

EMC testing of Peony Lighting Technology Co., Ltd.

Luminaires for road and street lighting (LED Street Light)

(Refer to section 1.4 for detailed models)

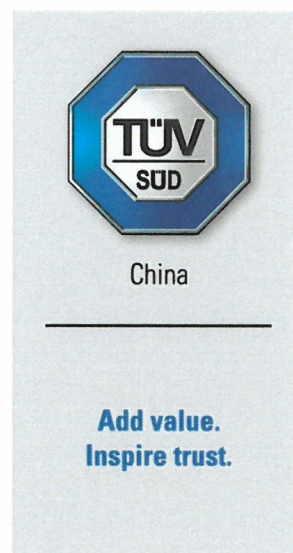
In accordance with EN 55015, EN 61000-3-2, EN 61000-3-3 and EN 61547

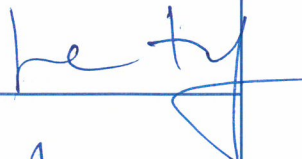
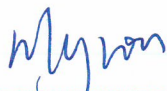
Prepared for: Peony Lighting Technology Co., Ltd.

Building B, Su Shi Shan Shui Industrial Park, Baoyuan Community,
Shiyan Street, Bao'an District, 518108 Shenzhen, PEOPLE'S
REPUBLIC OF CHINA

COMMERCIAL-IN-CONFIDENCE

Report Number: 68.740.19.0004.01



RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Approved by	Laurent Yuan	02/20/2019	
Prepared by	Myron Yu	02/20/2019	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service control rules.

EXECUTIVE SUMMARY

A sample of this product was tested and found to be in compliance with EN 55015:2013/A1:2015, EN 61000-3-2:2014, EN 61000-3-3:2013 and EN 61547:2009.

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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	02/20/2019

1.2 Introduction

The information contained in this report is intended to show verification of the EMC Qualification Approval Testing of the requirements of the standards for the tests listed in Section 1.3.

Applicant	Peony Lighting Technology Co., Ltd.
Address	Building B, Su Shi Shan Shui Industrial Park, Baoyuan Community, Shiyan Street, Bao'an District, 518108 Shenzhen, PEOPLE'S REPUBLIC OF CHINA
Manufacturer	Peony Lighting Technology Co., Ltd.
Address	Building B, Su Shi Shan Shui Industrial Park, Baoyuan Community, Shiyan Street, Bao'an District, 518108 Shenzhen, PEOPLE'S REPUBLIC OF CHINA
Factory	Peony Lighting Technology Co., Ltd.
Address	Building B, Su Shi Shan Shui Industrial Park, Baoyuan Community, Shiyan Street, Bao'an District, 518108 Shenzhen, PEOPLE'S REPUBLIC OF CHINA
Model Number(s)	Refer to section 1.4 for detailed models
Product Type	Luminaires for road and street lighting (LED Street Light)
Test Specification	EN 55015:2013/A1:2015, EN 61547:2009, EN 61000-3-2:2014, EN 61000-3-3:2013
Date of Receipt of EUT	01/28/2019
Start of Test	01/31/2019
Finish of Test	02/13/2019
Name of Engineer(s)	Myron Yu

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with EN 55015, EN 61000-3-2, EN 61000-3-3 and EN 61547 is shown below.

Specification	Clause	Test Description	Result	Comments/Base Standard
EN 55015:2013/A1:2015	4.3.1	Conducted Disturbance at Mains Terminals	Pass	
EN 55015:2013/A1:2015	4.4.1	Radiated Disturbance (9KHz to 30MHz)	Pass	
EN 55015:2013/A1:2015	4.4.2	Radiated Disturbance	Pass	
EN 61000-3-2:2014	7	Harmonic Current Emissions*	Pass	
EN 61000-3-3:2013	6	Flicker*	Pass	
EN 61547:2009	5.2	Electrostatic discharge immunity test	Pass	IEC 61000-4-2
EN 61547:2009	5.3	Radiated, radio-frequency, electromagnetic field immunity test	Pass	IEC 61000-4-3
EN 61547:2009	5.4	Power frequency magnetic field immunity test**	N/A	IEC 61000-4-8
EN 61547:2009	5.5	Electrical fast transient /burst immunity test	Pass	IEC 61000-4-4
EN 61547:2009	5.6	Immunity to conducted disturbances, induced by radio-frequency fields	Pass	IEC 61000-4-6
EN 61547:2009	5.7	Surge immunity test	Pass	IEC 61000-4-5
EN 61547:2009	5.8	Voltage dips, short interruptions and voltage variations immunity test	Pass	IEC 61000-4-11

Remark:

“*”: Limits are not specified when LED luminaires with rating less than or equal to 200W (EN 61000-3-3: 2013, Annex A (A.2)).

“***”: This item need only to be applied to equipment containing components susceptible to magnetic fields, such as Hall elements or magnetic field sensors (EN 61547:2009, Clause 5.4).

1.4 Product Information

LED Street Light is for outdoor use only.

Model List:

Model No.	Power (W)	LED Driver	LED type	LED quantities	Photos	
PL-LD-060-30W	30	EUC-035S070SVM	LUXEON 3030	72		
PL-LD-060-40W	40					
PL-LD-060-50W	50	EUC-060S105SVM		144		
PL-LD-060-60W	60					
PL-LD-060-70W	70	EUP-075S175SV				240
PL-LD-060-80W	80					
PL-LD-060-90W	90	EUP-096S210SV				
PL-LD-060-100W	100					
PL-LD-060-120W	120	EUP-150S350SV				
PL-LD-060-150W	150					
PL-LD-060-180W	180	EUP-200S560SV				
PL-LD-060-200W	200					
PL-LD-061-30W	30	EUC-035S070SVM	LUXEON 3030	96		
PL-LD-061-40W	40					
PL-LD-061-50W	50	EUC-060S105SVM		144		
PL-LD-061-60W	60					
PL-LD-061-70W	70	EUP-075S175SV				192
PL-LD-061-80W	80					
PL-LD-061-90W	90	EUP-096S210SV				
PL-LD-061-100W	100					
PL-LD-061-120W	120	EUP-150S350SV				
PL-LD-061-150W	150					
PL-LD-061-180W	180	EUP-200S560SV				
PL-LD-061-200W	200					
PL-LD-062-30W	30	EUC-035S070SVM	LUXEON 3030	144		
PL-LD-062-40W	40					
PL-LD-062-50W	50	EUC-060S105SVM				192
PL-LD-062-60W	60					
PL-LD-062-70W	70	EUP-075S175SV				
PL-LD-062-80W	80					
PL-LD-062-90W	90	EUP-096S210SV				
PL-LD-062-100W	100					
PL-LD-062-120W	120	EUP-150S350SV				
PL-LD-062-150W	150					
PL-LD-065-100W	100	EUP-096S210SV	LUXEON 3030	192		
PL-LD-065-120W	120	EUP-150S350SV				
PL-LD-065-150W	150			EUP-200S560SV		256
PL-LD-065-180W	180					
PL-LD-065-200W	200					

PL-LD-057-50W	50	EUC-060S180SVM	LUXEON 3030	72			
PL-LD-057-80W	80	EUP-075S175SV		144			
PL-LD-057-100W	100	EUP-096S210SV					
PL-LD-057-120W	120	EUP-150S560SV		216			
PL-LD-057-150W	150						
PL-LD-057-180W	180	EUP-200S560SV		288			
PL-LD-057-200W	200						
PL-LD-057-250W	250	EUP-240S670SV		360			
PL-LD-057S-50W	50	EUC-060S105SVM	LUXEON 5050	28			
PL-LD-057S-80W	80	EUP-075S175SV		56			
PL-LD-057S-100W	100	EUP-096S210SV					
PL-LD-057S-120W	120	EUP-150S350SV		84			
PL-LD-057S-150W	150						
PL-LD-057S-180W	180	EUP-200S560SV		112			
PL-LD-057S-200W	200						
PL-LD-057S-250W	250	EUP-240S670SV		140			
PL-LD-067-30W	30	EUC-035S070SVM	LUXEON 3030	96			
PL-LD-067-40W	40						
PL-LD-067-50W	50	EUC-060S105SVM		192			
PL-LD-067-60W	60						
PL-LD-067-70W	70	EUP-075S175SV				320	
PL-LD-067-80W	80						
PL-LD-067-90W	90	EUP-096S210SV					
PL-LD-067-100W	100						
PL-LD-067-120W	120	EUP-150S350SV					
PL-LD-067-150W	150						
PL-LD-067-180W	180	EUP-200S560SV					
PL-LD-067-200W	200						
PL-LD-067S-30W	30	EUC-035S070SVM	LUXEON 5050		24		
PL-LD-067S -40W	40						
PL-LD-067S -50W	50	EUC-060S105SVM					
PL-LD-067S -60W	60						
PL-LD-067S -70W	70	EUP-075S175SV					
PL-LD-067S -80W	80						
PL-LD-067S -90W	90	EUP-096S210SV					
PL-LD-067S -100W	100						
PL-LD-067S -120W	120	EUP-150S350SV					
PL-LD-067S -150W	150						
PL-LD-067S -180W	180	EUP-200S560SV					
PL-LD-067S -200W	200						

PL-LD-068-80W	80	EUP-075S175SV	LUXEON 3030	144	
PL-LD-068-100W	100	EUP-096S210SV			
PL-LD-068-120W	120	EUP-150S560SV		216	
PL-LD-068-150W	150				
PL-LD-068-180W	180	EUP-200S560SV		288	
PL-LD-068-200W	200				
PL-LD-068-250W	250	EUP-240S670SV		360	
PL-LD-068S-80W	80	EUP-075S175SV	LUXEON 5050	56	
PL-LD-068S -100W	100	EUP-096S210SV			
PL-LD-068S -120W	120	EUP-150S560SV		84	
PL-LD-068S -150W	150				
PL-LD-068S -180W	180	EUP-200S560SV		112	
PL-LD-068S -200W	200				
PL-LD-068S -250W	250	EUP-240S670SV		140	
PL-LD-066-50W	50	EUC-060S105SVM	LUXEON 3030	112	
PL-LD-066-60W	60				
PL-LD-066-100W	100	EUP-096S210SV		224	
PL-LD-066-120W	120				
PL-LD-066-150W	150	EUP-150S350SV		336	
PL-LD-066-180W	180	EUP-200S560SV			
PL-LD-066-200W	200			448	
PL-LD-066-240W	240	EUP-240S670SV			
PL-LD-058-80W	80	EUP-075S175SV	LUXEON 3030	144	
PL-LD-058-100W	100	EUP-096S210SV			
PL-LD-058-120W	120	EUP-150S560SV		216	
PL-LD-058-150W	150				
PL-LD-058-180W	180	EUP-200S560SV		288	
PL-LD-058-200W	200				
PL-LD-058-250W	250	EUP-240S670SV		360	
PL-LD-058S-80W	80	EUP-075S175SV	LUXEON 5050	96	
PL-LD-058S -100W	100	EUP-096S210SV			
PL-LD-058S -120W	120	EUP-150S350SV		144	
PL-LD-058S -150W	150				
PL-LD-058S -180W	180	EUP-200S560SV		192	
PL-LD-058S -200W	200				
PL-LD-058S -250W	250	EUP-240S670SV		240	

PL-LD-069-30W	30	EUC-035S070SVM	LUXEON 3030	128	
PL-LD-069-40W	40				
PL-LD-069-50W	50	EUC-060S105SVM			
PL-LD-069-60W	60				
PL-LD-069-70W	70	EUP-075S175SV			
PL-LD-069-80W	80				
PL-LD-069-90W	90	EUP-096S210SV			
PL-LD-069-100W	100				
PL-LD-069-120W	120	EUP-150S350SV			
PL-LD-069-150W	150				
PL-LD-069-180W	180	EUP-200S560SV			
PL-LD-069-200W	200				
PL-LD-069-240W	240	EUP-240S670SV			
PL-LD-069-250W	250				
PL-LD-069S-30W	30	EUC-035S070SVM	LUXEON 5050	32	
PL-LD-069S-40W	40				
PL-LD-069S-50W	50	EUC-060S105SVM			
PL-LD-069S-60W	60				
PL-LD-069S-70W	70	EUP-075S175SV			
PL-LD-069S-80W	80				
PL-LD-069S-90W	90	EUP-096S210SV			
PL-LD-069S-100W	100				
PL-LD-069S-120W	120	EUP-150S350SV			
PL-LD-069S-150W	150				
PL-LD-069S-180W	180	EUP200S560SV			
PL-LD-069S-200W	200				
PL-LD-069S-240W	240	EUP-240S670SV			
PL-LD-069S-250W	250				

LED driver model no.	Rated input	Rated Output	Remark
EUC-035S070SVM	AC 100-240V, 50/60Hz, 0.38A max	DC 34-80V, 0.7A max	/
EUC-060S105SVM	AC 100-240V, 50/60Hz, 0.6A max	DC 34-80V, 1.05A max	Same construction, PCB circuit except the parameter of respective components.
EUC-060S180SVM		DC 20-50V, 1.8A max	
EUP-075S175SV	AC 100-240V, 50/60Hz, 0.91A max	DC 22-63V, 1.75A max	/
EUP-096S210SV	AC 100-240V, 50/60Hz, 1.2A max	DC 24-69V, 2.1A max	/
EUP-150S350SV	AC 100-240V, 50/60Hz, 1.65A max	DC 22-61V, 3.5A max	Same with primary circuit diagram except minor difference in secondary circuits and PCB layout.
EUP-150S560SV		DC 14-36V, 5.6A max	
EUP-200S560SV	AC 100-240V, 50/60Hz, 2.25A max	DC 18-52V, 5.6A max	Same with primary circuit diagram except minor difference in secondary circuits and PCB layout.
EUP-240S670SV	AC 100-240V, 50/60Hz, 2.9A max	DC 18-52V, 6.7A max	

Unless otherwise specified, the models **PL-LD-067-40W**, **PL-LD-067-60W**, **PL-LD-067-80W**, **PL-LD-066-100W**, **PL-LD-068-150W** and **PL-LD-069S-250W** were chosen as representative model to perform all tests.

1.4.1 Technical Description

Ratings : 100-240VAC, 50/60Hz;
See section 1.4 model list for other ratings
Protection class : I

1.4.2 Test Configuration

Configuration	Description
AC Powered	230VAC, 50Hz

1.4.3 Modes of Operation

Mode	Description
ON	The EUT was powered and lighted on.

1.4.4 Performance Criteria

Performance 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.

Performance 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.

Performance 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.

1.5 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.6 Test Location

Test site: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Address: Building 12&13, Zhiheng Wisdomland Business Park,
Nantou Checkpoint Road 2, Nanshan District,
Shenzhen City, 518052, P. R. China

Test Name	Name of Engineer(s)
Conducted Disturbance at Mains Terminals	Adam Yang
Radiated Disturbance (9KHz to 30MHz)	Adam Yang
Radiated Disturbance	Tim Yue
Harmonic Current Emissions	Tim Yue
Flicker	Tim Yue
Electrostatic discharge immunity test	Aaron Long
Radiated, radio-frequency, electromagnetic field immunity test	Black Ding
Power frequency magnetic field immunity test	N/A
Electrical fast transient /burst immunity test	Tim Yue
Immunity to conducted disturbances, induced by radio-frequency fields	Tim Yue
Surge immunity test	Tim Yue
Voltage dips, short interruptions and voltage variations immunity test	Tim Yue

2 Test Details

2.1 Conducted Disturbance at Mains Terminals

2.1.1 Specification Reference

EN 55015:2013/A1:2015, Clause 4.3.1

2.1.2 Equipment Under Test

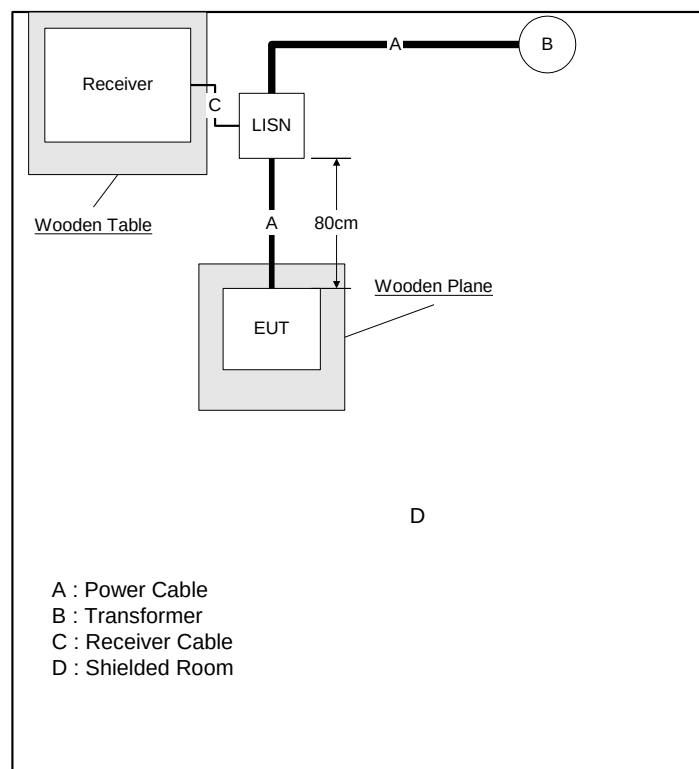
PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

2.1.3 Date of Test

01/31/2019

2.1.4 Test Method

The disturbance voltage shall be measured at the main terminals of the lighting equipment by means of the arrangement described in Figure 5 and 6 for the relevant type of equipment. The output terminals of the artificial mains network (V-network) and the terminals a-b shall be positioned $0,8\text{m} \pm 20\%$ apart and shall be connected by the two power conductors of a flexible three-core cable of $0,8\text{m}$ length.



2.1.5 Environmental Conditions

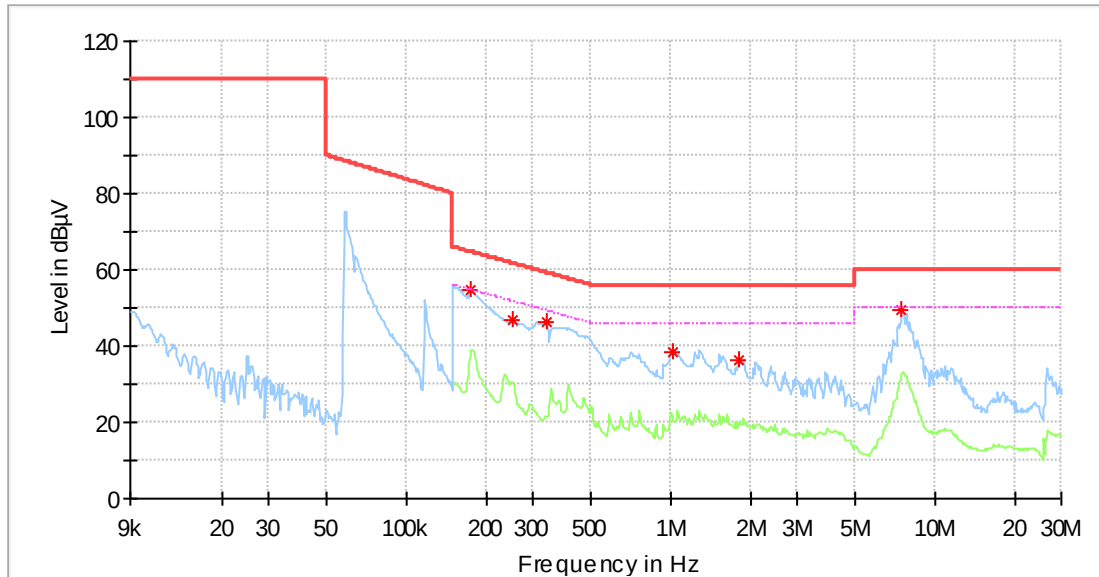
Ambient Temperature	23.4 °C
Relative Humidity	48.7 %
Atmospheric Pressure	1018.0 mbar

2.1.6 Specification Limits

Disturbance voltage limits at the mains terminals		
Frequency range	Limits dB(μ V)	
	Quasi-peak	Average
9kHz to 50kHz	110	--
50kHz to 150kHz	90 to 80	--
150kHz to 0.5MHz	66 to 56	56 to 46
0.5MHz to 5.0MHz	56	46
5.0MHz to 30MHz	60	50

2.1.7 Test Results

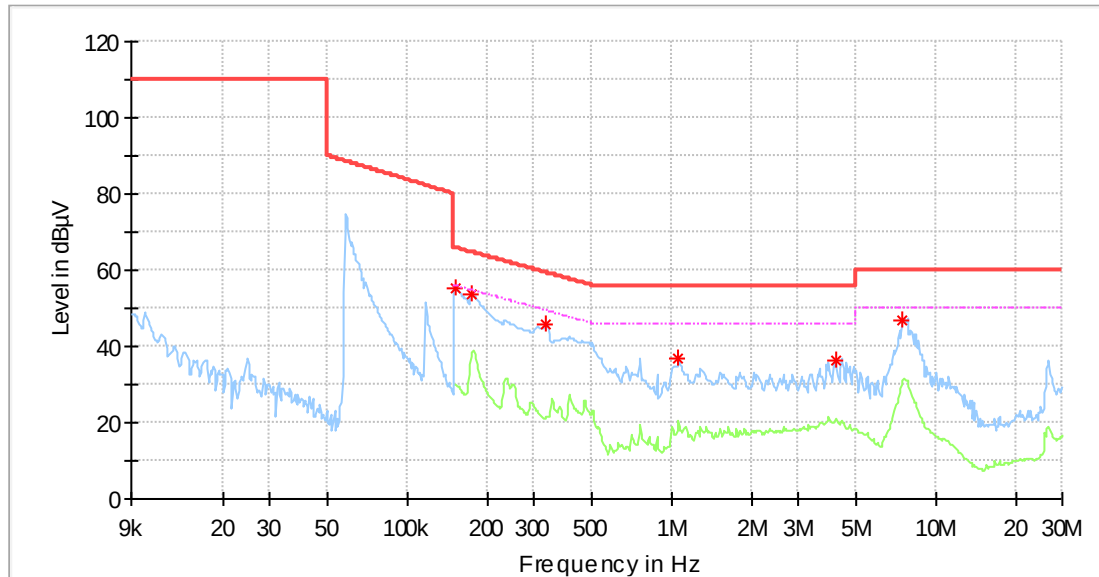
Model: PL-LD-067-40W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Power Line, Live



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.175887	54.56	---	64.68	10.12	L1	10.2
0.251654	46.96	---	61.70	14.74	L1	10.2
0.339191	46.22	---	59.22	13.00	L1	10.2
1.023568	38.27	---	56.00	17.73	L1	10.3
1.822873	36.27	---	56.00	19.73	L1	10.3
7.488442	49.36	---	60.00	10.64	L1	10.6

Remark: Corrector factor = LISN Factor + Cable Loss

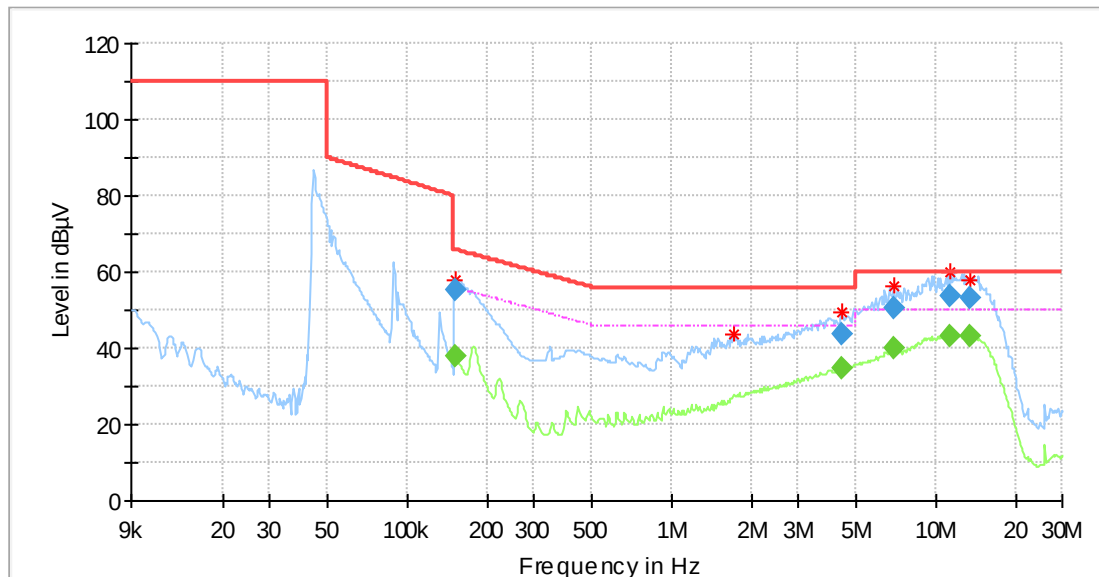
Model: PL-LD-067-40W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Power Line, Neutral



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.151500	55.16	---	65.92	10.76	N	10.4
0.174145	53.88	---	64.76	10.88	N	10.2
0.335833	45.76	---	59.31	13.54	N	10.3
1.054583	36.73	---	56.00	19.27	N	10.3
4.163230	36.25	---	56.00	19.75	N	10.4
7.488442	47.08	---	60.00	12.92	N	10.6

Remark: Corrector factor = LISN Factor + Cable Loss

Model: PL-LD-067-60W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Power Line, Live



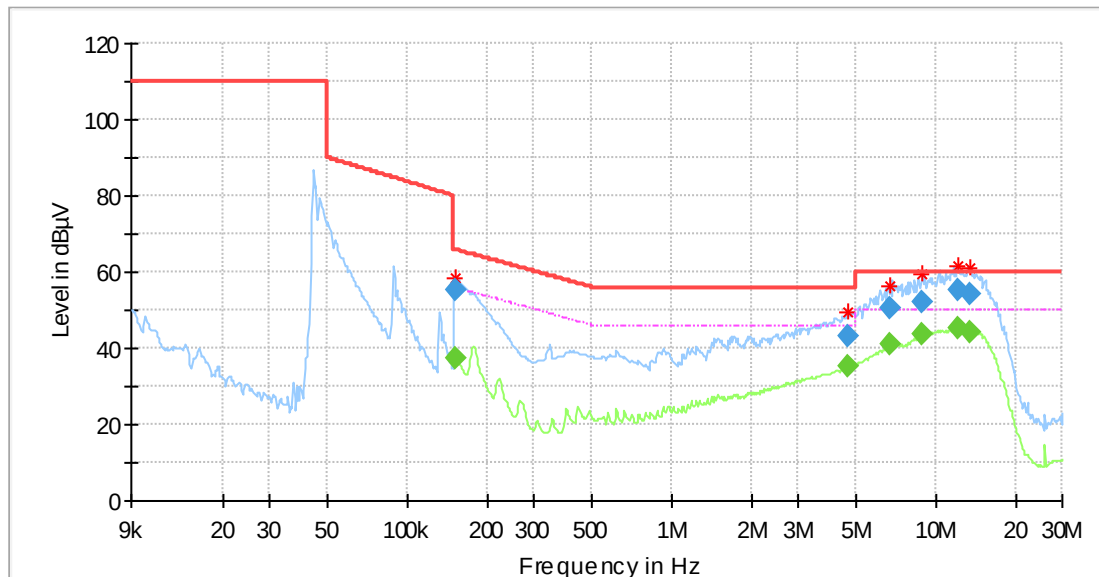
Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.151545	58.16	---	65.75	7.59	L1	10.2
1.717229	43.59	---	56.00	12.41	L1	10.3
4.371096	49.33	---	56.00	6.67	L1	10.4
6.910950	56.52	---	60.00	3.48	L1	10.5
11.377869	60.14	---	60.00	-0.14	L1	10.7
13.340670	57.79	---	60.00	2.21	L1	10.7

Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.151545	---	37.71	55.91	18.20	L1	10.4
0.151545	55.38	---	65.91	10.53	L1	10.4
4.371096	---	34.99	46.00	11.01	L1	10.4
4.371096	43.80	---	56.00	12.20	L1	10.4
6.910950	---	40.22	50.00	9.78	L1	10.5
6.910950	50.51	---	60.00	9.49	L1	10.5
11.377869	---	43.36	50.00	6.64	L1	10.7
11.377869	53.82	---	60.00	6.18	L1	10.7
13.340670	---	43.20	50.00	6.80	L1	10.7
13.340670	53.28	---	60.00	6.72	L1	10.7

Remark: Corrector factor = LISN Factor + Cable Loss

Model: PL-LD-067-60W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Power Line, Neutral



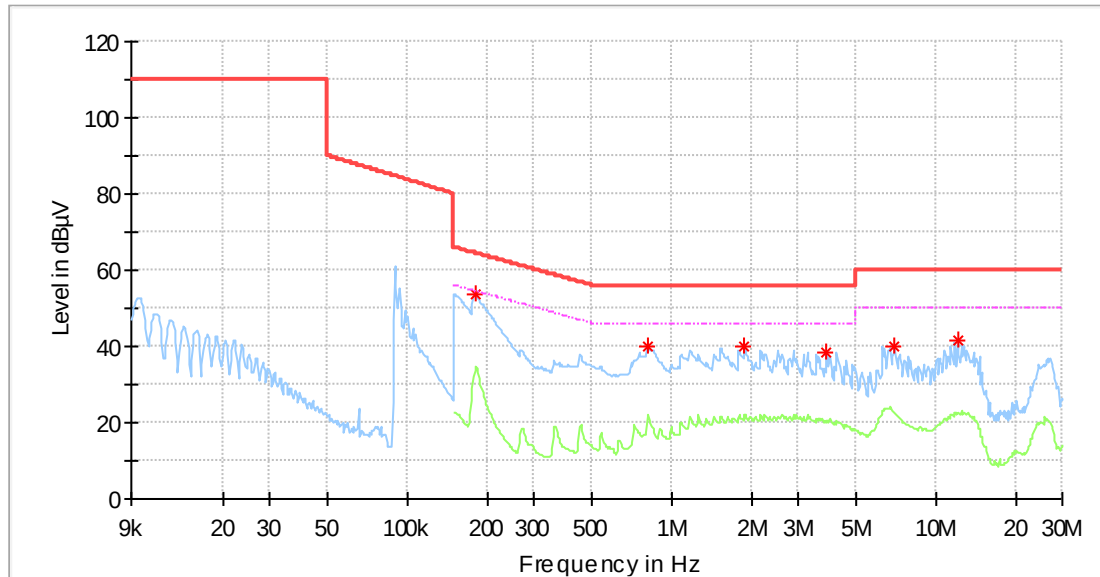
Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.151500	58.37	---	65.92	7.55	N	10.4
4.603296	49.31	---	56.00	6.69	N	10.4
6.707568	56.51	---	60.00	3.49	N	10.6
8.873095	59.39	---	60.00	0.61	N	10.6
12.068561	61.76	---	60.00	-1.76	N	10.7
13.465032	60.92	---	60.00	-0.92	N	10.8

Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.151500	---	37.55	55.92	18.37	N	10.4
0.151500	55.11	---	65.92	10.81	N	10.4
4.603296	---	35.03	46.00	10.97	N	10.4
4.603296	43.36	---	56.00	12.64	N	10.4
6.707568	---	41.25	50.00	8.75	N	10.6
6.707568	50.59	---	60.00	9.41	N	10.6
8.873095	---	43.89	50.00	6.11	N	10.6
8.873095	52.22	---	60.00	7.78	N	10.6
12.068561	---	45.33	50.00	4.67	N	10.7
12.068561	55.48	---	60.00	4.52	N	10.7
13.465032	---	44.43	50.00	5.57	N	10.8
13.465032	54.32	---	60.00	5.68	N	10.8

Remark: Corrector factor = LISN Factor + Cable Loss

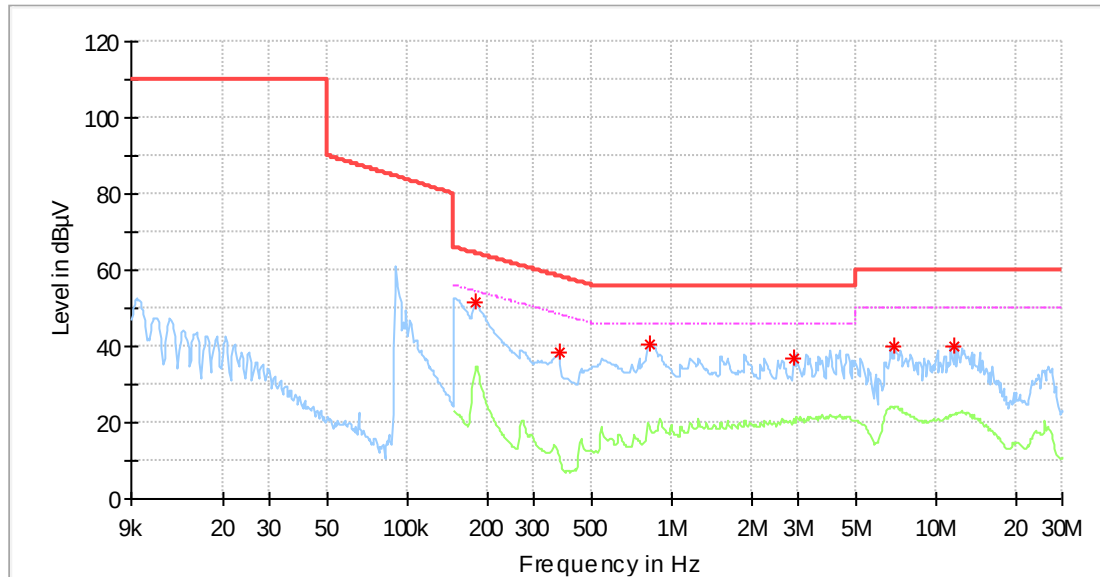
Model: PL-LD-067-80W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Power Line, Live



Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.179422	53.59	---	64.51	10.92	L1	10.2
0.806127	39.98	---	56.00	16.02	L1	10.3
1.878108	39.90	---	56.00	16.10	L1	10.3
3.844673	38.49	---	56.00	17.51	L1	10.4
6.984605	40.11	---	60.00	19.89	L1	10.5
12.073061	41.72	---	60.00	18.28	L1	10.7

Remark: Corrector factor = LISN Factor + Cable Loss

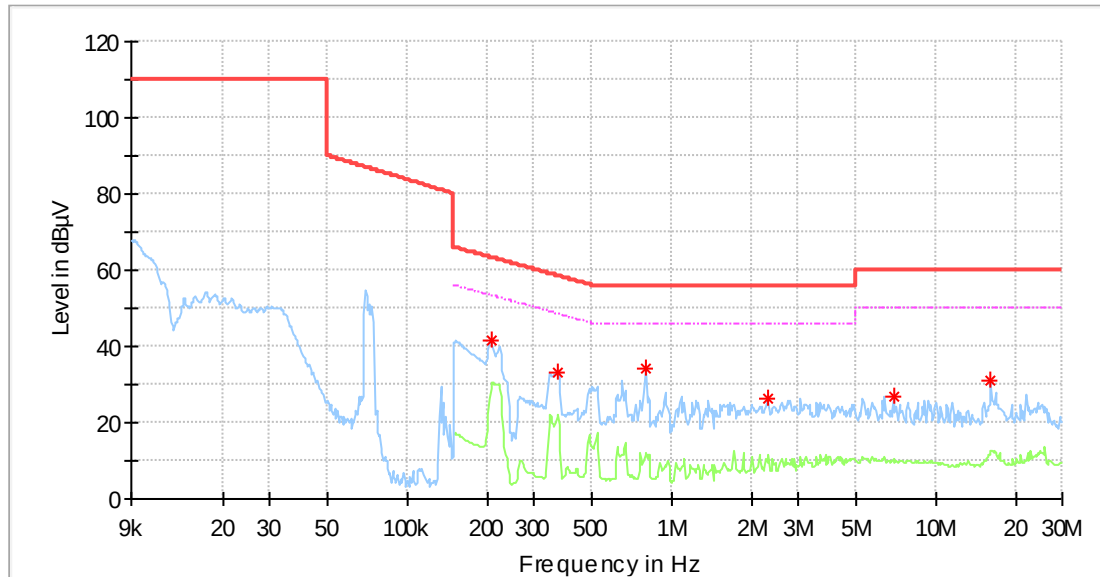
Model: PL-LD-067-80W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Power Line, Neutral



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.179422	51.72	---	64.51	12.80	N	10.2
0.374678	38.30	---	58.40	20.09	N	10.3
0.830554	40.72	---	56.00	15.28	N	10.3
2.880975	37.06	---	56.00	18.94	N	10.4
6.984605	40.03	---	60.00	19.97	N	10.6
11.717994	40.26	---	60.00	19.74	N	10.7

Remark: Corrector factor = LISN Factor + Cable Loss

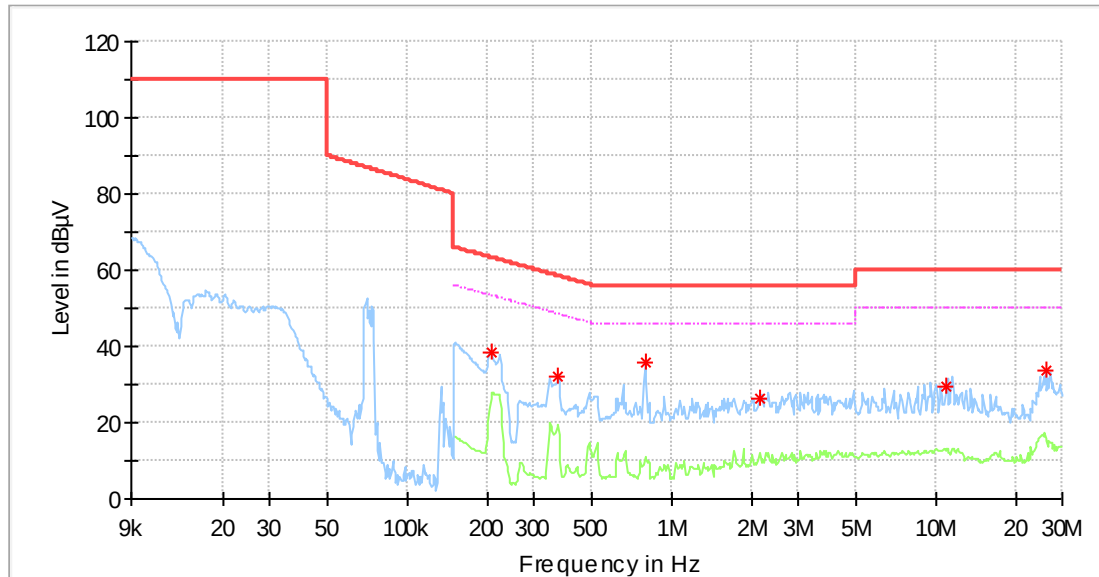
Model: PL-LD-066-100W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Power Line, Live



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.206241	41.55	---	63.36	21.80	L1	10.2
0.367295	33.08	---	58.56	25.48	L1	10.3
0.798146	34.37	---	56.00	21.63	L1	10.3
2.291648	26.19	---	56.00	29.81	L1	10.3
6.915450	26.66	---	60.00	33.34	L1	10.5
16.111546	31.29	---	60.00	28.71	L1	10.8

Remark: Corrector factor = LISN Factor + Cable Loss

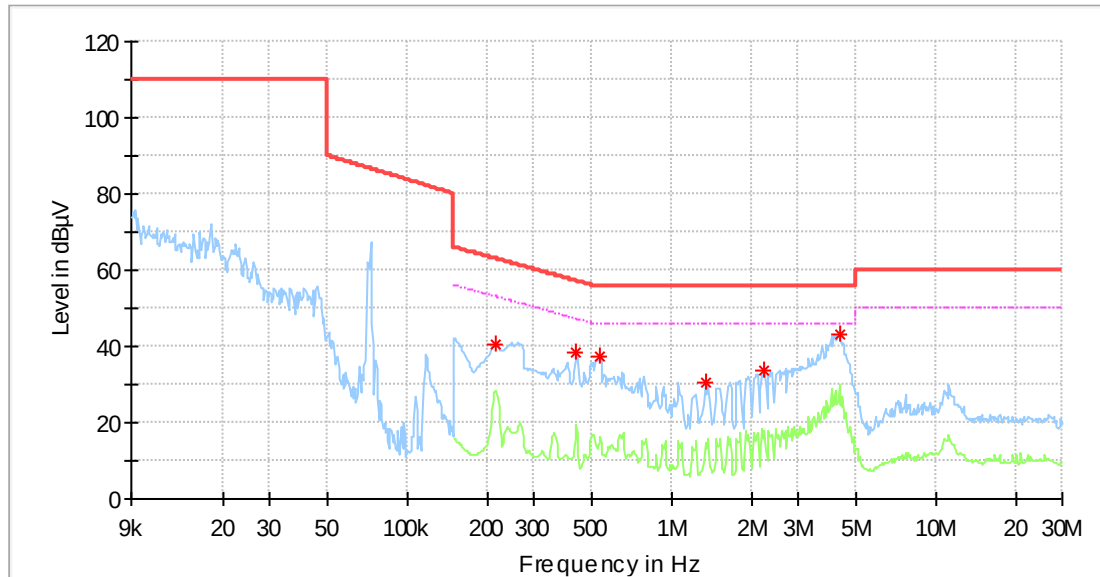
Model: PL-LD-066-100W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Power Line, Neutral



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.206241	38.59	---	63.36	24.76	N	10.2
0.370968	32.32	---	58.48	26.16	N	10.3
0.790244	35.92	---	56.00	20.08	N	10.3
2.158836	26.22	---	56.00	29.78	N	10.3
10.929584	29.29	---	60.00	30.71	N	10.7
25.975455	33.83	---	60.00	26.17	N	11.2

Remark: Corrector factor = LISN Factor + Cable Loss

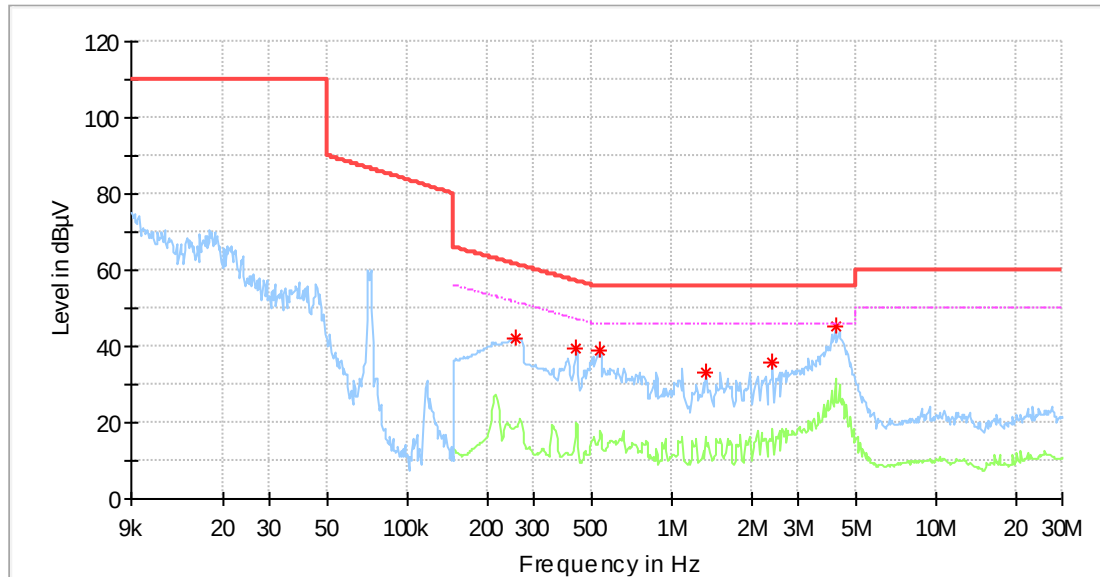
Model: PL-LD-068-150W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Power Line, Live



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.216762	40.46	---	62.94	22.49	L1	10.2
0.434989	38.62	---	57.16	18.53	L1	10.3
0.536077	37.26	---	56.00	18.74	L1	10.3
1.339041	30.59	---	56.00	25.41	L1	10.3
2.246494	33.44	---	56.00	22.56	L1	10.3
4.289380	43.25	---	56.00	12.75	L1	10.4

Remark: Corrector factor = LISN Factor + Cable Loss

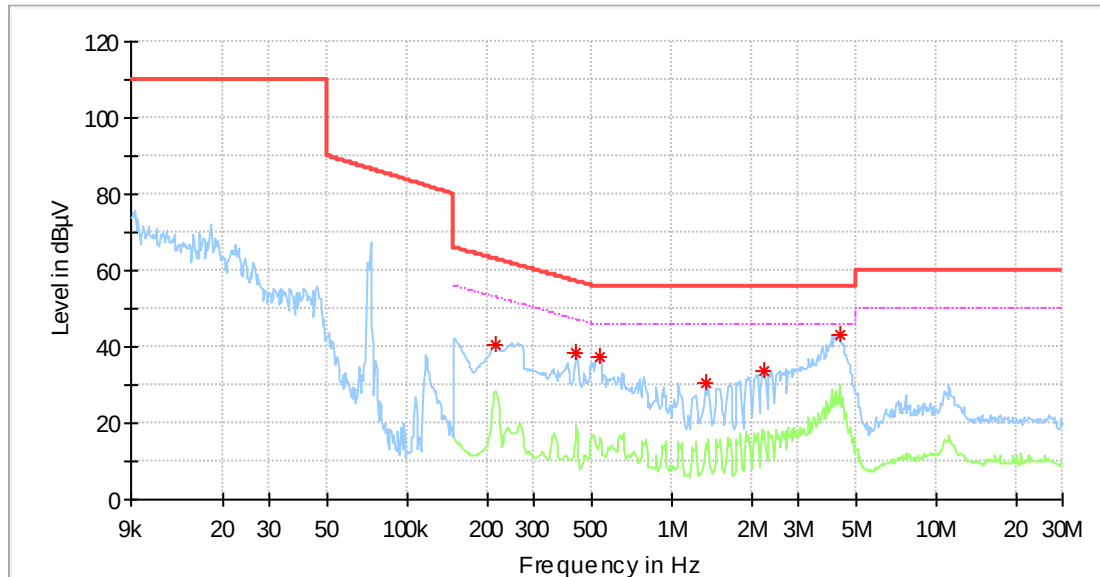
Model: PL-LD-068-150W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Power Line, Neutral



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.256712	42.21	---	61.54	19.33	N	10.2
0.434989	39.63	---	57.16	17.53	N	10.3
0.536077	38.80	---	56.00	17.20	N	10.3
1.352431	33.14	---	56.00	22.86	N	10.3
2.408545	35.59	---	56.00	20.41	N	10.3
4.163230	45.27	---	56.00	10.73	N	10.4

Remark: Corrector factor = LISN Factor + Cable Loss

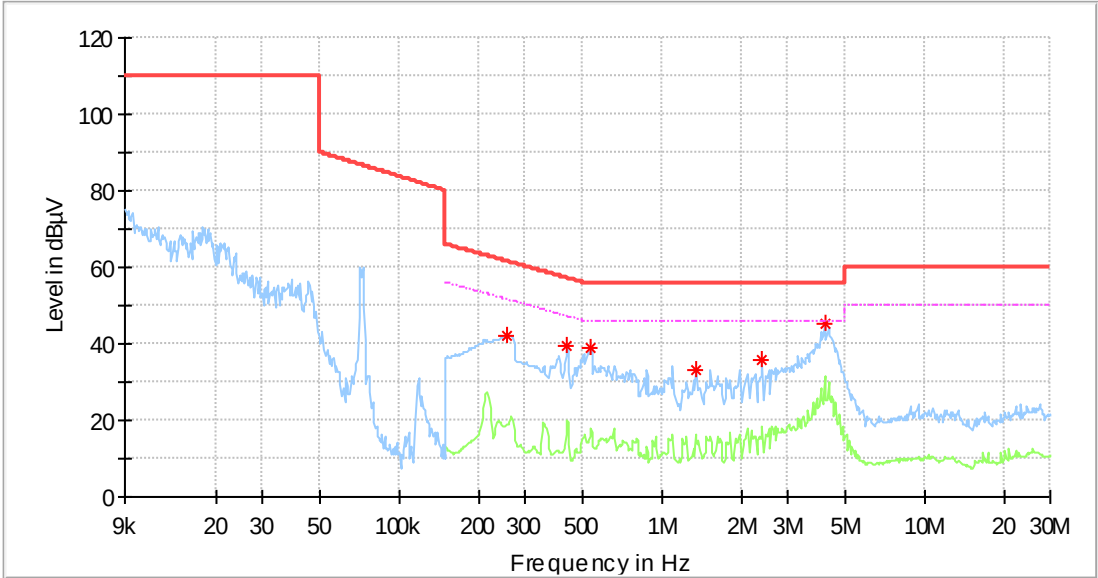
Model: PL-LD-069S-250W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Power Line, Live



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.216762	40.46	---	62.94	22.49	L1	10.2
0.434989	38.62	---	57.16	18.53	L1	10.3
0.536077	37.26	---	56.00	18.74	L1	10.3
1.339041	30.59	---	56.00	25.41	L1	10.3
2.246494	33.44	---	56.00	22.56	L1	10.3
4.289380	43.25	---	56.00	12.75	L1	10.4

Remark: Corrector factor = LISN Factor + Cable Loss

Model: PL-LD-069S-250W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Power Line, Neutral



Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.256712	42.21	---	61.54	19.33	N	10.2
0.434989	39.63	---	57.16	17.53	N	10.3
0.536077	38.80	---	56.00	17.20	N	10.3
1.352431	33.14	---	56.00	22.86	N	10.3
2.408545	35.59	---	56.00	20.41	N	10.3
4.163230	45.27	---	56.00	10.73	N	10.4

Remark: Corrector factor = LISN Factor + Cable Loss

Representative model: PL-LD-069S-250W



Test Setup

2.1.8 Test Location

This test was carried out in conducted emission shielded room.

2.2 Radiated Disturbance (9KHz to 30MHz)

2.2.1 Specification Reference

EN 55015:2013/A1:2015, Clause 4.4.1

2.2.2 Equipment Under Test

PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

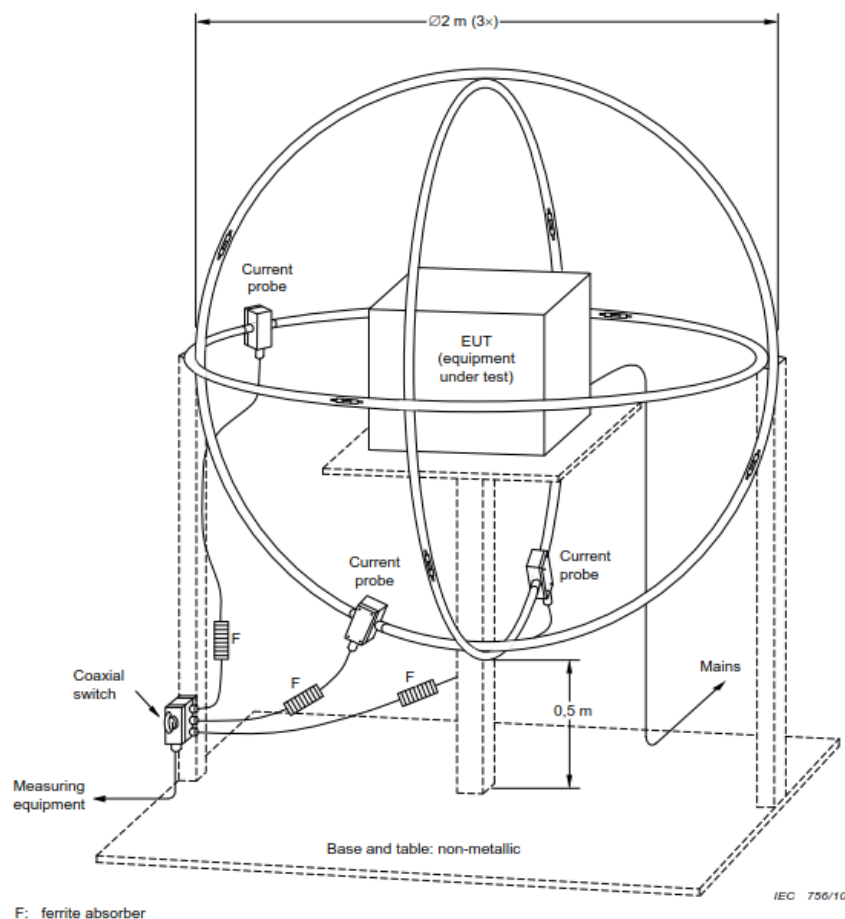
2.2.3 Date of Test

01/31/2019

2.2.4 Test Method

The magnetic component shall be measured by means of a loop antenna. The lighting equipment shall be placed in the center of the antenna.

The induced current in the loop antenna is measured by means of a current probe and the CISPR measuring receiver. By means of a coaxial switch, the three field directions can be measured in sequence.



2.2.5 Environmental Conditions

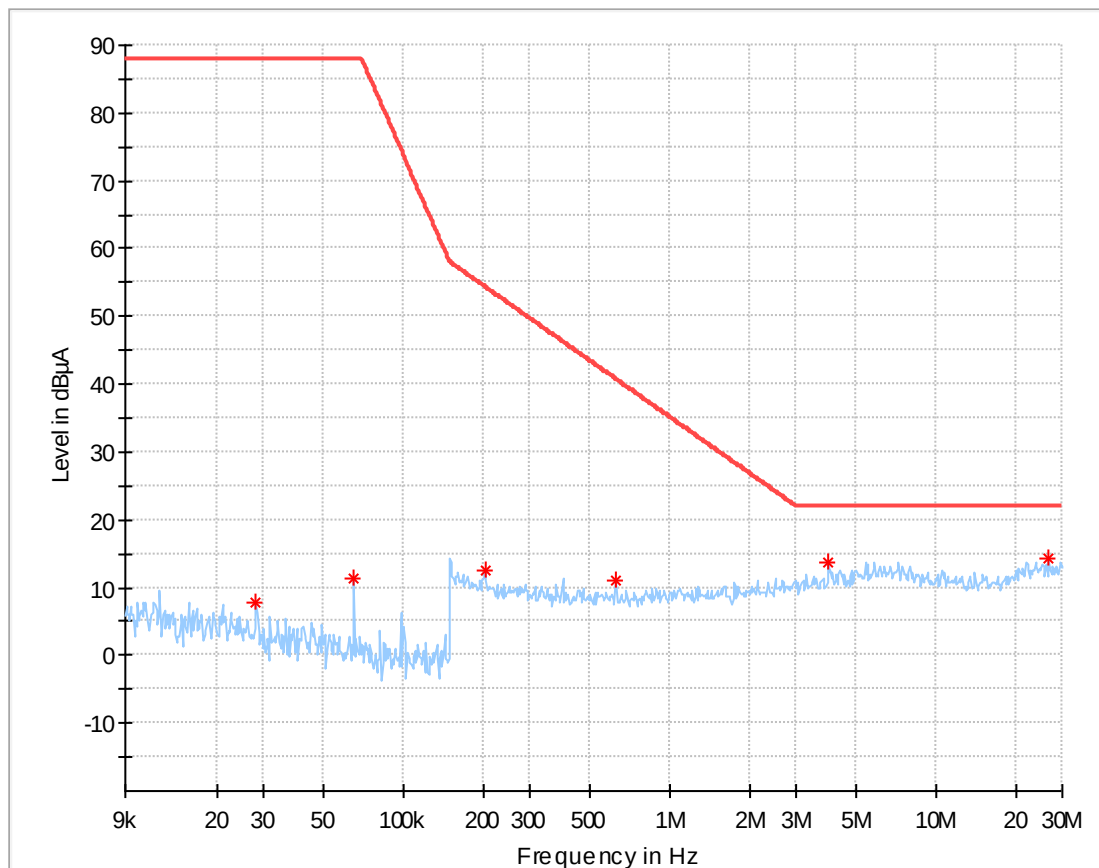
Ambient Temperature	23.4 °C
Relative Humidity	48.7 %
Atmospheric Pressure	1018.0 mbar

2.2.6 Specification Limits

Radiated disturbance limits in the frequency range 9kHz to 30MHz			
Frequency range	Limits dB(μA) for loop diameter		
	2 m	3 m	4 m
9kHz to 70kHz	88	81	75
70kHz to 150kHz	88 to 58	81 to 51	75 to 45
150kHz to 3.0MHz	58 to 22	51 to 15	45 to 9
3.0MHz to 30MHz	22	15 to 16	9 to 12

2.2.7 Test Results

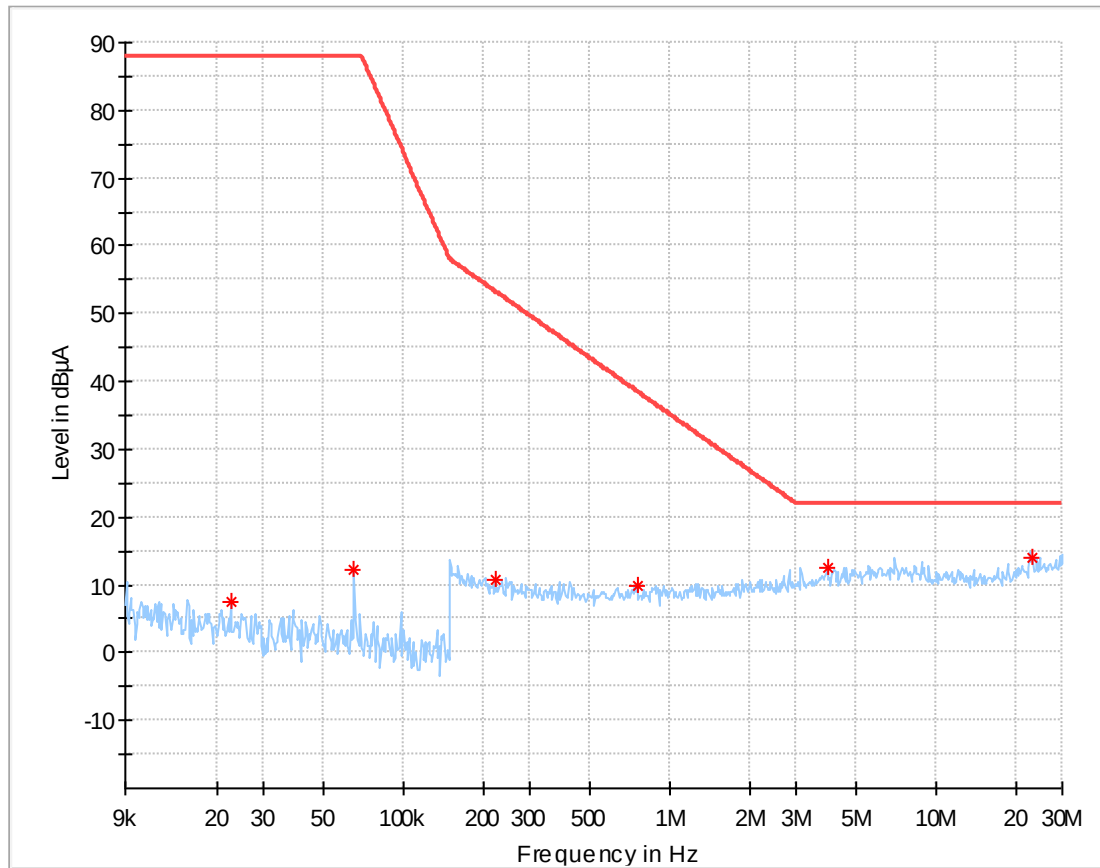
Model: PL-LD-067-40W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: X axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.027982	7.81	88.00	80.19	6.0
0.065192	11.37	88.00	76.63	6.0
0.202177	12.46	54.41	41.95	6.0
0.628593	10.94	40.78	29.84	6.0
3.961170	13.58	22.00	8.42	6.1
26.762538	14.33	22.00	7.67	6.3

Remark: Corrector factor = Antenna Factor + Cable Loss

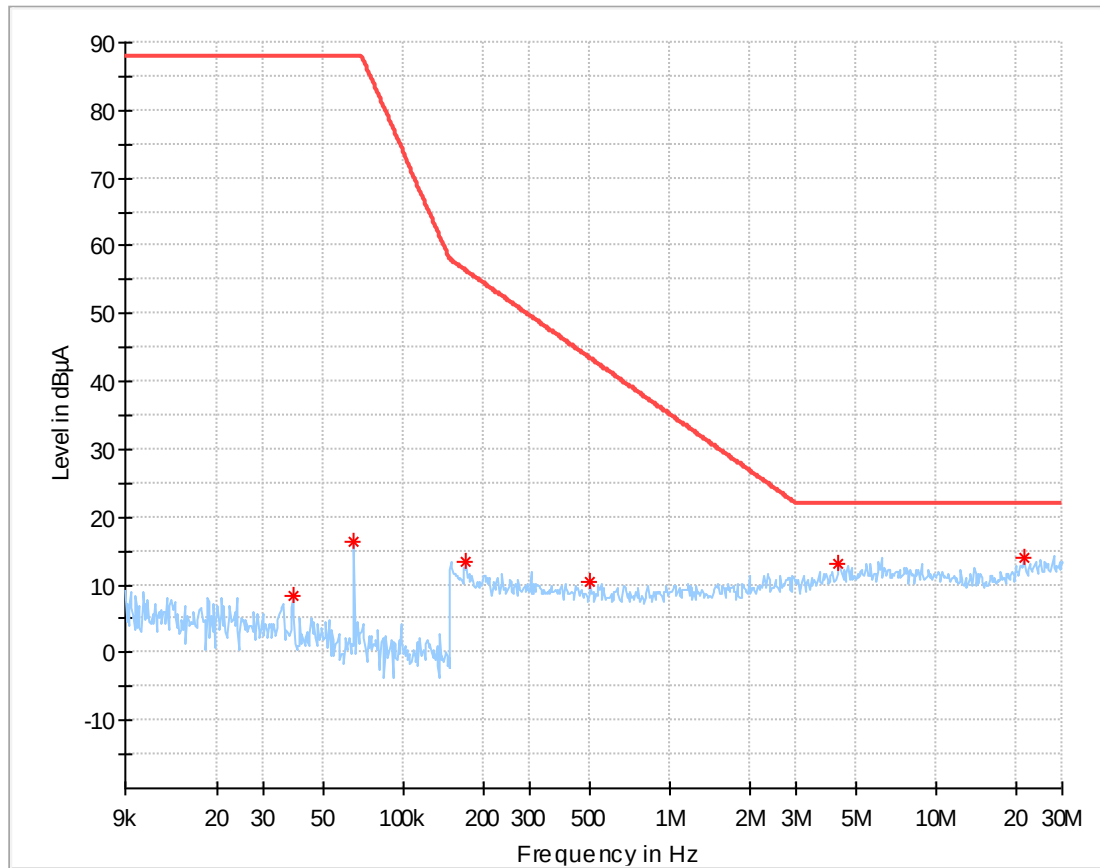
Model: PL-LD-067-40W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Y axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.022481	7.59	88.00	80.41	6.0
0.065192	12.18	88.00	75.82	6.0
0.221119	10.68	53.34	42.65	6.0
0.759409	9.75	38.51	28.75	6.0
3.921951	12.45	22.00	9.55	6.1
23.282417	14.03	22.00	7.97	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

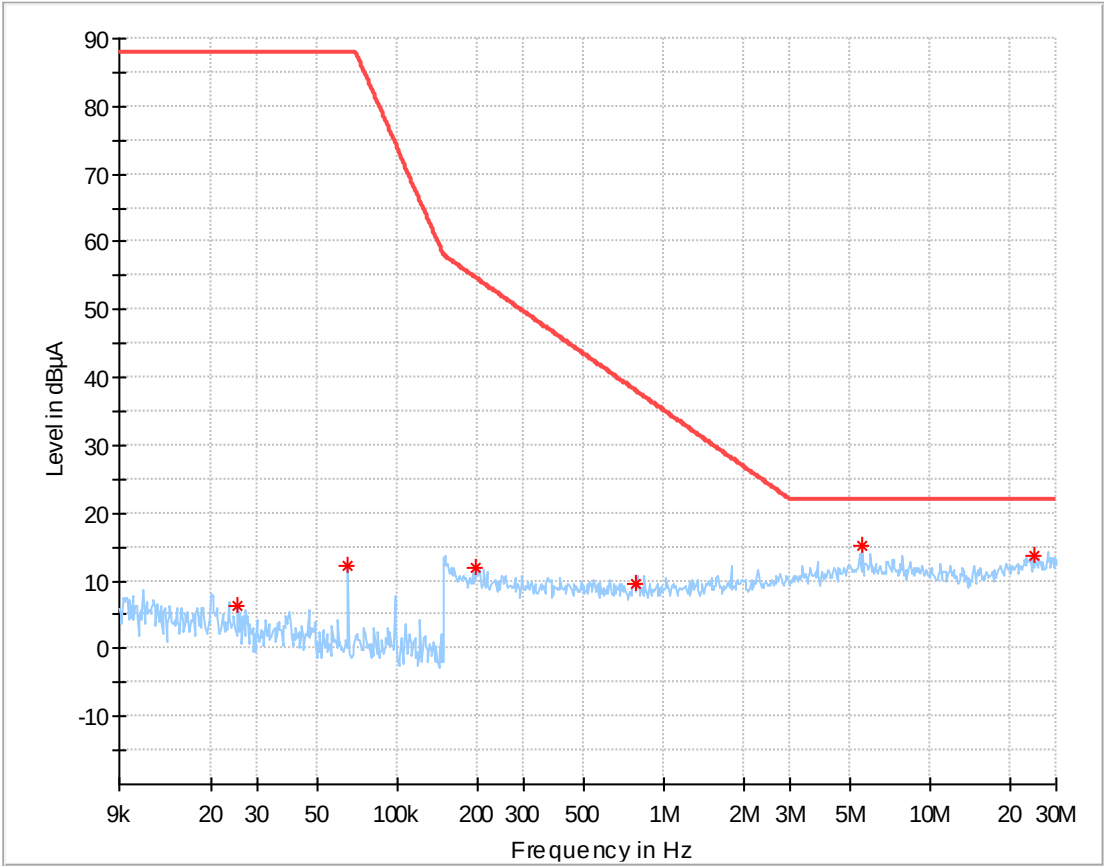
Model: PL-LD-067-40W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Z axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.038474	8.45	88.00	79.55	6.0
0.065192	16.40	88.00	71.60	6.0
0.172421	13.42	56.33	42.91	6.0
0.505009	10.32	43.41	33.10	6.0
4.332274	13.03	22.00	8.97	6.1
21.500921	14.14	22.00	7.86	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

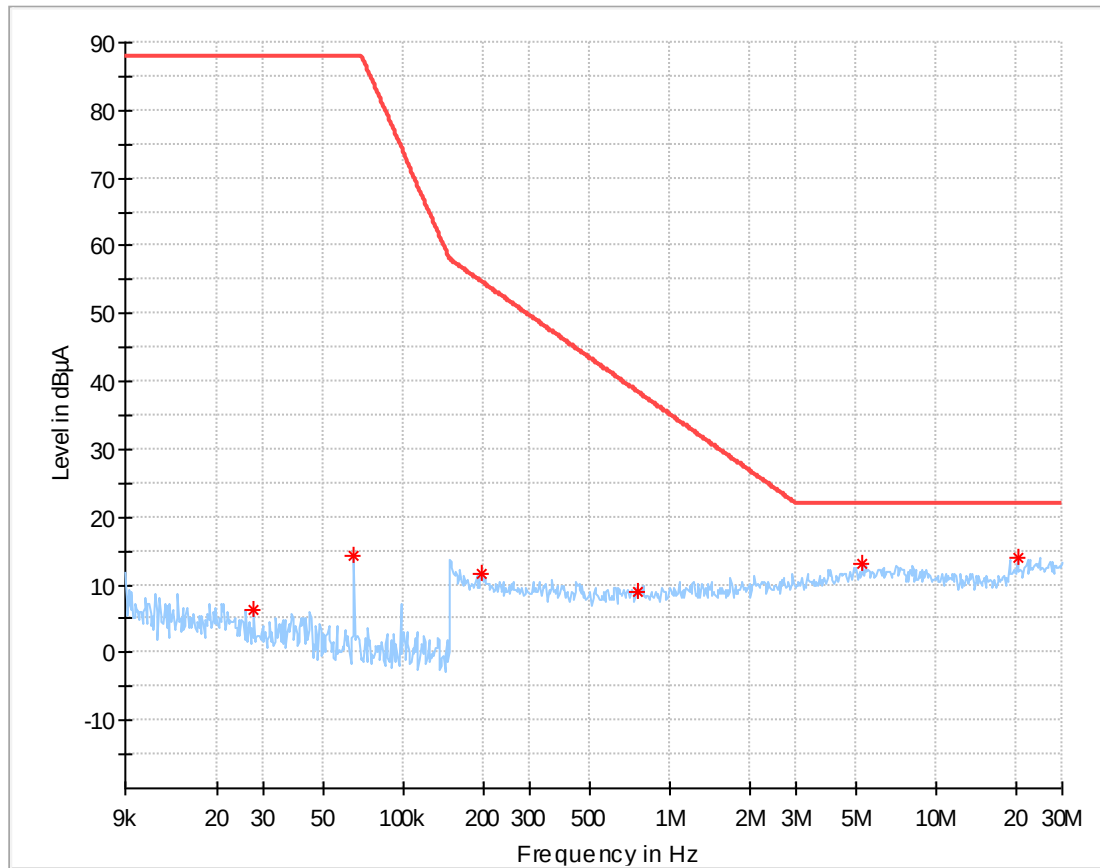
Model: PL-LD-067-60W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: X axis



Frequency (MHz)	MaxPeak (dBµA)	Limit (dBµA)	Margin (dB)	Corr. (dB)
0.025081	6.25	88.00	81.75	6.0
0.065192	12.13	88.00	75.87	6.0
0.198194	11.96	54.65	42.69	6.0
0.782419	9.50	38.15	28.65	6.0
5.611405	15.06	22.00	6.94	6.1
24.961902	13.76	22.00	8.24	6.3

Remark: Corrector factor = Antenna Factor + Cable Loss

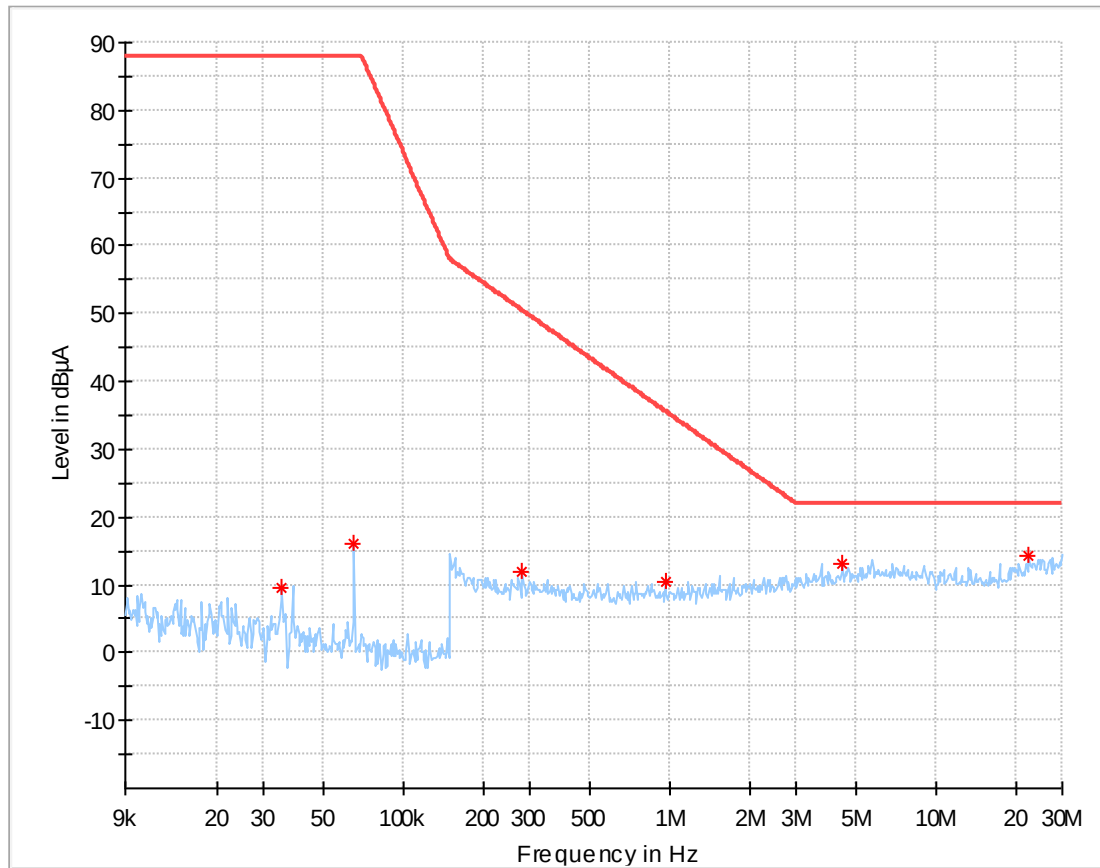
Model: PL-LD-067-60W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Y axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.027431	6.28	88.00	81.72	6.0
0.065192	14.17	88.00	73.83	6.0
0.198194	11.73	54.65	42.92	6.0
0.767003	8.91	38.39	29.48	6.0
5.339059	13.01	22.00	8.99	6.1
20.457389	14.04	22.00	7.96	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

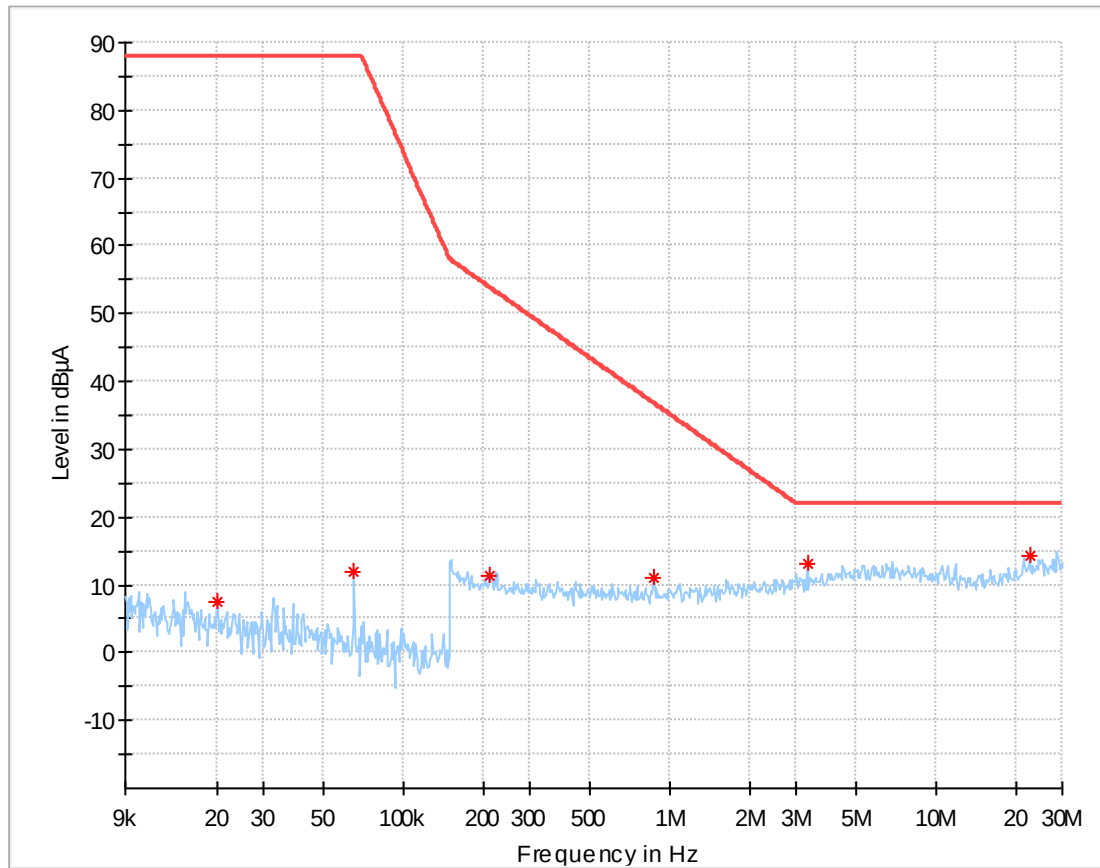
Model: PL-LD-067-60W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Z axis



Frequency (MHz)	MaxPeak (dBµA)	Limit (dBµA)	Margin (dB)	Corr. (dB)
0.034830	9.47	88.00	78.53	6.0
0.065192	16.09	88.00	71.91	6.0
0.280762	12.02	50.47	38.45	6.0
0.964247	10.47	35.64	25.17	6.0
4.463546	13.23	22.00	8.77	6.1
22.373945	14.25	22.00	7.75	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

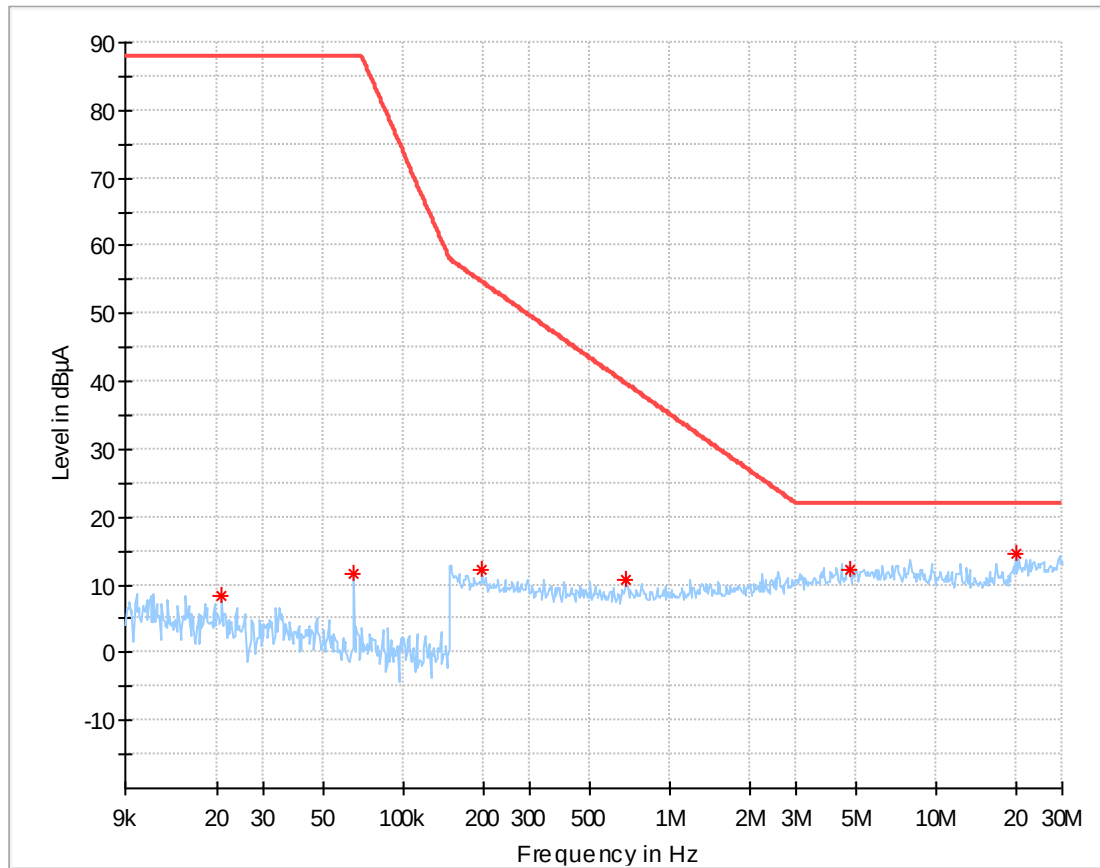
Model: PL-LD-067-80W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: X axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.019950	7.43	88.00	80.57	6.0
0.065192	11.82	88.00	76.18	6.0
0.210387	11.22	53.93	42.71	6.0
0.872921	11.14	36.84	25.70	6.0
3.311607	13.00	22.00	9.00	6.1
22.597684	14.22	22.00	7.78	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

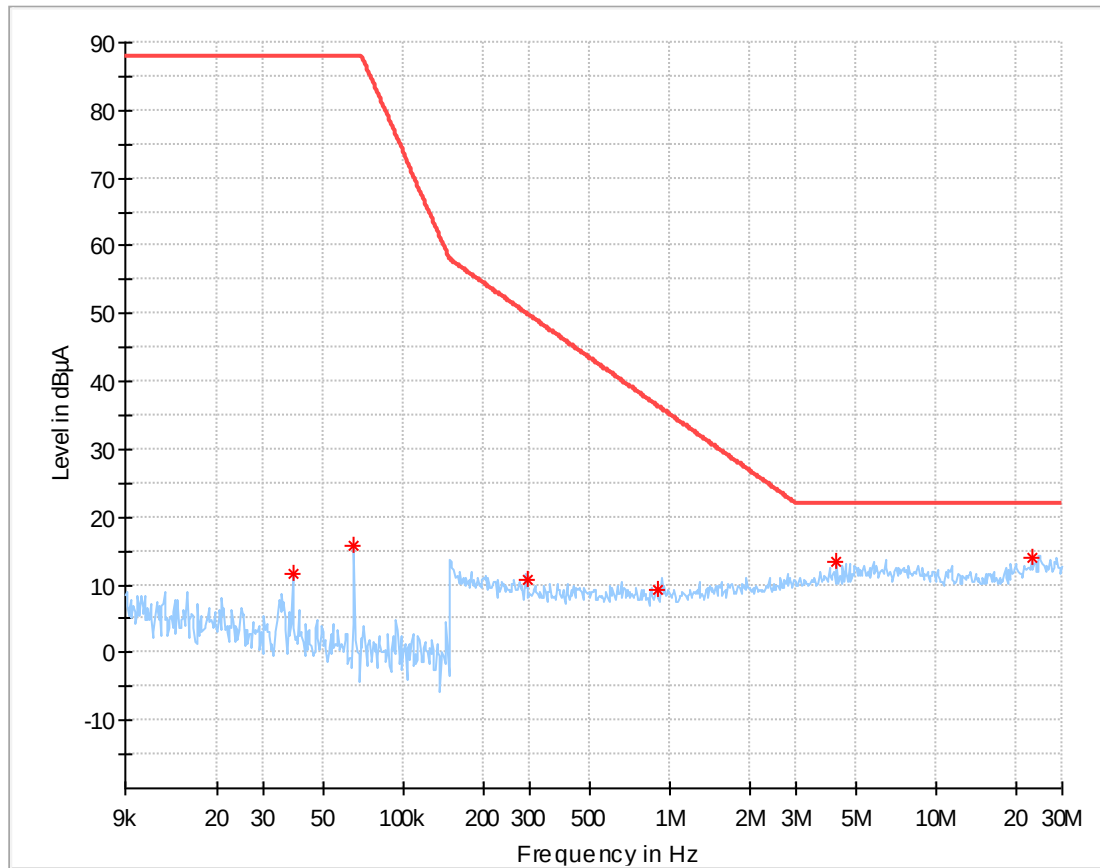
Model: PL-LD-067-80W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Y axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.020761	8.26	88.00	79.74	6.0
0.065192	11.75	88.00	76.25	6.0
0.198194	12.23	54.65	42.42	6.0
0.687483	10.78	39.71	28.93	6.0
4.738144	12.35	22.00	9.65	6.1
20.054297	14.69	22.00	7.31	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

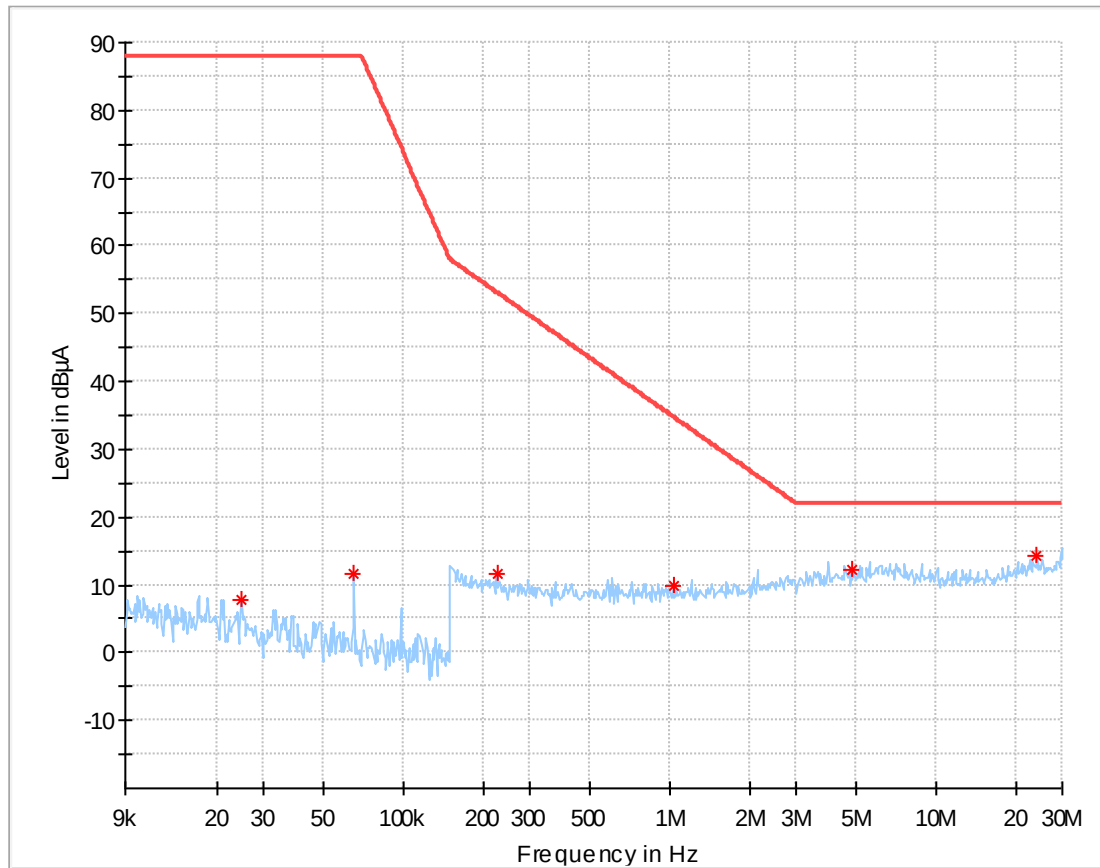
Model: PL-LD-067-80W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Z axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.038474	11.72	88.00	76.28	6.0
0.065192	15.79	88.00	72.21	6.0
0.292162	10.85	49.99	39.14	6.0
0.899371	9.35	36.48	27.13	6.0
4.246911	13.39	22.00	8.61	6.1
23.051898	14.10	22.00	7.90	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

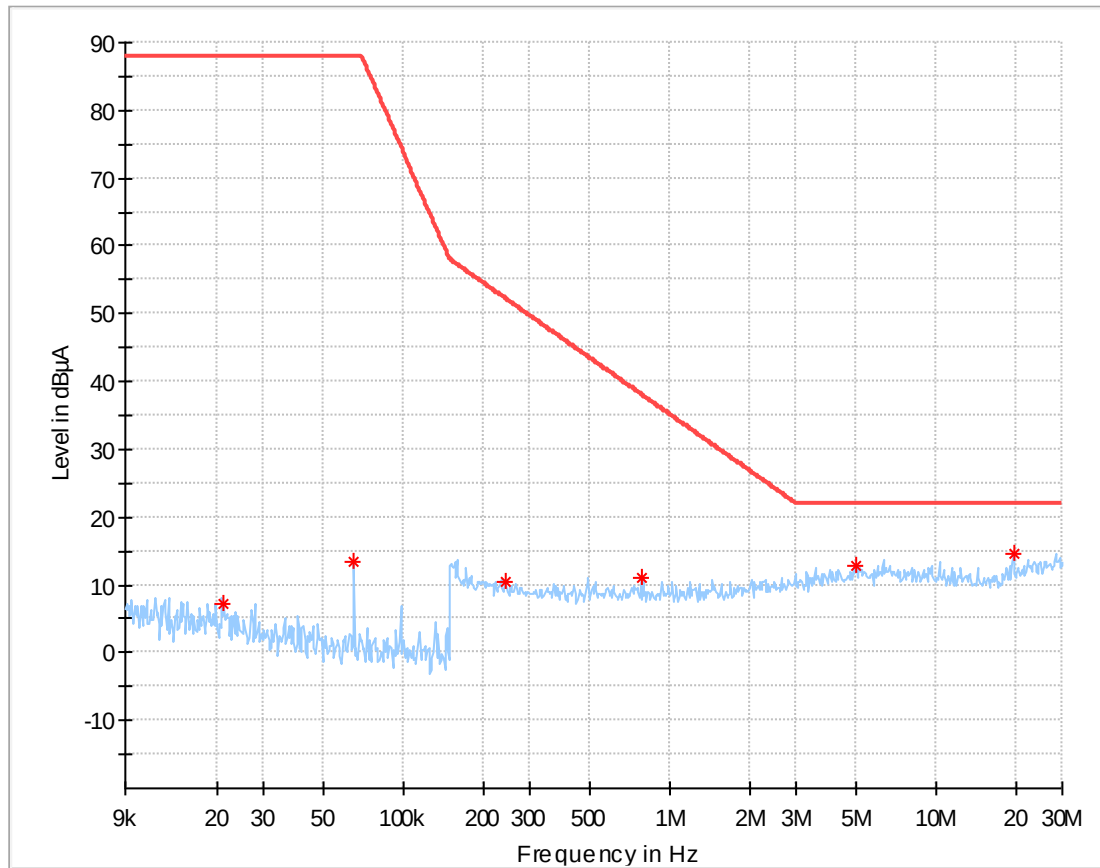
Model: PL-LD-066-100W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: X axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.024587	7.75	88.00	80.25	6.0
0.065192	11.58	88.00	76.42	6.0
0.225563	11.78	53.10	41.32	6.0
1.033804	9.97	34.80	24.83	6.0
4.833381	12.25	22.00	9.75	6.1
23.987897	14.44	22.00	7.56	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

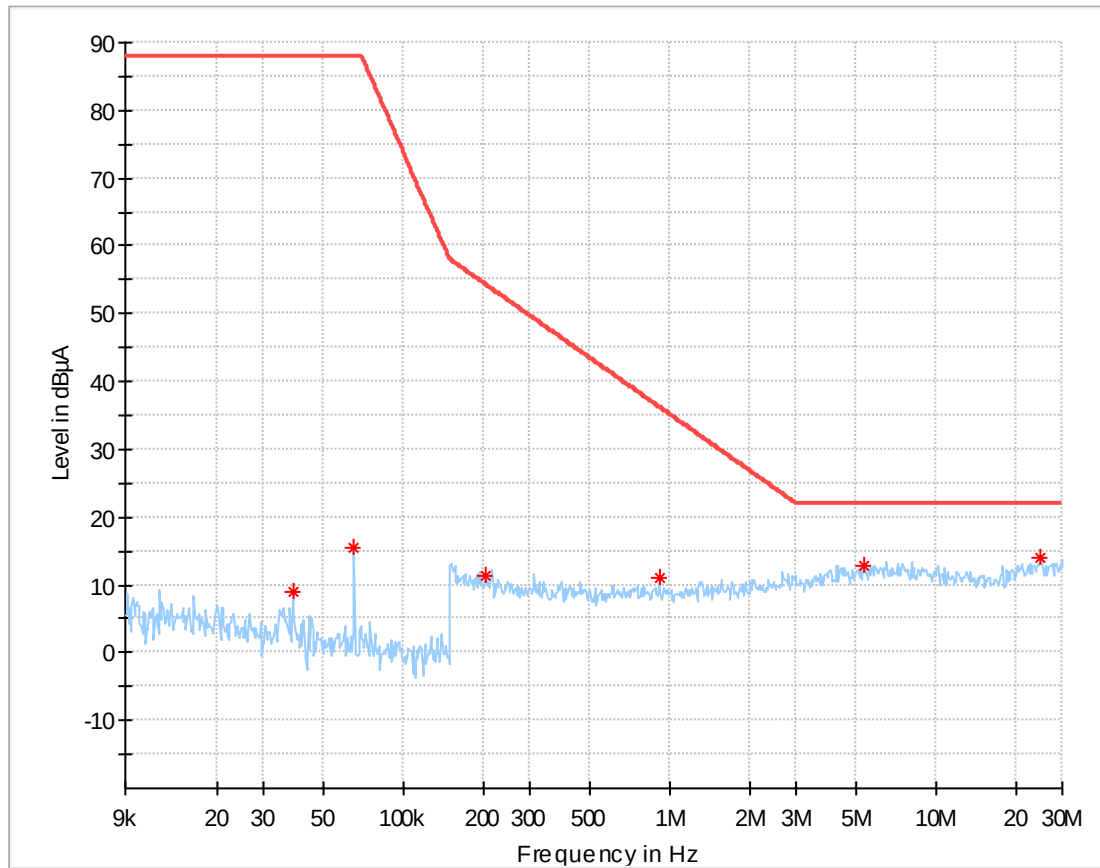
Model: PL-LD-066-100W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Y axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.021178	7.12	88.00	80.88	6.0
0.065192	13.32	88.00	74.68	6.0
0.241834	10.40	52.26	41.86	6.0
0.782419	11.12	38.15	27.03	6.0
5.029635	12.80	22.00	9.20	6.1
19.659148	14.45	22.00	7.55	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

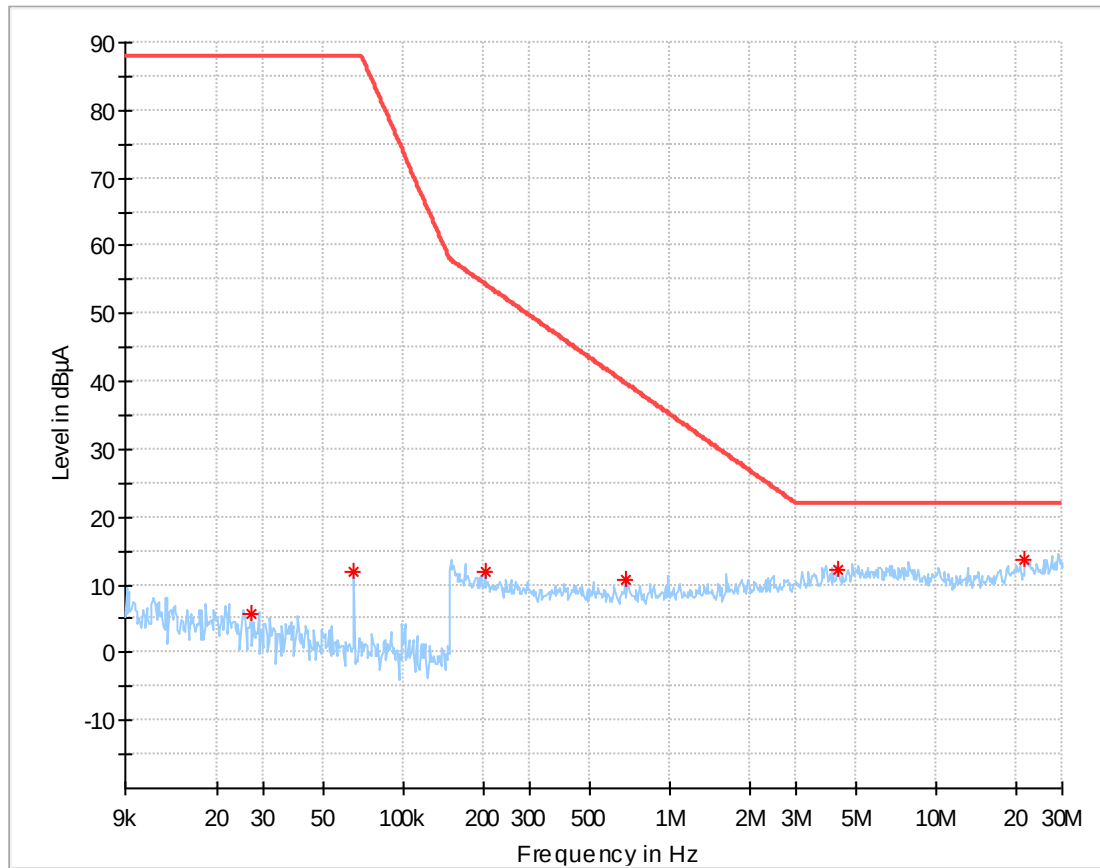
Model: PL-LD-066-100W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Z axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.038474	8.89	88.00	79.11	6.0
0.065192	15.40	88.00	72.60	6.0
0.204199	11.23	54.29	43.06	6.0
0.917448	11.07	36.24	25.16	6.0
5.392450	12.72	22.00	9.28	6.1
24.961902	14.02	22.00	7.98	6.3

Remark: Corrector factor = Antenna Factor + Cable Loss

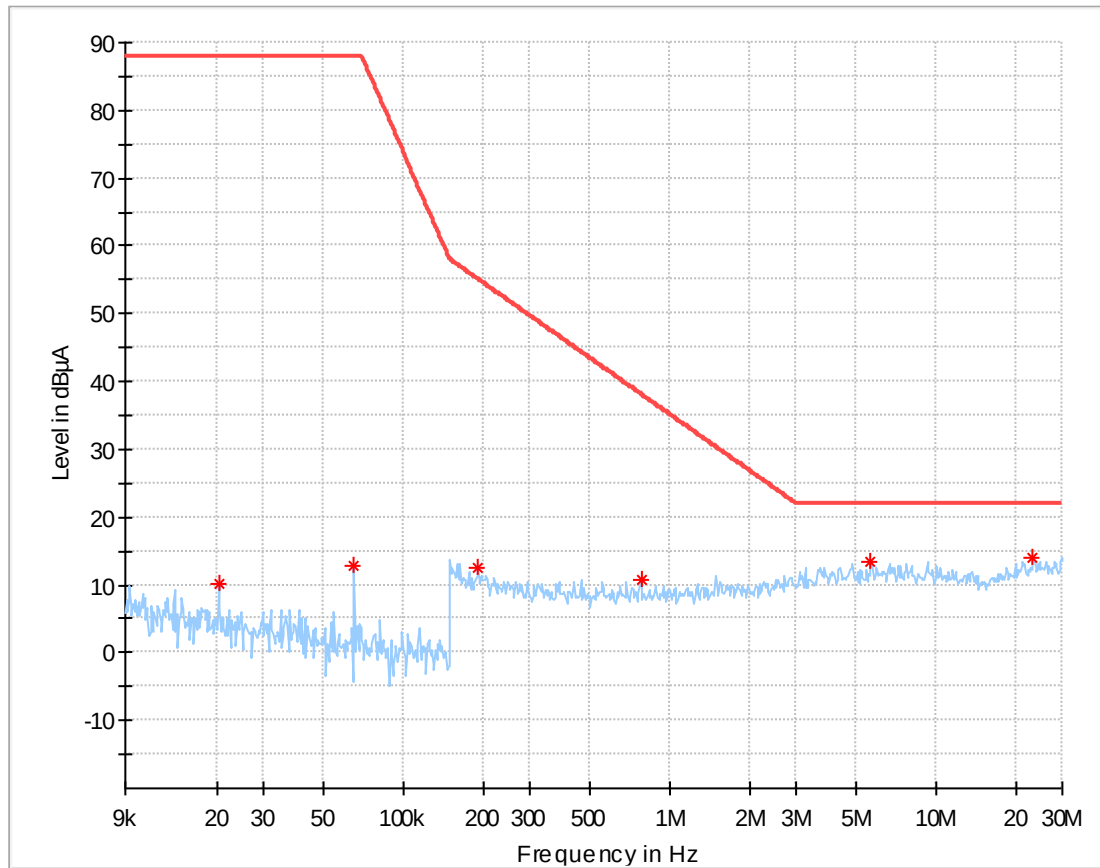
Model: PL-LD-068-150W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: X axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.026624	5.65	88.00	82.35	6.0
0.065192	11.94	88.00	76.06	6.0
0.202177	11.94	54.41	42.47	6.0
0.680676	10.88	39.82	28.95	6.0
4.332274	12.34	22.00	9.66	6.1
21.715930	13.64	22.00	8.36	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

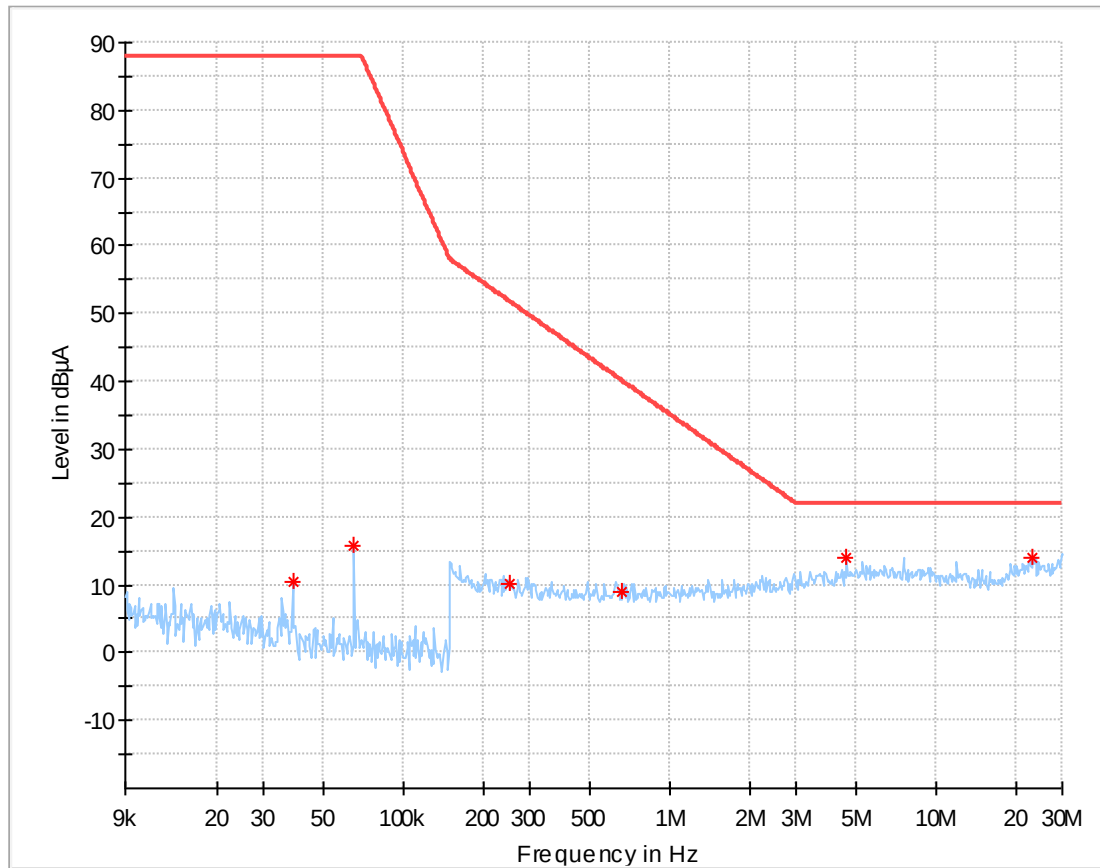
Model: PL-LD-068-150W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Y axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.020150	10.22	88.00	77.78	6.0
0.065192	12.74	88.00	75.26	6.0
0.190460	12.53	55.13	42.60	6.0
0.782419	10.82	38.15	27.33	6.0
5.724194	13.43	22.00	8.57	6.1
23.282417	14.00	22.00	8.00	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

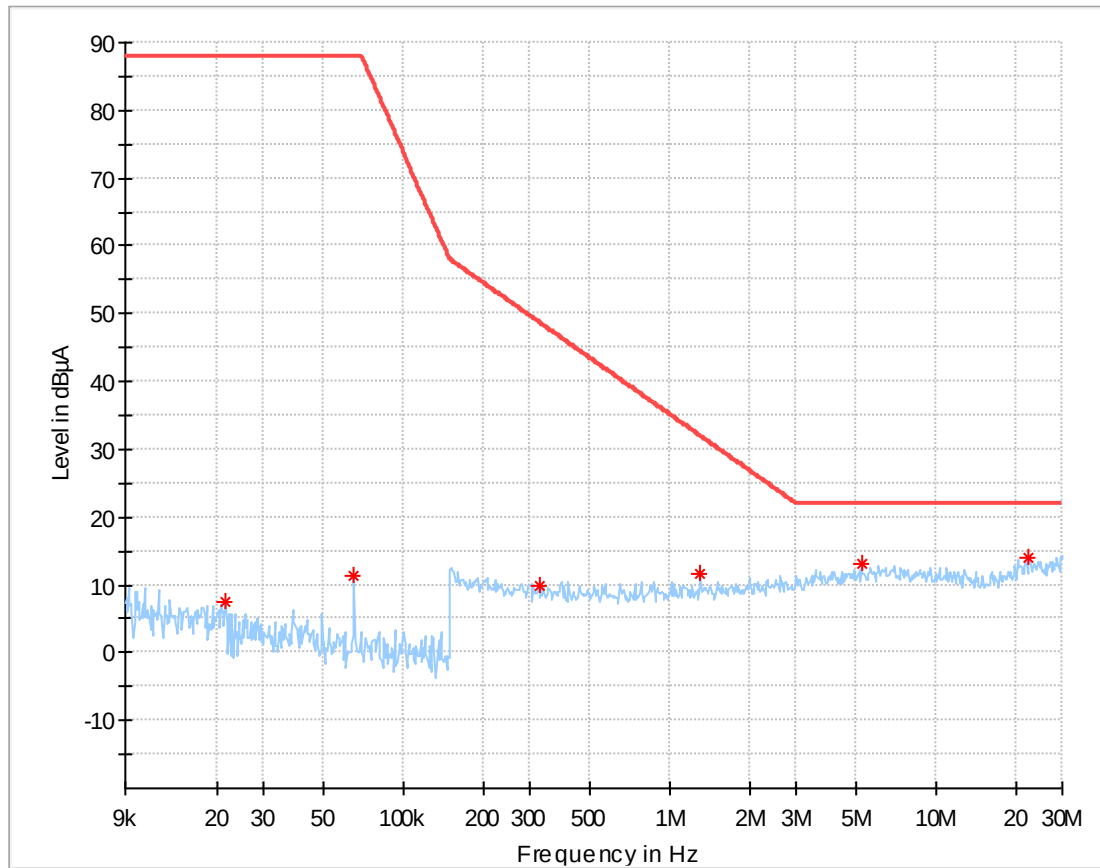
Model: PL-LD-068-150W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Z axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.038474	10.57	88.00	77.43	6.0
0.065192	15.75	88.00	72.25	6.0
0.249162	10.27	51.90	41.63	6.0
0.660657	8.85	40.18	31.33	6.0
4.644784	13.92	22.00	8.08	6.1
23.282417	13.99	22.00	8.01	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

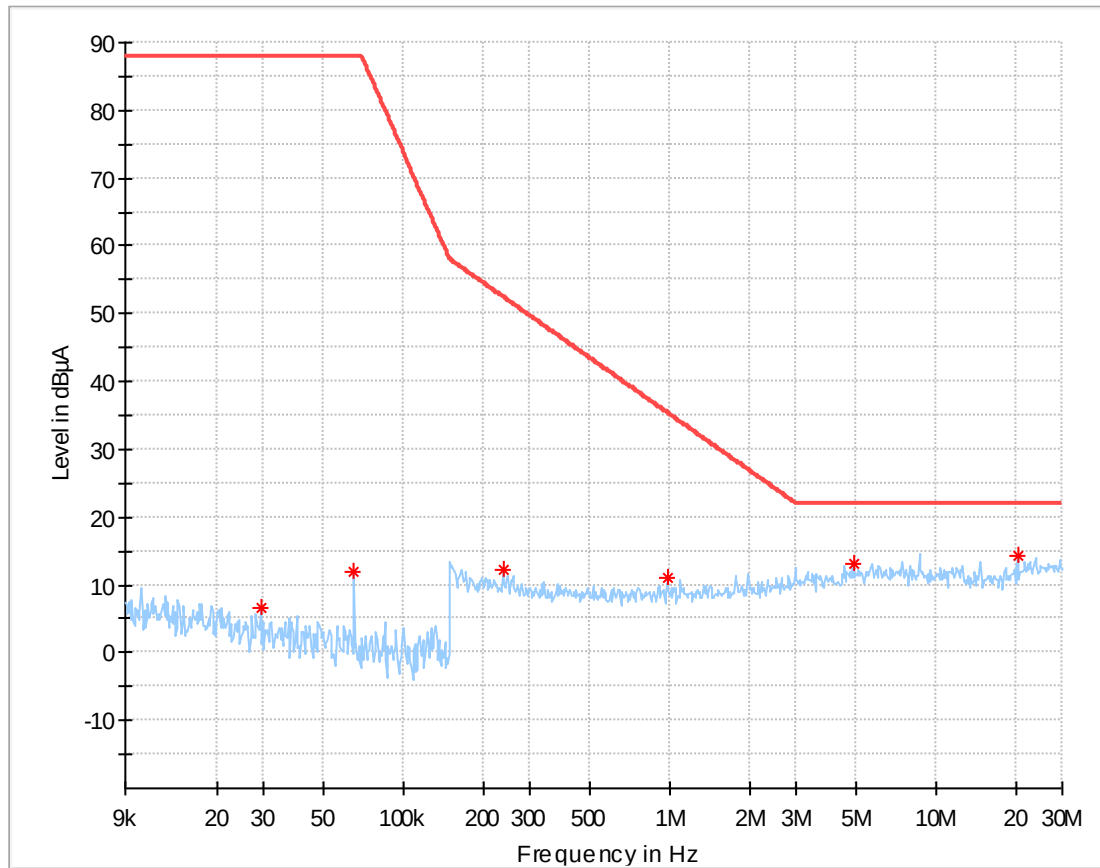
Model: PL-LD-069S-250W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: X axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.021390	7.49	88.00	80.51	6.0
0.065192	11.31	88.00	76.69	6.0
0.322729	9.75	48.79	39.05	6.0
1.312656	11.70	31.93	20.24	6.0
5.286197	13.17	22.00	8.83	6.1
22.373945	13.86	22.00	8.14	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

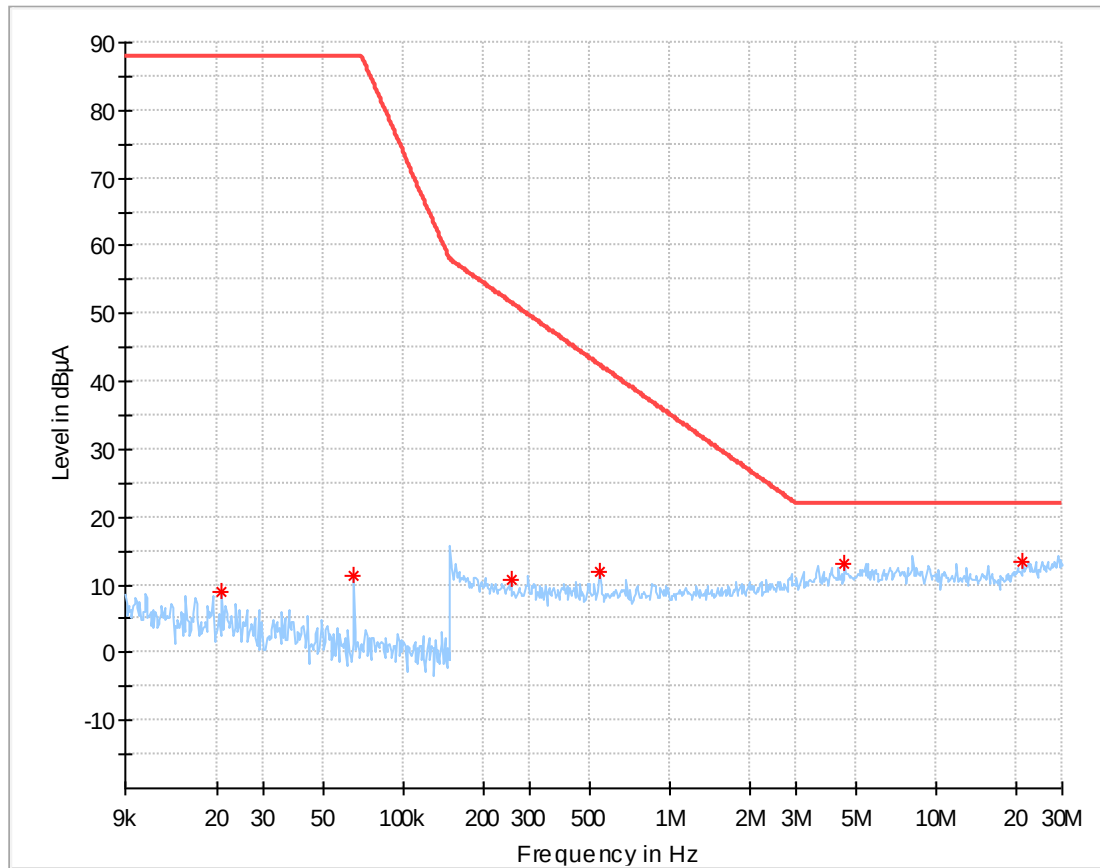
Model: PL-LD-069S-250W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Y axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.029118	6.54	88.00	81.46	6.0
0.065192	11.96	88.00	76.04	6.0
0.237069	12.34	52.50	40.16	6.0
0.983629	11.11	35.40	24.29	6.0
4.930532	13.15	22.00	8.85	6.1
20.457389	14.21	22.00	7.79	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

Model: PL-LD-069S-250W
Test mode: ON
Test Voltage: 230VAC, 50Hz
Remark: Z axis



Frequency (MHz)	MaxPeak (dBμA)	Limit (dBμA)	Margin (dB)	Corr. (dB)
0.020761	8.91	88.00	79.09	6.0
0.065192	11.31	88.00	76.69	6.0
0.254170	10.87	51.66	40.79	6.0
0.546852	12.01	42.46	30.45	6.0
4.553263	13.23	22.00	8.77	6.1
21.288041	13.30	22.00	8.70	6.2

Remark: Corrector factor = Antenna Factor + Cable Loss

Representative model: PL-LD-069S-250W



Test Setup

2.2.8 Test Location

This test was carried out in conducted emission shielded room.

2.3 Radiated Disturbance

2.3.1 Specification Reference

EN 55015:2013/A1:2015, Clause 4.4.2

2.3.2 Equipment Under Test

PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

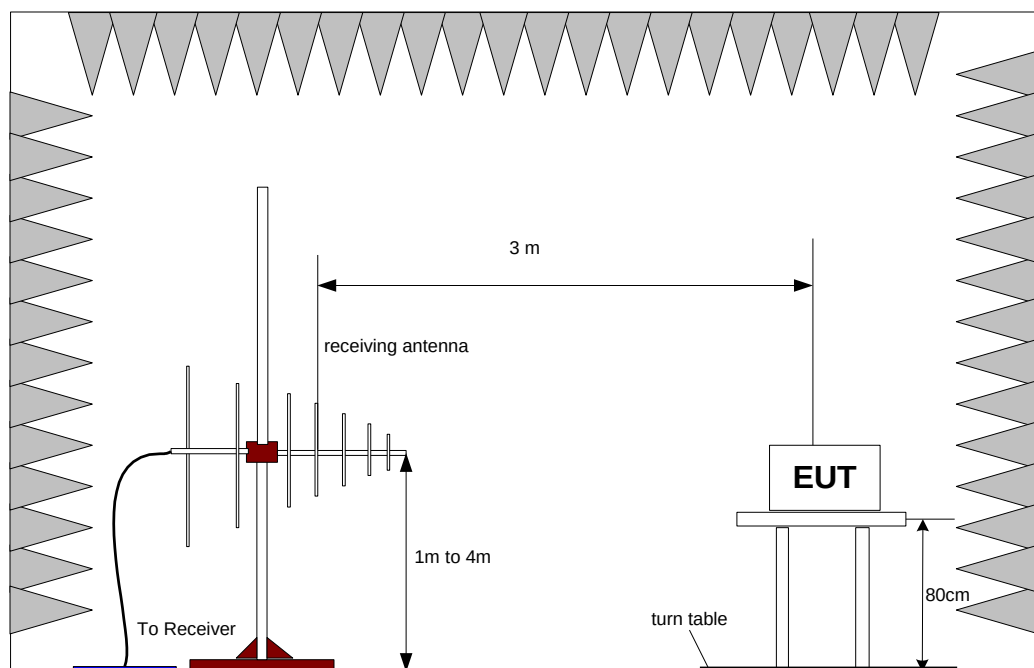
2.3.3 Date of Test

02/11/2019

2.3.4 Test Method

The EUT was set up in a semi-anechoic chamber on a remotely controlled turntable and placed on a non-conductive. Guidance on how to arrange the luminaire during the measurements can be found in Annex C.

A prescan of the EUT emissions profile was made while varying the antenna-to-EUT azimuth and antenna-to-EUT polarization using a peak detector; measurements were taken at a 3m distance. Using the prescan list of the highest emissions detected, their bearing and associated antenna polarization, the EUT was then formally measured using a Quasi-Peak detector. The readings were maximized by adjusting the antenna height, polarization and turntable azimuth, in accordance with the specification.



2.3.5 Environmental Conditions

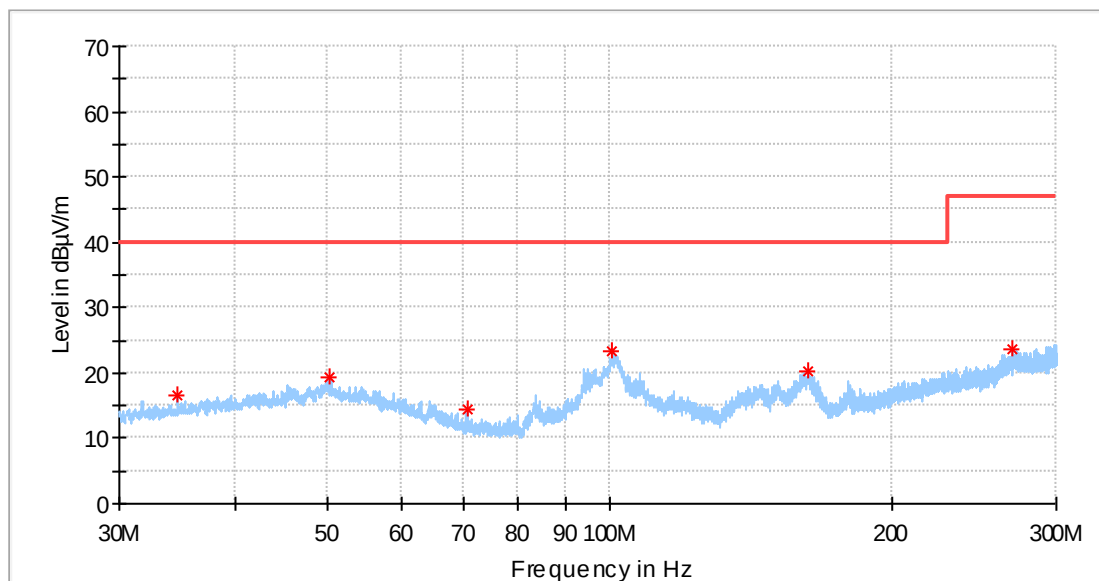
Ambient Temperature	23.2 °C
Relative Humidity	52.1 %
Atmospheric Pressure	1013.0 mbar

2.3.6 Specification Limits

Radiated disturbance limits in the frequency range 30MHz to 300MHz at a measuring distance of 3 m	
Frequency range MHz	Quasi-peak limits dB(μV/m)
30 to 230	40
230 to 300	47

2.3.7 Test Results

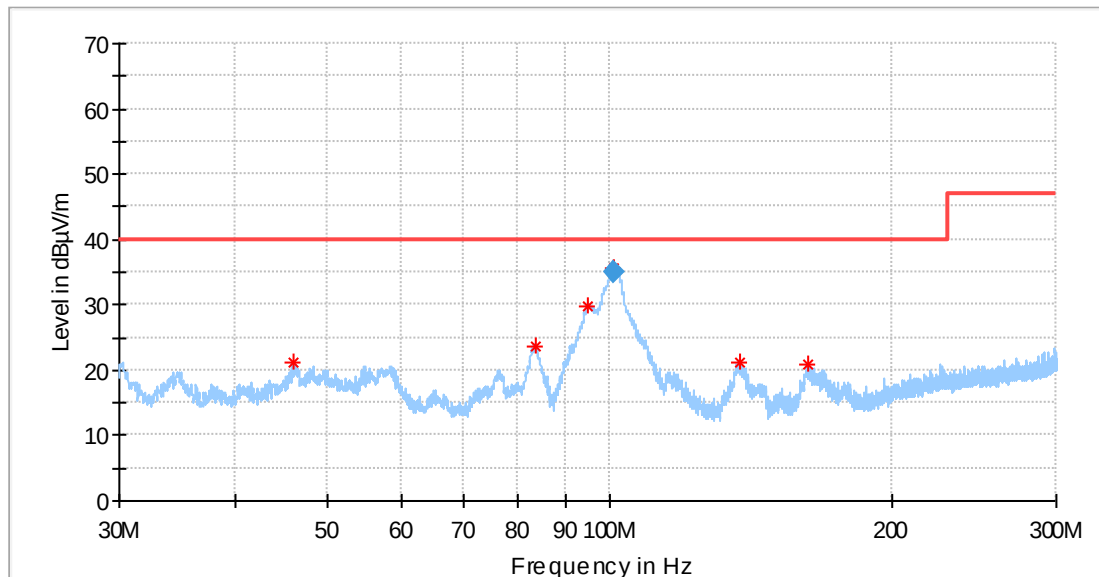
Model: PL-LD-067-40W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Horizontal



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.640625	16.58	40.00	23.42	100.0	H	0.0	14.9
50.250000	19.43	40.00	20.57	100.0	H	0.0	18.1
70.567500	14.46	40.00	25.54	200.0	H	178.0	12.2
100.858125	23.32	40.00	16.68	200.0	H	185.0	15.8
163.025625	20.27	40.00	19.73	200.0	H	12.0	14.2
268.747500	23.66	47.00	23.34	100.0	H	0.0	19.0

Remark: Corrector factor = Antenna Factor + Cable Loss

Model: PL-LD-067-40W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Vertical



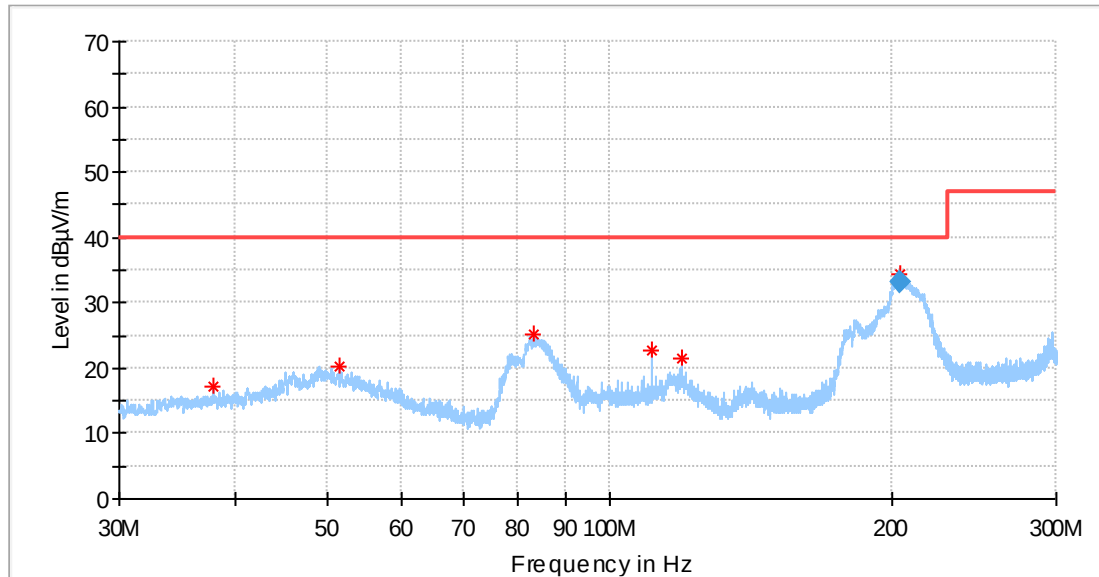
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
45.946875	21.05	40.00	18.95	100.0	V	33.0	17.4
83.544375	23.52	40.00	16.48	100.0	V	0.0	12.6
95.053125	29.75	40.00	10.25	100.0	V	209.0	15.1
101.094375	35.48	40.00	4.52	100.0	V	60.0	15.8
137.730000	21.28	40.00	18.72	100.0	V	129.0	13.4
163.312500	20.73	40.00	19.27	100.0	V	202.0	14.2

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
101.094375	34.89	40.00	5.11	100.0	V	60.0	15.8

Remark: Corrector factor = Antenna Factor + Cable Loss

Model: PL-LD-067-60W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Horizontal



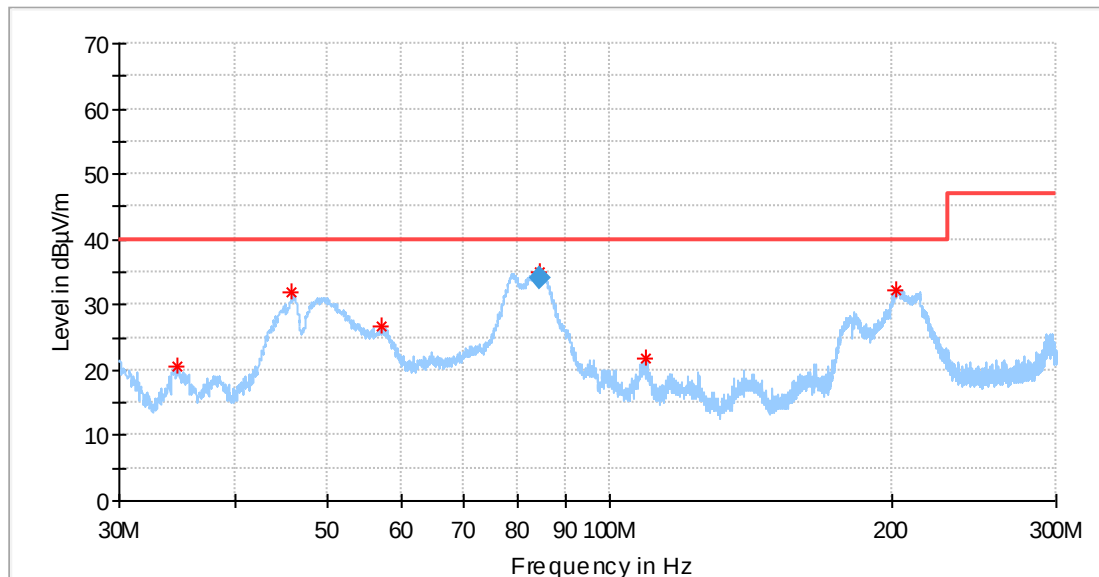
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
37.796250	17.10	40.00	22.90	100.0	H	0.0	15.7
51.465000	20.26	40.00	19.74	200.0	H	93.0	17.9
83.105625	25.17	40.00	14.83	200.0	H	195.0	12.5
111.084375	22.66	40.00	17.34	200.0	H	333.0	15.4
119.403750	21.37	40.00	18.63	200.0	H	3.0	15.1
204.487500	34.26	40.00	5.74	100.0	H	19.0	16.5

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
204.487500	33.21	40.00	6.79	100.0	H	19.0	16.5

Remark: Corrector factor = Antenna Factor + Cable Loss

Model: PL-LD-067-60W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Vertical



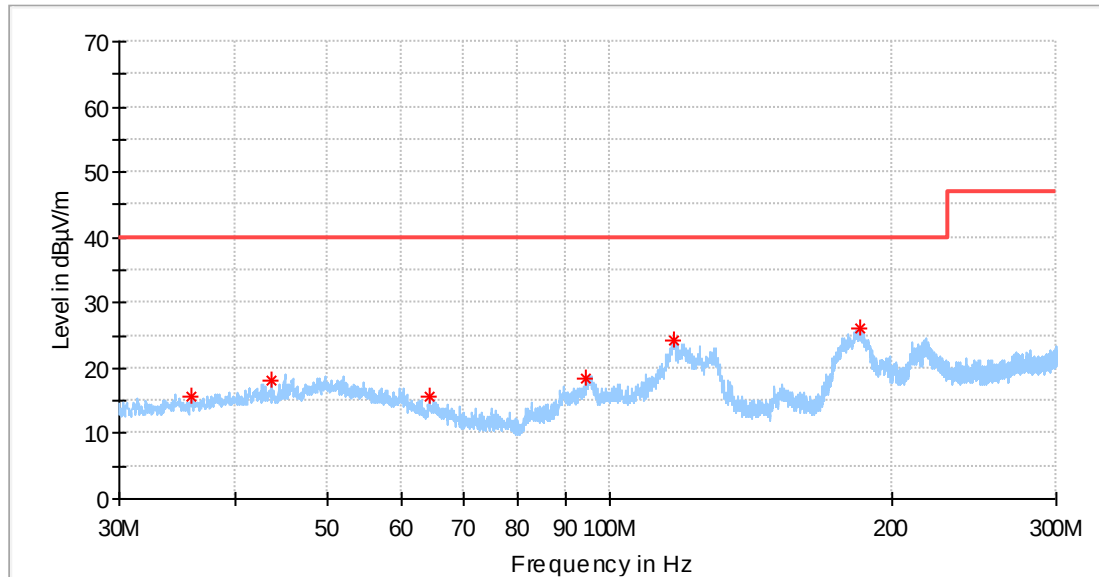
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.590000	20.51	40.00	19.49	100.0	V	311.0	14.9
45.879375	31.88	40.00	8.12	100.0	V	0.0	17.4
57.236250	26.57	40.00	13.43	100.0	V	138.0	16.5
84.135000	35.01	40.00	4.99	100.0	V	206.0	12.8
109.599375	21.93	40.00	18.07	100.0	V	226.0	15.5
202.715625	32.22	40.00	7.78	100.0	V	95.0	16.5

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
84.135000	34.21	40.00	5.79	100.0	V	206.0	12.8

Remark: Corrector factor = Antenna Factor + Cable Loss

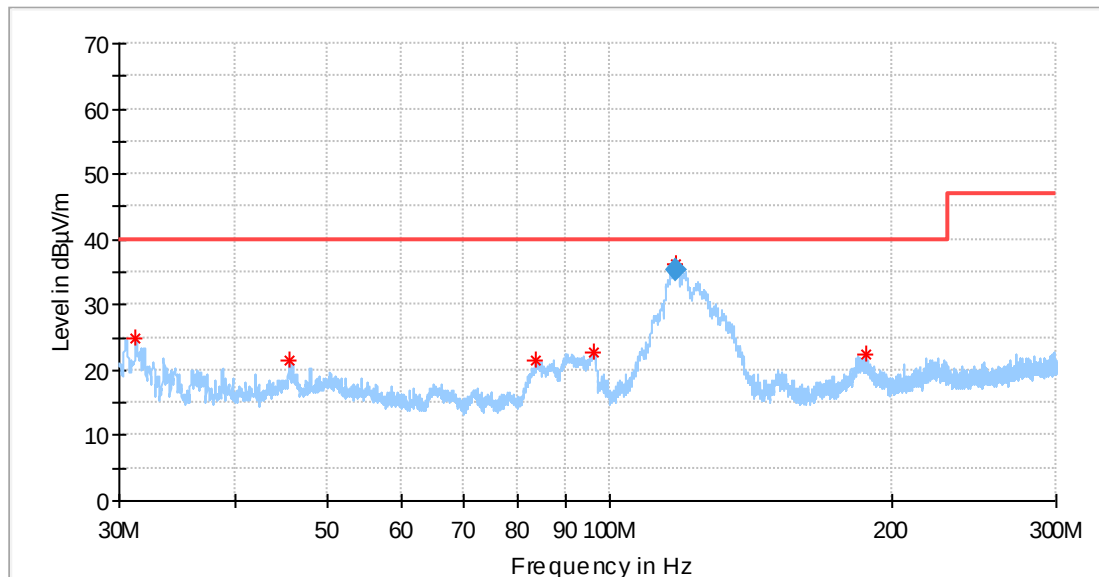
Model: PL-LD-067-80W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Horizontal



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
35.771250	15.74	40.00	24.26	100.0	H	336.0	15.2
43.567500	17.97	40.00	22.03	200.0	H	44.0	16.9
64.323750	15.78	40.00	24.22	100.0	H	263.0	14.3
94.428750	18.48	40.00	21.52	200.0	H	340.0	14.9
117.243750	24.38	40.00	15.62	100.0	H	155.0	15.1
184.895625	26.14	40.00	13.86	100.0	H	162.0	14.9

Remark: Corrector factor = Antenna Factor + Cable Loss

Model: PL-LD-067-80W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Vertical



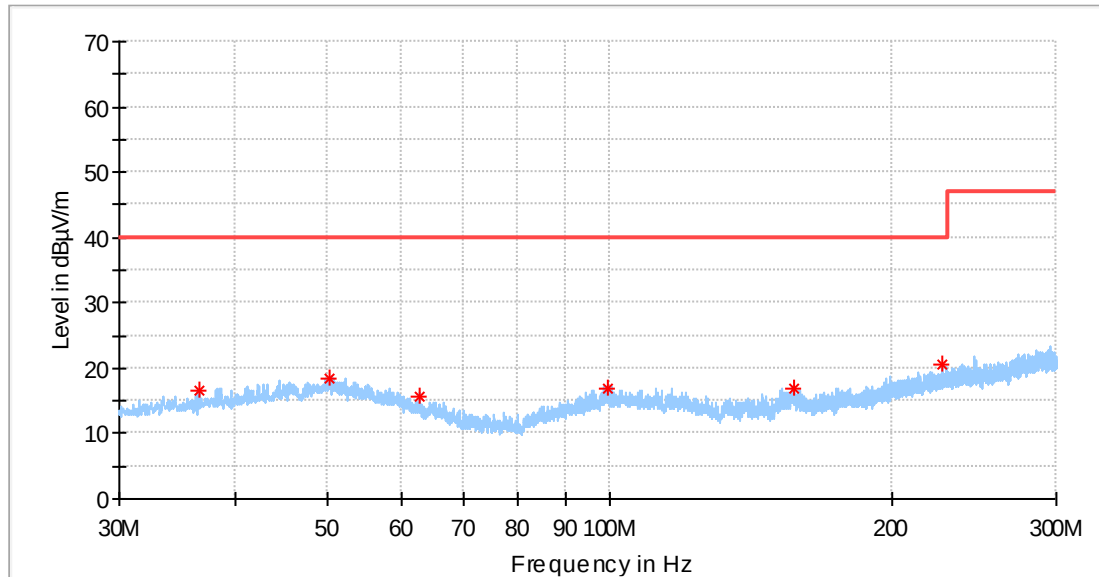
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.248750	24.75	40.00	15.25	200.0	V	2.0	14.1
45.575625	21.44	40.00	18.56	100.0	V	250.0	17.4
83.628750	21.40	40.00	18.60	100.0	V	256.0	12.7
96.335625	22.69	40.00	17.31	100.0	V	243.0	15.3
117.868125	36.22	40.00	3.78	100.0	V	210.0	15.1
188.034375	22.54	40.00	17.46	100.0	V	60.0	15.1

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
117.868125	35.21	40.00	4.79	100.0	V	210.0	15.1

Remark: Corrector factor = Antenna Factor + Cable Loss

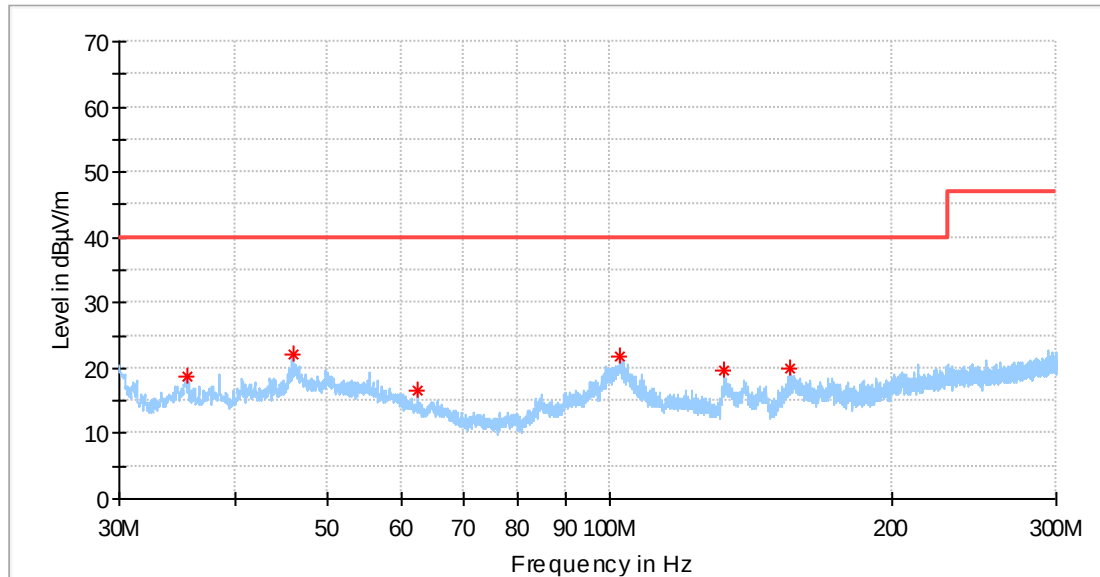
Model: PL-LD-066-100W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Horizontal



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
36.496875	16.56	40.00	23.44	200.0	H	0.0	15.4
50.283750	18.52	40.00	21.48	200.0	H	0.0	18.1
62.670000	15.79	40.00	24.21	100.0	H	19.0	15.0
99.491250	16.96	40.00	23.04	200.0	H	0.0	15.8
157.170000	16.98	40.00	23.02	200.0	H	125.0	13.9
226.948125	20.44	40.00	19.56	200.0	H	186.0	17.5

Remark: Corrector factor = Antenna Factor + Cable Loss

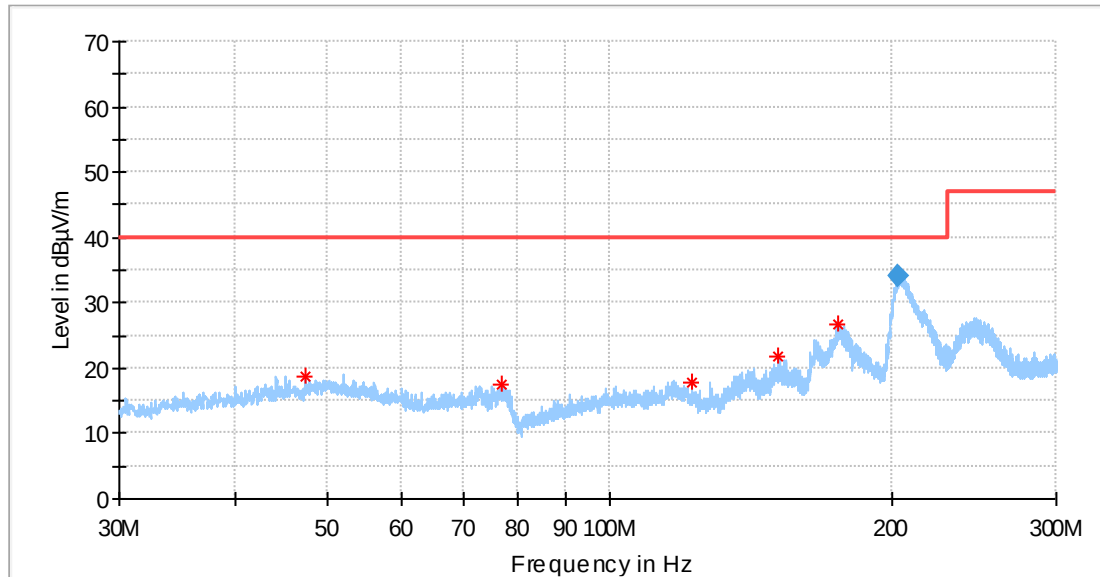
Model: PL-LD-066-100W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Vertical



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
35.501250	18.84	40.00	21.16	100.0	V	302.0	15.1
45.930000	22.21	40.00	17.79	100.0	V	88.0	17.4
62.433750	16.58	40.00	23.42	200.0	V	145.0	15.0
102.731250	21.83	40.00	18.17	100.0	V	308.0	15.8
132.785625	19.60	40.00	20.40	100.0	V	33.0	13.4
156.275625	20.05	40.00	19.95	100.0	V	33.0	13.9

Remark: Corrector factor = Antenna Factor + Cable Loss

Model: PL-LD-068-150W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Horizontal



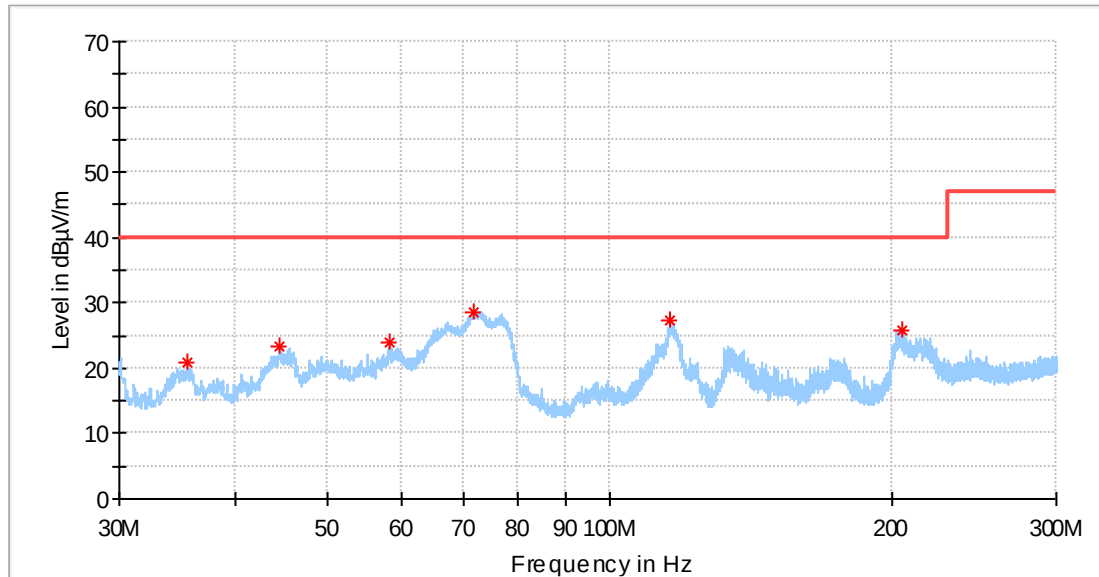
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.415000	18.77	40.00	21.23	200.0	H	240.0	17.7
76.861875	17.54	40.00	22.46	200.0	H	213.0	11.9
122.626875	17.71	40.00	22.29	200.0	H	185.0	14.6
151.736250	21.83	40.00	18.17	100.0	H	0.0	13.4
175.614375	26.73	40.00	13.27	100.0	H	358.0	14.6
203.728125	34.53	40.00	5.47	100.0	H	0.0	16.5

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
203.728125	33.95	40.00	6.05	100.0	H	0.0	16.5

Remark: Corrector factor = Antenna Factor + Cable Loss

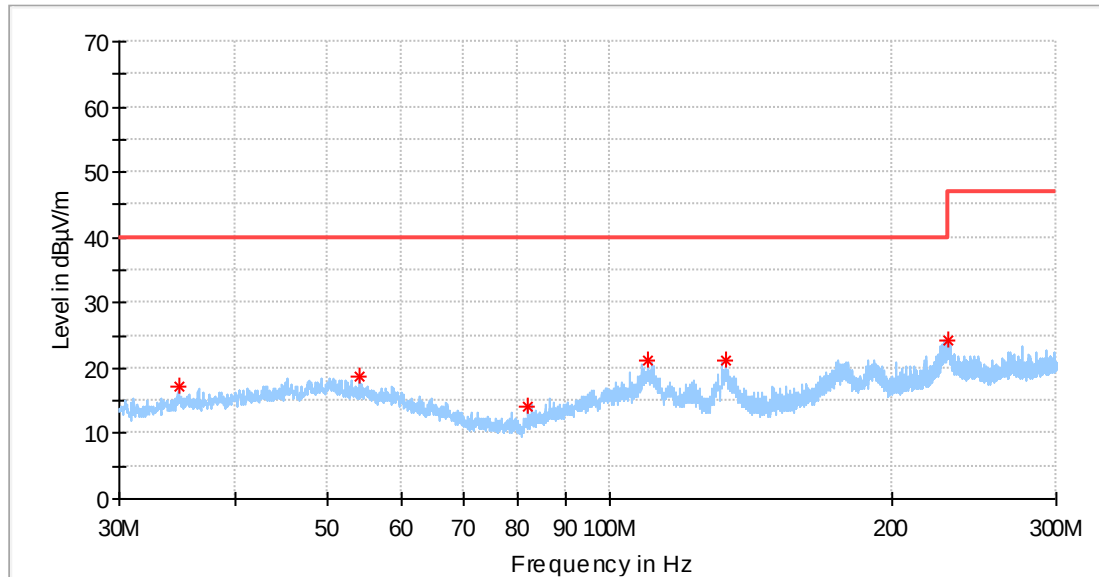
Model: PL-LD-068-150W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Vertical



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
35.416875	20.87	40.00	19.13	100.0	V	0.0	15.1
44.563125	23.47	40.00	16.53	100.0	V	208.0	17.2
58.164375	23.97	40.00	16.03	100.0	V	215.0	16.3
71.630625	28.65	40.00	11.35	100.0	V	47.0	12.2
116.281875	27.36	40.00	12.64	100.0	V	222.0	15.1
205.095000	25.83	40.00	14.17	200.0	V	116.0	16.5

Remark: Corrector factor = Antenna Factor + Cable Loss

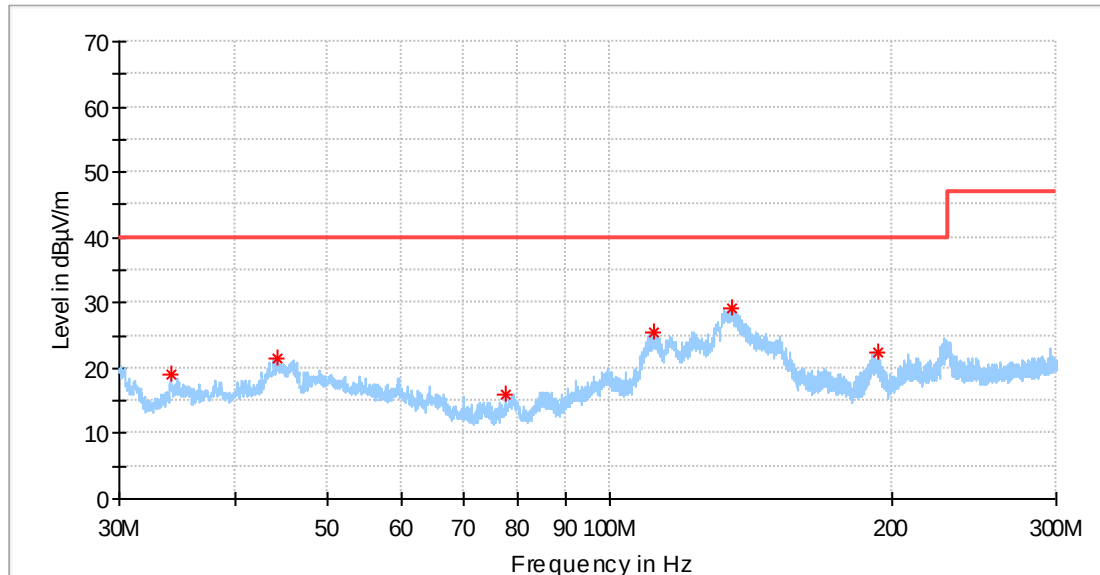
Model: PL-LD-069S-250W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Horizontal



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.725000	17.07	40.00	22.93	200.0	H	154.0	15.0
54.131250	18.66	40.00	21.34	100.0	H	5.0	17.2
81.991875	14.23	40.00	25.77	100.0	H	205.0	12.2
109.903125	21.15	40.00	18.85	200.0	H	188.0	15.5
132.988125	21.10	40.00	18.90	200.0	H	35.0	13.4
229.749375	24.31	40.00	15.69	100.0	H	27.0	17.6

Remark: Corrector factor = Antenna Factor + Cable Loss

Model: PL-LD-069S-250W
 Test mode: ON
 Test Voltage: 230VAC, 50Hz
 Remark: Vertical



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.033125	18.95	40.00	21.05	100.0	V	150.0	14.8
44.242500	21.51	40.00	18.49	100.0	V	0.0	17.1
77.621250	16.05	40.00	23.95	100.0	V	54.0	11.8
111.540000	25.58	40.00	14.42	100.0	V	251.0	15.4
135.435000	29.06	40.00	10.94	100.0	V	95.0	13.4
193.215000	22.37	40.00	17.63	100.0	V	177.0	15.4

Remark: Corrector factor = Antenna Factor + Cable Loss

Representative model: PL-LD-069S-250W



Test Setup

2.3.8 Test Location

This test was carried out in 3m anechoic chamber.

2.4 Harmonic current emission

2.4.1 Specification Reference

EN 61000-3-2:2014, Clause 6

2.4.2 Equipment Under Test

PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

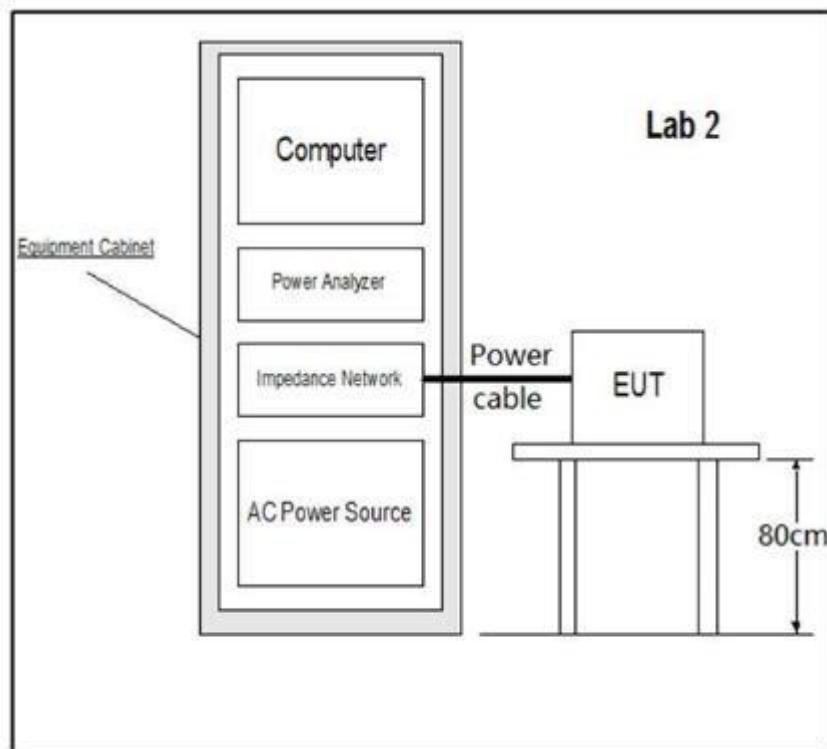
2.4.3 Date of Test

02/11/2019

2.4.4 Test Method

Harmonic current test should be conducted with the user's operation control or automatic programs set to the mode expected to produce the maximum total harmonic current under normal operating conditions.

Specific test conditions for the measurement of harmonic currents associated with some types of equipment are given in test equipment list.



2.4.5 Environmental Conditions

Ambient Temperature 23.1 °C
 Relative Humidity 46.7 %
 Atmospheric Pressure 1008.0 mbar

2.4.6 Specification Limits

Limits for class C equipment	
Harmonic order n	Maximum permissible harmonic current expressed as a percentage of the input current at the fundamental frequency %
2	2
3	$30 \cdot \lambda^a$
5	10
7	7
9	5
$11 \leq n \leq 39$ (odd harmonic only)	3
^a λ is the circuit power factor.	

2.4.7 Test Results

Results for Configuration and Mode: 230VAC, 50Hz/ ON.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Line Under Test: power line

Harmonics – Class-C per Ed. 4.0 (2014)(Run time)

EUT: PL-LD-067-40W

Tested by: Tim

Test category: Class-C per Ed. 4.0 (2014) (European limits) Test Margin: 100

Test date: 2019/2/11

Start time: 11:11:15

End time: 11:14:07

Test duration (min): 2.5

Data file name: CTSXML_H-000213.cts_data

Test Result: Pass

Source qualification: Normal

THC(A): 0.010

I-THD(%): 6.5

POHC(A): 0.000

POHC Limit(A): 0.015

Highest parameter values during test:

V_RMS (Volts): 229.958

Frequency(Hz): 50.00

I_Peak (Amps): 0.251

I_RMS (Amps): 0.154

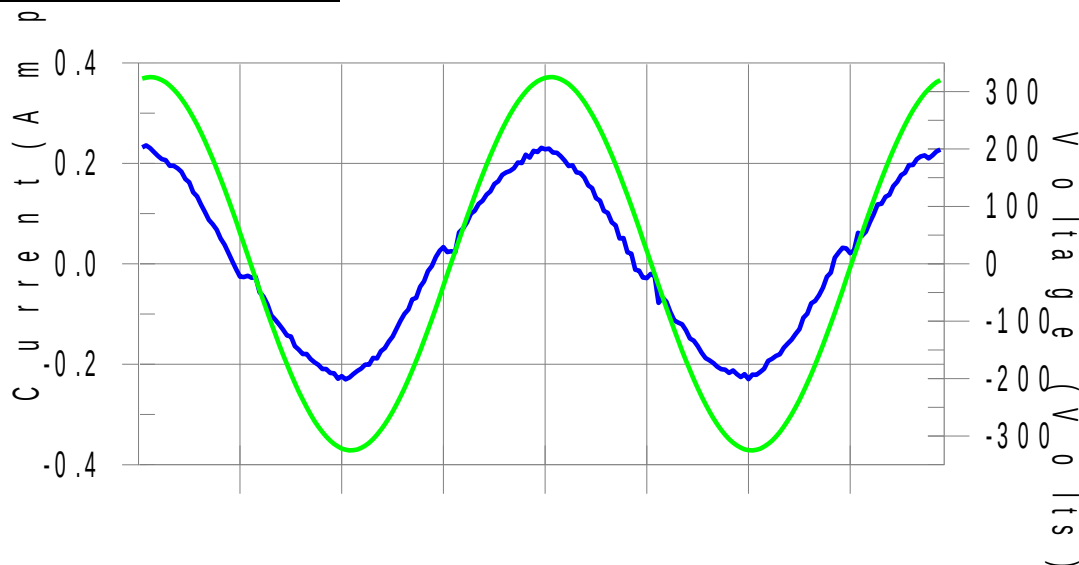
I_Fund (Amps): 0.154

Crest Factor: 1.629

Power (Watts): 34.9

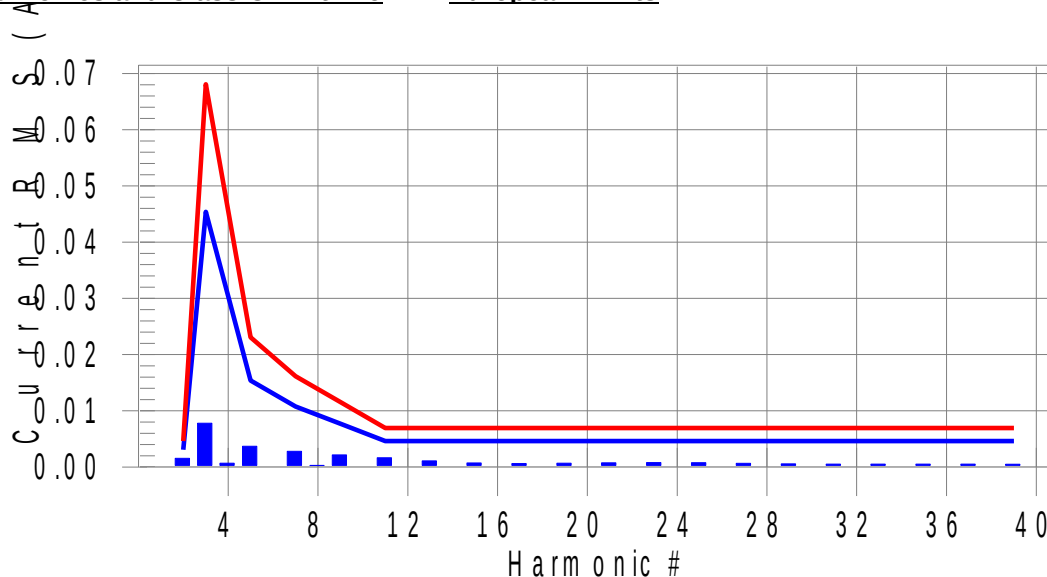
Power Factor: 0.983

Current & voltage waveforms



Harmonics and Class C limit line

European Limits



Test result: Pass Worst harmonics H3-13.6% of 150% limit, H3-17.2% of 100% limit.

Current Test Result Summary (Run time)

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.003	N/A	0.002	0.005	N/A	Pass
3	0.008	0.045	17.2	0.009	0.068	13.6	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.004	0.015	N/A	0.004	0.023	N/A	Pass
6	0.000	0.000	N/A	0.000	0.000	N/A	Pass
7	0.003	0.011	N/A	0.003	0.016	N/A	Pass
8	0.000	0.000	N/A	0.000	0.000	N/A	Pass
9	0.002	0.008	N/A	0.003	0.012	N/A	Pass
10	0.000	0.000	N/A	0.000	0.000	N/A	Pass
11	0.002	0.005	N/A	0.003	0.007	N/A	Pass
12	0.000	0.000	N/A	0.000	0.000	N/A	Pass
13	0.001	0.005	N/A	0.001	0.007	N/A	Pass
14	0.000	0.000	N/A	0.000	0.000	N/A	Pass
15	0.001	0.005	N/A	0.001	0.007	N/A	Pass
16	0.000	0.000	N/A	0.000	0.000	N/A	Pass
17	0.001	0.005	N/A	0.001	0.007	N/A	Pass
18	0.000	0.000	N/A	0.000	0.000	N/A	Pass
19	0.001	0.005	N/A	0.001	0.007	N/A	Pass
20	0.000	0.000	N/A	0.000	0.000	N/A	Pass
21	0.001	0.005	N/A	0.001	0.007	N/A	Pass
22	0.000	0.000	N/A	0.000	0.000	N/A	Pass
23	0.001	0.005	N/A	0.001	0.007	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.001	0.005	N/A	0.001	0.007	N/A	Pass
26	0.000	0.000	N/A	0.000	0.000	N/A	Pass
27	0.001	0.005	N/A	0.001	0.007	N/A	Pass
28	0.000	0.000	N/A	0.000	0.000	N/A	Pass
29	0.001	0.005	N/A	0.001	0.007	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.001	0.005	N/A	0.001	0.007	N/A	Pass
32	0.000	0.000	N/A	0.000	0.000	N/A	Pass
33	0.001	0.005	N/A	0.001	0.007	N/A	Pass
34	0.000	0.000	N/A	0.000	0.000	N/A	Pass
35	0.001	0.005	N/A	0.001	0.007	N/A	Pass
36	0.000	0.000	N/A	0.000	0.000	N/A	Pass
37	0.001	0.005	N/A	0.001	0.007	N/A	Pass
38	0.000	0.000	N/A	0.000	0.000	N/A	Pass
39	0.001	0.005	N/A	0.001	0.007	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

Voltage Source Verification Data (Run time)

Test Result: Pass Source qualification: Normal
 Measured source distortion is within the requirements of the standards
 Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.127	0.460	27.66	OK
3	0.171	2.069	8.25	OK
4	0.039	0.460	8.43	OK
5	0.059	0.920	6.39	OK
6	0.017	0.460	3.62	OK
7	0.036	0.690	5.27	OK
8	0.020	0.460	4.36	OK
9	0.035	0.460	7.53	OK
10	0.013	0.460	2.86	OK
11	0.026	0.230	11.46	OK
12	0.012	0.230	5.34	OK
13	0.022	0.230	9.79	OK
14	0.011	0.230	4.87	OK
15	0.017	0.230	7.54	OK
16	0.009	0.230	3.92	OK
17	0.019	0.230	8.15	OK
18	0.016	0.230	6.87	OK
19	0.024	0.230	10.33	OK
20	0.021	0.230	9.23	OK
21	0.013	0.230	5.86	OK
22	0.010	0.230	4.36	OK
23	0.015	0.230	6.59	OK
24	0.010	0.230	4.52	OK
25	0.014	0.230	6.15	OK
26	0.010	0.230	4.37	OK
27	0.010	0.230	4.54	OK
28	0.013	0.230	5.46	OK
29	0.010	0.230	4.26	OK
30	0.011	0.230	4.86	OK
31	0.012	0.230	5.16	OK
32	0.010	0.230	4.22	OK
33	0.011	0.230	4.71	OK
34	0.010	0.230	4.47	OK
35	0.011	0.230	4.81	OK
36	0.011	0.230	4.73	OK
37	0.012	0.230	5.25	OK
38	0.010	0.230	4.54	OK
39	0.012	0.230	5.11	OK
40	0.018	0.230	7.84	OK

Harmonics – Class-C per Ed. 4.0 (2014)(Run time)

EUT: PL-LD-067-60W

Tested by: Tim

Test category: Class-C per Ed. 4.0 (2014) (European limits) Test Margin: 100

Test date: 2019/2/11

Start time: 12:02:58

End time: 12:05:50

Test duration (min): 2.5

Data file name: CTSXML_H-000217.cts_data

Test Result: Pass

Source qualification: Normal

THC(A): 0.016

I-THD(%): 6.4

POHC(A): 0.000

POHC Limit(A): 0.023

Highest parameter values during test:

V_RMS (Volts): 229.920

Frequency(Hz): 50.00

I_Peak (Amps): 0.383

I_RMS (Amps): 0.245

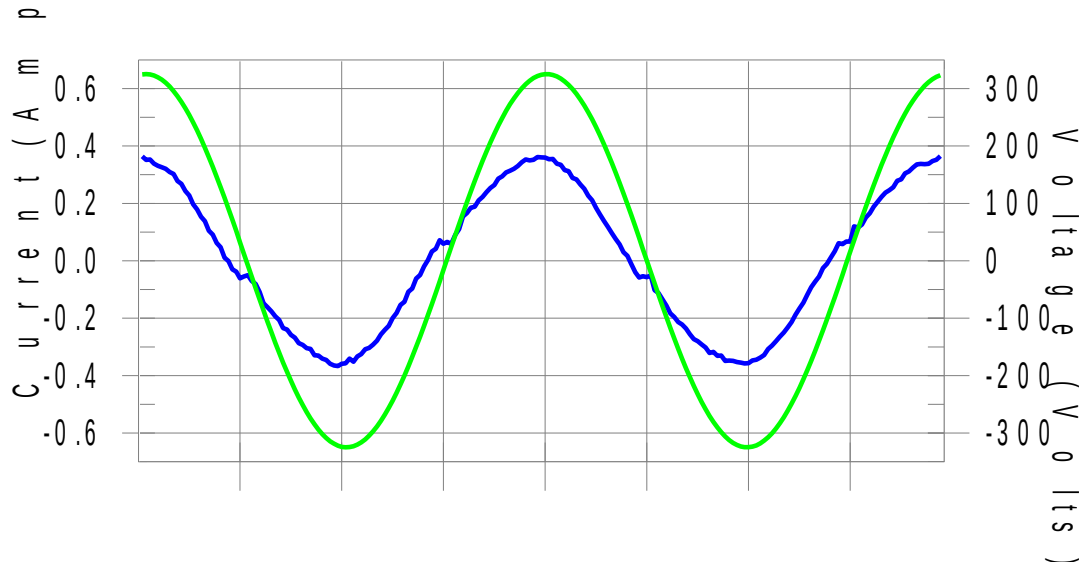
I_Fund (Amps): 0.245

Crest Factor: 1.565

Power (Watts): 55.1

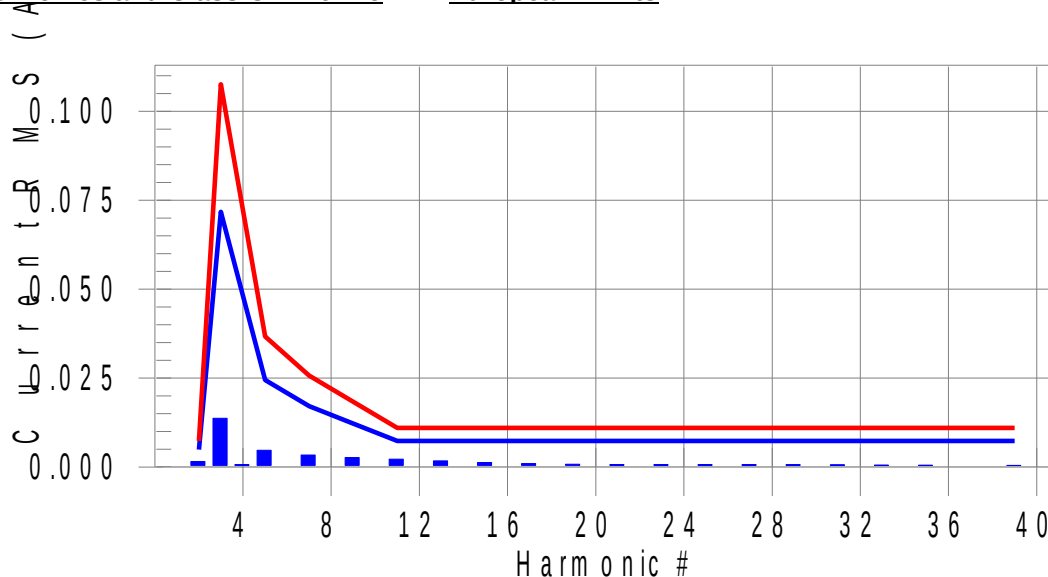
Power Factor: 0.977

Current & voltage waveforms



Harmonics and Class C limit line

European Limits



Test result: Pass Worst harmonics H3-14.4% of 150% limit, H3-19.1% of 100% limit.

Current Test Result Summary (Run time)

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.005	N/A	0.002	0.007	N/A	Pass
3	0.014	0.072	19.1	0.015	0.108	14.4	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.005	0.024	N/A	0.006	0.037	N/A	Pass
6	0.000	0.000	N/A	0.000	0.000	N/A	Pass
7	0.003	0.017	N/A	0.004	0.026	N/A	Pass
8	0.000	0.000	N/A	0.000	0.000	N/A	Pass
9	0.003	0.012	N/A	0.003	0.018	N/A	Pass
10	0.000	0.000	N/A	0.000	0.000	N/A	Pass
11	0.002	0.007	N/A	0.003	0.011	N/A	Pass
12	0.000	0.000	N/A	0.000	0.000	N/A	Pass
13	0.002	0.007	N/A	0.002	0.011	N/A	Pass
14	0.000	0.000	N/A	0.000	0.000	N/A	Pass
15	0.001	0.007	N/A	0.001	0.011	N/A	Pass
16	0.000	0.000	N/A	0.000	0.000	N/A	Pass
17	0.001	0.007	N/A	0.001	0.011	N/A	Pass
18	0.000	0.000	N/A	0.000	0.000	N/A	Pass
19	0.001	0.007	N/A	0.001	0.011	N/A	Pass
20	0.000	0.000	N/A	0.000	0.000	N/A	Pass
21	0.001	0.007	N/A	0.001	0.011	N/A	Pass
22	0.000	0.000	N/A	0.000	0.000	N/A	Pass
23	0.001	0.007	N/A	0.001	0.011	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.001	0.007	N/A	0.001	0.011	N/A	Pass
26	0.000	0.000	N/A	0.000	0.000	N/A	Pass
27	0.001	0.007	N/A	0.001	0.011	N/A	Pass
28	0.000	0.000	N/A	0.000	0.000	N/A	Pass
29	0.001	0.007	N/A	0.001	0.011	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.001	0.007	N/A	0.001	0.011	N/A	Pass
32	0.000	0.000	N/A	0.000	0.000	N/A	Pass
33	0.001	0.007	N/A	0.001	0.011	N/A	Pass
34	0.000	0.000	N/A	0.000	0.000	N/A	Pass
35	0.000	0.007	N/A	0.001	0.011	N/A	Pass
36	0.000	0.000	N/A	0.000	0.000	N/A	Pass
37	0.000	0.007	N/A	0.001	0.011	N/A	Pass
38	0.000	0.000	N/A	0.000	0.000	N/A	Pass
39	0.000	0.007	N/A	0.001	0.011	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

Voltage Source Verification Data (Run time)

Test Result: Pass Source qualification: Normal
 Measured source distortion is within the requirements of the standards
 Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.138	0.460	30.09	OK
3	0.180	2.069	8.68	OK
4	0.044	0.460	9.58	OK
5	0.060	0.920	6.48	OK
6	0.016	0.460	3.45	OK
7	0.036	0.690	5.17	OK
8	0.019	0.460	4.12	OK
9	0.033	0.460	7.18	OK
10	0.014	0.460	2.94	OK
11	0.031	0.230	13.61	OK
12	0.012	0.230	5.32	OK
13	0.024	0.230	10.26	OK
14	0.013	0.230	5.55	OK
15	0.022	0.230	9.40	OK
16	0.013	0.230	5.81	OK
17	0.016	0.230	7.09	OK
18	0.013	0.230	5.75	OK
19	0.018	0.230	7.99	OK
20	0.021	0.230	8.92	OK
21	0.014	0.230	6.24	OK
22	0.010	0.230	4.55	OK
23	0.016	0.230	6.83	OK
24	0.012	0.230	5.23	OK
25	0.014	0.230	6.04	OK
26	0.008	0.230	3.40	OK
27	0.013	0.230	5.49	OK
28	0.010	0.230	4.17	OK
29	0.013	0.230	5.65	OK
30	0.010	0.230	4.22	OK
31	0.014	0.230	5.92	OK
32	0.010	0.230	4.19	OK
33	0.013	0.230	5.66	OK
34	0.009	0.230	3.97	OK
35	0.011	0.230	4.73	OK
36	0.010	0.230	4.16	OK
37	0.014	0.230	6.20	OK
38	0.012	0.230	5.11	OK
39	0.012	0.230	5.31	OK
40	0.022	0.230	9.47	OK

Harmonics – Class-C per Ed. 4.0 (2014)(Run time)

EUT: PL-LD-067-80W

Tested by: Tim

Test category: Class-C per Ed. 4.0 (2014) (European limits) Test Margin: 100

Test date: 2019/2/11

Start time: 14:03:52

End time: 14:06:44

Test duration (min): 2.5

Data file name: CTSXML_H-000222.cts_data

Test Result: Pass

Source qualification: Normal

THC(A): 0.018

I-THD(%): 5.0

POHC(A): 0.000

POHC Limit(A): 0.033

Highest parameter values during test:

V_RMS (Volts): 229.894

Frequency(Hz): 50.00

I_Peak (Amps): 0.550

I_RMS (Amps): 0.353

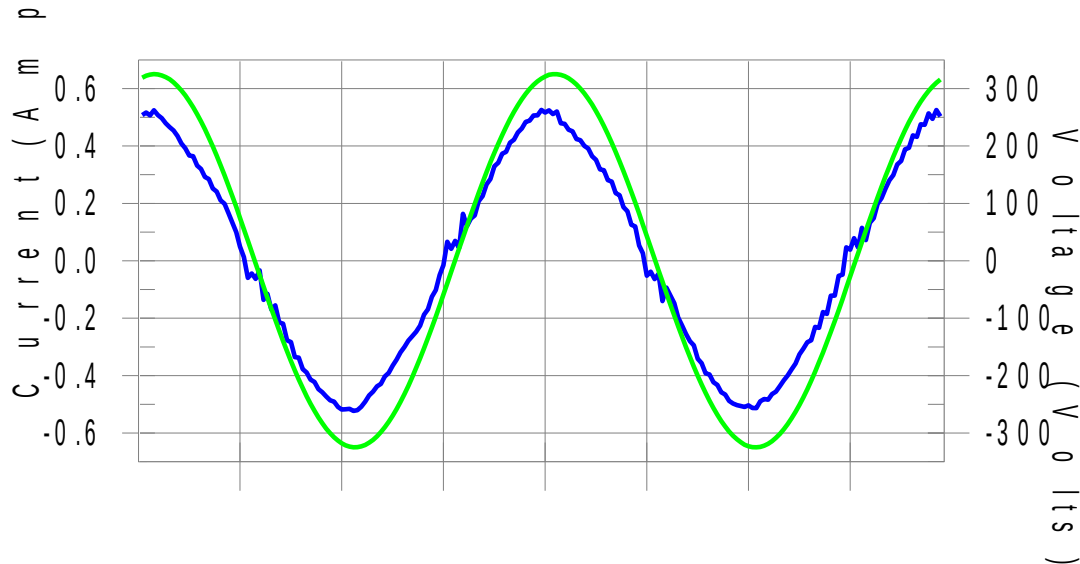
I_Fund (Amps): 0.353

Crest Factor: 1.560

Power (Watts): 80.7

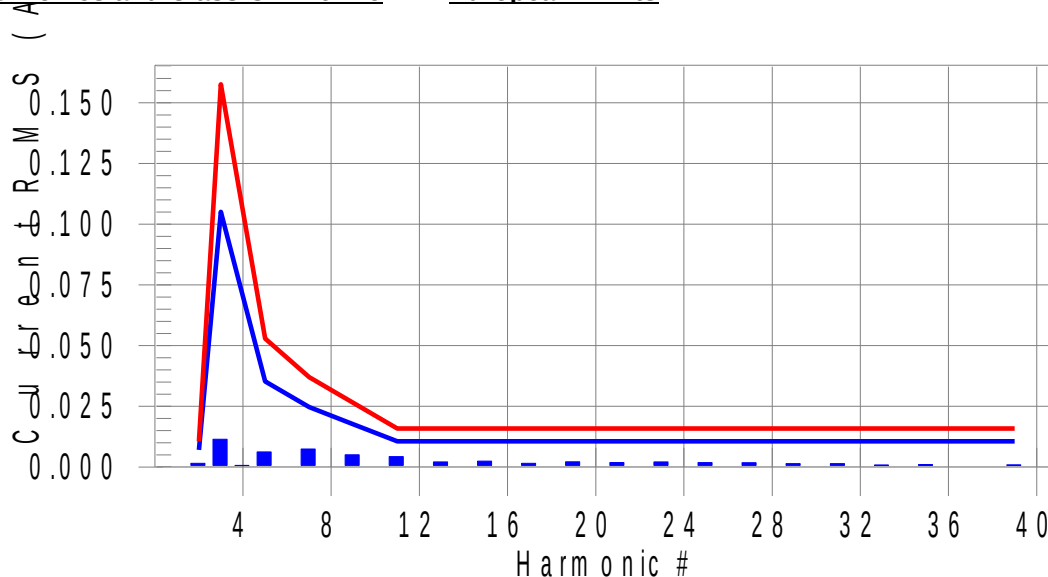
Power Factor: 0.993

Current & voltage waveforms



Harmonics and Class C limit line

European Limits



Test result: Pass Worst harmonics H7-20.7% of 150% limit, H7-30% of 100% limit.

Current Test Result Summary (Run time)

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.007	N/A	0.002	0.011	N/A	Pass
3	0.011	0.105	10.9	0.013	0.158	8.4	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.006	0.035	17.7	0.006	0.053	12.0	Pass
6	0.000	0.000	N/A	0.000	0.000	N/A	Pass
7	0.007	0.025	30.0	0.008	0.037	20.7	Pass
8	0.000	0.000	N/A	0.000	0.000	N/A	Pass
9	0.005	0.018	28.7	0.005	0.026	20.2	Pass
10	0.000	0.000	N/A	0.000	0.000	N/A	Pass
11	0.004	0.011	N/A	0.004	0.016	N/A	Pass
12	0.000	0.000	N/A	0.000	0.000	N/A	Pass
13	0.002	0.011	N/A	0.002	0.016	N/A	Pass
14	0.000	0.000	N/A	0.000	0.000	N/A	Pass
15	0.002	0.011	N/A	0.003	0.016	N/A	Pass
16	0.000	0.000	N/A	0.000	0.000	N/A	Pass
17	0.002	0.011	N/A	0.002	0.016	N/A	Pass
18	0.000	0.000	N/A	0.000	0.000	N/A	Pass
19	0.002	0.011	N/A	0.002	0.016	N/A	Pass
20	0.000	0.000	N/A	0.000	0.000	N/A	Pass
21	0.002	0.011	N/A	0.002	0.016	N/A	Pass
22	0.000	0.000	N/A	0.000	0.000	N/A	Pass
23	0.002	0.011	N/A	0.002	0.016	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.002	0.011	N/A	0.002	0.016	N/A	Pass
26	0.000	0.000	N/A	0.000	0.000	N/A	Pass
27	0.002	0.011	N/A	0.002	0.016	N/A	Pass
28	0.000	0.000	N/A	0.000	0.000	N/A	Pass
29	0.001	0.011	N/A	0.002	0.016	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.001	0.011	N/A	0.001	0.016	N/A	Pass
32	0.000	0.000	N/A	0.000	0.000	N/A	Pass
33	0.001	0.011	N/A	0.001	0.016	N/A	Pass
34	0.000	0.000	N/A	0.000	0.000	N/A	Pass
35	0.001	0.011	N/A	0.001	0.016	N/A	Pass
36	0.000	0.000	N/A	0.000	0.000	N/A	Pass
37	0.000	0.011	N/A	0.000	0.016	N/A	Pass
38	0.000	0.000	N/A	0.000	0.000	N/A	Pass
39	0.001	0.011	N/A	0.001	0.016	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

Voltage Source Verification Data (Run time)

Test Result: Pass Source qualification: Normal
 Measured source distortion is within the requirements of the standards
 Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.151	0.460	32.75	OK
3	0.175	2.069	8.46	OK
4	0.041	0.460	8.86	OK
5	0.059	0.919	6.37	OK
6	0.019	0.460	4.05	OK
7	0.044	0.690	6.39	OK
8	0.021	0.460	4.48	OK
9	0.036	0.460	7.88	OK
10	0.016	0.460	3.40	OK
11	0.031	0.230	13.33	OK
12	0.013	0.230	5.54	OK
13	0.027	0.230	11.87	OK
14	0.012	0.230	5.24	OK
15	0.024	0.230	10.59	OK
16	0.013	0.230	5.67	OK
17	0.018	0.230	7.72	OK
18	0.014	0.230	6.27	OK
19	0.023	0.230	9.86	OK
20	0.022	0.230	9.39	OK
21	0.014	0.230	6.16	OK
22	0.009	0.230	4.01	OK
23	0.020	0.230	8.58	OK
24	0.010	0.230	4.17	OK
25	0.019	0.230	8.22	OK
26	0.008	0.230	3.67	OK
27	0.014	0.230	6.21	OK
28	0.009	0.230	3.73	OK
29	0.015	0.230	6.51	OK
30	0.009	0.230	4.00	OK
31	0.015	0.230	6.64	OK
32	0.010	0.230	4.19	OK
33	0.013	0.230	5.75	OK
34	0.011	0.230	4.63	OK
35	0.012	0.230	5.31	OK
36	0.011	0.230	4.79	OK
37	0.013	0.230	5.64	OK
38	0.010	0.230	4.38	OK
39	0.011	0.230	4.75	OK
40	0.018	0.230	7.76	OK

Harmonics – Class-C Dimmer Test per Ed. 4.0 (2014)(Run time)

EUT: PL-LD-066-100W

Tested by: Tim

Test category: Class-C per Ed. 4.0 (2014) (European limits) Test Margin: 100

Test date: 2019/2/11

Start time: 11:57:25

End time: 12:00:17

Test duration (min): 2.5

Data file name: CTSXML_H-000216.cts_data

Test Result: Pass

Source qualification: Normal

THC(A): 0.022

I-THD(%): 5.4

POHC(A): 0.000

POHC Limit(A): 0.038

Highest parameter values during test:

V_RMS (Volts): 229.857

Frequency(Hz): 50.00

I_Peak (Amps): 0.633

I_RMS (Amps): 0.406

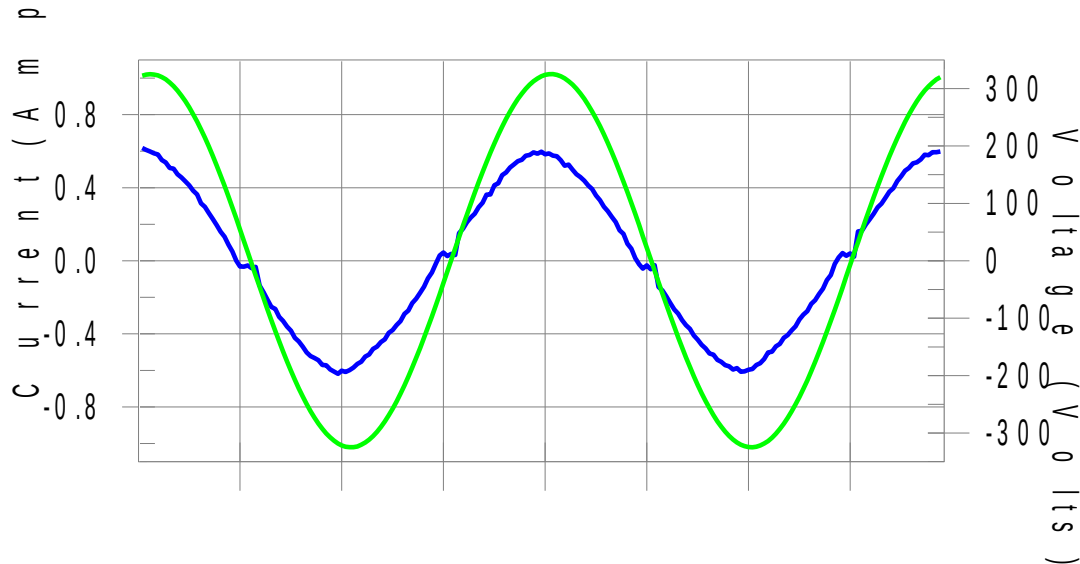
I_Fund (Amps): 0.406

Crest Factor: 1.558

Power (Watts): 92.1

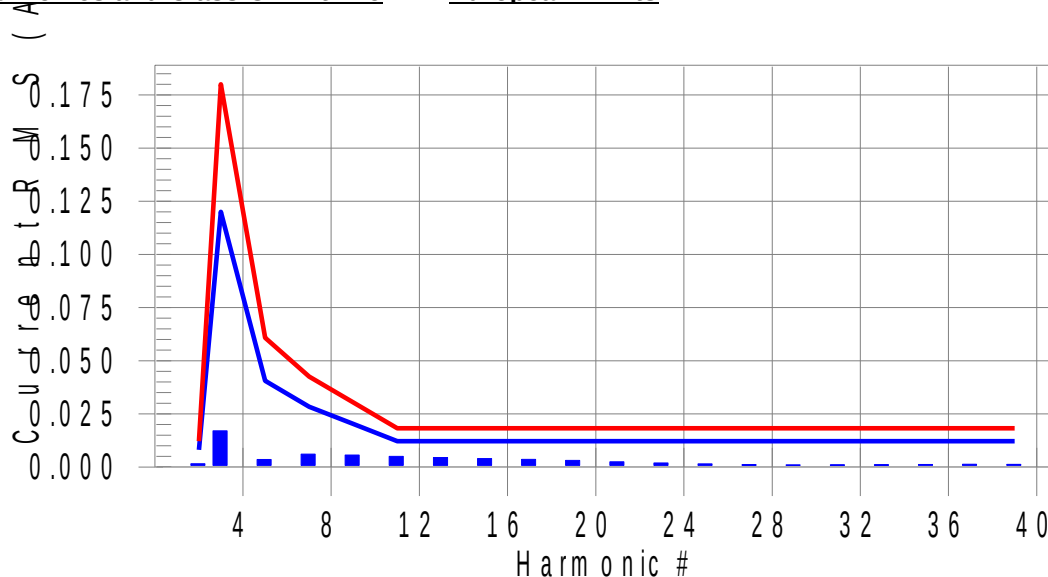
Power Factor: 0.986

Current & voltage waveforms



Harmonics and Class C limit line

European Limits



Test result: Pass Worst harmonics H11-32.5% of 150% limit, H11-41.4% of 100% limit.

Current Test Result Summary (Run time)

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.008	N/A	0.002	0.012	N/A	Pass
3	0.017	0.120	14.2	0.019	0.180	10.6	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.004	0.041	N/A	0.004	0.061	N/A	Pass
6	0.000	0.000	N/A	0.000	0.000	N/A	Pass
7	0.006	0.028	21.4	0.007	0.043	15.4	Pass
8	0.000	0.000	N/A	0.000	0.000	N/A	Pass
9	0.006	0.020	27.9	0.007	0.030	21.5	Pass
10	0.000	0.000	N/A	0.000	0.000	N/A	Pass
11	0.005	0.012	41.4	0.006	0.018	32.5	Pass
12	0.000	0.000	N/A	0.000	0.000	N/A	Pass
13	0.004	0.012	N/A	0.005	0.018	N/A	Pass
14	0.000	0.000	N/A	0.000	0.000	N/A	Pass
15	0.004	0.012	N/A	0.004	0.018	N/A	Pass
16	0.000	0.000	N/A	0.000	0.000	N/A	Pass
17	0.004	0.012	N/A	0.004	0.018	N/A	Pass
18	0.000	0.000	N/A	0.000	0.000	N/A	Pass
19	0.003	0.012	N/A	0.003	0.018	N/A	Pass
20	0.000	0.000	N/A	0.000	0.000	N/A	Pass
21	0.002	0.012	N/A	0.003	0.018	N/A	Pass
22	0.000	0.000	N/A	0.000	0.000	N/A	Pass
23	0.002	0.012	N/A	0.002	0.018	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.001	0.012	N/A	0.002	0.018	N/A	Pass
26	0.000	0.000	N/A	0.000	0.000	N/A	Pass
27	0.001	0.012	N/A	0.001	0.018	N/A	Pass
28	0.000	0.000	N/A	0.000	0.000	N/A	Pass
29	0.001	0.012	N/A	0.001	0.018	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.001	0.012	N/A	0.001	0.018	N/A	Pass
32	0.000	0.000	N/A	0.000	0.000	N/A	Pass
33	0.001	0.012	N/A	0.001	0.018	N/A	Pass
34	0.000	0.000	N/A	0.000	0.000	N/A	Pass
35	0.001	0.012	N/A	0.001	0.018	N/A	Pass
36	0.000	0.000	N/A	0.000	0.000	N/A	Pass
37	0.001	0.012	N/A	0.001	0.018	N/A	Pass
38	0.000	0.000	N/A	0.000	0.000	N/A	Pass
39	0.001	0.012	N/A	0.001	0.018	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

Voltage Source Verification Data (Run time)

Test Result: Pass Source qualification: Normal
 Measured source distortion is within the requirements of the standards
 Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.121	0.460	26.27	OK
3	0.177	2.069	8.57	OK
4	0.042	0.460	9.08	OK
5	0.064	0.919	6.94	OK
6	0.017	0.460	3.71	OK
7	0.042	0.690	6.13	OK
8	0.020	0.460	4.37	OK
9	0.029	0.460	6.21	OK
10	0.012	0.460	2.59	OK
11	0.030	0.230	13.07	OK
12	0.011	0.230	4.81	OK
13	0.029	0.230	12.56	OK
14	0.011	0.230	4.78	OK
15	0.019	0.230	8.24	OK
16	0.012	0.230	5.43	OK
17	0.020	0.230	8.90	OK
18	0.015	0.230	6.47	OK
19	0.026	0.230	11.35	OK
20	0.022	0.230	9.55	OK
21	0.020	0.230	8.57	OK
22	0.010	0.230	4.16	OK
23	0.019	0.230	8.24	OK
24	0.009	0.230	3.92	OK
25	0.014	0.230	6.04	OK
26	0.007	0.230	3.21	OK
27	0.010	0.230	4.40	OK
28	0.009	0.230	3.84	OK
29	0.012	0.230	5.29	OK
30	0.009	0.230	3.79	OK
31	0.012	0.230	5.20	OK
32	0.009	0.230	3.97	OK
33	0.013	0.230	5.78	OK
34	0.008	0.230	3.28	OK
35	0.009	0.230	3.95	OK
36	0.007	0.230	3.24	OK
37	0.014	0.230	6.15	OK
38	0.007	0.230	3.26	OK
39	0.011	0.230	4.95	OK
40	0.018	0.230	7.88	OK

Harmonics – Class-C per Ed. 4.0 (2014)(Run time)

EUT: PL-LD-068-150W

Tested by: Tim

Test category: Class-C per Ed. 4.0 (2014) (European limits) Test Margin: 100

Test date: 2019/2/11

Start time: 13:54:43

End time: 13:57:36

Test duration (min): 2.5

Data file name: CTSXML_H-000220.cts_data

Test Result: Pass

Source qualification: Normal

THC(A): 0.032

I-THD(%): 5.1

POHC(A): 0.000

POHC Limit(A): 0.060

Highest parameter values during test:

V_RMS (Volts): 229.749

Frequency(Hz): 50.00

I_Peak (Amps): 0.981

I_RMS (Amps): 0.637

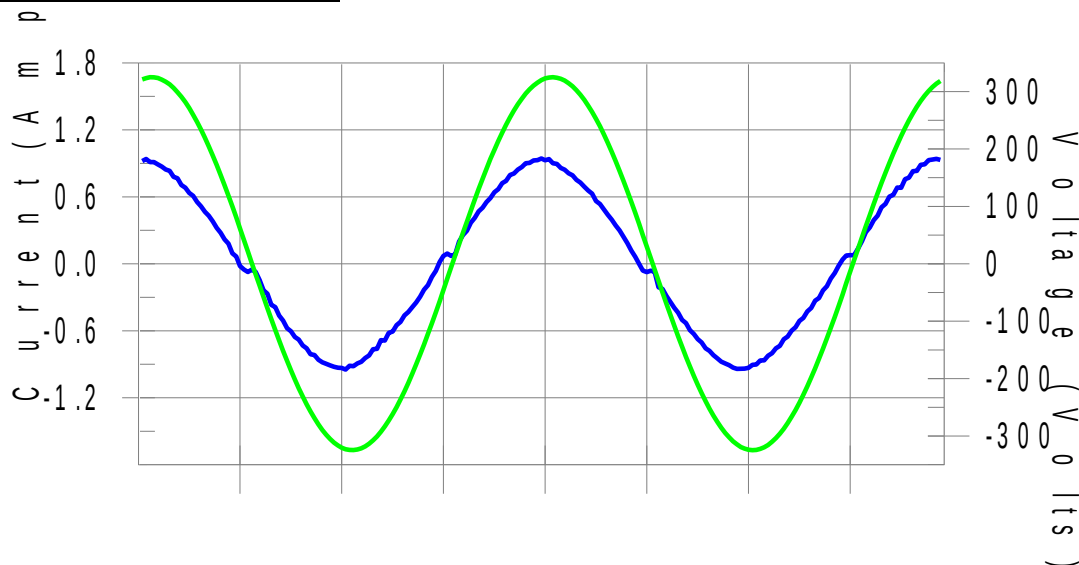
I_Fund (Amps): 0.636

Crest Factor: 1.540

Power (Watts): 144.3

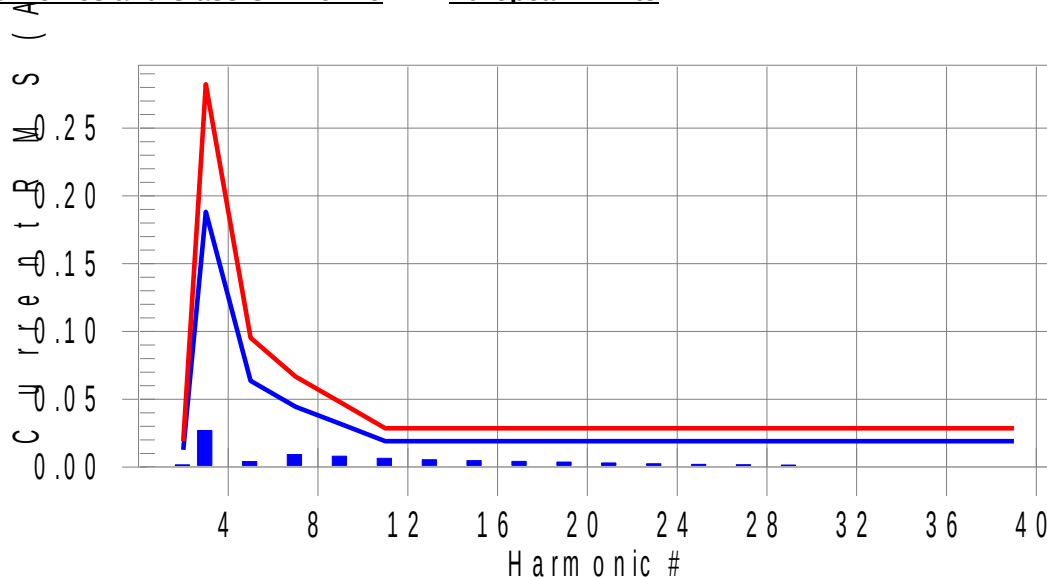
Power Factor: 0.987

Current & voltage waveforms



Harmonics and Class C limit line

European Limits



Test result: Pass Worst harmonics H11-23.2% of 150% limit, H11-33.7% of 100% limit.

Current Test Result Summary (Run time)

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.013	N/A	0.002	0.019	N/A	Pass
3	0.027	0.188	14.3	0.028	0.282	10.1	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.004	0.064	N/A	0.004	0.095	N/A	Pass
6	0.000	0.000	N/A	0.000	0.000	N/A	Pass
7	0.009	0.045	20.7	0.010	0.067	14.3	Pass
8	0.000	0.000	N/A	0.000	0.000	N/A	Pass
9	0.008	0.032	25.2	0.008	0.048	17.5	Pass
10	0.000	0.000	N/A	0.000	0.000	N/A	Pass
11	0.006	0.019	33.7	0.007	0.029	23.2	Pass
12	0.000	0.000	N/A	0.000	0.000	N/A	Pass
13	0.005	0.019	28.4	0.006	0.029	19.6	Pass
14	0.000	0.000	N/A	0.000	0.000	N/A	Pass
15	0.005	0.019	N/A	0.005	0.029	N/A	Pass
16	0.000	0.000	N/A	0.000	0.000	N/A	Pass
17	0.004	0.019	N/A	0.004	0.029	N/A	Pass
18	0.000	0.000	N/A	0.000	0.000	N/A	Pass
19	0.004	0.019	N/A	0.004	0.029	N/A	Pass
20	0.000	0.000	N/A	0.000	0.000	N/A	Pass
21	0.003	0.019	N/A	0.003	0.029	N/A	Pass
22	0.000	0.000	N/A	0.000	0.000	N/A	Pass
23	0.002	0.019	N/A	0.003	0.029	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.002	0.019	N/A	0.002	0.029	N/A	Pass
26	0.000	0.000	N/A	0.000	0.000	N/A	Pass
27	0.002	0.019	N/A	0.002	0.029	N/A	Pass
28	0.000	0.000	N/A	0.000	0.000	N/A	Pass
29	0.001	0.019	N/A	0.001	0.029	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.001	0.019	N/A	0.001	0.029	N/A	Pass
32	0.000	0.000	N/A	0.000	0.000	N/A	Pass
33	0.001	0.019	N/A	0.001	0.029	N/A	Pass
34	0.000	0.000	N/A	0.000	0.000	N/A	Pass
35	0.001	0.019	N/A	0.001	0.029	N/A	Pass
36	0.000	0.000	N/A	0.000	0.000	N/A	Pass
37	0.001	0.019	N/A	0.001	0.029	N/A	Pass
38	0.000	0.000	N/A	0.000	0.000	N/A	Pass
39	0.001	0.019	N/A	0.001	0.029	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

Voltage Source Verification Data (Run time)

Test Result: Pass Source qualification: Normal
 Measured source distortion is within the requirements of the standards
 Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.137	0.459	29.89	OK
3	0.179	2.068	8.65	OK
4	0.045	0.459	9.82	OK
5	0.063	0.919	6.90	OK
6	0.016	0.459	3.50	OK
7	0.042	0.689	6.05	OK
8	0.019	0.459	4.08	OK
9	0.031	0.459	6.71	OK
10	0.013	0.459	2.78	OK
11	0.028	0.230	12.02	OK
12	0.014	0.230	6.10	OK
13	0.030	0.230	12.84	OK
14	0.013	0.230	5.49	OK
15	0.026	0.230	11.28	OK
16	0.014	0.230	6.00	OK
17	0.025	0.230	10.86	OK
18	0.014	0.230	5.96	OK
19	0.024	0.230	10.36	OK
20	0.021	0.230	9.27	OK
21	0.021	0.230	9.21	OK
22	0.010	0.230	4.46	OK
23	0.019	0.230	8.22	OK
24	0.009	0.230	4.06	OK
25	0.016	0.230	6.81	OK
26	0.008	0.230	3.43	OK
27	0.014	0.230	6.02	OK
28	0.011	0.230	4.60	OK
29	0.013	0.230	5.85	OK
30	0.010	0.230	4.18	OK
31	0.012	0.230	5.30	OK
32	0.010	0.230	4.17	OK
33	0.014	0.230	6.13	OK
34	0.007	0.230	3.18	OK
35	0.012	0.230	5.08	OK
36	0.008	0.230	3.68	OK
37	0.013	0.230	5.61	OK
38	0.010	0.230	4.51	OK
39	0.012	0.230	5.15	OK
40	0.018	0.230	7.72	OK

Harmonics – Class-C per Ed. 4.0 (2014)(Run time)

EUT: PL-LD-069S-250W

Tested by: Tim

Test category: Class-C per Ed. 4.0 (2014) (European limits) Test Margin: 100

Test date: 2019/2/11

Start time: 15:15:59

End time: 15:18:52

Test duration (min): 2.5

Data file name: CTSXML_H-000227.cts_data

Test Result: Pass

Source qualification: Normal

THC(A): 0.101

I-THD(%): 9.8

POHC(A): 0.000

POHC Limit(A): 0.098

Highest parameter values during test:

V_RMS (Volts): 229.652

Frequency(Hz): 50.00

I_Peak (Amps): 1.656

I_RMS (Amps): 1.037

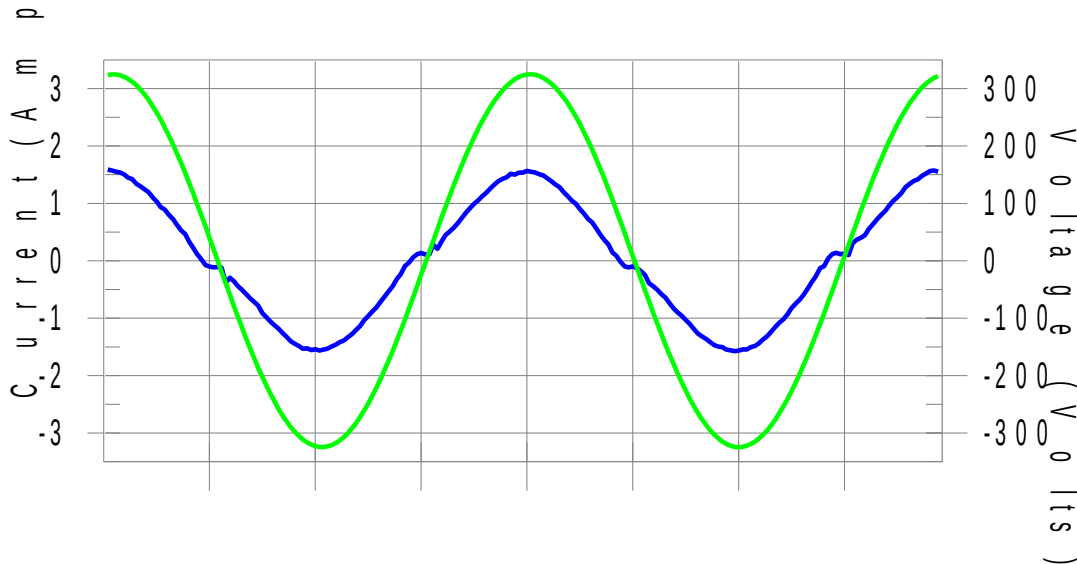
I_Fund (Amps): 1.032

Crest Factor: 1.597

Power (Watts): 235.7

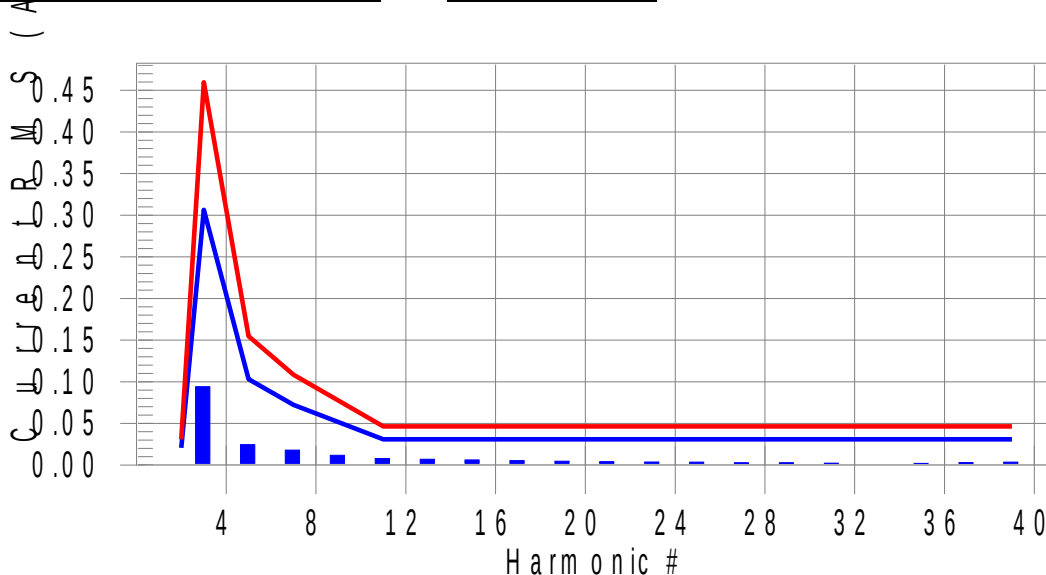
Power Factor: 0.990

Current & voltage waveforms



Harmonics and Class C limit line

European Limits



Test result: Pass Worst harmonics H3-20.8% of 150% limit, H3-30.7% of 100% limit.

Current Test Result Summary (Run time)

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.021	N/A	0.002	0.031	N/A	Pass
3	0.094	0.306	30.7	0.096	0.460	20.8	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.025	0.103	23.8	0.025	0.155	16.0	Pass
6	0.000	0.000	N/A	0.000	0.000	N/A	Pass
7	0.018	0.072	24.7	0.018	0.108	16.9	Pass
8	0.000	0.000	N/A	0.001	0.000	N/A	Pass
9	0.012	0.052	22.7	0.012	0.077	15.9	Pass
10	0.000	0.000	N/A	0.000	0.000	N/A	Pass
11	0.008	0.031	25.2	0.009	0.046	18.4	Pass
12	0.000	0.000	N/A	0.000	0.000	N/A	Pass
13	0.007	0.031	22.5	0.007	0.046	15.5	Pass
14	0.000	0.000	N/A	0.000	0.000	N/A	Pass
15	0.006	0.031	20.1	0.006	0.046	13.9	Pass
16	0.000	0.000	N/A	0.000	0.000	N/A	Pass
17	0.005	0.031	17.4	0.006	0.046	12.1	Pass
18	0.000	0.000	N/A	0.000	0.000	N/A	Pass
19	0.005	0.031	N/A	0.005	0.046	N/A	Pass
20	0.000	0.000	N/A	0.000	0.000	N/A	Pass
21	0.004	0.031	N/A	0.004	0.046	N/A	Pass
22	0.000	0.000	N/A	0.000	0.000	N/A	Pass
23	0.004	0.031	N/A	0.004	0.046	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.003	0.031	N/A	0.004	0.046	N/A	Pass
26	0.000	0.000	N/A	0.000	0.000	N/A	Pass
27	0.003	0.031	N/A	0.003	0.046	N/A	Pass
28	0.000	0.000	N/A	0.000	0.000	N/A	Pass
29	0.003	0.031	N/A	0.003	0.046	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.002	0.031	N/A	0.002	0.046	N/A	Pass
32	0.000	0.000	N/A	0.000	0.000	N/A	Pass
33	0.001	0.031	N/A	0.001	0.046	N/A	Pass
34	0.000	0.000	N/A	0.000	0.000	N/A	Pass
35	0.002	0.031	N/A	0.002	0.046	N/A	Pass
36	0.000	0.000	N/A	0.000	0.000	N/A	Pass
37	0.003	0.031	N/A	0.003	0.046	N/A	Pass
38	0.000	0.000	N/A	0.000	0.000	N/A	Pass
39	0.004	0.031	N/A	0.004	0.046	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

Voltage Source Verification Data (Run time)

Test Result: Pass Source qualification: Normal
 Measured source distortion is within the requirements of the standards
 Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.129	0.459	28.09	OK
3	0.197	2.066	9.54	OK
4	0.041	0.459	9.00	OK
5	0.077	0.918	8.39	OK
6	0.017	0.459	3.65	OK
7	0.050	0.689	7.26	OK
8	0.021	0.459	4.67	OK
9	0.040	0.459	8.68	OK
10	0.013	0.459	2.77	OK
11	0.040	0.230	17.26	OK
12	0.013	0.230	5.63	OK
13	0.041	0.230	18.05	OK
14	0.015	0.230	6.68	OK
15	0.030	0.230	13.09	OK
16	0.013	0.230	5.61	OK
17	0.026	0.230	11.20	OK
18	0.012	0.230	5.16	OK
19	0.027	0.230	11.72	OK
20	0.021	0.230	8.99	OK
21	0.025	0.230	11.08	OK
22	0.012	0.230	5.23	OK
23	0.023	0.230	10.17	OK
24	0.013	0.230	5.86	OK
25	0.022	0.230	9.62	OK
26	0.013	0.230	5.77	OK
27	0.016	0.230	7.10	OK
28	0.012	0.230	5.37	OK
29	0.017	0.230	7.49	OK
30	0.010	0.230	4.15	OK
31	0.015	0.230	6.52	OK
32	0.011	0.230	4.60	OK
33	0.014	0.230	5.98	OK
34	0.014	0.230	6.00	OK
35	0.015	0.230	6.42	OK
36	0.011	0.230	4.91	OK
37	0.022	0.230	9.61	OK
38	0.012	0.230	5.05	OK
39	0.020	0.230	8.52	OK
40	0.019	0.230	8.09	OK

Representative model: PL-LD-069S-250W



Test setup

2.4.8 Test Location

This test was carried out in Harmonic Flicker Test area.

2.5 Flicker

2.5.1 Specification Reference

EN 61000-3-3:2013, Clause 6

2.5.2 Equipment Under Test

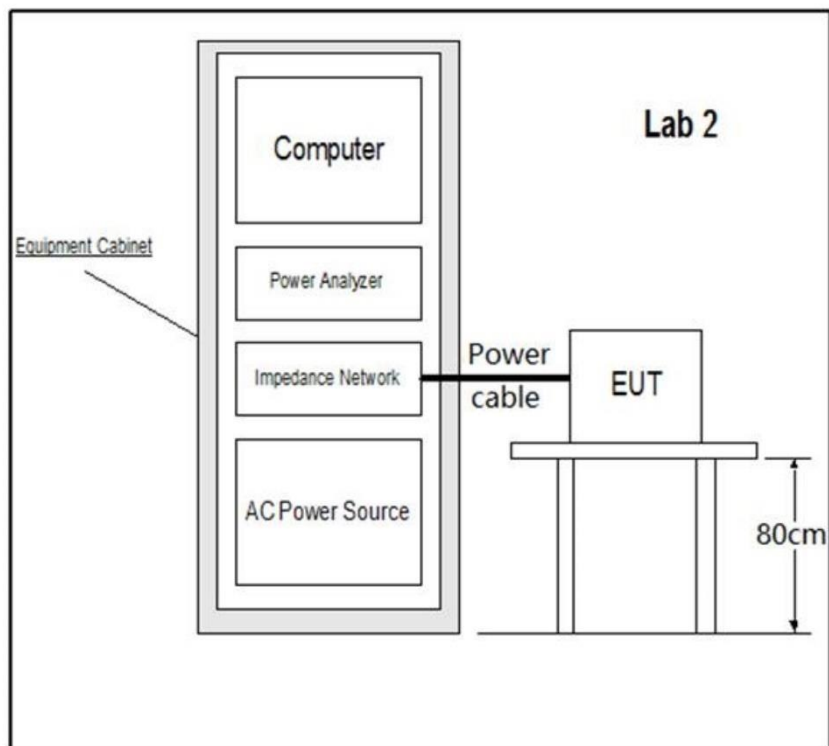
PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

2.5.3 Date of Test

02/11/2019

2.5.4 Test Method

Flicker test should be conducted with the user's operation controls or automatic programs set to the mode expected to produce the most unfavourable sequence of voltage change, using only those combinations of controls and programmes which are mentioned by the manufacturer in the instruction manual, or are otherwise likely to be used.



2.5.5 Environmental Conditions

Ambient Temperature	23.1 °C
Relative Humidity	47.9 %
Atmospheric Pressure	1008.0 mbar

2.5.6 Specification Limits

The value of P_{st} shall not be greater than 1.0

The value of Plt shall not be greater than 0.65

T_{max} , the accumulated time value of $d(t)$ with a deviation exceeding 3.3% during a single voltage change at the EUT terminals, shall not exceed 500ms

The maximum relative steady-state voltage change, dc , shall not exceed 3.3%

The maximum relative voltage change d_{max} , shall not exceed

- a) 4% without additional conditions
- b) 6% for equipment which is:
 - Switched manually, or
 - Switched automatically more frequently than twice per day, and also has either a delayed start, or manual restart, after a power supply interruption
- c) 7% for equipment which is:
 - Attended whilst in use, or
 - Switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart or manual restart, after a power supply interruption

2.5.7 Test Results

Results for Configuration and Mode: 230VAC, 50Hz/ ON.

Performance assessment of the EUT made during this test: Pass.

Note: Limits are not specified when LED luminaires with rating less than or equal to 200W (EN 61000-3-3: 2013, Annex A (A.2)).

Detailed results are shown below.

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

EUT: PL-LD-069S-250W

Tested by: Tim

Test category: All parameters (European limits)

Test Margin: 100

Test date: 2019/2/11

Start time: 14:20:40

End time: 14:31:11

Test duration (min): 10

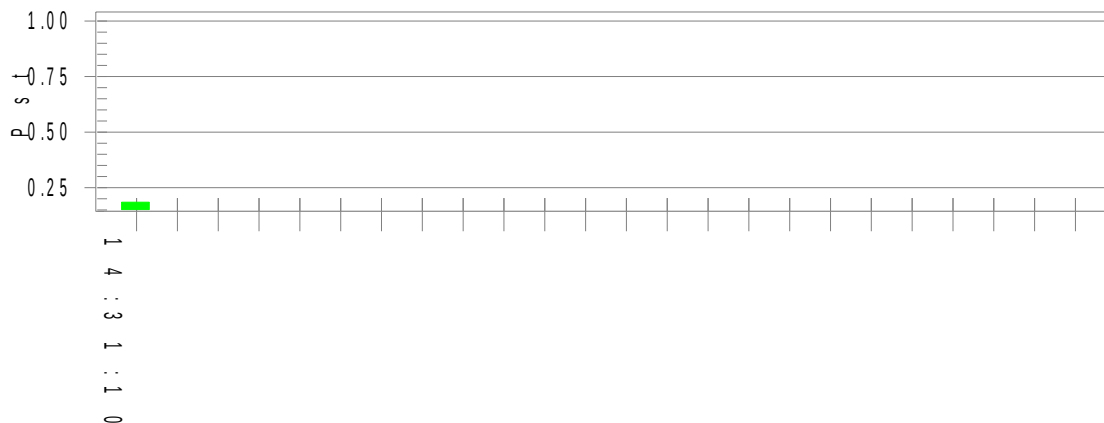
Data file name: CTSMXL_F-000224.cts_data

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.23

Highest dt (%): 0.00

T-max (mS): 0.0

Highest dc (%): 0.00

Highest dmax (%): -0.05

Highest Pst (10 min. period): 0.185

Highest Plt (2 hr. period): 0.081

Test limit (%): N/A N/A

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

Test limit: 0.650 Pass

Representative model: PL-LD-069S-250W



Test setup

2.5.8 Test Location

This test was carried out in Harmonic Flicker Test area.

2.6 Electrostatic discharge immunity test

2.6.1 Specification Reference

EN 61547:2009, Clause 5.2

2.6.2 Equipment Under Test

PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

2.6.3 Date of Test

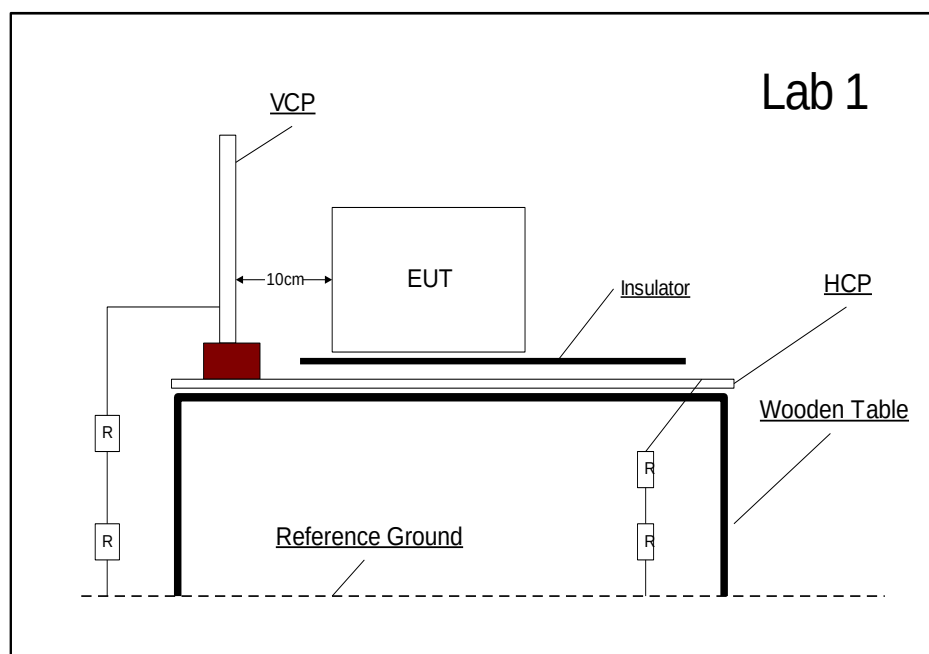
02/13/2019

2.6.4 Test Method

The equipment under test including associated cabling was configured on but insulated from, using a 0.5mm isolator, a horizontal coupling plane fitted to the top of a 0.8m non-conductive table for table-top equipment; and on a 0.1m insulated support for floor standing equipment; above a ground reference plane all within a test laboratory.

Using the air discharge method for non-metallic parts, contact discharge method for metallic parts with both vertical and horizontal couple plane discharge methods for the sides of the equipment under test, the required electrostatic discharge voltage levels in both voltage polarities were applied at the detailed pulse repartition rate.

During this testing any anomalies in the equipment under tests performance was recorded.



2.6.5 Environmental Conditions

Ambient Temperature	22.6 °C
Relative Humidity	53.9 %
Atmospheric Pressure	1019.0 mbar

2.6.6 Specification Limits

Required Test Levels				Performance Criteria
Discharge type	Discharge Level (kV)		Number of discharges per location (each polarity)	
	Positive	Negative		
Air – Direct	2, 4 and 8	2, 4 and 8	<10>	B
Contact – Direct	2 and 4	2 and 4	<10>	B
Contact – Indirect	2 and 4	2 and 4	<10>	B

2.6.7 Test Results

Results for Configuration and Mode: 230VAC, 50Hz/ON.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

ID	Test Point	Discharge	Results: Performance Criteria									
			2kV		4kV		6kV		8kV		15kV	
			+	-	+	-	+	-	+	-	+	-
	HCP	Contact	A	A	A	A	N/A	N/A	N/A	N/A	N/A	N/A
	VCP	Contact	A	A	A	A	N/A	N/A	N/A	N/A	N/A	N/A
	Each conductive location touchable by hand	Contact	A	A	A	A	N/A	N/A	N/A	N/A	N/A	N/A
	Each nonconductive location touchable by hand	Air	A	A	A	A	N/A	N/A	A	A	N/A	N/A
N/A		Not Appliance										

Representative model: PL-LD-069S-250W



Test Setup

2.6.8 Test Location

This test was carried out in ESD room.

2.7 Radiated, radio-frequency, electromagnetic field immunity test

2.7.1 Specification Reference

EN 61547:2009, Clause 5.3

2.7.2 Equipment Under Test

PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

2.7.3 Date of Test

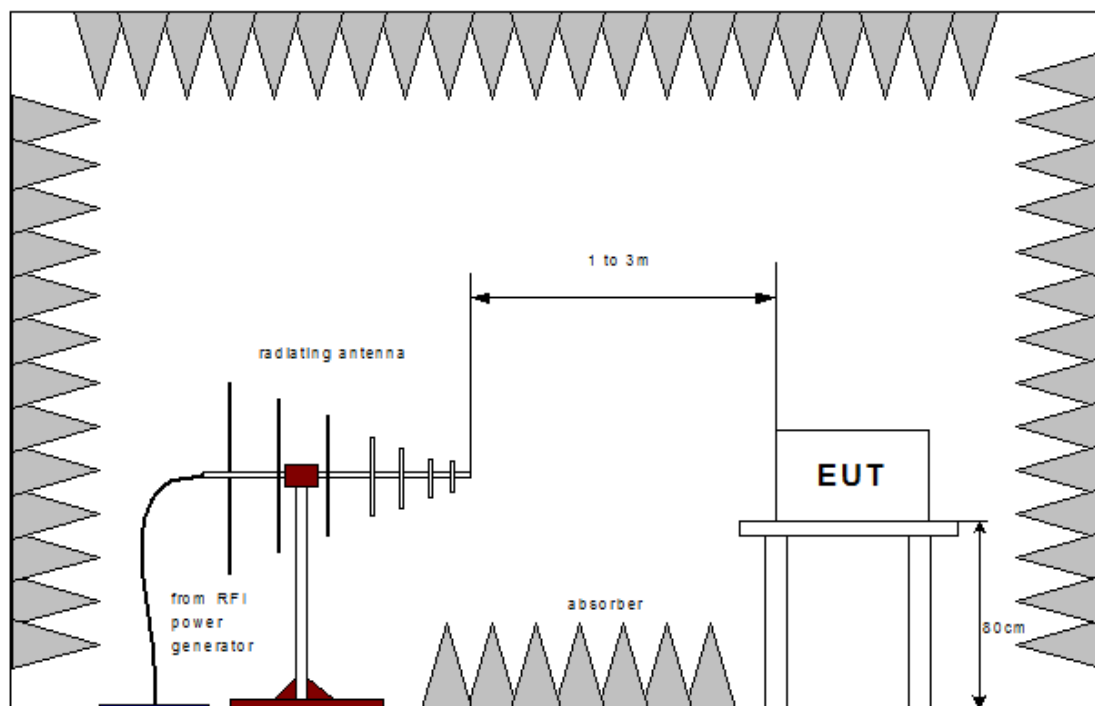
02/12/2019

2.7.4 Test Method

The equipment under test including associated cabling was configured, on a 0.8 m non-conductive table for table-top equipment and on a 0.1 m insulated support for floor standing equipment; with a pre-calibrated semi anechoic chamber.

All four side of the equipment under test were subjected to the required RF field strength, modulated as described, swept over the frequency range of test with the antenna positioned in both horizontal and vertical polarizations.

During this testing any anomalies in the equipment under tests performance was recorded.



2.7.5 Environmental Conditions

Ambient Temperature	23.4 °C
Relative Humidity	57.3 %
Atmospheric Pressure	1011.0 mbar

2.7.6 Specification Limits

Required Test Levels					Performance Criteria
Frequency Range (MHz)	Level (V/m)	Modulation	Step Size (%)	Dwell (s)	
80 to 1000	3	AM (80 %,1 kHz, sine wave)	1	1	A
Note 1. EUT powered at one of the Nominal input voltages and frequencies					

2.7.7 Test Results

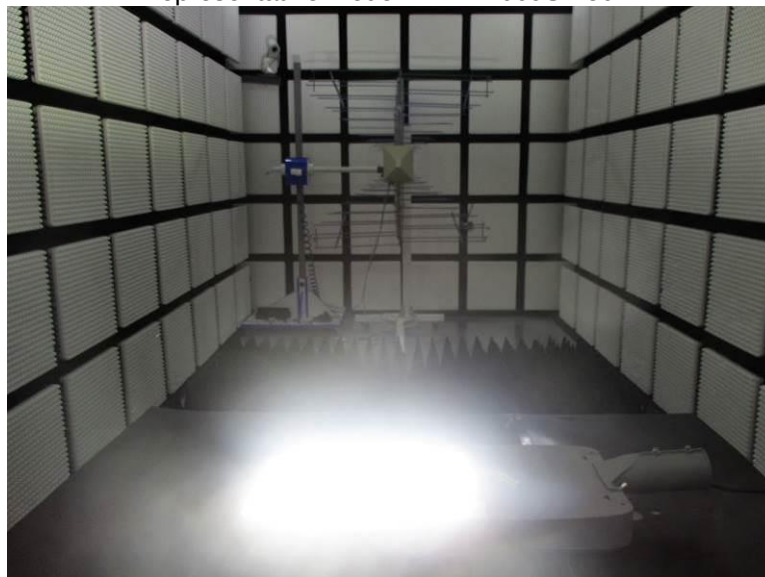
Results for Configuration and Mode: 230VAC, 50Hz/ON.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Tabulated Results for RF Electromagnetic Field 80 - 1000 MHz				
Side of the equipment under test	Antenna polarization	Test Level	Dwell Time	Result/ Performance Criteria
All sides	Horizontal	3 V/m	3 s	Pass/PC (A)
All sides	Vertical	3 V/m	3 s	Pass/PC (A)

Representative model: PL-LD-069S-250W



Test Setup

2.7.8 Test Location

This test was carried out in 3m anechoic chamber.

2.8 Electrical fast transient /burst immunity test

2.8.1 Specification Reference

EN 61547:2009, Clause 5.5

2.8.2 Equipment Under Test

PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

2.8.3 Date of Test

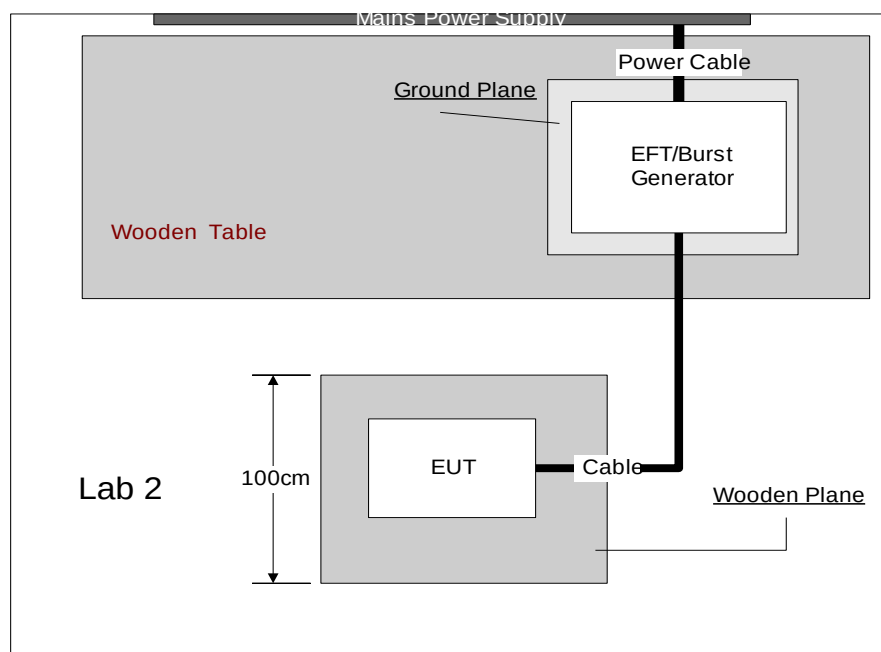
02/02/2019

2.8.4 Test Method

The equipment under test including associated cabling was configured on but insulated from, using a 0.1 m isolator, a horizontal coupling plane fitted to the top of a 0.8 m non-conductive table for table-top equipment; and on a 0.1 m insulated support for floor standing equipment; above a ground reference plane all within a test laboratory.

Using a CDN for power ports, capacitive coupling clamp for signal and control ports and a 33nF coupling capacitor for earth ports, the required fast transient burst voltage levels in both voltage polarities were applied at the detailed pulse repartition rate and duration of test.

During this testing any anomalies in the equipment under tests performance was recorded.



2.8.5 Environmental Conditions

Ambient Temperature	24.2 °C
Relative Humidity	47.3 %
Atmospheric Pressure	1012.0 mbar

2.8.6 Specification Limits

Required Test Levels at input and output a.c. power port					Performance Criteria
Line Under Test	Level (kV)	Repetition Rate (kHz)	Test Duration	Coupling Method	
AC Power Port	± 1	5 kHz	1 min per polarity	Direct	B
Note 1. EUT powered at one of the Nominal input voltages and frequencies					

Required Test Levels at input and output d.c. power ports					Performance Criteria
Line Under Test	Level (kV)	Repetition Rate (kHz)	Test Duration	Coupling Method	
DC Power Port	± 0.5	5 kHz	1 min per polarity	Direct	B
Note Not applicable to equipment not connected to the mains while in use..					

Required Test Levels at ports for signal and control lines					Performance Criteria
Line Under Test	Level (kV)	Repetition Rate (kHz)	Test Duration	Coupling Method	
signal and control Port	± 0.5	5 kHz	1 min per polarity	Direct	B
Note 1. Only applicable to ports interfacing with cables whose total length, according to the manufacturer's specification, may exceed 3m.					
Note 2 Change of state commands are not applied during the test.					

2.8.7 Test Results

Results for Configuration and Mode: 230VAC, 50Hz/ON.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Tabulated Results for Fast Transient Burst Immunity					
Line under test	Test Level (V/m)	Repetition Rate	Test Duration	Coupling Method	Result/ Performance Criteria
Power line	± 1.0 kV	5 kHz	5 min	CDN	Pass/PC (A)

Representative model: PL-LD-069S-250W



Test Setup

2.8.8 Test Location

This test was carried out in EMS Test Location.

2.9 Immunity to conducted disturbances, induced by radio-frequency fields

2.9.1 Specification Reference

EN 61547:2009, Clause 5.6

2.9.2 Equipment Under Test

PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

2.9.3 Date of Test

02/02/2019

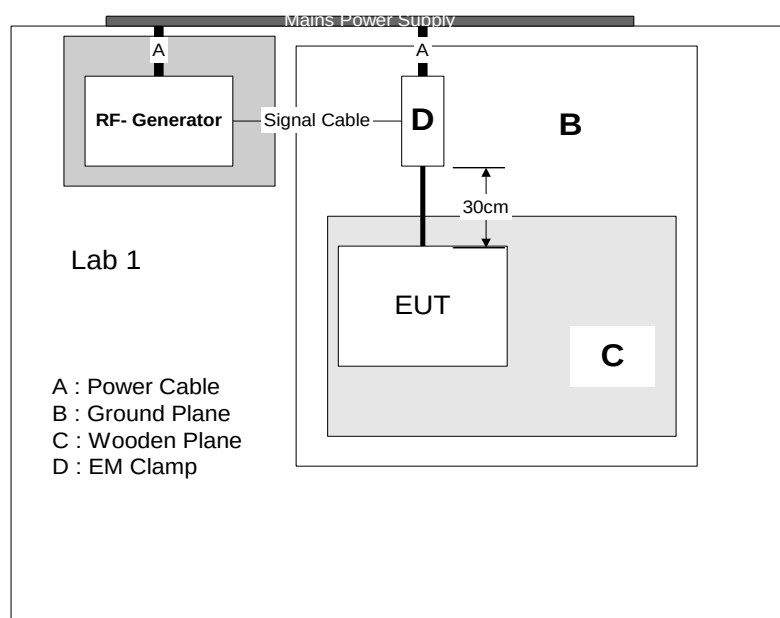
2.9.4 Test Method

The equipment under test was configured, on but insulated from, using a 0.1 m isolator, a horizontal coupling plane fitted to the top of a 0.8 m non-conductive table for table-top equipment; and on a 0.1 m insulated support for floor standing equipment; above a ground reference plane all within a test laboratory.

All associated cabling was configured, on but insulated from, using a 50 mm isolator, the same horizontal coupling plane as the equipment under test.

Using CDNs, EM Clamps or current clamps as appropriate, the power ports and applicable signal and control ports were subjected to the required, pre calibrated RF injected signal strength, modulated as described, swept over the frequency range of test.

During this testing any anomalies in the equipment under tests performance was recorded.



2.9.5 Environmental Conditions

Ambient Temperature	24.1 °C
Relative Humidity	46.7 %
Atmospheric Pressure	1012.0 mbar

2.9.6 Specification Limits

Required Test Levels at ports for signal and control lines						Performance Criteria
Line Under Test	Frequency Range (MHz)	Level (V/m)	Modulation	Step Size (%)	Dwell (s)	
Signal and control lines	0.15 to 80	3	AM (80 %,1 kHz, sine wave)	1	3	A
Note Only applicable to ports interfacing with cables whose total length, according to the manufacturer's specification, may exceed 3m						

Required Test Levels at input and output d.c. power ports						Performance Criteria
Line Under Test	Frequency Range (MHz)	Level (V/m)	Modulation	Step Size (%)	Dwell (s)	
DC power ports	0.15 to 80	3	AM (80 %,1 kHz, sine wave)	1	3	A
Note Only applicable to equipment that is connected to the mains while in use.						

Required Test Levels at input and output a.c. power ports						Performance Criteria
Line Under Test	Frequency Range (MHz)	Level (V/m)	Modulation	Step Size (%)	Dwell (s)	
AC power ports	0.15 to 80	3	AM (80 %,1 kHz, sine wave)	1	3	A
Note Only applicable to ports interfacing with cables whose total length, according to the manufacturer's specification, may exceed 3m						

2.9.7 Test Results

Results for Configuration and Mode: 230VAC, 50Hz/ON.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Tabulated Results for Injected current						
Line under test	Test Level	Step	Dwell Time	Coupling Method	Modulation	Result/ Performance Criteria
Power line	3V	1%	3S	CDN	1KHZ 80%	Pass/PC (A)

Representative model: PL-LD-069S-250W



Test Setup

2.9.8 Test Location

This test was carried out in EMS Test Location.

2.10 Surge immunity test

2.10.1 Specification Reference

EN 61547:2009, Clause 5.7

2.10.2 Equipment Under Test

PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

2.10.3 Date of Test

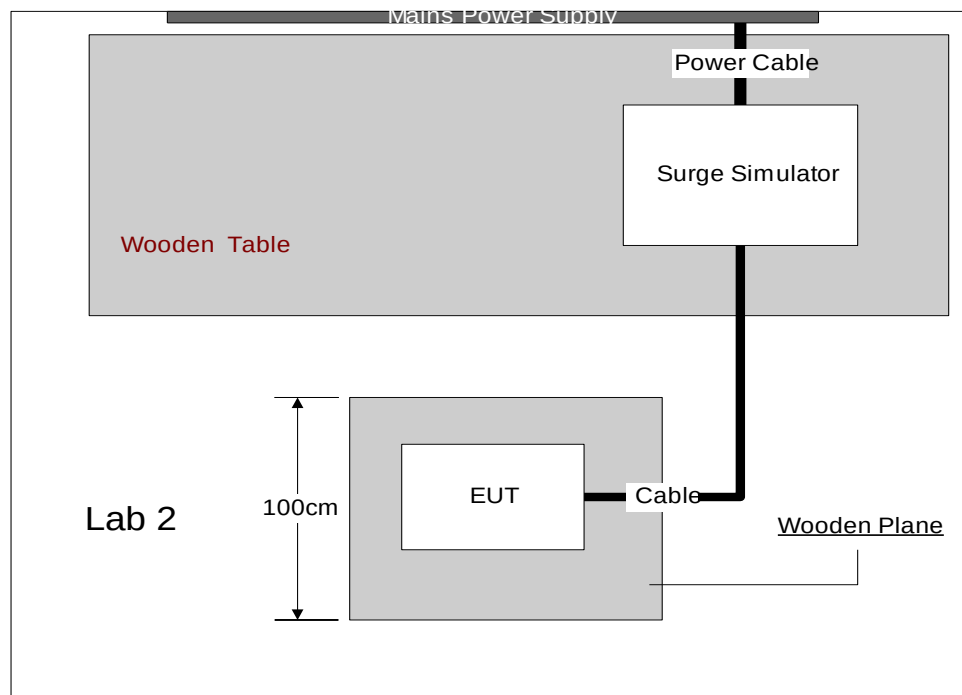
11/14/2018

2.10.4 Test Method

The equipment under test including associated cabling was configured, on a 0.8 m non-conductive table for table-top equipment and on a 0.1 m insulated support for floor standing equipment above a ground reference plane all within a test laboratory.

Using CDNs for power ports and appropriate coupling methods for applicable signal and control ports, the required number of surges was applied for each surge voltage level using both positive and negative surge voltage polarities. Surges were applied at the power line frequency phase angles and repartition rates detailed.

During this testing any anomalies in the equipment under tests performance was recorded.



2.10.5 Environmental Conditions

Ambient Temperature	23.5 °C
Relative Humidity	55.6 %
Atmospheric Pressure	1016.0 mbar

2.10.6 Specification Limits

Characteristics	Test Levels			Performance Criteria
	Device			
	Self-ballasted lamps And semi-luminaires	Luminaires and independent auxiliaries		
		Input power		
		≤25W	>25W	
Wave- shape data Test levels line to line line to ground	1.2/50 μs ± 0.5 kV ±1.0 kV	1.2/50 μs ± 0.5 kV ±1.0 kV	1.2/50 μs ± 1.0 kV ±2.0 kV	B
Note In addition to the specified test level, all lower levels as detailed in IEC 61000-4-5 should also be satisfied.				

2.10.7 Test Results

Results for Configuration and Mode: 230VAC, 50Hz/ON.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Tabulated Results for Surge Immunity (Power Ports)							
Line Name	Coupling	Level	Polarity	Phase Angle	No of Pulses	Repetition Rate	Result/ Performance Criteria
Power line	Live to Neutral	1kV	NEGATIVE	270 deg	5	60 sec	Pass/PC (B)*
Power line	Live to Neutral	1kV	POSITIVE	90 deg	5	60 sec	Pass/PC (B)*
Power line	Live to Earth	2kV	NEGATIVE	270 deg	5	60 sec	Pass/PC (B)*
Power line	Live to Earth	2kV	POSITIVE	90 deg	5	60 sec	Pass/PC (B)*
Power line	Neutral to Earth	2kV	NEGATIVE	270 deg	5	60 sec	Pass/PC (B)*
Power line	Neutral to Earth	2kV	POSITIVE	90 deg	5	60 sec	Pass/PC (B)*
*: During the testing, the light was flashing and restored to normal after the testing.							

Representative model: PL-LD-069S-250W



Test Setup

2.10.8 Test Location

This test was carried out in EMS Test Location.

2.11 Voltage dips, short interruptions and voltage variations immunity test

2.11.1 Specification Reference

EN 61547:2009, Clause 5.8

2.11.2 Equipment Under Test

PL-LD-067-40W, PL-LD-067-60W, PL-LD-067-80W, PL-LD-066-100W, PL-LD-068-150W and PL-LD-069S-250W

2.11.3 Date of Test

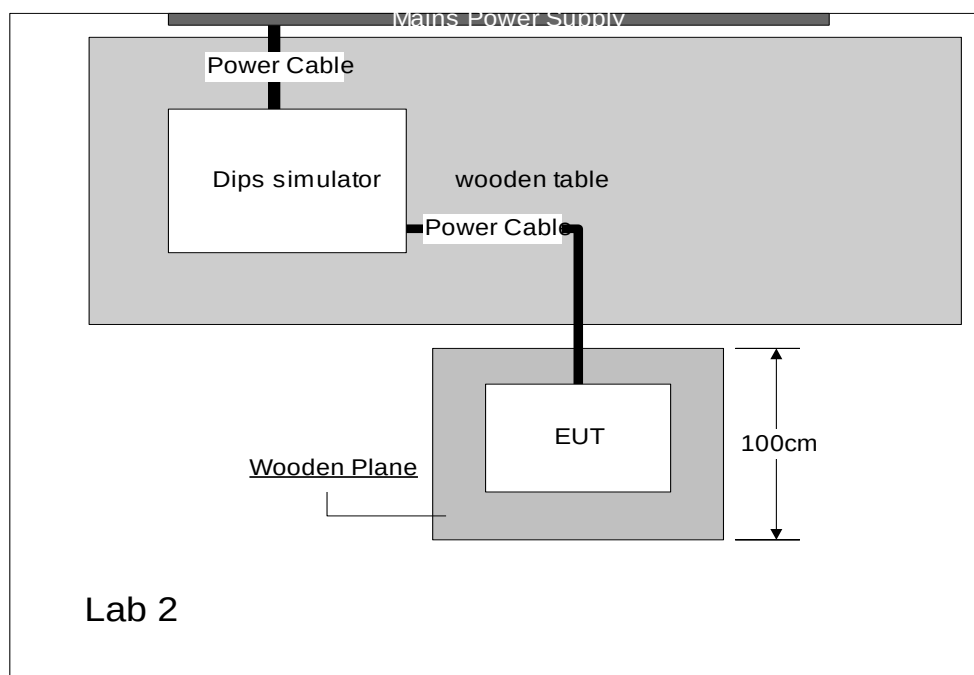
02/02/2019

2.11.4 Test Method

The equipment under test including associated cabling was configured, on a 0.8 m non-conductive table for table-top equipment and on a 0.1 m insulated support for floor standing equipment above a ground reference plane all within a test laboratory.

Using a programmable power supply the equipment under test was subjected to the detailed supply voltage dips and interruptions. The required supply phase synchronization and test repetition rate, detailed, was controlled by the programmable power supply.

During this testing any anomalies in the equipment under tests performance was recorded.



2.11.5 Environmental Conditions

Ambient Temperature	24.1 °C
Relative Humidity	47.3 %
Atmospheric Pressure	1012.0 mbar

2.11.6 Specification Limits

Required Test Levels			Performance Criteria
Test	Test Level	Duration	
Voltage Dip	0 % of Vnom	½ cycle	B
Voltage Dip	70 % of Vnom	10 cycles	C
Note: EUT powered at one of the Nominal input voltages and frequencies			

2.11.7 Test Results

Results for Configuration and Mode: 230VAC, 50Hz/ON.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Tabulated Results for Voltage Dip and Short Interruption					
Line under test	Vnom	Operating Frequency	Test Level	Duration	Result/ Performance Criteria
Power line	230 VAC	50 Hz	0% of Vnom	½ cycle	Pass/PC (B)*
Power line	230 VAC	50 Hz	70% of Vnom	10 cycles (50Hz)	Pass/PC (B)*
*: During the testing, the light was flashing and restored to normal after the testing.					

Representative model: PL-LD-069S-250W



Test Setup

2.11.8 Test Location

This test was carried out in EMS Test Location.

3 Test Equipment Information

3.1 General Test Equipment Used

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Conducted Emission				
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2019-7-6
LISN	Rohde & Schwarz	ENV4200	100249	2019-7-6
LISN	Rohde & Schwarz	ENV432	101318	2019-7-6
LISN	Rohde & Schwarz	ENV216	100326	2019-7-6
ISN	Rohde & Schwarz	ENY81	100177	2019-7-6
ISN	Rohde & Schwarz	ENY81-CA6	101664	2019-7-6
High Voltage Probe	Rohde & Schwarz	TK9420(VT9420)	9420-584	2019-6-30
RF Current Probe	Rohde & Schwarz	EZ-17	100816	2019-6-30
Attenuator	Shanghai Huaxiang	TS2-26-3	080928189	2019-7-6
Radiated Disturbance (9KHz to 30MHz)				
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2019-7-6
Triple Loop Antenna	Rohde & Schwarz	HM020	100951	2019-7-6
Radiated Emission				
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2019-7-6
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2019-6-28
Horn Antenna	Rohde & Schwarz	HF907	102294	2019-6-28
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2019-7-6
Signal Generator	Rohde & Schwarz	SMY01	839369/005	2019-7-6
Attenuator	Agilent	8491A	MY39264334	2019-7-6
3m Semi-anechoic chamber	TDK	9X6X6	----	2020-7-7
Harmonic and Flicker				
Three Phase Harmonic flicker test system	CI	MX45-3PI-400-413-CTSHL-LF-SNK	1424A00547	2019-7-6
Electrostatic Discharge Test				
Electrostatic Discharge Simulator	Noiseken	ESS-2002	ESS0615075	2019-7-3
Electrical Fast Transient				
Immunity simulator	EMTEST	UCS 500N7	P1313116005	2019-7-6
7kV Coupling network 3-phase	EMTEST	CNI 503B5	P1425134991	2019-7-6
Capacitive Coupling Clamp	EMTEST	HFK	P1426135389	2019-7-6
Immunity simulator	EMTEST	EFT 500	1094-37	2019-7-6

Conducted Immunity Test				
Continuous Wave Simulator	EMTEST	CWS 500N1	P1420134224	2019-7-6
Attenuator	EMTEST	ATT6/80	P1402129090	2019-7-6
CDN	EMTEST	CDN-M2/M3	P1420134163	2019-7-6
CDN	EMTEST	CDN-M4	P1346125919	2019-7-6
Electromagnetic Injection Clamp	EMTEST	EM101	P1411132453	2019-7-6
Radiated Immunity Test				
Signal Generator	Rohde & Schwarz	SMB100A	177600	2019-7-6
Power Amplifier	Rohde & Schwarz	BBA100	101238	2019-7-6
Power Amplifier	Rohde & Schwarz	BBA150	101671	2019-7-6
Power Amplifier	Rohde & Schwarz	BBA150-E100	102640	2019-7-6
Log-Periodic Antenna	Rohde & Schwarz	HL046E	100160	2019-7-6
Microwave Log-Periodic Antenna	Rohde & Schwarz	STLP 9149	9149-453	2019-7-6
Power Meter	Rohde & Schwarz	NRP2	103497	2019-6-20
Average Power Sensor	Rohde & Schwarz	NRP-Z91	102538	2019-6-20
Average Power Sensor	Rohde & Schwarz	NRP-Z91	102539	2019-6-20
Starprobe Laser-Powered Probe	AMPLIFIER RESEARCH	FL7006/KIT	0433720	2019-7-6
Fully Anechoic Chamber	TDK	8X4X4	--	2020-7-7
Surge				
Immunity simulator	EMTEST	UCS 500N7	P1313116005	2019-7-6
7kV Coupling network 3-phase	EMTEST	CNI 503B5	P1425134991	2019-7-6
Telecom Surge Module	EMTEST	Tsurge 7	P1420134206	2019-7-6
4kV coupling/decoupling network	EMTEST	CNV 504 N1	P1420134192	2019-7-6
4kV CDN for 8 telecom lines	EMTEST	CNV 508 S1	P1431137565	2019-7-6
Immunity simulator	EMTEST	VCS 500	1194-15	2019-7-6
Voltage dips, short interruptions and voltage variations immunity tests				
Immunity simulator	EMTEST	UCS 500N7	P1313116005	2019-7-6
Motorized Variac	EMTEST	MV2616	P1401128623	2019-7-6
Switch-Box for phase by phase	EMTEST	PFLS 32N1	P1251107106	N/A
Immunity simulator	EMTEST	PFS 500	1194-04	2019-7-6

4 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.91dB; Vertical: 4.89dB
Uncertainty for Conducted Emission 9kHz-150kHz	3.62dB
Uncertainty for Conducted Emission 150kHz-30MHz	3.21dB
Uncertainty for Radiated Electromagnetic Disturbance 9kHz-30MHz	3.21dB
Uncertainty for RS test	21%, K=2
Uncertainty for CS test	29%, K=2
Uncertainty for ESD test	The immunity measurement system uncertainty is within standard requirement and is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.
Uncertainty for EFT test	
Uncertainty for Surges test	
Uncertainty for Voltage Dips, Voltage Variations and Short Interruptions Test	

5 Photographs

Details of: Outlook view

Representative model: PL-LD-067-40W



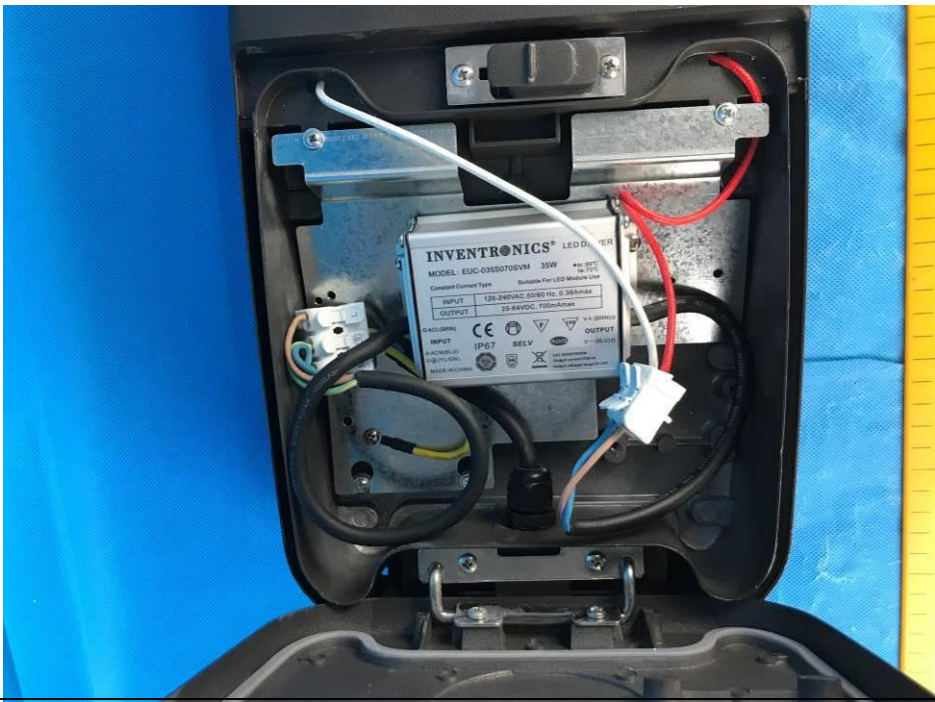
Details of: Rear view

Representative model: PL-LD-067-40W



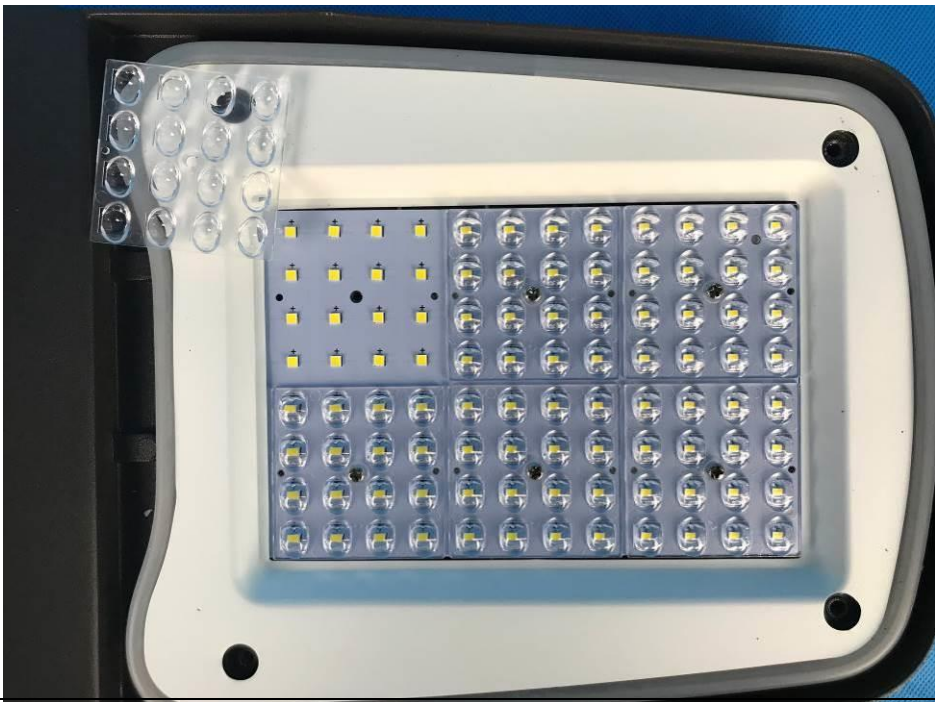
Details of: Internal view

Representative model: PL-LD-067-40W



Details of: LED view

Representative model: PL-LD-067-40W



Details of: Outlook view

Representative model: PL-LD-067-60W



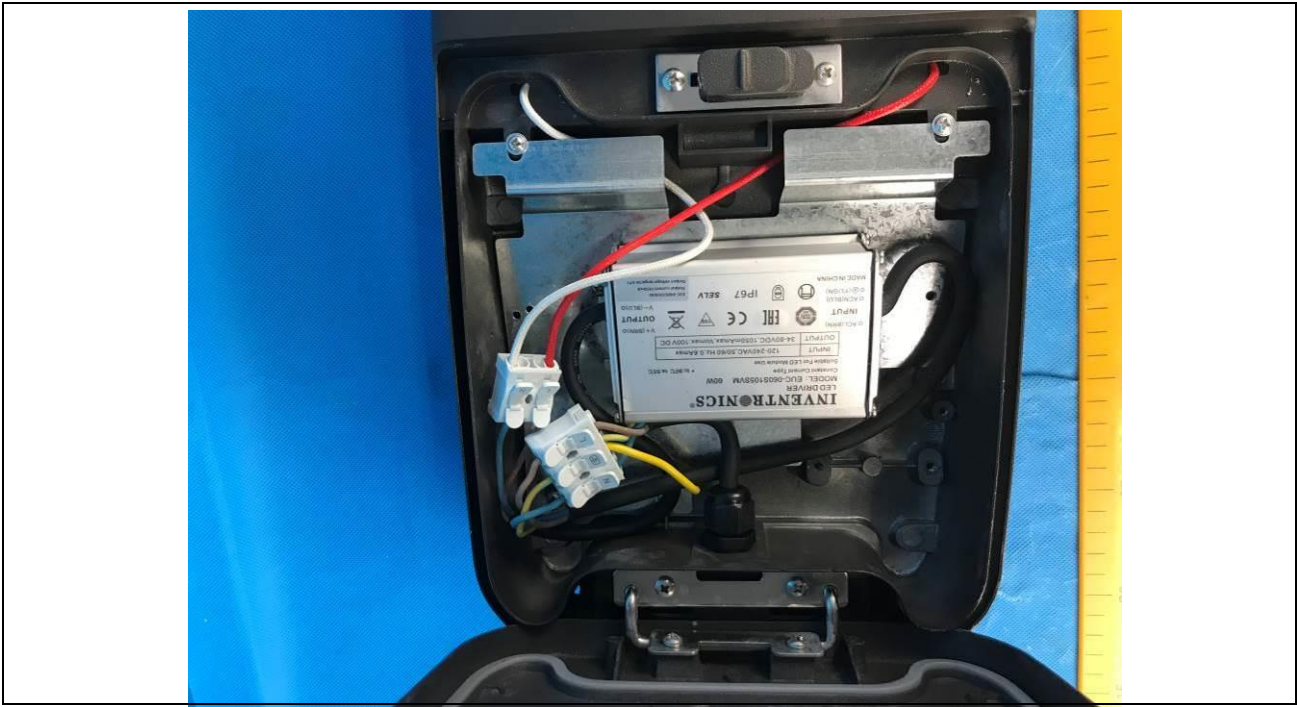
Details of: Rear view

Representative model: PL-LD-067-60W



Details of: Internal view

Representative model: PL-LD-067-60W



Details of: LED view

Representative model: PL-LD-067-60W



Details of: Outlook view

Representative model: PL-LD-067-80W



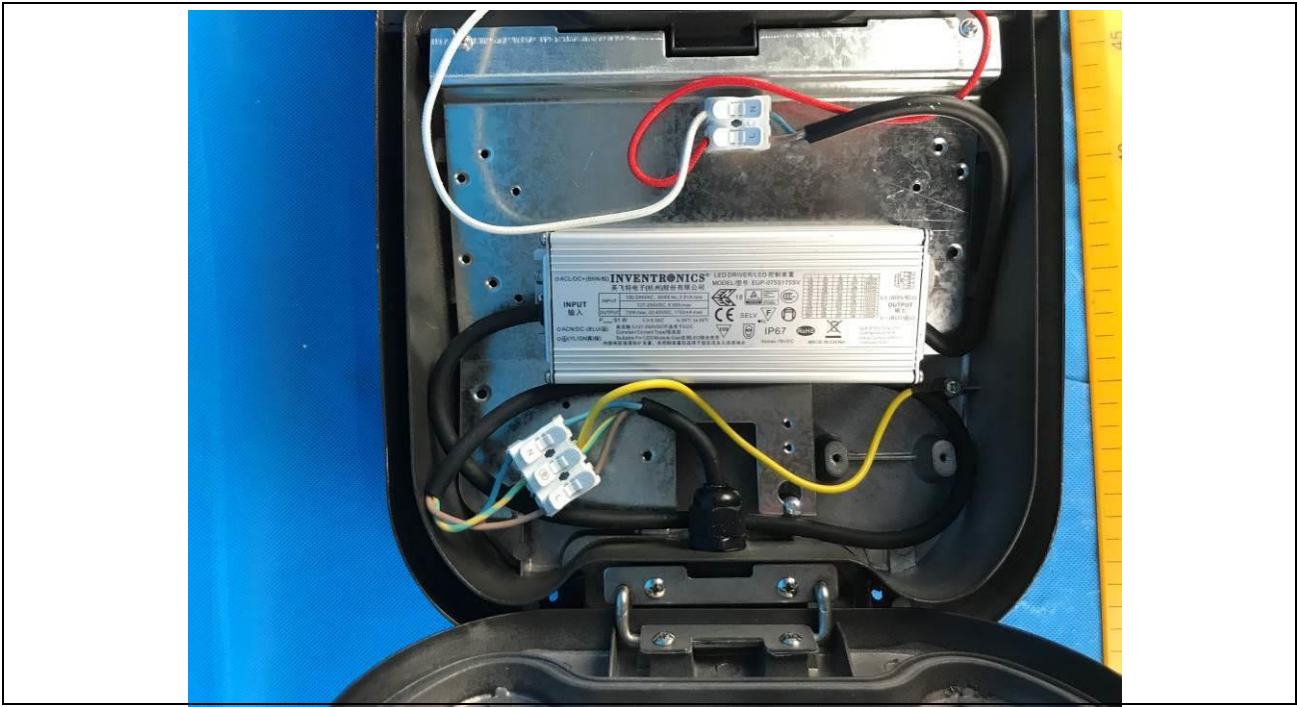
Details of: Rear view

Representative model: PL-LD-067-80W



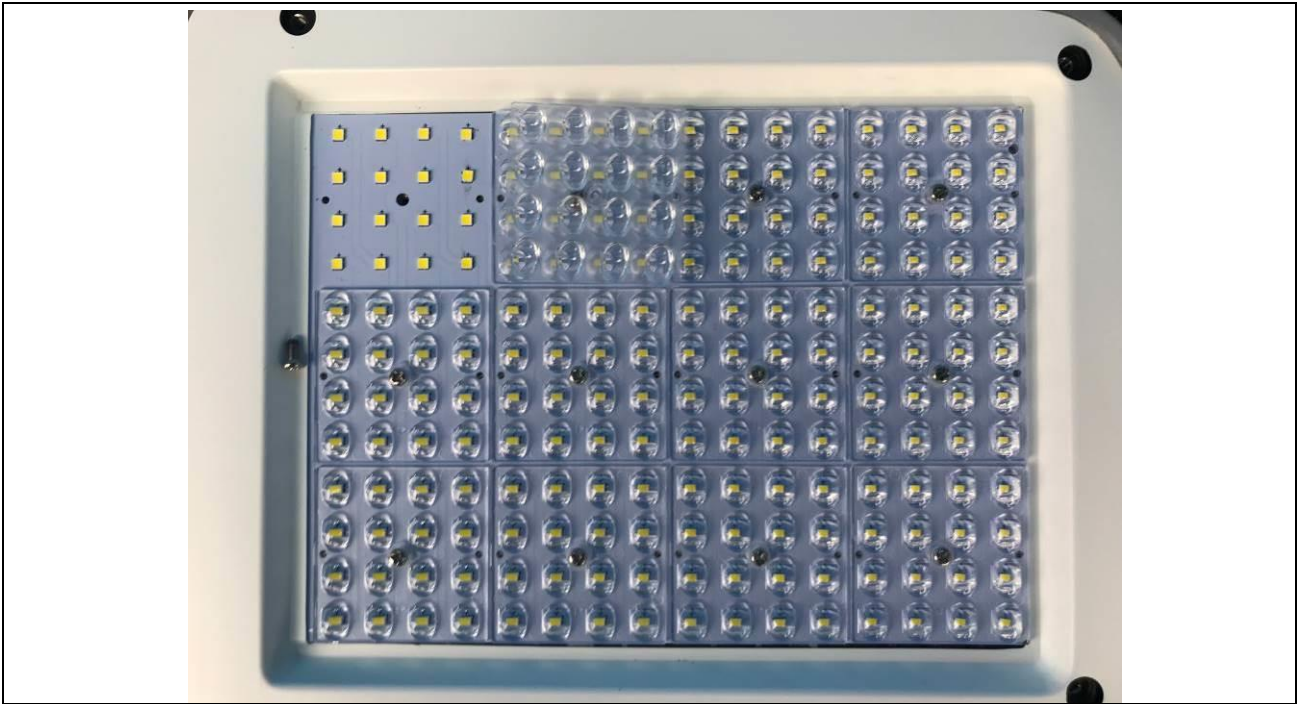
Details of: Internal view

Representative model: PL-LD-067-80W



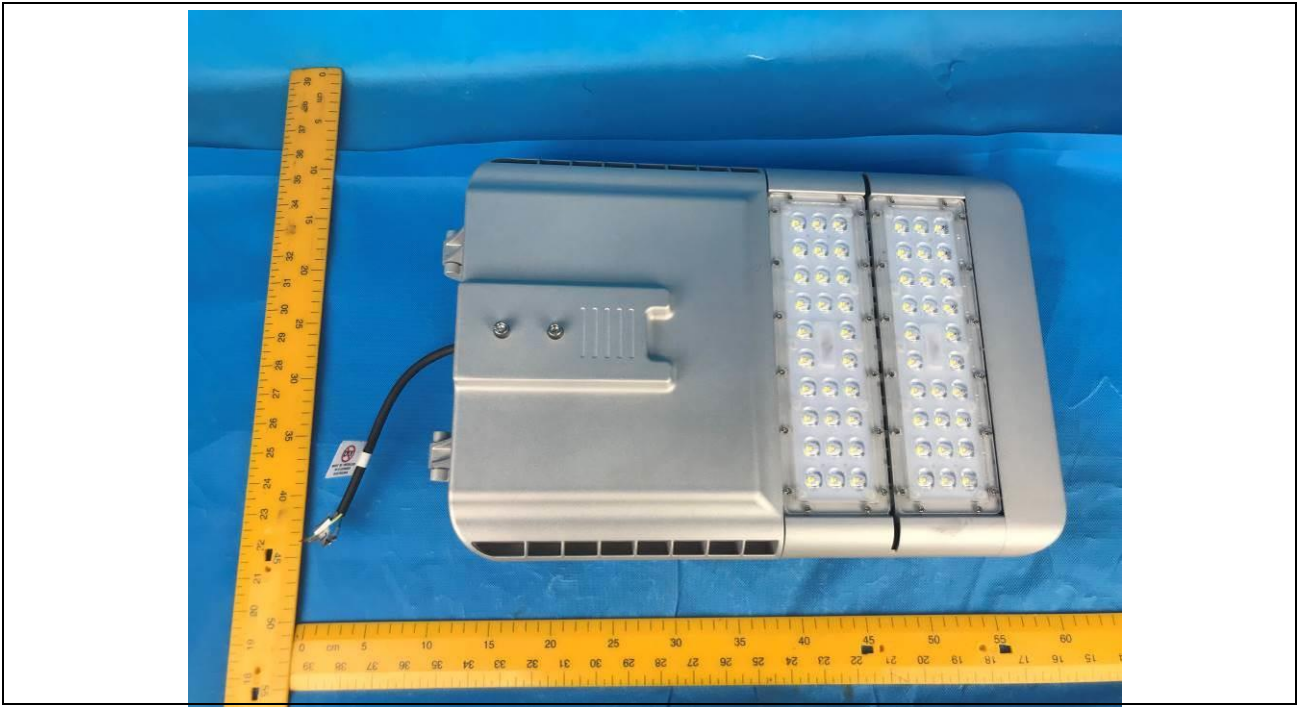
Details of: LED view

Representative model: PL-LD-067-80W



Details of: Outlook view

Representative model: PL-LD-066-100W



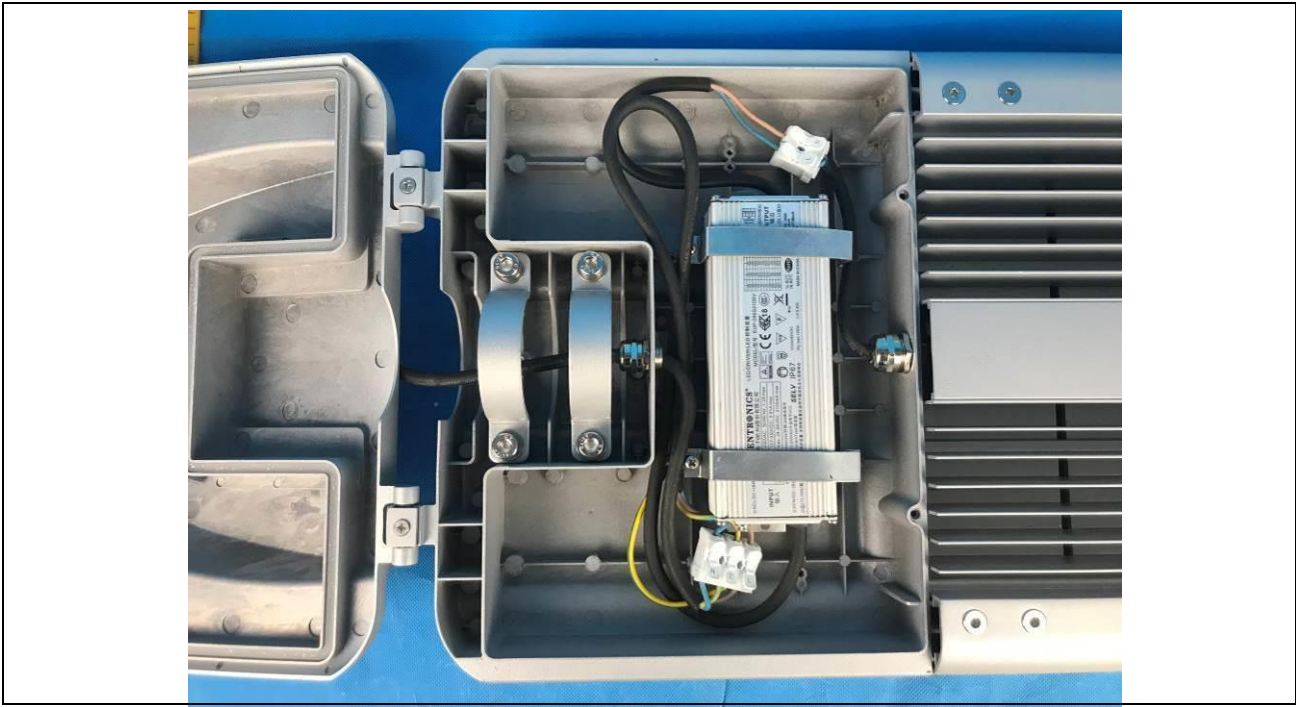
Details of: Rear view

Representative model: PL-LD-066-100W



Details of: Internal view

Representative model: PL-LD-066-100W



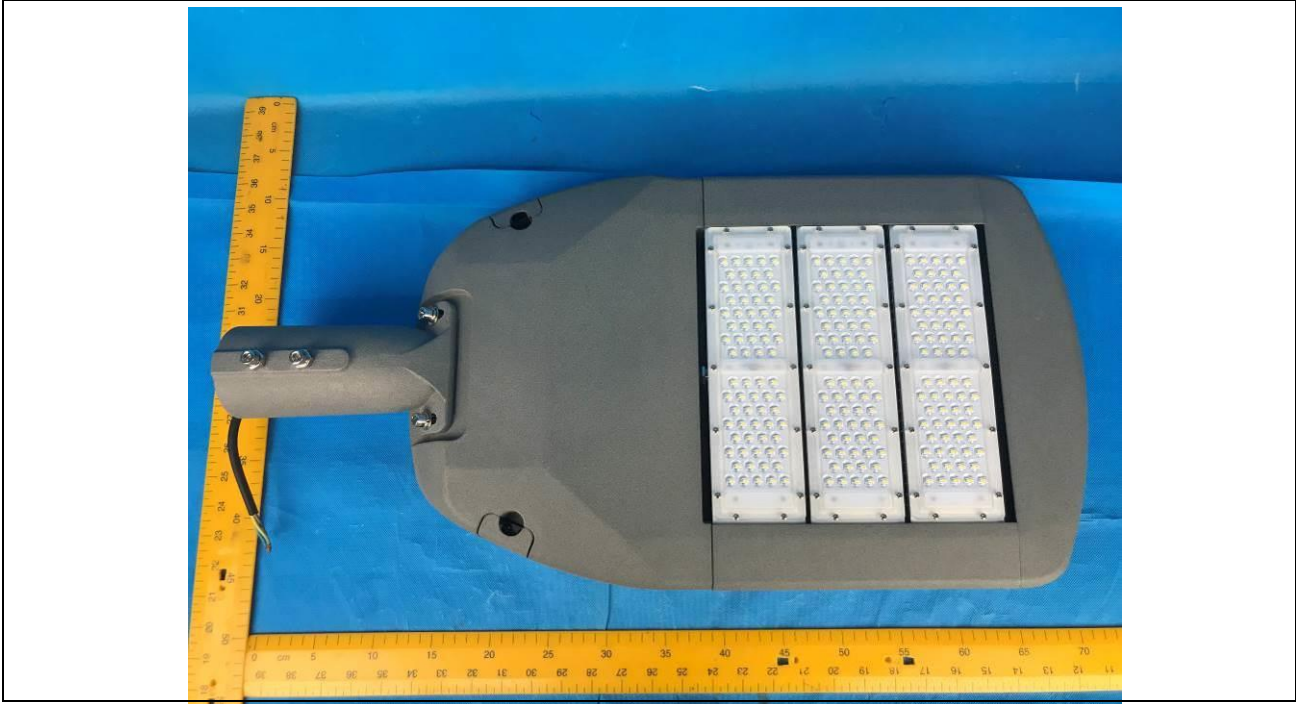
Details of: LED view

Representative model: PL-LD-066-100W



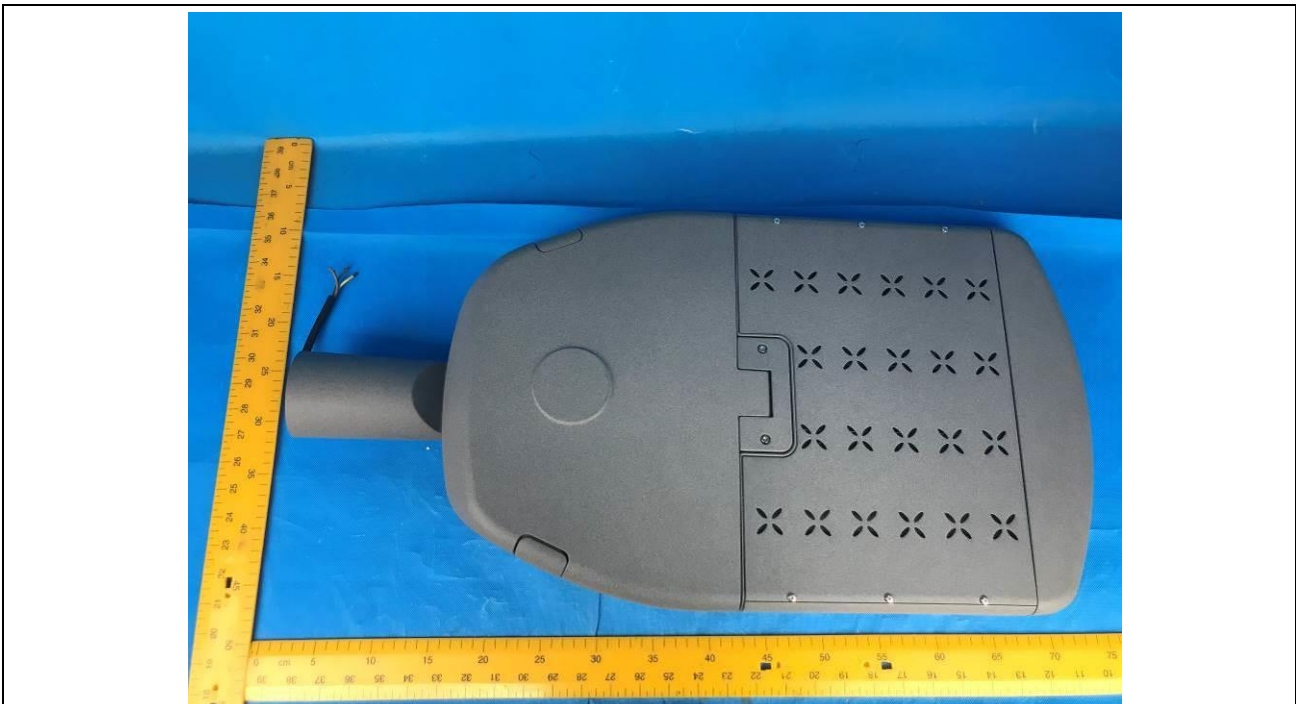
Details of: Outlook view

Representative model: PL-LD-068-150W



Details of: Rear view

Representative model: PL-LD-068-150W



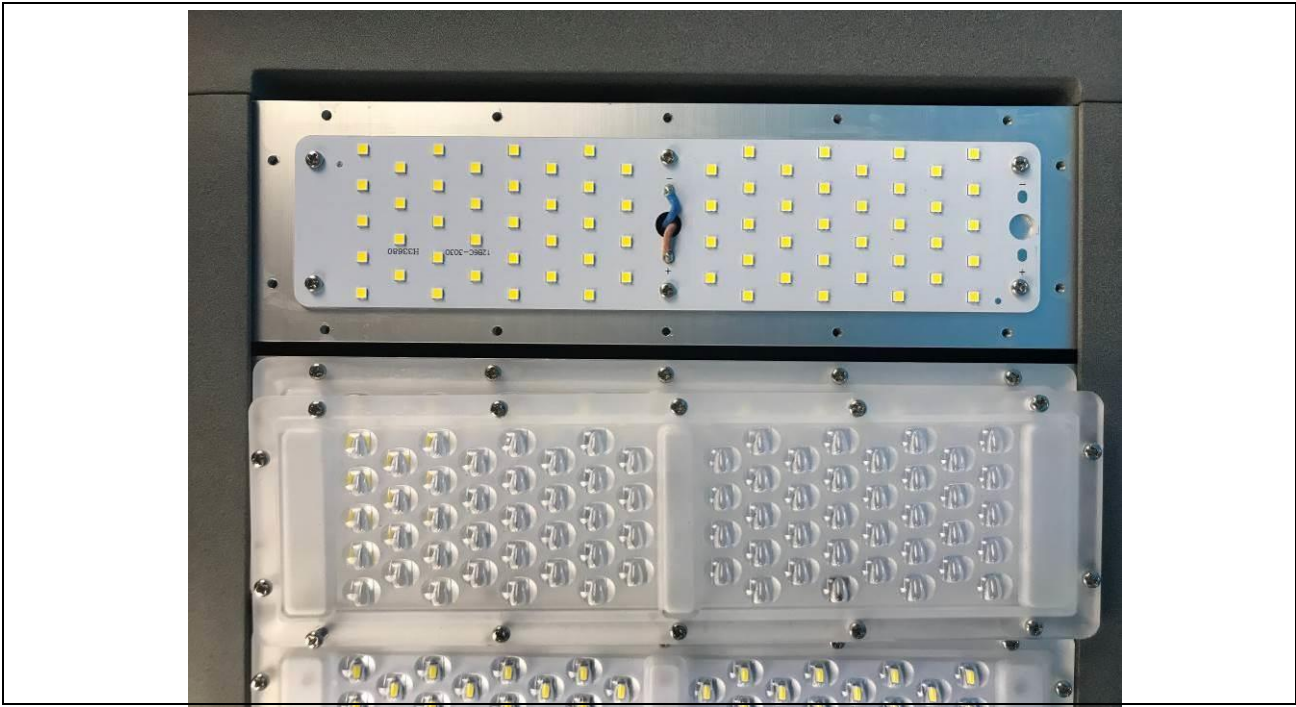
Details of: Internal view

Representative model: PL-LD-068-150W



Details of: LED view

Representative model: PL-LD-068-150W



Details of: Outlook view

Representative model: PL-LD-069S-250W



Details of: Rear view

Representative model: PL-LD-069S-250W



Details of: Internal view

Representative model: PL-LD-069S-250W

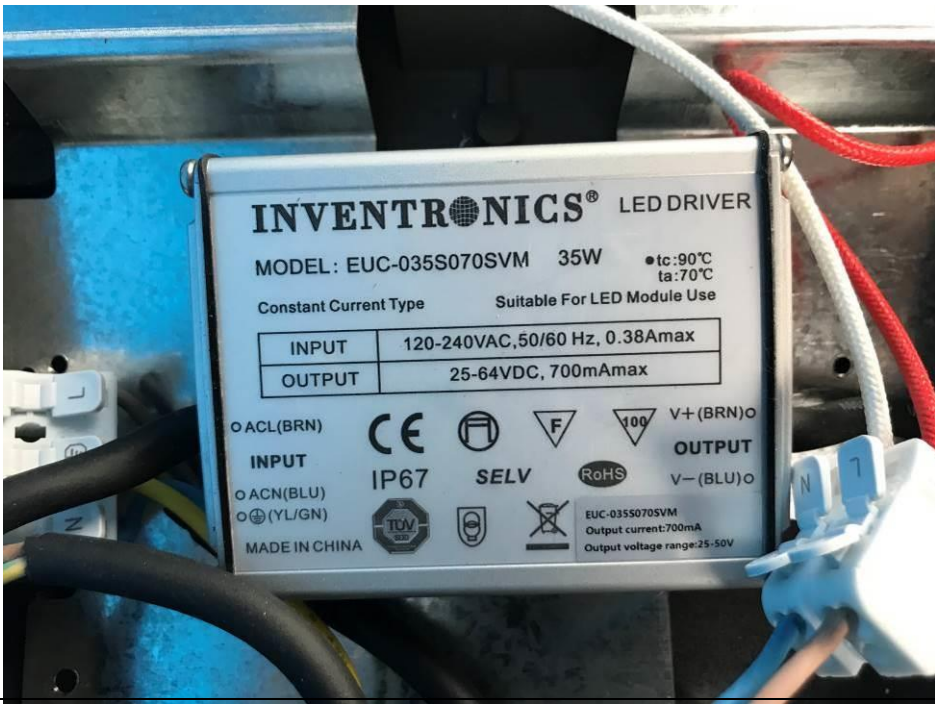


Details of: LED view

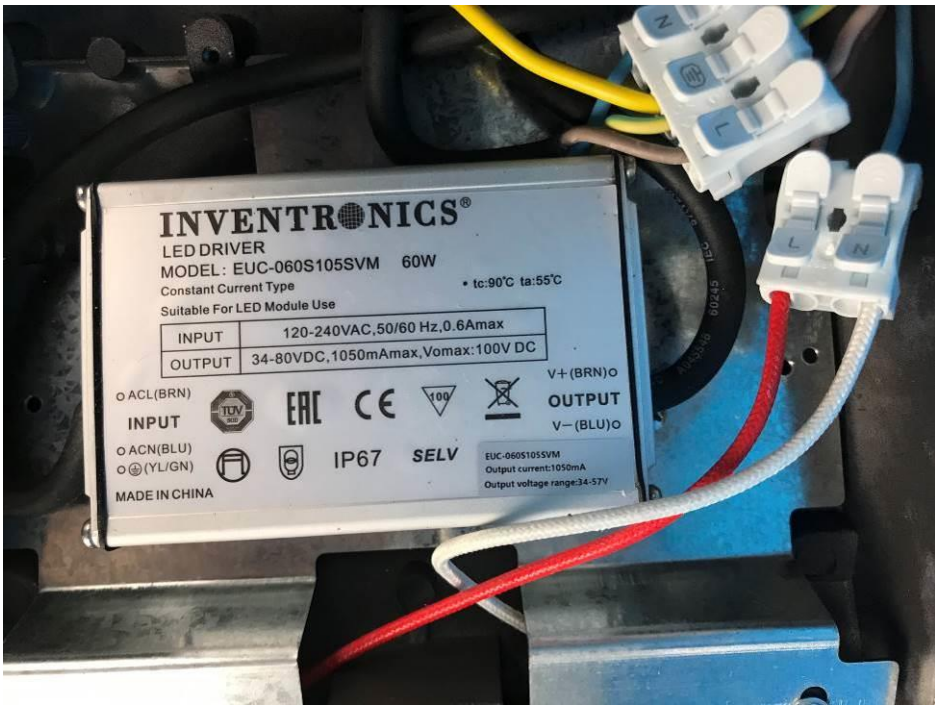
Representative model: PL-LD-069S-250W



Details of: LED Driver view for PL-LD-067-40W
Representative model: EUC-035S070SVM



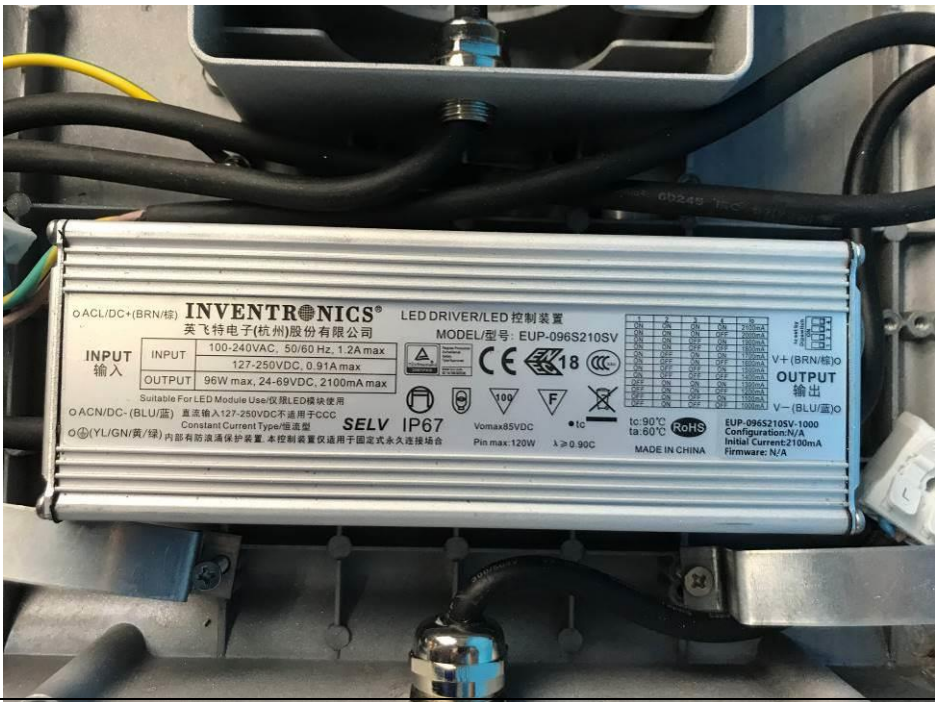
Details of: LED Driver view for PL-LD-067-60W
Representative model: EUC-060S105SVM



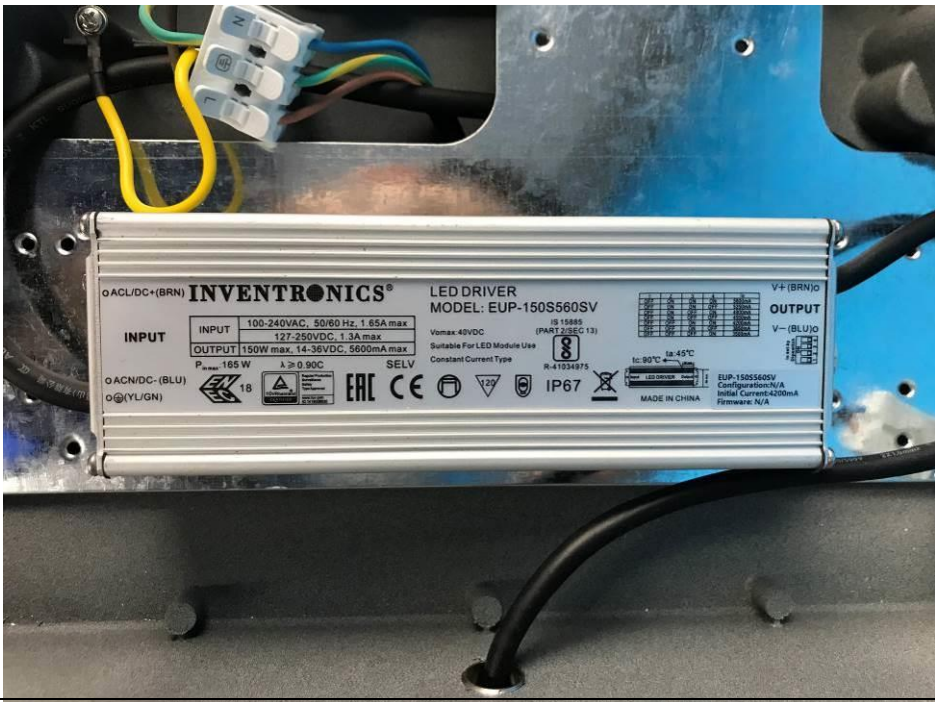
Details of: LED Driver view for PL-LD-067-80W
Representative model: EUP-075S175SV



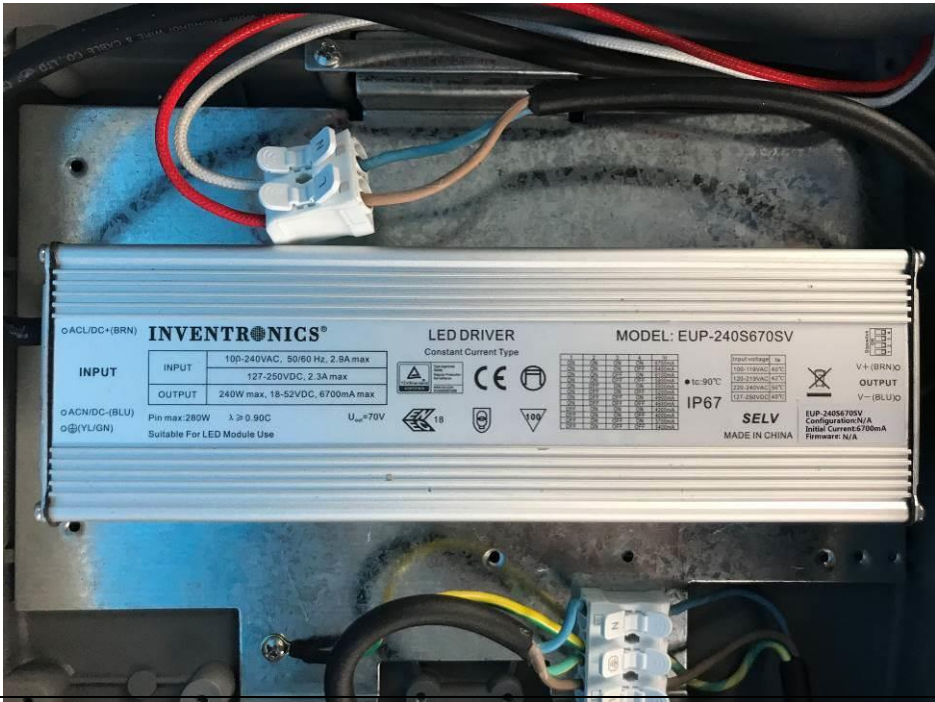
Details of: LED Driver view for PL-LD-066-100W
Representative model: EUP-096S210SV



Details of: LED Driver view for PL-LD-068-150W
Representative model: EUP-150S560SV



Details of: LED Driver view for PL-LD-069S-250W
Representative model: EUP-240S670SV



End of Report