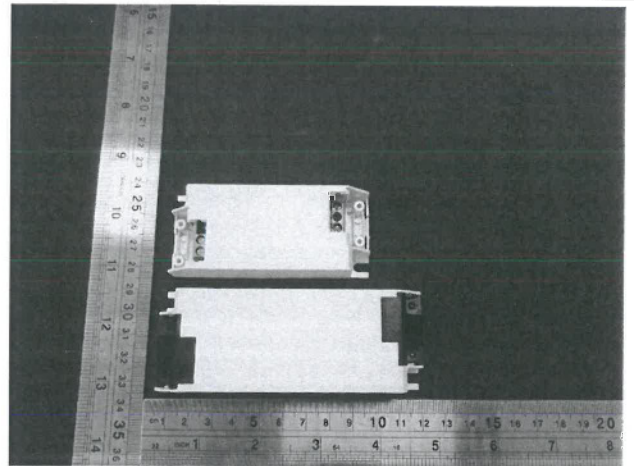


Prüfbericht-Nr.: Test Report No.:	50107458 001	Auftrags-Nr.: Order No.:	164106799	Seite 1 von 28 Page 1 of 28
Kunden-Referenz-Nr.: Client Reference No.:	634348	Auftragsdatum: Order date.:	26 Sep. 2017	
Auftraggeber: Client:	Berdis Lighting Co.,LTD. Floor 6, NO 1., Huatai East Road, Caosan Industrial Park Guzhen Town Zhongshan City, Guangdong Province 528421 P.R. China			
Prüfgegenstand: Test item:	LED POWER SUPPLY			
Bezeichnung / Typ-Nr.: Identification / Type No.:	A03-0024 D01, A03-0024 D02, A03-0024 D07, A03-0018 D03, A03-0018 D05, A03-0012 D09, A03-0012 D11, A03-0012 D14, A03-0012 D13, A03-0007 D07, A03-0007 D09			
Auftrags-Inhalt: Order content:	TUV Rheinland - EMC service			
Prüfgrundlage: Test specification:	EN 55015:2013 EN 61000-3-2:2014 EN 61000-3-3:2013 EN 61547:2009			
Wareneingangsdatum: Date of receipt:	26 September 2017			
Prüfmuster-Nr.: Test sample No.:	B170908002			
Prüfzeitraum: Testing period:	Refer to test report			
Ort der Prüfung: Place of testing:	Refer to section 2.1			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
27.12.2017	Neo Dong Senior Engineer	27.12.2017	Tongle Lee Technical Certifier	
Datum Date	Name/Stellung Name/Position	Unterschrift Signature	Datum Date	Name/Stellung Name/Position
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet				
Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specifications(s) F(ail) = failed a.m. test specifications(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				



TEST SUMMARY

5.1.1 HARMONICS ON AC MAINS

RESULT: Pass

5.1.2 VOLTAGE FLUCTUATIONS ON AC MAINS

RESULT: Pass

5.1.3 DISTURBANCE VOLTAGE ON AC MAINS

RESULT: Pass

5.1.4 RADIATED ELECTROMAGNETIC DISTURBANCES (9 KHz – 30MHz)

RESULT: Pass

5.2.1 RADIATED ELECTROMAGNETIC DISTURBANCES (30-300MHz)

RESULT: Pass

6.2.1 RADIO FREQUENCY ELECTROMAGNETIC FIELDS SUSCEPTIBILITY (RS)

RESULT: Pass

6.2.2 INJECTED CURRENTS / CONDUCTED SUSCEPTIBILITY (CS)

RESULT: Pass

6.3.1 ELECTRICAL FAST TRANSIENTS (EFT)

RESULT: Pass

6.3.2 SURGE

RESULT: Pass

6.3.3 ELECTROSTATIC DISCHARGES (ESD)

RESULT: Pass

6.4.1 VOLTAGE DIPS AND INTERRUPTIONS

RESULT: Pass

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1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test Result

Appendix 2: Measurement Uncertainties

2. Test Sites

2.1 Test Facilities

Shenzhen Southern LCS compliance testing Laboratory Ltd.
1-2F, B Area, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou,
Gongming Street, Guangming New District, Shenzhen, Guangdong, China
and
Shenzhen LCS compliance testing Laboratory Ltd.
1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen,
Guangdong, China.

The tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Disturbance Voltage (Southern LCS)				
EMI Test Receiver	ROHDE & SCHWARZ	ESPI7	101940	2018-07-21
10dB Attenuator	SCHWARZBECK	VTSD9561-F	9561-F059	2018-07-21
Artificial Mains	SCHWARZBECK	NSLK8127	8127716	2018-07-21
EMI Test Software	EZ	EZ EMC	N/A	2018-06-17
Radiated Electromagnetic Disturbances (Southern LCS)				
EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101142	2018-07-21
Triple-loop Antenna	EVERFINE	LLA-2	11050003	2018-07-21
EMI Test Software	EZ	EZ EMC	N/A	2018-06-17
Radiated Electromagnetic Disturbances 30-300MHz (Southern LCS)				
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2018-03-28
EMI Test Receiver	ROHDE & SCHWARZ	ESPI7	101940	2018-07-21
Log per Antenna	SCHWARZBECK	VULB9163	5094	2018-05-01
EMI Test Software	AUDIX	E3	N/A	2018-06-17
Positioning Controller	MF	BK8807-4A-2T	2016-0808-008	2018-06-17
Harmonics (Southern LCS)				
Power Analyzer Test System	Laplace	AC2000A	/	2018-07-21
ESD (Southern LCS)				
ESD Simulator	KIKUSUI	KC001311	KES4021	2018-07-21
Radio-Frequency Radiated Electromagnetic Disturbances (LCS)				
Power Meter	R&S	NRVD	102051	2018-03-29
Singl Generator	R&S	SMB100A	1406600K02-104532-DF	2018-03-29
Biconilog Antenna	ETS.LINDGREN	3142C	00060445	2018-11-14
Power Amplifier	Bonn ELelektronik	BLWA0840-50/30D	066454B	2018-03-29
Power Amplifier	Bonn ELelektronik	BLWA0810-250/100D	066454A	2018-03-29
RI Test Software	R&S	EMC32	V8.40.0	N/A
EFT (Southern LCS)				
Electrical fast transient(EFT)gener ator	HTEC	HEFT51	162201	2018-07-21

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Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Coupling Clamp	HTEC	H3C	163701	2018-02-28
Surge (Southern LCS)				
Surge test system	3CTEST	SG5006G	EC5581070	2018-07-21
Coupling/decoupling network	3CTEST	SGN-5010G	EC5591033	2018-07-21
Radio-Frequency Continuous Conducted (Southern LCS)				
Conducted Susceptibility Generator	HTEC	CDG6000	126A140012016	2018-07-21
CDN	HTEC	CDN-M2+3	A22/0382/2016	2018-07-21
Attenuator	HTEC	ATT6	HA1601	2018-07-21
Voltage Dips and Interruptions (Southern LCS)				
Voltage dips and up generator	HTEC	HPFS161P	162202	2018-07-21

3. General Product Information

3.1 Product Function and Intended Use

The EUTs are LED POWER SUPPLY for illumination purpose.

All models have the same circuit diagram and PCB layout except the input rating, output rating, transformer, MOS and some components, see below table for details.

Model list:

Model No.	Input	Output	Max. output voltage	MOS	Transformer
A03-0024 D01	200-240V~, 50/60Hz, 160mA	55-85VDC, 280mA, 24W	98V	CS07N65	EFD25
A03-0024 D02	200-240V~, 50/60Hz, 160mA	30-42VDC, 580mA, 24W	48V	CS07N65	EFD25
A03-0024 D07	200-240V~, 50/60Hz, 160mA	30-50VDC, 450mA, 24W	60V	CS07N65	EFD25
A03-0018 D03	200-240V~, 50/60Hz, 130mA	30-65VDC, 280mA, 18W	80V	CS07N65	EFD25
A03-0018 D05	200-240V~, 50/60Hz, 85mA	28-48VDC, 450mA, 18W	60V	CS07N65	EFD25
A03-0012 D09	200-240V~, 50/60Hz, 85mA	22-42VDC, 280mA, 12W	48V	CS04N65	EE19
A03-0012 D11	200-240V~, 50/60Hz, 85mA	45-78VDC, 135mA, 12W	94V	CS04N65	EE19
A03-0012 D14	200-240V~, 50/60Hz, 50mA	28-45VDC, 200mA, 10W	59V	CS04N65	EE19
A03-0012 D13	200-240V~, 50/60Hz, 50mA	13-25VDC, 350mA, 9W	33V	CS04N65	EE19
A03-0007 D07	200-240V~, 50/60Hz, 50mA	13-25VDC, 280mA, 7W	33V	CS04N65	EE19
A03-0007 D09	200-240V~, 50/60Hz, 50mA	22-42VDC, 135mA, 5W	48V	CS04N65	EE19

For more information refer to the circuit diagram & instruction manual.

3.2 Ratings and System Details

System input voltage:	Refer to section 3.1
Frequency:	Refer to section 3.1
Rated input current:	Refer to section 3.1
Protection class:	II

3.3 Independent Operation Modes

The basic operation modes are:

- A. On
- B. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Circuit Diagram
- PCB Layout
- Bill of Material
- Rating Label
- Instruction Manual

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

Immunity: The equipment under test (EUT) was configured to have its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5 and 6.

Pre-test was carried out at all operation modes & different voltages to find out the worst case for compliance test.

According to section 3.1, all tests were applied to models A03-0012 D09 and A03-0024 D02.

4.3 Special Accessories and Auxiliary Equipment

LED lamp load was employed as maximum load for testing.

4.4 Countermeasures to achieve EMC Compliance

The test samples which have been tested, contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

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5. Test Results EMISSION

5.1 Emission in the Frequency Range up to 30 MHz

5.1.1 Harmonics on AC Mains

RESULT:**Pass**

Test procedure : EN 61000-3-2:2014
Class : C

Since the active input power of the EUTs are < 25W and there is no applicable limit described in EN61000-3-2:2014 for class C equipment below 25W other than discharge lighting equipment, this test is not applicable.

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5.1.2 Voltage Fluctuations on AC Mains

RESULT:**Pass**

Test procedure	:	EN 61000-3-3:2013
Limit	:	Clause 5
Frequency range	:	0 - 2kHz

The max. rated power of the EUTs is 24W only, which unlikely to produce significant voltage fluctuation. Therefore no test was applied.

See clause 6.1***

*** EN 61000-3-3:2013, clause 6.1:" ... Tests need not be made on equipment which is unlikely to produce significant voltage fluctuations or flicker...."

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5.1.3 Disturbance Voltage on AC Mains

RESULT:**Pass**

Date of testing	:	2017-10-09
Test standard	:	EN 55015:2013
Frequency range	:	0.009 - 30MHz
Limits	:	Table 2a
Kind of test site	:	Shielded room

Test setup

Input Voltage	:	AC 200-240V 50/60Hz
Operation Condition	:	According to Clause 6, 8.1.1 & 8.4.2
Operation mode	:	A
Artificial Hand	:	Not applied
Earthing	:	Not connected

Refer to attached Appendix 1.

5.1.4 Radiated Electromagnetic Disturbances (9 kHz – 30MHz)**RESULT:****Pass**

Date of testing : 2017-10-10
Test standard : EN 55015:2013
Frequency range : 0.009 – 30MHz
Limits : Table 3a
Kind of test site : Shielded room

Test setup

Input Voltage : AC 200-240V 50/60Hz
Operation Condition : According to Clause 6, 9.1 & 9.4
Operation mode : A
Earthing : Not connected

Refer to attached Appendix 1.

5.2 Emission in the Frequency Range above 30 MHz

5.2.1 Radiated Electromagnetic Disturbances (30-300MHz)

RESULT:**Pass**

Date of testing	:	2017-10-09
Test standard	:	EN 55015:2013
Basic standard	:	CISPR 32:2012
Frequency range	:	30 – 300MHz
Limits	:	Table 3b
Kind of test site	:	Shielded room

Test setup:

Input Voltage	:	AC 200-240V 50/60Hz
Operation Condition	:	According to clause 6 & 9.2
Operation mode	:	A
Earthing	:	Not connected

Refer to attached Appendix 1.

6. Test Results IMMUNITY

6.1 Classification of apparatus

According to EN 61547:2009, the EUTs belong to independent auxiliaries, and shall be tested in accordance with clause 5 and comply with the performance criterion of table 14.

Continuous Disturbance

Radio-Frequency Electromagnetic Fields (RS)	Criterion A
Injected Currents / Conducted Susceptibility (CS)	Criterion A
Power Frequency Magnetic Fields *	Criterion A

Transient Disturbance

Fast Transient (EFT)	Criterion B
Surge	Criterion C
Electrostatic Discharges (ESD)	Criterion B

Power supply Alterations

Voltage Dips and Interruptions 30% Voltage Reduction, 10 Periods	Criterion C
100% Voltage Reduction, 0.5 Periods	Criterion B

“*”: The EUTs do not contain devices susceptible to magnetic fields; therefore the Power-Frequency Magnetic Fields test is not necessary.

6.2 Continuous Disturbances

6.2.1 Radio Frequency Electromagnetic Fields Susceptibility (RS)

RESULT:**Pass**

Date of Testing	:	2017-10-11
Test Specification	:	EN 61547:2009, Table 2
Basic Standard	:	IEC 61000-4-3:2006+A1
Criterion	:	A
Frequency Range	:	80 – 1,000MHz
Test Level	:	3V/m (Unmodulated, rms)
Modulation	:	80% AM, 1kHz
Test Port	:	Enclosure

Test setup

Input Voltage	:	AC 200-240V 50/60Hz
Operation Mode	:	A
Earthing	:	Not connected
Ambient Temperature	:	Refer to Appendix 1
Relative Humidity	:	Refer to Appendix 1
Atmospheric Pressure	:	1010 mbar

Refer to attached Appendix 1.

6.2.2 Injected Currents / Conducted Susceptibility (CS)**RESULT:****Pass**

Date of testing	:	2017-10-11
Test Specification	:	EN 61547:2009, table 9
Basic Standard	:	IEC 61000-4-6:2008
Criterion	:	A
Frequency range	:	0.15 – 80MHz
Source impedance	:	150Ω
Test level	:	3V (unmodulated, rms.)
Modulation	:	AM 80%, 1kHz sine-wave
Sweep mode	:	automatic
Sweep rate	:	< 1.5×10 ⁻³ decade / sec.

Test setup

Input Voltage	:	AC 200-240V 50/60Hz
Operation Mode	:	A
Earthing	:	Not connected
Ambient temperature	:	Refer to Appendix 1
Relative humidity	:	Refer to Appendix 1
Atmospheric pressure	:	1011 mbar

Refer to attached Appendix 1.

6.3 Transient Disturbances

6.3.1 Electrical Fast Transients (EFT)

RESULT:**Pass**

Date of testing	:	2017-10-11
Test Specification	:	EN 61547:2009, table 6
Basic Standard	:	IEC 61000-4-4:2004
Criterion	:	B
Test level	:	±1kV
Test duration	:	≥60sec
Rise time	:	5/50ns
Repetition frequency	:	5 kHz

Test setup

Input Voltage	:	AC 200-240V 50/60Hz
Operation Mode	:	A
Earthing	:	Not connected
Ambient temperature	:	Refer to Appendix 1
Relative humidity	:	Refer to Appendix 1
Atmospheric pressure	:	1011 mbar

Refer to attached Appendix 1.

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6.3.2 Surge

RESULT:**Pass**

Date of testing	:	2017-10-11
Test Specification	:	EN 61547:2009, table 10
Basic Standard	:	IEC 61000-4-5:2005
Criterion	:	C
Source impedance	:	2Ω,
Test level	:	±0.5Kv
Coupling phases	:	$\pi/2$, $3\pi/2$
Number of surges	:	5 (for each combination of parameters)
Repetition rate	:	Max. 1/min

Test Setup

Input Voltage	:	AC 200-240V 50/60Hz
Operation Mode	:	A
Earthing	:	Not connected
Ambient temperature	:	Refer to Appendix 1
Relative humidity	:	Refer to Appendix 1
Atmospheric pressure	:	1011 mbar

Refer to attached Appendix 1.

6.3.3 Electrostatic Discharges (ESD)

RESULT:**Pass**

Date of testing	:	2017-10-11
Test Specification	:	EN 61547:2009, table 1
Basic Standard	:	IEC 61000-4-2:2008
Criterion	:	B
Discharge voltage	:	±2.0kV, ±4.0kV, ±8.0kV (air discharge) ±4.0kV (contact discharge)
Number of discharges	:	>10
Test Port	:	Enclosure

Test Setup

Input Voltage	:	AC 200-240V 50/60Hz
Operation Mode	:	A
Earthing	:	Not connected
Ambient temperature	:	Refer to Appendix 1
Relative humidity	:	Refer to Appendix 1
Atmospheric pressure	:	1011 mbar

Refer to attached Appendix 1.

6.4 Power Supply Alterations

6.4.1 Voltage Dips and Interruptions

RESULT:**Pass**

Date of testing	:	2017-10-11
Test Specification	:	EN 61547:2009, table 11 & 12
Basic Standard	:	IEC 61000-4-11:2004
Criterion	:	C - table 11 B - table 12
Test Port	:	AC Mains

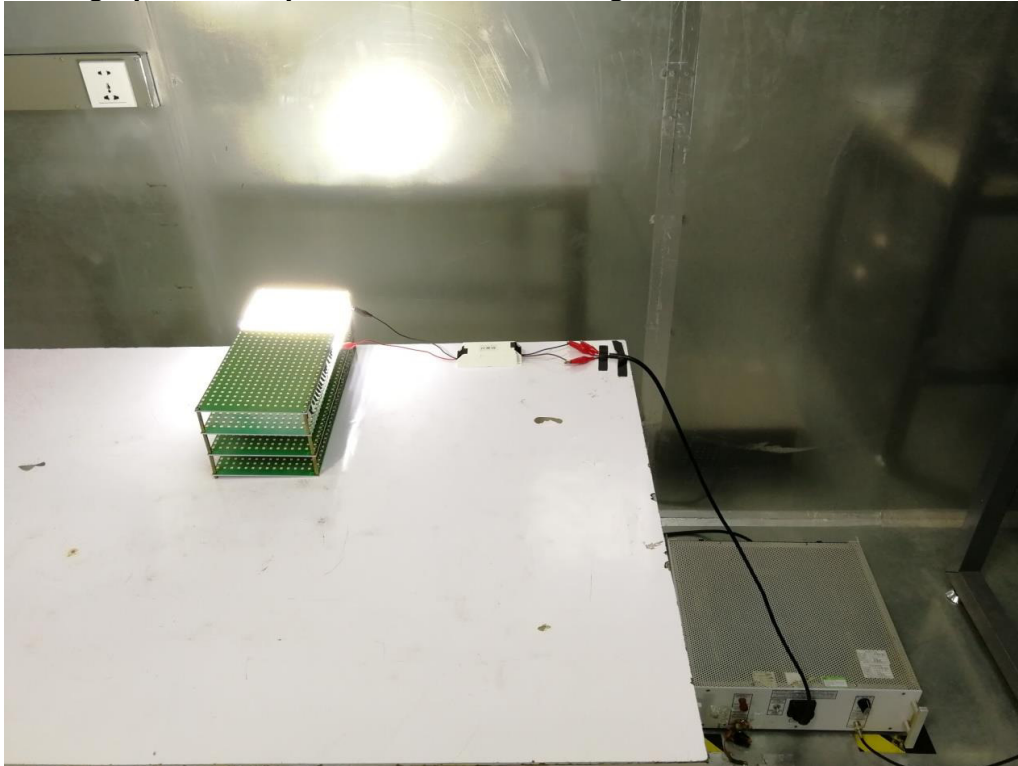
Test Setup

Input Voltage	:	AC 200-240V 50/60Hz
Operation Mode	:	A
Earthing	:	Not connected
Ambient temperature	:	Refer to Appendix 1
Relative humidity	:	Refer to Appendix 1
Atmospheric pressure	:	1011 mbar

Refer to attached Appendix 1.

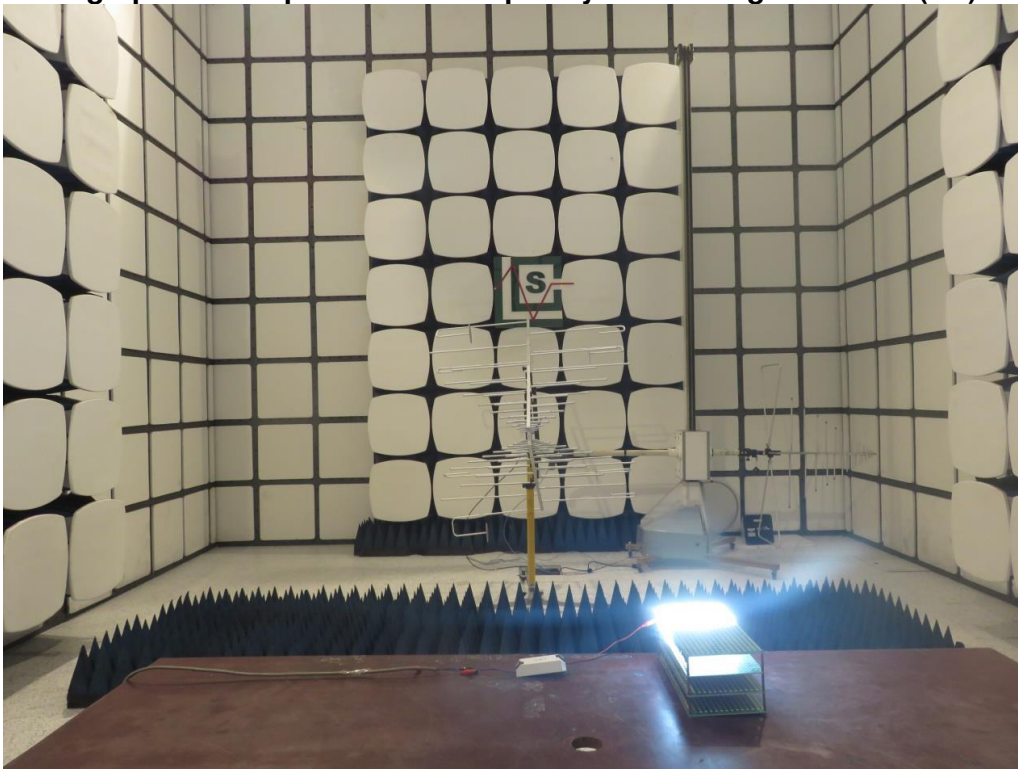
7. Photographs of the Test Set-Up

Photograph 1: Set-up for Disturbance Voltage

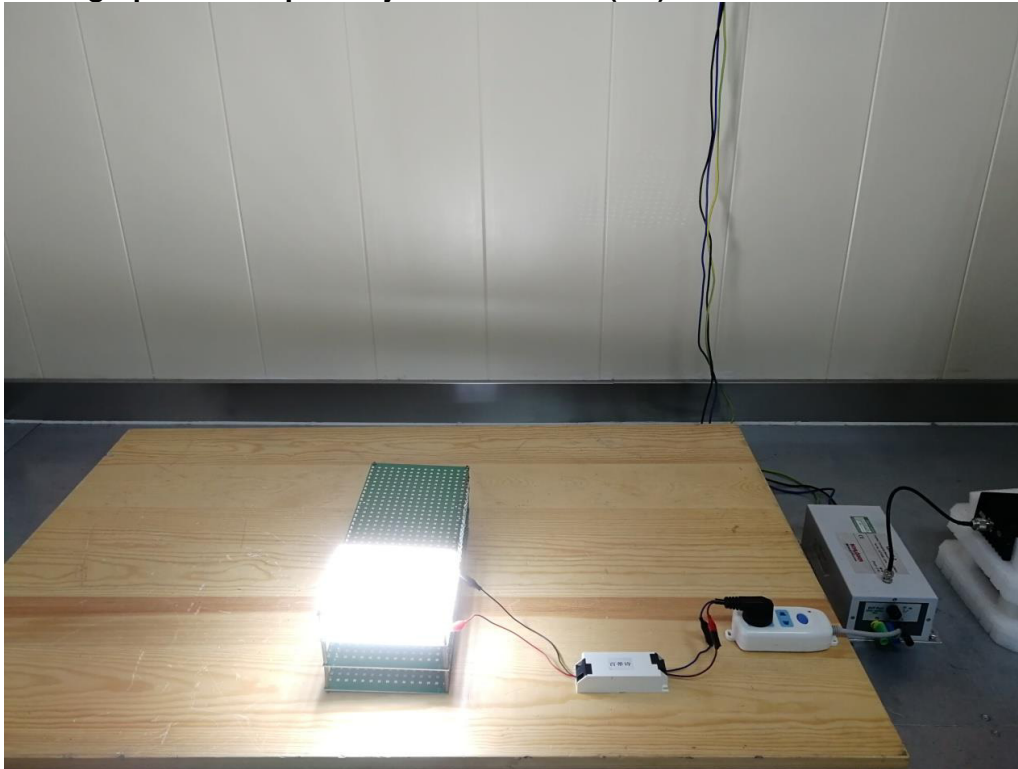


Photograph 2: Set-up for Radiated Electromagnetic Disturbances (Table 3a)

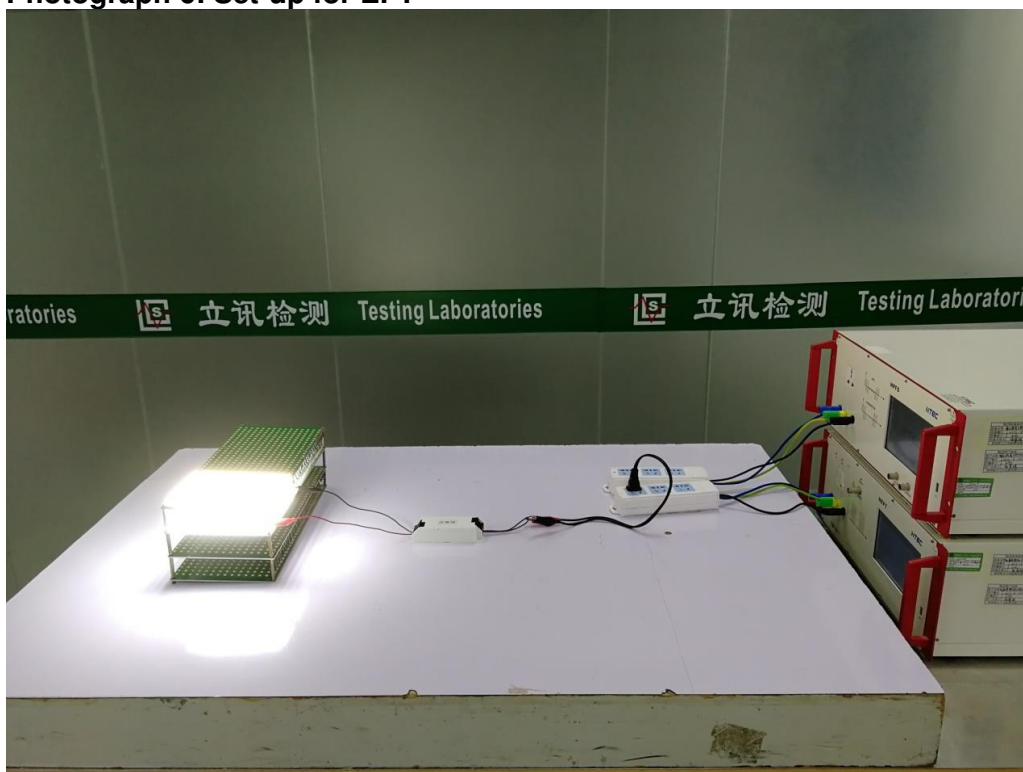


Photograph 3: Set-up for Radiated Electromagnetic Disturbances (Table 3b)**Photograph 4: Set-up for Radio-Frequency Electromagnetic Field (RS)**

Photograph 5: Set-up for Injected Currents (CS)



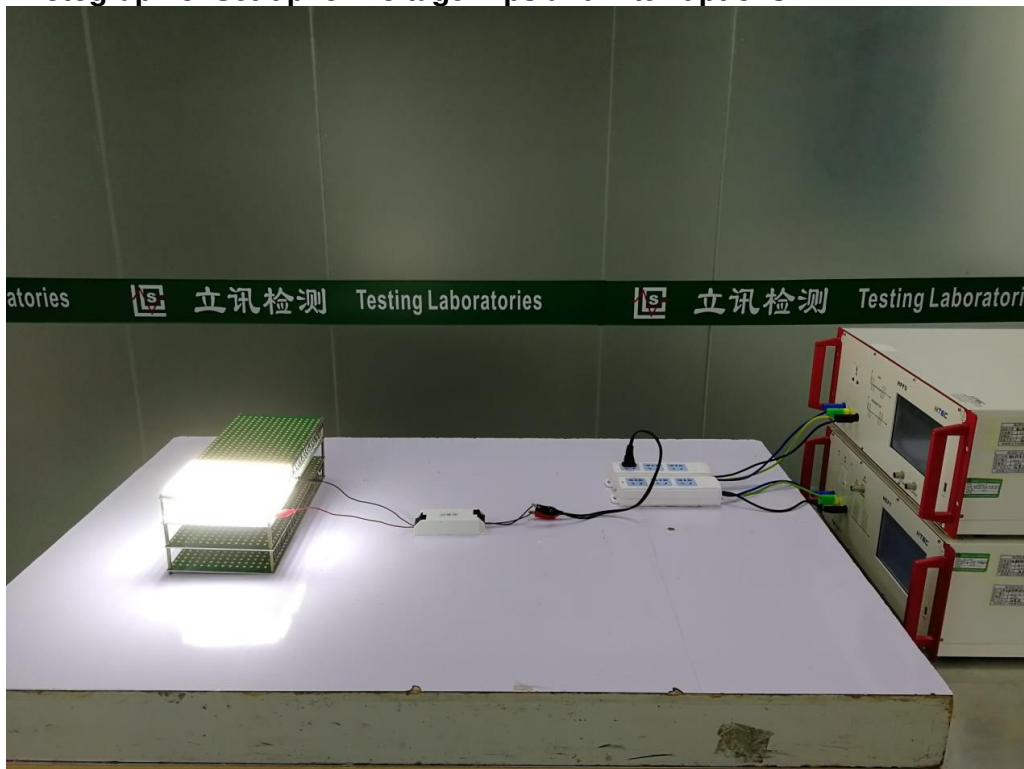
Photograph 6: Set-up for EFT



Photograph 7: Set-up for Surge



Photograph 8: Set-up for Voltage Dips and Interruptions



Photograph 9: Set-up for Electrostatic Discharges (ESD)



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Testing Lab.

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China. Tel: 0755-29871520 Fax: 0755-29871521

Conducted Emission Measurement

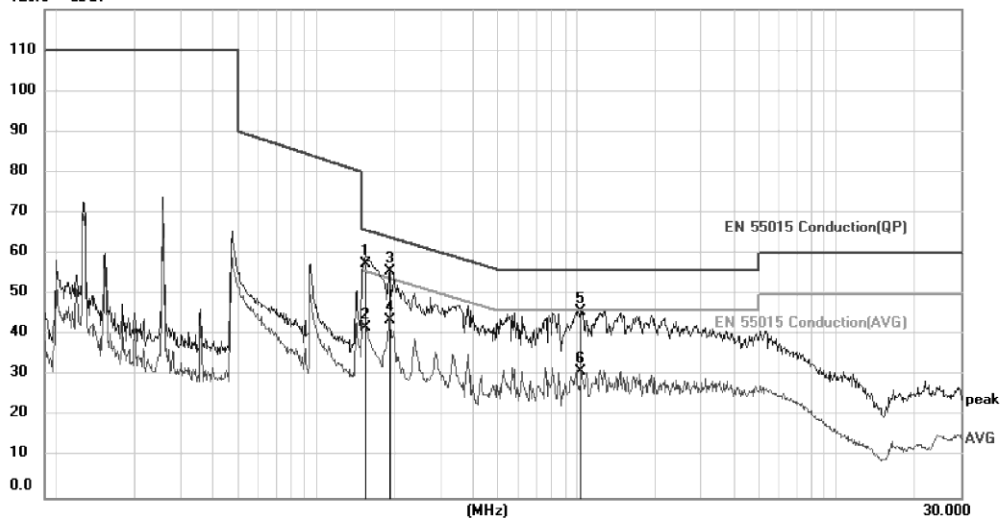
File :B170908002BDS

Data :#1

Date: 2017/10/9

Time: 10:45:11

120.0 dBuV



Site Chamber #1

Phase: L1

Temperature: 23.7

Limit: EN 55015 Conduction(QP)

Power: AC 230V/50Hz

Humidity: 56 %

EUT: LED POWER SUPPLY

M/N: A03-0024 D02

Mode: On

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1539	47.26	10.24	57.50	65.79	-8.29	QP	
2		0.1539	31.76	10.24	42.00	55.79	-13.79	AVG	
3	*	0.1901	45.55	10.23	55.78	64.03	-8.25	QP	
4		0.1901	33.44	10.23	43.67	54.03	-10.36	AVG	
5		1.0493	35.64	10.20	45.84	56.00	-10.16	QP	
6		1.0493	20.94	10.20	31.14	46.00	-14.86	AVG	

*:Maximum data x:Over limit !:over margin



Testing Lab.

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China. Tel: 0755-29871520 Fax: 0755-29871521

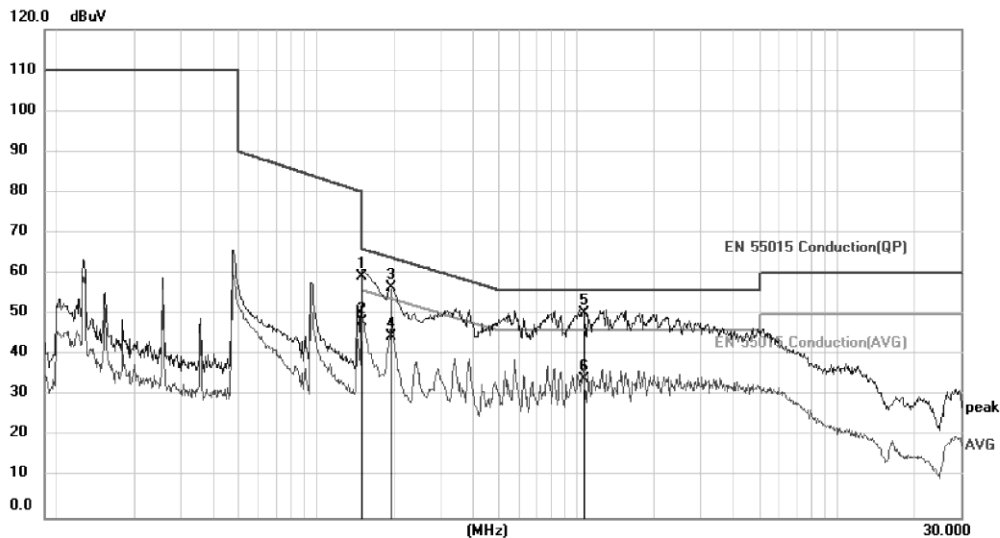
Conducted Emission Measurement

File :B170908002BDS

Data :#2

Date: 2017/10/9

Time: 10:51:21



Site Chamber #1

Phase: **N**

Temperature: 23.7

Limit: EN 55015 Conduction(QP)

Power: AC 230V/50Hz

Humidity: 56 %

EUT: LED POWER SUPPLY

M/N: A03-0024 D02

Mode: On

Note:

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.1500	49.16	10.24	59.40	66.00	-6.60	QP	
2	0.1500	37.96	10.24	48.20	56.00	-7.80	AVG	
3	0.1927	46.23	10.23	56.46	63.92	-7.46	QP	
4	0.1927	34.19	10.23	44.42	53.92	-9.50	AVG	
5 *	1.0582	40.07	10.20	50.27	56.00	-5.73	QP	
6	1.0582	23.77	10.20	33.97	46.00	-12.03	AVG	

*:Maximum data x:Over limit !:over margin



Testing Lab.

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China. Tel: 0755-29871520 Fax: 0755-29871521

Conducted Emission Measurement

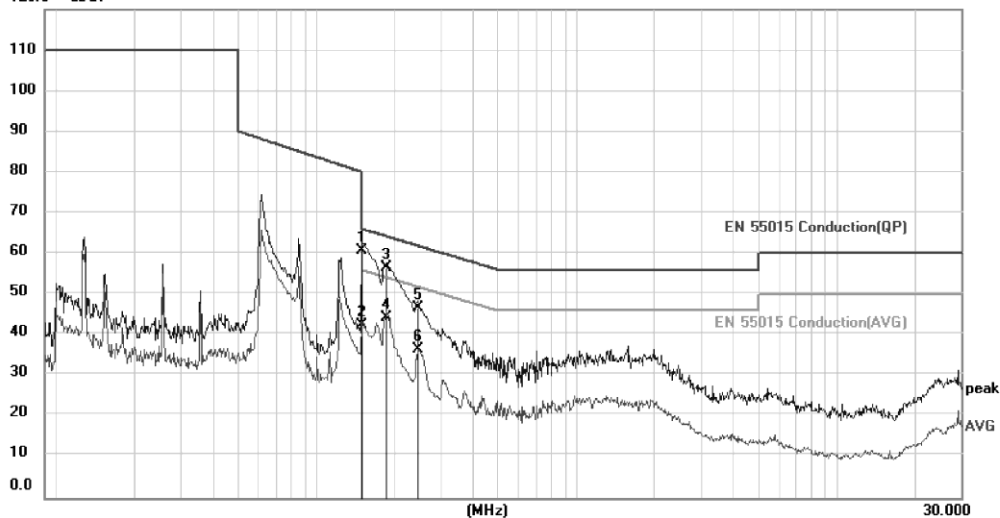
File :B170908002BDS

Data :#3

Date: 2017/10/9

Time: 11:10:18

120.0 dBuV



Site Chamber #1

Phase: **N**

Temperature: 23.7

Limit: EN 55015 Conduction(QP)

Power: AC 230V/50Hz

Humidity: 56 %

EUT: LED POWER SUPPLY

M/N: A03-0012 D09

Mode: On

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	50.46	10.24	60.70	66.00	-5.30	QP	
2		0.1500	32.16	10.24	42.40	56.00	-13.60	AVG	
3		0.1829	46.41	10.23	56.64	64.35	-7.71	QP	
4		0.1829	34.00	10.23	44.23	54.35	-10.12	AVG	
5		0.2461	36.44	10.21	46.65	61.89	-15.24	QP	
6		0.2461	26.20	10.21	36.41	51.89	-15.48	AVG	

*:Maximum data x:Over limit !:over margin



Testing Lab.

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Conducted Emission Measurement

File :B170908002BDS
120.0 dBuV

Data :#4

Date: 2017/10/9

Time: 11:16:34



Site Chamber #1

Phase: L1

Temperature: 23.7

Limit: EN 55015 Conduction(QP)

Power: AC 230V/50Hz

Humidity: 56 %

EUT: LED POWER SUPPLY

M/N: A03-0012 D09

Mode: On

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	50.36	10.24	60.60	66.00	-5.40	QP	
2		0.1500	32.16	10.24	42.40	56.00	-13.60	AVG	
3		0.1829	46.57	10.23	56.80	64.35	-7.55	QP	
4		0.1829	34.45	10.23	44.68	54.35	-9.67	AVG	
5		0.2439	36.95	10.21	47.16	61.96	-14.80	QP	
6		0.2439	25.29	10.21	35.50	51.96	-16.46	AVG	

*:Maximum data x:Over limit !:over margin



Testing Lab.

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China. Tel: 0755-29871520 Fax: 0755-29871521

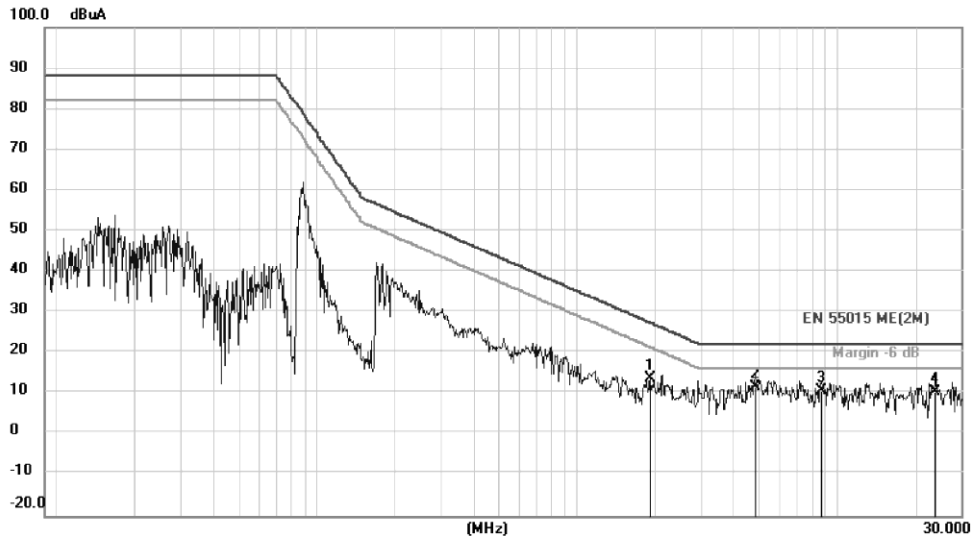
Conducted Emission Measurement

File :B170908002BDS

Data :#5

Date: 2017/10/10

Time: 17:29:32



Site Chamber #1

Phase: X

Temperature: 23.6

Limit: EN 55015 ME(2M)

Power: AC 230V/50Hz

Humidity: 56 %

EUT: LED POWER SUPPLY

M/N: A03-0024 D02

Mode: On

Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz	dBuA	dB	dBuA	dBuA	dB		
1	1.9026	13.72	0.00	13.72	27.47	-13.75	QP	
2 *	4.8357	11.61	0.00	11.61	22.00	-10.39	QP	
3	8.6720	13.71	-3.01	10.70	22.00	-11.30	QP	
4	23.7114	30.55	-20.00	10.55	22.00	-11.45	QP	

*:Maximum data x:Over limit !:over margin



Testing Lab.

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China. Tel: 0755-29871520 Fax: 0755-29871521

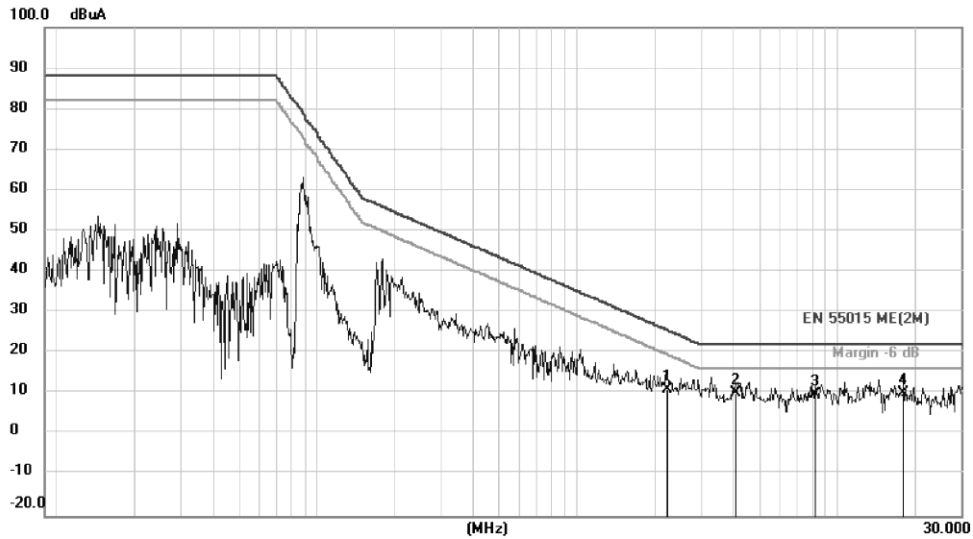
Conducted Emission Measurement

File :B170908002BDS

Data :#6

Date: 2017/10/10

Time: 17:35:54



Site Chamber #1

Phase: Y

Temperature: 23.6

Limit: EN 55015 ME(2M)

Power: AC 230V/50Hz

Humidity: 56 %

EUT: LED POWER SUPPLY

M/N: A03-0024 D02

Mode: On

Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz	dBuA	dB	dBuA	dBuA	dB		
1	2.2195	10.55	0.51	11.06	25.62	-14.56	QP	
2 *	4.0784	10.45	-0.22	10.23	22.00	-11.77	QP	
3	8.2600	12.26	-2.27	9.99	22.00	-12.01	QP	
4	17.9962	24.44	-14.40	10.04	22.00	-11.96	QP	

*:Maximum data x:Over limit !:over margin



Testing Lab.

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China. Tel: 0755-29871520 Fax: 0755-29871521

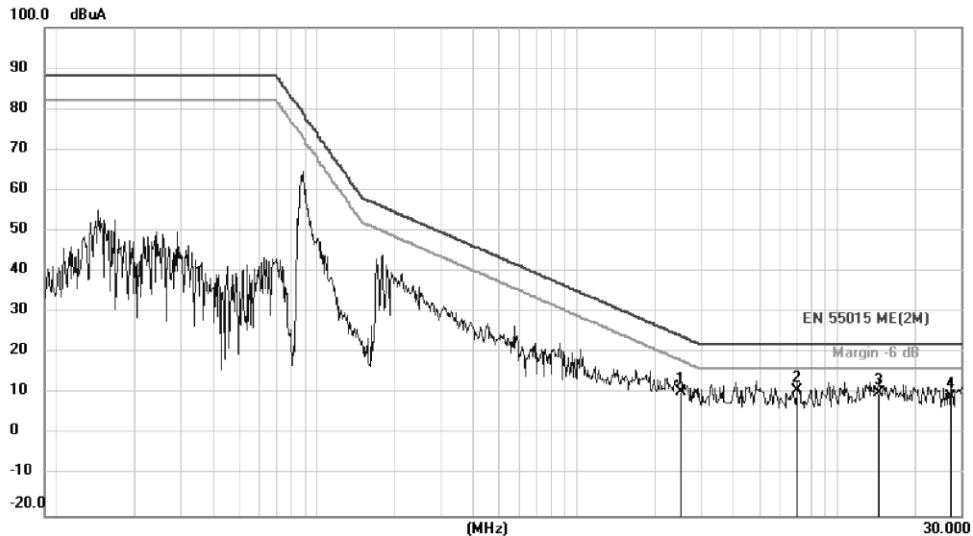
Conducted Emission Measurement

File :B170908002BDS

Data :#7

Date: 2017/10/10

Time: 17:41:43



Site Chamber #1

Phase: Z

Temperature: 23.6

Limit: EN 55015 ME(2M)

Power: AC 230V/50Hz

Humidity: 56 %

EUT: LED POWER SUPPLY

M/N: A03-0024 D02

Mode: On

Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz	dBuA	dB	dBuA	dBuA	dB		
1	2.5068	10.10	0.40	10.50	24.16	-13.66	QP	
2 *	7.0231	11.91	-1.17	10.74	22.00	-11.26	QP	
3	14.4565	22.28	-12.14	10.14	22.00	-11.86	QP	
4	27.2174	30.86	-21.69	9.17	22.00	-12.83	QP	

*:Maximum data x:Over limit !:over margin



Testing Lab.

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China. Tel: 0755-29871520 Fax: 0755-29871521

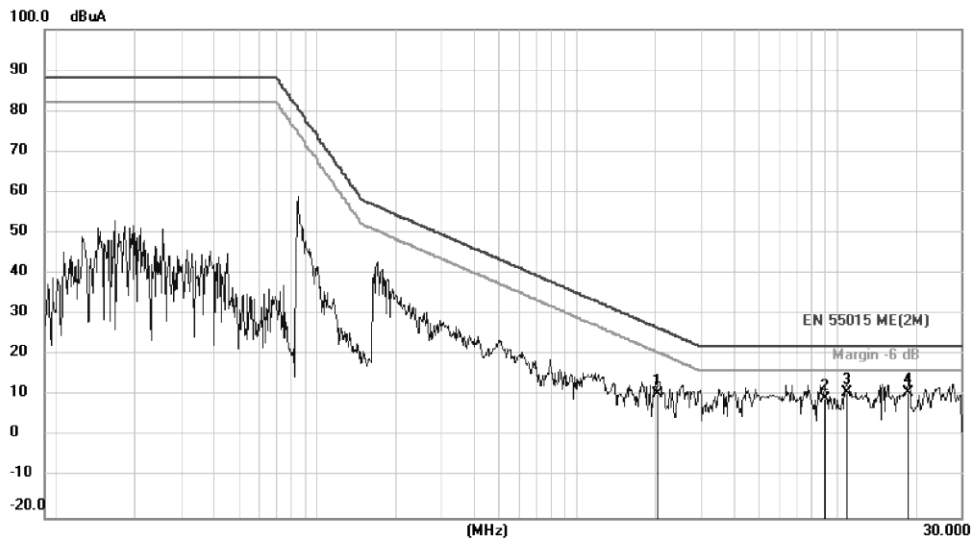
Conducted Emission Measurement

File :B170908002BDS

Data :#8

Date: 2017/10/10

Time: 17:55:32



Site Chamber #1

Phase: X

Temperature: 23.6

Limit: EN 55015 ME(2M)

Power: AC 230V/50Hz

Humidity: 56 %

EUT: LED POWER SUPPLY

M/N: A03-0012 D09

Mode: On

Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz	dBuA	dB	dBuA	dBuA	dB		
1	2.0466	10.36	0.00	10.36	26.60	-16.24	QP	
2	8.9580	12.66	-3.44	9.22	22.00	-12.78	QP	
3 *	10.8833	16.33	-5.44	10.89	22.00	-11.11	QP	
4	18.7408	24.67	-14.00	10.67	22.00	-11.33	QP	

*:Maximum data x:Over limit !:over margin



Testing Lab.

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China. Tel: 0755-29871520 Fax: 0755-29871521

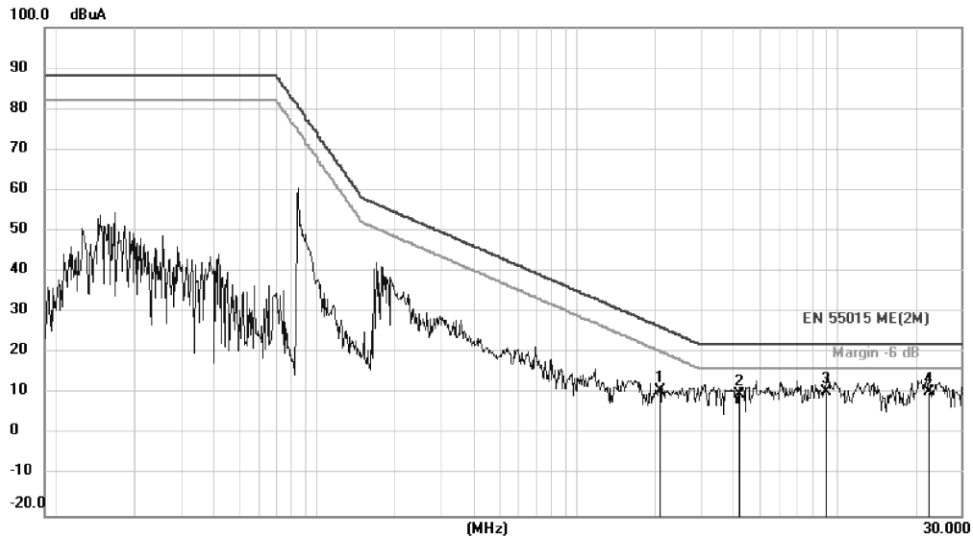
Conducted Emission Measurement

File :B170908002BDS

Data :#9

Date: 2017/10/10

Time: 18:01:25



Site Chamber #1

Phase: Y

Temperature: 23.6

Limit: EN 55015 ME(2M)

Power: AC 230V/50Hz

Humidity: 56 %

EUT: LED POWER SUPPLY

M/N: A03-0012 D09

Mode: On

Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz	dBuA	dB	dBuA	dBuA	dB		
1	2.0800	10.10	0.57	10.67	26.40	-15.73	QP	
2	4.2129	10.19	-0.23	9.96	22.00	-12.04	QP	
3 *	9.1044	14.32	-3.79	10.53	22.00	-11.47	QP	
4	22.5849	30.30	-19.90	10.40	22.00	-11.60	QP	

*:Maximum data x:Over limit !:over margin



Testing Lab.

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China. Tel: 0755-29871520 Fax: 0755-29871521

Conducted Emission Measurement

File :B170908002BDS

Data :#10

Date: 2017/10/10

Time: 18:07:36



Site Chamber #1

Phase: Z

Temperature: 23.6

Limit: EN 55015 ME(2M)

Power: AC 230V/50Hz

Humidity: 56 %

EUT: LED POWER SUPPLY

M/N: A03-0012 D09

Mode: On

Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz	dBuA	dB	dBuA	dBuA	dB		
1	2.9483	10.82	0.08	10.90	22.21	-11.31	QP	
2	4.1450	10.00	0.25	10.25	22.00	-11.75	QP	
3	6.7439	11.31	-0.99	10.32	22.00	-11.68	QP	
4 *	15.0548	23.44	-11.94	11.50	22.00	-10.50	QP	

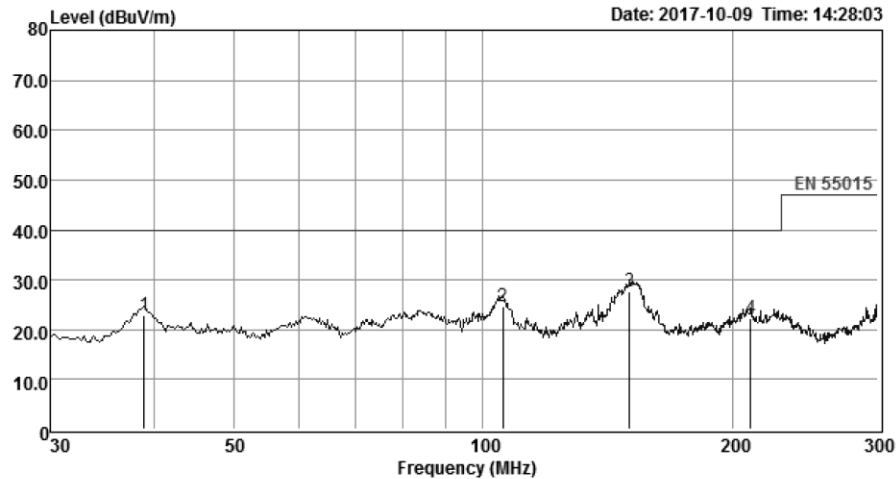
*:Maximum data x:Over limit !:over margin

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge
Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen,
China. Tel: 0755-29871520 Fax: 0755-29871521



Data: 145 File: E:\2016 REPORT DATA\DM.TUV.EM6 (154)

Date: 2017-10-09 Time: 14:28:03



Env./Ins: 23.6°C/56%
EUT: LED POWER SUPPLY
M/N: A03-0024 D02
Power Rating: AC 230V/50Hz
Test Mode: On
Operator: DM
Memo:
pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	38.91	9.08	0.38	13.30	22.76	40.00	-17.24	QP
2	105.60	11.43	0.61	12.65	24.69	40.00	-15.31	QP
3	150.42	18.79	0.73	8.28	27.80	40.00	-12.20	QP
4	210.90	10.40	0.93	10.91	22.24	40.00	-17.76	QP

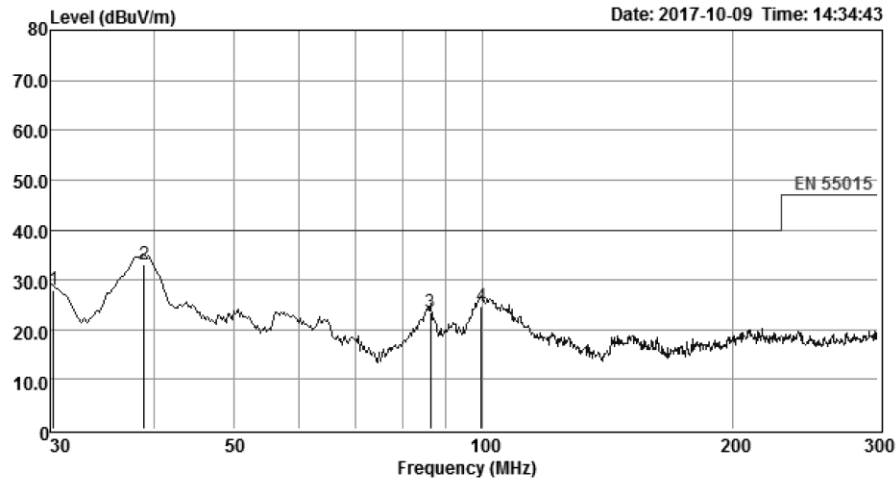
Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge
Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen,
China. Tel: 0755-29871520 Fax: 0755-29871521



Data: 146 File: E:\2016 REPORT DATA\DM.TUV.EM6 (154)

Date: 2017-10-09 Time: 14:34:43



Env./Ins: 23.6°C/56%
EUT: LED POWER SUPPLY
M/N: A03-0024 D02
Power Rating: AC 230V/50Hz
Test Mode: On
Operator: DM
Memo:
pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	30.27	15.17	0.39	12.33	27.89	40.00	-12.11	QP
2	38.91	19.32	0.38	13.30	33.00	40.00	-7.00	QP
3	86.43	12.17	0.47	10.76	23.40	40.00	-16.60	QP
4	99.66	10.88	0.61	13.14	24.63	40.00	-15.37	QP

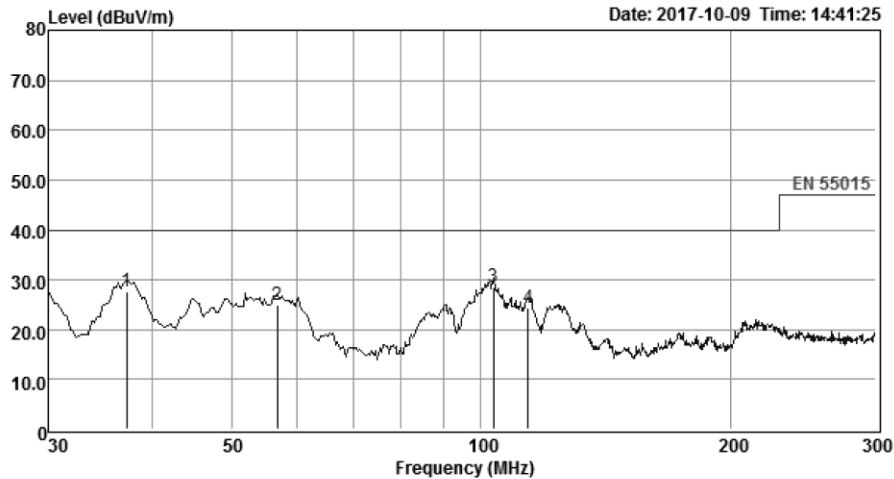
Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China.
Tel: 0755-29871520 Fax: 0755-29871521



Data: 147 File: E:\2016 REPORT DATA\DM.TUV.EM6 (154)

Date: 2017-10-09 Time: 14:41:25



Env./Ins: 23.6°C/56%
EUT: LED POWER SUPPLY
M/N: A03-0012 D09
Power Rating: AC 230V/50Hz
Test Mode: On
Operator: DM
Memo:
pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	37.29	14.31	0.41	12.89	27.61	40.00	-12.39	QP
2	56.73	11.57	0.47	12.91	24.95	40.00	-15.05	QP
3	103.44	14.96	0.61	12.85	28.42	40.00	-11.58	QP
4	113.97	12.17	0.65	11.55	24.37	40.00	-15.63	QP

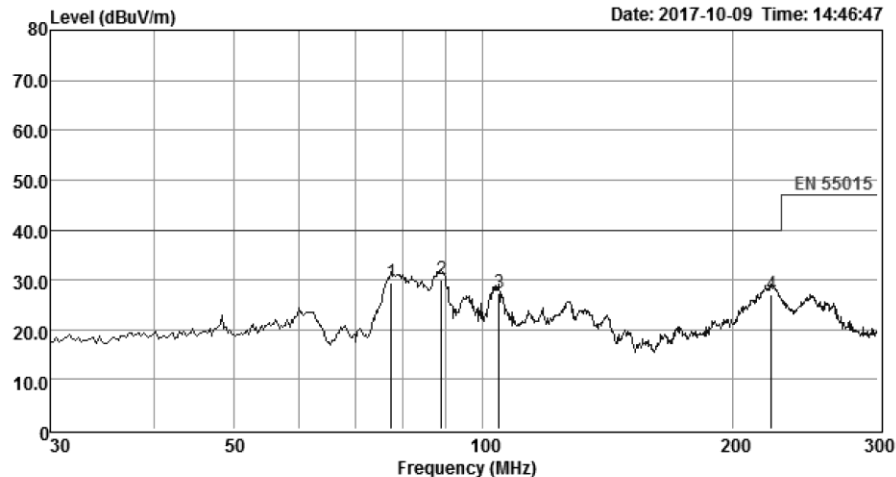
Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Add:1-2F,Building B,Zhongyu Green High-tech Industrial Park,Wenge Road,Heshuikou,Gongming Street,Guangming New District,Shenzhen, China.
Tel: 0755-29871520 Fax: 0755-29871521



Data: 148 File: E:\2016 REPORT DATA\DM.TUV.EM6 (154)

Date: 2017-10-09 Time: 14:46:47



Env./Ins: 23.6°C/56%
EUT: LED POWER SUPPLY
M/N: A03-0012 D09
Power Rating: AC 230V/50Hz
Test Mode: On
Operator: DM
Memo:
pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	77.52	20.82	0.47	8.17	29.46	40.00	-10.54	QP
2	89.13	17.63	0.68	11.62	29.93	40.00	-10.07	QP
3	104.52	13.90	0.61	12.75	27.26	40.00	-12.74	QP
4	223.32	14.75	0.95	11.35	27.05	40.00	-12.95	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Report No.:

Electrostatic Discharger Test Results						
Standard	☐ IEC 61000-4-2 ☒ EN 61000-4-2					
Applicant	BERDIS LIGHTING CO.,LTD.					
EUT	LED POWER SUPPLY			Temperature	23.6℃	
M/N	A03-0024 D02, A03-0012 D09			Humidity	55%	
Criterion	B			Pressure	1011mbar	
Test Mode	Normal			Test Date	2017.10.11	
Test Engineer	DM GU					
Air Discharge						
Test Points	Test Levels			Results		
	$\pm 2KV$	$\pm 4KV$	$\pm 8KV$	Pass	Fail	Required Criterion
Non-conductive Enclosure	☒	☒	☒	☒	☐	☐ A ☒ B
Contact Discharge						
Test Points	Test Levels		Results			
	$\pm 2 KV$	$\pm 4 KV$	Pass	Fail	Required Criterion	
Conductive Enclosure	☒	☒	☒	☐	☐ A ☒ B	
Discharge To Horizontal Coupling Plane						
Side of EUT	Test Levels		Results			
	$\pm 2 KV$	$\pm 4 KV$	Pass	Fail	Required Criterion	
Front	☒	☒	☒	☐	☐ A ☒ B	
Back	☒	☒	☒	☐	☐ A ☒ B	
Left	☒	☒	☒	☐	☐ A ☒ B	
Right	☒	☒	☒	☐	☐ A ☒ B	
Discharge To Vertical Coupling Plane						
Side of EUT	Test Levels		Results			
	$\pm 2 KV$	$\pm 4 KV$	Pass	Fail	Required Criterion	
Front	☒	☒	☒	☐	☐ A ☒ B	
Back	☒	☒	☒	☐	☐ A ☒ B	
Left	☒	☒	☒	☐	☐ A ☒ B	
Right	☒	☒	☒	☐	☐ A ☒ B	
Note: Input: 230V/50Hz						

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Report No.:

RF Field Strength Susceptibility Test Results			
Standard	☐ IEC 61000-4-3 ☒ EN 61000-4-3		
Applicant	BERDIS LIGHTING CO.,LTD.		
EUT	LED POWER SUPPLY	Temperature	23.6℃
M/N	A03-0024 D02, A03-0012 D09	Humidity	55%
Field Strength	3 V/m	Criterion	A
Test Mode	Normal	Test Engineer	DM GU
Frequency Range	80 MHz to1000 MHz	Test Date	2017.10.11
Modulation	☐ None ☐ Pulse ☒ AM 1KHz 80%		
Steps	1%		
	Horizontal	Vertical	
Front	Pass	Pass	
Right	Pass	Pass	
Rear	Pass	Pass	
Left	Pass	Pass	
Note: Input: 230V/50Hz			

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Report No.:

Electrical Fast Transient/Burst Test Results			
Standard	☐ IEC 61000-4-4 ☒ EN 61000-4-4		
Applicant	BERDIS LIGHTING CO.,LTD.		
EUT	LED POWER SUPPLY	Temperature	23.6℃
M/N	A03-0024 D02, A03-0012 D09	Humidity	56%
Test Mode	Normal	Criterion	B
Test Engineer	DM GU	Test Date	2017.10.11
Line	Test Voltage	Result (+)	Result (-)
L	1KV	Pass	Pass
N	1KV	Pass	Pass
PE			
L-N	1KV	Pass	Pass
L-PE			
N-PE			
L-N-PE			
Control Port			
Note: Input: 230V/50Hz			

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Report No.:

Surge Immunity Test Result					
Standard	☐ IEC 61000-4-5 ☒ EN 61000-4-5				
Applicant	BERDIS LIGHTING CO.,LTD.				
EUT	LED POWER SUPPLY			Temperature	23.6℃
M/N	A03-0024 D02, A03-0012 D09			Humidity	56%
Test Mode	Normal			Criterion	C
Test Engineer	DM GU			Test Date	2017.10.11
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	±	90°	10	0.5	Pass
	±	270°	10	0.5	Pass
L-PE					
N-PE					
L-N-PE					
Signal Line					
Note	Input: 230V/50Hz				

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Report No.:

Injected Currents Susceptibility Test Results				
Standard	☐ IEC 61000-4-6 ☒ EN 61000-4-6			
Applicant	BERDIS LIGHTING CO.,LTD.			
EUT	LED POWER SUPPLY	Temperature	23.6℃	
M/N	A03-0024 D02, A03-0012 D09	Humidity	56%	
Test Mode	Normal	Criterion	A	
Test Engineer	DM GU	Test Date	2017.10.11	
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	3V	A	Pass
I. Modulation Signal: 1kHz 80% AM				
Note: Input: 230V/50Hz				

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Report No.:

Voltage Dips And Interruptions Test Results				
Standard	☐ IEC 61000-4-11 ☒ EN 61000-4-11			
Applicant	BERDIS LIGHTING CO.,LTD.			
EUT	LED POWER SUPPLY	Temperature	23.6℃	
M/N	A03-0024 D02, A03-0012 D09	Humidity	56%	
Test Mode	Normal	Criterion	B&C	
Test Engineer	DM GU	Test Date	2017.10.11	
Test Level% U _T	Voltage Dips & Short Interruptions% U _T	Duration (in periods)	Criterion	Result
0	100	0.5P	B	Pass
70	30	10P	C	Pass
Note: Input: 230V/50Hz				

Measurement Uncertainties

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Table 1: Measurement Uncertainty levels

Test	Parameters	Expanded uncertainty (U_{lab})	Expanded uncertainty (U_{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 1.40 dB ± 2.80 dB	± 3.8 dB ± 3.4 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.46 dB	N/A
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.12 dB	N/A
Radiated Emission	Level accuracy (30MHz to 200MHz)	± 4.66 dB	± 6.3 dB
Radiated Emission	Level accuracy (200MHz to 1000MHz)	± 4.64 dB	± 6.3 dB
Mains Harmonic	Voltage	$\pm 0.640\%$	N/A
Voltage Fluctuations & Flicker	Voltage	$\pm 0.530\%$	N/A

As U_{lab} in all applicable tests listed above are less than U_{cispr} according to CISPR 16-4-2:2011,

- compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.