

CE TEST REPORT

For

RING LIGHT

Model: RL-18

(Other models please see the page 3)

Prepared for: Shenzhen Fresh Photographic Equipment Co., Ltd.
No. 26, Tongqing Road, Longgang District, Shenzhen of China

Prepared by: Shenzhen NCT Testing Technology Co., Ltd
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Report Number: NCT18017415E1-1

Date of Test: Apr. 25, 2018~May.03, 2018

Date of Issue: May.07, 2018

Tested By: Beryl Zhao
Beryl Zhao

Reported By: Beryl Zhao
Beryl Zhao

Reviewed By: _____



The results detailed in this test report relate only to the specific sample(s) tested. It is the Application's responsibility to ensure that all production units are manufactured with equivalent EMC characteristics. This report is not to be reproduced except in full, without written approval from NCT Testing Technology.

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1.0 General Information

1.1 Client Information

Application:	Shenzhen Fresh Photographic Equipment Co., Ltd.
Address of Application:	No. 26, Tongqing Road, Longgang District, Shenzhen of China
Manufacturer:	Shenzhen Fresh Photographic Equipment Co., Ltd.
Address of Manufacturer:	No. 26, Tongqing Road, Longgang District, Shenzhen of China

1.2 General Description of E.U.T.

Product Name:	RING LIGHT
Model:	RL-18
Additional Model:	RL-18I, RL-20, RL-18II, RL-188, RL-448, RL-336, FE-480, FD-480, FS-480, FS-390, R-48B, R-40B, CY-R50L, YN128.
Trade Mark:	N/A
Power Supply:	Input: AC100-240V, 50/60Hz, 2.0A Output: 15V $\overline{\text{---}}$ 5.0A

Model Difference:	All models are the same except for model name, led quantity and colour.
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1.3 Test Facility:

Name of Test Lab:	Shenzhen NCT Testing Technology Co., Ltd
Address of Test Lab:	1 / F, No. B Building, Mianshang Younger Pioneer Park, Hangcheng Road, Gushu Xixiang Street, Baoan District, Shenzhen
Telephone:	+86-755-27790922
Fax:	+86-755-27790922

2.0 List Test Equipments					
Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
Conducted emission					
EMI Test Receiver	ESCS30	1102.4500.30	RS	July 07, 2017	July 06, 2018
LISN	LS16C	10010947251	AFJ	July 07, 2017	July 06, 2018
Radiated emission					
EMI Test Receiver	ESVD	1026.5506.10	RS	July 07, 2017	July 06, 2018
Spectrum Analyzer	FSEM	1079.8500.30	RS	July 07, 2017	July 06, 2018
Coaxial Switch	MP59B	M70585	ANRITSU	N/A	N/A
Amplifier	8447D	2727A05017	HP	July 07, 2017	July 06, 2018
Bilog Antenna	VULB9163	9163/340	Schwarebeck	July 07, 2017	July 06, 2018
Harmonic & Flicker					
Harmonics Flicker Test System	PACS-1	72305	CI	July 07, 2017	July 06, 2018
5K VA AC Power source	500iX	56060	CI	July 07, 2017	July 06, 2018
Electrostatic Discharge					
Electostatic Discharge Generator	ESD61002AG	PR12092502	Prima	July 07, 2017	July 06, 2018
Continuous radiated disturbances					
Signal Generator	2022D	119246/003	Maconi	July 07, 2017	July 06, 2018
Power Amplifier	A00181-1000	9801-112	M2S	July 07, 2017	July 06, 2018
Power Amplifier	AC8113/ 800-250A	9801-179	M2S	July 07, 2017	July 06, 2018
Power Antenna	CBL6140A	1204	SCHAFFNER	July 07, 2017	July 06, 2018
EFT/Surge/Dip					
Fast Transient Burst Simulator	EFT61004BG	PR12074375	Prima	July 07, 2017	July 06, 2018
Lightning Surge Generator	SUG61005BG	PR12125534	Prima	July 07, 2017	July 06, 2018
CYCLE SAG SIMULATOR	DRP61011AG	PR12106201	Prima	July 07, 2017	July 06, 2018
Continuous conducted disturbances					
Signal Generator	2022D	119246/003	Maconi	July 07, 2017	July 06, 2018
Power Amplifier	A00181-1000	9801-112	M2S	July 07, 2017	July 06, 2018
CDN	M3-8016	003683	MEB	July 07, 2017	July 06, 2018
Power-frequency Magnetic field					
Continuous Wave Simulator	UCS 500 M4	0304-42	EM TEST	July 07, 2017	July 06, 2018
Power Source Network	MV 2616	0104-14	EM TEST	July 07, 2017	July 06, 2018
Current Transformer	MC2630	--	EM TEST	July 07, 2017	July 06, 2018
Magnetic Coil	MS100	0304-42	EM TEST	July 07, 2017	July 06, 2018

3.0 Technical Details

3.1 Investigations Requested

Perform Electromagnetic Interference [EMI] & Electromagnetic Susceptibility [EMS] tests for CE Marking

3.2 Test Standards

EN 55015: 2013+A1:2015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 61000-3-2:2014	Electromagnetic compatibility(EMC)- Part 3-2:Limits-Limits for harmonic current emissions(equipment input current $\leq 16A$ per phase)
EN 61000-3-3:2013	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
EN 61547:2009	Equipment for general lighting purposes-EMC immunity requirements

3.3 Performance Criteria

- Criterion A During the test, no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
- Criterion B During the test, the luminous intensity may change to any value. After the test, the luminous intensity shall be restored to its initial value within 1 min. Regulating controls need not function during the test, but after the test, the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.
- Criterion C During and after the test, any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal, if necessary by temporary interruption of the mains supply and/or operating the regulating control.
Additional requirement for lighting equipment incorporating a starting device: After the test, the lighting equipment is switched off. After half an hour, it is switched on again. The lighting equipment shall start and operate as intended.

3.4 Test standards and Results Summary Tables

Test Condition	Test Requirement	Test Method	Test Result
EMISSION Results Summary			
Conducted Emission on AC Mains, 9KHz to 30MHz	EN 55015: 2013+A1:2015	EN 55015: 2013+A1:2015	Pass
Radiated Electromagnetic Disturbances 9KHz to 30MHz	EN 55015: 2013+A1:2015	EN 55015: 2013+A1:2015	Pass
Radiated Emissions, 30MHz to 300MHz	EN 55015: 2013+A1:2015	EN 55015: 2013+A1:2015	Pass
Harmonic Emissions on AC supply	EN 61000-3-2:2014	EN 61000-3-2:2014	Pass
Voltage fluctuations on AC supply	EN 61000-3-3:2013	EN 61000-3-3:2013	Pass
IMMUNITY Results Summary			
Electrostatic Discharge	EN 61547:2009	EN 61000-4-2: 2009	Pass
RF field strength susceptibility	EN 61547:2009	EN 61000-4-3: 2004+A1:2010	Pass
Electrical Fast transients /Burst Immunity	EN 61547:2009	EN 61000-4-4:2012	Pass
Surge	EN 61547:2009	EN 61000-4-5:2014/A1:2017	Pass
Conducted susceptibility	EN 61547:2009	EN 61000-4-6:2014/AC:2015	Pass
Power-frequency Magnetic Field	EN 61547:2009	EN 61000-4-8:2010	Pass
Dips/Voltage Interruption Variation	EN 61547:2009	EN 61000-4-11:2004/A1:2017	Pass

Note: N/A=Not applicable

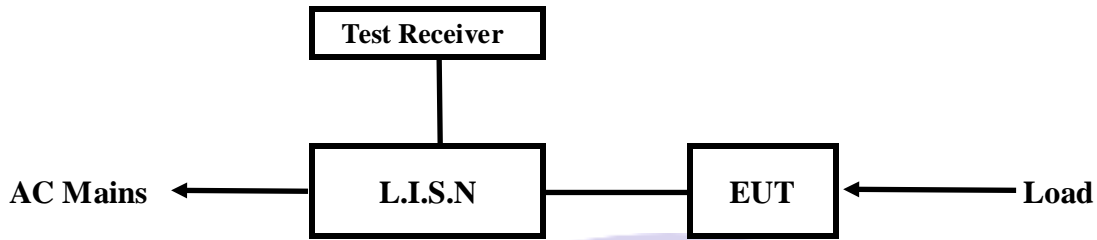
3.5 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	MU
1.	Temperature	$\pm 0.1^{\circ}\text{C}$
2.	Humidity	$\pm 1.0\%$
3.	Spurious emissions, conducted	$\pm 3.70\text{dB}$
4.	All emissions, radiated	$\pm 4.50\text{dB}$

4.0 Electromagnetic Interference Test results

4.1 Power Line Conducted Emission Test

4.1.1 Schematics of the test



EUT: Equipment Under Test

4.1.2 Test Method and test Procedure

The test was performed in accordance with EN 55015

Test Voltage: 230V~, 50Hz

4.1.3 Test Equipment

Please refer to the Section 2

4.1.4 Power line conducted Emission Limit

The limits of the mains terminal disturbance voltage for the frequency range 9KHz to 30MHz are given in Table 2a, and the limits of the load/control terminal disturbance voltage for the frequency 150KHz to 30MHz are given in Table 2b/Table 2c.

Table 2a - Disturbance voltage limits at mains terminals

Frequency range	Limits dB(μ V)	
	Quasi-peak Level	Average Level
9 kHz to 50 kHz	110	-
50 kHz to 150 kHz	90 to 80	-
150 kHz to 0.5MHz	66 to 56	56 to 46
0.5MHz to 5.0MHz	56	46
5MHz to 30MHz	60	50

a、 At the transition frequency, the lower limit applies.

b、 The limit decreases linearly with the logarithm of the frequency in the ranges 50 kHz to 150 kHz and 150 kHz to 0.5MHz.

c、 For electrodeless lamps and luminaires, the limit in the frequency range of 2,51MHz to 3,0MHz is 73 dB(μ V) Quasi-peak and 63 dB(μ V) average.

NOTE In Japan, the limits in the frequency range 9kHz 150 kHz do not apply.

Table 2b - Disturbance voltage limits at load terminals

Frequency(MHz)	Limits dB(μ V)	
	Quasi-peak Level	Average Level
0.15MHz to 0.50MHz	80	70
0.50MHz to 30MHz	74	64

At the transition frequency, the lower limit applies.

Table 2c - Disturbance voltage limits at control terminals

Frequency(MHz)	Limits dB(μ V)	
	Quasi-peak Level	Average Level
0.15MHz to 0.50MHz	84 to 74	74 to 64
0.50MHz to 30MHz	74	64

NOTE 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

NOTE 2: The voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which Presents a common mode (asymmetric mode) impedance of 150 Ω to the control terminal.

4.1.5 Photo documentation of the test set-up

Please refer to the Section 7

4.1.6 Test specification:

Environmental conditions: Temperature: 26° C Humidity: 60% Atmospheric pressure: 103kPa

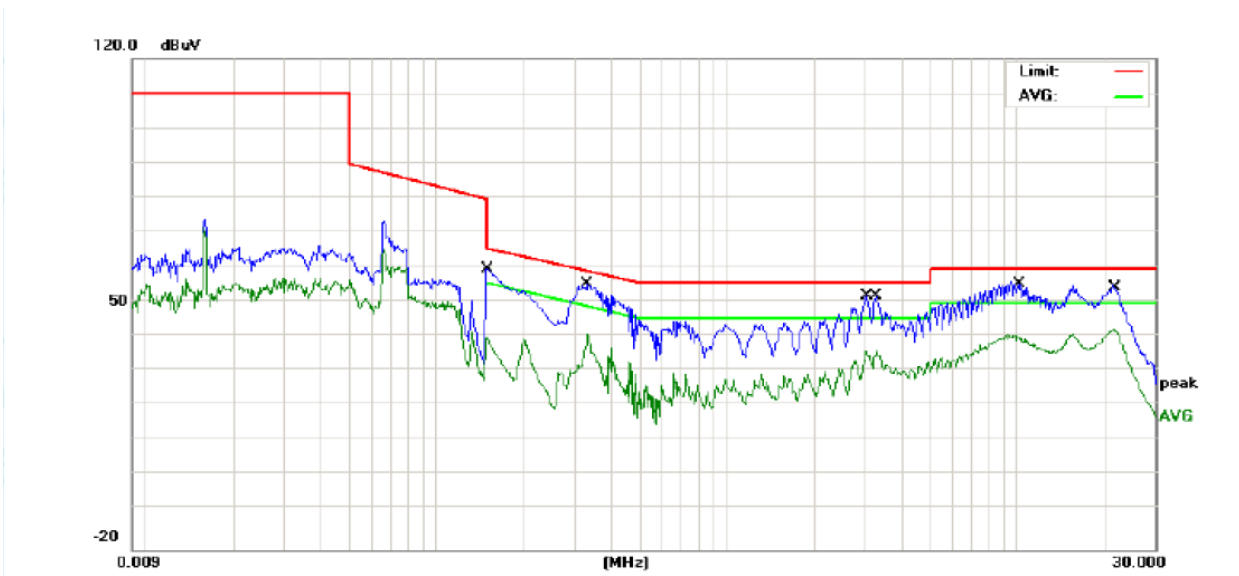
Frequency range: 0.009 MHz – 30 MHz

4.1.7 Test result

The requirements are FULFILLED

Remarks: According to the EN 55015: 2013+A1:2015

A Conducted Emission on Live Terminal of the power line (9kHz to 30MHz)



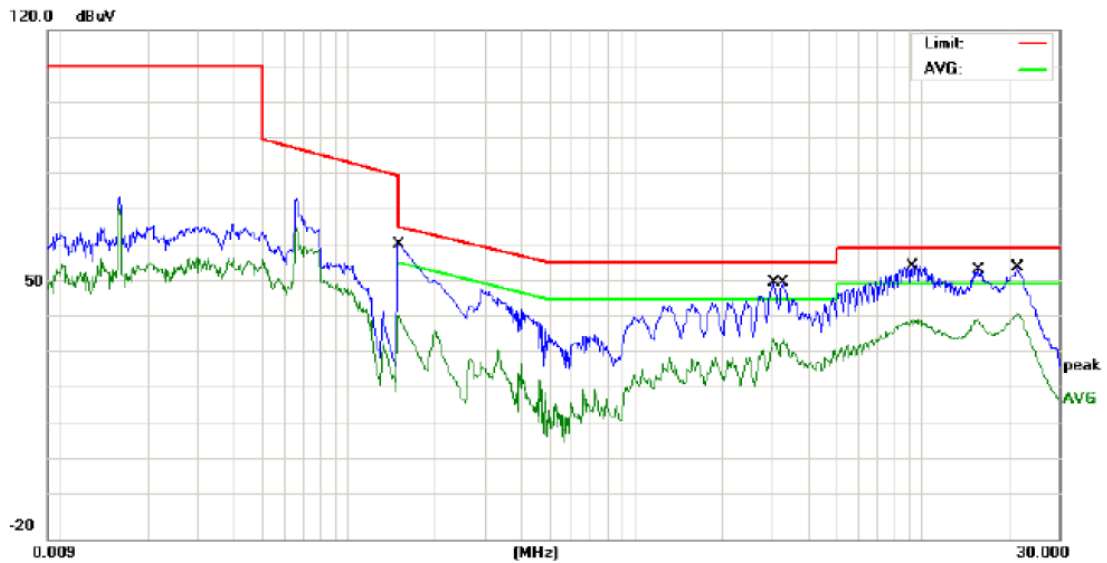
Site 843 Shielded Room
 Limit: EN55015 Conduction(QP)
 EUT:
 M/N:
 Mode: Lighting
 Note:

Phase: **L1**
 Power: AC 230V/50Hz

Temperature: 26
 Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1527	49.15	10.44	59.59	65.85	-6.26	QP	
2		0.1527	28.65	10.44	39.09	55.85	-16.76	AVG	
3	*	0.3339	45.24	10.60	55.84	59.35	-3.51	QP	
4		0.3339	30.92	10.60	41.52	49.35	-7.83	AVG	
5		3.0379	41.38	10.67	52.05	56.00	-3.95	QP	
6		3.0379	25.85	10.67	36.52	46.00	-9.48	AVG	
7		3.3020	41.54	10.66	52.20	56.00	-3.80	QP	
8		3.3020	24.68	10.66	35.34	46.00	-10.66	AVG	
9		10.1539	45.03	10.40	55.43	60.00	-4.57	QP	
10		10.1539	29.87	10.40	40.27	50.00	-9.73	AVG	
11		21.9420	44.10	10.52	54.62	60.00	-5.38	QP	
12		21.9420	32.13	10.52	42.65	50.00	-7.35	AVG	

B Conducted Emission on Neutral Terminal of the power line (9kHz to 30MHz)



Site 843 Shielded Room
 Limit: EN55015 Conduction(QP)
 EUT:
 M/N:
 Mode: Lighting
 Note:

Phase: **N**
 Power: AC 230V/50Hz

Temperature: 26
 Humidity: 60 %

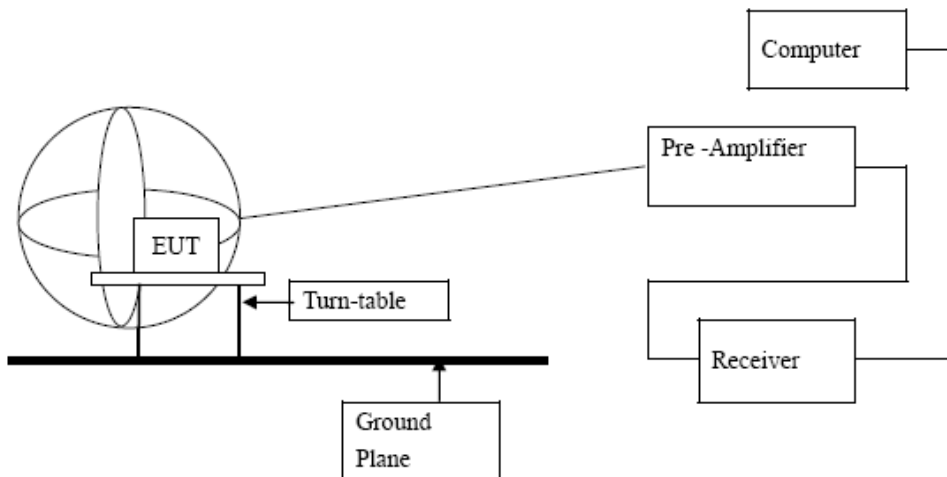
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1527	50.15	10.44	60.59	65.85	-5.26	QP	
2		0.1527	29.65	10.44	40.09	55.85	-15.76	AVG	
3		3.0579	39.97	10.67	50.64	56.00	-5.36	QP	
4		3.0579	24.33	10.67	35.00	46.00	-11.00	AVG	
5		3.3020	40.04	10.66	50.70	56.00	-5.30	QP	
6		3.3020	23.18	10.66	33.84	46.00	-12.16	AVG	
7	*	9.2980	44.48	10.43	54.91	60.00	-5.09	QP	
8		9.2980	29.89	10.43	40.32	50.00	-9.68	AVG	
9		15.8338	43.57	10.46	54.03	60.00	-5.97	QP	
10		15.8338	29.46	10.46	39.92	50.00	-10.08	AVG	
11		21.5820	44.16	10.52	54.68	60.00	-5.32	QP	
12		21.5820	31.46	10.52	41.98	50.00	-8.02	AVG	

4.2 Radiated electromagnetic disturbances

4.2.1 Test Method:

The test was performed in accordance with EN 55015

Block diagram of Test setup



4.2.2 Radiated electromagnetic disturbances Limits

Frequency Range (MHz)	Limits for loop diameter (dB μ A)		
	2m	3m	4m
9kHz to 70kHz	88	81	75
70kHz to 150kHz	88 to 58	81 to 51	75 to 45
150kHz to 2.2MHz	58 to 26	51 to 22	45 to 16
2.2MHz to 3.0MHz	58	51	45
3.0MHz to 30MHz	22	15 to 16	9 to 12

Note: 1. The lower limit shall apply at the transition frequencies
 2. Decreasing/Increasing linearly with the logarithm of the frequency.

4.2.3 Photo documentation of the test set-up

Please refer to the Section 7

4.2.4 Test Equipment:

Please refer to the Section 2

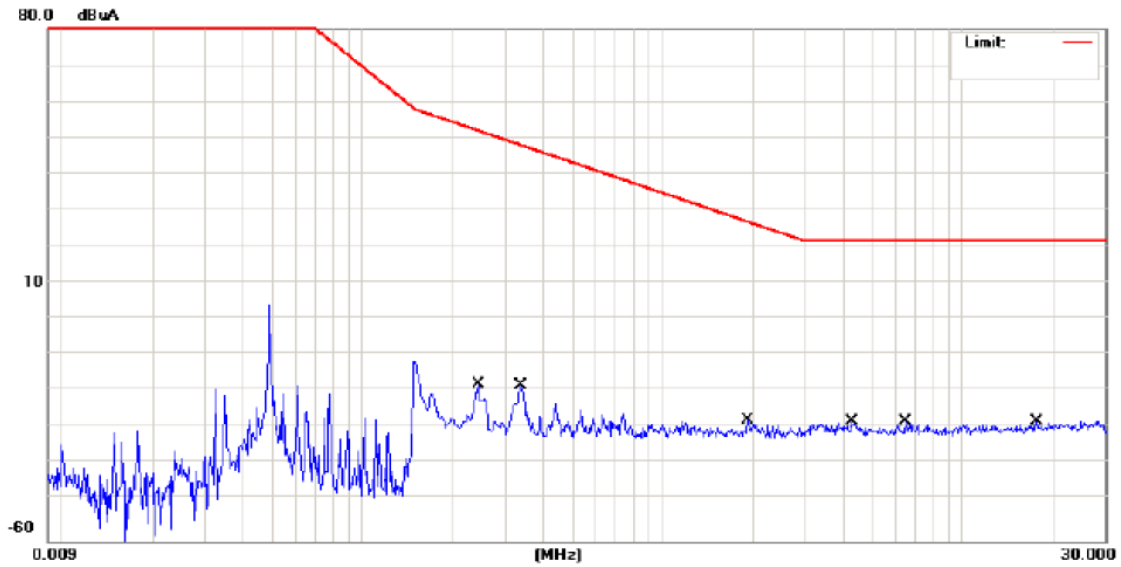
4.2.5 Test specification:

Environmental conditions: Temperature 26° C Humidity: 60% Atmospheric pressure: 103kPa

4.2.6 Test Result

Please refer to next page

Radiated electromagnetic disturbances in X (9kHz to 30MHz)

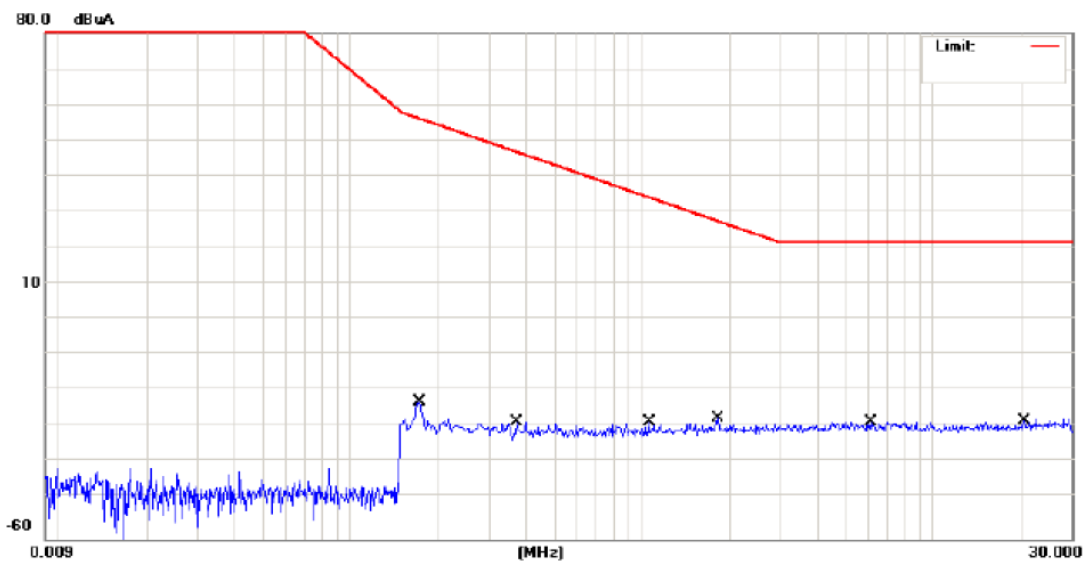


Site 843 Shielded Room	Phase: L1	Temperature: 26
Limit: EN55015 Magnetic Test	Power: AC 230V/50Hz	Humidity: 60 %
EUT:		
M/N:		
Mode: Lighting		
Note:		

No.	Mk.	Freq. MHz	Reading Level dBuA	Correct Factor dB	Measure- ment dBuA	Limit dBuA	Over dB	Detector	Comment
1		0.2459	-17.13	0.00	-17.13	52.05	-69.18	QP	
2		0.3379	-17.42	0.00	-17.42	48.23	-65.65	QP	
3		1.9376	-27.04	0.00	-27.04	27.25	-54.29	QP	
4		4.2980	-27.25	0.00	-27.25	22.00	-49.25	QP	
5	*	6.5099	-27.22	0.00	-27.22	22.00	-49.22	QP	
6		17.8216	-27.22	0.00	-27.22	22.00	-49.22	QP	



Radiated electromagnetic disturbances in Y (9kHz to 30MHz)



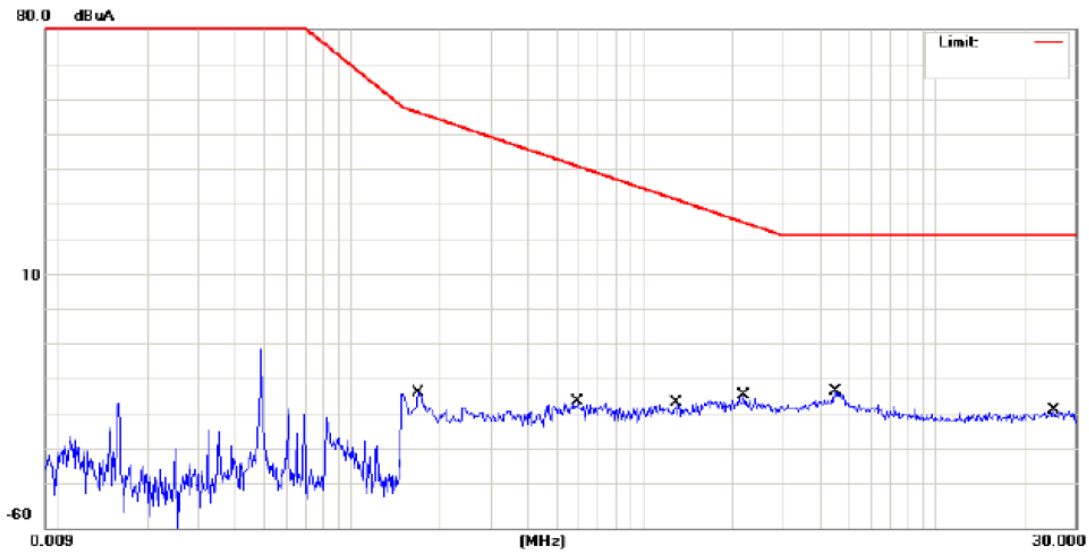
Site: 843 Shielded Room
 Limit: EN55015 Magnetic Test
 EUT:
 M/N:
 Mode: Lighting
 Note:

Phase: **L2** Temperature: 26
 Power: AC 230V/50Hz Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuA	Correct Factor dB	Measure- ment dBuA	Limit dBuA	Over dB	Detector	Comment
1		0.1737	-21.97	0.00	-21.97	56.23	-78.20	QP	
2		0.3738	-27.50	0.00	-27.50	47.02	-74.52	QP	
3		1.0620	-27.65	0.00	-27.65	34.48	-62.13	QP	
4		1.8300	-26.52	0.00	-26.52	27.94	-54.46	QP	
5		6.1579	-27.51	0.00	-27.51	22.00	-49.51	QP	
6	*	20.7975	-27.25	0.00	-27.25	22.00	-49.25	QP	



Radiated electromagnetic disturbances in Z (9kHz to 30MHz)



Site: 843 Shielded Room Phase: **L3** Temperature: 26
 Limit: EN55015 Magnetic Test Power: AC 230V/50Hz Humidity: 60 %
 EUT:
 M/N:
 Mode: Lighting
 Note:

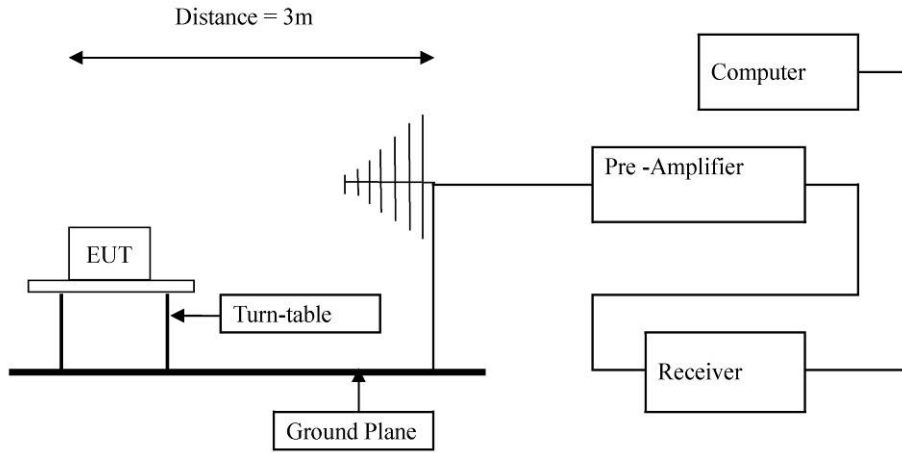
No.	Mk.	Freq. MHz	Reading Level dBuA	Correct Factor dB	Measure- ment dBuA	Limit dBuA	Over dB	Detector	Comment
1		0.1700	-22.20	0.00	-22.20	56.49	-78.69	QP	
2		0.5977	-24.50	0.00	-24.50	41.38	-65.88	QP	
3		1.3060	-24.92	0.00	-24.92	31.99	-56.91	QP	
4		2.2099	-22.89	0.00	-22.89	25.67	-48.56	QP	
5	*	4.5658	-21.68	0.00	-21.68	22.00	-43.68	QP	
6		25.4496	-27.01	0.00	-27.01	22.00	-49.01	QP	



4.3 Radiated Emission Test

4.3.1 Test Method: The test was performed in accordance with EN 55015

4.3.2 Block diagram of Test setup



4.3.3 Radiated Emission Limit

Frequency Range (MHz)	Distance (m)	Quasi-Peak limits (dB μ V/m)
30-230	3	40.00
230-300	3	47.00

Note: The lower limit shall apply at the transition frequencies

4.3.4 Photo documentation of the test set-up

Please refer to the Section 7

4.3.5 Test Equipment:

Please refer to the Section 2

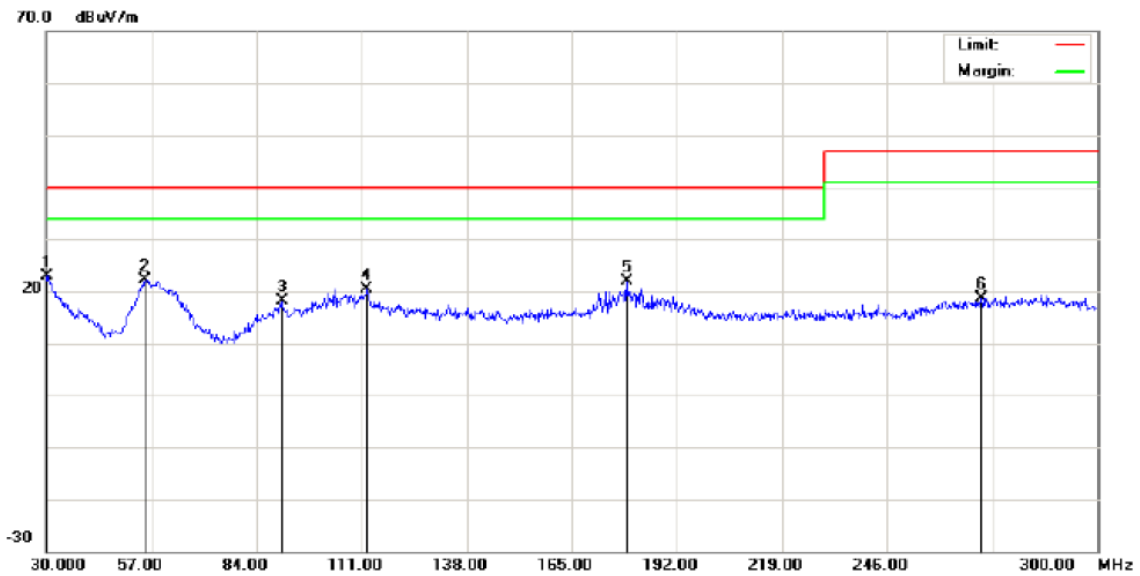
4.3.6 Test specification:

Environmental conditions: Temperature 26° C Humidity: 55% Atmospheric pressure: 103kPa

4.3.7 Test result

Remarks: According to the EN 55015: 2013+A1:2015

A. Radiated Emission In Horizontal (30MHz----300MHz)



Site 966
 Limit: EN55015_RE 3M
 EUT:
 M/N:
 Mode: Lighting
 Note:

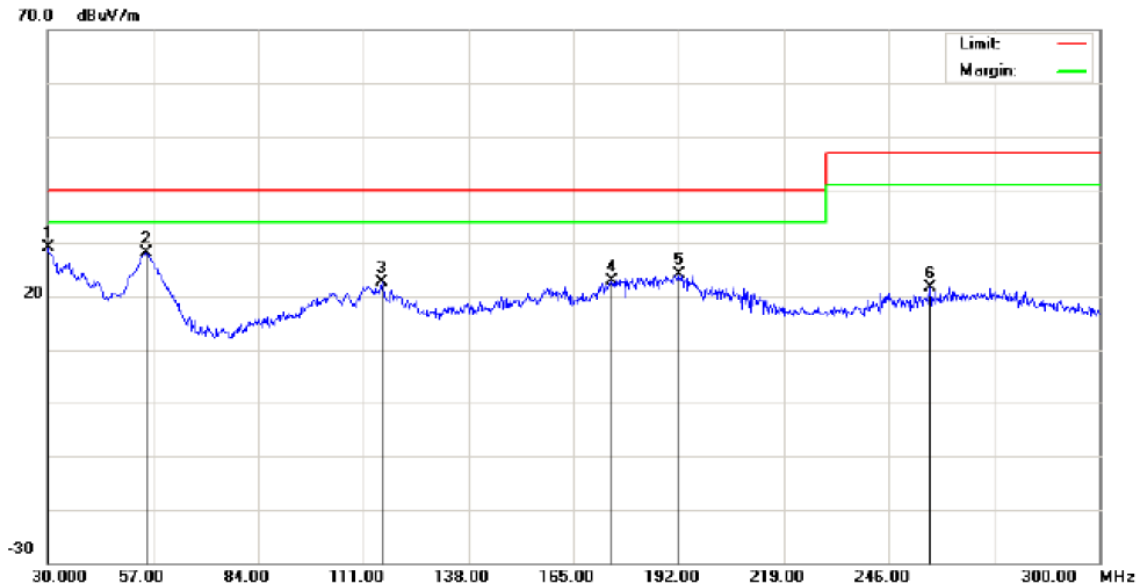
Polarization: *Horizontal*
 Power: AC 230V/50Hz
 Distance:

Temperature: 26
 Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Detector	Comment
1	*	30.0000	22.74	0.20	22.94	40.00	-17.06			QP	
2		55.3800	32.53	-10.44	22.09	40.00	-17.91			QP	
3		90.4800	27.47	-9.45	18.02	40.00	-21.98			QP	
4		112.3500	25.92	-5.59	20.33	40.00	-19.67			QP	
5		179.0400	27.42	-5.62	21.80	40.00	-18.20			QP	
6		270.3000	23.07	-4.34	18.73	47.00	-28.27			QP	



B. Radiated Emission In Vertical (30MHz----300MHz)



Site 966
 Limit: EN55015_RE 3M
 EUT:
 M/N:
 Mode: Lighting
 Note:

Polarization: **Vertical**
 Power: AC 230V/50Hz
 Distance:

Temperature: 26
 Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1	*	30.0000	32.01	-2.95	29.06	40.00	-10.94	QP			
2		55.3800	38.40	-10.19	28.21	40.00	-11.79	QP			
3		115.8600	27.31	-4.77	22.54	40.00	-17.46	QP			
4		174.7200	26.80	-3.86	22.94	40.00	-17.06	QP			
5		192.0000	28.76	-4.67	24.09	40.00	-15.91	QP			
6		256.5300	25.90	-4.27	21.63	47.00	-25.37	QP			

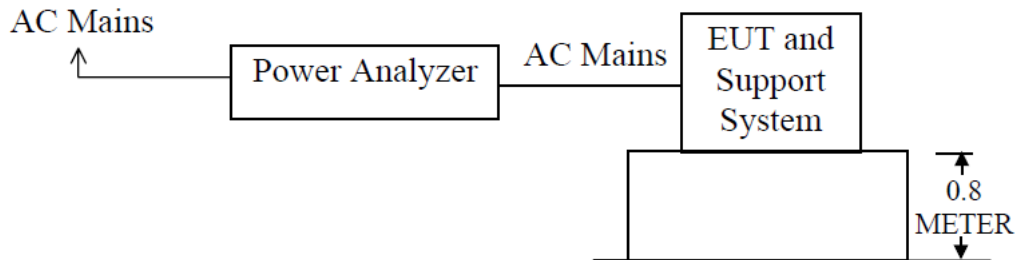


4.4 Harmonic Current Emissions

4.4.1 EUT Operating Mode

Lighting Mode

4.4.2 Block Diagram of Test Setup.



This test was performed as per EMC Basic Standard EN61000-3-2 Class C

4.4.3 Test Equipment

Please refer to Section 2 this report.

4.4.4 Test specification:

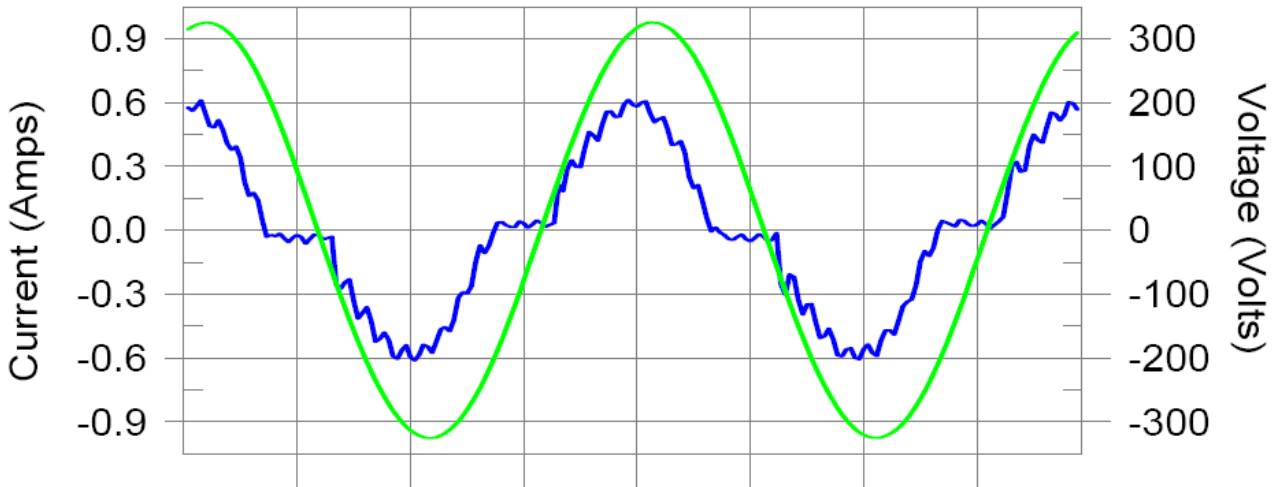
Environmental conditions: Temperature: 25.5° C Humidity: 55% Atmospheric pressure: 103kPa

4.4.5 Results

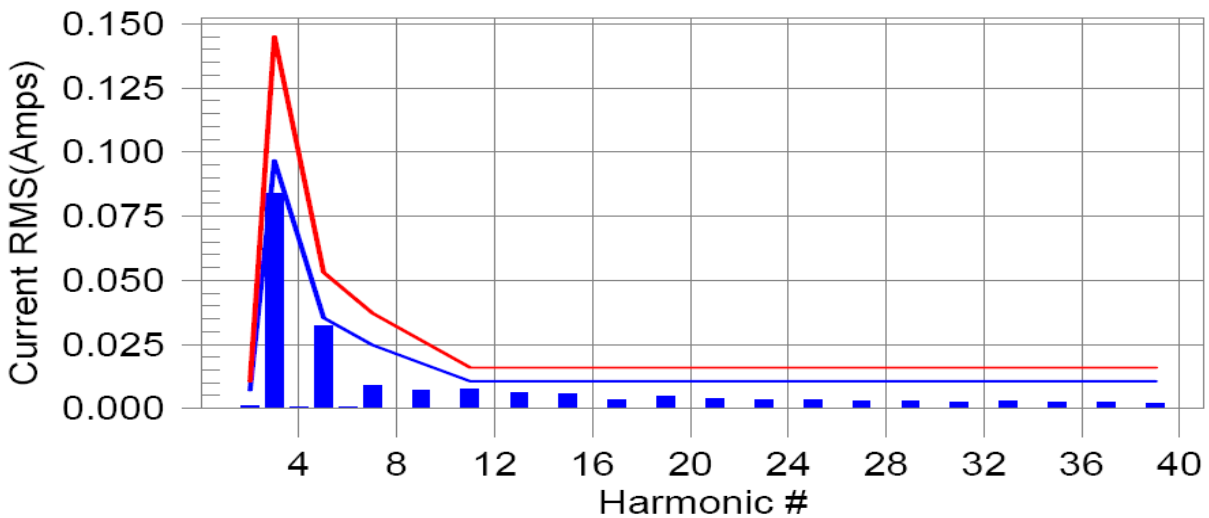
Port	EUT Operating mode	Result (Passed / Failed)
AC Input	Lighting Mode	Pass

Harmonics – Class-C per Ed. 3.0 (2006) (Run time)

EUT: RING LIGHT M/N: RL-18 Tested by: Beryl Zhao
 Test category: Class-C per Ed. 3.0 (2006) (European limits) Test Margin: 100
 Test date: 2018-05-03 Start time: 10:43:17 End time: 10:49:15
 Test duration (min): 6 Data file name: H-000224.cts_data
 Comment: RING LIGHT Temp.:25.5'C Humi.: 55%
 Customer: Shenzhen Fresh Photographic Equipment Co., Ltd.
 Test Result: Pass Source qualification: Normal
 Current & voltage waveforms



Harmonics and Class C limit line European Limits



Test result: Pass Worst harmonics H5-90.81% of 100% limit, H5-61.25% of 150% limit.

Current Test Result Summary (Run time)

EUT: RING LIGHT M/N: RL-18 Tested by: Beryl Zhao
 Test category: Class-C per Ed. 3.0 (2006) (European limits) Test Margin: 100
 Test date: 2018-05-03 Start time: 10:43:17 End time: 10:49:15
 Test duration (min): 6 Data file name: H-000224.cts_data
 Comment: RING LIGHT Temp.:25.5'C Humi.:55%
 Customer: Shenzhen Fresh Photographic Equipment Co., Ltd.
 Test Result: Pass Source qualification: Normal

Highest parameter values during test:

V_RMS (Volts): 229.83 Frequency(Hz): 50.00

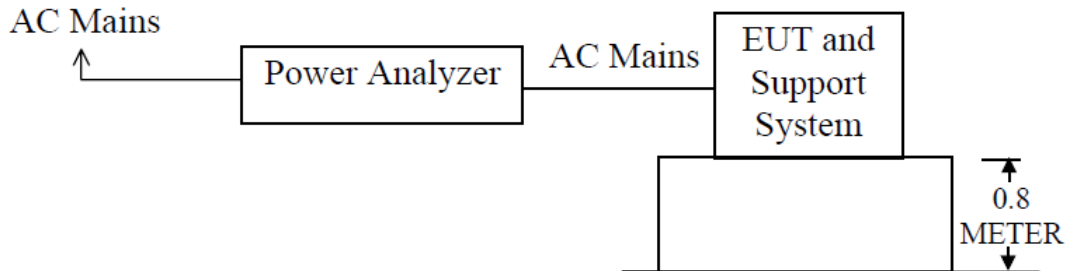
Harm#	Harms(avg)	100%Limit	% of Limit	Harms(max)	150%Limit	% of Limit	Status
2	0.001	0.007	0.0	0.001	0.011	0.00	Pass
3	0.084	0.097	86.7	0.084	0.145	58.45	Pass
4	0.001						
5	0.032	0.035	90.8	0.032	0.053	61.25	Pass
6	0.000						
7	0.009	0.025	35.3	0.009	0.037	24.00	Pass
8	0.000						
9	0.007	0.018	38.8	0.007	0.027	26.36	Pass
10	0.000						
11	0.008	0.011	71.7	0.008	0.016	48.56	Pass
12	0.000						
13	0.006	0.011	56.0	0.006	0.016	38.02	Pass
14	0.000						
15	0.006	0.011	52.4	0.006	0.016	35.62	Pass
16	0.000						
17	0.003	0.011	0.0	0.003	0.000	0.00	Pass
18	0.000						
19	0.005	0.011	46.8	0.005	0.016	31.62	Pass
20	0.000						
21	0.004	0.011	0.0	0.004	0.016	0.00	Pass
22	0.000						
23	0.003	0.011	0.0	0.003	0.016	0.00	Pass
24	0.000						
25	0.003	0.011	0.0	0.003	0.016	0.00	Pass
26	0.000						
27	0.003	0.011	0.0	0.003	0.016	0.00	Pass
28	0.000						
29	0.003	0.011	0.0	0.003	0.016	0.00	Pass
30	0.000						
31	0.002	0.011	0.0	0.002	0.016	0.00	Pass
32	0.000						
33	0.003	0.011	0.0	0.003	0.016	0.00	Pass
34	0.000						
35	0.002	0.011	0.0	0.002	0.016	0.00	Pass
36	0.000						
37	0.002	0.011	0.0	0.002	0.016	0.00	Pass
38	0.000						
39	0.002	0.011	0.0	0.002	0.016	0.00	Pass
40	0.000						

4.5 Flicker and Voltage Fluctuation

4.5.1 EUT Operating Mode

Lighting Mode

4.5.2 Block Diagram of Test Setup.



This test was performed as per EMC Basic Standard EN 61000-3-3

4.5.3 Limits of Voltage Fluctuation and Flicks Measurement

Test Item	Limit	Note
P_{st}	1.0	Pst means short-term flicker indicator
P_{lt}	0.65	Plt means long-term flicker indicator
T_{dt} (ms)	200	Tdt means maximum time that dt exceeds 3%.
d_{max} (%)	4	Dmax means maximum relative voltage change.
dc (%)	3	Dc means relative steady-state voltage change.

4.5.4 Test Equipment

Please refer to Section 2 this report.

4.5.5 Test specification:

Environmental conditions: Temperature: 25.5° C Humidity: 55% Atmospheric pressure: 103kPa

4.5.6 Results

Port	EUT Operating mode	Result (Passed / Failed)
AC Input	Lighting Mode	Pass

Flicker Test Summary

EUT: RING LIGHT M/N: RL-18 Tested by: Beryl Zhao

Test category: All parameters (European limits) Test Margin: 100

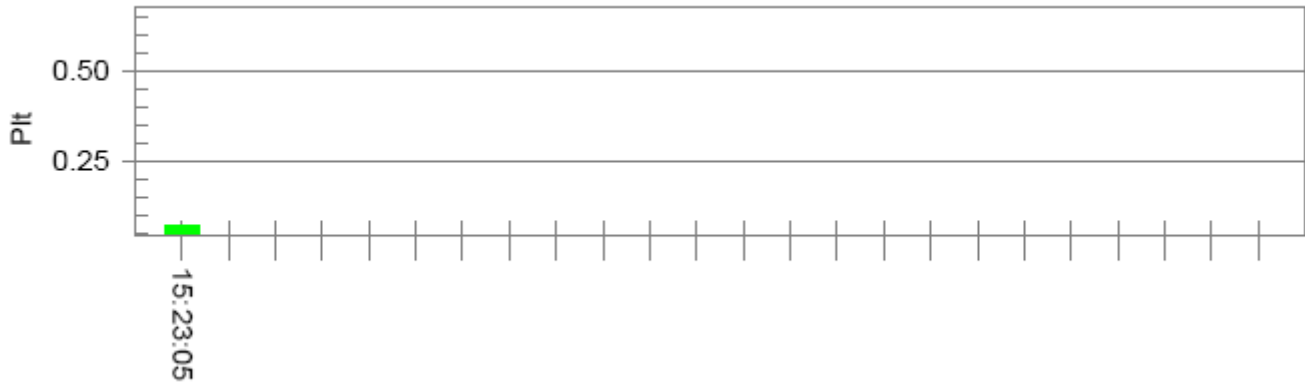
Test date: 2018-05-03 Start time: 10:24:54 End time: 10:41:32

Test duration (min): 17 Data file name: F-000125.cts_data

Comment: RING LIGHT

Customer: Shenzhen Fresh Photographic Equipment Co., Ltd.

Test Result: Pass Status: Test Completed



Parameter values recorded during the test:

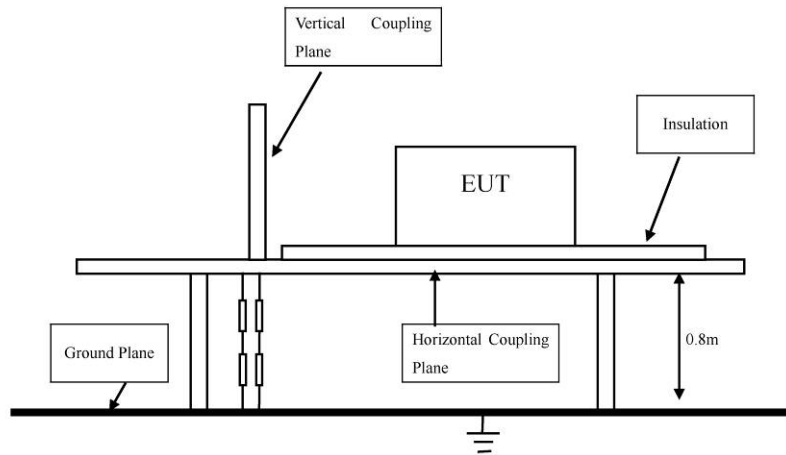
Vrms at the end of test (Volt): 230.04

Highest dt (%):	0.13	Test limit (%):	3.30	Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.11	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.160	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.070	Test limit:	0.650	Pass

5.0 Immunity Test

5.1 Electrostatic Discharge

5.1.1 Schematic of the test



5.1.2 Test method

The test was performed in accordance with EN 61000-4-2

5.1.3 Test severity

±4kV for direct & in-direct Contact Discharge

±8kV for air Discharge

Performance Criterion Require: **B**

5.1.4 Test Equipment

Please refer to Section 2 this report.

5.1.5 Test specification:

Environmental conditions: Temperature: 25° C Humidity: 50% Atmospheric pressure: 103kPa

5.1.6 Operation mode:

Lighting Mode

5.1.7 Discharge location

- HCP
- VCP
- Metal
- Slot

5.1.8 Test Result

Pass

5.2 RF field strength susceptibility (80MHz----- 1000MHz)

5.2.1 Test Method:

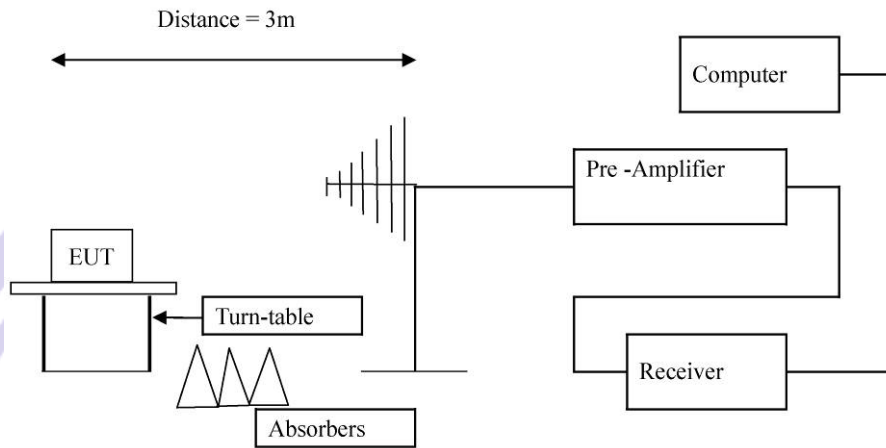
The test was performed in accordance with EN 61000-4-3

Severity: Level 2 (3V/m)

Modulation: 1 KHz 80% AM

Performance Criterion Require: A

Block diagram of Test setup



5.2.2 Test Equipment

Please refer to Section 2 this report.

5.2.3 Test specification:

Environmental conditions: Temperature: 25° C Humidity: 50% Atmospheric pressure: 103kPa

5.2.4 Operation mode: Lighting Mode

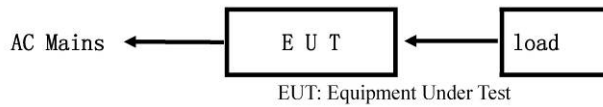
5.2.5 Test Result:

Please refer to the following table for individual results.

Frequency (MHz)	Radiation to	Polarity	Level (V/m)	Dwell Time(s)	Sweep Rate (%)	Results
80-1000	Front	Horizontal	3	1	1	Pass
80-1000	Rear	Horizontal	3	1	1	Pass
80-1000	Left	Horizontal	3	1	1	Pass
80-1000	Right	Horizontal	3	1	1	Pass
80-1000	Front	Vertical	3	1	1	Pass
80-1000	Rear	Vertical	3	1	1	Pass
80-1000	Left	Vertical	3	1	1	Pass
80-1000	Right	Vertical	3	1	1	Pass

5.3 Electrical Fast Transient/Burst (EFT/B) immunity test

5.3.1 Schematics of the test



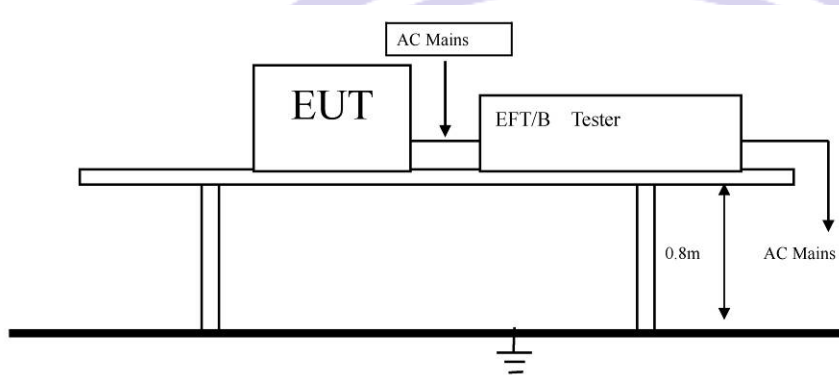
5.3.2 Test Method

The test was performed in accordance with EN 61000-4-4

Severity: Level 2 (1kV)

Performance Criterion Require: **B**

Block diagram of Test setup



5.3.3 Test Equipment

Please refer to Section 2 this report.

5.3.4 Test specification:

Environmental conditions: Temperature: 26° C Humidity: 55% Atmospheric pressure: 103kPa

5.3.5 Operation mode:

Lighting Mode

5.3.6 Test Results

Inject location: AC mains

Inject Line	Voltage kV	Inject Times (s)	Method	Results
L	±1	120	Direct	Pass
N	±1	120	Direct	Pass
L、N	±1	120	Direct	Pass
E	±1	120	Direct	N/A
L、E	±1	120	Direct	N/A
N、E	±1	120	Direct	N/A
L、N、E	±1	120	Direct	N/A

Note: N/A=Not applicable

5.4 Surge test

5.4.1 Schematics of the test



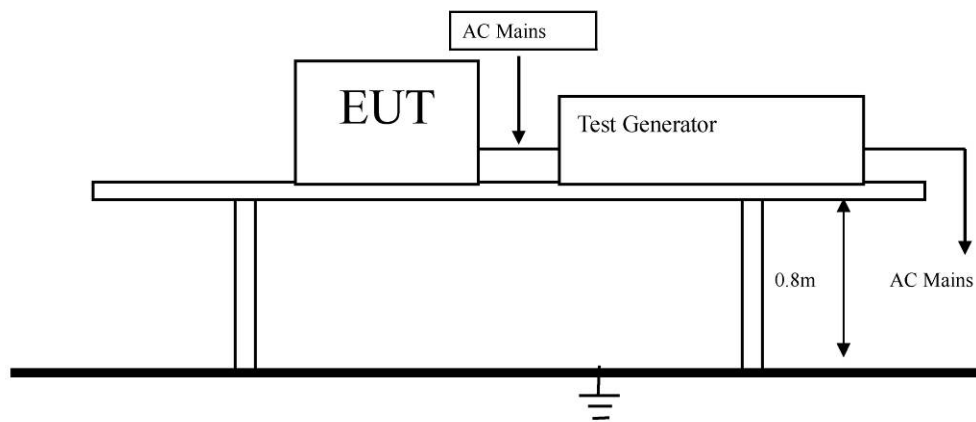
5.4.2 Test Method:

The test was performed in accordance with EN 61000-4-5

Severity: Level 2

Performance Criterion Require: B

Block diagram of Test setup



5.4.3 Test Equipment

Please refer to Section 2 this report.

5.4.4 Test specification:

Environmental conditions: Temperature: 26° C Humidity: 55% Atmospheric pressure: 103kPa

5.4.5 Operation mode: Lighting Mode

5.4.6 Test Results

5 pulses for each polarity and test voltage, and repetition rate is 1 per min.

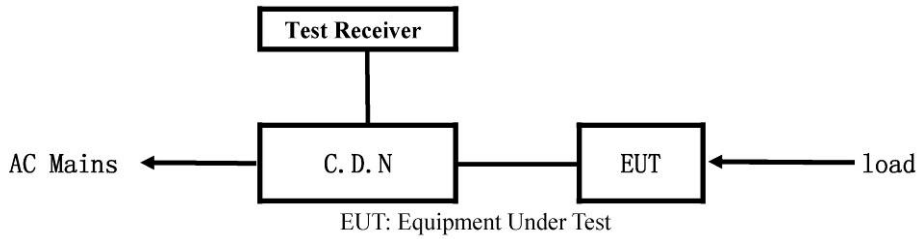
Location	Polarity	0°	90°	180°	270°	Results
L-N	+1 KV	N/A	n.r.r.	N/A	N/A	Pass
	-1 KV	N/A	N/A	N/A	n.r.r.	Pass
L-PE	+2 KV	N/A	N/A	N/A	N/A	N/A
	-2 KV	N/A	N/A	N/A	N/A	N/A
N-PE	+2 KV	N/A	N/A	N/A	N/A	N/A
	-2 KV	N/A	N/A	N/A	N/A	N/A

Remark: 1) n.r.r. = no reaction recognized, N/A = not applicable.

2) Performance Criteria A Observed.

5.5 Conducted Immunity test

5.5.1 Schematics of the test



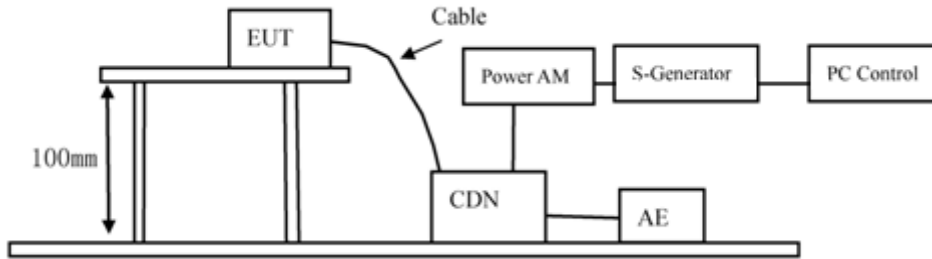
5.5.2 Test Method

The test was performed in accordance with EN 61000-4-6

Severity: Level 2 (3 V rms), 0.15MHz—80MHz

Performance Criterion Require: A

Block diagram of Test setup



5.5.3 Test Equipment

Please refer to Section 2 this report.

5.5.4 Test specification:

Environmental conditions: Temperature: 26° C Humidity: 55% Atmospheric pressure: 103kPa

5.5.5 Operation mode:

Lighting Mode

5.5.6 Test Results:

Frequency Range (MHz)	Injected Position	Strength	Criterion	Result
0.15 - 80	AC Line	3V (rms) Unmodulated	A	Pass

5.6 Power-Frequency magnetic field test

5.6.1 Schematics of the test



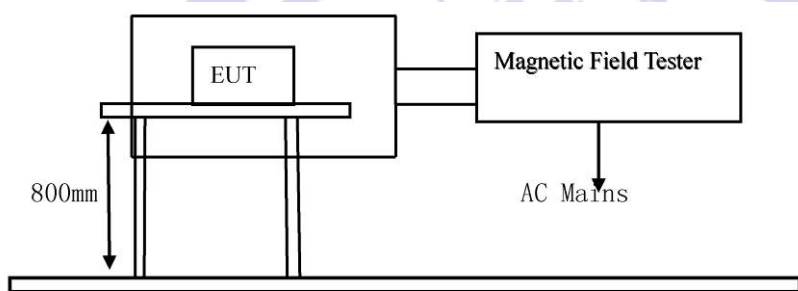
5.6.2 Test Method

The test was performed in accordance with EN 61000-4-8

Severity: Level 2 (3A/m),

Performance Criterion Require: A

Block diagram of Test setup



5.6.3 Test Equipment

Please refer to Section 2 this report.

5.6.4 Test specification:

Environmental conditions: Temperature: 26° C Humidity: 50% Atmospheric pressure: 103kPa

5.6.5 Operation mode: Lighting Mode

5.6.6 Test Results:

Test Level	Testing Duration	Coil Orientation	Criterion	Result
3A/m	5 Mins	X	A	Pass
3A/m	5 Mins	Y	A	Pass
3A/m	5 Mins	Z	A	Pass

5.7 Voltage Dips/Interruptions immunity test

5.7.1 Schematics of the test

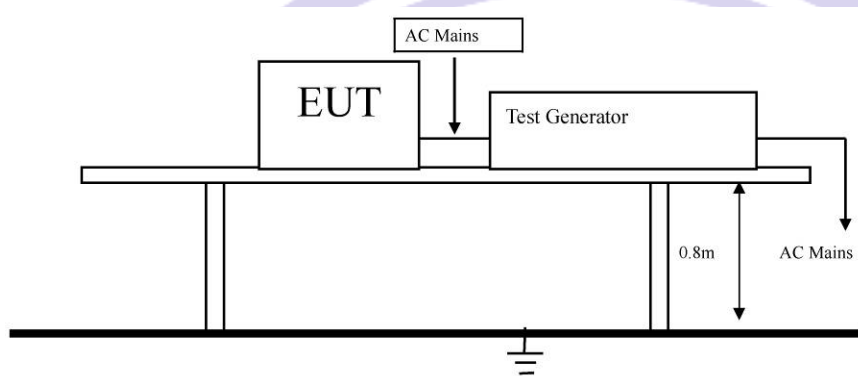


5.7.2 Test Method:

The test was performed in accordance with EN 61000-4-11

Performance Criterion Require: C&B

Block diagram of Test setup



5.7.3 Test Equipment

Please refer to Section 2 this report.

5.7.4 Test specification:

Environmental conditions: Temperature: 26° C Humidity: 55% Atmospheric pressure: 103kPa

5.7.5 Operation mode:

Lighting Mode

5.7.6 Test Result:

Voltage Dip: Voltage Interruptions:

Test Level % Ut	Reduction	Duration (periods)	Phase Angle	Meet Criterion	Result
0	100	0.5	0° - 360°	B	Pass
70	30	10	0° - 360°	C	Pass

6.0 CE Label

6.1 label specification

Text of the mark is black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.



6.2 Mark Location: On the product body



7.0 Photos of testing

Conducted Emission Test View



Radiated Emission Test View



PMFS Test View



EFT & Surge & Voltage Dips & Voltage Interruption Test View



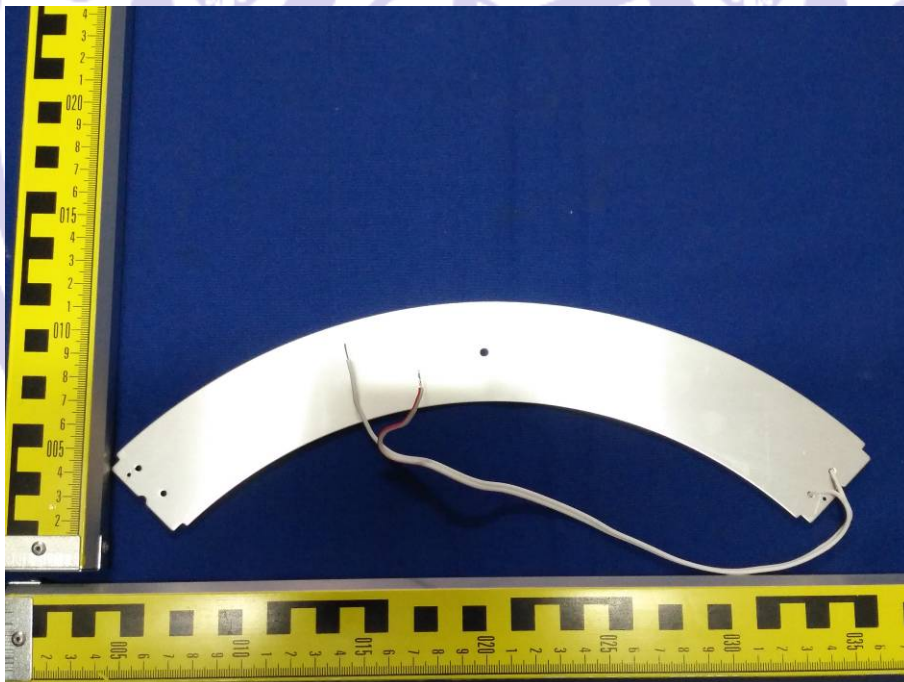
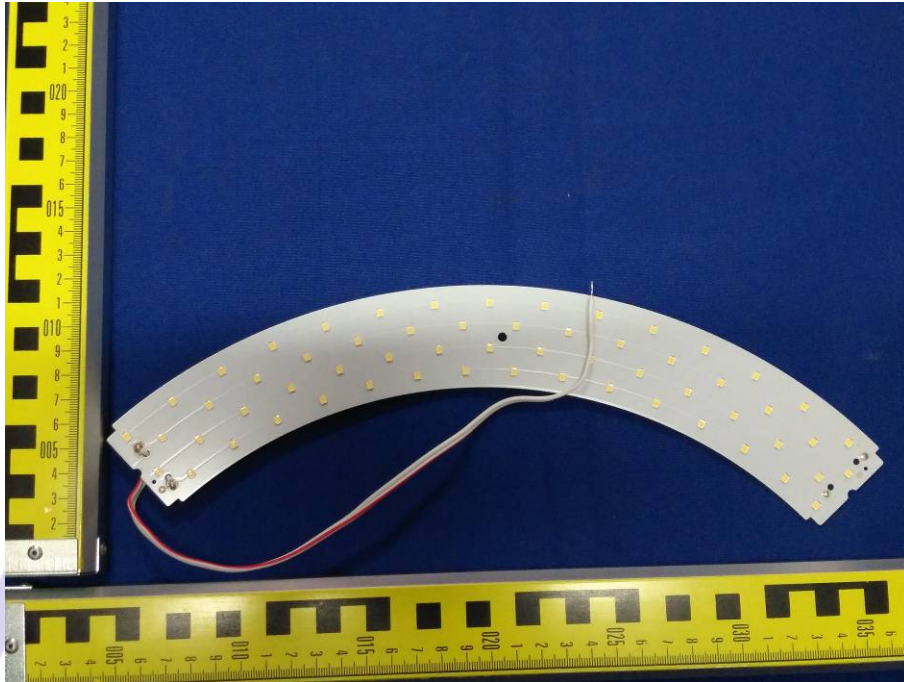
Harmonic Test View



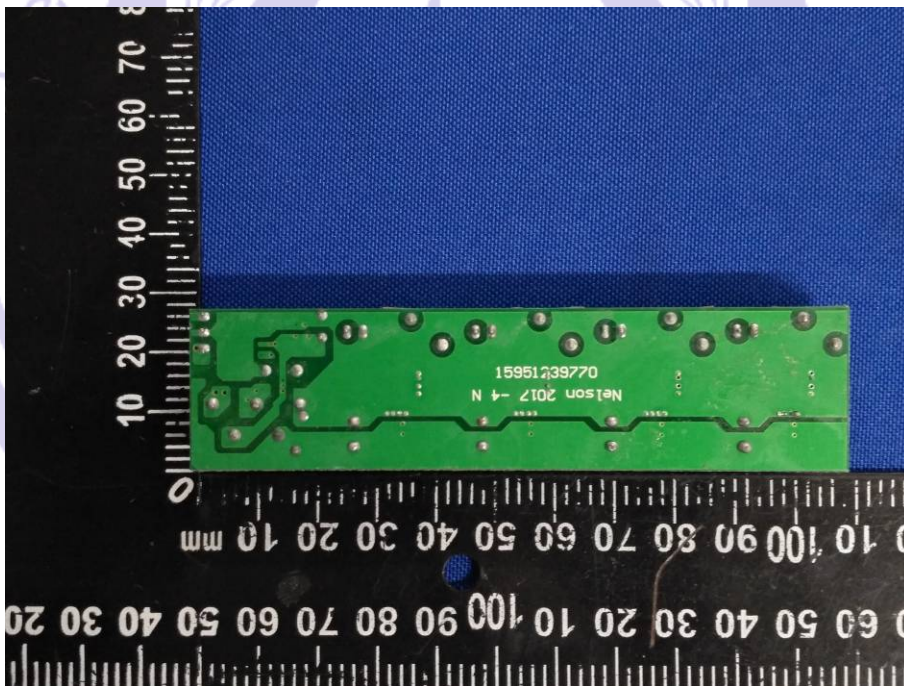
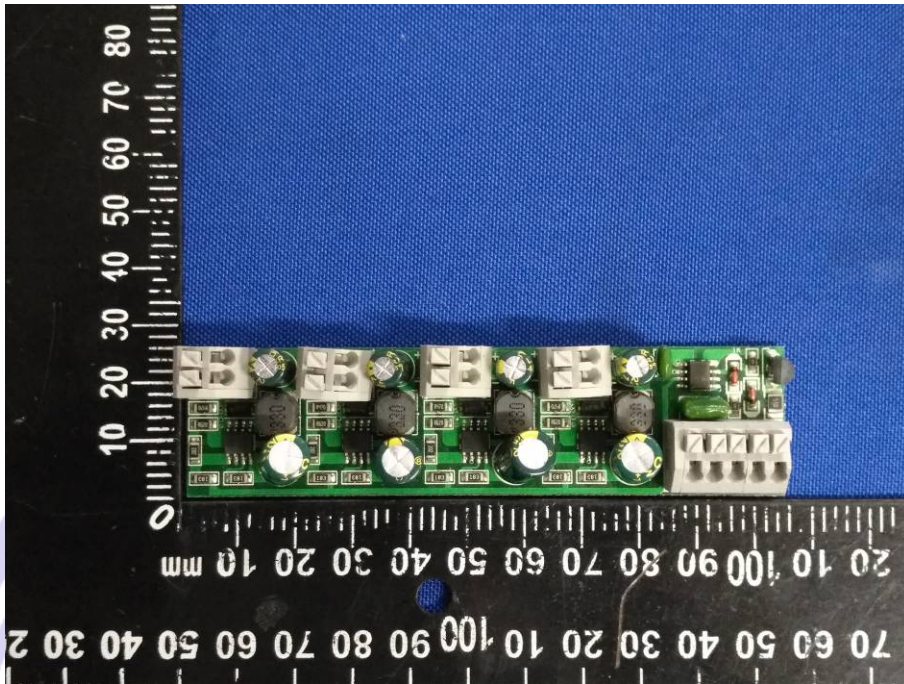
8.0 Photos of the EUT



Photos of the EUT



Photos of the EUT



--End of the report--