



EMC TEST REPORT

Product : LED Street Lamps
Test Model No. : SRSL200W-230V
Model No : See model list on page 6
Trade Mark : Tsong®
Input voltage : AC 220-240V, 50/60Hz
Date of issue : December 29, 2022
Regulations : See below

Test Standards	Results
<input checked="" type="checkbox"/> EN IEC 55015:2019+A11:2020	PASS
<input checked="" type="checkbox"/> EN IEC 61000-3-2:2019+A1:2021	PASS
<input checked="" type="checkbox"/> EN 61000-3-3:2013+A2:2021	PASS
<input checked="" type="checkbox"/> EN 61547:2009	PASS

Prepared for:

Sharplumi Lighting Co.,Ltd

4th floor,Building 1, Zone A, Xinxing Industry Park, Songbai Road
 5135,Shutianpu Community, Matian Village, Guangming District, Shenzhen
 City, Guangdong Provice, China

Prepared by:

Shenzhen DE Certification Lab co., Ltd.

Room 202, Building 3, Xin Nan Tian Industrial Area, No.106, Dan Zi Road,
 Lao Keng Community, Long Tian Street, Ping Shan District, Shenzhen

TEL: +86-755-2955 8752

FAX: +86-755-2699 6253

Tested by:



Reviewed by:

Zongjin

Approved by:

Date :

December 29, 2022



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1. GENERAL INFORMATION

Applicant: Sharplumi Lighting Co.,Ltd

Address: 4th floor,Building 1, Zone A, Xinxing Industry Park, Songbai Road 5135,Shutianpu Community, Matian Village, Guangming District, Shenzhen City, Guangdong Provice, China

Manufacturer 1: Sharplumi Lighting Co.,Ltd

Address 1: 4th floor,Building 1, Zone A, Xinxing Industry Park, Songbai Road 5135,Shutianpu Community, Matian Village, Guangming District, Shenzhen City, Guangdong Provice, China

EMC Directive: 2014/30/EU

Product: LED Street Lamps

Test Model No. SRSL200W-230V

Model: See model list on page 6

Trade Mark: Tsong®

Sample Received Date: December 23, 2022

Sample tested Date: December 23, 2022 to December 29, 2022

The tested sample(s) and the sample information are provided by the client.

2. TEST SUMMARY

The Product has been tested according to the following specifications:

EMISSION		
Standard	Test Item	Test
EN IEC 55015:2019+A11:2020	Disturbance voltages	Yes
	Radiated disturbance in frequency range 9KHz to 30MHz	Yes
	Radiated disturbance in frequency range 30MHz to 1000MHz	Yes
EN IEC 61000-3-2:2019+A1:2021	Harmonic current emission	Yes
EN 61000-3-3:2013+A2:2021	Voltage fluctuations & flicker	Yes

IMMUNITY (EN 61547)		
Standard	Test Item	Test
EN 61000-4-2:2009	Electrostatic discharge	Yes
EN 61000-4-3:2006+A2:2010*	Radio frequency electromagnetic fields	Yes
EN 61000-4-4:2012	Fast transients	Yes
EN 61000-4-5:2014+A1:2017	Surges	Yes
EN 61000-4-6:2014+AC:2015	Injected currents	Yes
EN 61000-4-8:2010	Power frequency magnetic fields	N/A
EN 61000-4-11:2004+A1:2017	Voltage dips and interruptions	Yes

Remark:

1. The Product doesn't contain any device susceptible to magnetic fields.

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated

for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
CE(9kHz-150kHz)	3.8
CE(150kHz-30MHz)	3.4
RE	6.3
ME	3.7

4. PRODUCT INFORMATION AND TEST SETUP

4.1 PRODUCT INFORMATION

Product: LED Street Lamps

Rating: AC 220-240V, 50/60Hz

Test voltage: 220-240V ~ , 50/60Hz

Model list

Model	Input	Input Rated Power (W)	LED model	Number of LED beads
SRSL060W-230V	AC100-277V 50-60Hz	60	6V 2835 1W / 6V 3030 1W	72
SRSL100W-230V	AC100-277V 50-60Hz	100		128
SRSL150W-230V	AC100-277V 50-60Hz	150		240
SRSL200W-230V	AC100-277V 50-60Hz	200		288
SRSL030W-230V	AC100-277V 50-60Hz	30		40
SRSL060W-230V-02	AC100-277V 50-60Hz	60		72
SRSL100W-230V-02	AC100-277V 50-60Hz	100		128
SRSL150W-230V-02	AC100-277V 50-60Hz	150		240
SRSL200W-230V-02	AC100-277V 50-60Hz	200		288

4.2 TEST SETUP CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between Product and support equipment.

4.3 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	---	---	---	---	---	---

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5. FACILITIES AND ACCREDITATIONS

5.1 TEST FACILITY

The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 TEST EQUIPMENT LIST

Instrumentation:

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

Equipment used during the tests:

Shielding Room No. 1 - Disturbance voltages Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
EMI Receiver	R&S	ESP17	101404	2023.11.24
LISN	R&S	ENV216	151028	2023.08.16
LISN (three phase)	EM Test	/	13835240	2023.08.16
Voltage probe	Schwarzbeck	TK9420	TK9420-718	2023.08.16

Shielding Room No. 1 - ME Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
EMI Receiver	R&S	ESP17	101404	2023.11.24
Loop antenna	R&S	HM020	4023.4508.02	2023.08.16

3M Semi-anechoic Chamber (1)- Radiated disturbance Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
Receiver	R&S	ESP17	101404	2023.08.16
broadband Antenna	Schwarzbeck	VULB 9168	9120D-1590	2023.10.07
Pre-amplifier	SKET	LAPA_01G18G-45dB	1600019	2023.08.16
Pre-amplifier (Low Freq)	SKET	LAPA_30M01G-30dB	SK2021082002	2023.08.16

Shielding Room No. 2 - Harmonic / Flicker Test (EN 61000-3-2) / (EN 61000-3-3)				
Equipment	Manufacturer	Model	Serial No.	Due Date
Harmonic analyzer	DCUU	DC6100	D220301001	2023.07.05
Programmable power supply	MTONI	HPF5010	1629A02598	2023.08.16

Shielding Room No. 3 - Electrostatic discharge Test (IEC 61000-4-2)				
Equipment	Manufacturer	Model	Serial No.	Due Date
ESD generator	HTEC	HESD 16	0220S20955	2023.11.22

3M Full-anechoic Chamber - Radio frequency electromagnetic fields Test (IEC 61000-4-3)				
Equipment	Manufacturer	Model	Serial No.	Due Date
Signal Generator	ROHDE&SCHWARZ	SMB 100A	A141002004	2023.10.25
Amplifier	AR	150W1000A	A0804545	2023.10.25
Antenna	AR	HL562	A0304224	2023.06.26



5m Chamber	Albatross	SAC-5MAC(EM C12.8*6.8*6.4m)	A0304210	2023.06.26
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Shielding Room No. 3 - Fast transients (IEC 61000-4-4)				
Equipment	Manufacturer	Model	Serial No.	Due Date
Transient Comprehensive Test Instrument(EFT&Surge&Dips)	HTEC	HCOMPACT 7	195001	2023.08.16
Capacitive coupling clamp	HTEC	H3C	222703	2023.08.16

Shielding Room No. 3 - Surges Test (IEC 61000-4-5)				
Equipment	Manufacturer	Model	Serial No.	Due Date
Transient Comprehensive Test Instrument(EFT&Surge&Dips)	HTEC	HCOMPACT 7	195001	2023.08.16

Shielding Room No. 2 - Injected currents Test (IEC 61000-4-6)				
Equipment	Manufacturer	Model	Serial No.	Due Date
Conduction generator	PRM	CRF61006A-PC	PR220881093	2023-09-21
M3 network	PRM	CRF-CDN-M316	PR220881094	2023-09-21
Attenuator	PRM	TZA-50-6-3-N	20221019	2023-10-23
Electromagnetic injection clamp	PRM	PEGL-100	PR220281065	2023-09-21
Attenuato	PRM	WDTS100-6-4-B	220726223	2023-10-23

Shielding Room No. 2 -Voltage dips and interruptions Test (IEC 61000-4-11)				
Equipment	Manufacturer	Model	Serial No.	Due Date
Transient Comprehensive Test Instrument(EFT&Surge&Dips)	HTEC	HCOMPACT 7	195001	2023.08.16
Program controlled AC fault power supply	SKET	HV1P16T	195002	2023.08.16

5.3 LABORATORY ACCREDITATIONS AND LISTINGS

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

6. DISTURBANCE VOLTAGES

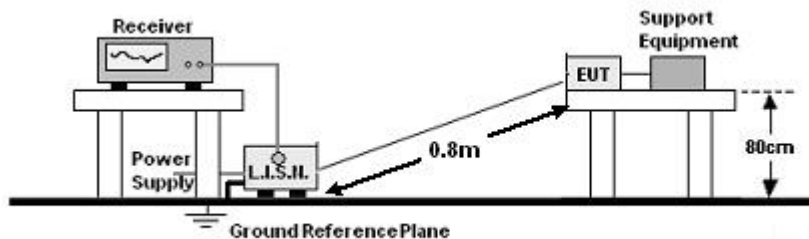
6.1 LIMITS

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,009 to 0,05	110	--
0.05 to 0.15	90 to 80	--
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.05 to 0.50 MHz.
3. For electrodeless lamps and luminaries, the limit in the frequency range of 2.51MHz to 3MHz is 73 dB(μV) quasi-peak and 63 dB(μV) average.

6.2 BLOCK DIAGRAM OF TEST SETUP



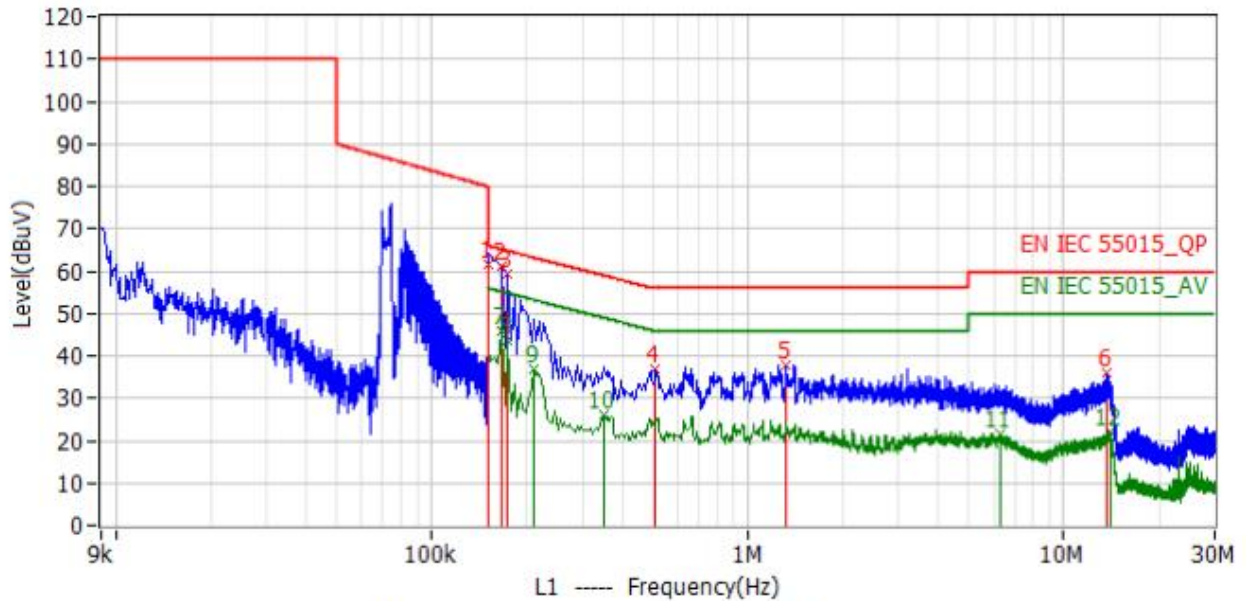
6.3 TEST PROCEDURE

- a. The Product was placed on a non-conductive table above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- b. The RBW of the receiver was set at 200Hz in 9 kHz ~150 kHz with Peak and 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- c. For each frequency whose maximum record was higher or close to limit, measure its QP or AVG values and record.



6.4 GRAPHS AND DATA

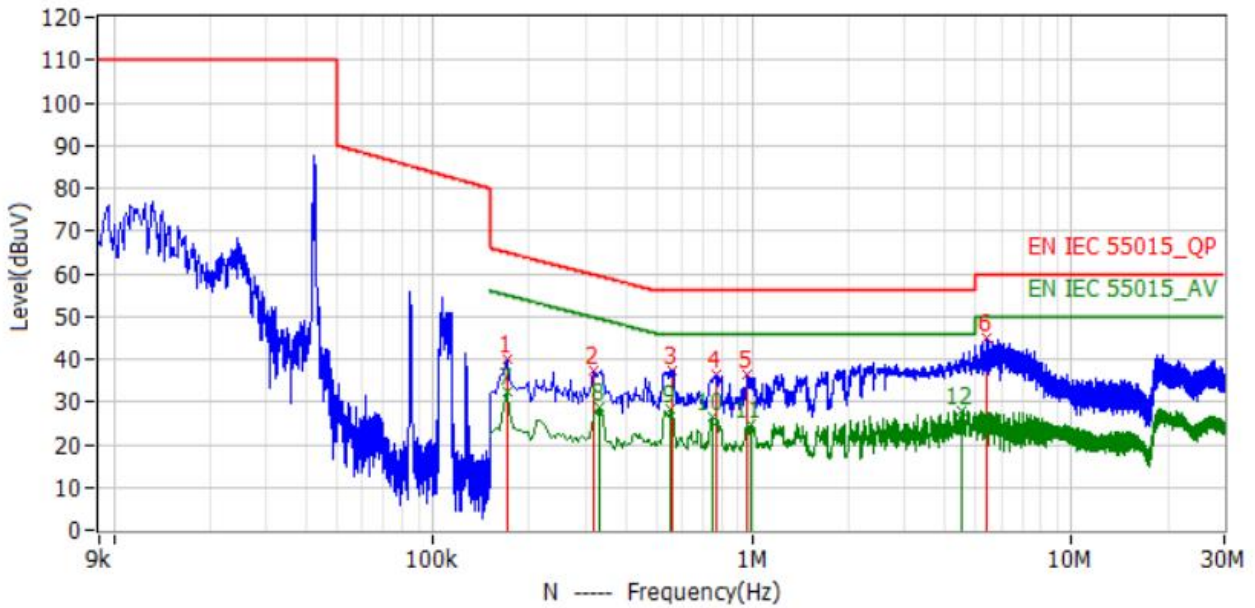
Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V
Power supply	: AC 230V/50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%
Phase	: L		



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Reading dBuV	Factor dB	Detector	Phase
1	150.000kHz	66.00	61.40	-4.60	51.70	9.70	QP	L1
2*	166.000kHz	65.16	61.27	-3.89	51.19	10.08	QP	L1
3*	174.000kHz	64.77	59.27	-5.50	49.12	10.15	QP	L1
4*	510.000kHz	56.00	36.84	-19.16	26.77	10.07	QP	L1
5*	1.322MHz	56.00	37.90	-18.10	28.05	9.85	QP	L1
6*	13.602MHz	60.00	35.74	-24.26	25.98	9.76	QP	L1
7*	166.000kHz	55.16	45.93	-9.23	35.85	10.08	AV	L1
8*	174.000kHz	54.77	43.60	-11.17	33.45	10.15	AV	L1
9*	210.000kHz	53.21	36.70	-16.51	26.87	9.83	AV	L1
10*	350.000kHz	48.96	25.88	-23.08	15.93	9.95	AV	L1
11*	6.322MHz	50.00	21.73	-28.27	12.02	9.71	AV	L1
12*	13.962MHz	50.00	22.21	-27.79	12.45	9.76	AV	L1



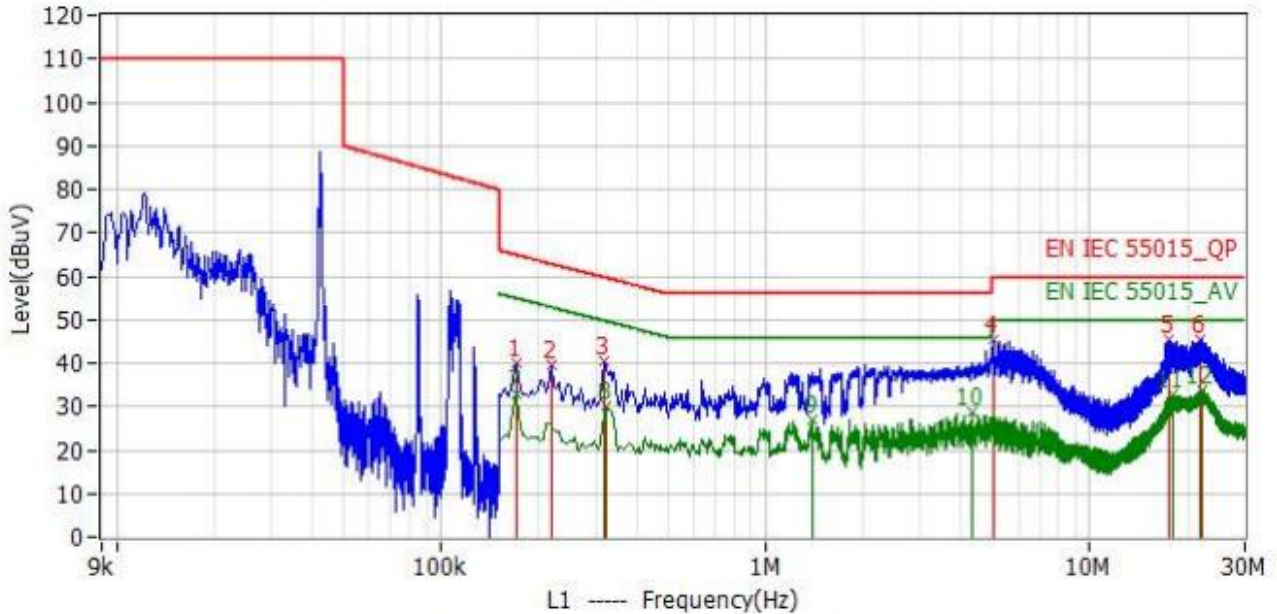
Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V
Power supply : AC 230V/50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%
Phase : N



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Reading dBuV	Factor dB	Detector	Phase
1*	170.000kHz	64.96	40.09	-24.87	29.96	10.13	QP	N
2*	318.000kHz	59.76	37.40	-22.36	27.41	9.99	QP	N
3*	562.000kHz	56.00	37.32	-18.68	27.33	9.99	QP	N
4*	766.000kHz	56.00	36.52	-19.48	26.60	9.92	QP	N
5*	962.000kHz	56.00	36.53	-19.47	26.68	9.85	QP	N
6*	5.438MHz	60.00	44.99	-15.01	35.29	9.70	QP	N
7*	170.000kHz	54.96	32.46	-22.50	22.33	10.13	AV	N
8*	330.000kHz	49.45	28.82	-20.63	18.83	9.99	AV	N
9*	554.000kHz	46.00	28.31	-17.69	18.32	9.99	AV	N
10*	746.000kHz	46.00	26.38	-19.62	16.45	9.93	AV	N
11*	994.000kHz	46.00	24.85	-21.15	15.01	9.84	AV	N
12*	4.518MHz	46.00	28.07	-17.93	18.35	9.72	AV	N



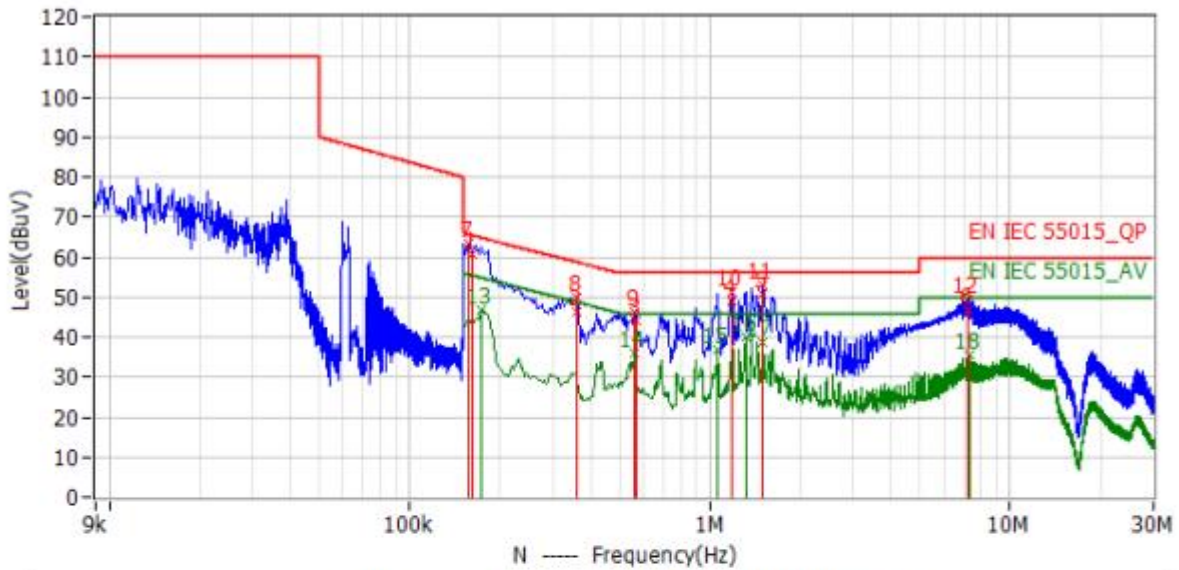
Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V-02
Power supply : AC 230V/50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%
Phase : L



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Reading dBuV	Factor dB	Detector	Phase
1*	170.000kHz	64.96	40.11	-24.85	30.00	10.11	QP	L1
2*	218.000kHz	62.89	39.57	-23.32	29.73	9.84	QP	L1
3*	318.000kHz	59.76	40.37	-19.39	30.45	9.92	QP	L1
4*	5.034MHz	60.00	45.20	-14.80	35.50	9.70	QP	L1
5*	17.386MHz	60.00	45.51	-14.49	35.74	9.77	QP	L1
6*	21.958MHz	60.00	45.33	-14.67	35.55	9.78	QP	L1
7*	170.000kHz	54.96	32.88	-22.08	22.77	10.11	AV	L1
8*	322.000kHz	49.66	30.06	-19.60	20.14	9.92	AV	L1
9*	1.394MHz	46.00	26.83	-19.17	16.99	9.84	AV	L1
10*	4.310MHz	46.00	28.71	-17.29	18.98	9.73	AV	L1
11*	17.970MHz	50.00	32.80	-17.20	23.02	9.78	AV	L1
12*	22.254MHz	50.00	33.89	-16.11	24.11	9.78	AV	L1



Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V-02
Power supply : AC 230V/50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%
Phase : N



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Reading dBuV	Factor dB	Detector	Phase
1	162.000kHz	65.36	60.49	-4.87	50.39	10.10	QP	N
2	358.000kHz	58.77	46.34	-12.43	36.34	10.00	QP	N
3	566.000kHz	56.00	43.91	-12.09	33.91	10.00	QP	N
4	1.186MHz	56.00	49.15	-6.85	39.35	9.80	QP	N
5	1.498MHz	56.00	50.92	-5.08	41.12	9.80	QP	N
6	7.230MHz	60.00	46.55	-13.45	36.85	9.70	QP	N
7*	158.000kHz	65.57	63.37	-2.20	53.39	9.98	PK	N
8*	358.000kHz	58.77	49.78	-8.99	39.78	10.00	PK	N
9*	562.000kHz	56.00	46.31	-9.69	36.32	9.99	PK	N
10*	1.190MHz	56.00	51.42	-4.58	41.59	9.83	PK	N
11*	1.494MHz	56.00	53.13	-2.87	43.31	9.82	PK	N
12*	7.214MHz	60.00	49.24	-10.76	39.53	9.71	PK	N
13*	174.000kHz	54.77	46.57	-8.20	36.42	10.15	AV	N
14*	562.000kHz	46.00	35.93	-10.07	25.94	9.99	AV	N
15*	1.066MHz	46.00	36.94	-9.06	27.10	9.84	AV	N
16*	1.314MHz	46.00	40.05	-5.95	30.22	9.83	AV	N
17*	1.494MHz	46.00	38.69	-7.31	28.87	9.82	AV	N
18*	7.338MHz	50.00	35.45	-14.55	25.74	9.71	AV	N

7. RADIATED DISTURBANCE (9KHz-30MHz)

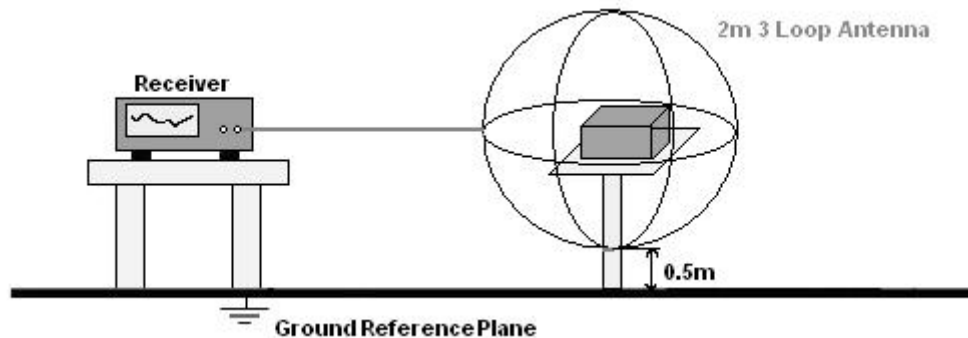
7.1 LIMITS OF RADIATED DISTURBANCE (9KHz-30MHz)

Frequency	Limits for Loop Diameter (dB μ A)
	2m
9KHz ~ 70KHz	88
70KHz ~ 150KHz	88 ~ 58*
150KHz ~ 3.0MHz	58 ~ 22*
3.0MHz ~ 30MHz	22

NOTE:

1. At the transition frequency the lower limit applies.
2. * Decreasing linearly with the logarithm of the frequency. For electrodeless lamps and luminaries, the limit in the frequency range of 2.2MHz to 3.0MHz is 58dB (μ A) for 2m.

7.2 TEST SETUP



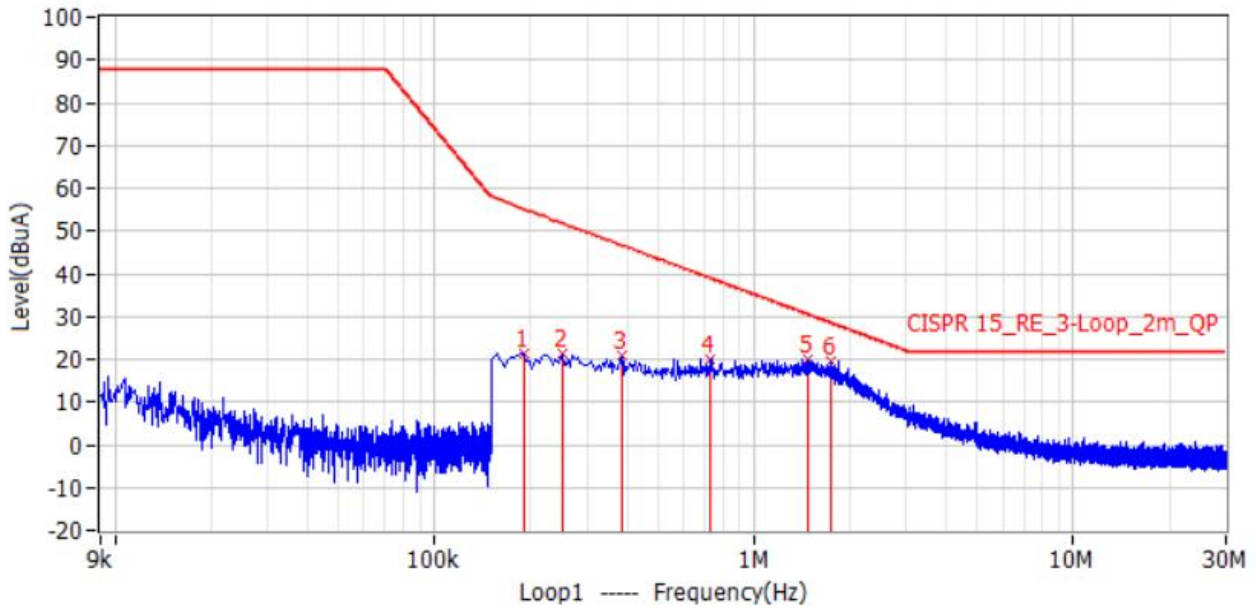
7.3 TEST PROCEDURE

- a. The Product was placed on a wooden table in the center of a loop antenna.
- b. The induced current in the loop antenna was measured by means of a current probe and the test receiver. Three field components were checked by means of a coaxial switch.
- c. The frequency range from 9 KHz to 30MHz is investigated. The receiver was measured with the quasi-peak detector. The RBW of the receiver was set at 200Hz in 9 kHz ~150 kHz and 9 kHz in 150 kHz ~ 30MHz.



7.4 GRAPHS AND DATA

Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V
Power supply : AC 230V, 50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%
Phase : X

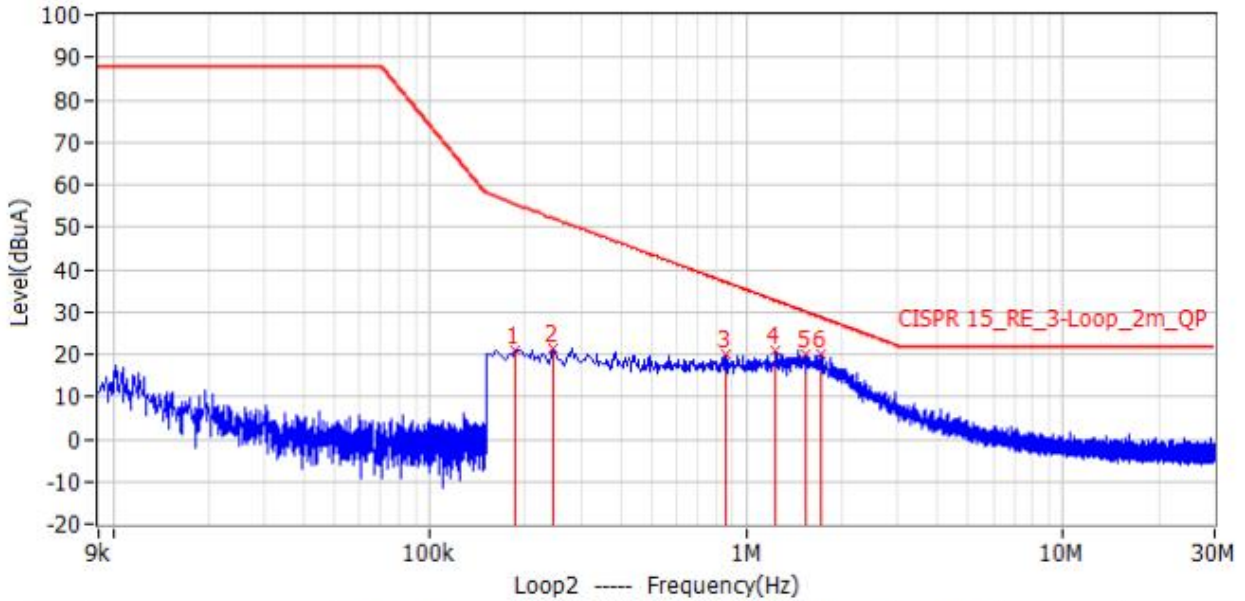


No.	Frequency	Limit dBuA	Level dBuA	Delta dB	Reading dBuV	Factor dB	Detector	Polar
1*	190.000kHz	55.2	21.5	-33.7	21.5	0.0	QP	Loop1
2*	250.000kHz	51.9	21.2	-30.7	21.2	0.0	QP	Loop1
3*	386.000kHz	46.6	20.7	-25.9	20.7	0.0	QP	Loop1
4*	726.000kHz	39.1	20.0	-19.1	20.0	0.0	QP	Loop1
5*	1.466MHz	30.6	20.1	-10.5	20.1	0.0	QP	Loop1
6*	1.750MHz	28.5	19.7	-8.8	19.7	0.0	QP	Loop1



Product : LED Street Lamps
Power supply : AC 230V, 50Hz
Mode : ON
Phase : Y

Model/Type reference : SRSL200W-230V
Temperature : 25°C
Humidity : 45%

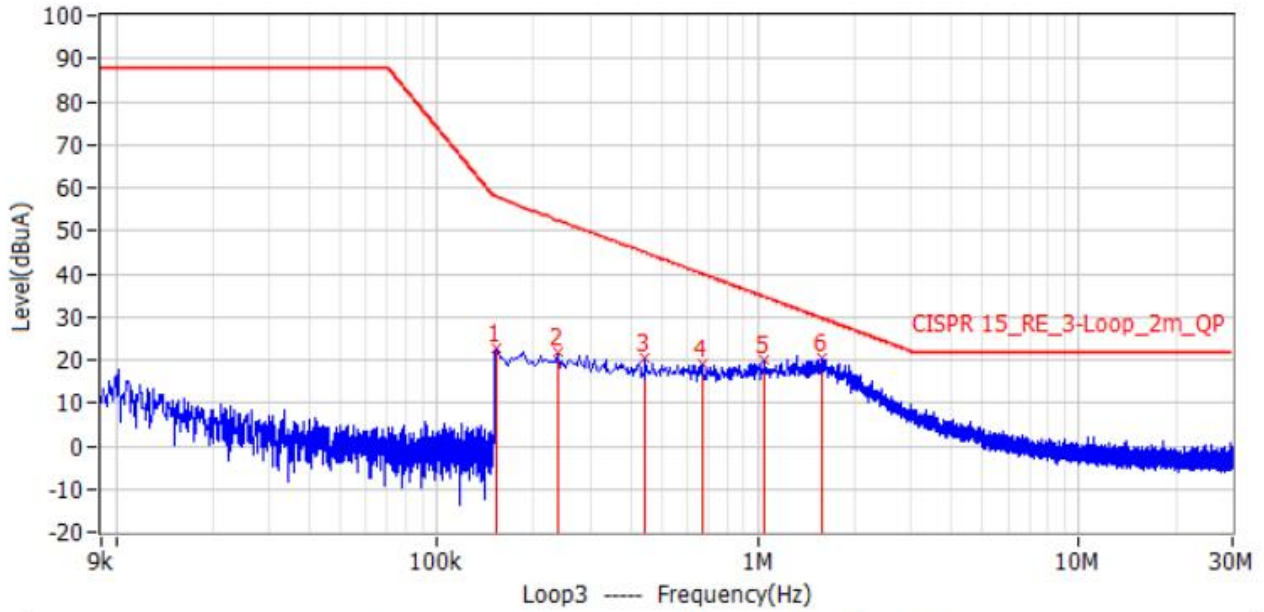


No.	Frequency	Limit dBuA	Level dBuA	Delta dB	Reading dBuV	Factor dB	Detector	Polar
1*	186.000kHz	55.4	21.0	-34.4	21.0	0.0	QP	Loop2
2*	246.000kHz	52.1	21.4	-30.7	21.4	0.0	QP	Loop2
3*	862.000kHz	37.0	19.8	-17.2	19.8	0.0	QP	Loop2
4*	1.238MHz	32.6	20.7	-11.9	20.7	0.0	QP	Loop2
5*	1.534MHz	30.1	20.0	-10.1	20.0	0.0	QP	Loop2
6*	1.714MHz	28.7	19.9	-8.8	19.9	0.0	QP	Loop2



Product : LED Street Lamps
Power supply : AC 230V, 50Hz
Mode : ON
Phase : Z

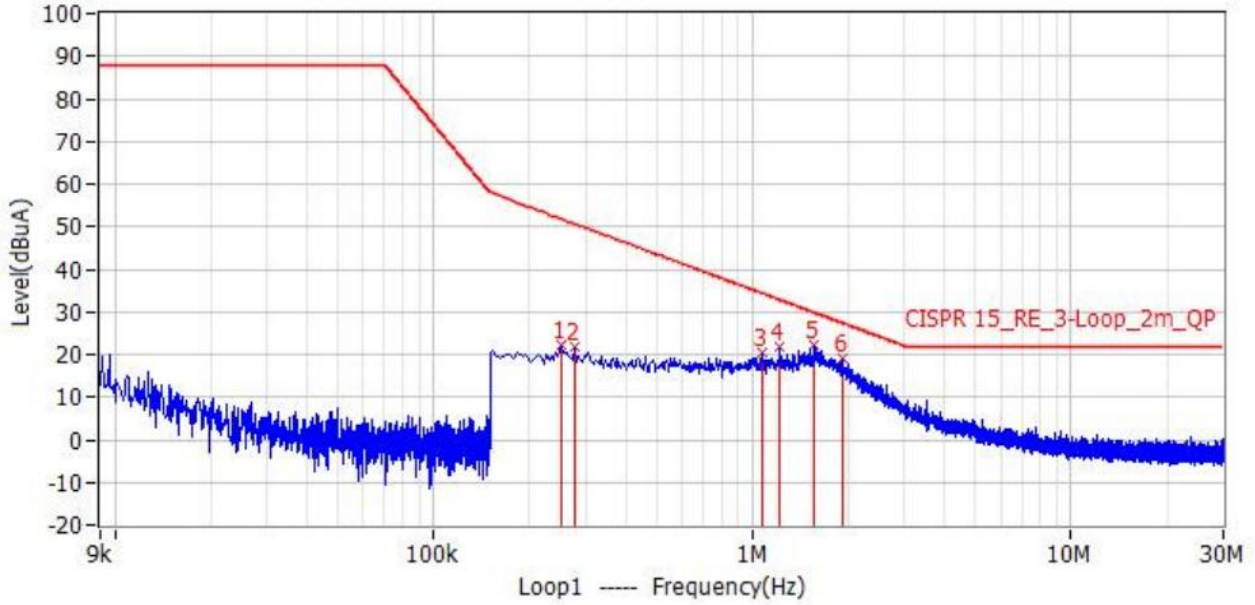
Model/Type reference : SRSL200W-230V
Temperature : 25°C
Humidity : 45%



No.	Frequency	Limit dBuA	Level dBuA	Delta dB	Reading dBuV	Factor dB	Detector	Polar
1*	154.000kHz	57.7	22.6	-35.1	22.6	0.0	QP	Loop3
2*	238.000kHz	52.5	21.6	-30.9	21.6	0.0	QP	Loop3
3*	446.000kHz	44.9	20.5	-24.4	20.5	0.0	QP	Loop3
4*	670.000kHz	40.0	18.9	-21.1	18.9	0.0	QP	Loop3
5*	1.046MHz	34.7	19.8	-14.9	19.8	0.0	QP	Loop3
6*	1.574MHz	29.8	20.6	-9.2	20.6	0.0	QP	Loop3



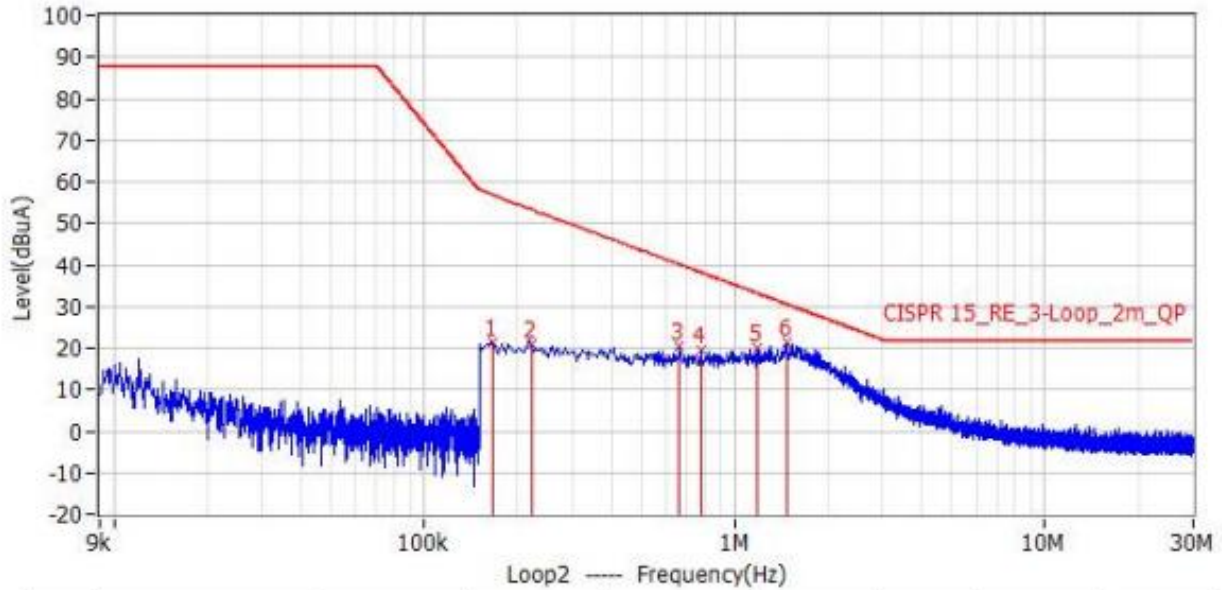
Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V-02
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%
Phase	: X		



No.	Frequency	Limit dBuA	Level dBuA	Delta dB	Reading dBuV	Factor dB	Detector	Polar
1*	250.000kHz	51.9	22.3	-29.6	22.3	0.0	QP	Loop1
2*	278.000kHz	50.6	22.0	-28.6	22.0	0.0	QP	Loop1
3*	1.074MHz	34.3	20.3	-14.0	20.3	0.0	QP	Loop1
4*	1.222MHz	32.8	21.9	-10.9	21.9	0.0	QP	Loop1
5*	1.566MHz	29.8	22.1	-7.7	22.1	0.0	QP	Loop1
6*	1.914MHz	27.4	19.1	-8.3	19.1	0.0	QP	Loop1



Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V-02
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%
Phase	: Y		

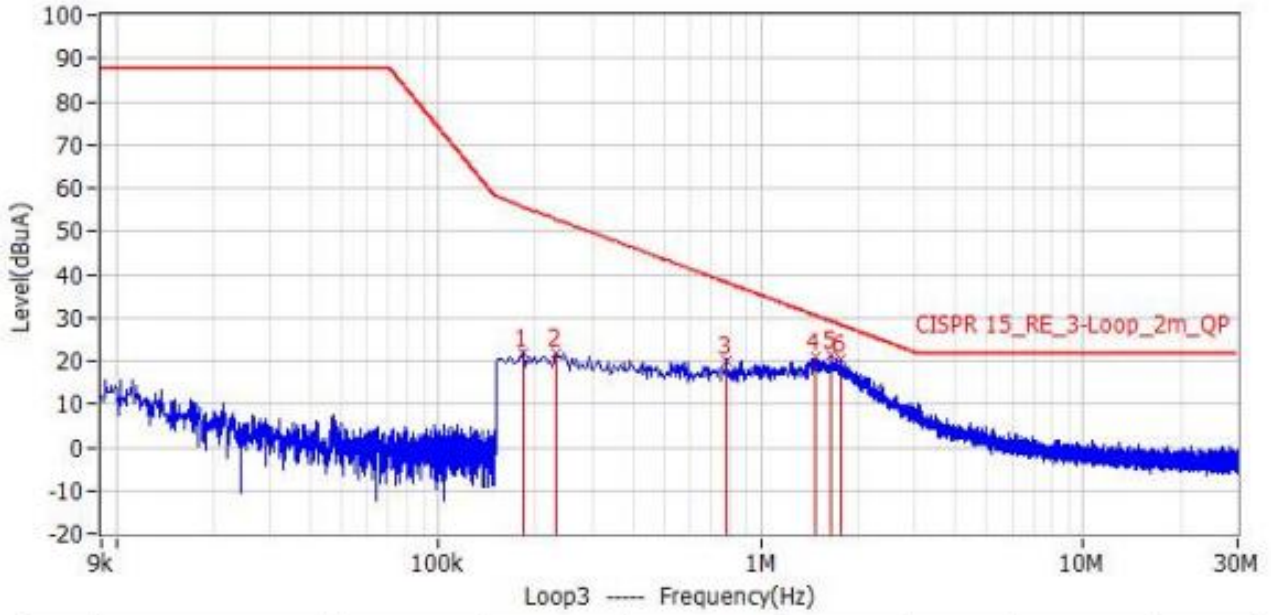


No.	Frequency	Limit dBuA	Level dBuA	Delta dB	Reading dBuV	Factor dB	Detector	Polar
1*	166.000kHz	56.8	21.4	-35.4	21.4	0.0	QP	Loop2
2*	222.000kHz	53.3	20.7	-32.6	20.7	0.0	QP	Loop2
3*	666.000kHz	40.1	20.5	-19.6	20.5	0.0	QP	Loop2
4*	778.000kHz	38.2	19.7	-18.5	19.7	0.0	QP	Loop2
5*	1.178MHz	33.2	20.1	-13.1	20.1	0.0	QP	Loop2
6*	1.466MHz	30.6	21.4	-9.2	21.4	0.0	QP	Loop2



Product : LED Street Lamps
Power supply : AC 230V, 50Hz
Mode : ON
Phase : Z

Model/Type reference : SRSL200W-230V-02
Temperature : 25°C
Humidity : 45%



No.	Frequency	Limit dBuA	Level dBuA	Delta dB	Reading dBuV	Factor dB	Detector	Polar
1*	182.000kHz	55.7	22.0	-33.7	22.0	0.0	QP	Loop3
2*	230.000kHz	52.9	21.8	-31.1	21.8	0.0	QP	Loop3
3*	782.000kHz	38.2	20.2	-18.0	20.2	0.0	QP	Loop3
4*	1.474MHz	30.5	20.7	-9.8	20.7	0.0	QP	Loop3
5*	1.650MHz	29.2	21.3	-7.9	21.3	0.0	QP	Loop3
6*	1.766MHz	28.4	20.3	-8.1	20.3	0.0	QP	Loop3

8. RADIATED DISTURBANCE (30MHz-1000MHz)

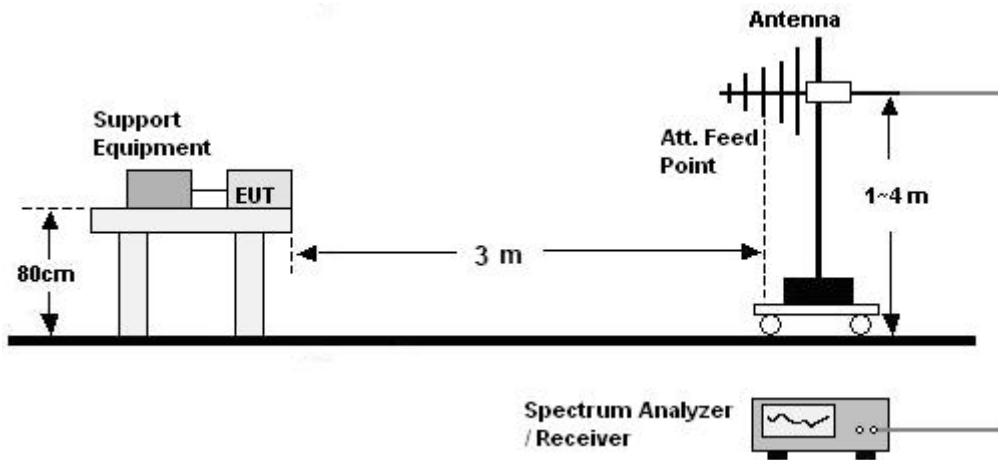
8.1 LIMITS OF RADIATED DISTURBANCE (30MHz-1000MHz)

Limits for radiated disturbance at a measuring distance of 3 m

Frequency (MHz)	Quasi-peak limit at 3m dB (uV/m)
30-230	40
230-1000	47

NOTE: The lower limit shall apply at the transition frequencies.

8.2 TEST SETUP



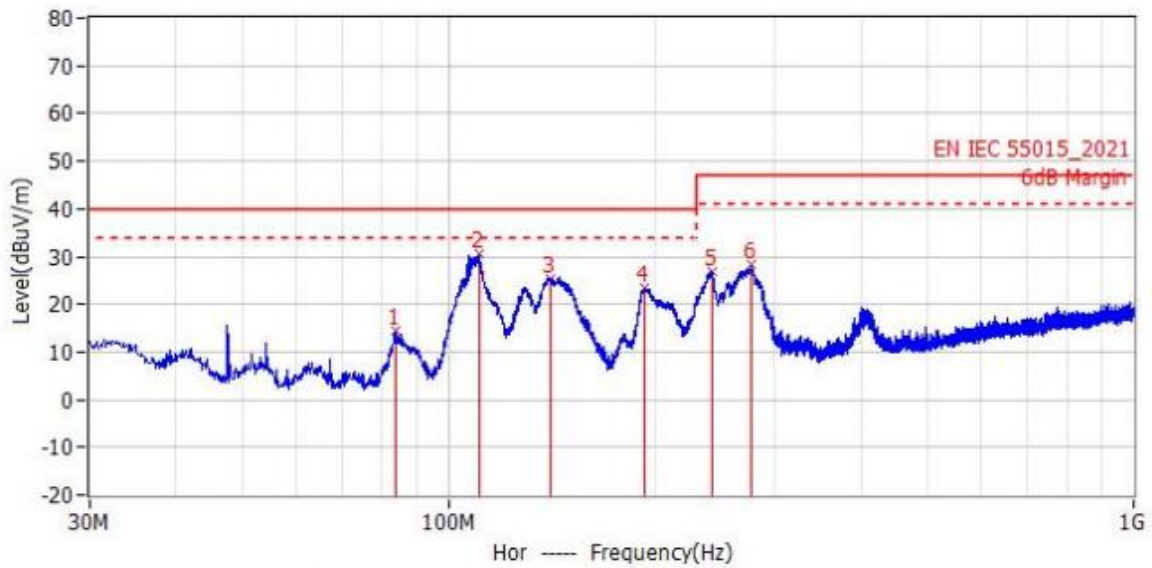
8.3 TEST PROCEDURE

- The Product was placed on the non-conductive turntable above the ground at a chamber.
- Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value



8.4 GRAPHS AND DATA

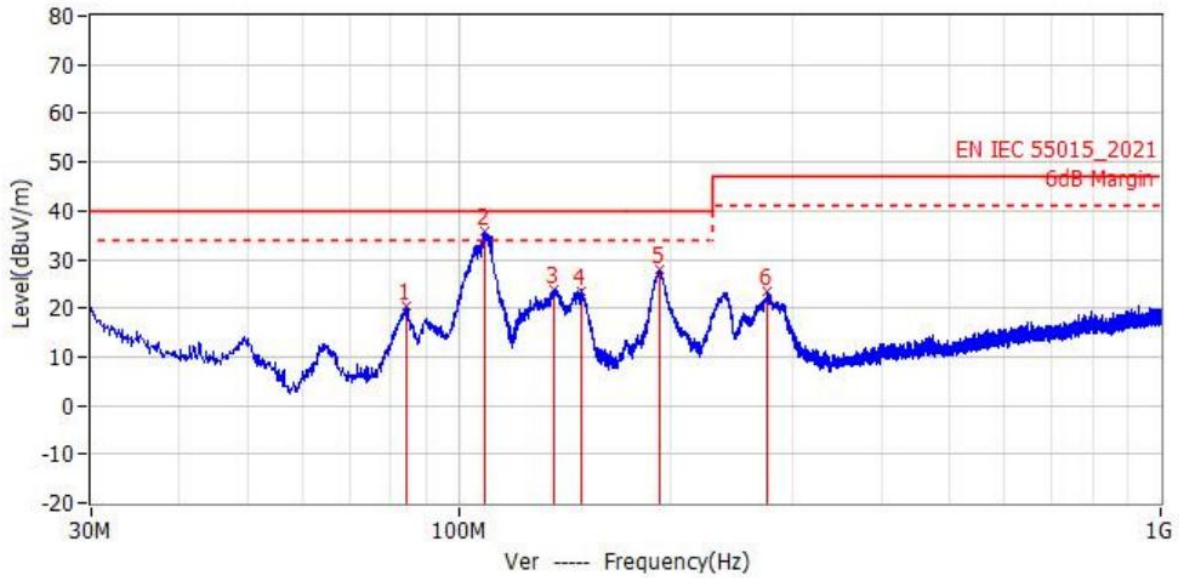
Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%
Phase	: Horizontal		



No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	83.956MHz	40.0	14.3	-25.7	37.1	-22.8	QP	Hor	100.0	324.0
2*	110.753MHz	40.0	30.4	-9.6	51.2	-20.8	QP	Hor	100.0	2.0
3*	140.944MHz	40.0	25.5	-14.5	43.7	-18.2	QP	Hor	100.0	0.0
4*	193.324MHz	40.0	23.5	-16.5	44.7	-21.2	QP	Hor	100.0	12.0
5*	242.066MHz	47.0	26.9	-20.1	46.4	-19.5	QP	Hor	100.0	324.0
6*	276.744MHz	47.0	28.2	-18.8	46.5	-18.3	QP	Hor	100.0	308.0



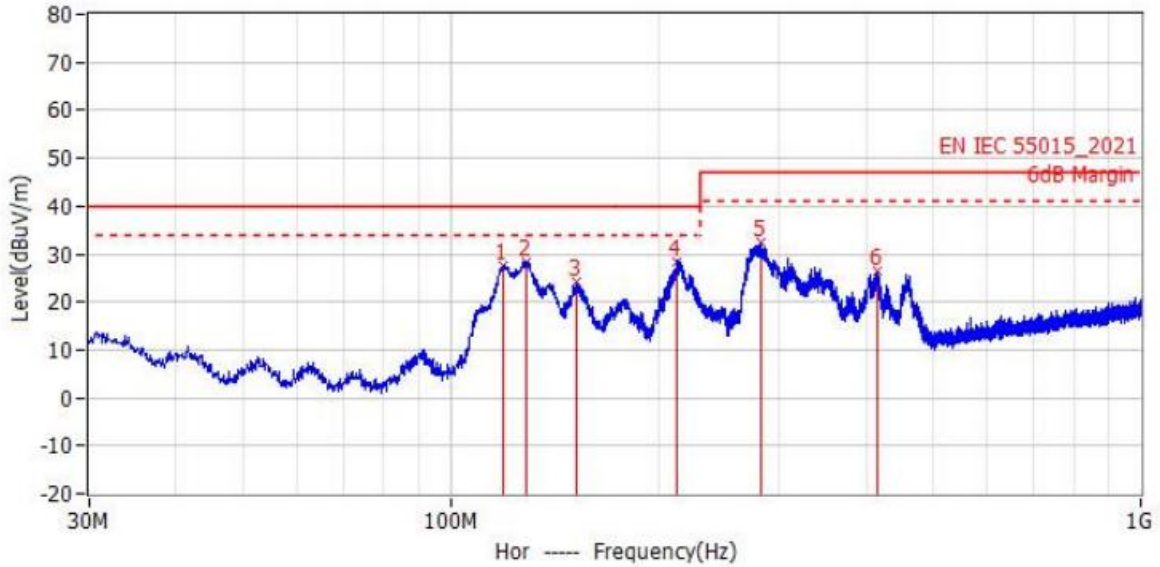
Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%
Phase	: Vertical		



No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	84.320MHz	40.0	20.5	-19.5	43.3	-22.8	QP	Ver	100.0	254.0
2*	109.298MHz	40.0	35.8	-4.2	56.7	-20.9	QP	Ver	100.0	327.0
3*	136.579MHz	40.0	23.9	-16.1	42.4	-18.5	QP	Ver	100.0	225.0
4*	149.310MHz	40.0	23.6	-16.4	41.1	-17.5	QP	Ver	100.0	359.0
5*	193.203MHz	40.0	27.9	-12.1	49.1	-21.2	QP	Ver	100.0	0.0
6*	275.895MHz	47.0	23.4	-23.6	41.8	-18.4	QP	Ver	100.0	72.0



Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V-02
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%
Phase	: Horizontal		

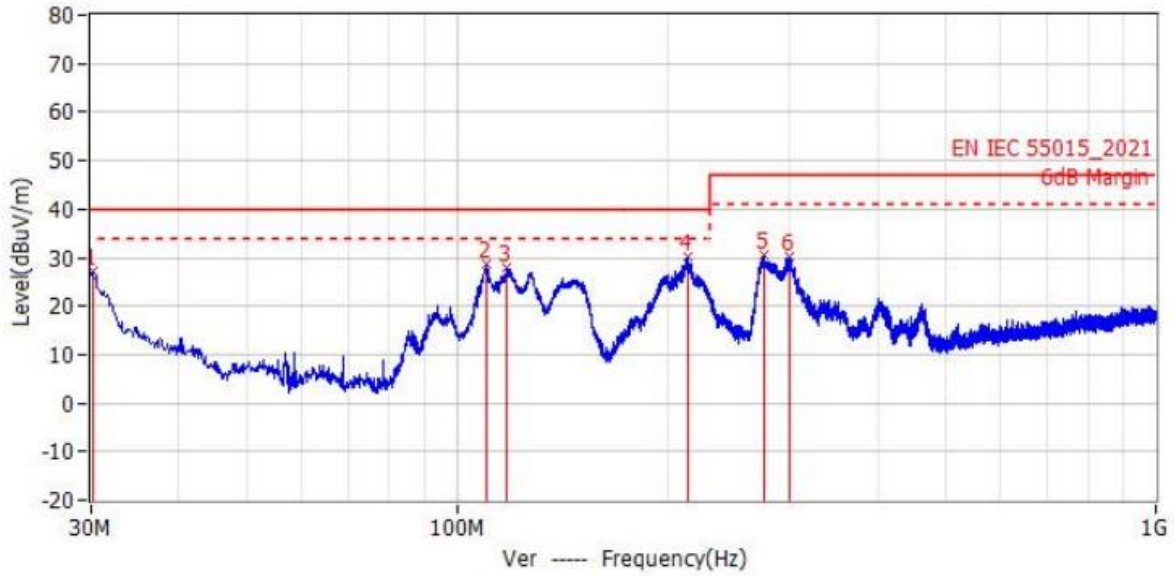


No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	119.361MHz	40.0	27.6	-12.4	47.3	-19.7	QP	Hor	100.0	0.0
2*	129.061MHz	40.0	28.5	-11.5	47.6	-19.1	QP	Hor	100.0	5.0
3*	152.341MHz	40.0	24.1	-15.9	41.6	-17.5	QP	Hor	100.0	0.0
4*	213.209MHz	40.0	28.5	-11.5	49.6	-21.1	QP	Hor	100.0	328.0
5*	281.473MHz	47.0	32.3	-14.7	50.5	-18.2	QP	Hor	100.0	304.0
6*	414.605MHz	47.0	26.3	-20.7	41.1	-14.8	QP	Hor	100.0	314.0



Product : LED Street Lamps
Power supply : AC 230V, 50Hz
Mode : ON
Phase : Vertical

Model/Type reference : SRSL200W-230V-02
Temperature : 25°C
Humidity : 45%



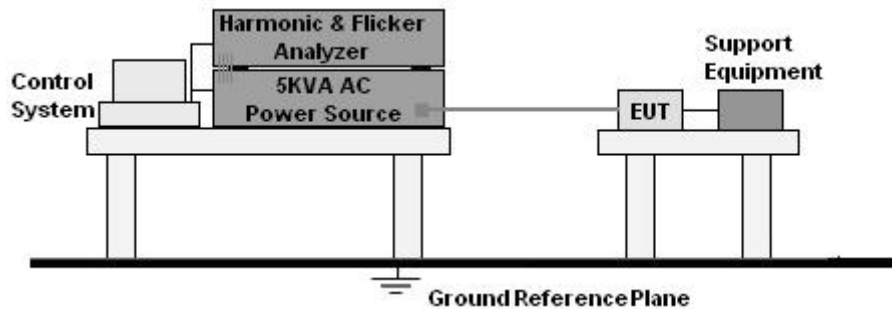
No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	30.121MHz	40.0	27.1	-12.9	40.2	-13.1	QP	Ver	100.0	300.0
2*	110.146MHz	40.0	28.8	-11.2	49.6	-20.8	QP	Ver	100.0	284.0
3*	117.785MHz	40.0	27.9	-12.1	47.8	-19.9	QP	Ver	100.0	282.0
4*	214.058MHz	40.0	30.2	-9.8	51.2	-21.0	QP	Ver	100.0	307.0
5*	274.804MHz	47.0	30.6	-16.4	49.0	-18.4	QP	Ver	100.0	216.0
6*	298.933MHz	47.0	30.3	-16.7	48.0	-17.7	QP	Ver	100.0	128.0

9. HARMONIC CURRENT EMISSION (HARMONIC)

9.1 LIMITS

Please refer to EN IEC 61000-3-2:2019+A1:2021 Clause 7.

9.2 TEST SETUP



9.3 TEST PROCEDURE

- a. The Product was placed on the top of a non-conductive table above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.
- b. The correspondent test program of test instrument to measure the current harmonics emanated from Product was chosen. The measure time shall be not less than the time necessary for the Product to be exercised.

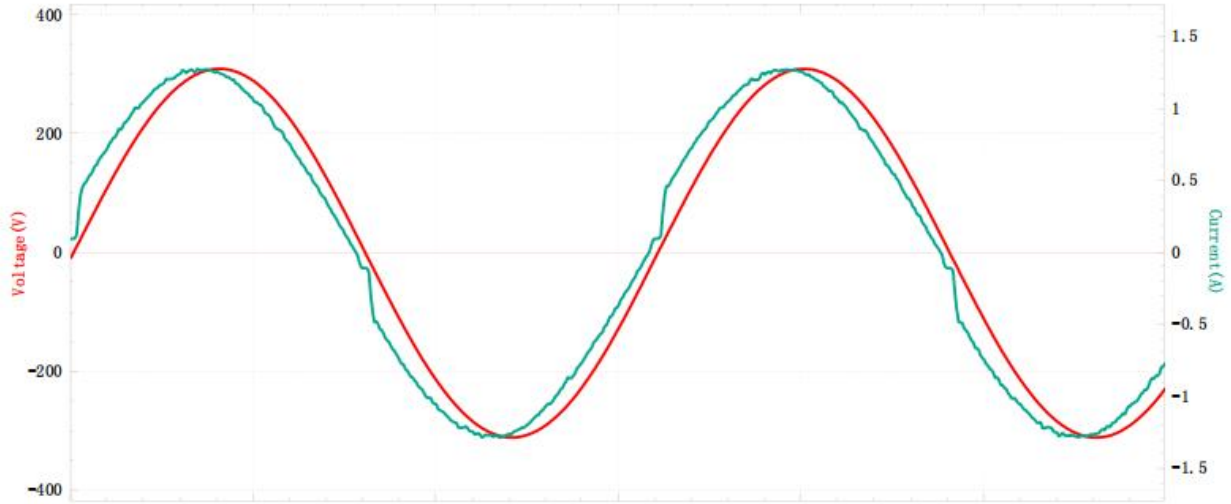
9.4 TEST RESULTS

Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%

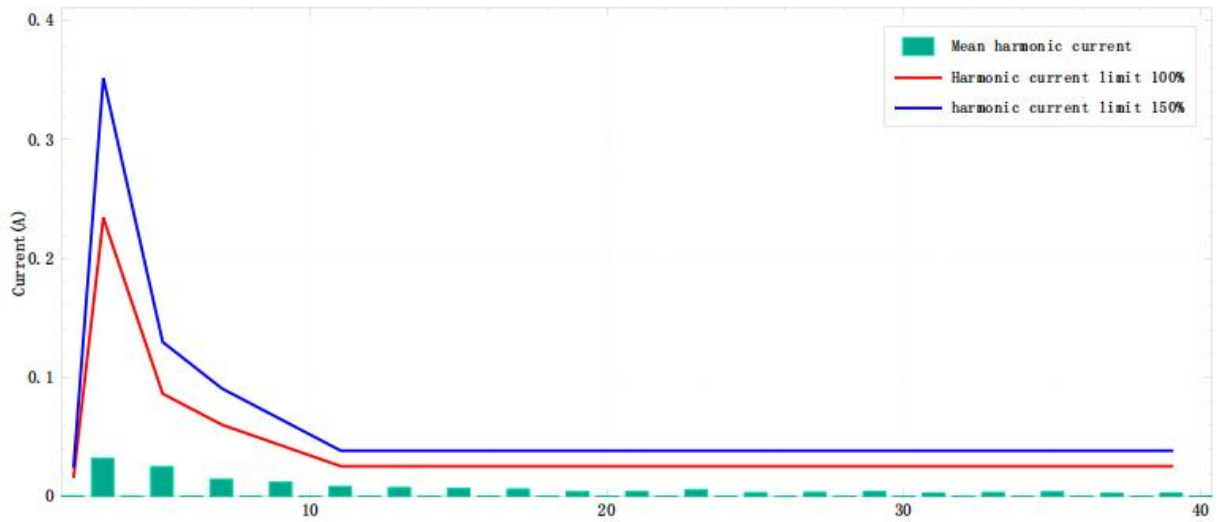
Pass.



Voltage current waveform



Current Harmonic -Type C(>25W) IEC 61000-3-2:2018+AMD1:2020



Test results: **Pass** Harmonics meet the corresponding limits Worst harmonic H11-32.74% 100% limit, H11-23.24% 150% limit



Harmonic frequency	Harmonic current (mean value)	100%Limit	%of Limit	Harmonic current (maximum)	150%Limit	%of Limit	Status
2	0.0005	0.0174	2.71	0.0013	0.0261	4.98	Pass
3	0.0321	0.2349	13.66	0.0328	0.3524	9.31	Pass
4	0.0004	N/A	N/A	0.0010	N/A	N/A	N/A
5	0.0251	0.0870	28.85	0.0258	0.1305	19.77	Pass
6	0.0003	N/A	N/A	0.0008	N/A	N/A	N/A
7	0.0145	0.0609	23.80	0.0153	0.0914	16.75	Pass
8	0.0003	N/A	N/A	0.0007	N/A	N/A	N/A
9	0.0124	0.0435	28.41	0.0129	0.0653	19.77	Pass
10	0.0003	N/A	N/A	0.0008	N/A	N/A	N/A
11	0.0085	0.0261	32.74	0.0091	0.0392	23.24	Pass
12	0.0003	N/A	N/A	0.0007	N/A	N/A	N/A
13	0.0076	0.0261	29.19	0.0084	0.0392	21.45	Pass
14	0.0003	N/A	N/A	0.0007	N/A	N/A	N/A
15	0.0068	0.0261	26.18	0.0074	0.0392	18.90	Pass
16	0.0003	N/A	N/A	0.0008	N/A	N/A	N/A
17	0.0063	0.0261	24.18	0.0068	0.0392	17.37	Pass
18	0.0003	N/A	N/A	0.0008	N/A	N/A	N/A
19	0.0041	0.0261	15.66	0.0048	0.0392	12.26	Pass
20	0.0003	N/A	N/A	0.0007	N/A	N/A	N/A
21	0.0044	0.0261	16.93	0.0051	0.0392	13.03	Pass
22	0.0002	N/A	N/A	0.0009	N/A	N/A	N/A
23	0.0058	0.0261	22.14	0.0063	0.0392	16.09	Pass
24	0.0002	N/A	N/A	0.0007	N/A	N/A	N/A
25	0.0034	0.0261	13.11	0.0043	0.0392	10.98	Pass
26	0.0002	N/A	N/A	0.0009	N/A	N/A	N/A
27	0.0036	0.0261	13.91	0.0042	0.0392	10.73	Pass
28	0.0003	N/A	N/A	0.0008	N/A	N/A	N/A
29	0.0042	0.0261	16.02	0.0047	0.0392	12.00	Pass
30	0.0003	N/A	N/A	0.0009	N/A	N/A	N/A
31	0.0031	0.0261	11.72	0.0037	0.0392	9.45	Pass
32	0.0003	N/A	N/A	0.0009	N/A	N/A	N/A
33	0.0036	0.0261	13.61	0.0042	0.0392	10.73	Pass
34	0.0003	N/A	N/A	0.0007	N/A	N/A	N/A
35	0.0040	0.0261	15.39	0.0048	0.0392	12.26	Pass
36	0.0002	N/A	N/A	0.0009	N/A	N/A	N/A
37	0.0027	0.0261	10.48	0.0033	0.0392	8.43	Pass
38	0.0003	N/A	N/A	0.0009	N/A	N/A	N/A
39	0.0030	0.0261	11.64	0.0036	0.0392	9.19	Pass
40	0.0003	N/A	N/A	0.0009	N/A	N/A	N/A

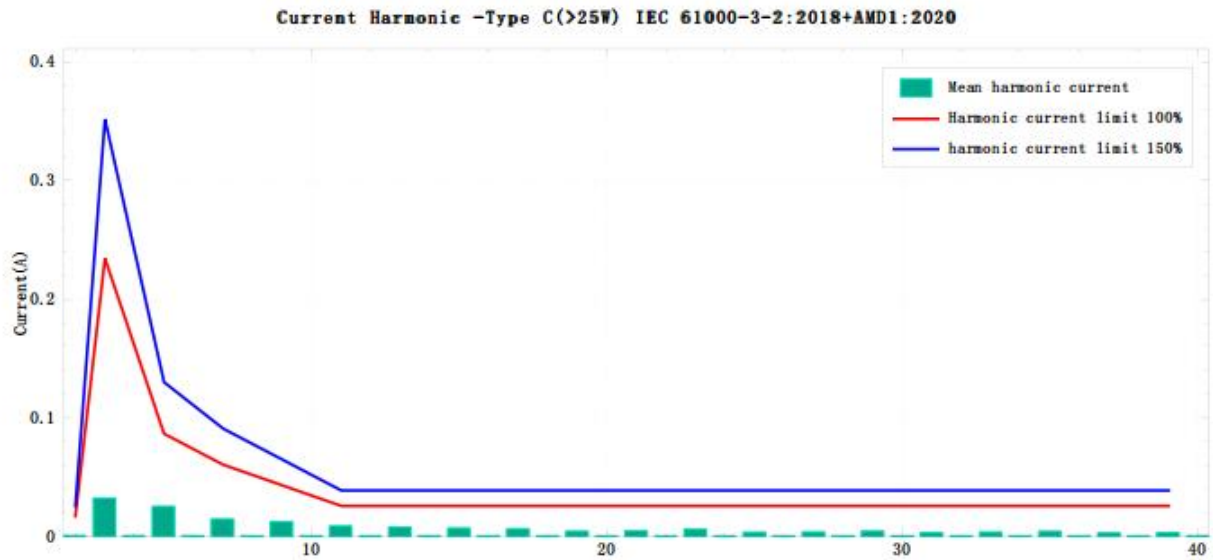


Harmonic frequency	Harmonic voltage (RMS)	Limit	%Limit	Status
2	0.130	0.439	29.62	Pass
3	0.110	1.975	5.57	Pass
4	0.110	0.439	25.07	Pass
5	0.070	0.878	7.98	Pass
6	0.060	0.439	13.67	Pass
7	0.070	0.658	10.63	Pass
8	0.030	0.439	6.84	Pass
9	0.030	0.439	6.84	Pass
10	0.020	0.439	4.56	Pass
11	0.040	0.219	18.23	Pass
12	0.020	0.219	9.12	Pass
13	0.030	0.219	13.67	Pass
14	0.010	0.219	4.56	Pass
15	0.030	0.219	13.67	Pass
16	0.020	0.219	9.12	Pass
17	0.030	0.219	13.67	Pass
18	0.020	0.219	9.12	Pass
19	0.020	0.219	9.12	Pass
20	0.020	0.219	9.12	Pass
21	0.020	0.219	9.12	Pass
22	0.010	0.219	4.56	Pass
23	0.020	0.219	9.12	Pass
24	0.010	0.219	4.56	Pass
25	0.020	0.219	9.12	Pass
26	0.010	0.219	4.56	Pass
27	0.020	0.219	9.12	Pass
28	0.010	0.219	4.56	Pass
29	0.020	0.219	9.12	Pass
30	0.010	0.219	4.56	Pass
31	0.020	0.219	9.12	Pass
32	0.010	0.219	4.56	Pass
33	0.010	0.219	4.56	Pass
34	0.020	0.219	9.12	Pass
35	0.020	0.219	9.12	Pass
36	0.010	0.219	4.56	Pass
37	0.020	0.219	9.12	Pass
38	0.010	0.219	4.56	Pass
39	0.020	0.219	9.12	Pass
40	0.010	0.219	4.56	Pass



Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V-02
Power supply : AC 230V, 50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%

Pass.



Test results: **Pass** Harmonics meet the corresponding limits Worst harmonic H11-32.74% 100% limit, H11-23.24% 150% limit



Harmonic frequency	Harmonic current (mean value)	100%Limit	%of Limit	Harmonic current (maximum)	150%Limit	%of Limit	Status
2	0.0005	0.0174	2.71	0.0013	0.0261	4.98	Pass
3	0.0321	0.2349	13.66	0.0328	0.3524	9.31	Pass
4	0.0004	N/A	N/A	0.0010	N/A	N/A	N/A
5	0.0251	0.0870	28.85	0.0258	0.1305	19.77	Pass
6	0.0003	N/A	N/A	0.0008	N/A	N/A	N/A
7	0.0145	0.0609	23.80	0.0153	0.0914	16.75	Pass
8	0.0003	N/A	N/A	0.0007	N/A	N/A	N/A
9	0.0124	0.0435	28.41	0.0129	0.0653	19.77	Pass
10	0.0003	N/A	N/A	0.0008	N/A	N/A	N/A
11	0.0085	0.0261	32.74	0.0091	0.0392	23.24	Pass
12	0.0003	N/A	N/A	0.0007	N/A	N/A	N/A
13	0.0076	0.0261	29.19	0.0084	0.0392	21.45	Pass
14	0.0003	N/A	N/A	0.0007	N/A	N/A	N/A
15	0.0068	0.0261	26.18	0.0074	0.0392	18.90	Pass
16	0.0003	N/A	N/A	0.0008	N/A	N/A	N/A
17	0.0063	0.0261	24.18	0.0068	0.0392	17.37	Pass
18	0.0003	N/A	N/A	0.0008	N/A	N/A	N/A
19	0.0041	0.0261	15.66	0.0048	0.0392	12.26	Pass
20	0.0003	N/A	N/A	0.0007	N/A	N/A	N/A
21	0.0044	0.0261	16.93	0.0051	0.0392	13.03	Pass
22	0.0002	N/A	N/A	0.0009	N/A	N/A	N/A
23	0.0058	0.0261	22.14	0.0063	0.0392	16.09	Pass
24	0.0002	N/A	N/A	0.0007	N/A	N/A	N/A
25	0.0034	0.0261	13.11	0.0043	0.0392	10.98	Pass
26	0.0002	N/A	N/A	0.0009	N/A	N/A	N/A
27	0.0036	0.0261	13.91	0.0042	0.0392	10.73	Pass
28	0.0003	N/A	N/A	0.0008	N/A	N/A	N/A
29	0.0042	0.0261	16.02	0.0047	0.0392	12.00	Pass
30	0.0003	N/A	N/A	0.0009	N/A	N/A	N/A
31	0.0031	0.0261	11.72	0.0037	0.0392	9.45	Pass
32	0.0003	N/A	N/A	0.0009	N/A	N/A	N/A
33	0.0036	0.0261	13.61	0.0042	0.0392	10.73	Pass
34	0.0003	N/A	N/A	0.0007	N/A	N/A	N/A
35	0.0040	0.0261	15.39	0.0048	0.0392	12.26	Pass
36	0.0002	N/A	N/A	0.0009	N/A	N/A	N/A
37	0.0027	0.0261	10.48	0.0033	0.0392	8.43	Pass
38	0.0003	N/A	N/A	0.0009	N/A	N/A	N/A
39	0.0030	0.0261	11.64	0.0036	0.0392	9.19	Pass
40	0.0003	N/A	N/A	0.0009	N/A	N/A	N/A



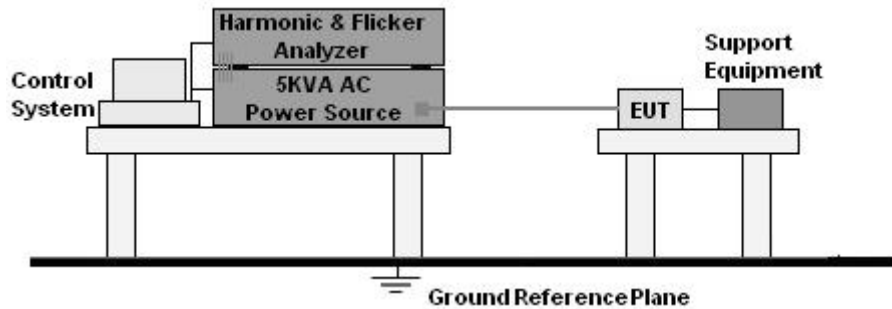
Harmonic frequency	Harmonic voltage (RMS)	Limit	%Limit	Status
2	0.130	0.439	29.62	Pass
3	0.110	1.975	5.57	Pass
4	0.110	0.439	25.07	Pass
5	0.070	0.878	7.98	Pass
6	0.060	0.439	13.67	Pass
7	0.070	0.658	10.63	Pass
8	0.030	0.439	6.84	Pass
9	0.030	0.439	6.84	Pass
10	0.020	0.439	4.56	Pass
11	0.040	0.219	18.23	Pass
12	0.020	0.219	9.12	Pass
13	0.030	0.219	13.67	Pass
14	0.010	0.219	4.56	Pass
15	0.030	0.219	13.67	Pass
16	0.020	0.219	9.12	Pass
17	0.030	0.219	13.67	Pass
18	0.020	0.219	9.12	Pass
19	0.020	0.219	9.12	Pass
20	0.020	0.219	9.12	Pass
21	0.020	0.219	9.12	Pass
22	0.010	0.219	4.56	Pass
23	0.020	0.219	9.12	Pass
24	0.010	0.219	4.56	Pass
25	0.020	0.219	9.12	Pass
26	0.010	0.219	4.56	Pass
27	0.020	0.219	9.12	Pass
28	0.010	0.219	4.56	Pass
29	0.020	0.219	9.12	Pass
30	0.010	0.219	4.56	Pass
31	0.020	0.219	9.12	Pass
32	0.010	0.219	4.56	Pass
33	0.010	0.219	4.56	Pass
34	0.020	0.219	9.12	Pass
35	0.020	0.219	9.12	Pass
36	0.010	0.219	4.56	Pass
37	0.020	0.219	9.12	Pass
38	0.010	0.219	4.56	Pass
39	0.020	0.219	9.12	Pass
40	0.010	0.219	4.56	Pass

VOLTAGE FLUCTUATIONS & FLICKER TEST (FLICKER)

9.5 LIMITS

Please refer to EN 61000-3-3:2013+A2:2021 Clause 5.

9.6 TEST SETUP



9.7 TEST PROCEDURE

a. The Product was placed on the top of a non-conductive table above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.

b. During the flick test, the measure time shall include that part of whole operation cycle in which the Product produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

9.8 TEST RESULTS

Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V
Power supply : AC 230V, 50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%

Pass.

Maximum Flicker results			
Test Item	EUT values	Limit	Result
Pst	0.070	1.000	PASS
dc [%]	0.005	3.300	PASS
dmax [%]	0.219	4.000	PASS
dt [ms]	0	500	PASS



Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V-02
Power supply : AC 230V, 50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%
 Pass.

Maximum Flicker results			
Test Item	EUT values	Limit	Result
Pst	0.071	1.000	PASS
dc [%]	0.001	3.300	PASS
dmax [%]	0.214	4.000	PASS
dt [ms]	0	500	PASS

10. IMMUNITY TEST

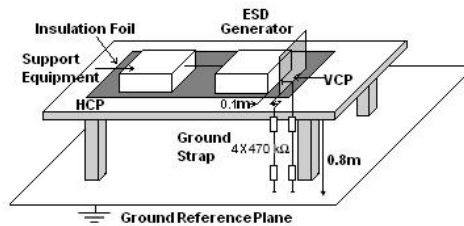
General Performance Criteria	
Product Standard	EN 61547:2009
CRITERION A	During the test no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
CRITERION B	During the test the luminous intensity may change to any value. After 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.

10.1 ELECTROSTATIC DISCHARGE

10.1.1 TEST SPECIFICATION

Basic Standard	: EN 61547:2009 &EN 61000-4-2:2009
Test Port	: Enclosure port
Discharge Impedance	: 330 ohm / 150 pF
Discharge Mode	: Single Discharge
Discharge Period	: one second between each discharge

10.1.2 TEST SETUP



10.1.3 TEST PROCEDURE

The basic test procedure was in accordance with EN 61547 and IEC 61000-4-2:

- Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.
- The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
- The time interval between two successive single discharges was at least 1 second.
- The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.
- Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
- At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.
- At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.



10.1.4 RESULT & PERFORMANCE

Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V
Power supply : AC 230V, 50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%

Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	Conductive Surfaces	2,4	10	B	A
	Indirect Discharge HCP	2,4	10	B	A
	Indirect Discharge VCP	2,4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	2,4,8	10	B	A

There was no observable degradation in performance.

TEST RESULT: PASS

Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V-02
Power supply : AC 230V, 50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%

Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	Conductive Surfaces	2,4	10	B	A
	Indirect Discharge HCP	2,4	10	B	A
	Indirect Discharge VCP	2,4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	2,4,8	10	B	A

There was no observable degradation in performance.

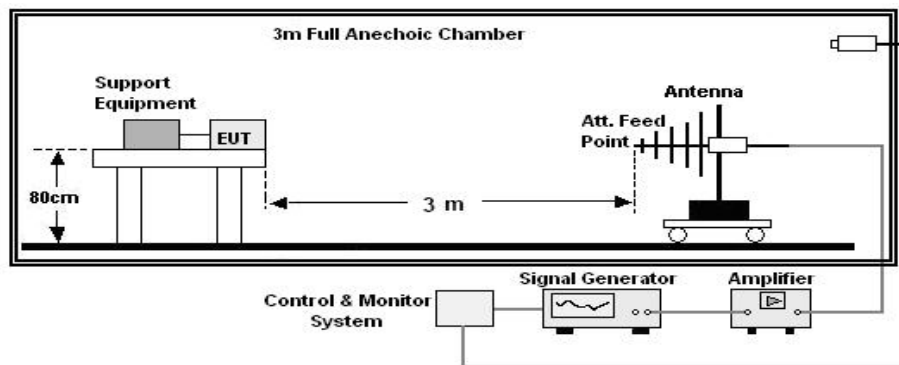
TEST RESULT: PASS

10.2 RADIO FREQUENCY ELECTROMAGNETIC FIELDS

10.2.1 TEST SPECIFICATION

Basic Standard	: EN 61547:2009 & EN 61000-4-3:2006+A2:2010
Test Port	: Enclosure port
Step Size	: 1%
Modulation	: 1kHz, 80% AM
Dwell Time	: 1 second
Polarization	: Horizontal & Vertical

10.2.2 TEST SETUP



10.2.3 TEST PROCEDURE

- The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3 meters from the Product.
- The frequency range is swept from 80MHz to 1000MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1%.
- The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.

10.2.4 RESULT & PERFORMANCE

Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%

Frequency (MHz)	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000	Front, Right, Back, Left	3	A	A

TEST RESULT: PASS

Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V-02
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%

Frequency (MHz)	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000	Front, Right, Back, Left	3	A	A

TEST RESULT: PASS

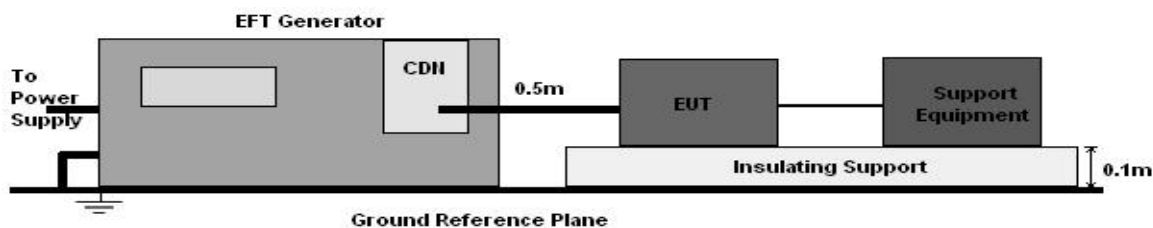
10.3 FAST TRANSIENTS

10.3.1 TEST SPECIFICATION

Basic Standard	: EN 61547:2009 & EN 61000-4-4:2012
Test Port	: Input a.c. power port
Impulse Frequency	: 5 kHz
Impulse Wave-shape	: 5/50 ns
Burst Duration	: 15 ms
Burst Period	: 300 ms
Test Duration	: 2 minutes per polarity

10.3.2 TEST SETUP

For input a.c. power port:



10.3.3 TEST PROCEDURE

- a. The Product and support units were located on a wooden table 0.1m away from ground reference plane.
- b. A 0.5m-long power cord was attached to Product during the test, and then test voltage was injected to the Product ports from minimum to standard request.



10.3.4 RESULT & PERFORMANCE

Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V
Power supply : AC 230V, 50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%

Coupling	Voltage (kV)	Polarity	Required Level	Performance Criterion
N	1.0	±	B	A
L	1.0	±	B	A
L,N	1.0	±	B	A

TEST RESULT: PASS

Product : LED Street Lamps **Model/Type reference** : SRSL200W-230V-02
Power supply : AC 230V, 50Hz **Temperature** : 25°C
Mode : ON **Humidity** : 45%

Coupling	Voltage (kV)	Polarity	Required Level	Performance Criterion
N	1.0	±	B	A
L	1.0	±	B	A
L,N	1.0	±	B	A

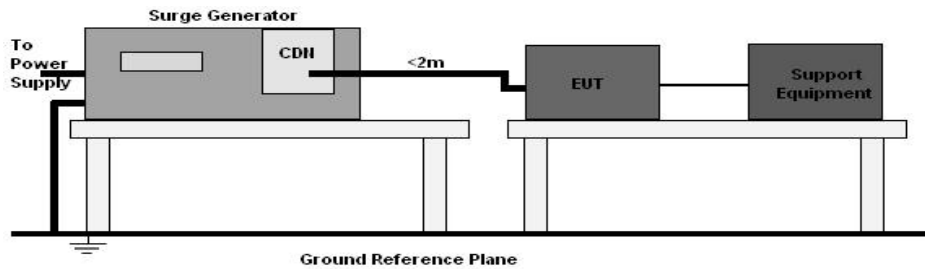
TEST RESULT: PASS

10.4 SURGES

10.4.1 TEST SPECIFICATION

Basic Standard : EN 61547 :2009& EN 61000-4-5:2014+A1:2017
Test Port : Input a.c. power port
Wave-Shape : Open Circuit Voltage - 1.2 / 50 us
Short Circuit Current - 8 / 20 us
Pulse Repetition Rate : 1 pulse / min.
Test Events : Five positive polarity pulses at the 90° phase angel
Five negative polarity pulses at the 270° phase angle

10.4.2 TEST SETUP



10.4.3 TEST PROCEDURE

- a. The surge is to be applied to the Product power supply terminals via the capacitive coupling network. effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave.
- b. The power cord between the Product and the coupling/decoupling networks shall be 2 meters in length.

10.4.4 RESULT & PERFORMANCE

Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%

Coupling	Voltage (kV)	Polarity	Required Level	Performance Criterion
L,N	1	±	B	A

Remark*: The product flickers during the test, but it can recover to normal by itself after testing.

TEST RESULT: PASS

Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V-02
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%

Coupling	Voltage (kV)	Polarity	Required Level	Performance Criterion
L,N	1	±	B	A

Remark*: The product flickers during the test, but it can recover to normal by itself after testing.

TEST RESULT: PASS

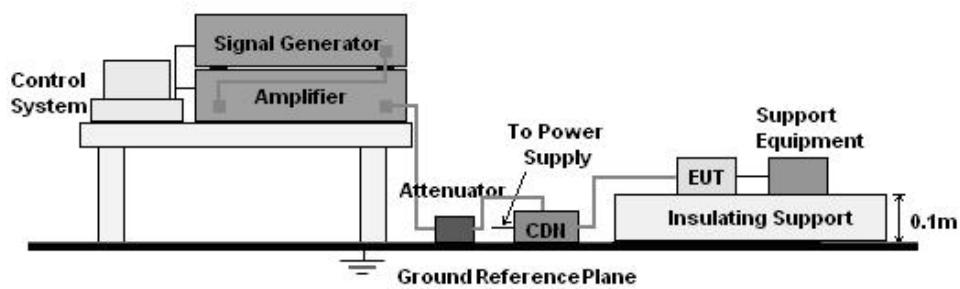
10.5 INJECTED CURRENTS

10.5.1 TEST SPECIFICATION

Basic Standard : EN 61547: 2009 & EN 61000-4-6: 2014+AC:2015
Test Port : Input a.c. power port
Step Size : 1%
Modulation : 1kHz, 80% AM
Dwell Time : 1 second

10.5.2 TEST SETUP

For input a.c. power port:



10.5.3 TEST PROCEDURE

For a.c. power port:

- The Product and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.
- The frequency range is swept from 150 kHz to 80MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave.
- The dwell time at each frequency shall be not less than the time necessary for the Product to be able to respond

10.5.4 RESULT & PERFORMANCE

Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%

Inject Line	Frequency (MHz)	Voltage Level (Vr.m.s.)	Required Level	Performance Criterion
a.c. port	0.15 - 80	3	A	A

TEST RESULT: PASS

Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V-02
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%

Inject Line	Frequency (MHz)	Voltage Level (Vr.m.s.)	Required Level	Performance Criterion
a.c. port	0.15 - 80	3	A	A

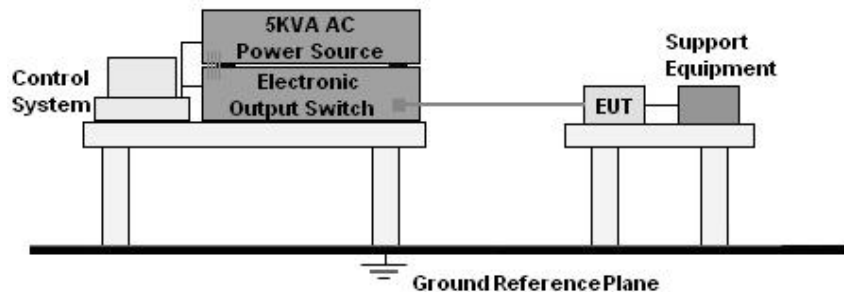
TEST RESULT: PASS

10.6 VOLTAGE DIPS AND INTERRUPTIONS

10.6.1 TEST SPECIFICATION

Basic Standard	: EN 61547: 2009 & EN 61000-4-11: 2004+A1:2017
Test Port	: Input a.c. power ports
Phase Angle	: 0°, 180°

10.6.2 TEST SETUP



10.6.3 TEST PROCEDURE

- The Product and support units were located on a wooden table above ground floor.
- Set the parameter of tests and then perform the test software of test simulator.
- Conditions changes to occur at 0 degree crossover point of the voltage waveform.

10.6.4 RESULT & PERFORMANCE

Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%



Voltage Dips:

Test Level % UT	Reduction (%)	Number of Periods	Required Level	Performance criteria
70	30	10	C	B*

Voltage Interruptions:

Test Level % UT	Reduction (%)	Number of Periods	Required Level	Performance criteria
0	100	0.5	B	B*

Remark*: The product flickers during the test, but it can recover to normal by itself after testing.

TEST RESULT: PASS

Product	: LED Street Lamps	Model/Type reference	: SRSL200W-230V-02
Power supply	: AC 230V, 50Hz	Temperature	: 25°C
Mode	: ON	Humidity	: 45%

Voltage Dips:

Test Level % UT	Reduction (%)	Number of Periods	Required Level	Performance criteria
70	30	10	C	B*

Voltage Interruptions:

Test Level % UT	Reduction (%)	Number of Periods	Required Level	Performance criteria
0	100	0.5	B	B*

Remark*: The product flickers during the test, but it can recover to normal by itself after testing.

TEST RESULT: PASS

APPENDIX 1 PHOTOGRAPHS OF PRODUCT



EUT (SRSL200W-230V)



EUT (SRSL200W-230V)



EUT (SRSL200W-230V-02)



EUT (SRSL200W-230V-02)

APPENDIX 2 PHOTOGRAPHS OF TEST SETUP



Disturbance Voltage Test Setup



Radiated Electromagnetic Disturbances (Table 3a) Test Setup



Harmonic&Flicker



Radiated Electromagnetic Disturbances (Table 3b) Test Setup



Electrostatic Discharges (ESD)



Suger, EFT, Dips



CS



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