EMC TEST REPORT

CE

For Electromagnetic Interference of

Report Reference No.	:	EA20100136E07001
Engineer (name + signature)	:	Tiger Xu
Approved by (name + signature)	:	Tomas Yang
Reviewed by (name + signature)	:	Alan He
Date of Receipt of EUT	:	Dec. 01, 2020
Date of Test	:	Dec. 01, 2020 to Dec. 10, 2020
Date of Issue	:	Jan. 12, 2021
Testing Laboratory	:	Dongguan Anci Electronic Technology Co., Ltd.
Address	:	1-2 Floor, Building A, No.11, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong, China
Laboratory location	:	EMC Laboratory
Applicant's name	:	Shenzhen Zhongli Power Technology Co., Ltd.
Address	:	Bldg. F 2-4 Layer, Li Hao Yongda High-Tech Park Gongming ST, Guangming New District, 518105 Shenzhen, Guangdong, PEOPLE'S REPUBLIC OF CHINA
Manufacturer	:	Shenzhen Zhongli Power Technology Co., Ltd.
Address	:	Bldg. F 2-4 Layer, Li Hao Yongda High-Tech Park Gongming ST, Guangming New District, 518105 Shenzhen, Guangdong, PEOPLE'S REPUBLIC OF CHINA
Factory	:	Shenzhen Zhongli Power Technology Co., Ltd.
Address	:	Bldg. F 2-4 Layer, Li Hao Yongda High-Tech Park Gongming ST, Guangming New District, 518105 Shenzhen, Guangdong, PEOPLE'S REPUBLIC OF CHINA

Test specification:

EUT description ..... :	AC/DC ADAPTOR
Trade Mark ..... :	N/A
Model/Type reference ..... :	ZL-024WLxxxyyyynn01, ZL-024WLxxxyyyyXX02 (xxx, yyyy and nn are variables, see model list of page 6 for details.)
Test Sample……:	ZL-024WL0663000EU01, ZL-024WL1202500EU01, ZL-024WL3600830EU01
Ratings ..... :	Input: 100-240V~ 50/60Hz, 1.0A Max. Output: 5.0-36.0V⎓0.1-3.0A 30.0 Max.
Tested Power……:	I/P: 230Vac, 50Hz and 120Vac, 60Hz
Standards ..... :	EN 55014-1:2017/A11:2020 EN 55014-2:2015 EN IEC 61000-3-2:2019 EN 61000-3-3: 2013/A1:2019

The device described above was tested by Dong Guan Anci Electronic Technology Co., Ltd. to determine the maximum emission levels emanated from the device and severity levels of the device endure and its performance criterion. The measurement results are contained in this test report and Dong Guan Anci Electronic Technology Co., Ltd. assumes full responsibility for the accuracy and completeness of these measurements. This report shows the EUT is technically compliance with the above official standards.

This report applies to the above sample only and shall not be reproduced in part without written approval of Dong Guan Anci Electronic Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 PRODUCT INFORMATION

The equipment model ZL-024WLxxxyyyynn01, ZL-024WLxxxyyyyXX02 is AC/DC ADAPTOR for the used only for household and indoor.

The components MOV1 and the heat sink HS1 on U2 is optional.
The secondary components D1 and D1A is alternatively use, only use D1 or only use D1A.

All models in ZL-024WLxxxyyyynn01 are identical to each other except for output rating, transformer secondary winding, some secondary electrical components, model name and plug portion type; models ZL-024WLxxxyyyyEU01 are fitted with European plug; models ZL-024WLxxxyyyyUK01 are fitted with British plug; models ZL-024WLxxxyyyyXX02 are similar with models ZL-024WLxxxyyyynn01 except for plug portion; models ZL-024WLxxxyyyyXX02 are fitted with detachable EU plug or UK plug; models ZL-024WLxxxyyyynn01 are fitted with fixed EU plug or UK plug.

Model list:

Model	Input	Voltage (Vdc)	Current (A)	Max. Output Power (W)	Transformer (T1)
ZL-024WLxxxyyyynn01 , ZL-024WLxxxyyyyXX02	100-240V~ 50/60Hz 1.0A Max	5.0-8.0	0.10-3.0	20.0	ZL-024W-05
		8.1-13.0	0.10-2.5	30.0	ZL-024W-12
		13.1-21.0	0.10-2.29	30.0	ZL-024W-18
		21.1-36.0	0.10-1.42	30.0	ZL-024W-24
- xxx=050-360, which denotes for the rated output voltage from 5.0VDC to 36.0VDC, in step of 0.1VDC; - yyyy=0100-3000, which denotes for the rated output current from 0.10A to 3.00A, in step of 0.01A. - nn=EU or UK, which denotes for the plug portion type, EU denotes for European plug, UK denotes for British plug.					

All tests was performed on model ZL-024WL0663000EU01, ZL-024WL1202500EU01 and ZL-024WL3600830EU01.

The EUT passed the test.
Test data reflecting the worst mode in the report.

1.2 Details about the Test Laboratory

Test Site 1 (Issue certificate: CNAS number L6214):

Company name: Dongguan Anci Electronic Technology Co., Ltd.

Address: 1-2 Floor, Building A, No.11, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

Test Site 2 (Subcontract test: CNAS number L0468):

Company name: Guangdong Dongguan Quality Supervision Testing Center

Address: No.2 South Industry Road, Dongguan Songshan Lake Sci.&Tech. Industrial Park, Guangdong Province, China

Standard	Test Item	Test Site
EN 55014-1: 2017/A11:2020	Conducted Emission	1
	Disturbance Power Measurement	1
	Radiated Emission	N/A
EN IEC 61000-3-2: 2019	Harmonic Current Emission	N/A
EN 61000-3-3: 2013/A1:2019	Voltage Fluctuations & Flicker	1
EN 61000-4-2:2009	Electrostatic Discharge	1
EN 61000-4-3:2006 +A1:2008+A2: 2010	RF electromagnetic field	N/A
EN 61000-4-4:2012	Fast transients	1
EN 61000-4-5:2014	Surges	1
EN 61000-4-6:2014	Injected Current	2
EN 61000-4-11:2004	Volt. Interruptions Volt. Dips	1

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Emission			
Standard	Test Item	Judgment	Remark
EN 55014-1: 2017/A11:2020	Conducted Emission	PASS	
	Disturbance Power Measurement	PASS	
	Radiated Emission	N/A	**NOTE (4)**
EN IEC 61000-3-2: 2019	Harmonic Current Emission	N/A	
EN 61000-3-3: 2013/A1:2019	Voltage Fluctuations & Flicker	PASS	

Immunity (EN 55014-2: 2015)				
Section	Test Item	Performance Criteria	Judgment	Remark
EN 61000-4-2:2009	Electrostatic Discharge	B	PASS	
EN 61000-4-3:2006 +A1:2008+A2: 2010	RF electromagnetic field	A	N/A	**NOTE (1)**
EN 61000-4-4:2012	Fast transients	B	PASS	
EN 61000-4-5:2014	Surges	B	PASS	
EN 61000-4-6:2014	Injected Current	A	PASS	
EN 61000-4-11:2004	Volt. Interruptions Volt. Dips	C **NOTE (3)**	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

(2) The power consumption of EUT is less than 75W and no Limits apply.

(3) Voltage dip: 30% reduction – Performance Criteria **C**

Voltage dip: 60% reduction – Performance Criteria **C**

Voltage Interruption: 100% reduction – Performance Criteria **C**

(4) Appliances are deemed to comply in the frequency range from 300 MHz to 1 000 MHz if both of the following conditions (1) and 2)) are fulfilled:
1) all emission readings from the equipment under test shall be lower than the applicable limits reduced by the margin;
2) the maximum clock frequency shall be less than 30 MHz.
If either of condition 1) or 2) is not fulfilled, radiated measurements in the frequency range from 300 MHz to 1 000 MHz shall be conducted and the limits of Table 3 for that range applied. In any case the limits of Table 2a in the frequency range 30 MHz to 300 MHz shall be met.

2.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U (dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	3.19	

B. Disturbance Power Measurement :

Test Site	Method	Measurement Frequency Range	U (dB)	NOTE
C01	ANSI	30 MHz ~ 300MHz	3.26	

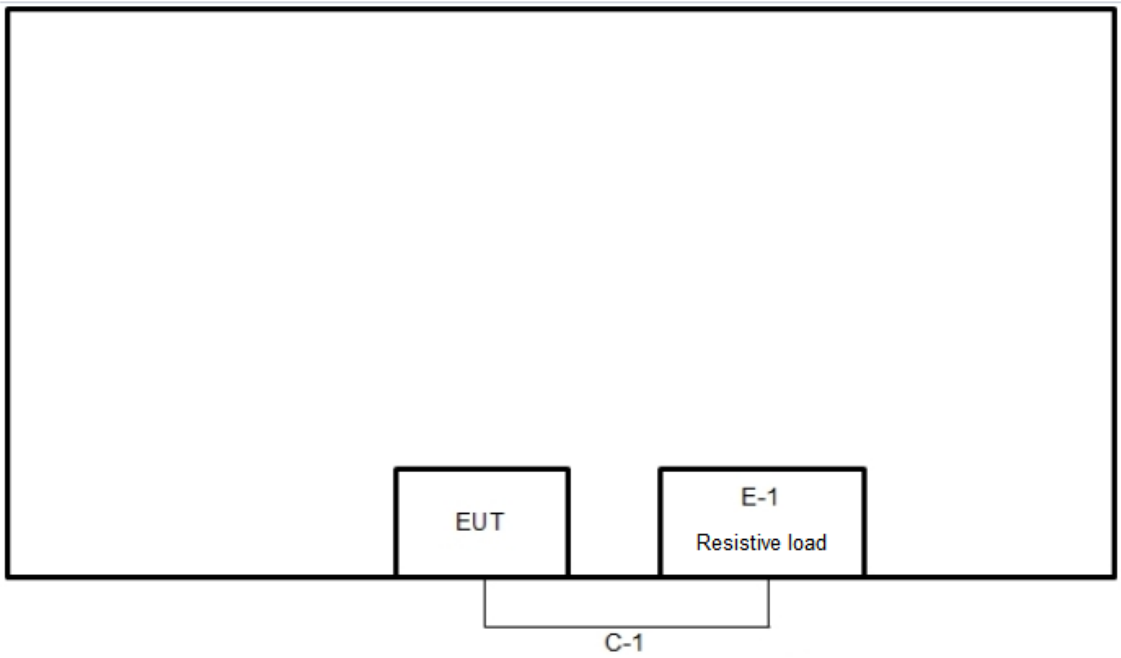
2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

For Emission Test	
Pretest Mode	Description
Mode 1	Full Load

For Immunity Test	
Final Test Mode	Description
Mode 1	Full Load

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment
E-1	Resistive load

Item	Type of cable
C-1	DC Cable

3. EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION(MAINS PORT) (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	59 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Instr.Code	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	AN-E010	L.I.S.N	SCHWARZBECK	NSLK 8127	8127-669	2021-05-27
2	AN-E028	TRANSIENT LIMITER	CYBERTEK	EM5010A	E1950100113	2021-05-23
3	AN-E022	RF Cable	N/A	ZT06S-BNCJ-NJ-7.5M	19044020	2021-05-23
4	AN-E020	EMI Test Receiver	ROHDE&SCHWARZ	ESCI	101358	2021-05-23
5	AN-E058	1# Shielded Room	chengyu	8m*4m*3.3m	N/A	2022-05-06
6	AN-E046	Test Software	Farad	EZ-EMC Ver:ANCI-8A1	N/A	N/A

Remark: ” N/A” denotes No Model No. , Serial No. or No Calibration specified.

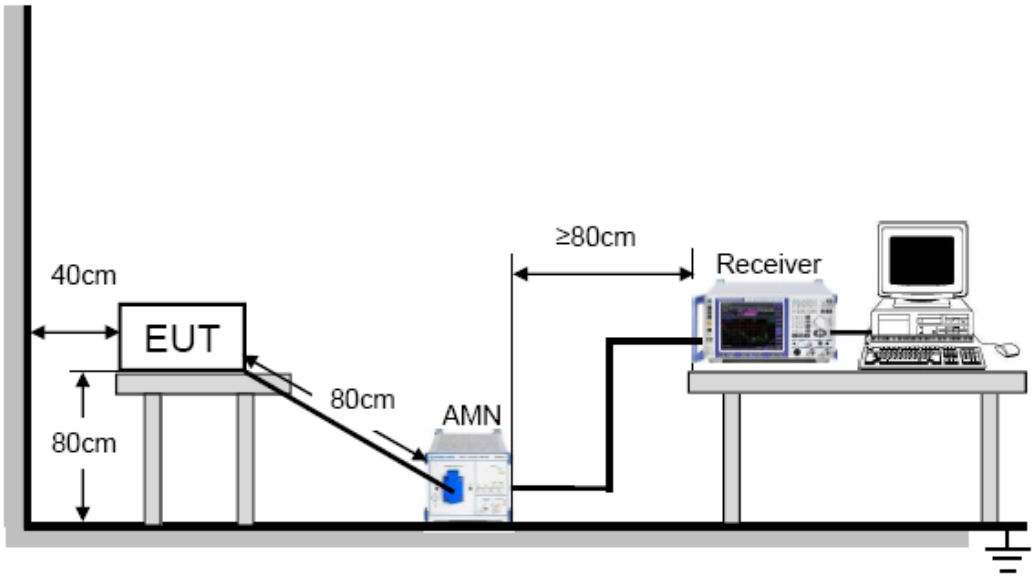
3.1.3 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP



3.1.6 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use.

3.1.7 TEST RESULTS

EUT：	AC/DC ADAPTOR	**Model No.:**	ZL-024WL0663000EU01, ZL-024WL1202500EU01, ZL-024WL3600830EU01
Temperature：	22.6℃	**Relative Humidity：**	54.8 %
Pressure：	1008 hPa	**Test Power ：**	AC 230V/50Hz
Test Mode ：	Full Load		

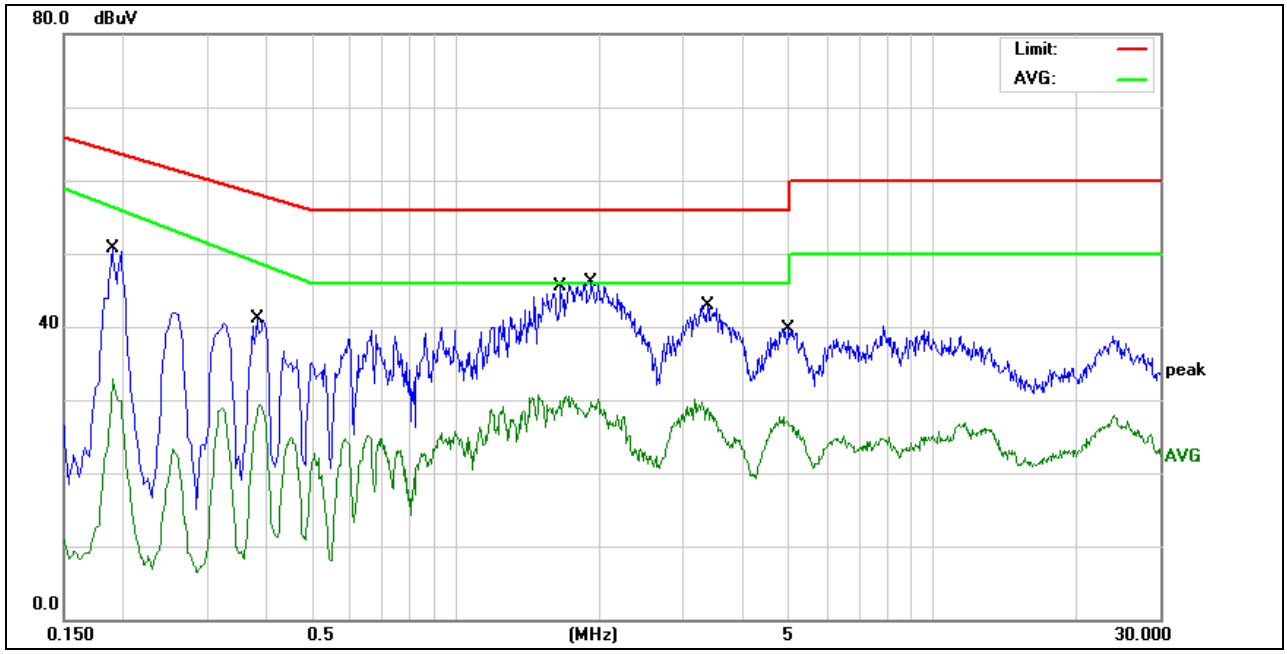
Remark：

(1) Reading in which marked as QP means measurements by using Quasi-Peak Detector,and AV means measurements by using Average Detector.

(2) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

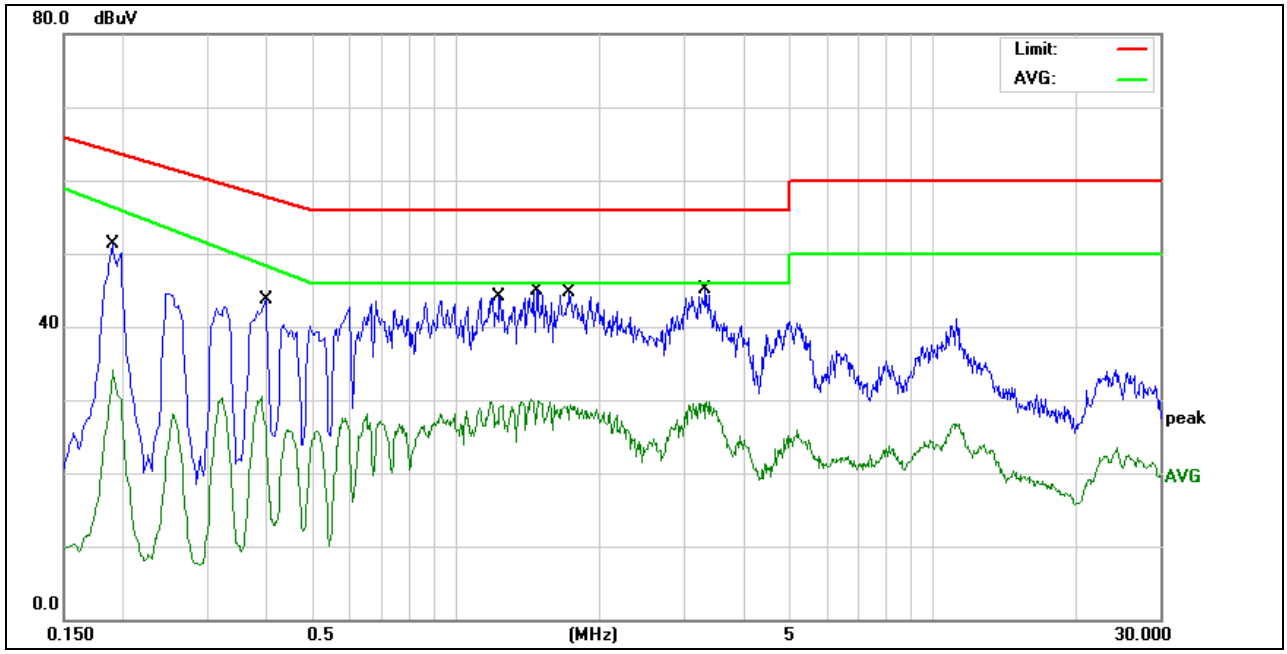
(3) Measuring frequency range from 150KHz to 30MHz.

(4） This test was carried out in conducted emission shielded room.



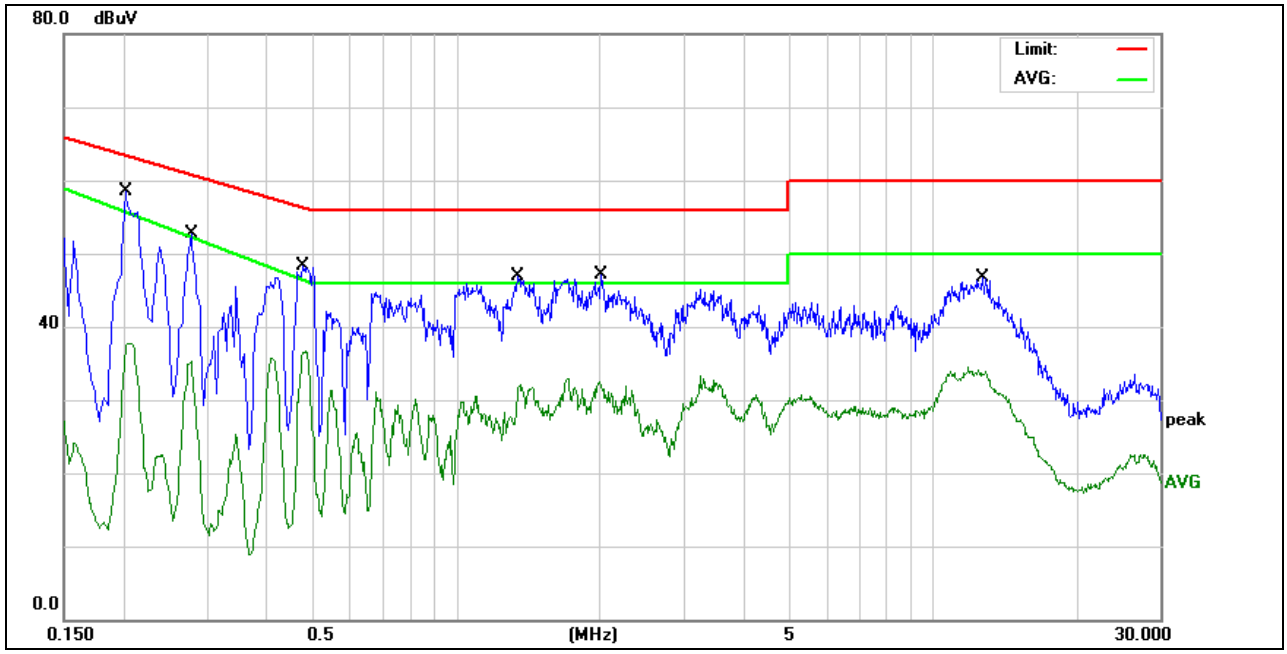
Site:	**843.3**	**Phase:N**	**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 QP**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL0663000EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:			

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	0.1900	33.83	10.15	43.98	64.03	-20.05	QP	
2	0.1900	20.26	10.15	30.41	56.44	-26.03	AVG	
3	0.3820	25.87	10.18	36.05	58.23	-22.18	QP	
4	0.3820	17.97	10.18	28.15	48.90	-20.75	AVG	
5	1.6540	27.24	10.27	37.51	56.00	-18.49	QP	
6	1.6540	18.30	10.27	28.57	46.00	-17.43	AVG	
7 *	1.9220	29.32	10.29	39.61	56.00	-16.39	QP	
8	1.9220	18.67	10.29	28.96	46.00	-17.04	AVG	
9	3.3740	25.73	10.37	36.10	56.00	-19.90	QP	
10	3.3740	16.49	10.37	26.86	46.00	-19.14	AVG	
11	4.9860	23.82	10.46	34.28	56.00	-21.72	QP	
12	4.9860	16.01	10.46	26.47	46.00	-19.53	AVG	



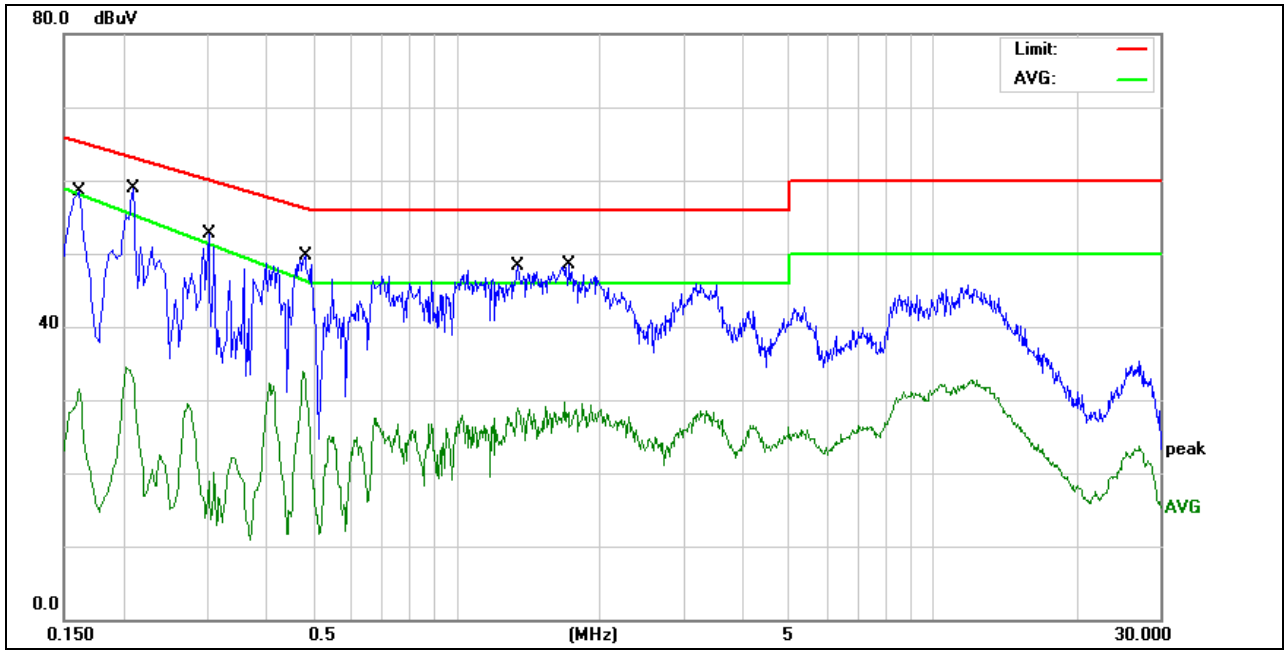
Site:	**843.3**	**Phase:L1**	**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 QP**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL0663000EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:			

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	0.1900	36.32	10.15	46.47	64.03	-17.56	QP	
2	0.1900	22.24	10.15	32.39	56.44	-24.05	AVG	
3	0.3980	28.94	10.18	39.12	57.89	-18.77	QP	
4	0.3980	15.32	10.18	25.50	48.46	-22.96	AVG	
5	1.2300	25.96	10.25	36.21	56.00	-19.79	QP	
6	1.2300	16.61	10.25	26.86	46.00	-19.14	AVG	
7	1.4780	26.33	10.26	36.59	56.00	-19.41	QP	
8	1.4780	16.35	10.26	26.61	46.00	-19.39	AVG	
9 *	1.7340	29.49	10.27	39.76	56.00	-16.24	QP	
10	1.7340	17.05	10.27	27.32	46.00	-18.68	AVG	
11	3.3380	27.32	10.36	37.68	56.00	-18.32	QP	
12	3.3380	16.67	10.36	27.03	46.00	-18.97	AVG	



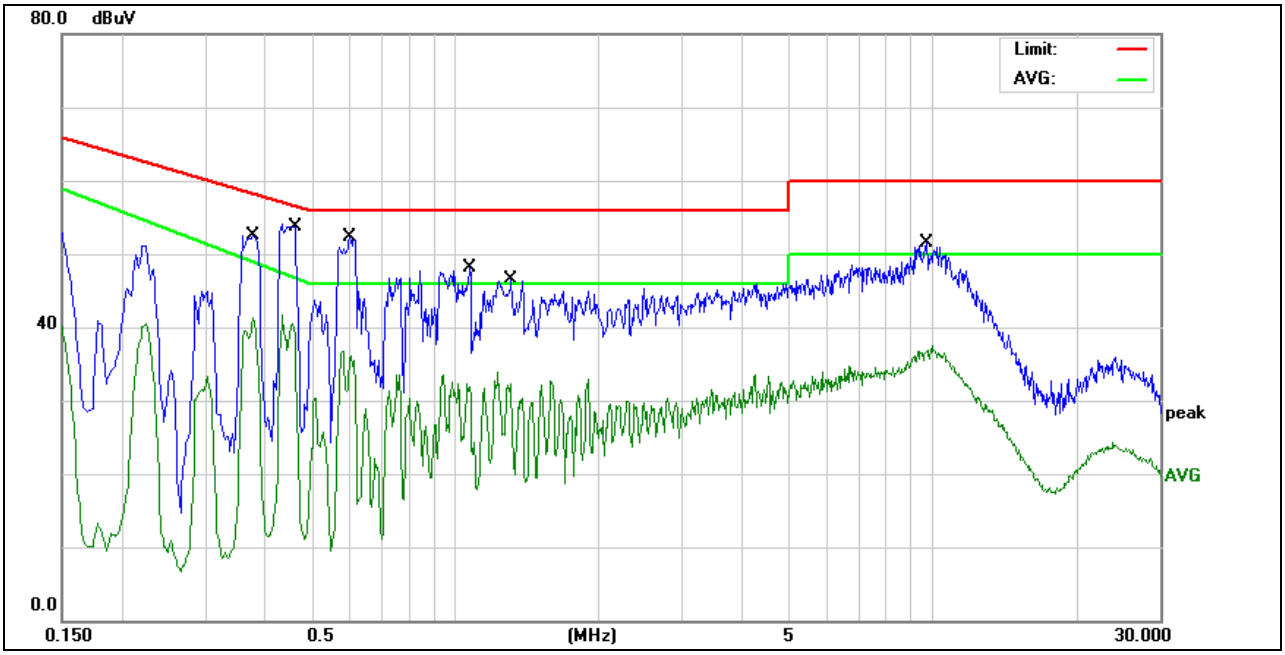
Site:	**843.3**	**Phase:N**	**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 QP**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL1202500EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:			

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	0.2020	40.54	10.16	50.70	63.52	-12.82	QP	
2	0.2020	25.13	10.16	35.29	55.78	-20.49	AVG	
3	0.2779	33.34	10.17	43.51	60.88	-17.37	QP	
4	0.2779	21.05	10.17	31.22	52.34	-21.12	AVG	
5	0.4780	35.25	10.20	45.45	56.37	-10.92	QP	
6 *	0.4780	26.50	10.20	36.70	46.49	-9.79	AVG	
7	1.3500	32.62	10.26	42.88	56.00	-13.12	QP	
8	1.3500	20.54	10.26	30.80	46.00	-15.20	AVG	
9	2.0140	30.37	10.29	40.66	56.00	-15.34	QP	
10	2.0140	21.17	10.29	31.46	46.00	-14.54	AVG	
11	12.7780	28.66	10.88	39.54	60.00	-20.46	QP	
12	12.7780	21.98	10.88	32.86	50.00	-17.14	AVG	



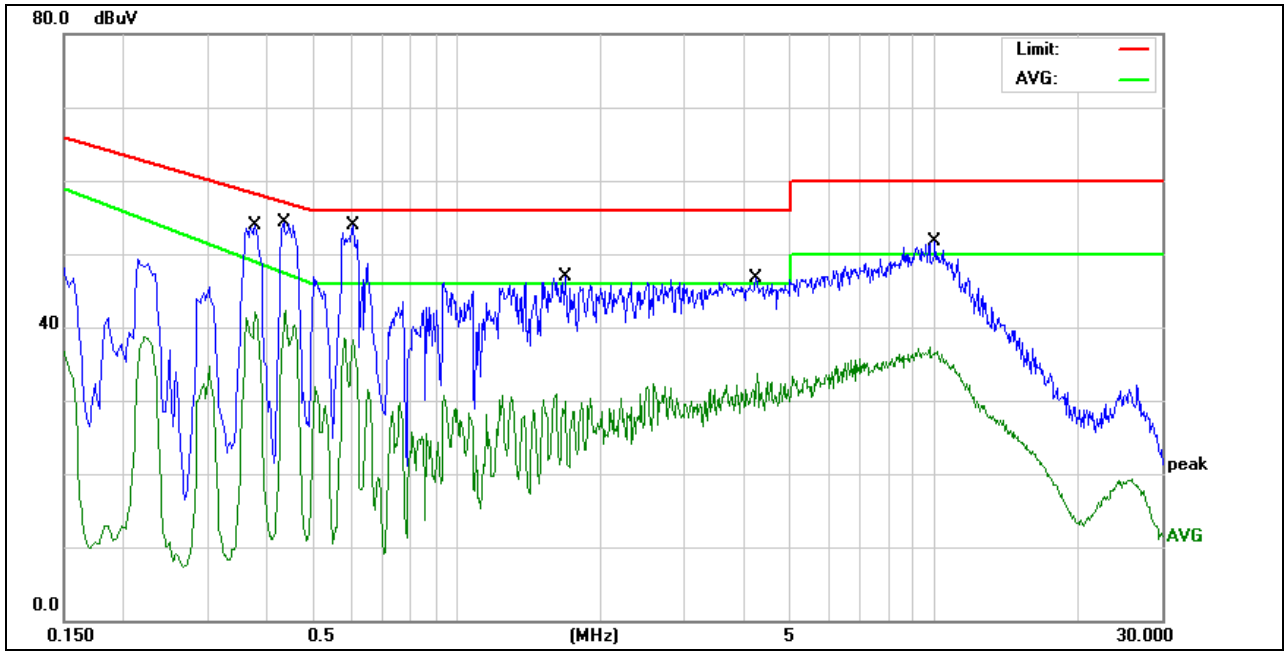
Site:	**843.3**	**Phase:L1**	**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 QP**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL1202500EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:			

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	0.1607	37.86	10.15	48.01	65.42	-17.41	QP	
2	0.1607	15.08	10.15	25.23	58.25	-33.02	AVG	
3	0.2100	36.38	10.16	46.54	63.20	-16.66	QP	
4	0.2100	19.97	10.16	30.13	55.36	-25.23	AVG	
5	0.3020	17.82	10.17	27.99	60.19	-32.20	QP	
6	0.3020	1.26	10.17	11.43	51.44	-40.01	AVG	
7 *	0.4820	36.08	10.20	46.28	56.30	-10.02	QP	
8	0.4820	21.68	10.20	31.88	46.40	-14.52	AVG	
9	1.3500	32.42	10.26	42.68	56.00	-13.32	QP	
10	1.3500	16.98	10.26	27.24	46.00	-18.76	AVG	
11	1.7340	30.85	10.27	41.12	56.00	-14.88	QP	
12	1.7340	14.89	10.27	25.16	46.00	-20.84	AVG	



Site:	**843.3**	**Phase:N**	**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 QP**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL3600830EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:			

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	0.3780	40.92	10.18	51.10	58.32	-7.22	QP	
2	0.3780	30.62	10.18	40.80	49.02	-8.22	AVG	
3 *	0.4620	41.56	10.20	51.76	56.66	-4.90	QP	
4	0.4620	31.53	10.20	41.73	46.85	-5.12	AVG	
5	0.6020	38.79	10.21	49.00	56.00	-7.00	QP	
6	0.6020	23.65	10.21	33.86	46.00	-12.14	AVG	
7	1.0740	34.74	10.24	44.98	56.00	-11.02	QP	
8	1.0740	20.64	10.24	30.88	46.00	-15.12	AVG	
9	1.3099	32.36	10.26	42.62	56.00	-13.38	QP	
10	1.3099	20.48	10.26	30.74	46.00	-15.26	AVG	
11	9.7340	33.10	10.70	43.80	60.00	-16.20	QP	
12	9.7340	24.97	10.70	35.67	50.00	-14.33	AVG	



Site:	**843.3**	**Phase:L1**	**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 QP**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL3600830EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:			

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	0.3780	42.93	10.18	53.11	58.32	-5.21	QP	
2	0.3780	31.86	10.18	42.04	49.02	-6.98	AVG	
3	0.4340	42.80	10.19	52.99	57.18	-4.19	QP	
4	0.4340	30.85	10.19	41.04	47.53	-6.49	AVG	
5 *	0.6060	43.03	10.21	53.24	56.00	-2.76	QP	
6	0.6060	29.21	10.21	39.42	46.00	-6.58	AVG	
7	1.6820	32.86	10.27	43.13	56.00	-12.87	QP	
8	1.6820	19.56	10.27	29.83	46.00	-16.17	AVG	
9	4.2460	33.60	10.41	44.01	56.00	-11.99	QP	
10	4.2460	22.95	10.41	33.36	46.00	-12.64	AVG	
11	10.0620	32.14	10.71	42.85	60.00	-17.15	QP	
12	10.0620	24.51	10.71	35.22	50.00	-14.78	AVG	

3.2 DISTURBANCE POWER MEASUREMENT

3.2.1 LIMITS OF DISTURBANCE POWER MEASUREMENT

FREQUENCY (MHz)	Limit (at 3m)	
	QP（dBpW）	AV(dBpw)
30 – 300	45 – 55	35 – 45

Notes:

(1) The tighter limit applies at the band edges.

3.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Instr.Code	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	AN-E012	Absorbing clamp	LUTHI	MDS 21	4202	2021-05-23
2	AN-E011	6 db attenuator	N/A	N/A	N/A	2021-05-23
3	AN-E008	RF Cable	N/A	Z804-NJ-NJ-10M	19044019	2021-05-23
4	AN-E020	EMI Test Receiver	ROHDE&SCHWARZ	ESCI	101358	2021-05-23
5	AN-E058	1# Shielded Room	chengyu	8m*4m*3.3m	N/A	2022-05-06
6	AN-E046	Test Software	Farad	EZ-EMC Ver:ANCI-8A1	N/A	N/A

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

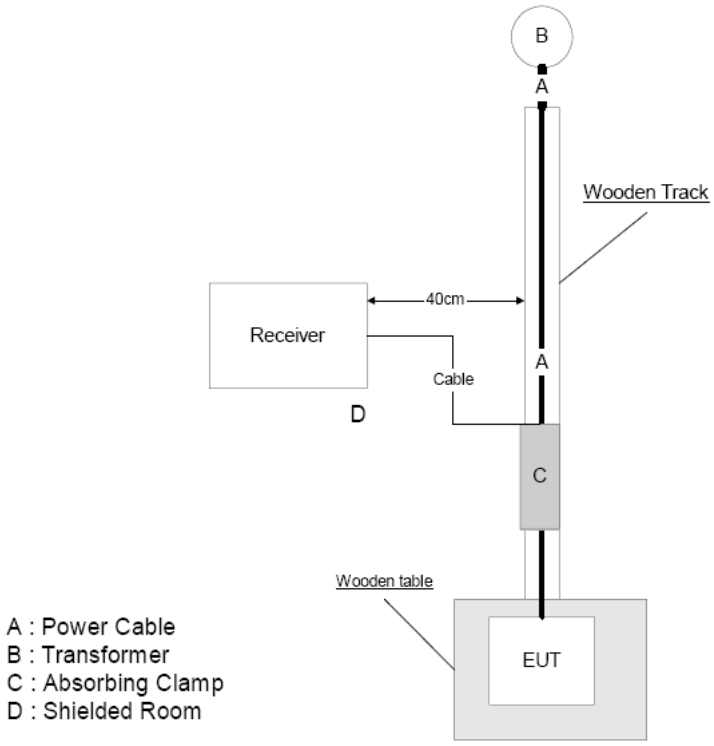
3.2.3 TEST PROCEDURE

a. The EUT was placed on a non-metallic table of 0.8 m of height above the floor and at least 0.8m from other metallic objects and from any person. The lead to be measured shall be stretched in a straight horizontal line for a length sufficient to accommodate the absorbing clamp and to permit the necessary adjustment of its position for tuning.
b. Any other lead than that to be measured shall disconnected..
c. At each test frequency the absorbing clamp shall be moved along the lead until the maximum value is found between a position adjacent to the equipment under test and a distance of 6 m
d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST SETUP



3.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 3.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.7 TEST RESULTS

EUT：	AC/DC ADAPTOR	**Model No.:**	ZL-024WL0663000EU01, ZL-024WL1202500EU01, ZL-024WL3600830EU01
Temperature：	21.7℃	**Relative Humidity：**	53.6 %
Pressure：	1008 hPa	**Test Power ：**	AC 230V/50Hz
Test Mode ：	Full Load		

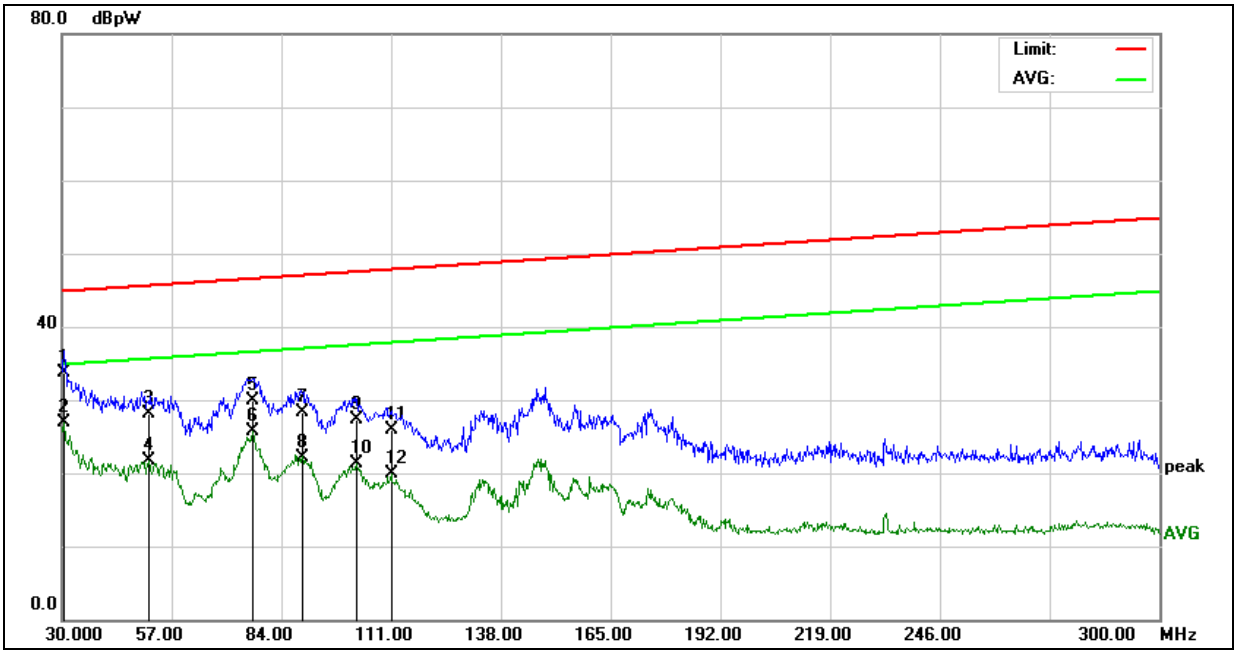
Remark：

(1) Reading in which marked as QP means measurements by using Quasi-Peak Detector ,and AV means measurements by using Average Detector.

(2) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

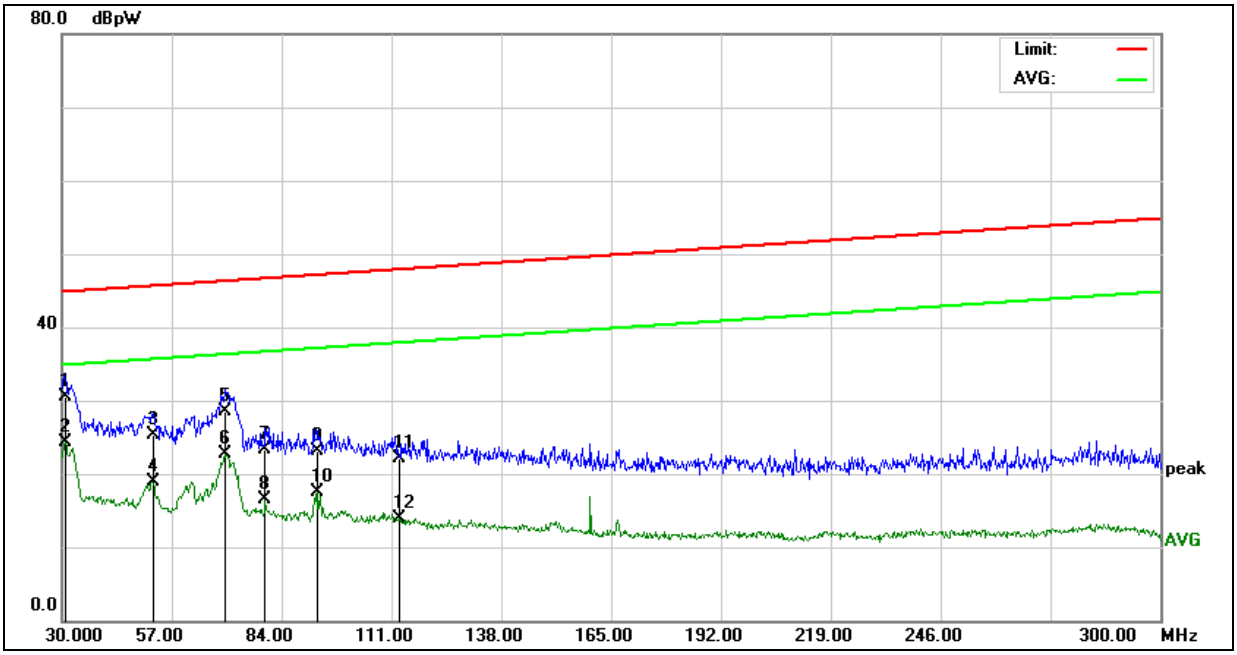
(3) Measuring frequency range from 30MHz to 300MHz.

(4） This test was carried out in conducted emission shielded room.



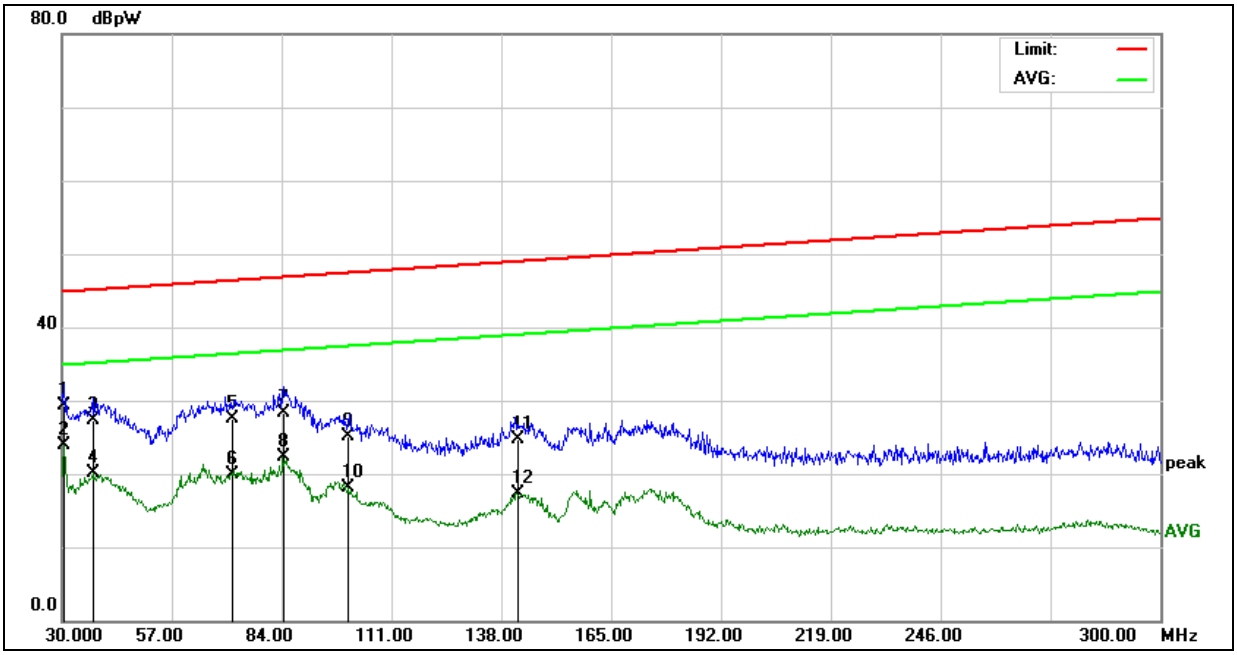
Site:	**843.3**		**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 Clamp(QP)**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL0663000EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:	**AC Line**		

No.	Frequency (MHz)	Reading Level(dBpW)	Factor (dB)	Measure-ment(dBpW)	Limit (dBpW)	Over (dB)	Detector	Comment
1	30.5600	7.89	25.74	33.63	45.02	-11.39	QP	
2 *	30.5600	1.20	25.74	26.94	35.02	-8.08	AVG	
3	51.5200	4.07	23.99	28.06	45.80	-17.74	QP	
4	51.5200	-2.22	23.99	21.77	35.80	-14.03	AVG	
5	77.0400	6.11	23.84	29.95	46.74	-16.79	QP	
6	77.0400	1.79	23.84	25.63	36.74	-11.11	AVG	
7	89.1600	5.00	23.24	28.24	47.19	-18.95	QP	
8	89.1600	-1.04	23.24	22.20	37.19	-14.99	AVG	
9	102.4400	4.00	23.25	27.25	47.68	-20.43	QP	
10	102.4400	-1.98	23.25	21.27	37.68	-16.41	AVG	
11	111.1200	2.51	23.44	25.95	48.00	-22.05	QP	
12	111.1200	-3.60	23.44	19.84	38.00	-18.16	AVG	



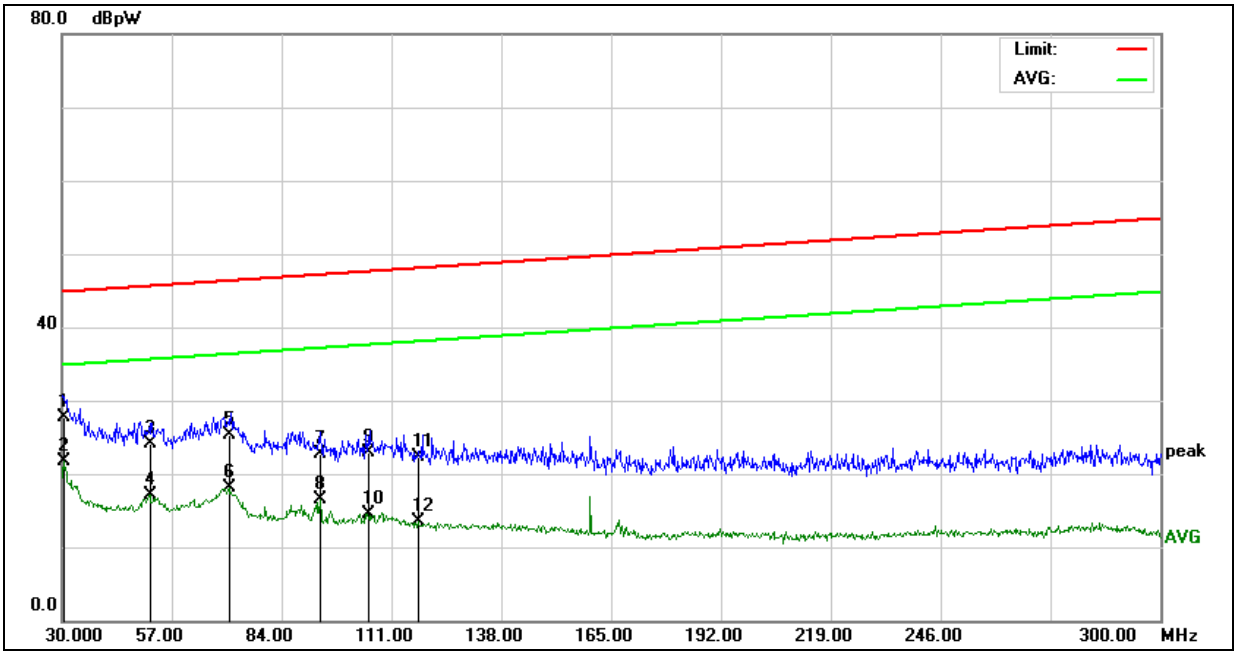
Site:	**843.3**		**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 Clamp(QP)**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL0663000EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:	**DC Line**		

No.	Frequency (MHz)	Reading Level(dBpW)	Factor (dB)	Measure-ment(dBpW)	Limit (dBpW)	Over (dB)	Detector	Comment
1	30.9199	4.78	25.69	30.47	45.03	-14.56	QP	
2 *	30.9199	-1.34	25.69	24.35	35.03	-10.68	AVG	
3	52.3998	1.36	24.01	25.37	45.83	-20.46	QP	
4	52.3998	-5.04	24.01	18.97	35.83	-16.86	AVG	
5	70.1600	3.79	24.71	28.50	46.49	-17.99	QP	
6	70.1600	-1.97	24.71	22.74	36.49	-13.75	AVG	
7	80.0000	-0.18	23.47	23.29	46.85	-23.56	QP	
8	80.0000	-6.99	23.47	16.48	36.85	-20.37	AVG	
9	92.9600	-0.19	23.21	23.02	47.33	-24.31	QP	
10	92.9600	-5.67	23.21	17.54	37.33	-19.79	AVG	
11	113.0000	-1.15	23.34	22.19	48.07	-25.88	QP	
12	113.0000	-9.42	23.34	13.92	38.07	-24.15	AVG	



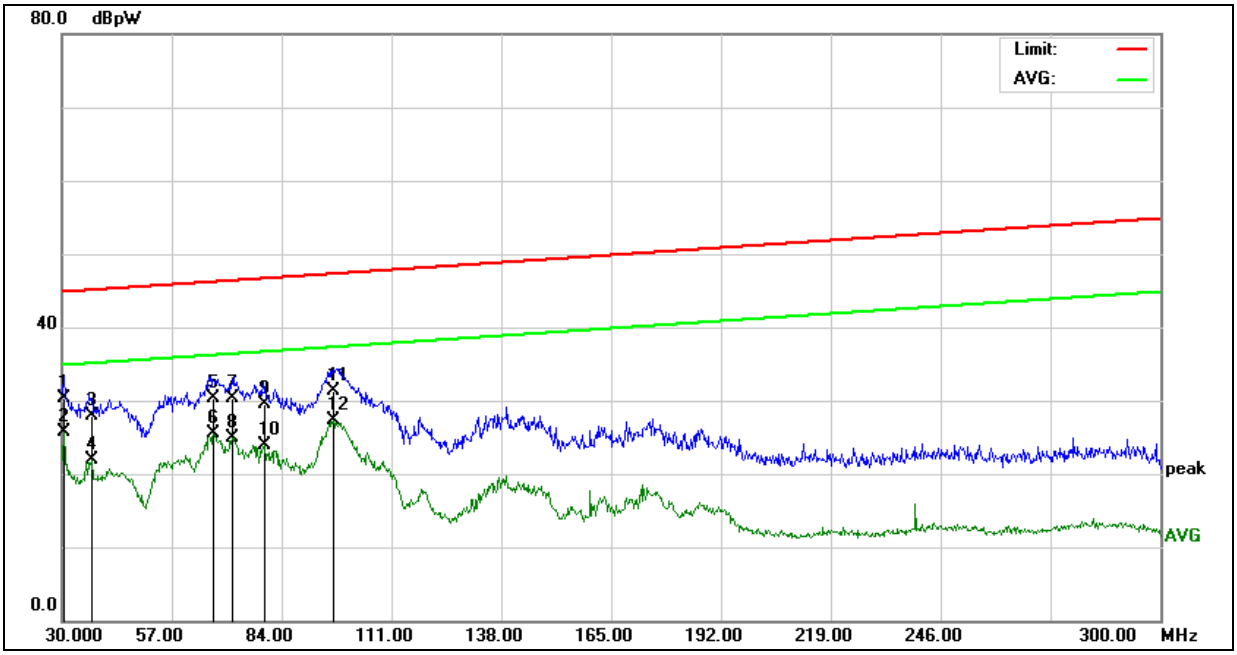
Site:	**843.3**		**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 Clamp(QP)**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL1202500EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:	**AC Line**		

No.	Frequency (MHz)	Reading Level(dBpW)	Factor (dB)	Measure-ment(dBpW)	Limit (dBpW)	Over (dB)	Detector	Comment
1	30.6000	3.49	25.74	29.23	45.02	-15.79	QP	
2 *	30.6000	-1.83	25.74	23.91	35.02	-11.11	AVG	
3	37.6000	2.54	24.85	27.39	45.28	-17.89	QP	
4	37.6000	-4.66	24.85	20.19	35.28	-15.09	AVG	
5	72.0000	3.01	24.48	27.49	46.56	-19.07	QP	
6	72.0000	-4.48	24.48	20.00	36.56	-16.56	AVG	
7	84.4000	4.87	23.37	28.24	47.01	-18.77	QP	
8	84.4000	-1.07	23.37	22.30	37.01	-14.71	AVG	
9	100.2400	1.84	23.18	25.02	47.60	-22.58	QP	
10	100.2400	-5.17	23.18	18.01	37.60	-19.59	AVG	
11	142.0399	2.37	22.40	24.77	49.15	-24.38	QP	
12	142.0399	-5.04	22.40	17.36	39.15	-21.79	AVG	



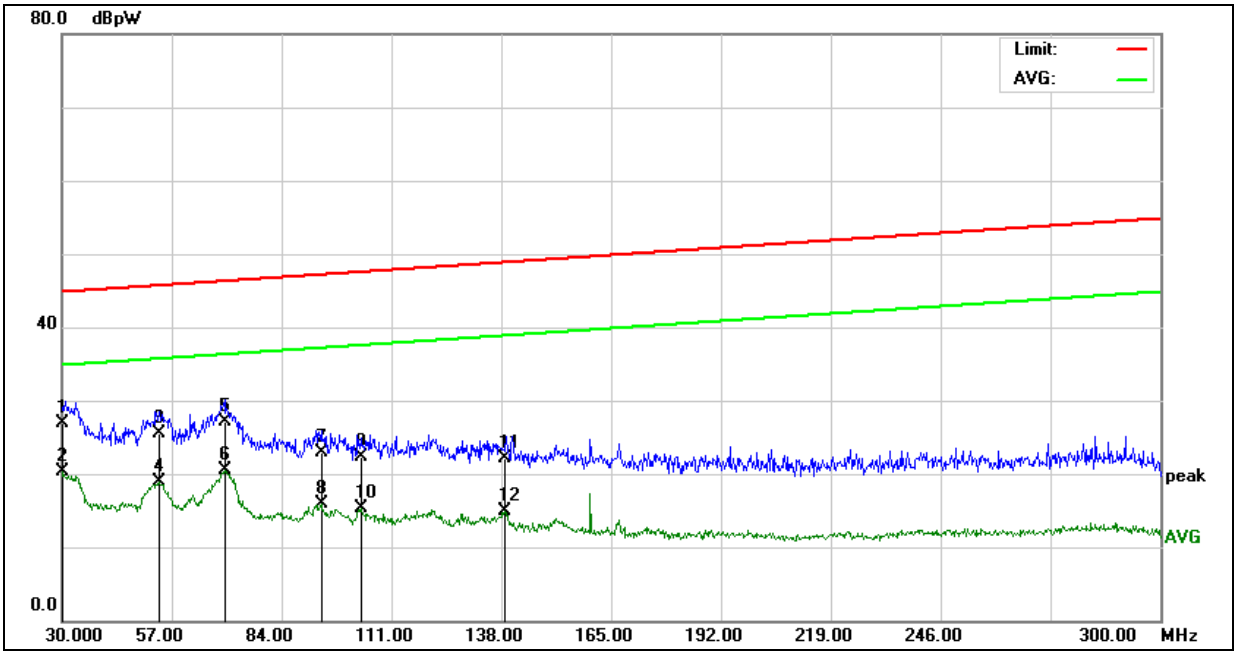
Site:	**843.3**		**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 Clamp(QP)**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL1202500EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:	**DC Line**		

No.	Frequency (MHz)	Reading Level(dBpW)	Factor (dB)	Measure-ment(dBpW)	Limit (dBpW)	Over (dB)	Detector	Comment
1	30.6399	2.04	25.73	27.77	45.02	-17.25	QP	
2 *	30.6399	-3.98	25.73	21.75	35.02	-13.27	AVG	
3	51.6799	0.04	23.99	24.03	45.80	-21.77	QP	
4	51.6799	-6.82	23.99	17.17	35.80	-18.63	AVG	
5	71.2400	0.64	24.57	25.21	46.53	-21.32	QP	
6	71.2400	-6.41	24.57	18.16	36.53	-18.37	AVG	
7	93.5600	-0.46	23.20	22.74	47.35	-24.61	QP	
8	93.5600	-6.61	23.20	16.59	37.35	-20.76	AVG	
9	105.3200	-0.54	23.35	22.81	47.79	-24.98	QP	
10	105.3200	-8.79	23.35	14.56	37.79	-23.23	AVG	
11	117.5600	-0.68	23.08	22.40	48.24	-25.84	QP	
12	117.5600	-9.60	23.08	13.48	38.24	-24.76	AVG	



Site:	**843.3**		**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 Clamp(QP)**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL3600830EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:	**AC Line**		

No.	Frequency (MHz)	Reading Level(dBpW)	Factor (dB)	Measure-ment(dBpW)	Limit (dBpW)	Over (dB)	Detector	Comment
1	30.6000	4.57	25.74	30.31	45.02	-14.71	QP	
2 *	30.6000	-0.02	25.74	25.72	35.02	-9.30	AVG	
3	37.3600	2.96	24.88	27.84	45.27	-17.43	QP	
4	37.3600	-2.98	24.88	21.90	35.27	-13.37	AVG	
5	67.4000	5.66	24.61	30.27	46.39	-16.12	QP	
6	67.4000	0.86	24.61	25.47	36.39	-10.92	AVG	
7	71.9200	5.80	24.49	30.29	46.55	-16.26	QP	
8	71.9200	0.44	24.49	24.93	36.55	-11.62	AVG	
9	79.8399	6.05	23.49	29.54	46.85	-17.31	QP	
10	79.8399	0.40	23.49	23.89	36.85	-12.96	AVG	
11	96.9200	8.21	23.19	31.40	47.48	-16.08	QP	
12	96.9200	4.20	23.19	27.39	37.48	-10.09	AVG	



Site:	**843.3**		**Temperature(C):22.6(C)**
Limit:	**EN 55014-1 Clamp(QP)**		**Humidity(%):54.8%**
EUT:	**AC/DC ADAPTOR**	**Test Time:**	**2020-12-02**
M/N.:	**ZL-024WL3600830EU01**	**Power Rating:**	**AC 230V/50Hz**
Mode:	**Full Load**	**Test Engineer:**	**Duke**
Note:	**DC Line**		

No.	Frequency (MHz)	Reading Level(dBpW)	Factor (dB)	Measure-ment(dBpW)	Limit (dBpW)	Over (dB)	Detector	Comment
1	30.0000	1.00	25.82	26.82	45.00	-18.18	QP	
2 *	30.0000	-5.44	25.82	20.38	35.00	-14.62	AVG	
3	53.7999	1.49	24.06	25.55	45.88	-20.33	QP	
4	53.7999	-5.17	24.06	18.89	35.88	-16.99	AVG	
5	70.1600	2.38	24.71	27.09	46.49	-19.40	QP	
6	70.1600	-4.18	24.71	20.53	36.49	-15.96	AVG	
7	93.8000	-0.22	23.20	22.98	47.36	-24.38	QP	
8	93.8000	-7.26	23.20	15.94	37.36	-21.42	AVG	
9	103.4400	-1.02	23.28	22.26	47.72	-25.46	QP	
10	103.4400	-8.05	23.28	15.23	37.72	-22.49	AVG	
11	139.0399	-0.34	22.53	22.19	49.04	-26.85	QP	
12	139.0399	-7.55	22.53	14.98	39.04	-24.06	AVG	

3.3 HARMONICS CURRENT MEASUREMENT

3.3.1 LIMITS OF HARMONICS CURRENT MEASUREMENT

Table 1 – Limits for Class A equipment

Harmonic order n	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
$15 \le n \le 39$	$0,15 \frac{15}{n}$
Even harmonics	
2	1,08
4	0,43
6	0,30
$8 \le n \le 40$	$0,23 \frac{8}{n}$

Table 2 – Limits for Class C equipment

Harmonic order n	Maximum permissible harmonic currrent expressed as a percentage of the input current at the fundamental frequency %
2	2
3	$30 \cdot \lambda$ *
5	10
7	7
9	5
$11 \le n \le 39$ (odd harmonics only)	3
* λ is the circuit power factor	

Table 3 – Limits for Class D equipment

Harmonic order n	Maximum permissible harmonic current per watt mA/W	Maximum permissible harmonic current A
3	3,4	2,30
5	1,9	1,14
7	1,0	0,77
9	0,5	0,40
11	0,35	0,33
$13 \le n \le 39$ (odd harmonics only)	$\frac{3,85}{n}$	See Table 1

3.3.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Harmonic Analyzer	EMC PARTNER	Harmonics 1000-1P 230V	0241	2021-05-23

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

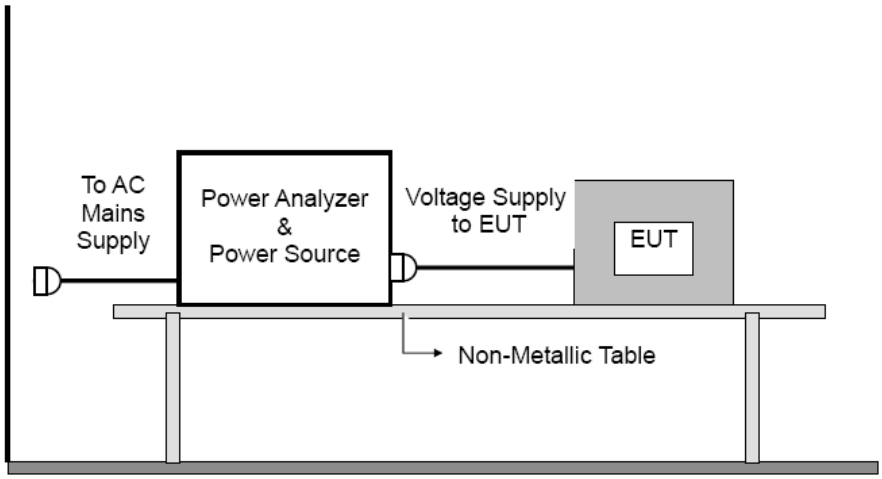
3.3.3 TEST PROCEDURE

a. Test was performed according to the procedures specified in Clause 5.0 of IEC555-2 and/or Sub-clause 6.2 of IEC/EN 61000-3-2 depend on which standard adopted for compliance measurement.
b. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.
c. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3.4 DEVIATION FROM TEST STANDARD

No deviation

3.3.5 TEST SETUP



3.3.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 3.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.7 TEST RESULTS

The power consumption is less than 75W, so no limit is applicable.

3.4 VOLTAGE FLUCTUATION AND FLICKS MEASUREMENT

3.4.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKSMEASUREMENT

Tests	Limits		Descriptions
	IEC555-3	IEC/EN 61000-3-2	
Pst	≤ 1.0, Tp= 10 min.	≤ 1.0, Tp= 10 min.	Short Term Flicker Indicator
Plt	N/A	≤ 0.65, Tp=2 hr.	Long Term Flicker Indicator
dc	≤ 3 %	≤ 3.3 %	Relative Steady-State V-Chang
dmax	≤ 4 %	≤ 4 %	Maximum Relative V-change
d (t)	N/A	≤ 3.3% for > 500 ms	Relative V-change characteristic

3.4.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Fliker Analyzer	EMC PARTNER	Harmonics 1000-1P 230V	0241	2021-05-23

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

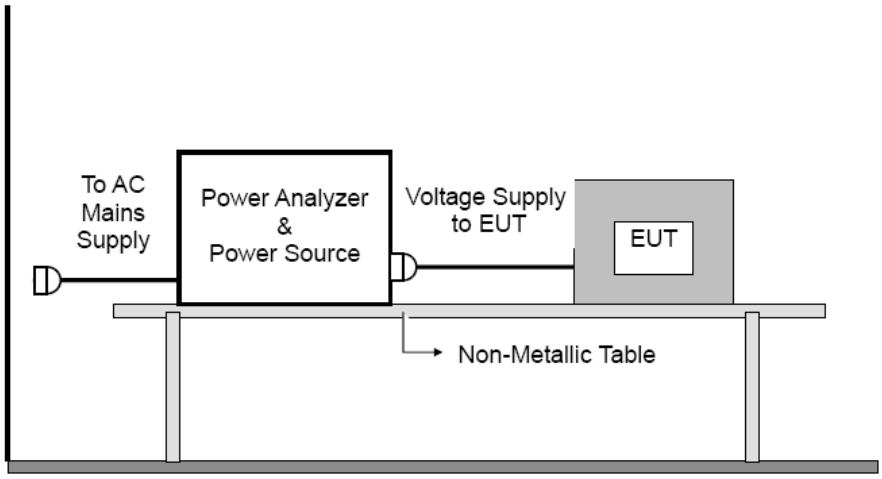
3.4.3 TEST PROCEDURE

a. Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.
b. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.
c. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.4.4 DEVIATION FROM TEST STANDARD

No deviation

3.4.5 TEST SETUP

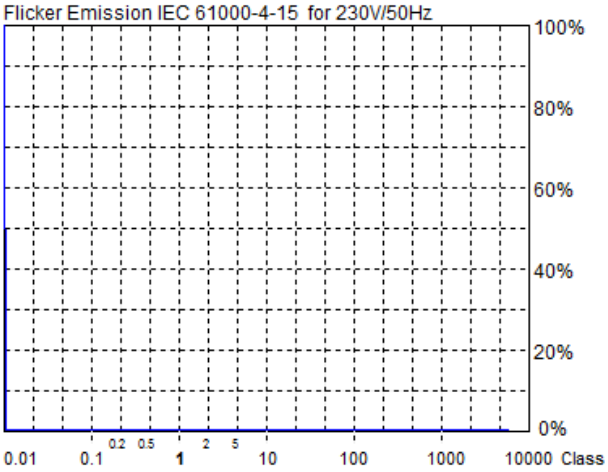


3.4.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 3.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

3.4.7 TEST RESULTS

EUT：	AC/DC ADAPTOR	Model No. ：	ZL-024WL1202500EU01
Temperature：	24℃	Relative Humidity：	56 %
Pressure：	1009 hPa	Test Power ：	AC 230V/50Hz
Test Mode ：	Full Load		



Actual Flicker (Fli):	**0.00**
Short-term Flicker (Pst):	**0.07**
Limit (Pst):	1.00
Long-term Flicker (Plt):	**0.07**
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	**0.00%**
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	**0.02%**
Limit (dc):	3.30%
Tmax 3.30% (dt):	**0.00ms**
Limit (dt>Lim):	200ms

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

Urms =	230.1	V	P =	32.44	W
Irms =	0.354	A	pf =	0.398	

Range:	2 A
V-nom:	230 V
TestTime:	10 min (100%)

adapter

Test completed, Result: PASSED

HAR-1000 EMC-Partner

```
Urms = 230.1V  Freq = 49.974  Range:  2 A
Irms = 0.354A  Ipk  = 1.721A  cf    = 4.854
P    = 32.44W  S    = 81.57VA pf    = 0.398

Test - Time :  1 x 10min = 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: 200ms

Test completed, Result: PASSED

Plt  = 0.072
```

4. IMMUNITY TEST

4.1 STANDARD COMPLIANCE/SERVRITY LEVEL/CRITERIA

Tests Standard No.	TEST SPECIFICATION Level	Test Mode Test Ports	Perform. Criteria	Remark
1. ESD IEC/EN 61000-4-2	8KV air discharge 4KV contact discharge	Direct Mode	B	PASS
	4KV HCP discharge 4KV VCP discharge	Indirect Mode	B	PASS
2. RS IEC/EN 61000-4-3	80 MHz to 1000 MHz 3V/m(rms), 1 KHz, 80%, AM modulated	Enclosure	A	N/A
3. EFT/Burst IEC/EN 61000-4-4	1.0KV(peak) 5/50ns Tr/Th 5KHz Repetition Freq.	AC Power Port	B	PASS
	0.5 KV(peak) 5/50ns Tr/Th 5KHz Repetition Freq.	CTL/Signal Data Line Port	B	N/A
4. Surges IEC/EN 61000-4-5	1 KV(5P/5N) 1.2/50(8/20) Tr/Th us	L-N	B	PASS
	2 KV(5P/5N) 1.2/50(8/20) Tr/Th us	L-PE N-PE	B	N/A
5 Injected Current IEC/EN 61000-4-6	0.15 MHz to 230 MHz 1V(rms), 1KHz 80%, AM Modulated 150Ω source impedance	CTL/Signal Port	A	N/A
	0.15 MHz to 230 MHz 3V(rms), 1KHz 80%, AM Modulated 150Ω source impedance	AC Power Port	A	PASS
	0.15 MHz to230 MHz 1V(rms), 1KHz 80%, AM Modulated 150Ω source impedance	DC Power Port	A	N/A

6 Volt. Interruptions Volt. Dips IEC/EN 61000-4-11	Voltage Dips: AC Line 100/240V, 50Hz i) 30% reduction for 25 period, Performance Criterion C ii) 60% reduction for 10 period, Performance Criterion C Voltage Interruptions: 100% reduction for 0.5 period Performance Criterion C Voltage Dips: AC Line 100/240V, 60Hz i) 30% reduction for 30 period, Performance Criterion C ii) 60% reduction for 12 period, Performance Criterion C Voltage Interruptions: 100% reduction for 0.5 period Performance Criterion C	AC Power Port	C	PASS

* Remark:

(1) "N/A": denotes test is not applicable in this Test Report.

(2) Test Location: This test was carried out in EMS Test Location.

4.2 GENERAL PERFORMANCE CRITERIA

According to **EN55014-2** standard, the general performance criteria as following:

Criterion A	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 product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion B	After the test, the equipment shall continue to operate as intended without operator Intervention. No degradation of performance or loss of function is allowed, after the application of the phenomenon 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. During the test, degradation of performance is allowed. However, no change of operating state if stored data 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 equipment if used as intended.
Criterion 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. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

4.3 GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of **3.1.6** Unless otherwise a special operating condition is specified in the follows during the testing.

4.4 ESD TESTING

4.4.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Required Performance	B
Discharge Voltage:	Air Discharge: 2kV/4kV/8kV (Direct) Contact Discharge: 2kV/4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: 10 times at each test point Contact Discharge: 10 times at each test point
Discharge Mode:	Contact and Air
Discharge Period:	1 second minimum

4.4.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	ESD Simulator	Prima	ESD61002B	PR13012530	2021-05-23

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

4.4.3 TEST PROCEDURE

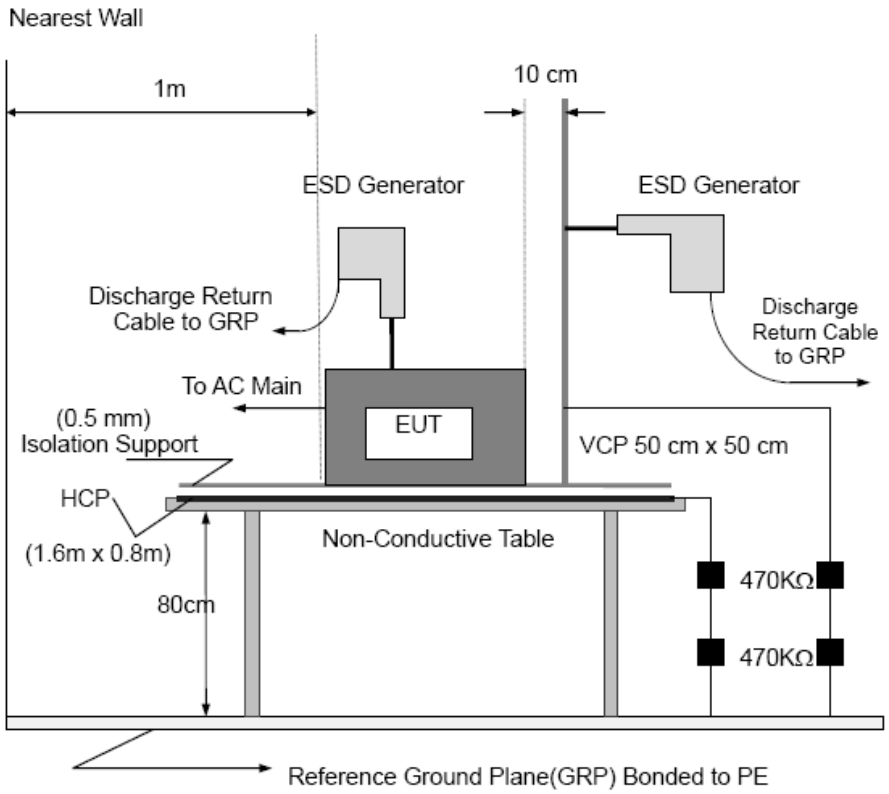
The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

a. Contact discharge was applied to conductive surfaces and coupling planes of the EUT.
   During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges.
   If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.
   Vertical Coupling Plane (VCP):
   The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.
   The four faces of the EUT will be performed with electrostatic discharge.
   Horizontal Coupling Plane (HCP):
   The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.
   The four faces of the EUT will be performed with electrostatic discharge.
b. Air discharges at insulation surfaces of the EUT.
   It was at least ten single discharges with positive and negative at the same selected point.
c. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC /EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC/EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

4.4.6 TEST RESULTS

Mode	Air Discharge								Contact Discharge							
	2KV		4KV		8KV		15KV		2KV		4KV		6KV		8KV	
Location	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
1	--	--	A	A	A	A	--	--	--	--	--	--	--	--	--	--
2	--	--	A	A	B	B	--	--	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--	A	A	A	A	--	--	--	--
4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8	--	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
9	--	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
Criteria	**B**								**B**							
Result	**B**								**A**							
Judgment	**PASS**								**PASS**							

Mode	HCP Discharge								VCP Discharge							
	2KV		4KV		6KV		8KV		2KV		4KV		6KV		8KV	
Location	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
1	-	--	A	A	--	--	--	--	-	--	A	A	--	--	--	--
2	--	--	A	A	--	--	--	--	--	--	A	A	--	--	--	--
3	--	--	A	A	-	--	--	--	--	--	A	A	-	--	--	--
4	-	--	A	A	--	--	--	--	-	--	A	A	--	--	--	--
Criteria	**B**								**B**							
Result	**A**								**A**							
Judgment	**PASS**								**PASS**							

Note:

1) P/N denotes the Positive/Negative polarity of the output voltage.
2) Test condition:
   Direct discharges: Minimum 20 times (Positive/Negative) at each point.
   Air discharges / Indirect (HCP/VCP): Minimum 20 times (Positive/Negative) at each point.
3) Test location(s) in which discharge (Air and contact discharge) to be described as following
4) The Indirect (HCP/VCP) discharges description of test point as following:
   1.left side 2.right side 3.front side 4.rear side
5) N/A - denotes test is not applicable in this test report
7) Criteria B: The EUT function loss during the test, but self-recoverable after the test.

Test location description:

No	Description		No	Description	No	Description
1	Slot	4 points	4			
2	DC Output	1 point	5			
3	DC Output	1 point	6			

4.5 RS TESTING

4.5.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-3
Required Performance	A
Frequency Range:	80 MHz - 1000 MHz
Field Strength:	3 V/m
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m
Antenna Height:	1.5 m
Dwell Time:	at least 3 seconds

4.5.2 MEASUREMENT INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Signal Generator	Aglilet	N5171B-50B	MY53050160	2021-10-11
Amplifier	A&R	150W1000M3	313157	2021-09-20
Amplifier	A&R	50SIG6M1	0342835	2021-09-20
Power Meter	Boonton	4232A	15102	2021-09-20
Isotropic Field Probe	A&R	FL7006	0342652	2021-10-11
Log-periodic Antenna	SCHWARZBECK	STLP 9128E	9128E-012	2021-06-16
Microwave log-periodic antenna	SCHWARZBECK	STLP 9149	9149.222	2021-12-12

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

4.5.3 TEST PROCEDURE

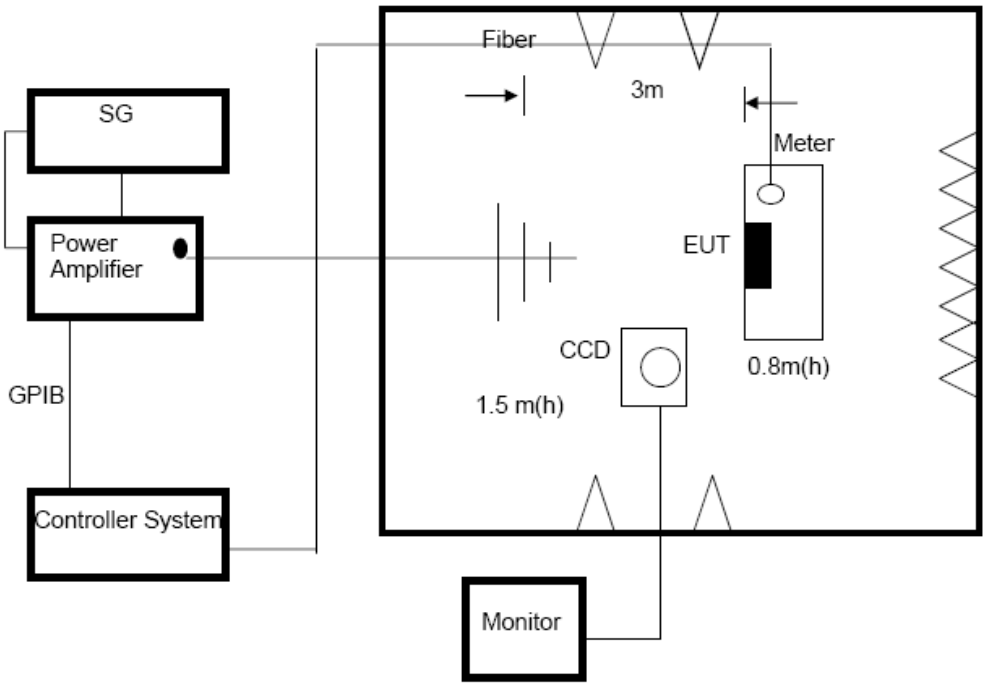
The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.
The testing distance from antenna to the EUT was 3 meters.
The other condition as following manner:

a. The field strength level was 3V/m.
b. The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
d. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

4.5.6 TEST RESULTS

This product belong to Catalog II equipment , so no applicable

4.6 EFT/BURST TESTING

4.6.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-4
Required Performance	B
Test Voltage:	Power Line：±0.5、1 kV
Polarity:	Positive & Negative
Impulse Frequency:	5 kHz
Impulse Wave shape :	5/50 ns
Burst Duration:	15 ms
Burst Period:	300 ms
Test Duration:	Not less than 1 min.

4.6.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Electrical Intelligent Transient Generator	Everfine	EMS61000-4B	G114921CA1341115	2021-05-23

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

4.6.3 TEST PROCEDURE

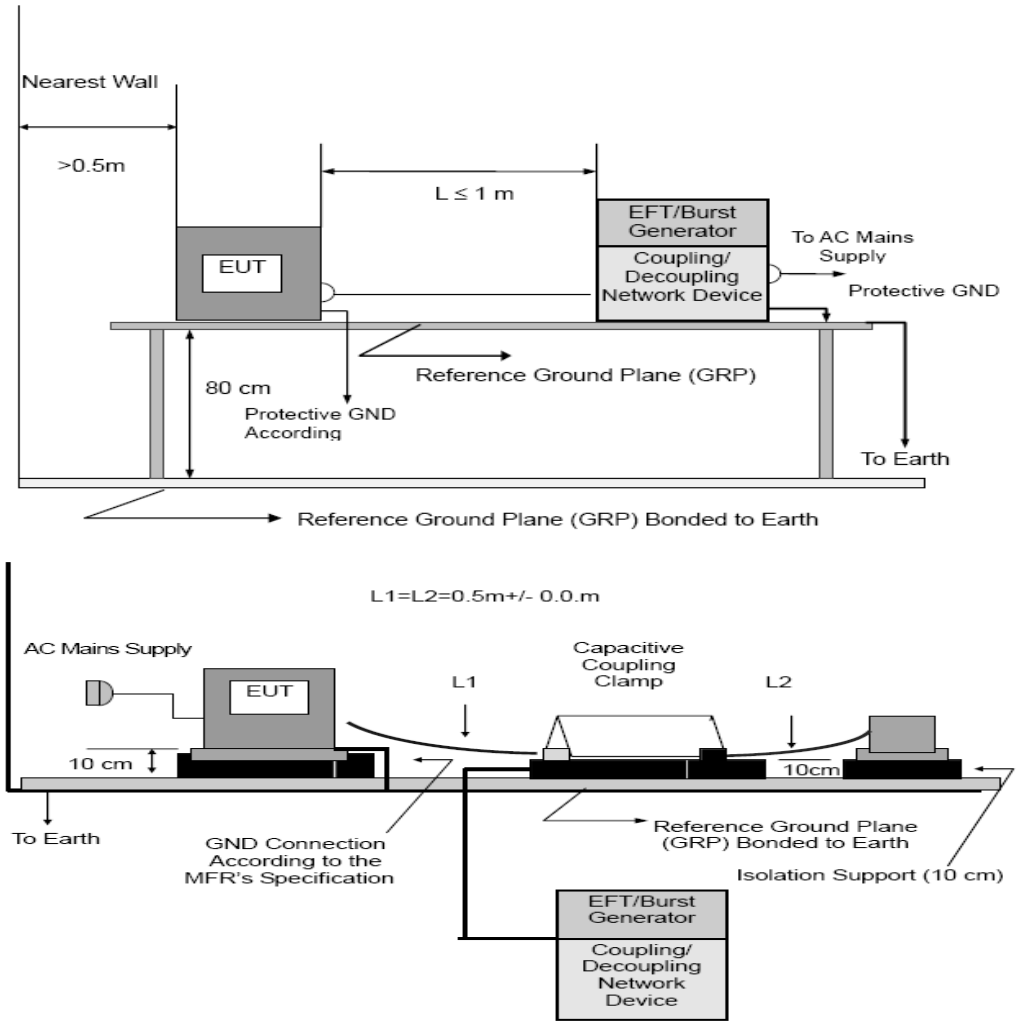
The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.
The other condition as following manner:

a. The length of power cord between the coupling device and the EUT should not exceed 1 meter.
b. Both positive and negative polarity discharges were applied.
c. The duration time of each test sequential was 1 minute
d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table (0.8m high) standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system. A minimum distance of 0.5m was provided between the EUT and the walls of the laboratory or any other metallic structure.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-4 and its cables, were isolated from the Ground Reference Plane by an insulating support that is 0.1-meter thick. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system.

4.6.6 TEST RESULTS

Mode	AC Power Line		DC Power Line		Signal/Control Line	
Test Level	1KV		0.5KV		0.5KV	
Port(s)	Polarity	Results	Polarity	Results	Polarity	Results
Line (L)	P	A	P		P	
	N	A	N		N	
Neutral (N)	P	A	P		P	
	N	A	N		N	
Ground (PE)	P		P		P	
	N		N		N	
DC Power Line	P		P		P	
	N		N		N	
Signal/Control Line	P		P		P	
	N		N		N	
Criteria	**B**		**B**		**B**	
Result	**A**		**--**		**--**	
Judgment	**PASS**		**N/A**		**N/A**	

1) P/N denotes the Positive/Negative polarity of the output voltage.

2) N/A - denotes test is not applicable in this test report

3) Criteria A: There was no change operated with initial operating during the test.

4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.

5) Criteria C: The system shut down during the test.

4.7 SURGE TESTING

4.7.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-5
Required Performance	B
Wave-Shape:	Combination Wave 1.2/50 us Open Circuit Voltage 8 /20 us Short Circuit Current
Test Voltage:	Power Line：0.5 kV, 1 kV, 2 kV
Surge Input/Output:	L-N, L-PE, N-PE
Generator Source:	2 ohm between networks
Impedance:	12 ohm between network and ground
Polarity:	Positive/Negative
Phase Angle:	90/270
Pulse Repetition Rate:	1 time / min. (maximum)
Number of Tests:	5 positive at 90° and 5 negative at 270°

4.7.2 MEASUREMENT INSTRUMENTS

Item	Instr.Code	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	AN-E054	Immunity Teat System	EMC PARTNER	IMU3000 S-T	105684-2060	2021-05-23
2	AN-E055	Signal line coupled decoupling network	EMC PARTNER	CDN-UTP8 ED3	1558	2021-05-23

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

4.7.3 TEST PROCEDURE

a. For EUT:

The surge is to be applied to the EUT terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks shall be 2meters in length (or shorter).

b. For test applied to unshielded unsymmetrically operated interconnection lines of EUT:

The surge is applied to the lines via the capacitive coupling. The coupling /decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

c. For test applied to unshielded symmetrically operated interconnection /telecommunication lines of EUT:

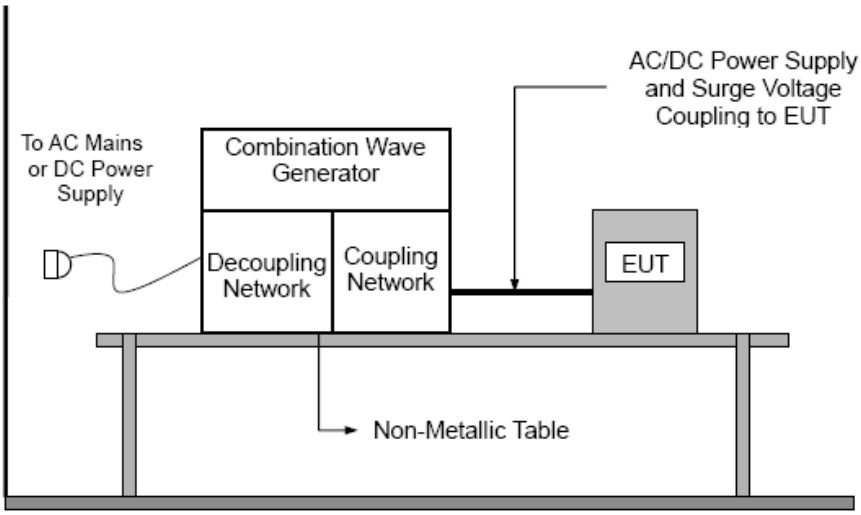
The surge is applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor cannot be specified. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



4.7.6 TEST RESULTS

Wave Form / EUT Ports Tested	1.2/50(8/20) us						Criteria	Judgment
	Polarity	Phase	Voltage					
			0.5kV	1kV	1.5kV	2kV		
L - N	+/-	0°					B	PASS
	+	90°		B				
	+/-	180°						
	-	270°		B				
L - PE	+/-	0°					B	N/A
	+/-	90°						
	+/-	180°						
	+/-	270°						
N - PE	+/-	0°					B	N/A
	+/-	90°						
	+/-	180°						
	+/-	270°						

Note:

1) N/A - denotes test is not applicable in this Test Report

4.8 INJECTION CURRENT TESTING

4.8.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-6
Required Performance	A
Frequency Range:	0.15 MHz - 230 MHz
Field Strength:	1 Vr.m.s. , 3 Vr.m.s.
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Dwell Time:	at least 3 seconds

4.8.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	CONDUCTED IMMUNITY TEST SYSTEM	FRANKONIA	CIT-10-75	102D1253	2021-06-16
2	CDN	FRANKONIA	CDN M2+M3	A3011059	2021-09-21
4	Attenuator	BIRD	DAM75W (6db)	29750	2021-09-21

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

4.8.3 TEST PROCEDURE

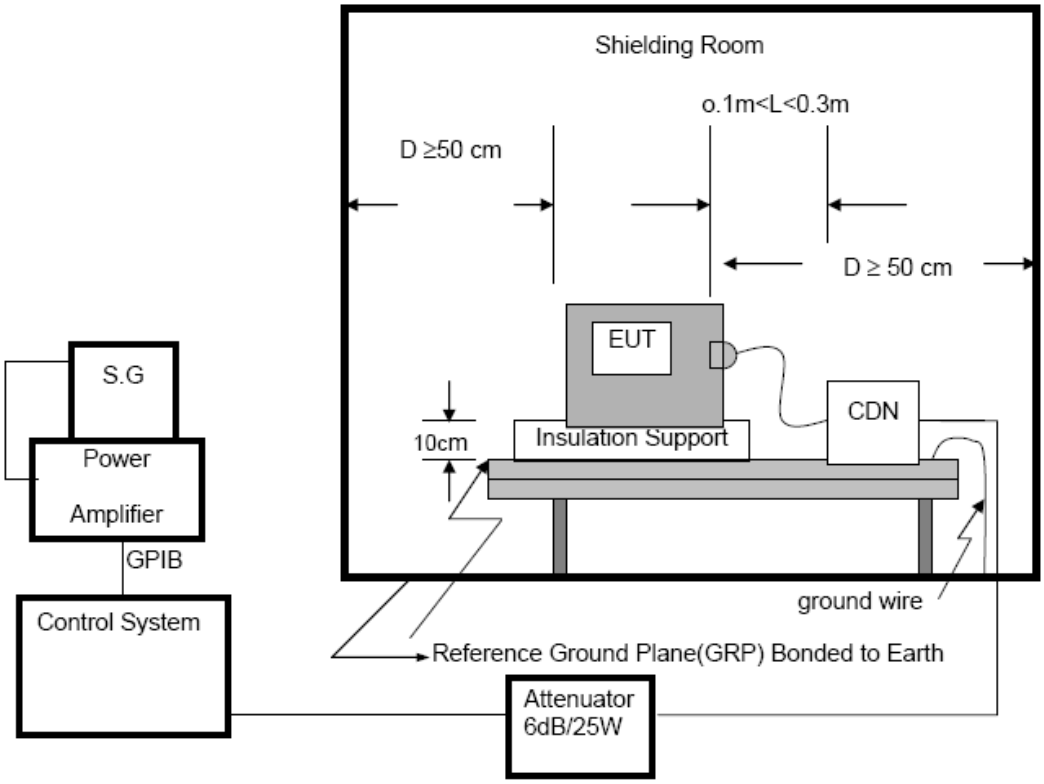
The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.
The other condition as following manner:

a. The field strength level was 3V.
b. The frequency range is swept from 150 KHz to 230 MHz, with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

4.8.5 TEST SETUP



For the actual test configuration, please refer to the related Item –EUT Test Photos.

NOTE:

FLOOR-STANDING EQUIPMENT

The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

4.8.6 TEST RESULTS

Test Ports (Mode)	Freq. Range MHz)	Field Strength	Perform. Criteria	Results	Judgment
Input/ Output AC. Power Port	0.15 ---230	3V(rms) AM Modulated 1000Hz, 80%	**A**	**A**	**PASS**
Input/ Output DC. Power Port	0.15 --- 230	1V(rms) AM Modulated 1000Hz, 80%	**A**	**--**	**N/A See note 3)**
Signal Line	0.15 --- 230		**A**	**--**	**N/A See note 2)**
control lines	0.15 --- 230		**A**	**--**	**N/A See note 2)**

Note:

1) N/A - denotes test is not applicable in this Test Report.
2) Applicable only to ports interfacing with cables whose total length may exceed 3m according to the manufacturer's function specification.
3) Not applicable to battery operated appliances that cannot be connected to the mains while in use. Not applicable to input ports intended for connection to a battery or a rechargeable battery which shall be removed or disconnected from the apparatus for recharging. Apparatus with a d.c. power input port intended for use with an a.c. − d.c. power adaptor shall be tested on the a.c. power input of the a.c.- d.c. power adaptor specified by the manufacturer or, where none is so specified, using a typical a.c. − d.c. power adaptor. For d.c. input and output ports intended to be connected permanently, the test is only applicable to cables longer than 3 m.

4.9 VOLTAGE INTERRUPTION/DIPS TESTING

4.9.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-11
Required Performance**:**	C (For 30% Voltage Dips) C (For 60% Voltage Dips) C (For 100% Voltage Interruptions)
Test Duration Time:	Minimum three test events in sequence
Interval between Event:	Minimum ten seconds
Phase Angle:	0°
Test Cycle:	3 times

4.9.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Voltage Dips And Interruptions Generator	Everfine	EMS61000-11K	G113317CA8341117	2021-05-23

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

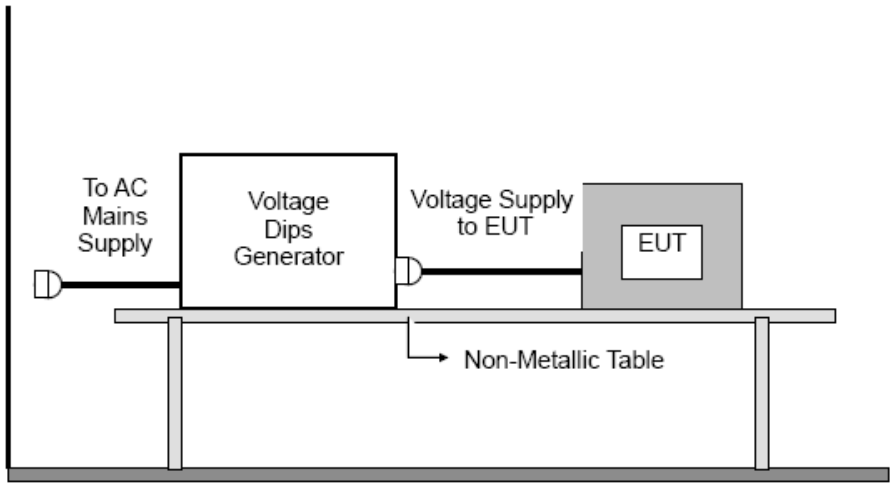
4.9.3 TEST PROCEDURE

The EUT shall be tested for each selected combination of test levels and duration with a sequence of three dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

4.9.4 DEVIATION FROM TEST STANDARD

No deviation

4.9.5 TEST SETUP



For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.9.6 TEST RESULTS

Voltage Reduction	Periods	Perform Criteria	Results	Judgment
AC 100/240V, 50Hz				
Voltage dip 30%	25	C	B	PASS
Voltage dip 60%	10	C	B	PASS
Interruption 100%	0.5	C	A	PASS
AC 100/240V, 60Hz				
Voltage dip 30%	30	C	B	PASS
Voltage dip 60%	10	C	B	PASS
Interruption 100%	0.5	C	A	PASS

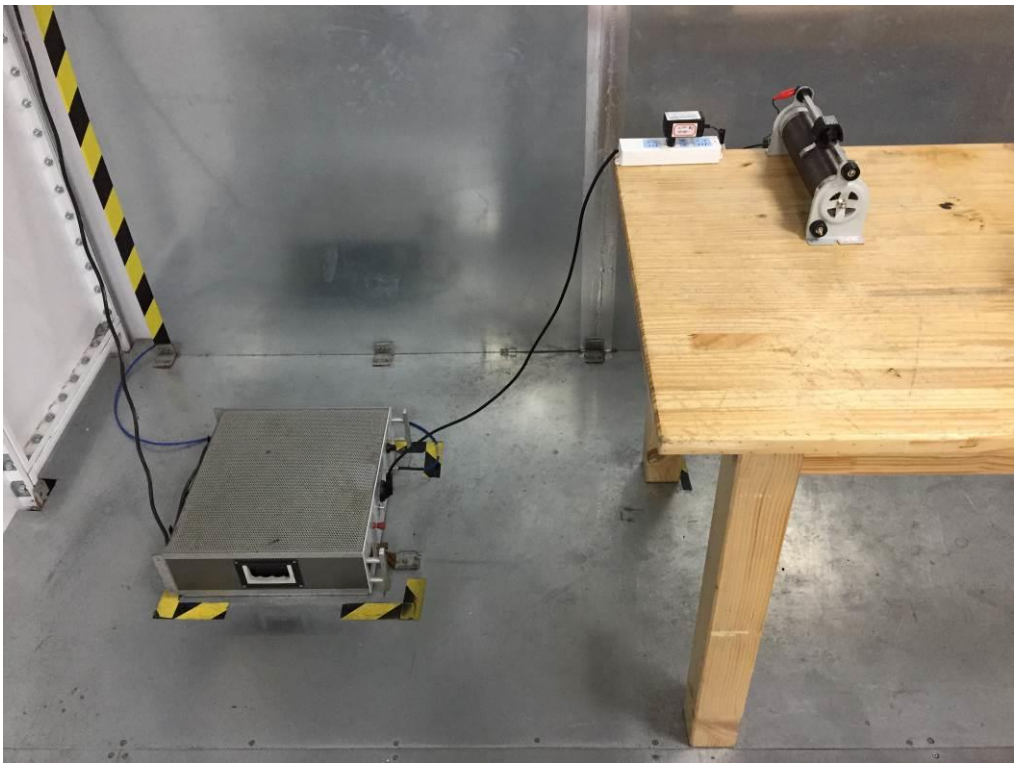
Note:

1) N/A - denotes test is not applicable in this test report.

5. ATTACHMENT

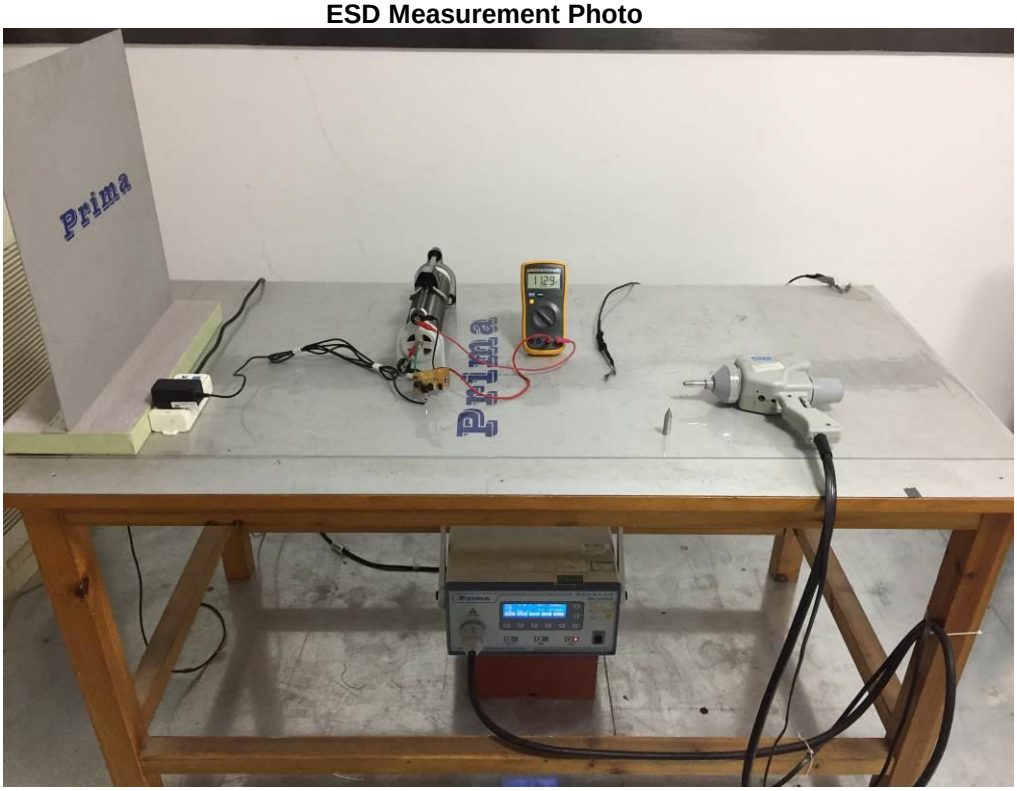
5.1 EUT TEST PHOTO

Conducted Emission Measurement Photo

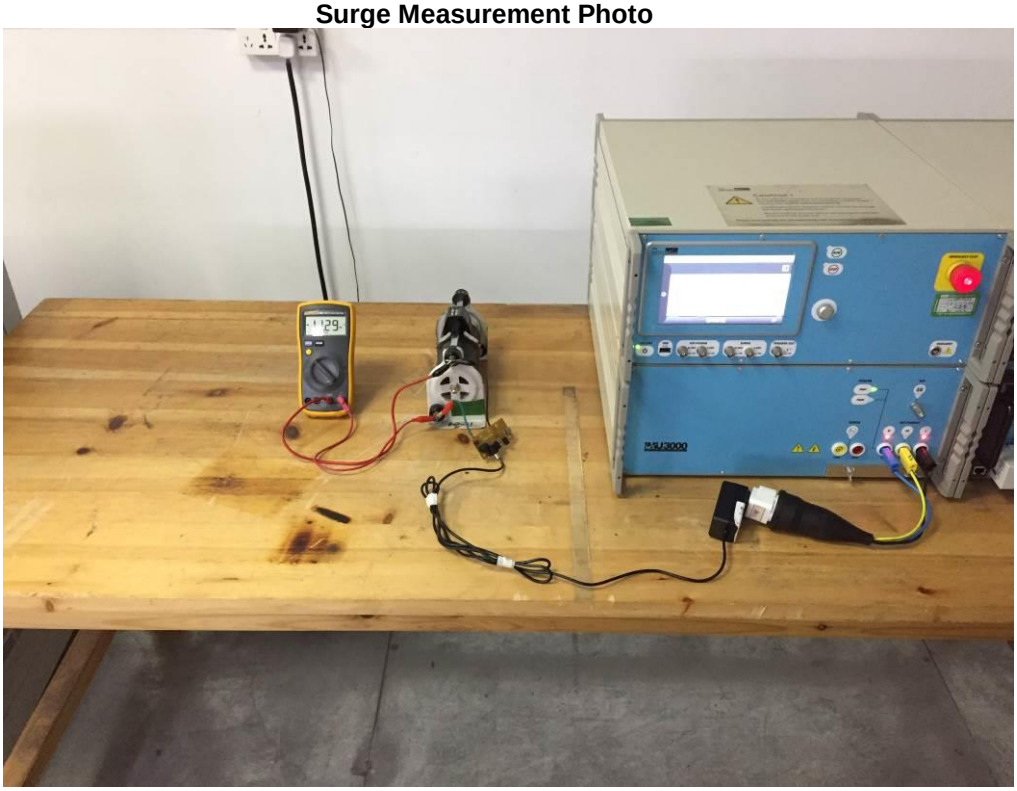


Disturbance Power Measurement Photo

ESD Measurement Photo

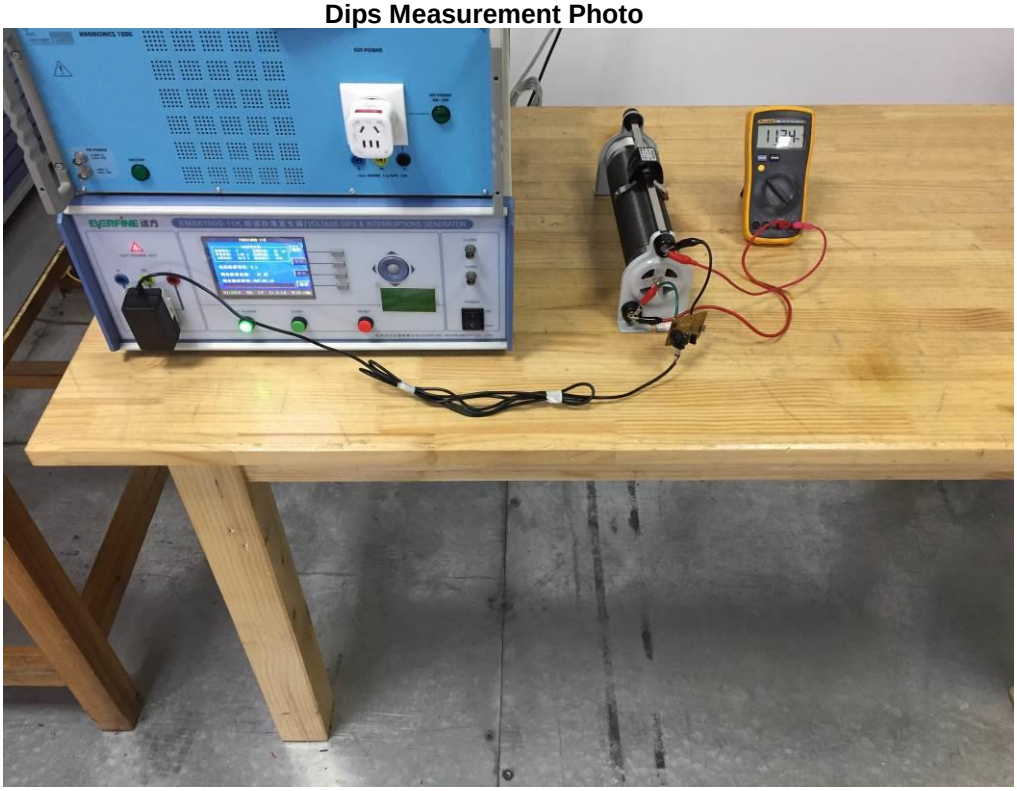


Surge Measurement Photo

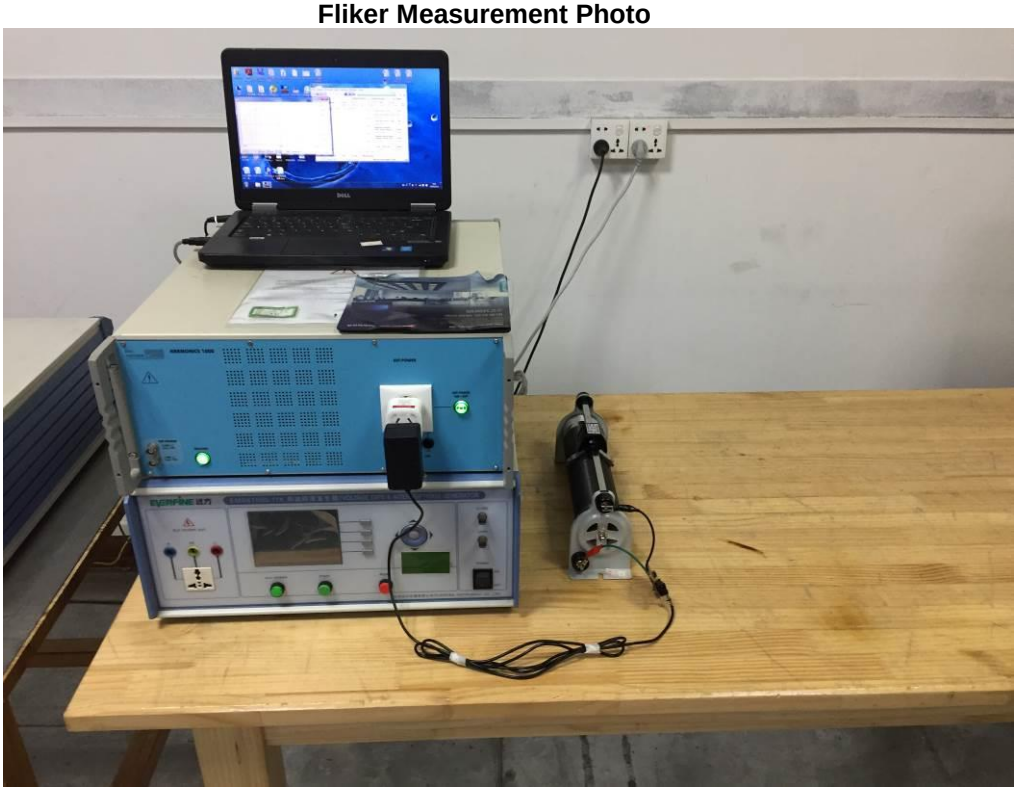


EFT Measurement Photo

Dips Measurement Photo



Fliker Measurement Photo



5.2 EUT PHOTO

Figure 1. Overall view of unit for model ZL-024WLxxxyyyyEU01

Figure 2. Overall view of unit for model ZL-024WLxxxyyyyEU01

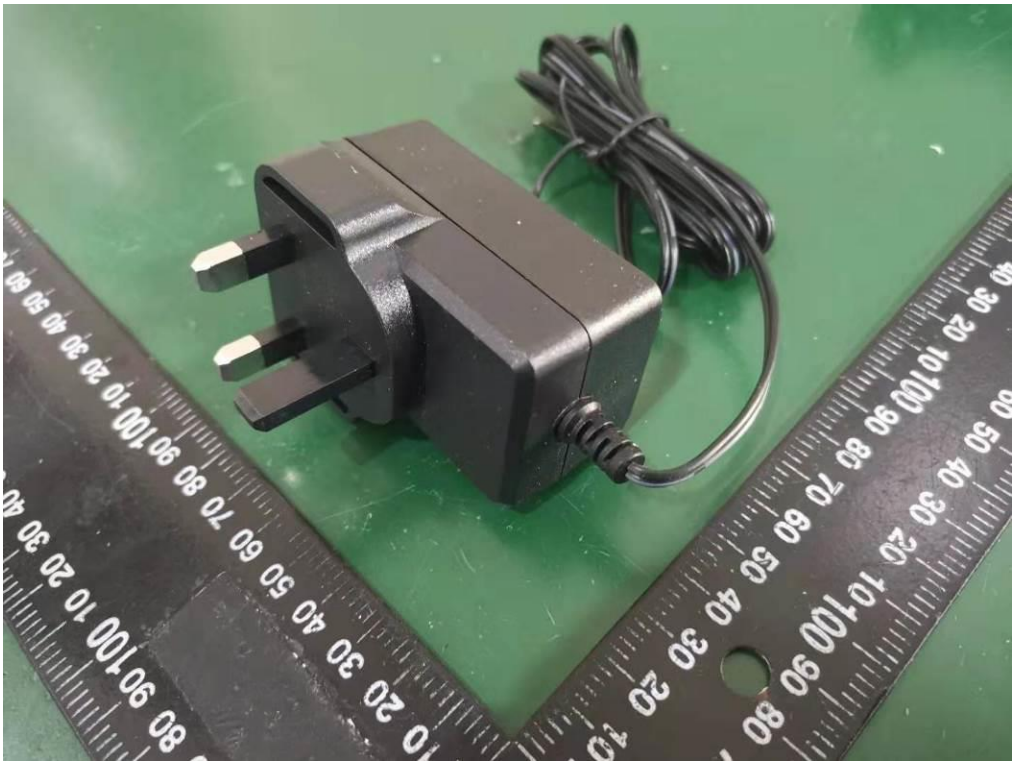


Figure 3. Overall view of unit for model ZL-024WLxxxyyyyUK01

Figure 4. Overall view of unit for model ZL-024WLxxxyyyyUK01

Figure 5. Overall view of unit for model ZL-024WLxxxyyyyXX02

Figure 6. Overall view of unit for model ZL-024WLxxxyyyyXX02

Figure 7. Overall view of unit for model ZL-024WLxxxyyyyXX02

Figure 8. Overall view of unit for model ZL-024WLxxxyyyyXX02

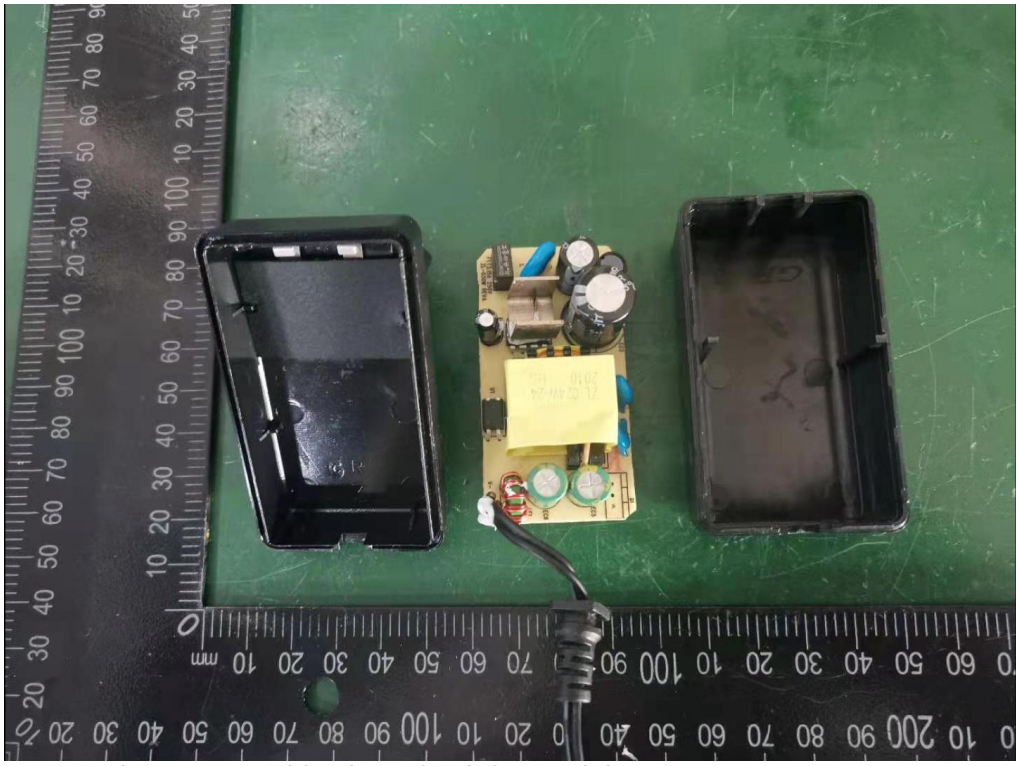


Figure 9. Inside view of unit for model ZL-024WLxxxyyyyEU01

Figure 10. Inside view of unit for model ZL-024WLxxxyyyyUK01

Figure 11. Inside view of unit for model ZL-024WLxxxyyyyXX02

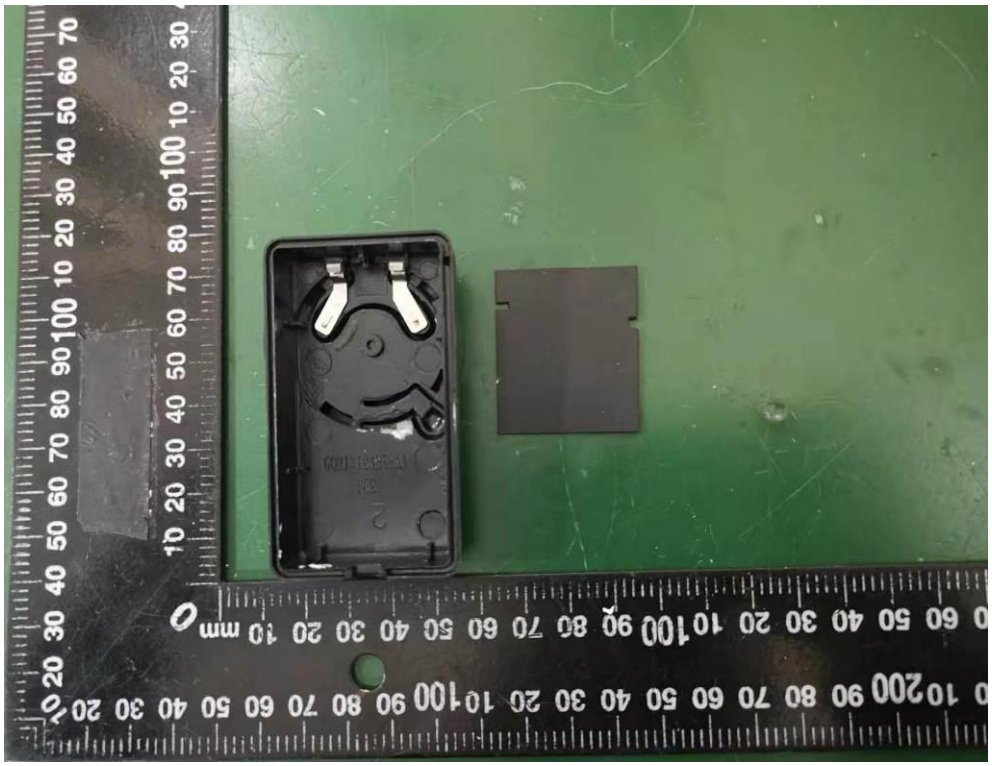


Figure 12. Inside view of unit for model ZL-024WLxxxyyyyXX02

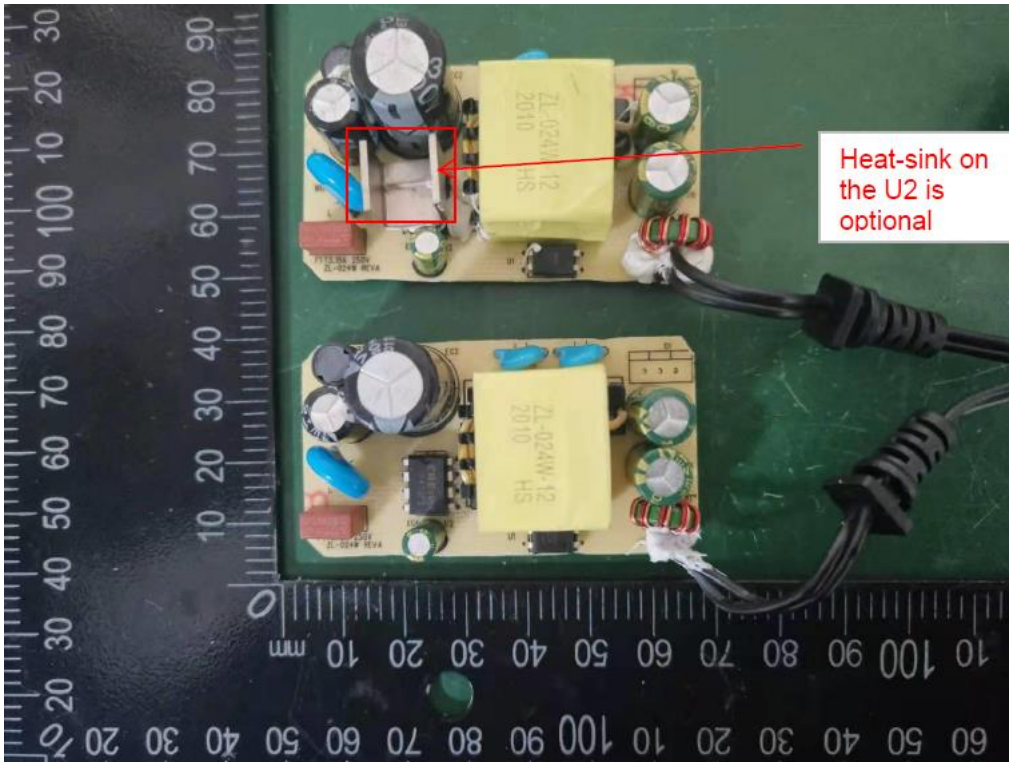


Figure 13. Top view of PCB

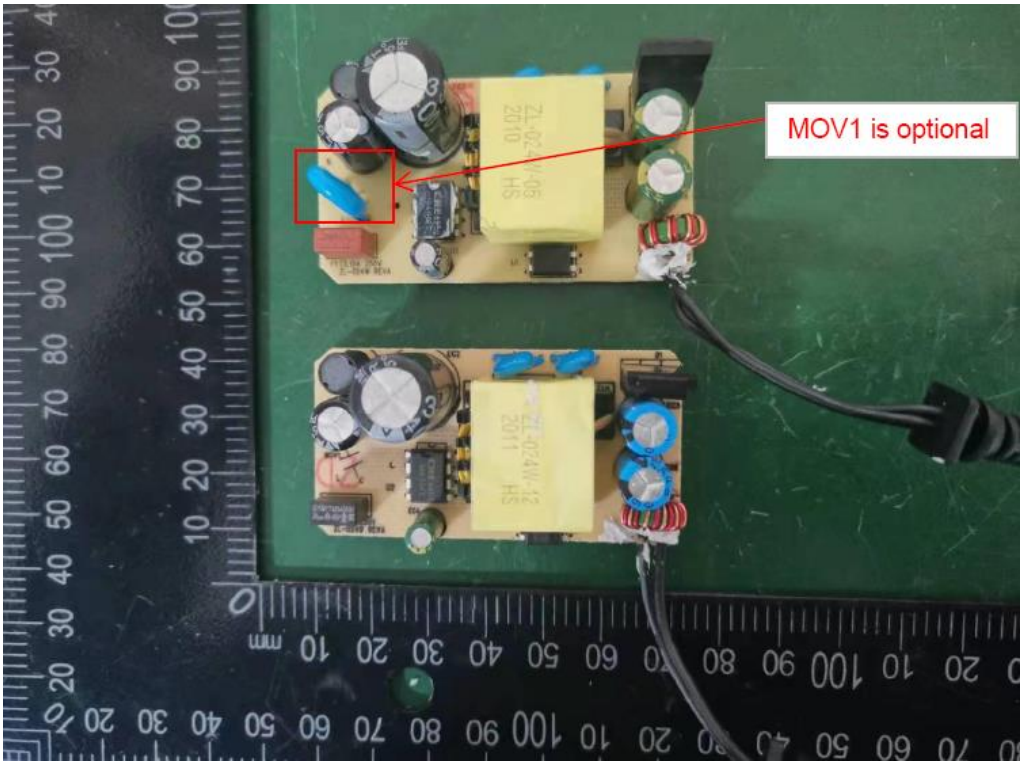


Figure 14. Top view of PCB

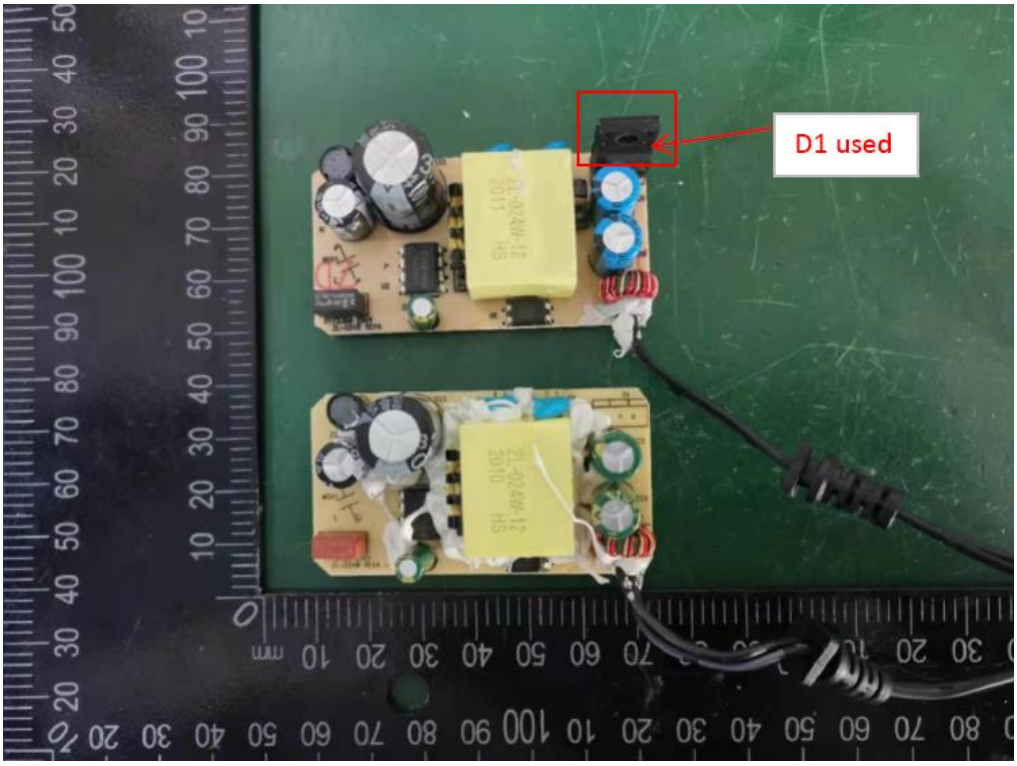


Figure 15. Top view of PCB

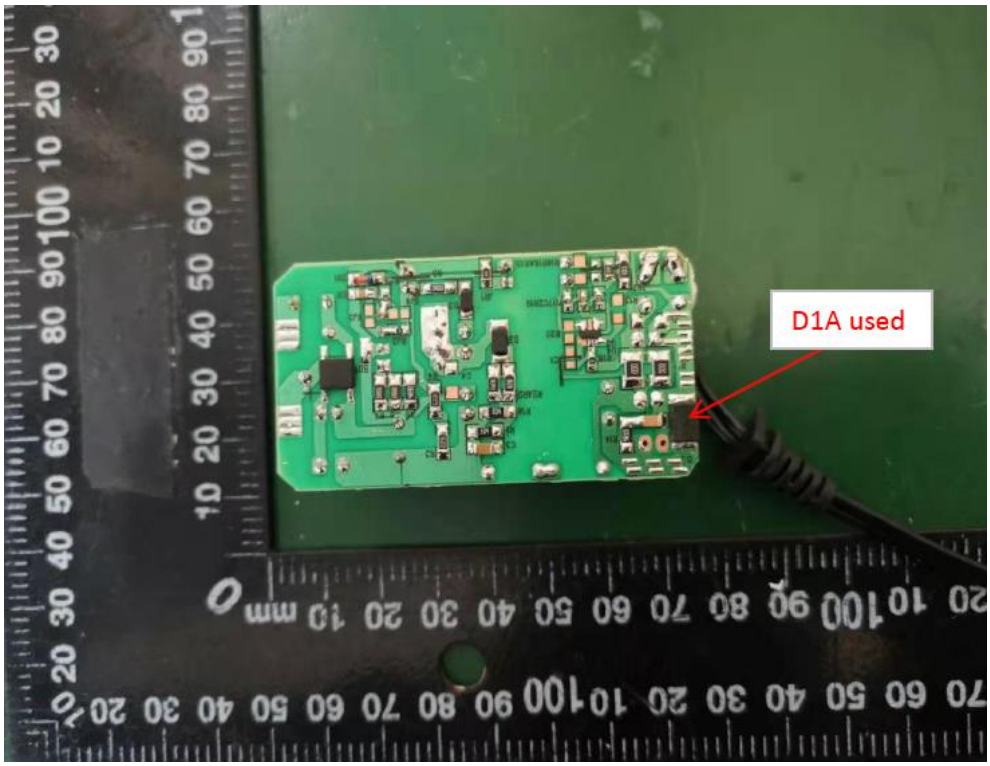


Figure 16. Bottom view of PCB

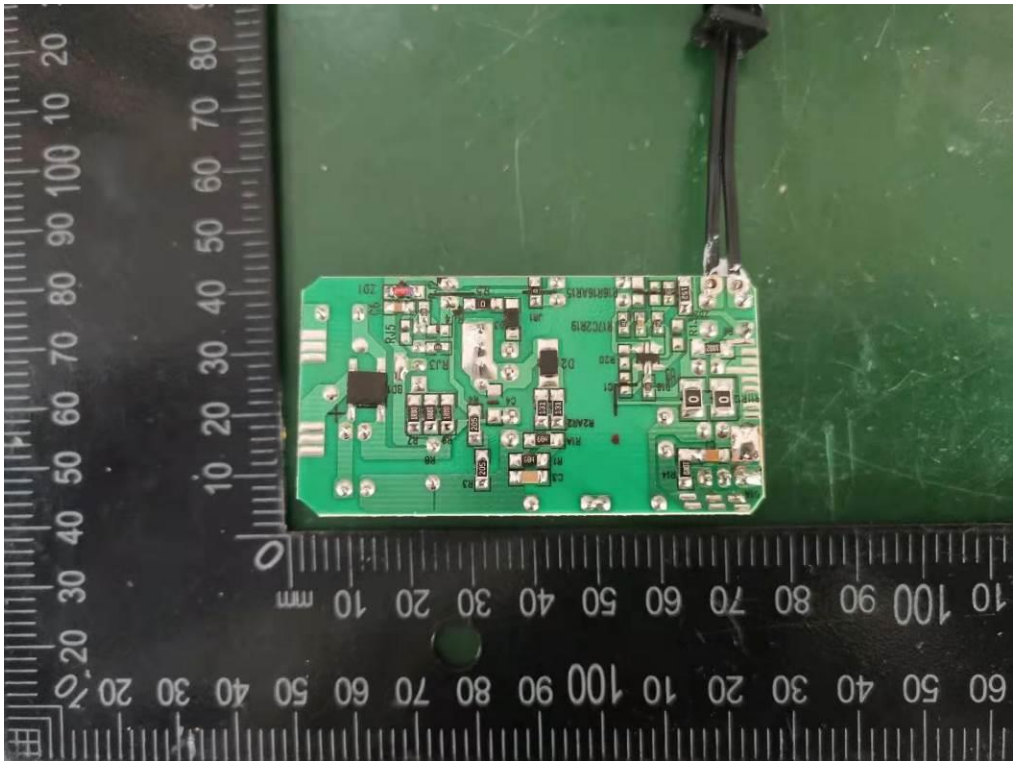


Figure 17. Bottom view of PCB

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