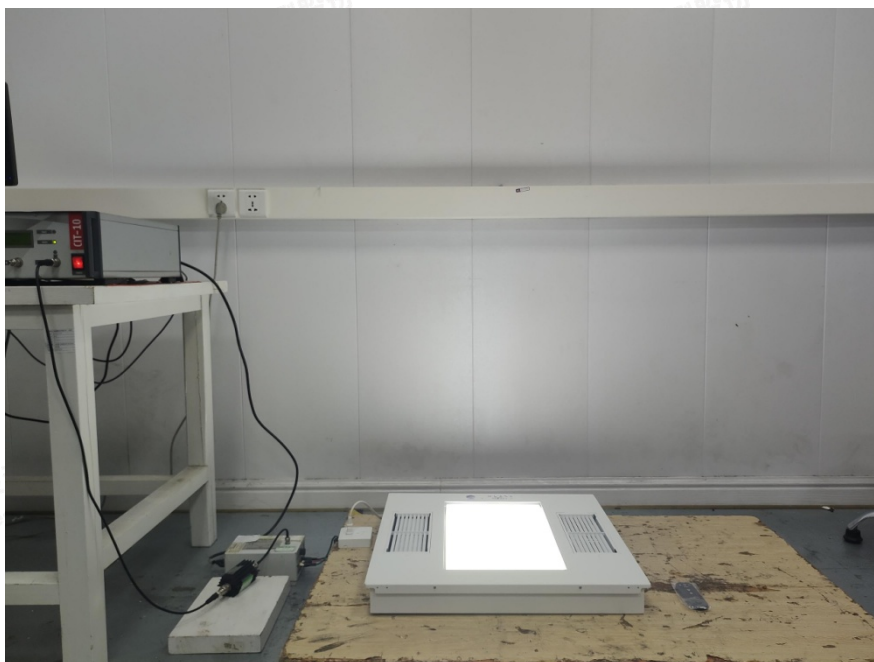




Fast transients for AC power ports Surges for AC power ports



Injected currents for AC power ports



Voltage dips





8. EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS)

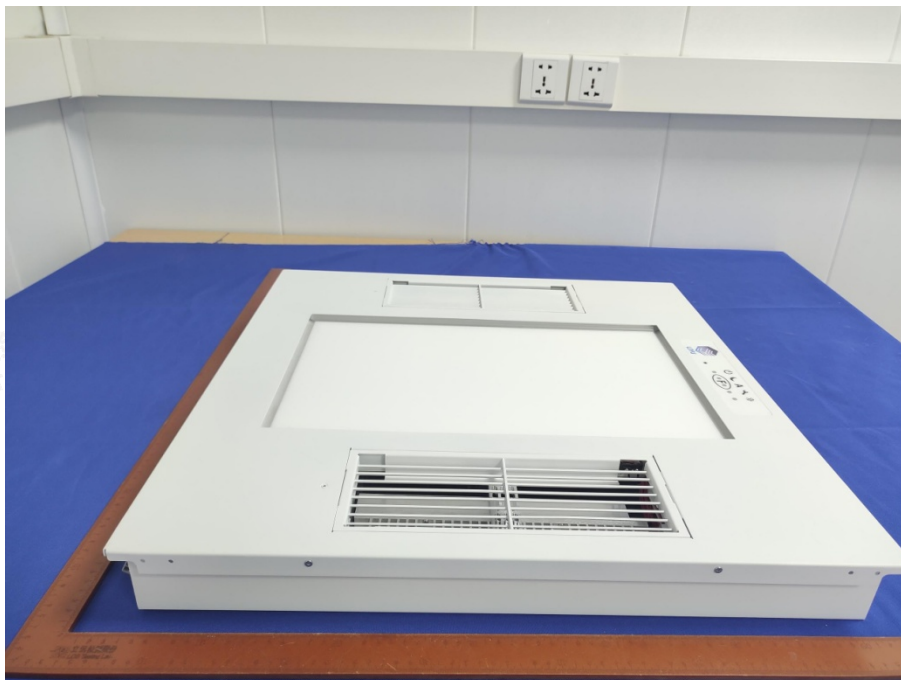


Fig. 1



Fig. 2





Fig. 3



Fig. 4





Fig. 5

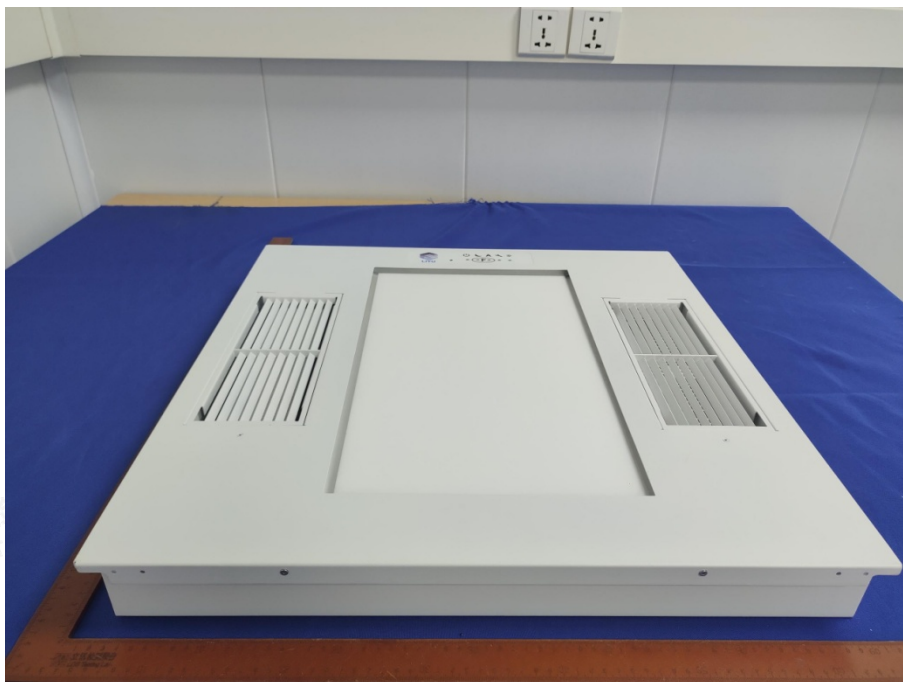


Fig. 6





Fig. 7



Fig. 8

--- End of Report ---

