TEST REPORT NO.: RGT260825191006

EMC TEST REPORT

EN IEC 55015: 2019+A11:2020
Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN IEC 61547: 2023
Equipment for general lighting purposes - EMC immunity requirements

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Approved by (+ signature):	Red Fan
Date of issue:	2026-10-15
Number of pages:	63 Pages
Test item description	--
EUT:	LED DOWN LIGHT
Brand name:	N/A
Test Model:	NRP-IRDL0107-6-40K-GR-5D, NRP-IRDL0107-12-40K-GR-24D
Ratings:	220-240V~, 50/60Hz, 6/12W
Name of manufacturer:	Same as the Applicant
Business address:	Same as the Applicant
Test Result:	Pass
Test specifications:	EN IEC 55015:2019+A11:2020; EN IEC 61547:2023;
Standard .....:	EN IEC 61000-3-2:2019+A1:2021+A2:2024; EN 61000-3-3:2013+A1:2019+A2:2021+AC:2022-01;
Test procedure .....:	N/A
Non-standard test method .....:	N/A

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Modified Information

Version	Summary	Revision Date	Report No.
Ver.1.0	Original Report	/	RGT260825191006

1.DESCRIPTION OF STANDARDS AND RESULTS (EUT)

EMISSION			
Description of Test Item	Standard	Limits	Results
Disturbance voltages mains terminals (9kHz to 30MHz)	EN IEC 55015:2019+A11:2020	Table 1	Pass
Radiated electromagnetic disturbances (30MHz to 1000MHz) #	EN IEC 55015:2019+A11:2020	Table 10	Pass
Radiated electromagnetic disturbances (9 kHz to 30 MHz)	EN IEC 55015:2019+A11:2020	Table 8	Pass
Harmonic current emissions	EN IEC 61000-3-2:2019+A1:2021+ A2:2024	Class C	Pass
Voltage fluctuation and flicker	EN 61000-3-3:2013+A1:2019+A2:2021+AC:2022-01	Section 5	N/A
IMMUNITY			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic discharge	EN IEC 61547: 2023 EN 61000-4-2: 2009	B	Pass
Radio-frequency electromagnetic fields #	EN IEC 61547: 2023 EN 61000-4-3: 2020	A	Pass
Fast transients	EN IEC 61547: 2023 EN 61000-4-4: 2012	B	Pass
Surges	EN IEC 61547: 2023 EN 61000-4-5: 2014+A1:2017	C	Pass
Injected currents (radio-frequency common mode)	EN IEC 61547: 2023 EN IEC 61000-4-6:2023	A	Pass
Power frequency magnetic fields	EN IEC 61547: 2023 EN 61000-4-8: 2009	A	N/A
Voltage interruptions and dips	EN IEC 61547: 2023 EN IEC 61000-4-11:2020+AC:2022-10	B or C	Pass
Note: 1. N/A is an abbreviation for Not Applicable. 2. The test result PASS and /or FAIL has no relationship with the measurement uncertainty. 3. “#” indicates the testing item(s) was(were) fulfilled by subcontracted lab.			

2、GENERAL INFORMATION

2.1 Description of Device (EUT)

EUT: LED DOWN LIGHT

Test Model: NRP-IRDL0107-6-40K-GR-5D, NRP-IRDL0107-12-40K-GR-24D

Model List:

Model	Voltage(V)	Frequency (Hz)	Power (W)	Drive
NRP-IRDL0107-6-30K-GR-5D	AC 220-240V	50/60Hz	6W	AX-XML
NRP-IRDL0107-6-40K-GR-5D	AC 220-240V	50/60Hz	6W	AX-XML
NRP-IRDL0107-6-60K-GR-5D	AC 220-240V	50/60Hz	6W	AX-XML
NRP-IRDL0107-12-30K-GR-24D	AC 220-240V	50/60Hz	12W	LS-12-280 LI1 EXC
NRP-IRDL0107-12-40K-GR-24D	AC 220-240V	50/60Hz	12W	LS-12-280 LI1 EXC
NRP-IRDL0107-12-60K-GR-24D	AC 220-240V	50/60Hz	12W	LS-12-280 LI1 EXC
NRP-IRDL0107-12-30K-GR-36D	AC 220-240V	50/60Hz	12W	LS-12-280 LI1 EXC
NRP-IRDL0107-12-40K-GR-36D	AC 220-240V	50/60Hz	12W	LS-12-280 LI1 EXC
NRP-IRDL0107-12-60K-GR-36D	AC 220-240V	50/60Hz	12W	LS-12-280 LI1 EXC
NRP-IRDL0107-12-30K-GR-50D	AC 220-240V	50/60Hz	12W	LS-12-280 LI1 EXC

NRP-IRDL0107-12-40K-GR-50D	AC 220-240V	50/60Hz	12W	LS-12-280 LI1 EXC
NRP-IRDL0107-12-60K-GR-50D	AC 220-240V	50/60Hz	12W	LS-12-280 LI1 EXC

Test voltage: 230V~, 50Hz

Operate mode:

Mode	Description
TM1	Lighting function (adjust to the worst for dimming function)
TM2	OFF MODE
Remark: Only record the worst case.	

Factory: Same as the Applicant

Address: Same as the Applicant

Date of sample receiver: 2026-09-28

Date of Test: 2026-09-28 to 2026-10-13

2.2 Description of Test Facility

Name of Firm : Ring Testing Technology (zhongshan) Co., Ltd
Site Location : Room 203, 2nd Floor, Building D, Wanwei Lighting Plaza, No.59 Tongxing Road, Guzhen Town, Zhongshan City, China.

Subcontracted lab.

Name of Firm : Guangdong Tsaint Hi-tech Co.,Ltd.
Site Location : 1,2,3,4,6,&-1/F.,No.5, Gufeng South Road, Guzhen, Zhongshan, Guangdong, China

2.3 Measurement Uncertainty

Test Item	Range	Measurement Uncertainty	Notes
Disturbance voltages	9kHz-150kHz 150kHz-30MHz	2.94dB 2.98dB	(1)
Radiated electromagnetic disturbances	9kHz ~ 30MHz	3.0dB	(1)
Radiated electromagnetic disturbances	30~1000MHz Polarize:H	3.7dB	(1)
	30~1000MHz Polarize:V	3.7dB	
Test site temperature and humidity	/	20.6℃, 54%	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. MEASURING DEVICES AND TEST EQUIPMENT

For Disturbance voltages mains terminals Measurement ☒

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Shielding Room	CRT	CRTSR853	RGT-E-001	2026-04-22	3 Year
2.	Test Receiver	R&S	ESCS30	RGT-E002	2026-04-22	1 Year
3.	LISN	EMCO	3816/2	RGT-E003	2026-04-22	1 Year
4.	10dB Limiter	HCT	HCT-XFQ-10	RGT-E005	2026-04-22	1 Year
5.	Cable-CE01	HS	CE-2.0m	RGT-E015	2026-04-22	1 Year

For Radiated electromagnetic disturbances (30 MHz to 1GHz) Measurement ☒

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESR7	1316.3003K7-102053-TK	2025-11-20	1 Year
2.	Antenna	Schwarzbeck	VULB 9162	00249	2025-11-20	1 Year
3.	966 Chamber	CRT	9m×6m×6m	/	2024-04-04	3 Year
4.	Cable-RE02	Times	SFT205-NMNM-2.00M	441734-0001	2025-11-20	1 Year
5.	Cable-RE03	Times	SFT205-NMNM-8.00M	441731-0001	2025-11-20	1 Year
6.	CDNE	Schwarzbeck	CDNE M2	00137	2025-11-20	1 Year
7.	CDNE	Schwarzbeck	CDNE M3	00130	2025-11-20	1 Year

For Radiated electromagnetic disturbances (9 kHz to 30 MHz) Measurement ☒

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	R&S	ESCS30	RGT-E002	2026-04-22	1 Year
2.	Loop Antenna	HCT	ME9170-2m	RGT-E006	2026-04-22	1 Year
3.	Cable ME	HS	ME-5.0m	RGT-E016	2026-04-22	1 Year

For Harmonic current/ Flicker Measurement ☒

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Harmonic and Flicker Analyzer	Volnic	UI6800	RGT-E021	2026-04-22	1 Year
2.	AC Frequency Conversion Power	Volnic	FDP-500	RGT-E022	2026-04-22	1 Year

For Electrostatic discharge Test ☒

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	ESD Tester	NoiseKen	ESS-2002	RGT-E010	2026-04-28	1 Year

For Radio-frequency electromagnetic fields Test ☒

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Meter	Boonton	4242	17199	2025-11-20	1 Year
2.	Field intensity meter	Narda	EP 600	711WX80880	2025-11-20	1 Year
3.	Antenna	Schwarzbeck	VUSLP 9111E	00037	2025-11-20	1 Year
4.	Power Amplifier	HTEC	HRF0810-250	MPA1810335	2025-11-20	1 Year
5.	Signal Generator	Keysight	N5181A	ATO-57097	2025-11-20	1 Year

For Fast transients & Surges & Voltage dips and Interruptions Test ☒

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMS 3-in-1 disturbance immunity tester	EMS-PARTNER	TRANSIENT2000	RGT-E011	2026-04-22	1 Year
2.	Coupling clamp	HCT	EFT-C-01	RGT-E012	2026-04-22	1 Year

For Injected currents (radio-frequency common mode) Test ☒

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	CS test system	Schloder	CIT-10/75	RGT-E020	2026-04-22	1 Year
2.	CDN	HCT	CDN M2+M3-16A	RGT-E014	2026-04-22	1 Year
3.	6dB attenuator	Schloder	CDG 6050-50	RGT-E019	2026-04-22	1 Year

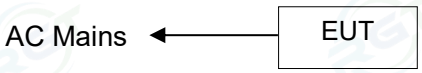
For Power frequency magnetic fields Test ☐

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Power frequency magnetic fields test system	HTEC	HMFG 100	RGT-184201	2026-04-22	1 Year

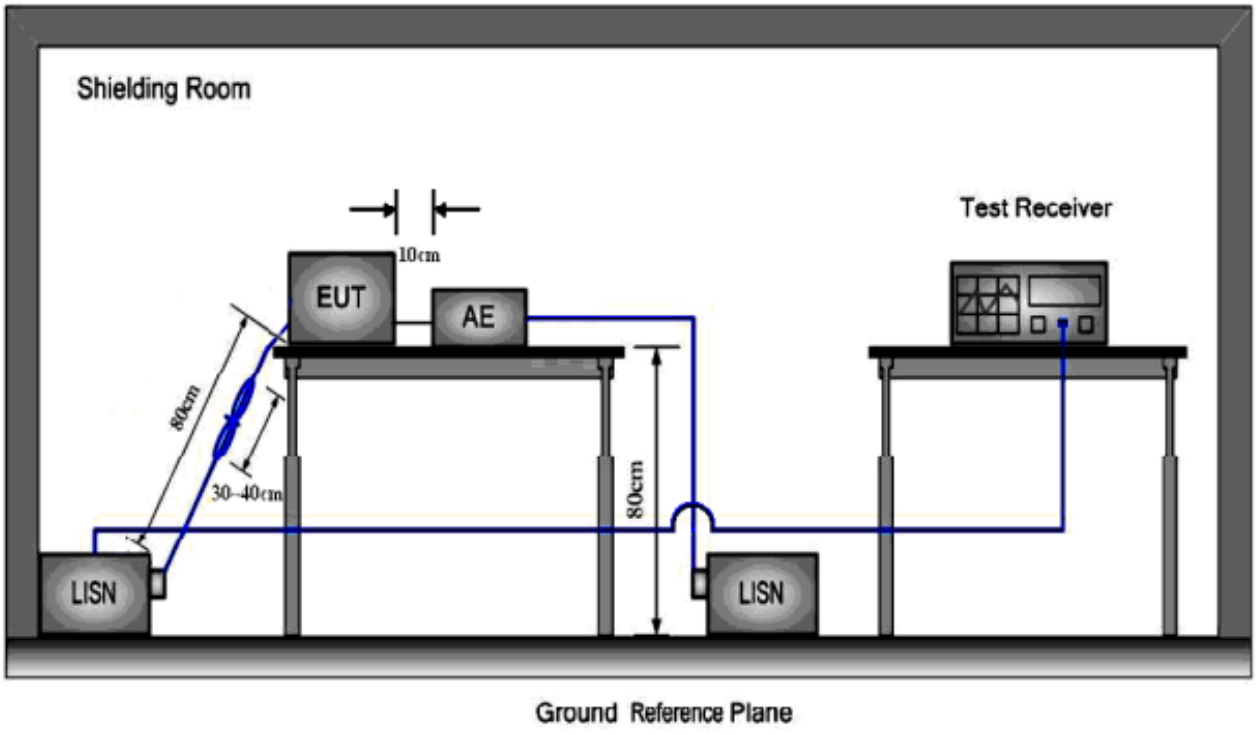
4. DISTURBANCE VOLTAGES MAINS TERMINALS MEASUREMENT

4.1 Block Diagram of Test Setup

4.1.1 Block diagram of connection between the EUT and simulators



4.1.2 Block Diagram of Test Setup



4.2 Disturbance voltages mains terminals Measurement Limits

Frequency	Limits dBμV	
	Quasi-peak Level	Average Level
9 kHz ~ 50 kHz	110	—
50 kHz ~ 150 kHz	90~80	—
150 kHz ~ 0.5 MHz	66~56	56~46
0.5 MHz ~ 5.0 MHz	56	46
5.0 MHz ~ 30 MHz	60	50
Note1-The lower limit shall apply at the transition frequencies. Note2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

4.3 Operating Condition of EUT

4.4.1 Setup the EUT as shown in Section 4.1.

4.4.2 Turn on the power of all equipment.

4.4.3 Let the EUT work in test mode and measure it.

4.4 Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground and connected to the AC mains through a Line Impedance Stabilization Network (L.I.S.N.). This provided a 50ohm coupling impedance for the tested equipment. Both sides of AC line are checked to find out the maximum conducted emission according to the EN55015 regulations during conducted emission measurement. And the voltage probe had been used for the load terminals measurement according to the EN55015 standard.

The bandwidth of the test receiver (R&S ESPI) is set at 200Hz in 9kHz~150kHz range and 9kHz in 150kHz~30MHz range.

The frequency range from 9kHz to 30MHz is checked.

All the test results are listed in Section 4.5.

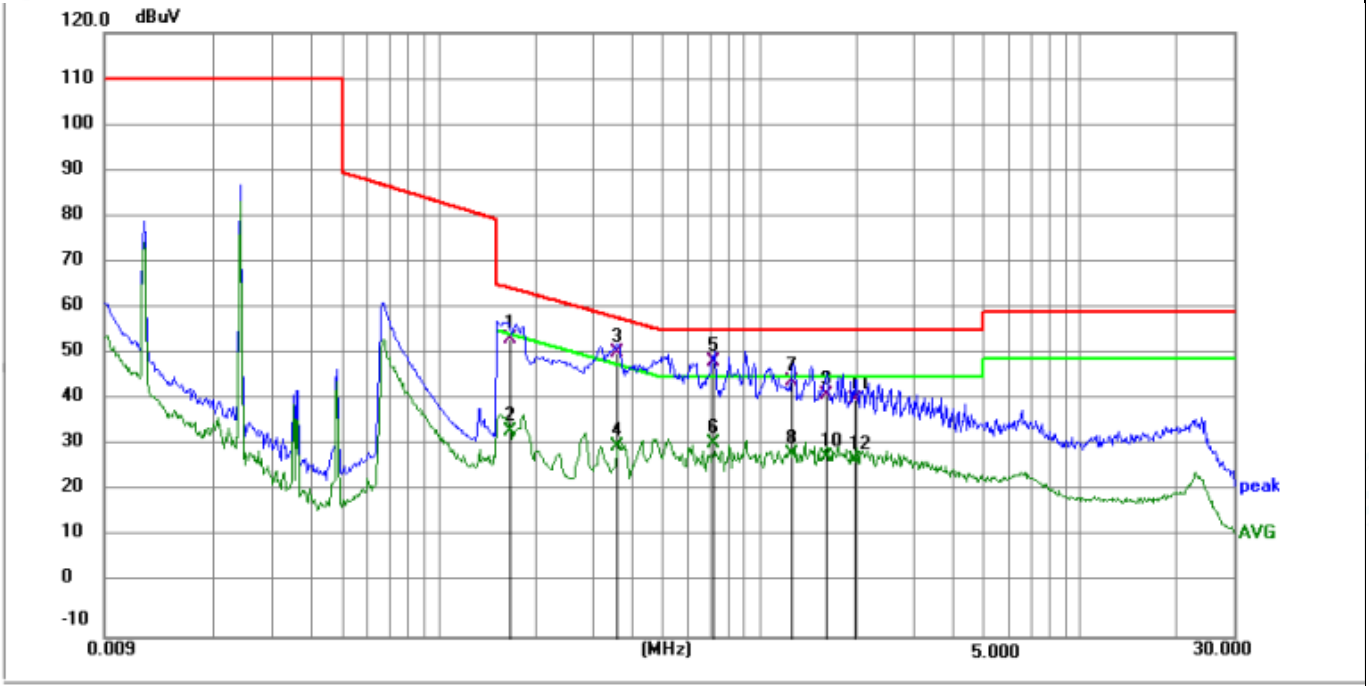
4.5 Test Results

PASS.

The frequency range from 9kHz to 30MHz is investigated.

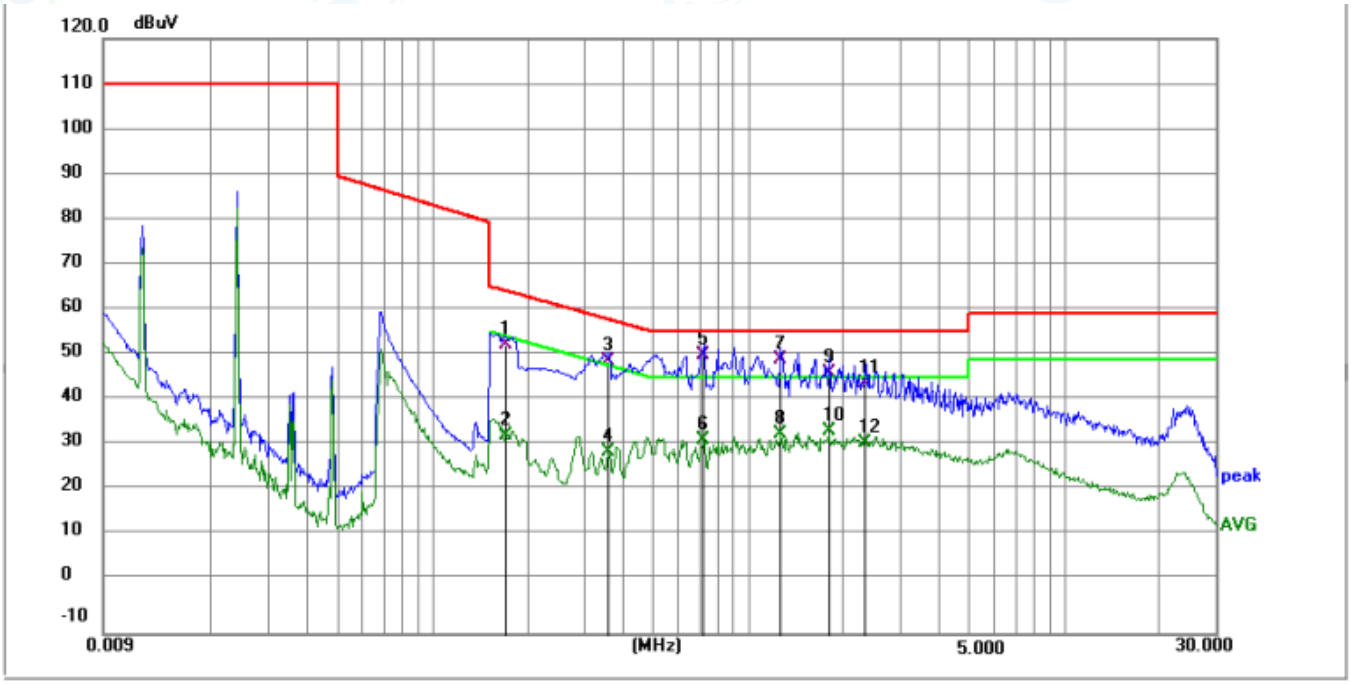
The test data are attached in the following pages.

Model No.:	NRP-IRDL0107-6-40K-GR-5D	Phase:	L
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1		



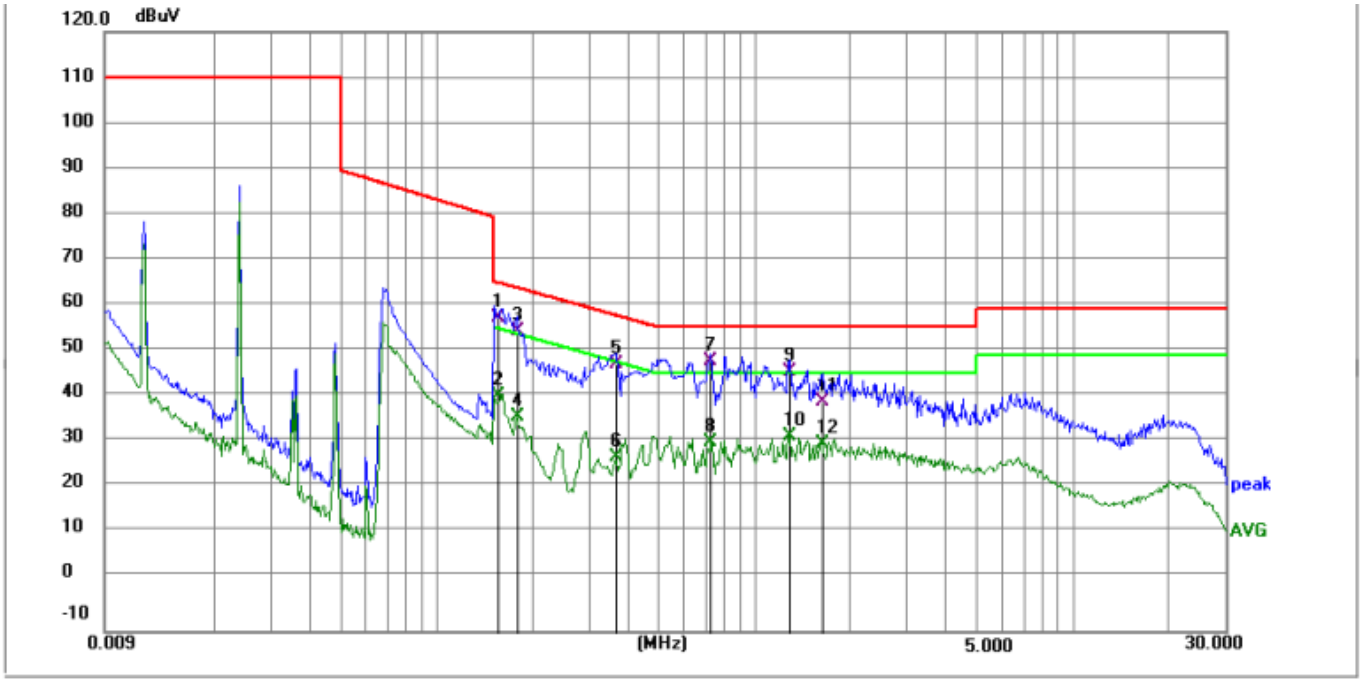
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1660	43.67	10.36	54.03	65.16	-11.13	QP	P	
2	0.1660	24.09	10.36	34.45	55.16	-20.71	AVG	P	
3	0.3595	40.85	10.36	51.21	58.74	-7.53	QP	P	
4	0.3595	20.83	10.36	31.19	48.74	-17.55	AVG	P	
5 *	0.7209	38.87	10.36	49.23	56.00	-6.77	QP	P	
6	0.7209	21.32	10.36	31.68	46.00	-14.32	AVG	P	
7	1.2672	34.71	10.36	45.07	56.00	-10.93	QP	P	
8	1.2672	19.25	10.36	29.61	46.00	-16.39	AVG	P	
9	1.6204	31.68	10.37	42.05	56.00	-13.95	QP	P	
10	1.6204	18.43	10.37	28.80	46.00	-17.20	AVG	P	
11	1.9880	30.79	10.38	41.17	56.00	-14.83	QP	P	
12	1.9880	17.77	10.38	28.15	46.00	-17.85	AVG	P	

Model No.:	NRP-IRDL0107-6-40K-GR-5D	Phase:	N
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1		



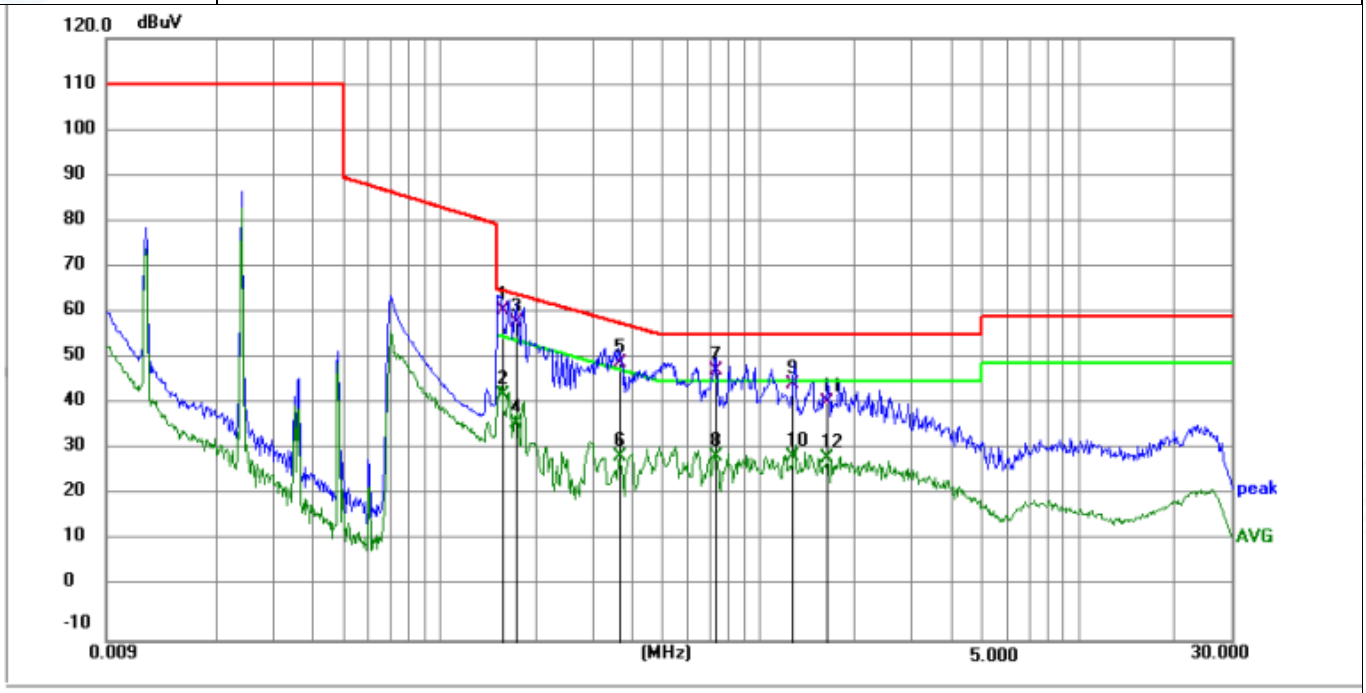
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1697	42.78	10.41	53.19	64.98	-11.79	QP	P	
2	0.1697	23.13	10.41	33.54	54.98	-21.44	AVG	P	
3	0.3589	39.28	10.44	49.72	58.75	-9.03	QP	P	
4	0.3589	19.50	10.44	29.94	48.75	-18.81	AVG	P	
5 *	0.7211	40.43	10.41	50.84	56.00	-5.16	QP	P	
6	0.7211	22.06	10.41	32.47	46.00	-13.53	AVG	P	
7	1.2617	39.47	10.41	49.88	56.00	-6.12	QP	P	
8	1.2617	23.44	10.41	33.85	46.00	-12.15	AVG	P	
9	1.8007	36.56	10.41	46.97	56.00	-9.03	QP	P	
10	1.8007	23.85	10.41	34.26	46.00	-11.74	AVG	P	
11	2.3459	34.28	10.39	44.67	56.00	-11.33	QP	P	
12	2.3459	21.41	10.39	31.80	46.00	-14.20	AVG	P	

Model No.:	NRP-IRDL0107-12-40K-GR-24D	Phase:	L
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1551	47.74	10.41	58.15	65.72	-7.57	QP	P	
2	0.1551	30.78	10.41	41.19	55.72	-14.53	AVG	P	
3	0.1787	44.86	10.42	55.28	64.55	-9.27	QP	P	
4	0.1787	26.13	10.42	36.55	54.55	-18.00	AVG	P	
5	0.3662	37.69	10.44	48.13	58.59	-10.46	QP	P	
6	0.3662	17.31	10.44	27.75	48.59	-20.84	AVG	P	
7 *	0.7341	38.23	10.41	48.64	56.00	-7.36	QP	P	
8	0.7341	20.84	10.41	31.25	46.00	-14.75	AVG	P	
9	1.2855	36.14	10.41	46.55	56.00	-9.45	QP	P	
10	1.2855	22.07	10.41	32.48	46.00	-13.52	AVG	P	
11	1.6248	29.61	10.40	40.01	56.00	-15.99	QP	P	
12	1.6248	20.37	10.40	30.77	46.00	-15.23	AVG	P	

Model No.:	NRP-IRDL0107-12-40K-GR-24D	Phase:	N
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1		

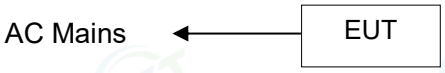


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.1573	50.84	10.36	61.20	65.61	-4.41	QP	P	
2	0.1573	32.76	10.36	43.12	55.61	-12.49	AVG	P	
3	0.1740	48.53	10.36	58.89	64.77	-5.88	QP	P	
4	0.1740	26.65	10.36	37.01	54.77	-17.76	AVG	P	
5	0.3639	39.57	10.36	49.93	58.64	-8.71	QP	P	
6	0.3639	19.41	10.36	29.77	48.64	-18.87	AVG	P	
7	0.7356	38.14	10.36	48.50	56.00	-7.50	QP	P	
8	0.7356	19.41	10.36	29.77	46.00	-16.23	AVG	P	
9	1.2865	35.00	10.36	45.36	56.00	-10.64	QP	P	
10	1.2865	19.35	10.36	29.71	46.00	-16.29	AVG	P	
11	1.6442	31.01	10.37	41.38	56.00	-14.62	QP	P	
12	1.6442	19.17	10.37	29.54	46.00	-16.46	AVG	P	

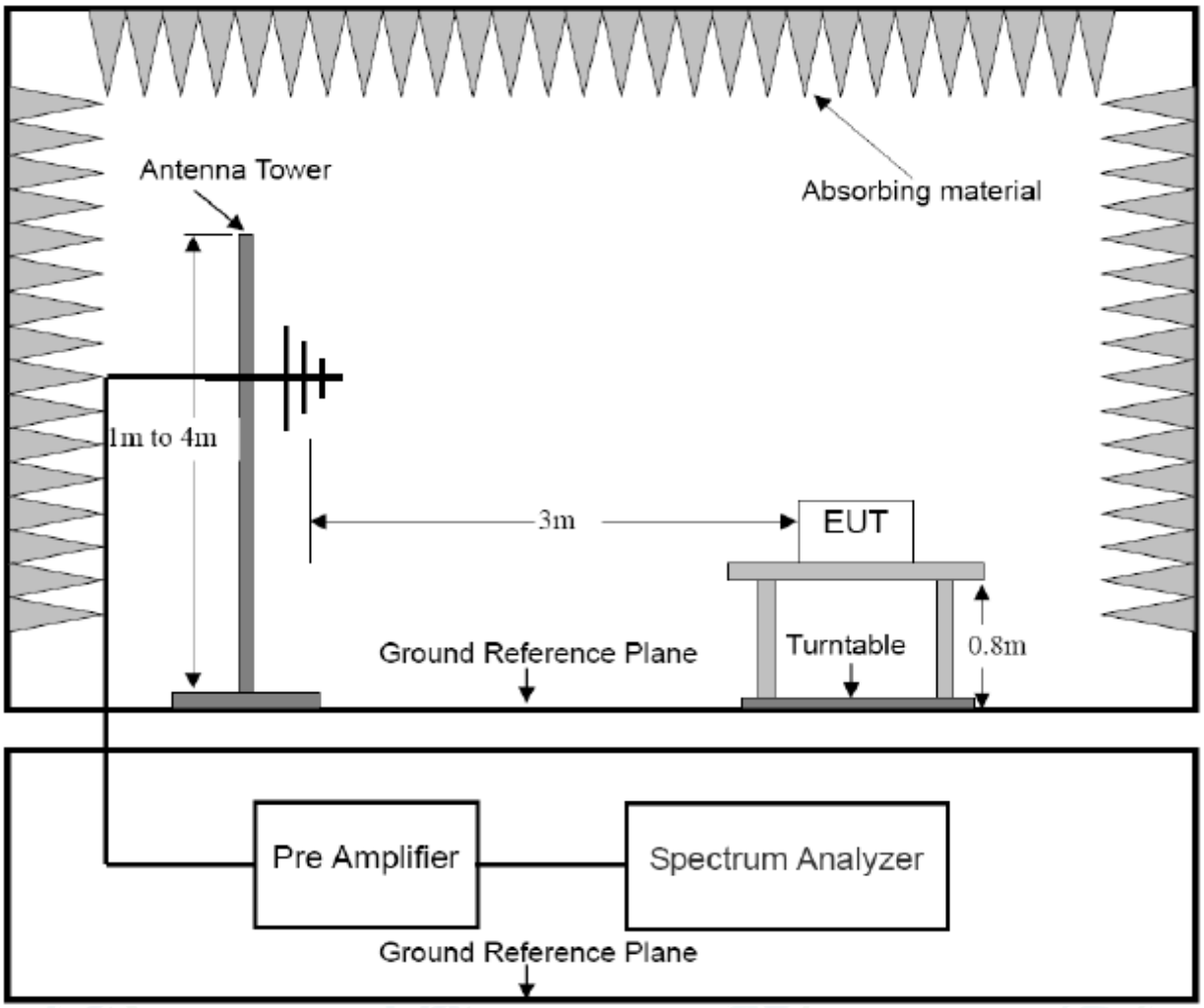
5. RADIATED ELECTROMAGNETIC DISTURBANCES (30MHz To 1GHz) MEASUREMENT

5.1 Block Diagram of Test

5.1.1 Block diagram of connection between the EUT and simulators



5.1.2 Block diagram of test setup (In chamber)



5.2 Limits

Radiated electromagnetic disturbances (30MHz to 1GHz) Measurement Limits

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

5.3 Operating Condition of EUT

5.3.1 Setup the EUT as shown in Section 5.1.

5.3.1 Turn on the power.

5.3.2 Let the EUT work in test mode and measure it.

5.4 Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meter to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarizations of the antenna are set on test.

The bandwidth of the Receiver (ESCS30) is set at 120kHz.

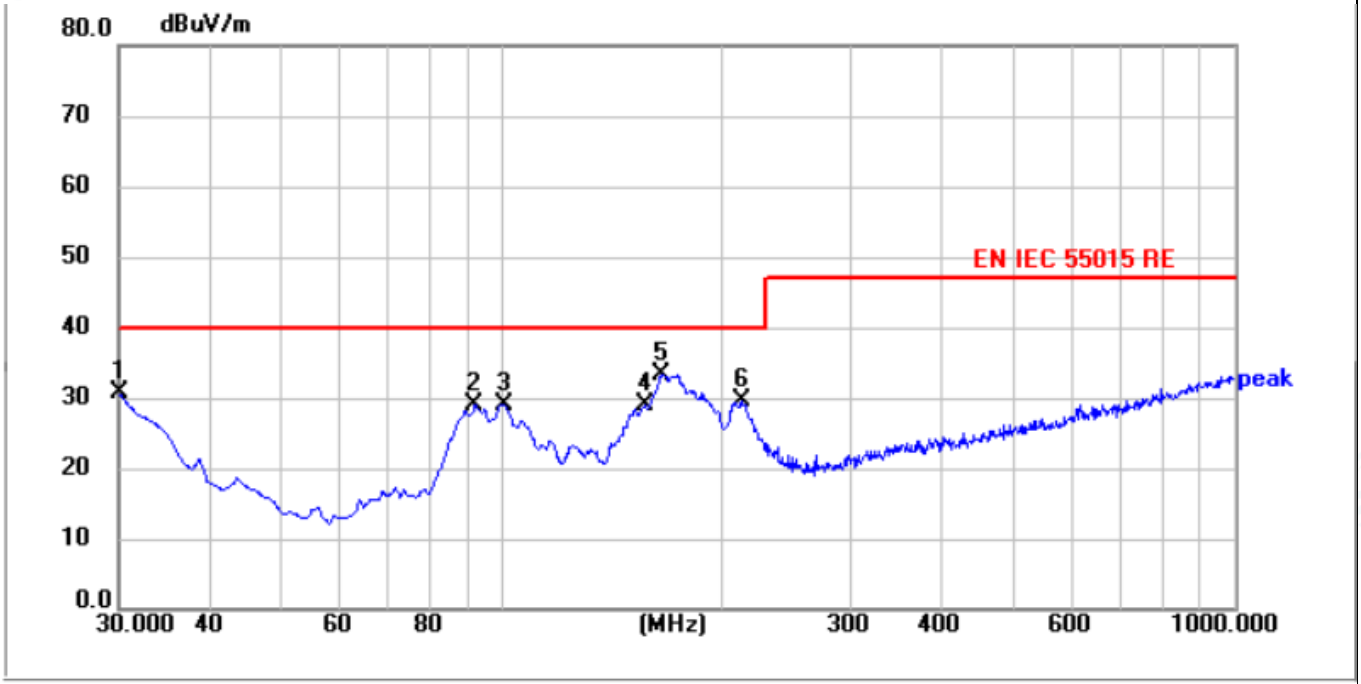
5.5 Test Results

PASS.

The frequency range from 30MHz to 1GHz is investigated.

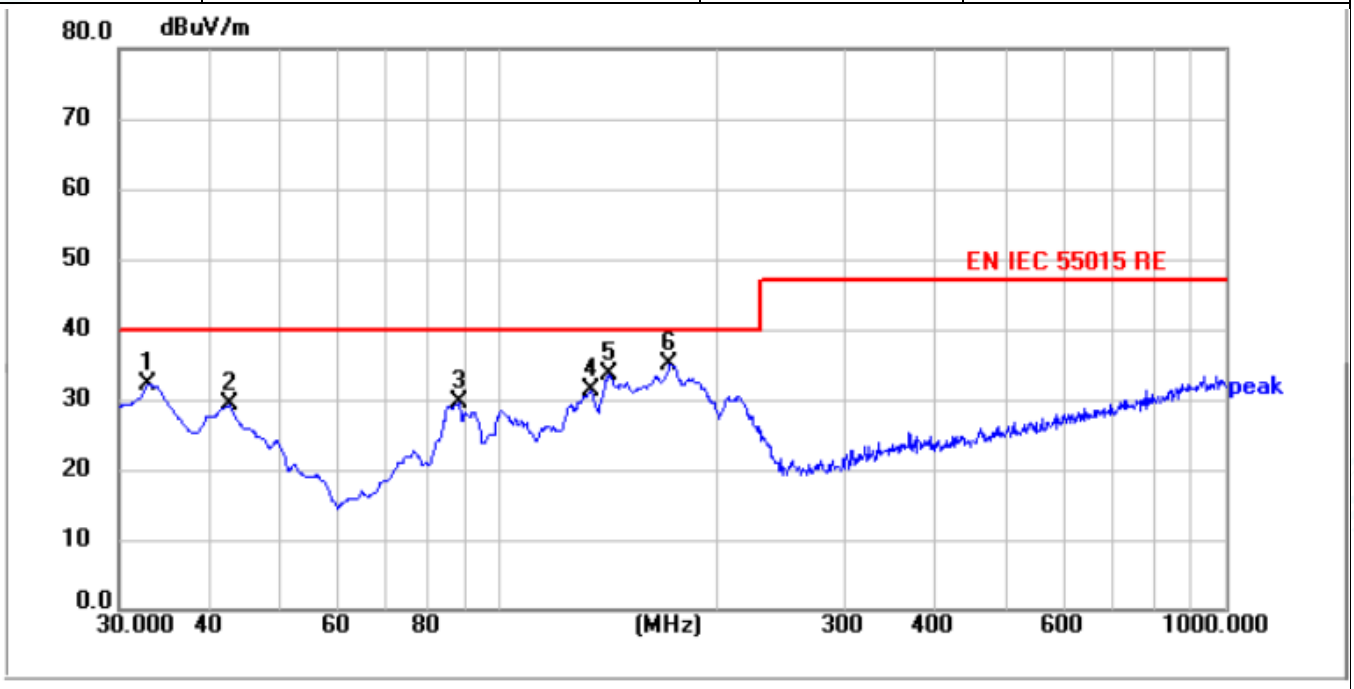
The test data are attached in the following pages.

Model No.:	NRP-IRDL0107-6-40K-GR-5D	Polarization:	Horizontal
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1	Antenna/Distance:	VULB 9162-2202/3m



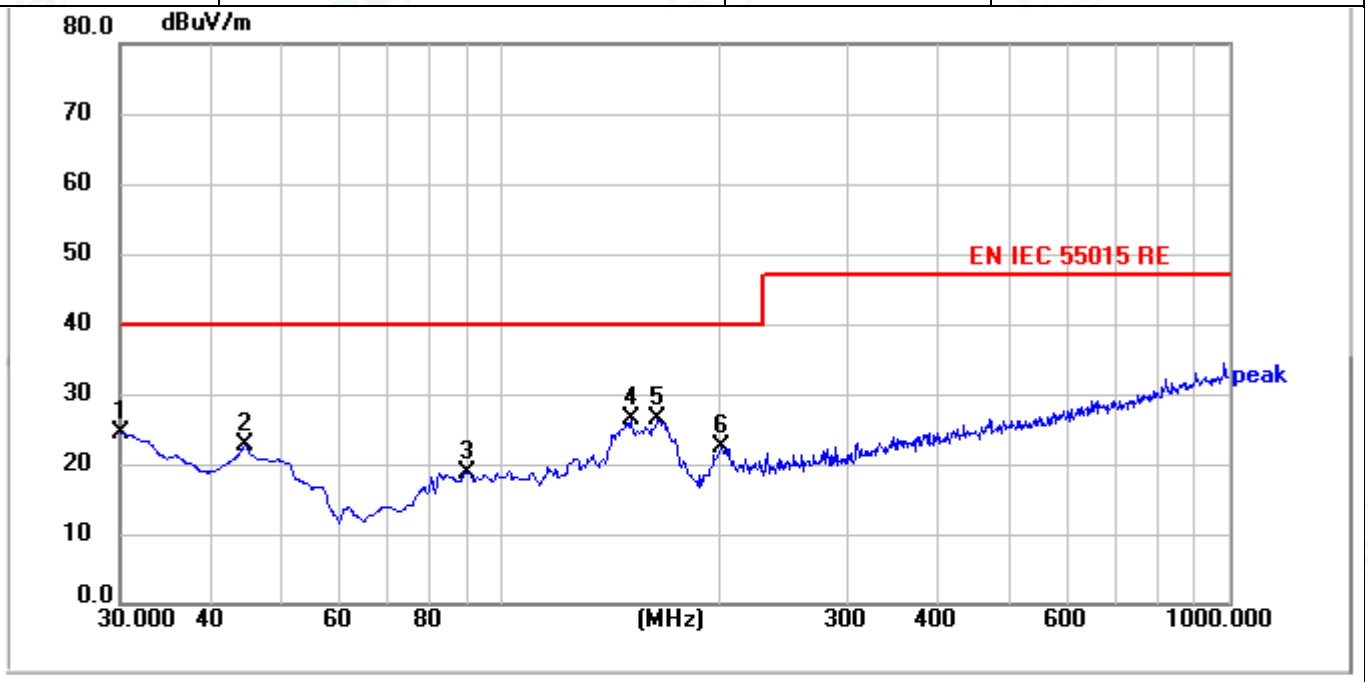
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	30.000	32.91	-2.15	30.76	40.00	-9.24	peak	300	360	P	
2	92.080	37.64	-8.73	28.91	40.00	-11.09	peak	300	360	P	
3	100.810	37.23	-8.09	29.14	40.00	-10.86	peak	300	360	P	
4	157.070	37.70	-8.82	28.88	40.00	-11.12	peak	300	360	P	
5 *	165.800	42.46	-9.12	33.34	40.00	-6.66	peak	300	360	P	
6	212.360	38.59	-9.16	29.43	40.00	-10.57	peak	300	360	P	

Model No.:	NRP-IRDL0107-6-40K-GR-5D	Polarization:	Vertical
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1	Antenna/Distance:	VULB 9162-2202/3m



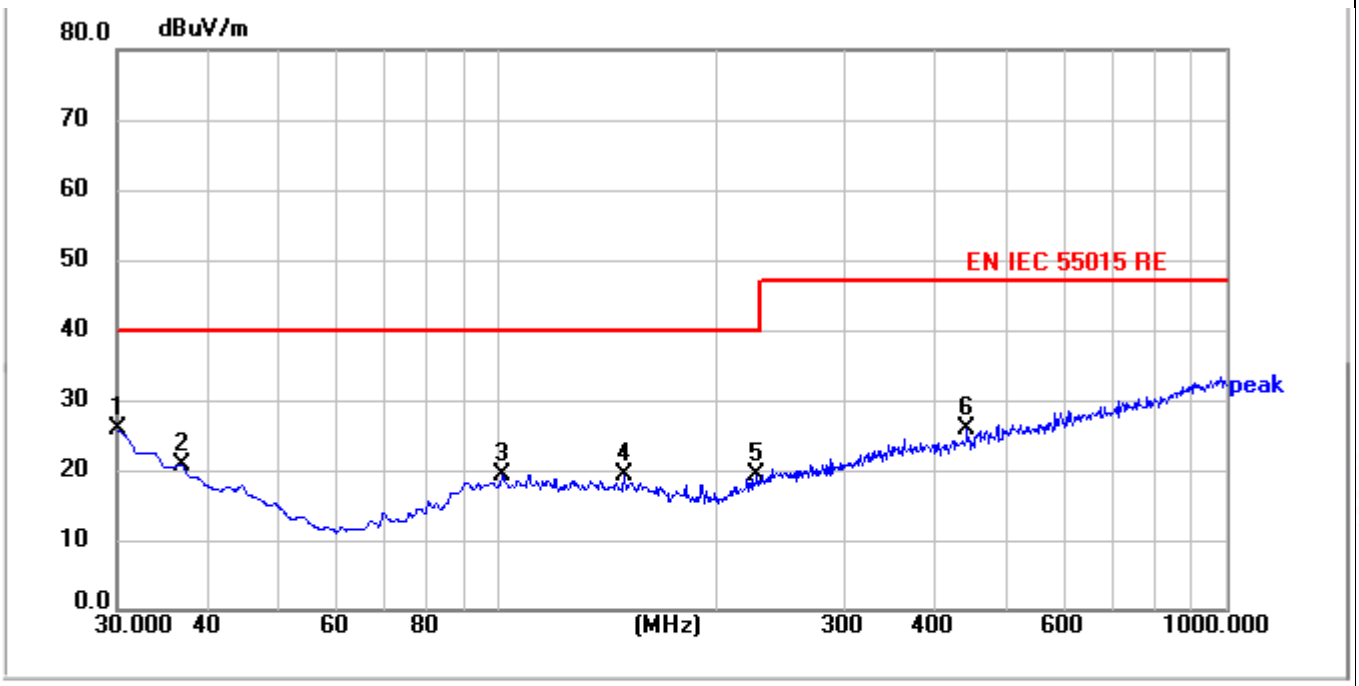
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	32.910	36.09	-4.03	32.06	40.00	-7.94	peak	300	360	P	
2	42.610	38.23	-9.02	29.21	40.00	-10.79	peak	300	360	P	
3	88.200	38.93	-9.50	29.43	40.00	-10.57	peak	300	360	P	
4	133.790	39.47	-8.27	31.20	40.00	-8.80	peak	300	360	P	
5	142.520	42.08	-8.44	33.64	40.00	-6.36	peak	300	360	P	
6 *	172.590	44.22	-9.34	34.88	40.00	-5.12	peak	300	360	P	

Model No.:	NRP-IRDL0107-12-40K-GR-24D	Polarization:	Horizontal
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1	Antenna/Distance:	VULB 9162-2202/3m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	30.000	26.59	-2.15	24.44	40.00	-15.56	peak			P	
2	44.550	32.09	-9.42	22.67	40.00	-17.33	peak			P	
3	90.140	27.71	-8.90	18.81	40.00	-21.19	peak			P	
4 *	151.250	35.08	-8.62	26.46	40.00	-13.54	peak			P	
5	164.830	35.38	-9.09	26.29	40.00	-13.71	peak			P	
6	201.690	32.47	-10.14	22.33	40.00	-17.67	peak			P	

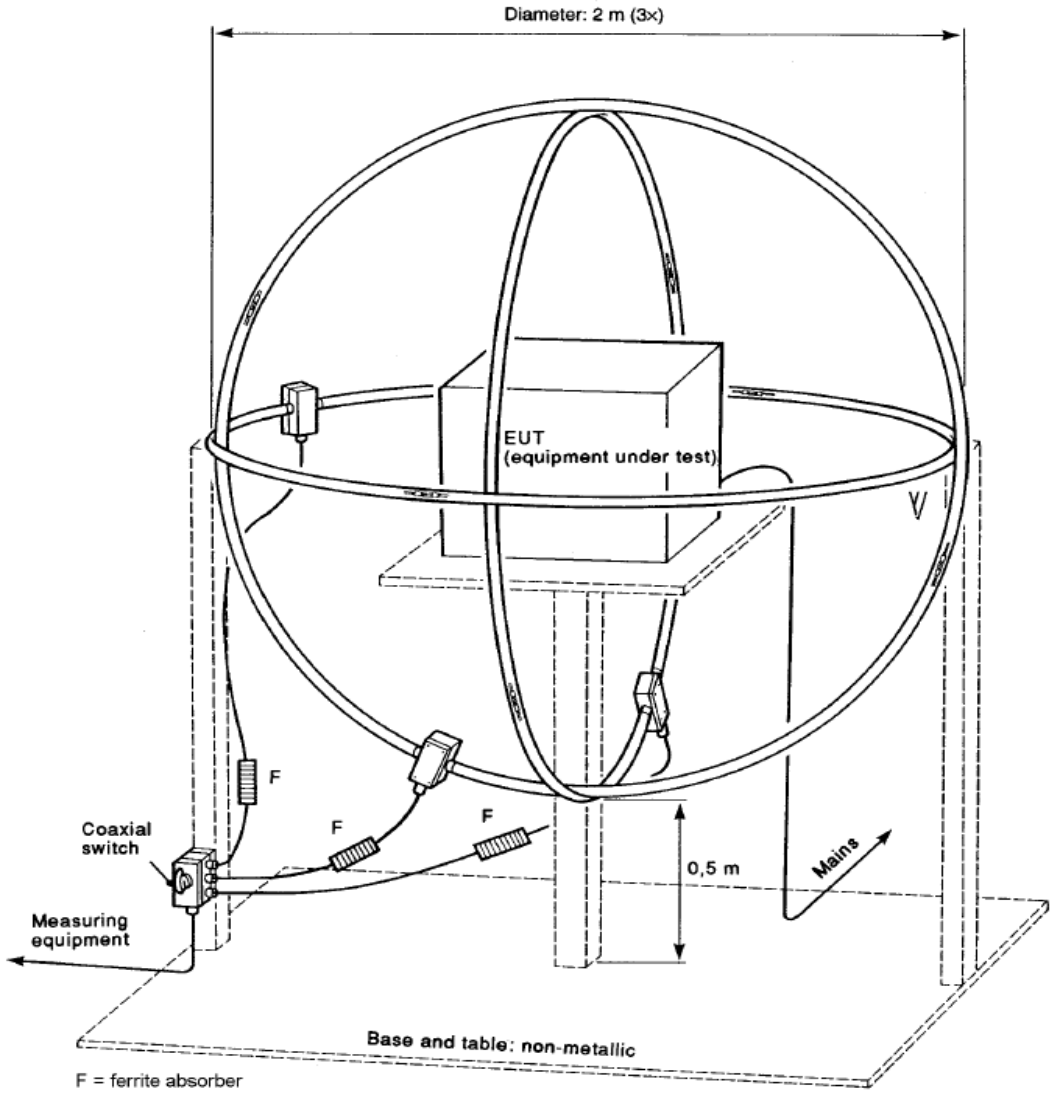
Model No.:	NRP-IRDL0107-12-40K-GR-24D	Polarization:	Vertical
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1	Antenna/Distance:	VULB 9162-2202/3m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	30.000	27.94	-2.15	25.79	40.00	-14.21	peak	300	360	P	
2	36.790	27.29	-6.49	20.80	40.00	-19.20	peak	300	360	P	
3	101.780	27.38	-8.09	19.29	40.00	-20.71	peak	300	360	P	
4	149.310	27.72	-8.57	19.15	40.00	-20.85	peak	300	360	P	
5	226.910	27.41	-8.02	19.39	40.00	-20.61	peak	300	360	P	
6	443.220	28.68	-2.90	25.78	47.00	-21.22	peak	300	360	P	

6. RADIATED ELECTROMAGNETIC DISTURBANCES (9KHZ TO 30MHZ) MEASUREMENT

6.1 Block Diagram of Test Setup



6.2 Radiated electromagnetic disturbances (9kHz to 30MHz) Measurement Limits

Frequency	Limits for loop diameter (dBμA)
	2m
9kHz ~ 70kHz	88
70kHz ~ 150kHz	88 ~ 58*
150kHz ~ 3.0MHz	58 ~ 22*
3.0MHz ~ 30MHz	22

1. At the transition frequency the lower limit applies.
2. * decreasing linearly with logarithm of the frequency.

6.3 Operating Condition of EUT

6.3.1 Setup the EUT as shown in Section 6.1.

6.3.2 Turn on the power.

6.3.3 Let the EUT work in test mode and measure it.

6.4 Test Procedure

The EUT is placed on a wood table in the center of a loop antenna. The induced current in the loop antenna is measured by means of a current probe and the test receiver. Three field components are checked by means of a coaxial switch.

The frequency range from 9kHz to 30MHz is investigated. The receiver is measured with the quasi-peak detector. For frequency band 9kHz to 150kHz, the bandwidth of the field strength meter (R&S test receiver ESCS30) is set at 200Hz. For frequency band 150kHz to 30MHz, the bandwidth is set at 9kHz.

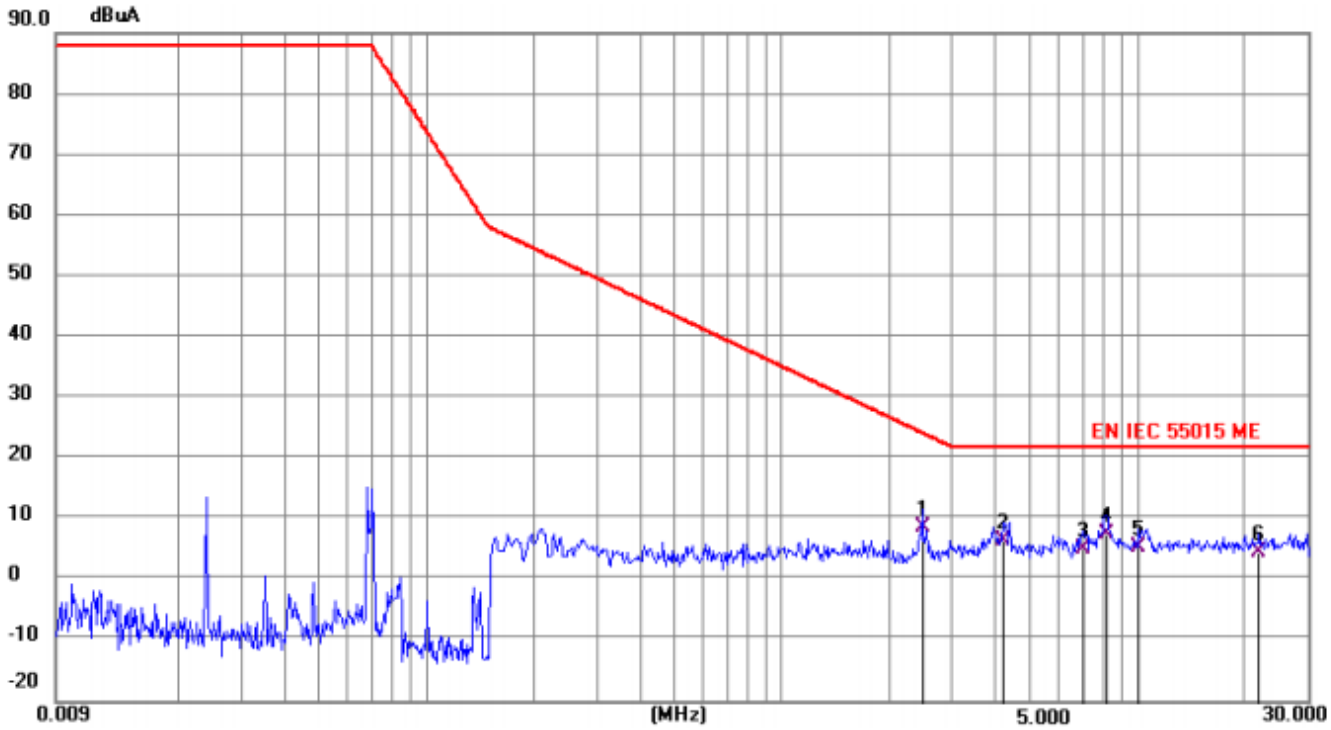
6.5 Test Results

PASS.

The frequency range from 9kHz to 30MHz is investigated.

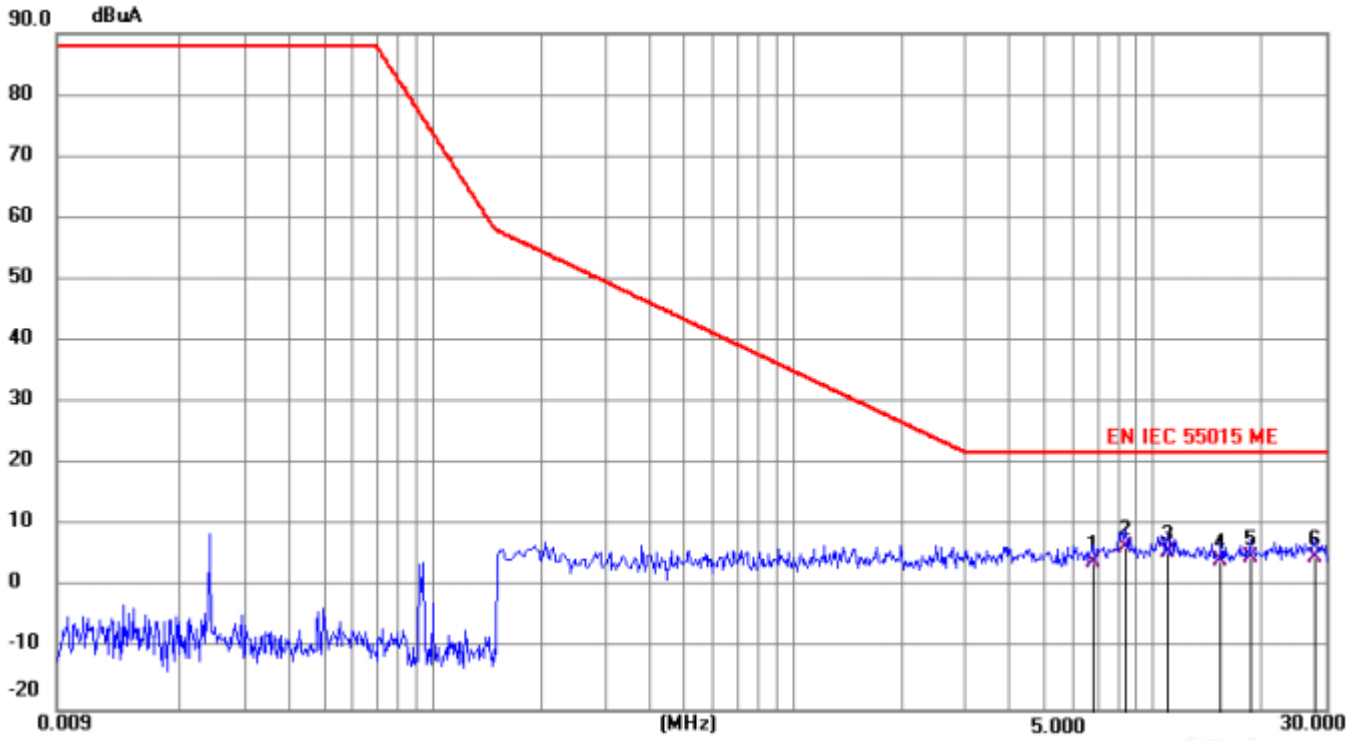
The test data are attached in the following pages.

Model No.:	NRP-IRDL0107-6-40K-GR-5D	Phase:	LOOP A
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1		



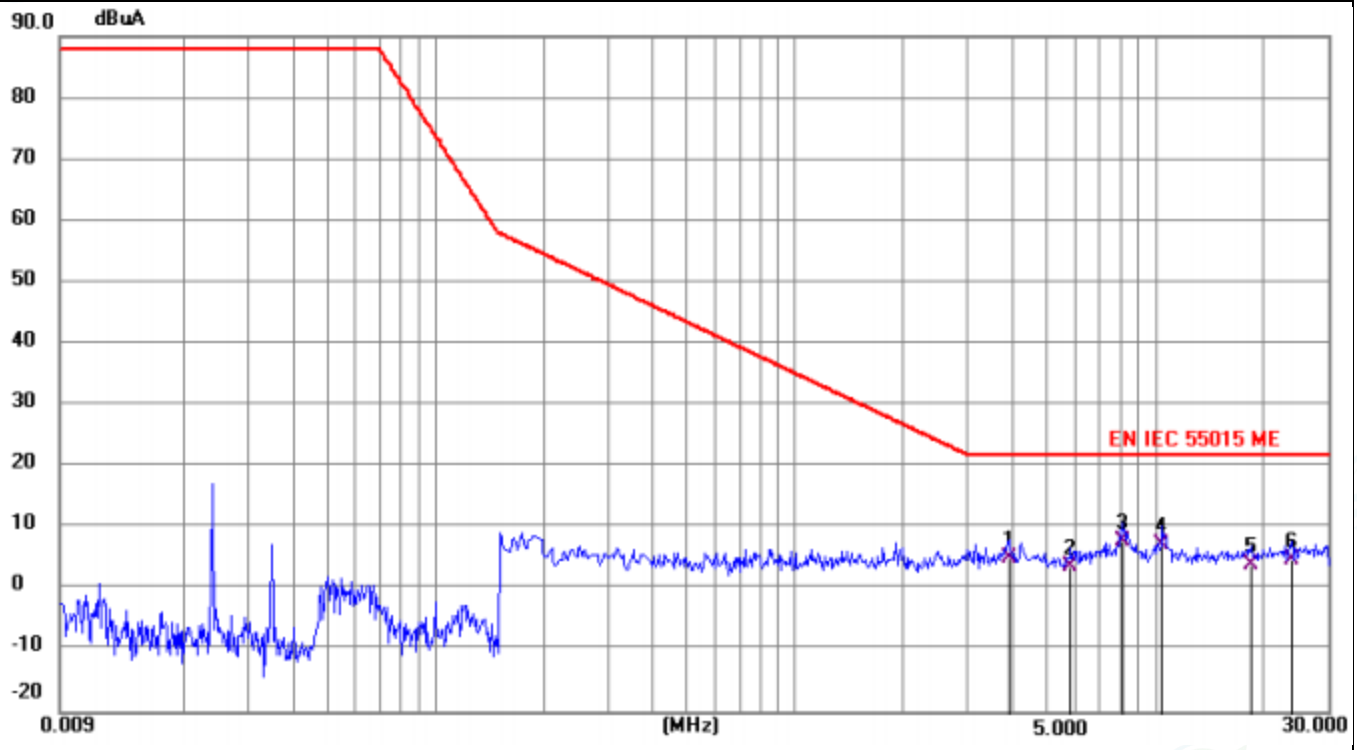
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector	Comment
1		2.4674	8.58	0.09	8.67	24.35	-15.68	QP	
2		4.1595	6.53	0.12	6.65	22.00	-15.35	QP	
3		7.0530	5.03	0.19	5.22	22.00	-16.78	QP	
4	*	8.1822	7.51	0.21	7.72	22.00	-14.28	QP	
5		10.0950	5.29	0.24	5.53	22.00	-16.47	QP	
6		21.9615	4.39	0.34	4.73	22.00	-17.27	QP	

Model No.:	NRP-IRDL0107-6-40K-GR-5D	Phase:	LOOP B
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1		



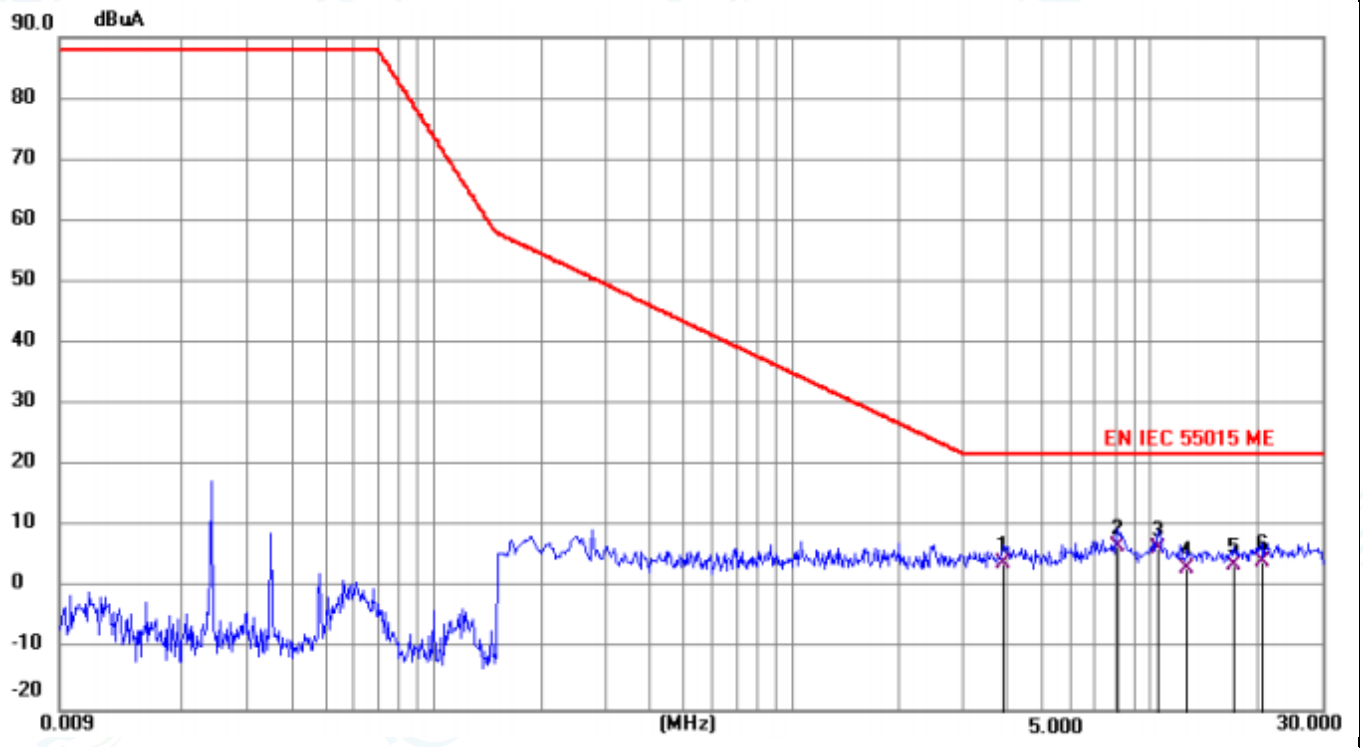
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector	Comment
1		6.7830	3.89	0.18	4.07	22.00	-17.93	QP	
2	*	8.3580	6.39	0.21	6.60	22.00	-15.40	QP	
3		10.8870	5.40	0.25	5.65	22.00	-16.35	QP	
4		15.3330	4.16	0.28	4.44	22.00	-17.56	QP	
5		18.5233	4.52	0.31	4.83	22.00	-17.17	QP	
6		28.1083	4.62	0.39	5.01	22.00	-16.99	QP	

Model No.:	NRP-IRDL0107-6-40K-GR-5D	Phase:	LOOP C
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1		



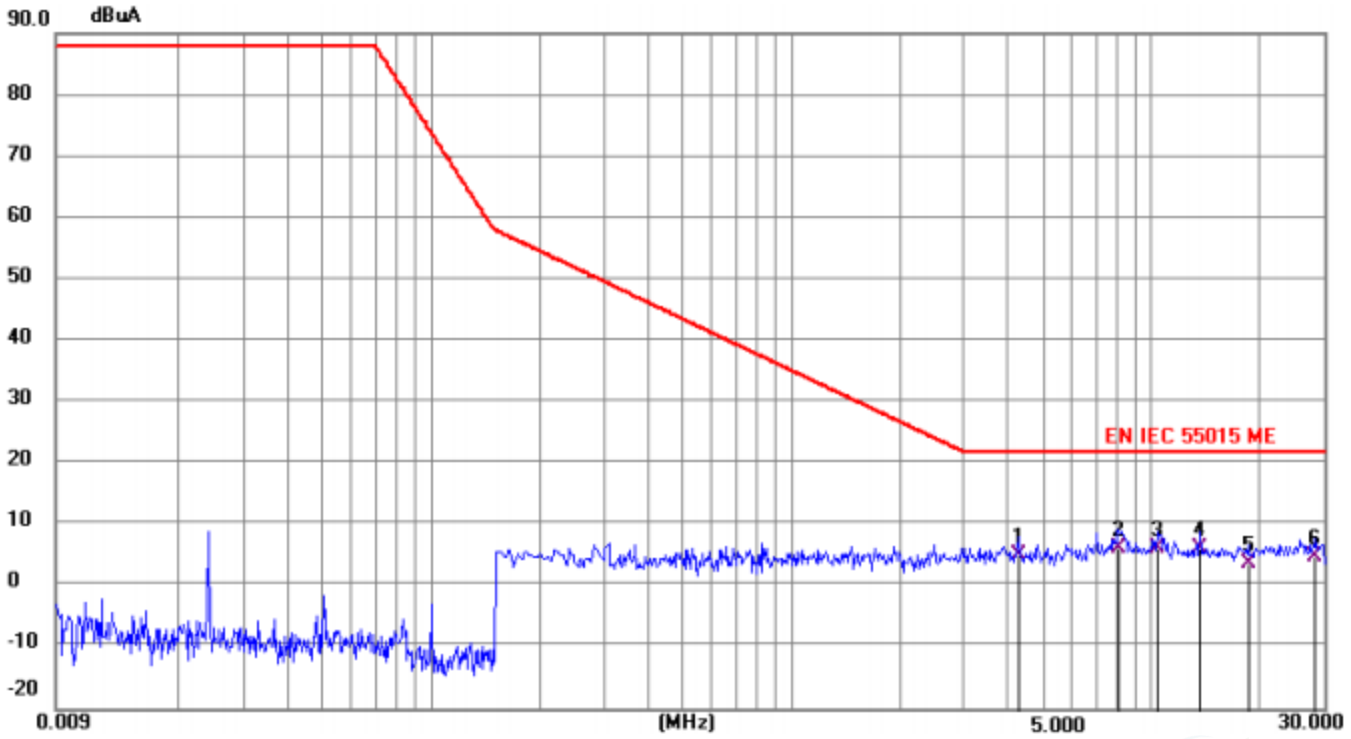
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector	Comment
1		3.8894	5.14	0.12	5.26	22.00	-16.74	QP	
2		5.8020	3.72	0.16	3.88	22.00	-18.12	QP	
3	*	8.1105	7.82	0.21	8.03	22.00	-13.97	QP	
4		10.4414	7.05	0.24	7.29	22.00	-14.71	QP	
5		18.3614	3.87	0.31	4.18	22.00	-17.82	QP	
6		23.9010	4.52	0.36	4.88	22.00	-17.12	QP	

Model No.:	NRP-IRDL0107-12-40K-GR-24D	Phase:	LOOP A
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1		



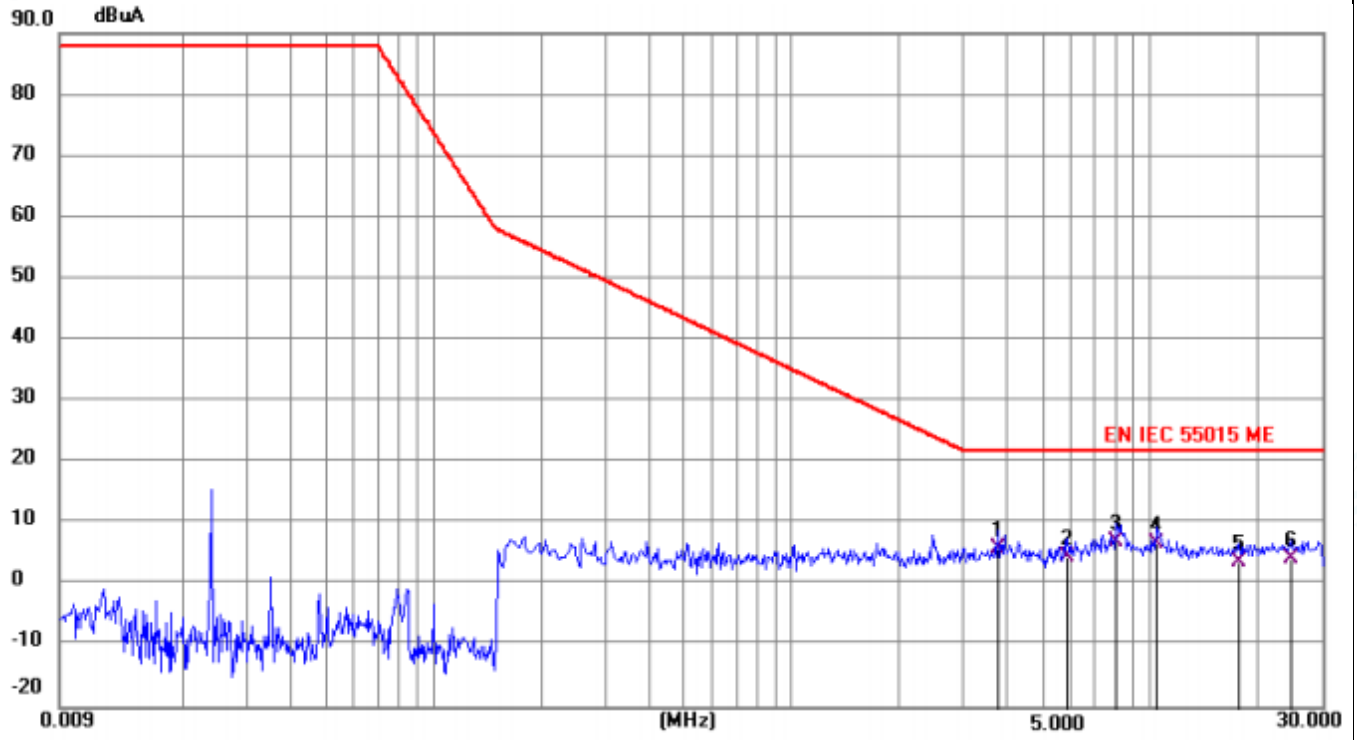
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector	Comment
1		3.8805	3.94	0.12	4.06	22.00	-17.94	QP	
2	*	8.0700	6.67	0.21	6.88	22.00	-15.12	QP	
3		10.5225	6.33	0.24	6.57	22.00	-15.43	QP	
4		12.6554	2.98	0.26	3.24	22.00	-18.76	QP	
5		17.0970	3.48	0.30	3.78	22.00	-18.22	QP	
6		20.3505	4.14	0.32	4.46	22.00	-17.54	QP	

Model No.:	NRP-IRDL0107-12-40K-GR-24D	Phase:	LOOP B
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector	Comment
1		4.2675	5.04	0.13	5.17	22.00	-16.83	QP	
2	*	8.0655	6.14	0.21	6.35	22.00	-15.65	QP	
3		10.3605	5.89	0.24	6.13	22.00	-15.87	QP	
4		13.5645	5.88	0.27	6.15	22.00	-15.85	QP	
5		18.5865	3.41	0.31	3.72	22.00	-18.28	QP	
6		28.5045	4.53	0.40	4.93	22.00	-17.07	QP	

Model No.:	NRP-IRDL0107-12-40K-GR-24D	Phase:	LOOP C
EUT:	LED DOWN LIGHT	Power Supply:	230V~, 50Hz
Test mode:	TM1		

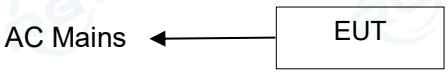


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector	Comment
1		3.7365	5.94	0.11	6.05	22.00	-15.95	QP	
2		5.8560	4.41	0.16	4.57	22.00	-17.43	QP	
3	*	8.0565	6.95	0.21	7.16	22.00	-14.84	QP	
4		10.3965	6.44	0.24	6.68	22.00	-15.32	QP	
5		17.6100	3.42	0.30	3.72	22.00	-18.28	QP	
6		24.5310	4.00	0.36	4.36	22.00	-17.64	QP	

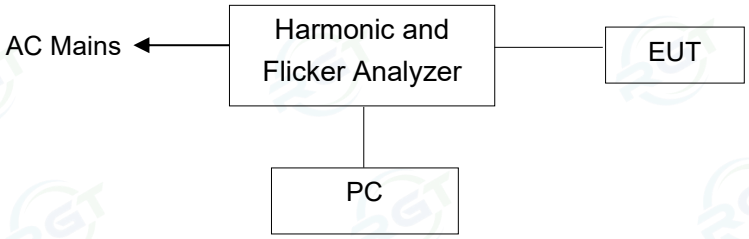
7.FOR HARMONIC CURRENT MEASUREMENT

7.1Block Diagram of Test Setup

7.1.1 Block diagram of connection between the EUT and simulators



7.1.2 Block Diagram of Test Setup



7.2 Measuring Standard

EN IEC 61000-3-2:2019+A1:2021+A2:2024 Class C

7.3 Operating Condition of EUT

7.3.1 Setup the EUT as shown in Section 7.1.

7.3.2 Turn on the power of all equipment.

7.3.3 Let the EUT work in test mode and measure it.

7.4 Test Results

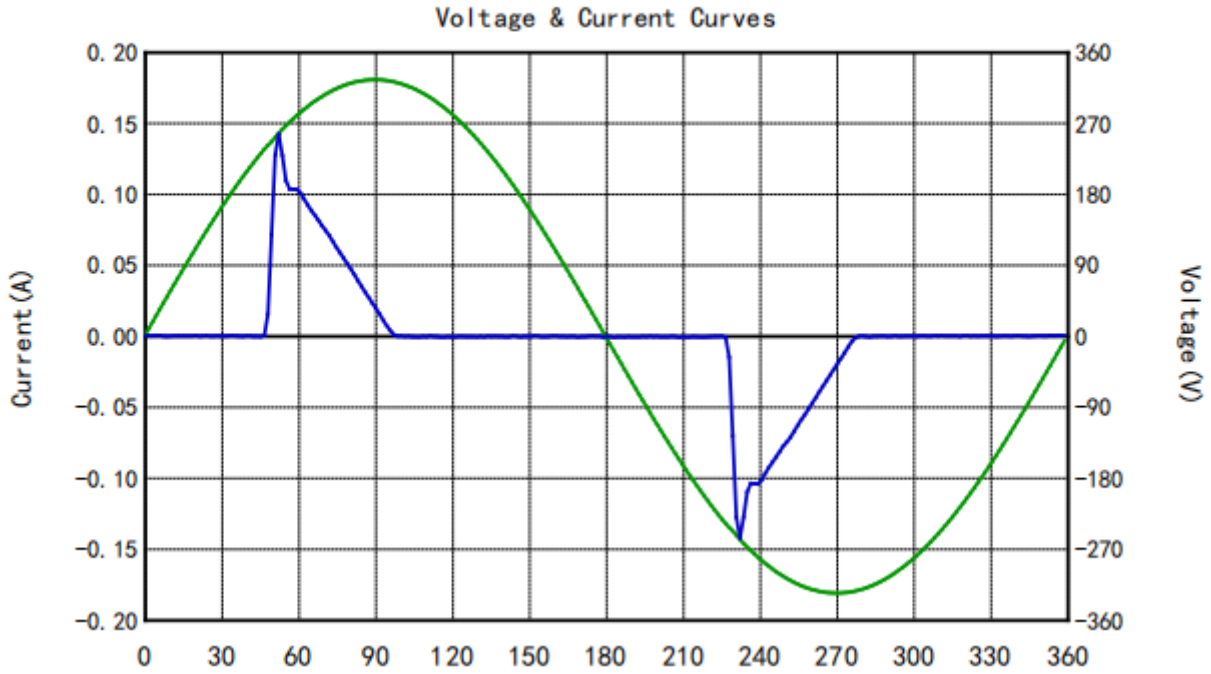
PASS

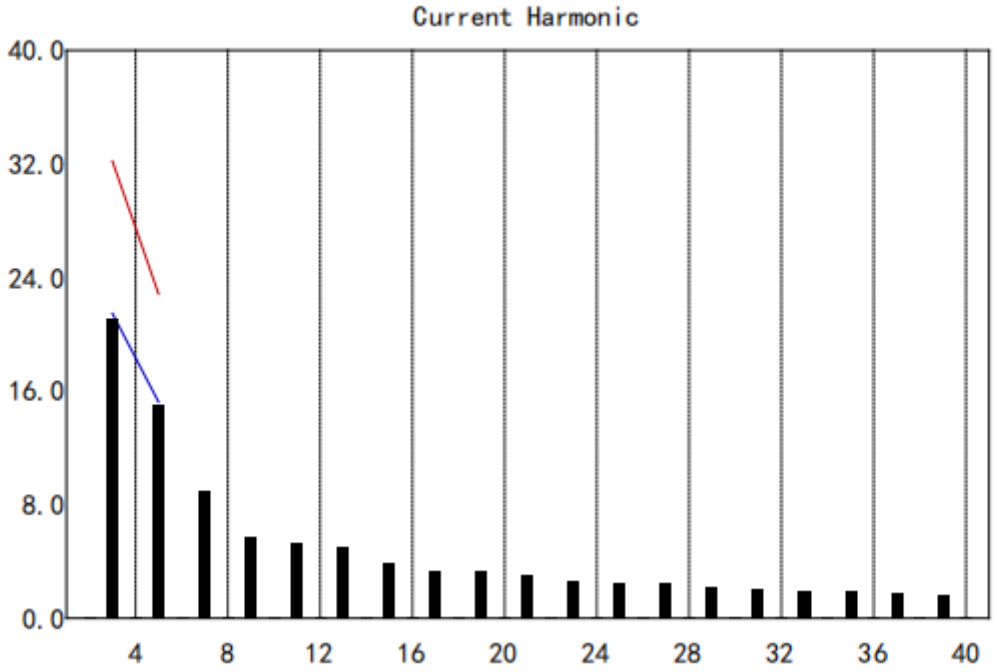
The test data are attached in the following pages.

Harmonic Test Report

EUT:	LED DOWN LIGHT	Model:	NRP-IRDL0107-6-40K-GR-5D
Standard:	EN IEC 61000-3-2:2019+A1:2021+A2:2024	Test mode:	TM1

Test Result:Pass





Current Test Result Summary

EUT:	LED DOWN LIGHT	Model:	NRP-IRDL0107-6-40K-GR-5D
Standard:	EN IEC 61000-3-2:2019+A1:2021+A2:2024	Test mode:	TM1

Test Result:Pass Source qualification:Normal
THC(mA):30.5 I-THD(%):122.2 POHC(mA):7.1 POHC Limit(mA):N/A

Highest parameter values during test:

Voltage(V):230.05	Frequency(Hz):50.00
I_Peak(A)0.145	I_RMS(A)0.040
I_Fund(A)0.025	Crest Factor:3.708
Power(W):5.2	Power Factor:0.568

Peak current(Ipeak)141.5 mA			
Peak current max. phase angle=52.0 deg			Pass
Min. Current 60-90 deg(I60_90pMin)=16.21 mA		Limit=7.08 mA	Pass
Max. Current 60-90 deg(I60_90nMax)=-16.45 mA		Limit=-7.08 mA	Pass
I_h3:21.16	Limit:21.45		Pass
I_h5:15.06	Limit:15.22		Pass

Voltage Source Verification Date

EUT:	LED DOWN LIGHT	Model:	NRP-IRDL0107-6-40K-GR-5D
Standard:	EN IEC 61000-3-2:2019+A1:2021+A2:2024	Test mode:	TM1

Test Result:Pass

Measure data:

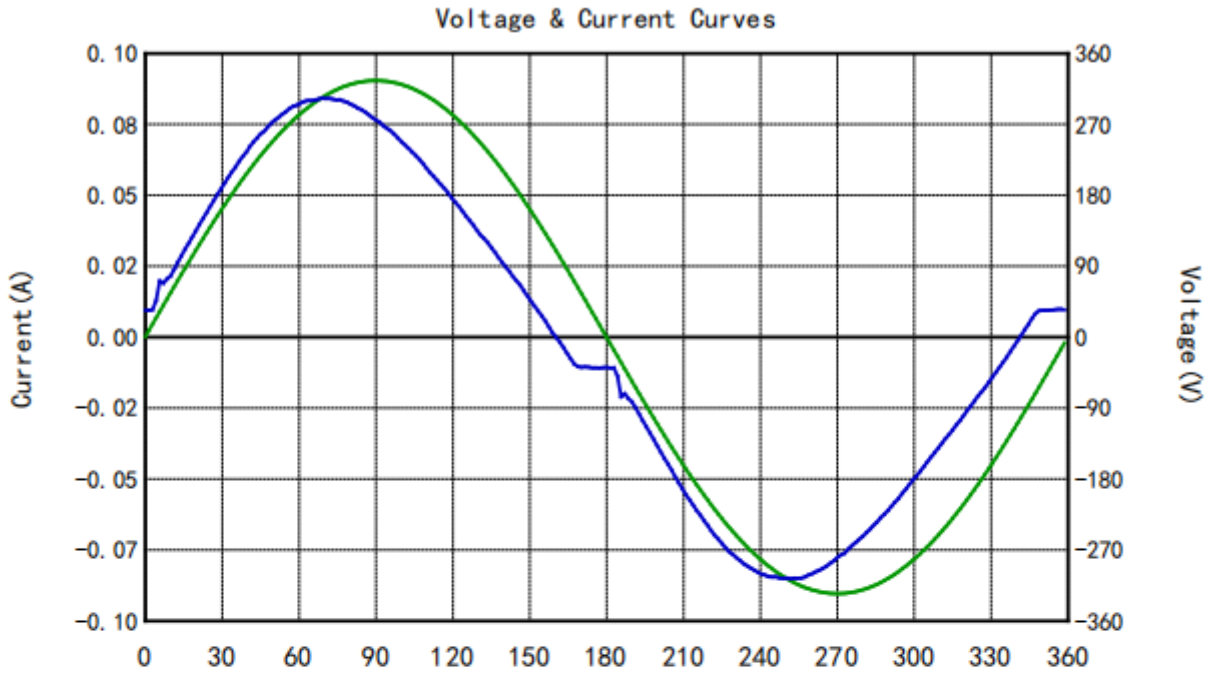
	Rated	Avg	Max	Min	Result
Voltage(V)	230.00	230.04	230.05	230.03	Pass
Freq. (Hz)	50.00	50.00	50.00	50.00	Pass
CF	1.414	1.415	1.415	1.414	Pass
Phase-peak (deg)	90.0	90.8	91.4	90.0	Pass

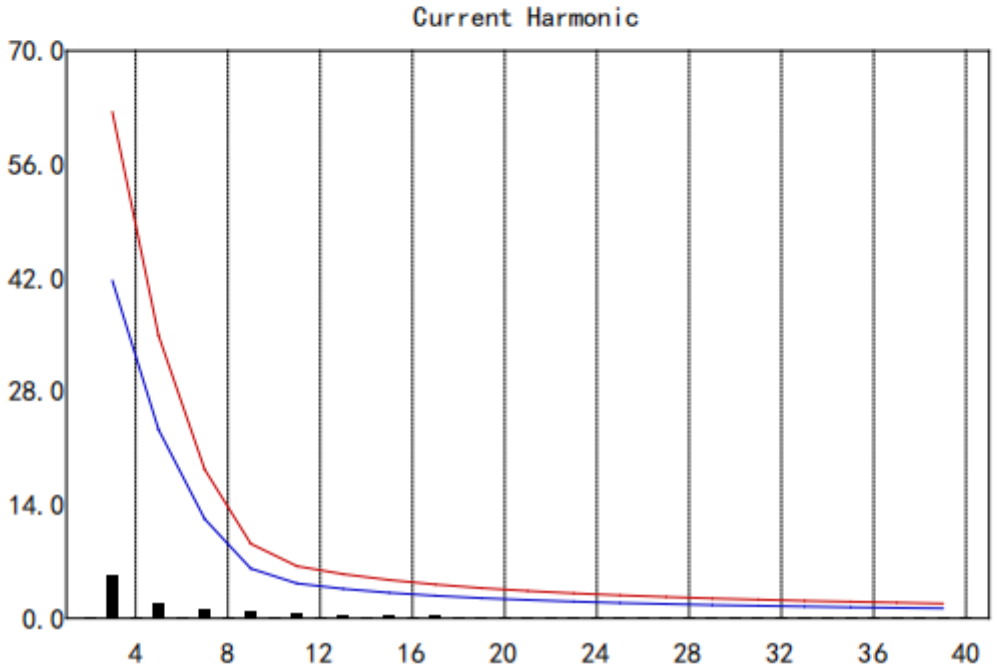
Harmonic#	Voltage-%	Limit%	%Limit	Status
2	0.02	0.20	10.36	OK
3	0.04	0.90	4.34	OK
4	0.00	0.20	0.89	OK
5	0.02	0.40	5.36	OK
6	0.00	0.20	0.36	OK
7	0.01	0.30	4.85	OK
8	0.00	0.20	0.32	OK
9	0.01	0.20	5.48	OK
10	0.00	0.20	0.25	OK
11	0.01	0.10	11.35	OK
12	0.00	0.10	0.51	OK
13	0.01	0.10	11.36	OK
14	0.00	0.10	0.54	OK
15	0.01	0.10	9.85	OK
16	0.00	0.10	0.53	OK
17	0.01	0.10	9.16	OK
18	0.00	0.10	0.55	OK
19	0.01	0.10	9.68	OK
20	0.00	0.10	0.48	OK
21	0.01	0.10	9.53	OK
22	0.00	0.10	0.54	OK
23	0.01	0.10	9.10	OK
24	0.00	0.10	0.62	OK
25	0.01	0.10	8.94	OK
26	0.00	0.10	0.52	OK
27	0.01	0.10	9.55	OK
28	0.00	0.10	0.45	OK
29	0.01	0.10	9.45	OK
30	0.00	0.10	0.37	OK
31	0.01	0.10	8.96	OK
32	0.00	0.10	0.43	OK
33	0.01	0.10	9.03	OK
34	0.00	0.10	0.54	OK
35	0.01	0.10	9.40	OK
36	0.00	0.10	0.45	OK
37	0.01	0.10	9.15	OK
38	0.00	0.10	0.50	OK
39	0.01	0.10	8.70	OK
40	0.00	0.10	0.43	OK

Harmonic Test Report

EUT:	LED DOWN LIGHT	Model:	NRP-IRDL0107-12-40K-GR-24D
Standard:	EN IEC 61000-3-2:2019+A1:2021+A2:2024	Test mode:	TM1

Test Result:Pass





Current Test Result Summary

EUT:	LED DOWN LIGHT	Model:	NRP-IRDL0107-12-40K-GR-24D
Standard:	EN IEC 61000-3-2:2019+A1:2021+A2:2024	Test mode:	TM1

Test Result:Pass Source qualification:Normal
THC(mA):5.9 I-THD(%):10.7 POHC(mA):0.4 POHC Limit(mA):5.3

Highest parameter values during test:
Voltage(V):230.07 Frequency(Hz):50.00
I_Peak(A)0.086 I_RMS(A)0.056
I_Fund(A)0.056 Crest Factor:-1.524
Power(W):12.3 Power Factor:0.955

Harmonic#	avg	100%Limit	%Limit	max	150%Limit	%Limit	Status
2	0.0			0.0			Pass
3	5.3	41.6	12.86	5.4	62.4	8.63	Pass
4	0.0			0.0			Pass
5	1.8	23.2	7.81	1.8	34.9	5.30	Pass
6	0.0			0.0			Pass
7	1.1	12.2	8.89	1.1	18.4	6.09	Pass
8	0.0			0.0			Pass
9	0.8	6.1	12.47	0.8	9.2	8.63	Pass
10	0.0			0.0			Pass
11	0.6	4.3	13.86	0.6	6.4	9.69	Pass
12	0.0			0.0			Pass
13	0.4	3.6	11.44	0.4	5.4	8.06	Pass
14	0.0			0.0			Pass
15	0.3	3.1	10.70	0.4	4.7	7.51	Pass
16	0.0			0.0			Pass
17	0.3	2.8	9.43	0.3	4.2	6.67	Pass
18	0.0			0.0			Pass
19	0.2	2.5	6.91	0.2	3.7	4.98	Pass
20	0.0			0.0			Pass
21	0.2	2.2	7.66	0.2	3.4	5.68	Pass
22	0.0			0.0			Pass
23	0.1	2.0	6.15	0.1	3.1	4.58	Pass
24	0.0			0.0			Pass
25	0.1	1.9	4.56	0.1	2.8	3.55	Pass
26	0.0			0.0			Pass
27	0.1	1.7	3.53	0.1	2.6	3.02	Pass
28	0.0			0.0			Pass
29	0.1	1.6	5.36	0.1	2.4	4.13	Pass
30	0.0			0.0			Pass
31	0.1	1.5	6.63	0.1	2.3	5.08	Pass
32	0.0			0.0			Pass
33	0.1	1.4	7.53	0.1	2.1	5.75	Pass
34	0.0			0.0			Pass
35	0.1	1.3	7.63	0.1	2.0	5.71	Pass
36	0.0			0.0			Pass
37	0.1	1.3	9.75	0.1	1.9	7.22	Pass
38	0.0			0.0			Pass
39	0.1	1.2	10.36	0.1	1.8	7.63	Pass
40	0.0			0.0			Pass

Voltage Source Verification Date

EUT:	LED DOWN LIGHT	Model:	NRP-IRDL0107-12-40K-GR-24D
Standard:	EN IEC 61000-3-2:2019+A1:2021+A2:2024	Test mode:	TM1

Test Result:Pass

Measure data:

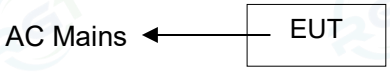
	Rated	Avg	Max	Min	Result
Voltage(V)	230.00	230.06	230.07	230.05	Pass
Freq. (Hz)	50.00	50.00	50.00	50.00	Pass
CF	1.414	1.414	1.415	1.414	Pass
Phase-peak (deg)	90.0	90.7	91.4	90.0	Pass

Harmonic#	Voltage-%	Limit%	%Limit	Status
2	0.02	0.20	10.58	OK
3	0.01	0.90	1.23	OK
4	0.00	0.20	0.66	OK
5	0.00	0.40	0.85	OK
6	0.00	0.20	0.50	OK
7	0.00	0.30	0.95	OK
8	0.00	0.20	0.32	OK
9	0.00	0.20	1.12	OK
10	0.00	0.20	0.33	OK
11	0.00	0.10	2.16	OK
12	0.00	0.10	0.60	OK
13	0.00	0.10	1.72	OK
14	0.00	0.10	0.58	OK
15	0.00	0.10	1.50	OK
16	0.00	0.10	0.55	OK
17	0.00	0.10	1.35	OK
18	0.00	0.10	0.62	OK
19	0.00	0.10	1.32	OK
20	0.00	0.10	0.54	OK
21	0.00	0.10	1.39	OK
22	0.00	0.10	0.54	OK
23	0.00	0.10	1.17	OK
24	0.00	0.10	0.56	OK
25	0.00	0.10	1.18	OK
26	0.00	0.10	0.46	OK
27	0.00	0.10	0.95	OK
28	0.00	0.10	0.49	OK
29	0.00	0.10	1.19	OK
30	0.00	0.10	0.43	OK
31	0.00	0.10	1.20	OK
32	0.00	0.10	0.47	OK
33	0.00	0.10	1.24	OK
34	0.00	0.10	0.46	OK
35	0.00	0.10	1.23	OK
36	0.00	0.10	0.42	OK
37	0.00	0.10	1.46	OK
38	0.00	0.10	0.41	OK
39	0.00	0.10	1.35	OK
40	0.00	0.10	0.44	OK

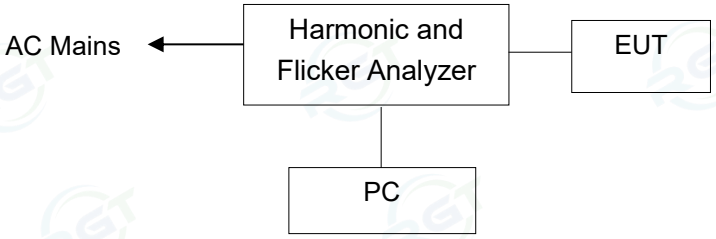
8. VOLTAGE FLUCTUATIONS & FLICKER MEASUREMENT

8.1 Block Diagram of Test Setup

8.1.1 Block diagram of connection between the EUT and simulators



8.1.2 Block Diagram of Test Setup



8.2 Measuring Standard

EN 61000-3-3:2013+A1:2019+A2:2021+AC:2022-01

8.3 Operating Condition of EUT

8.3.1 Setup the EUT as shown in Section 8.1.

8.3.2 Turn on the power of all equipment.

8.3.3 Let the EUT work in test mode and measure it.

8.4 Test Results

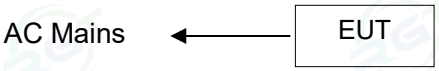
N/A.

Remark: Based on technical evaluation, the EUT is not likely to produce multiple voltage fluctuations which in turn can cause flicker. Therefore, they are deemed to comply with the limits in this standard and not required to be tested.

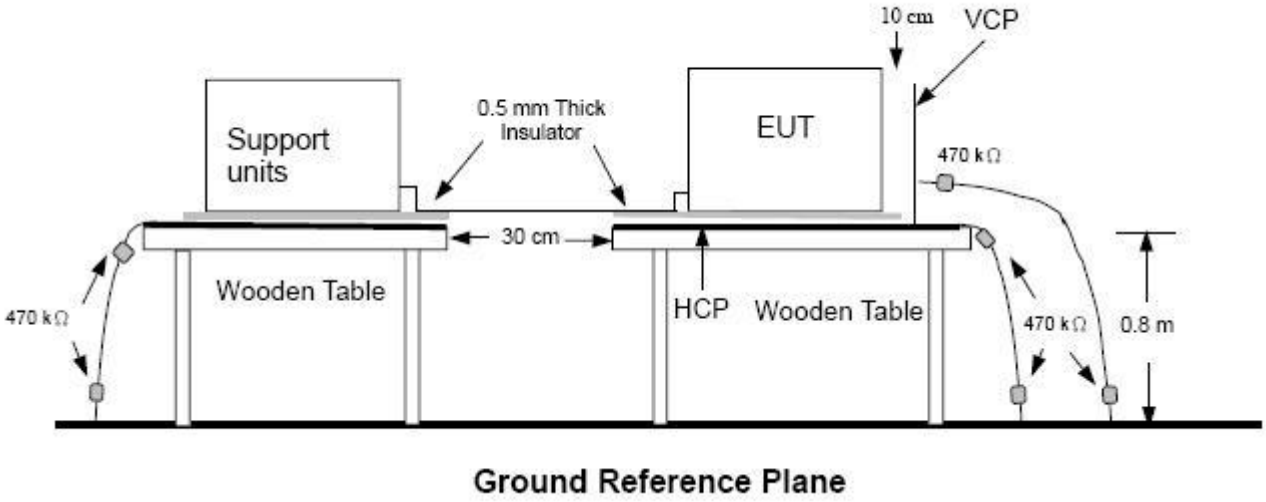
9.FOR ELECTROSTATIC DISCHARGE TEST

9.1 Block Diagram of Test Setup

9.1.1 Block Diagram of the EUT



9.1.2 Block Diagram of ESD Test Setup



9.2 Test Standard

EN IEC 61547: 2023 (EN IEC 61000-4-2:2009)

9.3 Severity Levels and Performance Criterion

9.3.1 Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

9.3.2 Performance criterion: **B**

9.4 Operating Condition of EUT

9.4.1 Setup the EUT as shown in Section 9.1.

9.4.2 Turn on the power of all equipment.

9.4.3 Let the EUT work in test mode and measure it.

9.5 Test Procedure

9.5.1 Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

9.5.2 Contact Discharge:

All the procedure shall be same as Section 9.6.1 except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

9.5.3 Indirect discharge for horizontal coupling plane:

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

9.5.4 Indirect discharge for vertical coupling plane:

At least 20 single discharge shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

9.6 Test Results

PASS.

Please refer to the following page.

Electrostatic discharge Test Results

Standard:	☐ **IEC 61000-4-2:2008** ☑ **EN IEC 61000-4-2:2009**	**Result:**	☑ **PASS /** ☐ **FAIL**
EUT:	LED DOWN LIGHT	M/N:	NRP-IRDL0107-6-40K-GR-5D, NRP-IRDL0107-12-40K-GR-24D
Power Supply:	230V~, 50Hz	Ambient Condition:	24℃ 54％RH
Test Mode:	TM1,TM2	Criterion:	B
Air Discharge: ±2, 4, 8KV Contact Discharge: ±2, 4KV			
# For each point positive 10 times and negative 10 times			

Discharge Location	**Kind** A-Air Discharge C-Contact Discharge	**Result**
Conductive Surfaces	C	PASS
Slots, Apertures, and Insulating Surfaces	A	PASS
HCP	C	PASS
VCP	C	PASS

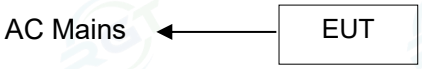
Note: No degradation in the performance of the EUT was observed.

Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).

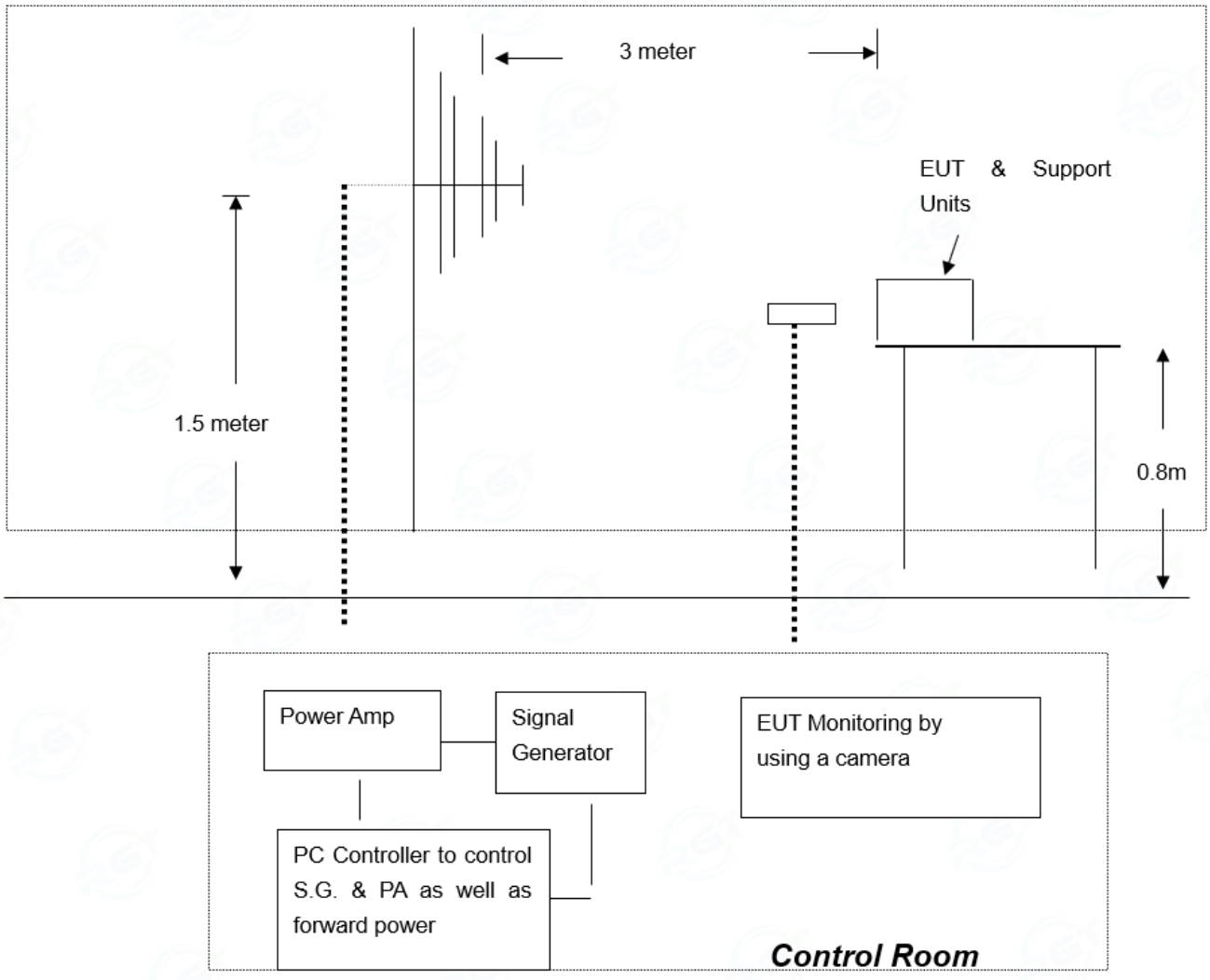
10. RADIO-FREQUENCY ELECTROMAGNETIC FIELDS TEST

10.1 Block Diagram of Test Setup

10.1.1 Block Diagram of the EUT and the simulators



10.1.2 R/S Test Setup



10.2 Test Standard

EN IEC 61547: 2023 (EN IEC 61000-4-3: 2020)

10.3 Severity Levels and Performance Criterion

10.3.1 Severity level

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

10.3.2 Performance criterion**: A**

10.4 Operating Condition of EUT

10.4.1 Setup the EUT as shown in Section 10.1.

10.4.2 Turn on the power of all equipment.

10.4.3 Let the EUT work in test mode and measure it.

10.5 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor EUT screen. All the scanning conditions are as follows**:**

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80 - 1000 MHz
4. Dwell time of radiated	0.0015 decade/s
5. Waiting Time	1 Sec.

10.6 Test Results

Pass

Radio-frequency electromagnetic fields Test Data

Standard:	☐ **IEC 61000-4-3:2020** ☑ **EN IEC 61000-4-3:2020**	**Result:**	☑ **PASS /** ☐ **FAIL**
EUT:	LED DOWN LIGHT	M/N:	NRP-IRDL0107-6-40K-GR-5D, NRP-IRDL0107-12-40K-GR-24D
Power Supply:	230V~, 50Hz	Ambient Condition:	24 ℃ 54% RH
Field Strength:	3 V/m	Criterion:	A
EUT - Antenna Separation:	3 m	Steps ：	1 % with 3s dwell time
Modulation： ☐ none ☐ Pulse ☑ AM Sinusoidal 1 kHz 80 %			
Operation Mode：TM1			
Frequency Range: Frequency Rang：80 to 1000 MHz			

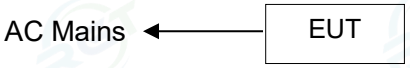
	Horizontal	Vertical
Front	Pass	Pass
Right	Pass	Pass
Rear	Pass	Pass
Left	Pass	Pass

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

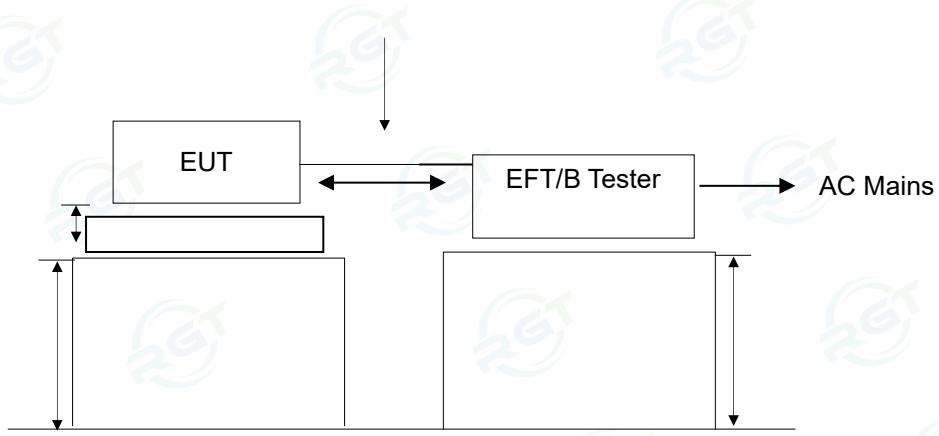
11.FAST TRANSIENTS TEST

11.1 Block Diagram of Test Setup

11.1.1 Block Diagram of the EUT and the simulators



11.1.2 Block Diagram of Test Setup



11.2 Test Standard

EN IEC 61547: 2023 (EN 61000-4-4: 2012)

11.3 Severity Levels and Performance Criterion

11.3.1 Severity level

Open circuit output test voltage and repetition rate of the impulses				
Level	On power port, PE		On I/O (Input/Output) Signal data and control ports	
	Voltage peak kV	Repetition rate kHz	Voltage peak kV	Repetition rate kHz
1.	0.5 kV	5 or 100	0.25 kV	5 or 100
2.	1 kV	5 or 100	0.5 kV	5 or 100
3.	2 kV	5 or 100	1 kV	5 or 100
4.	4 kV	5 or 100	2 kV	5 or 100
X	Special	Special	Special	Special
NOTE 1 Use of 5 kHz repetition rates is traditional; however, 100 kHz is closer to reality. Product committees should determine which frequencies are relevant for specific products or product types. NOTE 2 With some products, there may be no clear distinction, between power ports and I/O ports, in which case it is up to product committees to make this determination for test purposes.				
“X” is an open level. The level has to be specified in the dedicated equipment specification.				

11.3.2 Performance criterion**: B**

11.4 Operating Condition of EUT

11.4.1 Setup the EUT as shown in Section 11.1.

11.4.2 Turn on the power of all equipment.

11.4.3 Let the EUT work in test mode and measure it.

11.5 Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

11.5.1 For input and output AC power ports**:**

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

11.5.2 For signal lines and control lines ports**:**

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

11.5.3 For DC output line ports**:**

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

11.6 Test Results

PASS.

Fast transients Test Results

Standard：	☐ **IEC 61000-4-4 :2012** ☑ **EN 61000-4-4 :2012**	**Result：**	☑ **PASS /** ☐ **FAIL**
EUT:	LED DOWN LIGHT	M/N:	NRP-IRDL0107-6-40K-GR-5D, NRP-IRDL0107-12-40K-GR-24D
Power Supply:	230V~, 50Hz	Ambient Condition:	24 ℃ 54% RH
Test Time*: 120s*			
Line: ☑ AC Mains ☐ DC Mains ☐ Signal			
Coupling*:* ☑ Direct ☐ Capacitive Clamp			
Operation Mode: TM1			

Line	Test Voltage	Repetition Frequency	Criterion	Result (+)	Result (-)
AC Power port	1kV	5kHz	B	PASS	PASS
DC Line					
Signal Line					

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

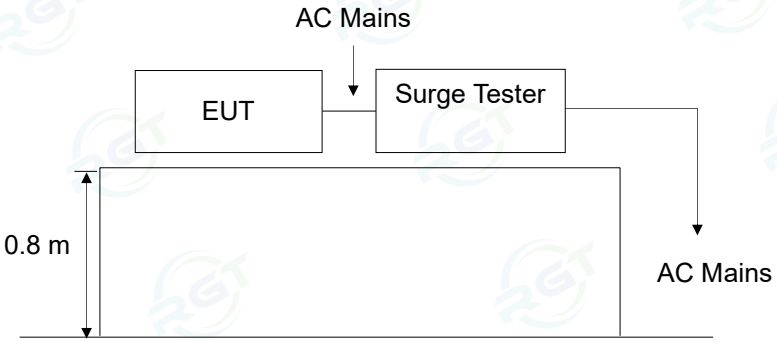
12. SURGES TEST

12.1 Block Diagram of Test Setup

12.1.1 Block Diagram of the EUT



12.1.2 Surge Test Setup



12.2 Test Standard

EN IEC 61547: 2023 (EN 61000-4-5:2014+A1:2017)

12.3 Severity Levels and Performance Criterion

12.3.1 Severity level

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

12.3.2 Performance criterion**: C**

12.4 Operating Condition of EUT

12.4.1 Setup the EUT as shown in Section 12.1.

12.4.2 Turn on the power of all equipment.

12.4.3 Let the EUT work in test mode and measure it.

12.5 Test Procedure

1) Set up the EUT and test generator as shown on Section 12.1.2.
2) For line-to-line coupling mode, provide a 1.0kV, 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
3) At least 5 positive and 5 negative (Polarization) tests with a maximum 1/min repetition rate are conducted during test.
4) Different phase angles are done individually.
5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

12.6 Test Results

PASS.

Surges Test Results

Standard:	☐ **IEC 61000-4-5:2014+A1:2017** ☑ **EN 61000-4-5:2014+A1:2017**	**Result:**	☑ **PASS /** ☐ **FAIL**
EUT:	LED DOWN LIGHT	M/N:	NRP-IRDL0107-6-40K-GR-5D, NRP-IRDL0107-12-40K-GR-24D
Power Supply:	230V~, 50Hz	Ambient Condition:	24 ℃ 54% RH
Operation Mode:	TM1	Criterion:	C

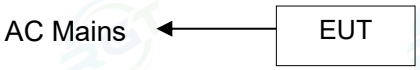
Location	Polarization	Phase Angle	No. of Pulse	Pulse Voltage (kV)	Result
L-N	+	90^0	5	1	PASS
	-	270^0	5	1	PASS
L-PE	+	90^0	5	2	PASS
	-	270^0	5	2	PASS
N-PE	+	90^0	5	2	PASS
	-	270^0	5	2	PASS

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

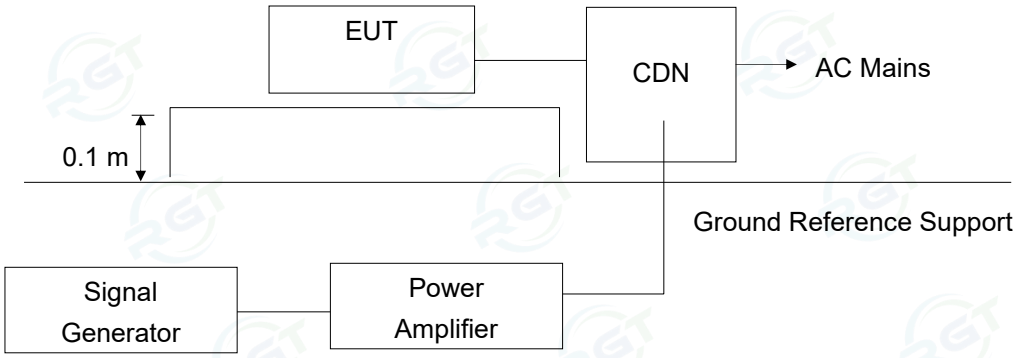
13. INJECTED CURRENTS (RADIO-FREQUENCY COMMON MODE) TEST

13.1 Block Diagram of Test Setup

13.1.1 Block Diagram of the EUT



13.1.2 Block Diagram of Test Setup



13.2 Test Standard

EN IEC 61547: 2023 (EN IEC 61000-4-6: 2023)

13.3 Severity Levels and Performance Criterion

13.3.1 Severity level

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

13.3.2 Performance criterion**: A**

13.4 Operating Condition of EUT

13.4.1 Setup the EUT as shown in Section 13.1.

13.4.2 Turn on the power of all equipment.

13.4.3 Let the EUT work in test mode and measure it.

13.5 Test Procedure

1) Set up the EUT, CDN and test generators as shown on Section13.1.2.
2) Let the EUT work in test mode and measure it.
3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
4) The disturbance signal described below is injected to EUT through CDN.
5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
6) The frequency range is swept from 150kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
7) The rate of sweep shall not exceed 1.5*10-3decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

13.6 Test Results

PASS.

Injected currents (radio-frequency common mode) Test Results

Standard:	☐ **IEC 61000-4-6:2023** ☑ **EN IEC 61000-4-6:2023**	**Result:**	☑ **PASS /** ☐ **FAIL**
EUT:	LED DOWN LIGHT	M/N:	NRP-IRDL0107-6-40K-GR-5D, NRP-IRDL0107-12-40K-GR-24D
Power Supply:	230V~, 50Hz	Ambient Condition:	24 ℃ 54% RH
Line: ☑ AC Mains ☐ DC Mains ☐ Signal			
Coupling: ☑ Direct ☐ Capacitive Clamp			
Modulation： ☐ none ☐ Pulse ☑ AM Sinusoidal 1 kHz 80 %			
Operation Mode: TM1			

Frequency Range (MHz)	Injected Position	Strength	Criterion	Result
0.15 ~ 80	AC Mains	3V(rms)	A	PASS

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

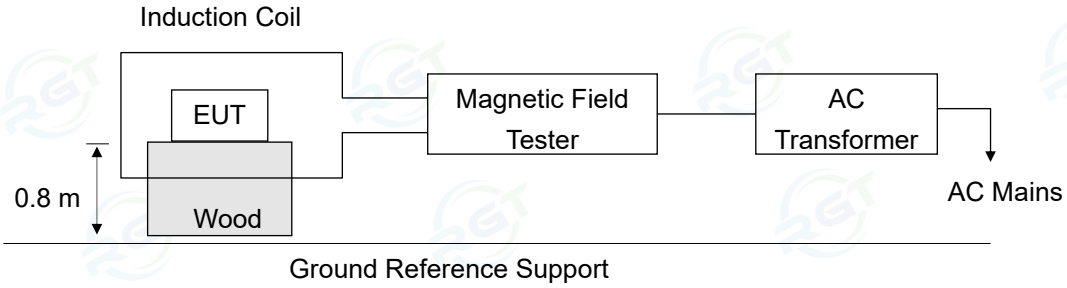
14. POWER FREQUENCY MAGNETIC FIELD TEST

14.1 Block Diagram of Test Setup

14.1.1 Block Diagram of the EUT



14.1.2 Block Diagram of Test Setup



14.2 Test Standard

EN IEC 61547: 2023 (EN 61000-4-8:2010)

14.3 Severity Levels and Performance Criterion

14.3.1 Severity level

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

14.3.2 Performance criterion**: A**

14.4 Operating Condition of EUT

14.4.1 Setup the EUT as shown in Section 14.1.

14.4.2 Turn on the power of all equipment.

14.4.3 Let the EUT work in test mode and measure it.

14.5 Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. X, Y and Z polarization of the induction coil are set on test, so that each side of the EUT is affected by the magnetic field. Also it can reach the same aim by changing the position of the EUT.

14.6 Test Results

N/A.

Remark: According to IEC 61000-4-8, this standard needs only to be applied to equipment containing components susceptible to magnetic fields. Considering that the sample doesn't contain this kind of components, it is unnecessary to perform this test item.

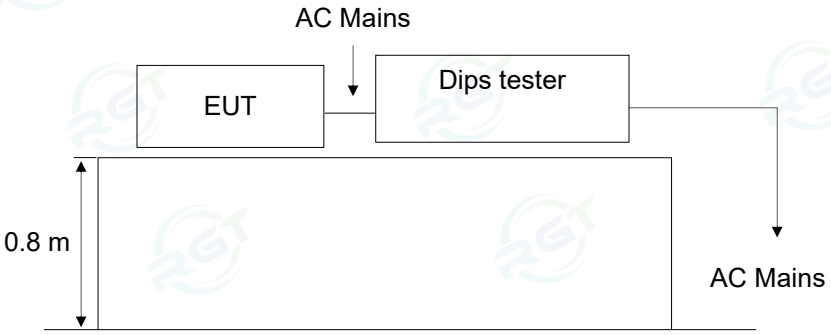
15.VOLTAGE DIPS AND INTERRUPTIONS TEST

15.1 Block Diagram of Test Setup

15.1.1 Block Diagram of the EUT



15.1.2 Dips Test Setup



15.2 Test Standard

EN IEC 61547: 2023 (EN IEC 61000-4-11:2020+AC:2022-10)

15.3 Severity Levels and Performance Criterion

15.3.1 Severity level

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

15.3.2 Performance criterion: **B**

15.4 Operating Condition of EUT

15.4.1 Setup the EUT as shown in Section 15.1.

15.4.2 Turn on the power of all equipment.

15.4.3 Let the EUT work in test mode and measure it.

15.5 Test Procedure

Set up the EUT and test generator as shown on Section 15.1.2.

The interruption is introduced at selected phase angles with specified duration.

Record any degradation of performance.

15.6 Test Results

PASS.

Voltage Dips And Interruptions Test Results

Standard:	☐ **IEC 61000-4-11:2020** ☑ **EN IEC 61000-4-11:2020 +AC:2022-10**	**Result:**	☑ **PASS /** ☐ **FAIL**
EUT:	LED DOWN LIGHT	M/N:	NRP-IRDL0107-6-40K-GR-5D, NRP-IRDL0107-12-40K-GR-24D
Power Supply:	230V~, 50Hz	Ambient Condition:	24 ℃ 54% RH
Number of voltage fluctuations: 3 times			
Interval time: 10s			
Operation Mode: TM1			

Test Level % U_T	Voltage Dips & Short Interruption % U_T	Duration (in period)	Criterion	Result
0	100	0.5P	B[a]	PASS
70	30	10P	B	PASS

Remark: U_T is the rated voltage for the equipment.
a : For lighting equipment where the light source is not able to restart within 1 min, due to the physical constraints of the light source, performance criterion C applies.

16. TEST SETUP PHOTOS OF THE EUT

Photo of Disturbance voltages mains terminals Measurement



Photo of Radiated electromagnetic disturbances (30MHz to 1GHz) Measurement

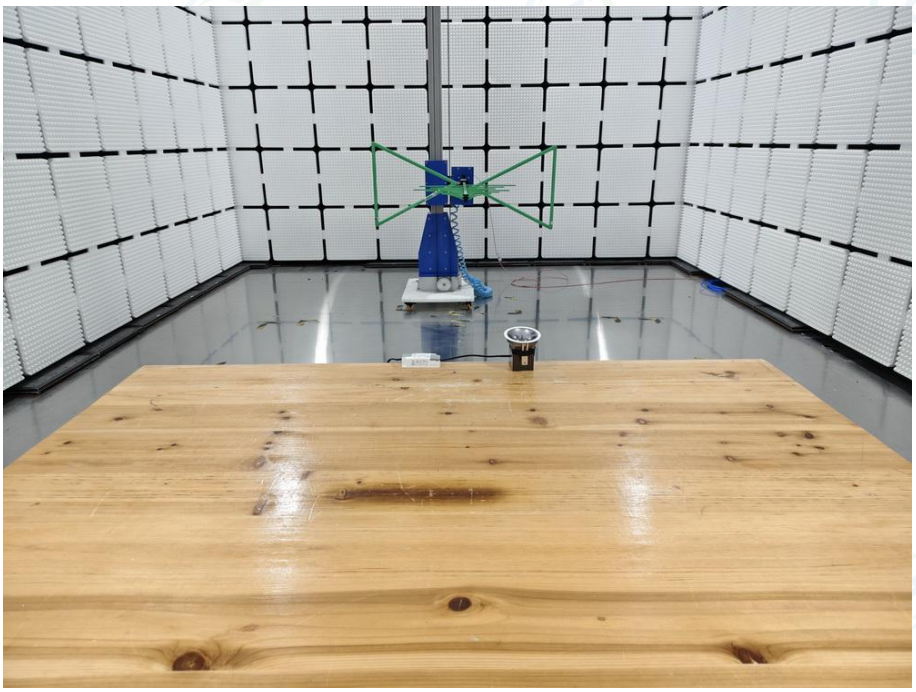


Photo of Radiated electromagnetic disturbances (9kHz to 30MHz) Measurement



Photo of Harmonic & Flicker Measurement

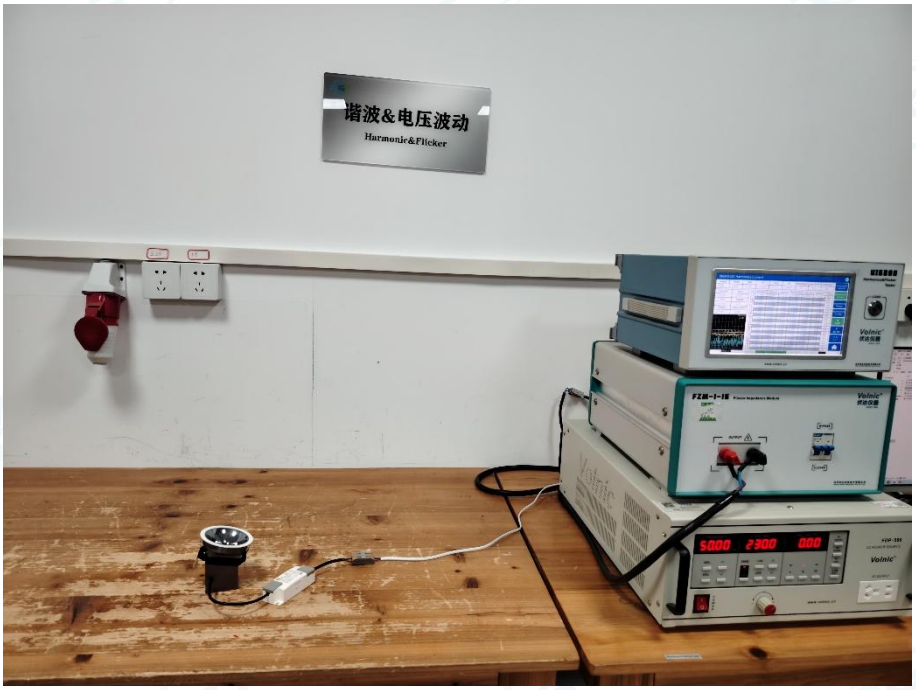


Photo of Electrostatic discharge Test

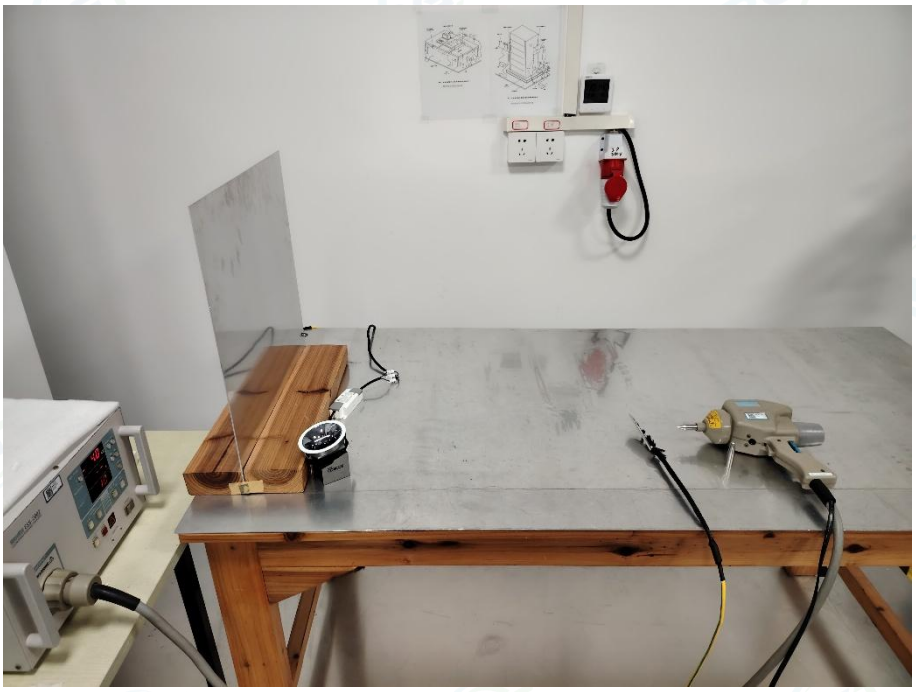


Photo of Radio-frequency electromagnetic fields Test

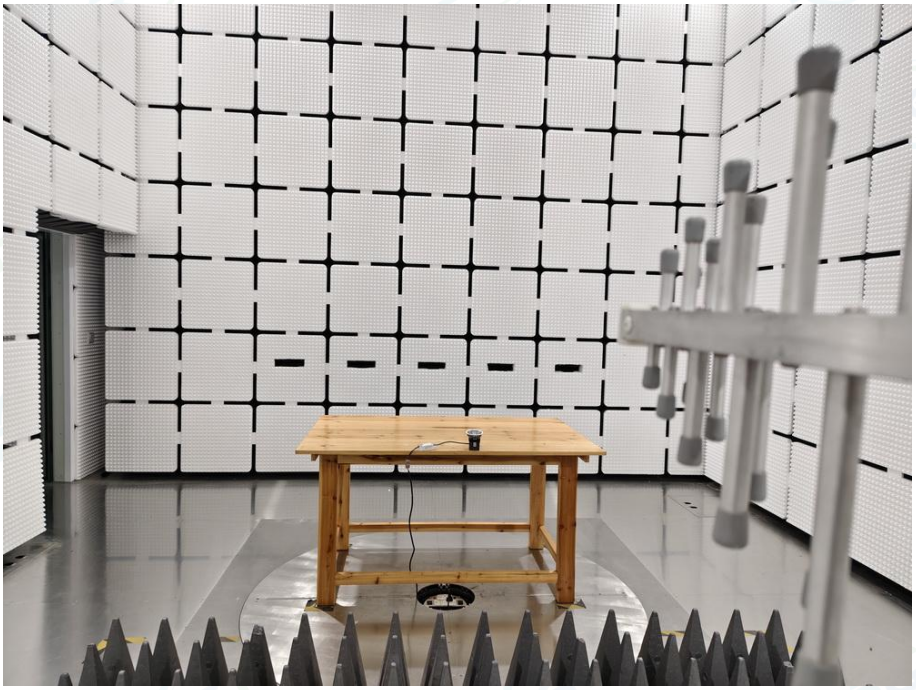


Photo of Fast transients & Surge & Voltage dips and Interruption Test

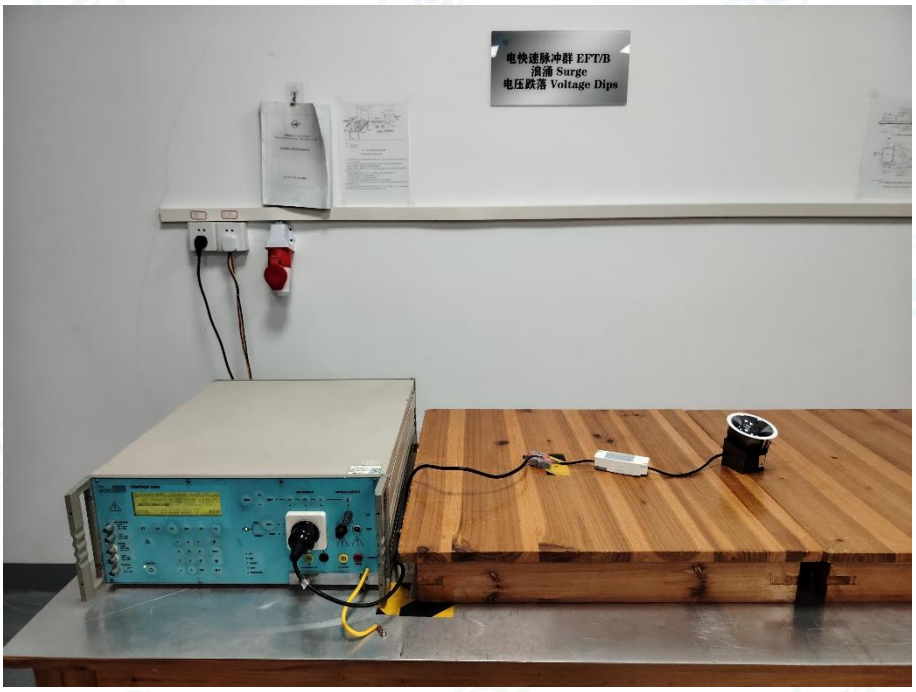
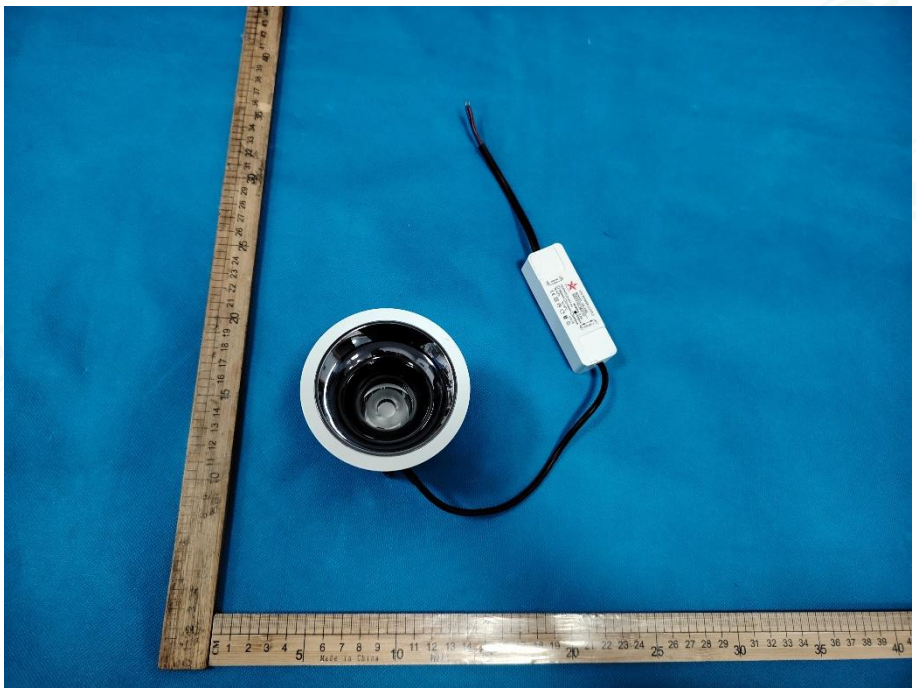


Photo of Injected currents (Radio-frequency common mode) Test

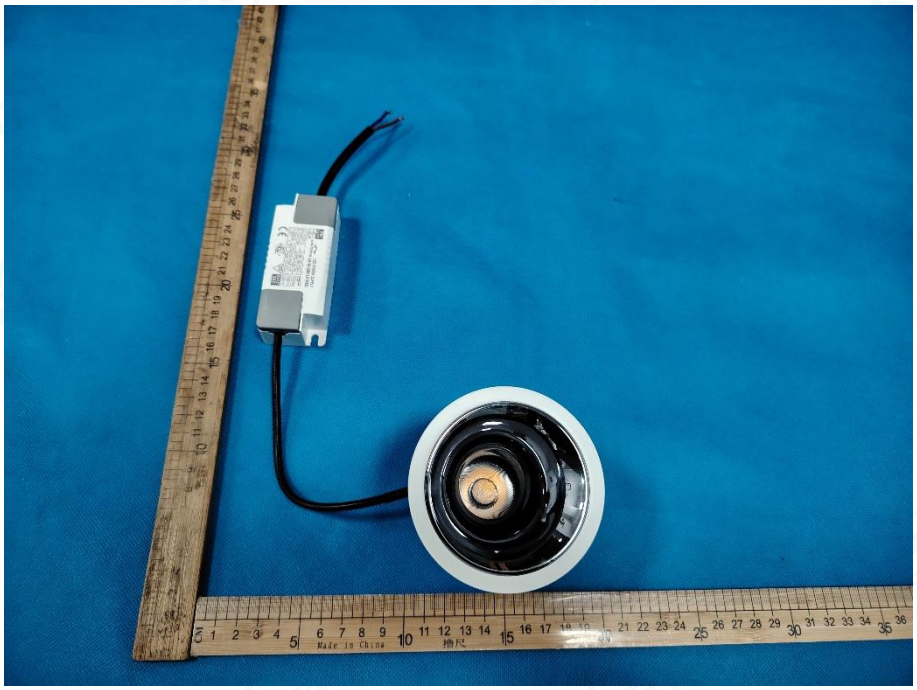


17. PHOTOS OF THE EUT

NRP-IRDL0107-6-40K-GR-5D



NRP-IRDL0107-12-40K-GR-24D



***** End of the report *****