C-TICK
TEST REPORT

for

Product: LED BAY
Model: B08-XX-YYY-ZZZ, B0801-XX-YYY-ZZZ
(Remark: "XX" represent for size of the lampshade;"YYY" represent for power, It can be 050, 100, 120, 150, 180, 200, 250, 300; "ZZZ" represent for code of the product.)
Report No.: PTC802139160815E-CK01

Issued for

Berdis Lighting Co.,LTD.
Floor 6, NO 1., Huatai east Road, Caosan Industrial Park, Guzhen Town, Zhongshan City, Guangdong Province

Issued by

Dongguan Precise Testing Service Co., Ltd.
Building D, Baoding Technology Park, Guangming Road 2, Guangming Community, Dongcheng District, Dongguan, Guangdong, China
TEL: +86-769-23368601
FAX: +86-769-23368602

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1. TEST CERTIFICATION

Product:	LED BAY
Model:	B08-XX-YYY-ZZZ, B0801-XX-YYY-ZZZ (Remark: “XX” represent for size of the lampshade; “YYY” represent for power, It can be 050, 100, 120, 150, 180, 200, 250, 300; “ZZZ” represent for code of the product.)
Applicant :	Berdis Lighting Co.,LTD.
Address:	Floor 6, NO 1., Huatai east Road, Caosan Industrial Park, Guzhen Town, Zhongshan City, Guangdong Province
Manufacturer:	Berdis Lighting Co.,LTD.
Address:	Floor 6, NO 1., Huatai east Road, Caosan Industrial Park, Guzhen Town, Zhongshan City, Guangdong Province
Test Date:	August 20, 2016～August 24, 2016
Issued Date:	August 24, 2016
Test Voltage:	AC 240V/50Hz
Applicable Standards:	AS/NZS CISPR 15:2011

The above equipment has been tested by Dongguan Precise Testing Service Co., Ltd. and found compliance with the requirements in the technical standards mentioned above. The test results presented in this report only relate to the product/system tested. The Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:

August Qiu / Engineer

Approved & Authorized Signer:

Chris Du / Manager

2. TEST SUMMARY

EMISSION			
Standard	**Item**	**Result**	**Remarks**
AS/NZS CISPR 15:2011	Conducted (Main Port)	PASS	Complied with limit
	Radiated Electromagnetic Disturbance	PASS	Complied with limit
	Radiated Emission	PASS	Complied with limit

3. TEST SITE

3.1. TEST FACILITY

Dongguan Precise Testing Service Co., Ltd.

Address: Building D, Baoding Technology Park, Guangming Road 2, Dongcheng District, Dongguan, Guangdong, China

☆ CNAS Registration No.: CNAS L5772

☆ FCC Registration No.: 371540

☆ IC Registration No.: 12191A-1

3.2. LIST OF TEST AND MEASUREMENT INSTRUMENTS

3.2.1. For conducted emission at the mains terminals test

Name of Equipment	Manufacturer	Model	Serial No.	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	July 14, 2017
Artificial Mains Network	Narda	L2-16B	000WX31025	July 14, 2017
Artificial Mains Network(AUX)	Rohde&Schwarz	ENV216	101342	July 14, 2017

3.2.2. For radiated electromagnetic emission test

Name of Equipment	Manufacturer	Model	Serial No.	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	July 14, 2017
Triple-Loop Antenna	LAPLACE	RF300	9138	July 14, 2017

3.2.3. For radiated emission test (30MHz-1GHz)

Name of Equipment	Manufacturer	Model	Serial No.	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	July 14, 2017
Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3355	July 14, 2017

4. EUT DESCRIPTION

Product	LED BAY
Model	B0801-XX-300-ZZZ
Supplied Voltage	AC 240V/50Hz
Power	300W
AC Lines	☐Shielded ☒Unshielded, ☐Detachable ☒Un-detachable ☒Not applicable ☒Length:1.4m
DC Lines	☐Shielded ☐Unshielded, ☐Detachable ☐Un-detachable ☒Not applicable ☐Length:
Control Lines	☐Shielded ☐Unshielded, ☐Detachable ☐Un-detachable ☒Not applicable ☐Length:

I/O PORT

I/O PORT TYPES	Q'TY	TESTED WITH
AC Port	1	☒

Models Difference

The circuit theory and PCB layout are the same, only the model names, size and color are different.

5. TEST METHODOLOGY

5.1. TEST MODE

The EUT was tested together with the thereinafter additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The following test mode(s) were assessed.

Test Items		Test Mode
Emission	Conducted Emission	Lighting
	Radiated Electromagnetic Disturbance	Lighting
	Radiated Emission	Lighting

5.2. EUT SYSTEM OPERATION

1. Set up EUT with the support equipment.
2. Make sure the EUT work normally during the test.

6. SETUP OF EQUIPMENT UNDER TEST

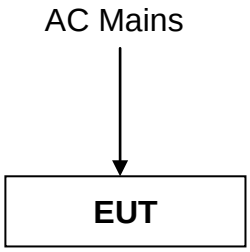
6.1. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1.	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

6.2. CONFIGURATION OF SYSTEM UNDER TEST



(EUT: LED BAY)

7. EMISSION TEST

7.1. CONDUCTED EMISSION MEASUREMENT

7.1.1. LIMITS

FREQUENCY (MHz)	LIMITS(dBμV)	
	Quasi-peak	Average
0.009-0.05	110	N/A
0.05-0.15	90 – 80	N/A
0.15 - 0.5	66 – 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1) The lower limit shall apply at the transition frequencies.

2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 MHz to 0.5 MHz

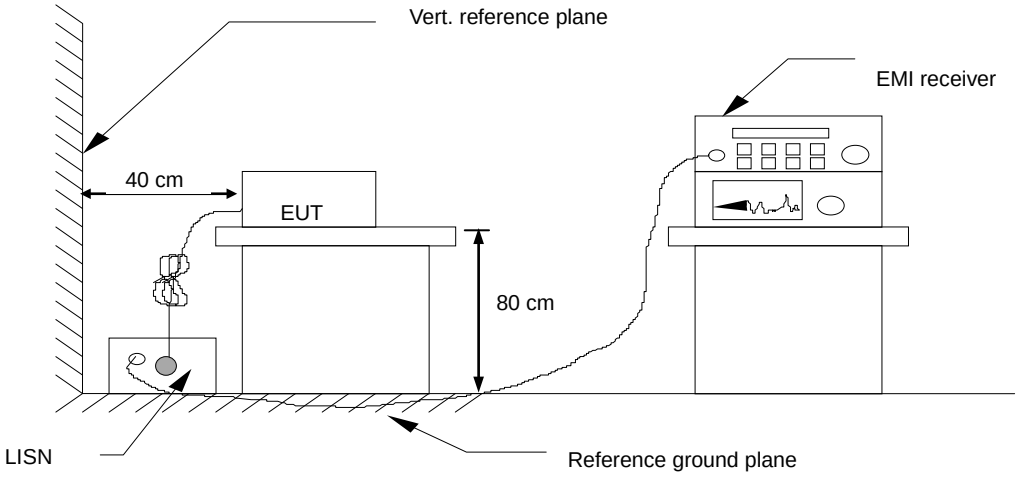
7.1.2. TEST PROCEDURES

The EUT and Support equipment, if needed, was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane. When the EUT is floor standing equipment, it is placed on the ground plane, which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane. The EUT should be 0.8 m apart from the AMN, where the mains cable supplied by the manufacturer is longer than 0.8 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, Details please refer to test setup photography.

The Receiver scanned from 9 kHz to 30 MHz for emissions in each of the test modes.
During the above scans, the emissions were maximized by cable manipulation.

A scanning was taken on the power lines, Line and neutral, recording at least six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. The test data of the worst-case condition(s) was recorded.

7.1.3. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

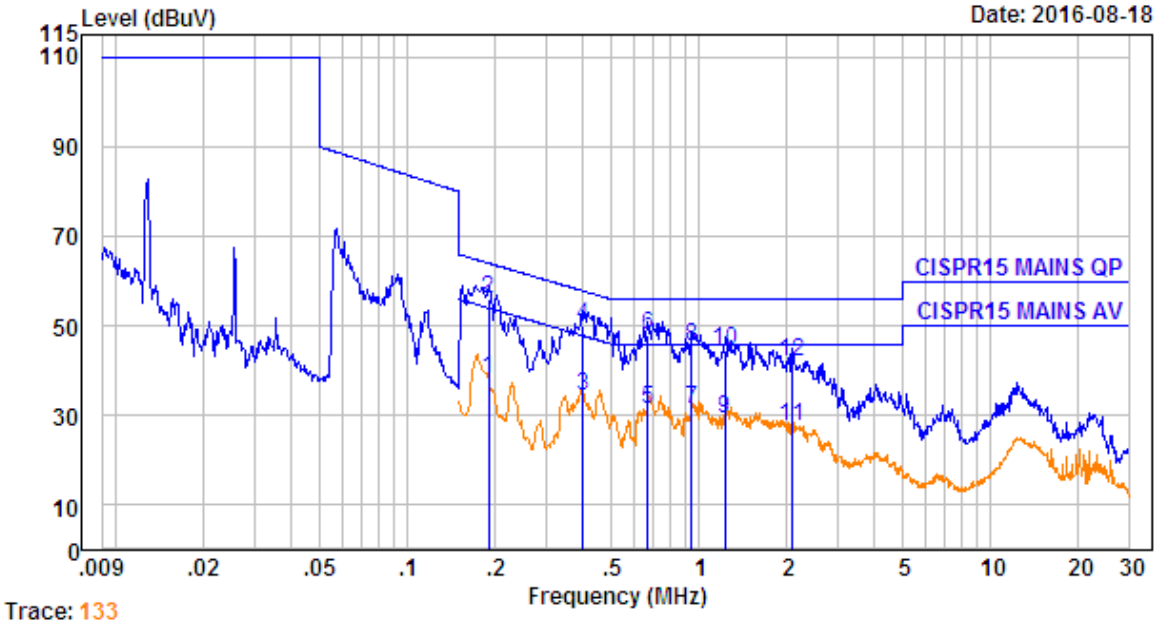
7.1.4. TEST RESULT

Product name	LED BAY	Tested By	Cen
Model No.	B0801-XX-300-ZZZ	Detector Function	Peak / Quasi-peak/AV
Test Mode	Lighting	6 dB Bandwidth	200 Hz/9 kHz
Environmental Conditions	25.5℃, 54 % RH, 101.5 kPa	Test Result	Pass

Note:
L = Line Line, N = Neutral Line
Freq. = Emission frequency in MHz
Reading level (dBμV) = Receiver reading
Corr. Factor (dB) = attenuator + Cable loss
Level (dBμV) = Reading level (dBμV) + Corr. Factor (dB)
Limit (dBμV) = Limit stated in standard
Over Limit (dB) = Level (dBμV) – Limit (dBμV)
QP = Quasi-Peak
AV = Average

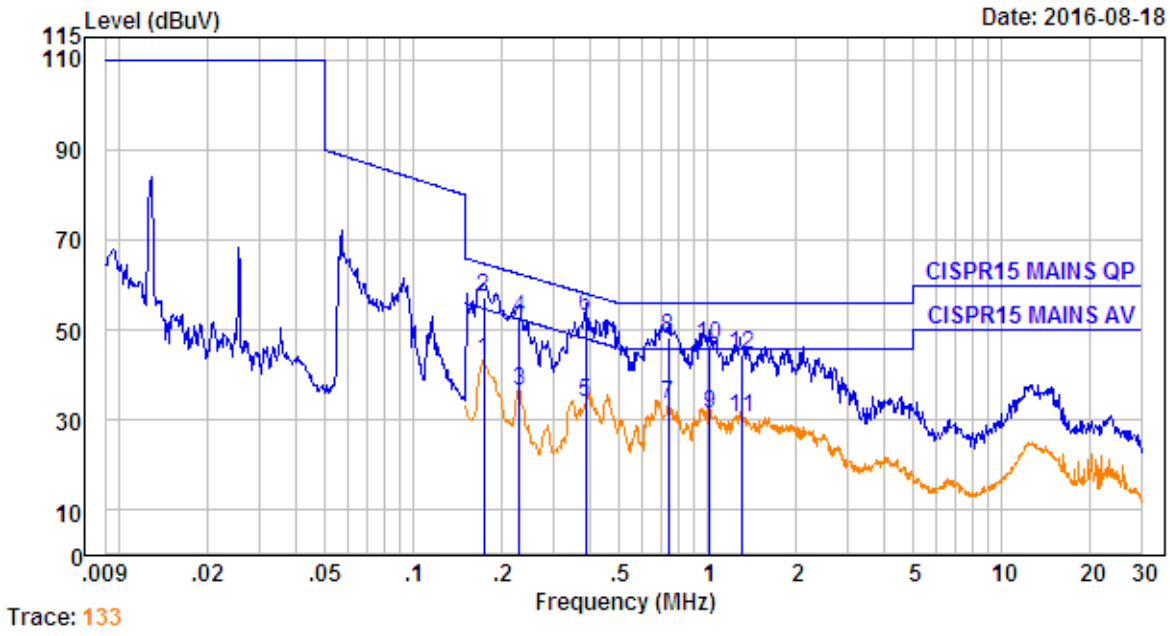
Please refer to the following diagram:

Line:



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.190	10.61	0.60	26.85	38.06	54.02	-15.96	Average
2.	0.190	10.61	0.60	44.89	56.10	64.02	-7.92	QP
3.	0.402	10.64	0.60	23.02	34.26	47.81	-13.55	Average
4.	0.402	10.64	0.60	39.03	50.27	57.81	-7.54	QP
5.	0.668	10.66	0.60	20.23	31.49	46.00	-14.51	Average
6.	0.668	10.66	0.60	36.59	47.85	56.00	-8.15	QP
7.	0.948	10.67	0.60	20.29	31.56	46.00	-14.44	Average
8.	0.948	10.67	0.60	34.32	45.59	56.00	-10.41	QP
9.	1.229	10.68	0.60	18.19	29.47	46.00	-16.53	Average
10.	1.229	10.68	0.60	33.44	44.72	56.00	-11.28	QP
11.	2.077	10.70	0.60	16.11	27.41	46.00	-18.59	Average
12.	2.077	10.70	0.60	30.75	42.05	56.00	-13.95	QP

Neutral:



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.174	10.60	0.60	32.26	43.46	54.77	-11.31	Average
2.	0.174	10.60	0.60	46.22	57.42	64.77	-7.35	QP
3.	0.230	10.62	0.60	25.34	36.56	52.44	-15.88	Average
4.	0.230	10.62	0.60	41.31	52.53	62.44	-9.91	QP
5.	0.385	10.64	0.60	22.82	34.06	48.17	-14.11	Average
6.	0.385	10.64	0.60	41.79	53.03	58.17	-5.14	QP
7.	0.735	10.66	0.60	22.38	33.64	46.00	-12.36	Average
8.	0.735	10.66	0.60	37.12	48.38	56.00	-7.62	QP
9.	1.016	10.67	0.60	20.32	31.59	46.00	-14.41	Average
10.	1.016	10.67	0.60	35.60	46.87	56.00	-9.13	QP
11.	1.303	10.68	0.60	19.39	30.67	46.00	-15.33	Average
12.	1.303	10.68	0.60	33.43	44.71	56.00	-11.29	QP

7.2. RADIATED ELECTROMAGNETIC DISTURBANCE

7.2.1. LIMITS

Frequency	Limits for loop diameter dB(μA)*		
	2 m	3 m	4 m
9 kHz-70 kHz	88	81	75
70 kHz-150 kHz	88-58**	81-51**	75-45**
150 kHz-3.0 MHz	58-22**	51-22**	45-16**
3.0 MHz-30 MHz	22	15-16***	9-12***

* At the transition frequency, the lower limit applies.
** Decreasing linearly with the logarithm of the frequency.
*** Increasing linearly with the logarithm of the frequency.

7.2.2. TEST PROCEDURE

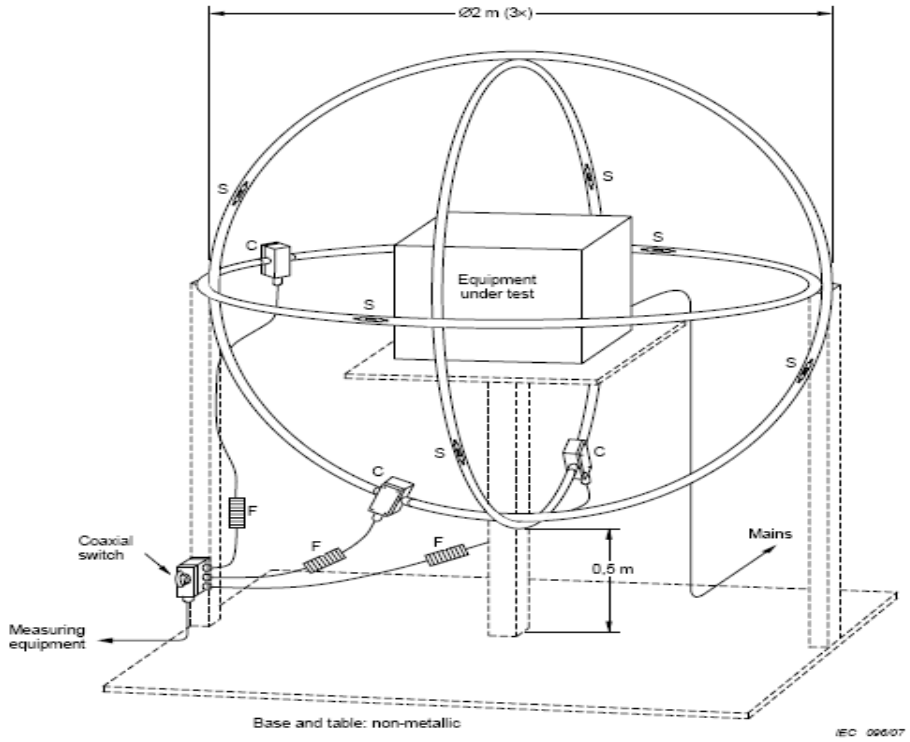
The EUT and support equipment are positioned in the centre of loop antenna system (LAS). The LAS consists of three circular, mutually perpendicular large-loop antennas (LLAs), having a diameter of 2 m, supported by a non-metallic base. A 50 Ω coaxial cable between the current probe of an LLA and the coaxial switch, and between this switch and the measuring equipment, shall have surface transfer impedance smaller than 10 mΩ/m at 100 kHz and 1 mΩ/m at 10 MHz. The distance between the outer diameter of the loop antenna system and nearby objects, such as floor and walls, shall be at least 0.5 m as per CISPR 15/ EN 55015.

The induced current in the loop antenna is measured by means of a current probe (1 V/A) and the CISPR measuring receiver. By means of a coaxial switch, the three field directions (X, Y, Z) can be measured in sequence.

The receiver scanned from 9 kHz to 30 MHz for emissions in each of the test modes, and recorded at least the six highest emissions. Each value shall comply with the requirement given.

The test data of the worst-case condition(s) was recorded.

7.2.3. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

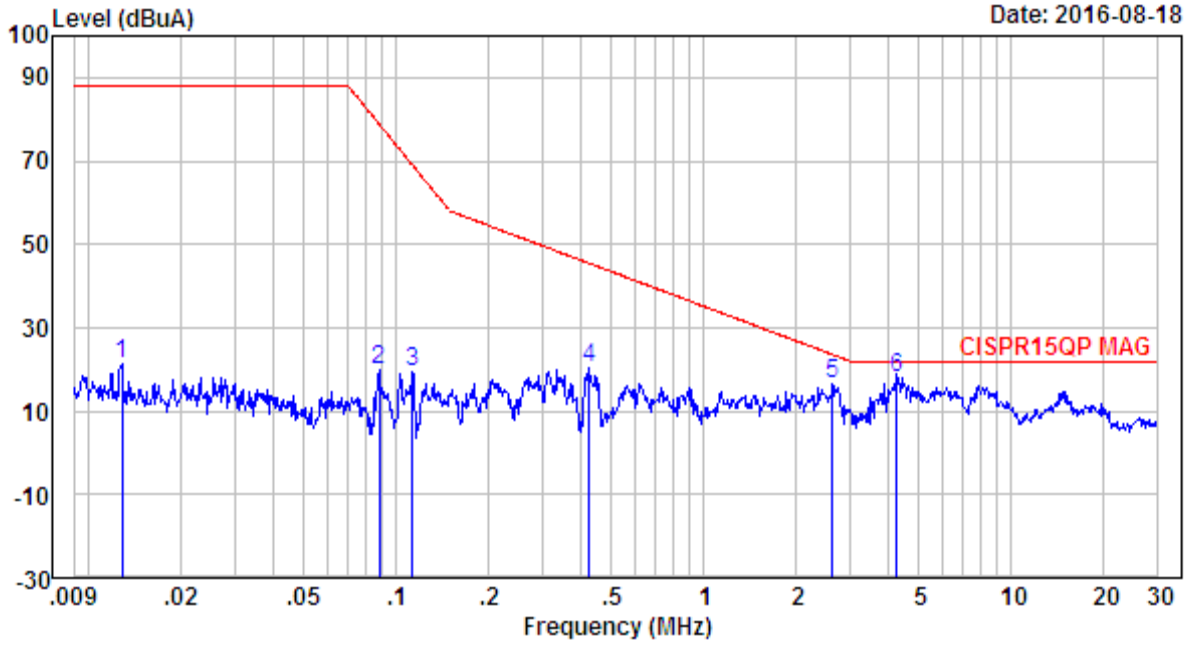
7.2.4. TEST RESULT

Product name	LED BAY	Antenna Pole	X, Y, Z
Model No.	B0801-XX-300-ZZZ	Antenna Diameter	2 m
Test Mode	Lighting	Detector Function	Peak
Environmental Conditions	25.5℃, 54 % RH, 101.5 kPa	6 dB Bandwidth	200 Hz/9 kHz
Tested By	Cen	Test Result	Pass

Note:
Freq. = Emission frequency in MHz
Reading level (dBμA) = Receiver reading
Corr. Factor (dB) = Antenna factor + Cable loss
Measurement (dBμA) = Reading level (dBμA) + Corr. Factor (dB)
Limit (dBμA) = Limit stated in standard
Over Limit (dB) = Measurement (dBμA) – Limit (dBμA)
QP = Quasi-Peak

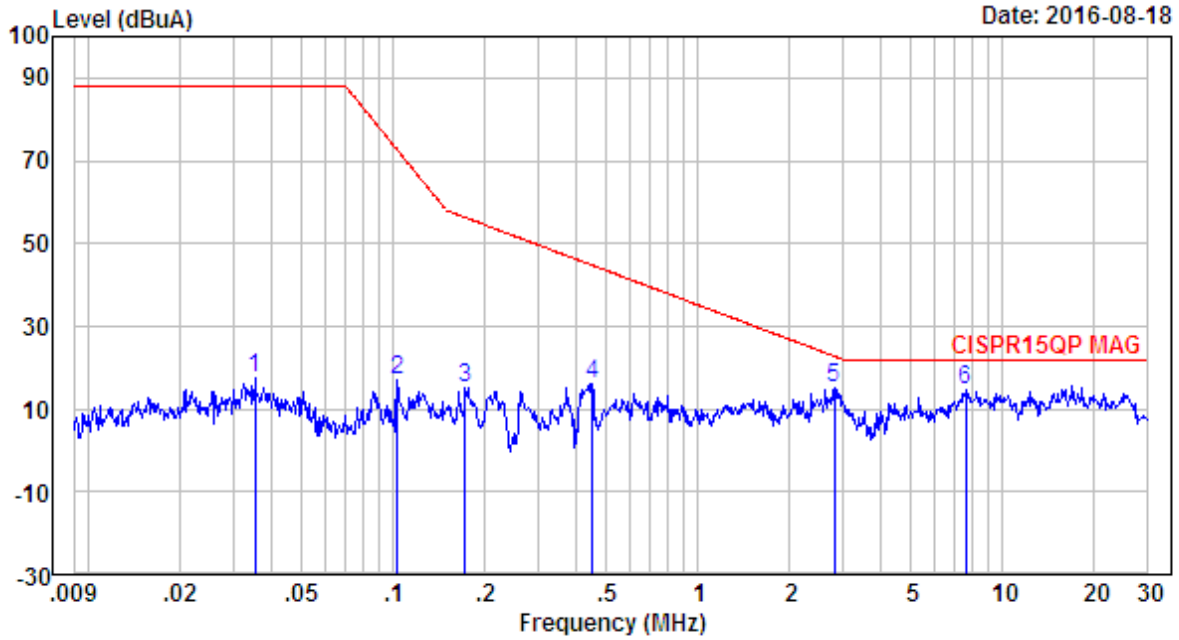
Please refer to the following diagram:

X:



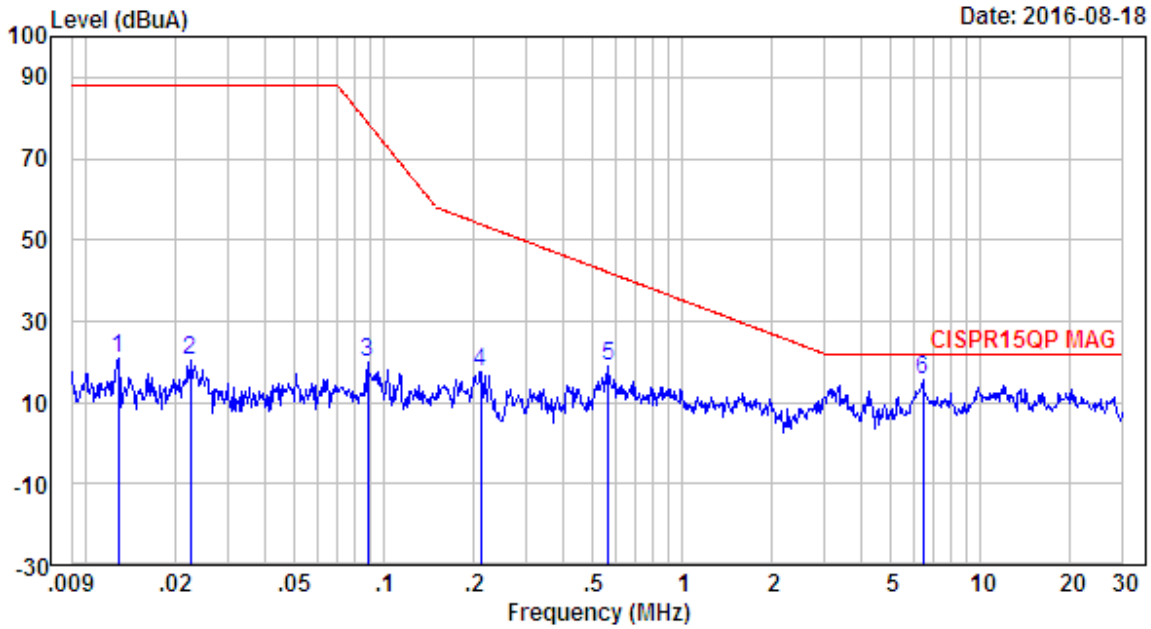
No.	Freq MHz	Cable Loss dB	MAG-ANT Factor dB	Receiver Reading dBuA	Emission Level dBuA	Limit dBuA	Over Limit dB	Remark
1.	0.013	10.78	0.97	9.52	21.27	88.00	-66.73	Peak
2.	0.089	10.64	0.92	8.22	19.78	78.70	-58.92	Peak
3.	0.113	10.62	0.90	7.75	19.27	69.12	-49.85	Peak
4.	0.424	10.64	0.94	8.78	20.36	45.51	-25.15	Peak
5.	2.632	10.71	0.72	5.23	16.66	23.57	-6.91	Peak
6.	4.247	10.73	0.85	6.53	18.11	22.00	-3.89	Peak

Y:



No.	Freq MHz	Cable Loss dB	MAG-ANT Factor dB	Receiver Reading dBuA	Emission Level dBuA	Limit dBuA	Over Limit dB	Remark
1.	0.035	10.71	0.98	5.90	17.59	88.00	-70.41	Peak
2.	0.103	10.63	0.91	5.57	17.11	72.63	-55.52	Peak
3.	0.172	10.60	0.91	3.48	14.99	56.33	-41.34	Peak
4.	0.453	10.64	0.93	4.44	16.01	44.73	-28.72	Peak
5.	2.808	10.71	0.73	3.43	14.87	22.79	-7.92	Peak
6.	7.555	10.75	1.03	2.83	14.61	22.00	-7.39	Peak

Z:



No.	Freq MHz	Cable Loss dB	MAG-ANT Factor dB	Receiver Reading dBuA	Emission Level dBuA	Limit dBuA	Over Limit dB	Remark
1.	0.013	10.78	0.97	9.29	21.04	88.00	-66.96	Peak
2.	0.023	10.74	0.98	8.81	20.53	88.00	-67.47	Peak
3.	0.089	10.64	0.92	8.31	19.87	78.70	-58.83	Peak
4.	0.211	10.61	0.96	5.75	17.32	53.89	-36.57	Peak
5.	0.568	10.65	0.90	7.16	18.71	42.00	-23.29	Peak
6.	6.424	10.74	0.98	3.69	15.41	22.00	-6.59	Peak

7.3. RADIATED EMISSION MEASUREMENT

7.3.1. LIMITS

FREQUENCY (MHz)	Limit (dBμV/m) (At 3 m)
30 ~ 230	40
230 ~ 300	47

Note: 1) The lower limit shall apply at the transition frequencies.

2) Emission level (dBμV/m) = 20 log Emission level (μV/m).

7.3.2. TEST PROCEDURE

The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is floor standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

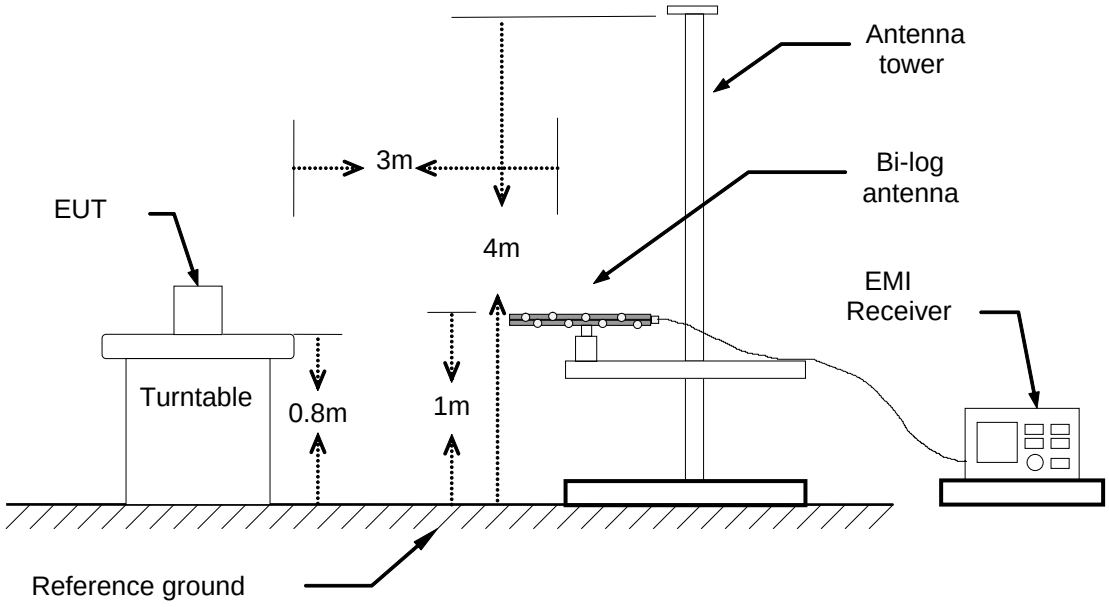
The antenna was placed at 3 meter away from the EUT. The antenna connected to the spectrum analyzer via a cable and at times a pre-amplifier would be used.

The analyzer / receiver quickly scanned from 30 MHz to 300 MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

During the above scans, the emissions were maximized by cable manipulation. Each modes is measured, recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

The test data of the worst-case condition(s) was recorded.

7.3.3. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration

7.3.4. TEST RESULT

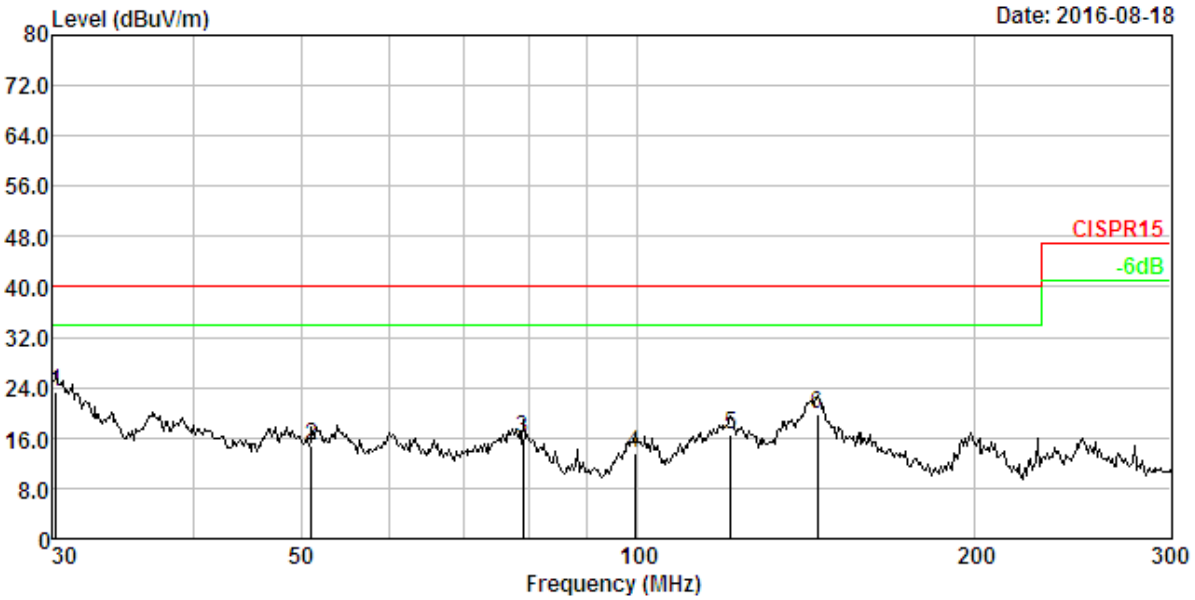
Product name	LED BAY	Antenna Distance	3 m
Model No.	B0801-XX-300-ZZZ	Antenna Pole	Vertical / Horizontal
Test Mode	Lighting	Detector Function	Peak / Quasi-peak
Environmental Conditions	25.5℃, 54 % RH, 101.5 kPa	6 dB Bandwidth	120 kHz
Tested by	Cen	Test Result	Pass

Note:
Freq. = Emission frequency in MHz
Reading level (dBμV/m) = Receiver reading
Corr. Factor (dB) = Antenna factor + Cable loss
Measurement (dBμV/m) = Reading level (dBμV/m) + Corr. Factor (dB)
Limit (dBμV/m) = Limit stated in standard
Over Limit (dB) = Measurement (dBμV/m) – Limit (dBμV/m)
QP = Quasi-Peak

The highest frequency of the internal sources of the EUT was less than 108 MHz, so the measurement was only made up to 1 GHz.

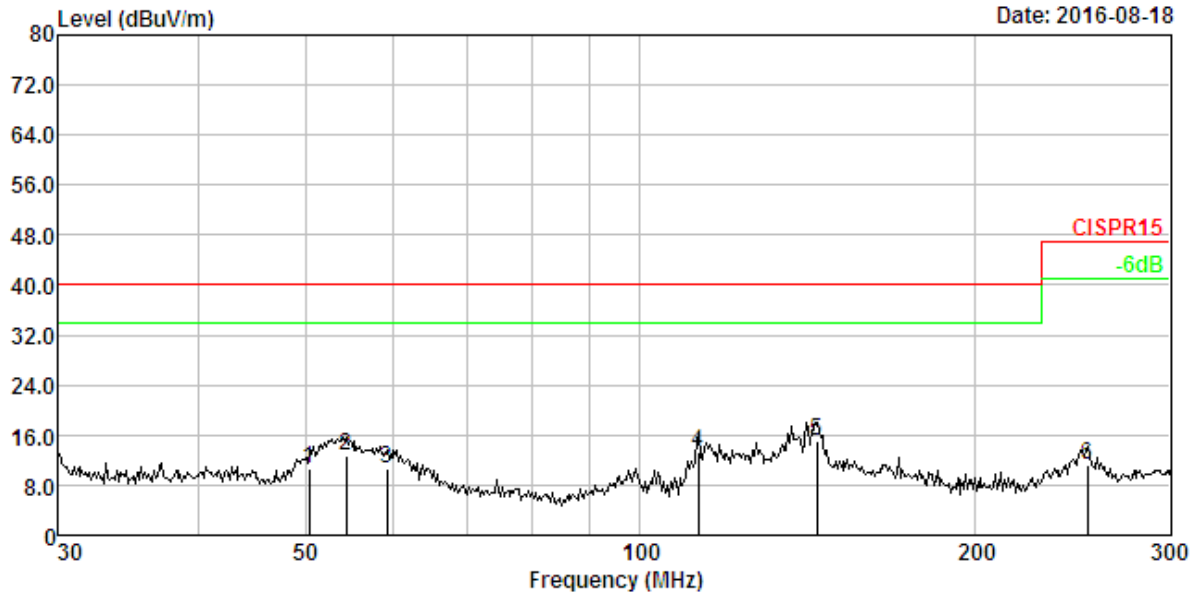
Please refer to the following diagram:

Vertical:



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	30.211	1.06	13.24	39.08	29.97	23.41	40.00	-16.59	QP
2.	51.121	1.54	12.18	31.25	30.16	14.81	40.00	-25.19	QP
3.	78.965	1.93	8.99	35.25	30.31	15.86	40.00	-24.14	QP
4.	99.528	2.14	10.19	31.77	30.39	13.71	40.00	-26.29	QP
5.	121.123	2.32	12.10	32.53	30.46	16.49	40.00	-23.51	QP
6.	144.842	2.48	13.63	34.10	30.52	19.69	40.00	-20.31	QP

Horizontal:



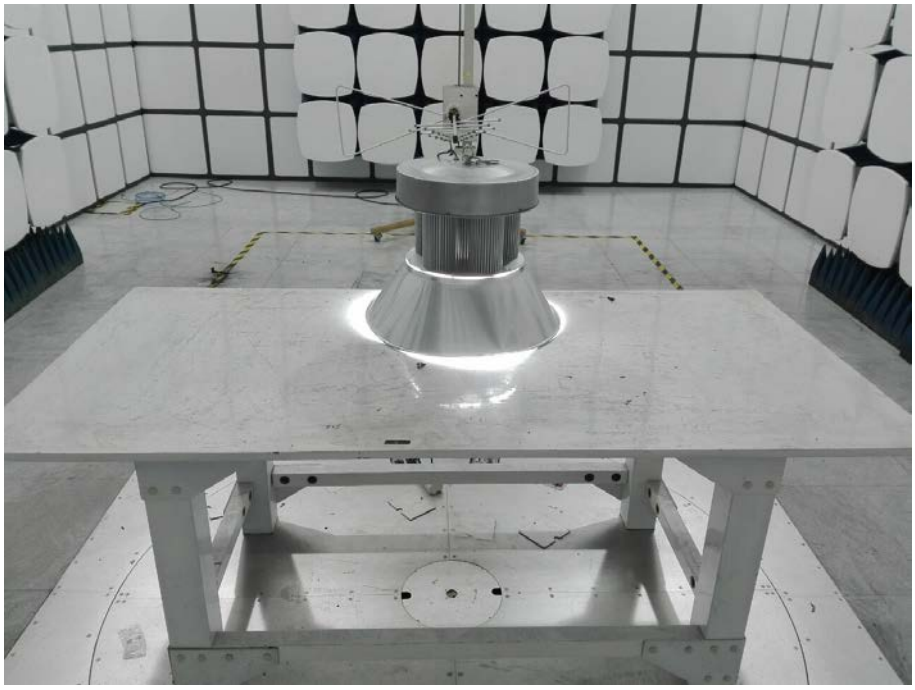
No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	50.409	1.52	12.24	27.00	30.15	10.61	40.00	-29.39	QP
2.	54.452	1.59	11.94	29.35	30.18	12.70	40.00	-27.30	QP
3.	59.232	1.67	12.13	26.99	30.21	10.58	40.00	-29.42	QP
4.	112.920	2.26	11.36	29.96	30.43	13.15	40.00	-26.85	QP
5.	144.335	2.48	13.60	29.59	30.52	15.15	40.00	-24.85	QP
6.	252.948	2.99	11.99	26.99	30.71	11.26	47.00	-35.74	QP

8. PHOTOGRAPHS OF THE TEST CONFIGURATION

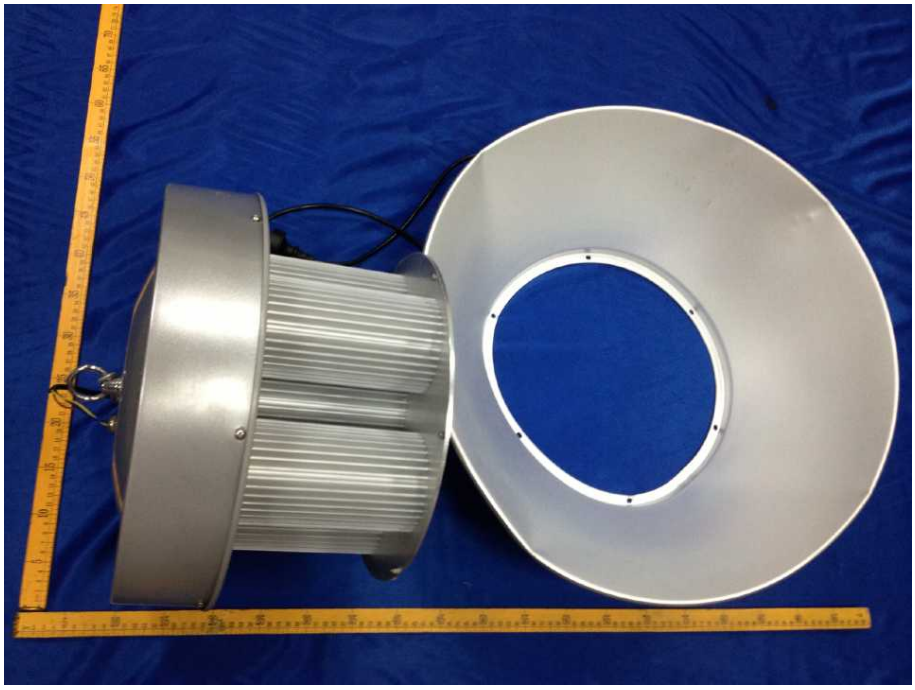
CONDUCTED EMISSION TEST

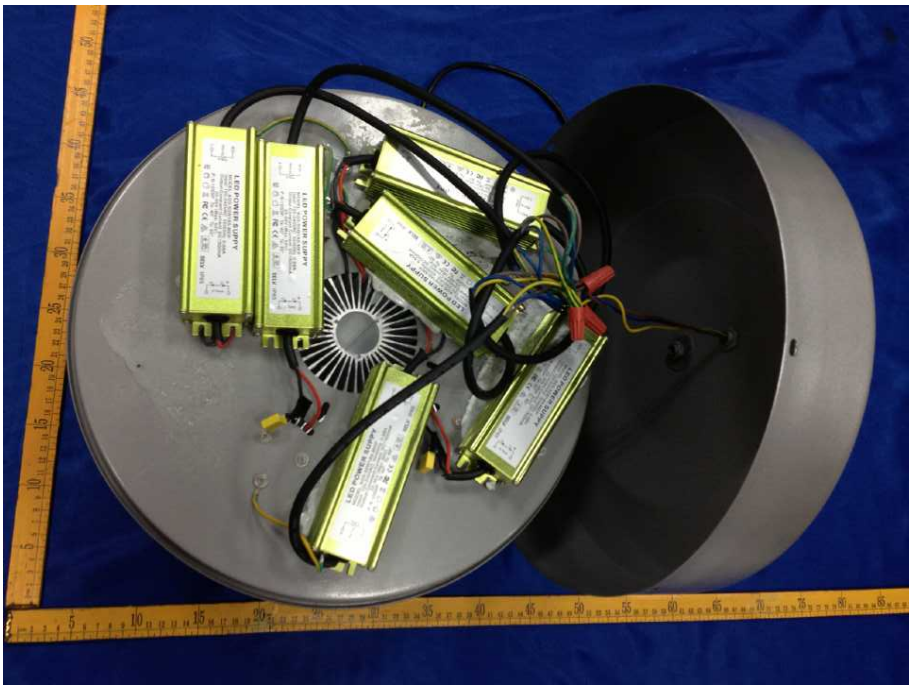
RADIATED ELECTROMAGNETIC EMISSION TEST

RADIATED EMISSION TEST



9. PHOTOGRAPHS OF EUT





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