



**SGS-CSTC Standards  
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Report No.: SHEM130200021901  
Page: 1 of 29

**1 Cover Page**

# TEST REPORT

Application No.:	SHEM1302000219LM
Applicant:	Taizhou BD King Trading Co., Ltd.
Manufacturer:	Taizhou BD King Trading Co., Ltd.
Factory:	Taizhou BD King Trading Co., Ltd.
Product Name:	Camp Lantern
Model No.(EUT):	LIV-258
Add Model No.:	LIV-251
Standards:	FCC Part15 :2012
Date of Receipt:	February 20, 2013
Date of Test:	February 22, 2013 to February 27, 2013
Date of Issue:	March 15, 2013
Test Result :	Pass*

\* In the configuration tested, the EUT (Equipment under test) complied with the standards specified above.



Mar. 2013

**Tony Wu**  
**E&E Section Manager**  
**SGS-CSTC (Shanghai) Co., Ltd.**

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

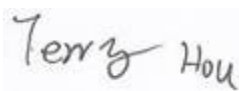

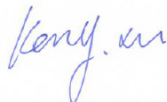
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## 2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		March 01, 2013		Original
01	Modified §5.3	March 15, 2013	Tricia Jiang	Amendment

Remark: The version 01 of the report had replaced the version 00 which were invalid.

Authorized for issue by:				
Engineer		Terry Hou		
		Print Name		Date(February 27, 2013)
Clerk		Tricia Jiang		
		Print Name		Date(March 01, 2013)
Reviewer		Keny Xu		
		Print Name		Date(March 05, 2013)

### 3 Test Summary

ELECTROMAGNETIC INTERFERENCE (EMI)				
Test	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission (150KHz to 30MHz)	FCC Part15:2012	ANSI C63.4: 2009	Class B	PASS
Radiated Emission, (30MHz to 1GHz)	FCC Part15:2012	ANSI C63.4: 2009	Class B ♀	PASS
Radiated Emission above 1 GHz	FCC Part15:2012	ANSI C63.4: 2009	Class B	N/A
<p>Remark:</p> <p>N/A: Not applicable.</p> <p>Note1: ♀ If the highest frequency of the internal sources of the EUT is less than 108MHz,the measurement shall only be made up to 1GHz.</p> <p>Note2: There are 2 models mentioned in this report, and they are the similar in electrical and electronic characters. So we just have the typical models LIV-258 tested.</p>				

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## 5 General Information

### 5.1 Client Information

Applicant:	Taizhou BD King Trading Co., Ltd.
Address of Applicant:	No.47 Yuandian Rd. Yuanqiao Industrial Park, Huangyan Taizhou Zhejiang
Manufacturer:	Taizhou BD King Trading Co., Ltd.
Address of Manufacturer:	No.47 Yuandian Rd. Yuanqiao Industrial Park, Huangyan Taizhou Zhejiang
Factory:	Taizhou BD King Trading Co., Ltd.
Address of Factory:	No.47 Yuandian Rd. Yuanqiao Industrial Park, Huangyan Taizhou Zhejiang

### 5.2 General Description of E.U.T.

Product Name:	Camp Lantern
Model No.(EUT):	LIV-258
Add Model No.:	LIV-251

### 5.3 Details of E.U.T.

Power Supply:	DC 5V 1000mA
Cable Type:	About 0.37m for USB DC cable
Rated Power:	5W
Functions/Modes:	Lighting mode & Charging mode
Lighting mode:	Keep EUT lighting with maximum brightness continually.
Charging mode:	Keep EUT connect with USB Adaptor.

## 5.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
USB Adaptor	SAMSUNG	ETA0U80EBE

## 5.5 Deviation from Standards

None.

## 5.6 Abnormalities from Standard Conditions

None.

## 5.7 Modification/Retest Record

None.

## 5.8 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab

No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

No tests were sub-contracted.

## 5.9 Test Facility

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2015-02-22.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: **R-3868** and **C-4336** respectively. Date of Registration: 2012-05-29. Date of Expiry: 2015-05-28.

## 6 Equipment list

### Conducted Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2012-04-13	2013-04-12
2	Line impedance stabilization network	SCHWARZBE CK	NSLK812 7	8127-490	2012-03-15	2013-03-14
3	Line impedance stabilization network	ETS	3816/2	00034161	2012-03-15	2013-03-14

### Radiated Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2012-06-02	2013-06-01
2	Antenna	SCHWARZBE CK	VULB916 8	9168-313	2012-03-15	2013-03-14
3	CONTROLLER	INNCO	CO200	474	/	/
4	Antenna	SCHWARZBE CK	BBHA912 0D	9120D-67 9	2012-03-15	2013-03-14
5	Antenna	SCHWARZBE CK	BBHA917 0	9170-373	2012-03-15	2013-03-14
6	Low noise amplifier	LNA6900	TESEQ	71033	2012-03-15	2013-03-14





**General Equipment**

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	Digital pressure meter	YONGZHI	DYM3-01	101012	2013-01-16	2014-01-14
2	Digital Multimeter	FLUKE	17B	10560713	2012-08-24	2013-08-22
3	Temperature& humidity recorder	ShangHai weather meter work	ZJ 1-2B	0804081 0802150 0805126	2012-07-25	2013-07-23
4	Digital illuminance meter	TES electrical electronic Corp.	TES-1330 A	05060221 9	2012-10-17	2013-10-15

## 7 Electromagnetic Interference Test Results

### 7.1 Conducted Emissions on Mains Terminals, 150 kHz to 30 MHz

Test Requirement: FCC Part15 :2012  
Test Method: ANSI C63.4: 2009  
Test Date: February 27, 2013  
Test Voltage: DC 5V  
Frequency Range: 150 KHz to 30 MHz  
Class / Severity: Class B  
Detector: Peak for pre-scan (9 kHz Resolution Bandwidth from 150 KHz to 30 MHz)  
Limit:

Frequency range MHz	Class B Limits dB (μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.  
Note2: The lower limit is applicable at the transition frequency.

#### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 56 % RH Atmospheric Pressure: 101.9 kPa

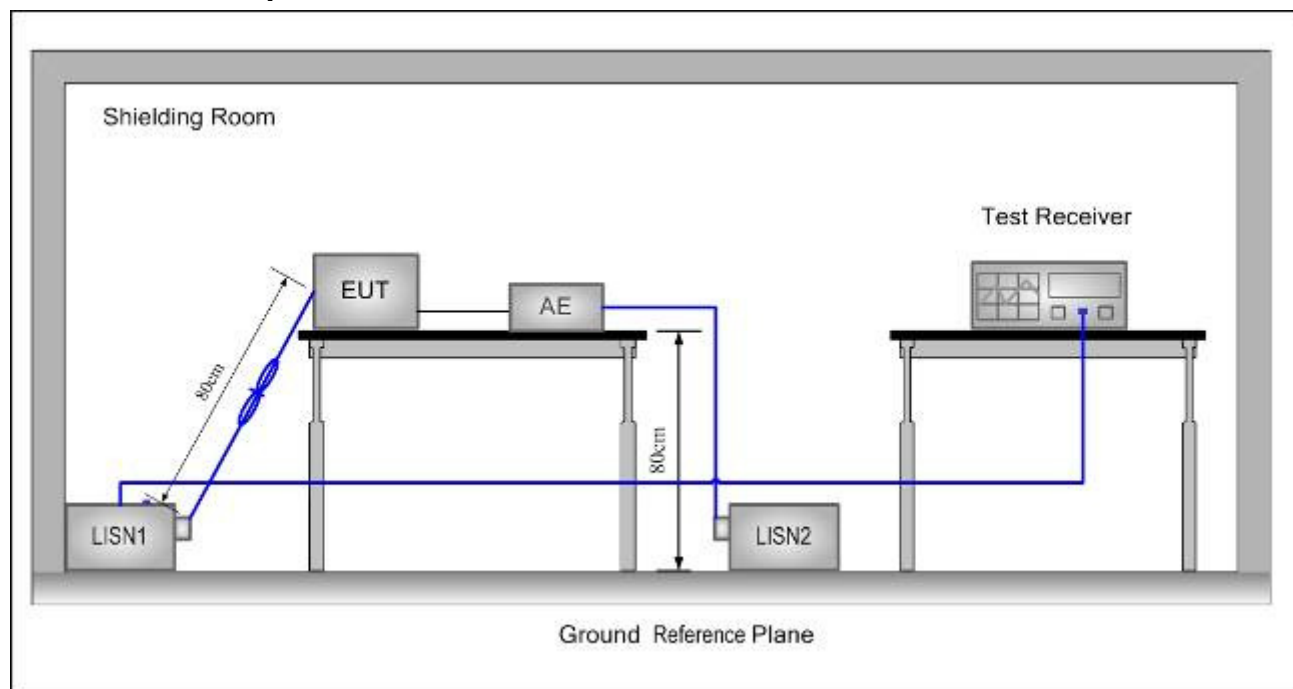
Test mode: Charging mode

Pre-scan was performed with peak detected on all ports, Quasi-peak & average measurements were performed at the frequencies at which maximum peak emission level were detected.

Please see the attached Quasi-peak and Average test results.

Level = Read Level + LISN/ISN Factor + Cable Loss.

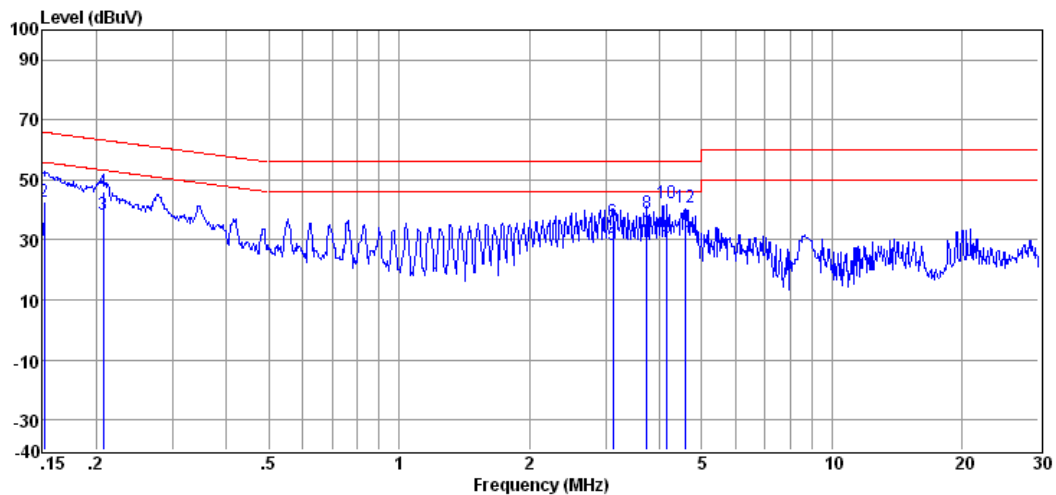
## 7.1.2 Test Setup and Procedure



1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a  $50\Omega/50\mu\text{H} + 5\Omega$  linear impedance. The power cables of all other units of the EUT was connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance was between the closest points of the LISN and the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m. All other units of the EUT and associated equipment was at least 0,8 m from the LISN.

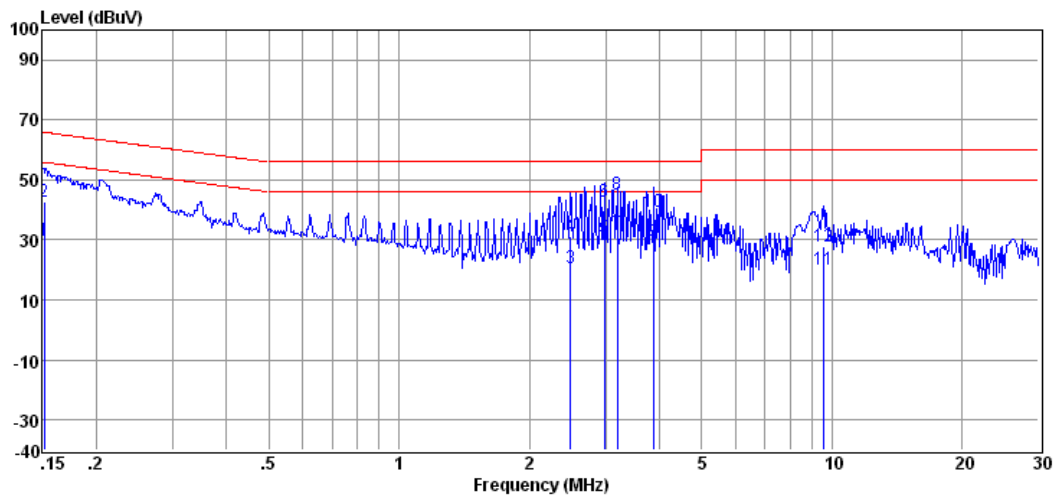
### 7.1.3 Measurement Data

Live Line:



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)	
1	0.152	29.68	0.20	0.10	29.98	55.91	-25.93	Average
2	0.152	42.27	0.20	0.10	42.57	65.91	-23.34	QP
3	0.207	38.38	0.10	0.10	38.58	53.32	-14.74	Average
4	0.207	46.14	0.10	0.10	46.34	63.32	-16.98	QP
5	3.123	27.94	0.30	0.14	28.38	46.00	-17.62	Average
6	3.123	35.70	0.30	0.14	36.14	56.00	-19.86	QP
7	3.740	31.67	0.30	0.16	32.13	46.00	-13.87	Average
8	3.740	38.41	0.30	0.16	38.87	56.00	-17.13	QP
9	4.158	30.49	0.30	0.17	30.96	46.00	-15.04	Average
10	4.158	41.61	0.30	0.17	42.08	56.00	-13.92	QP
11	4.574	29.09	0.30	0.19	29.58	46.00	-16.42	Average
12	4.574	40.19	0.30	0.19	40.68	56.00	-15.32	QP

Neutral Line:



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)	
1	0.152	29.54	0.20	0.10	29.84	55.91	-26.07	Average
2	0.152	42.37	0.20	0.10	42.67	65.91	-23.24	QP
3	2.487	20.03	0.30	0.12	20.45	46.00	-25.55	Average
4	2.487	30.55	0.30	0.12	30.97	56.00	-25.03	QP
5	2.978	30.52	0.30	0.13	30.95	46.00	-15.05	Average
6	2.978	42.51	0.30	0.13	42.94	56.00	-13.06	QP
7	3.190	31.82	0.30	0.14	32.26	46.00	-13.74	Average
8	3.190	44.81	0.30	0.14	45.25	56.00	-10.75	QP
9	3.881	28.63	0.30	0.16	29.09	46.00	-16.91	Average
10	3.881	38.68	0.30	0.16	39.14	56.00	-16.86	QP
11	9.552	19.46	0.56	0.11	20.13	50.00	-29.87	Average
12	9.552	27.08	0.56	0.11	27.75	60.00	-32.25	QP

## 7.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement: FCC Part15 :2012  
Test Method: ANSI C63.4: 2009  
Test Date: February 22, 2013  
Test Voltage: DC 5V  
Frequency Range: 30 MHz to 1 GHz  
Measurement Distance: 3m  
Class: Class B  
Detector: Peak for pre-scan (120 kHz resolution bandwidth)  
Limit:  
For 3m

Frequency range MHz	Quasi-peak limits dB (μV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54
Note: At transitional frequencies the lower limit applies.	

### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C      Humidity: 55 % RH      Atmospheric Pressure: 99.9 kPa

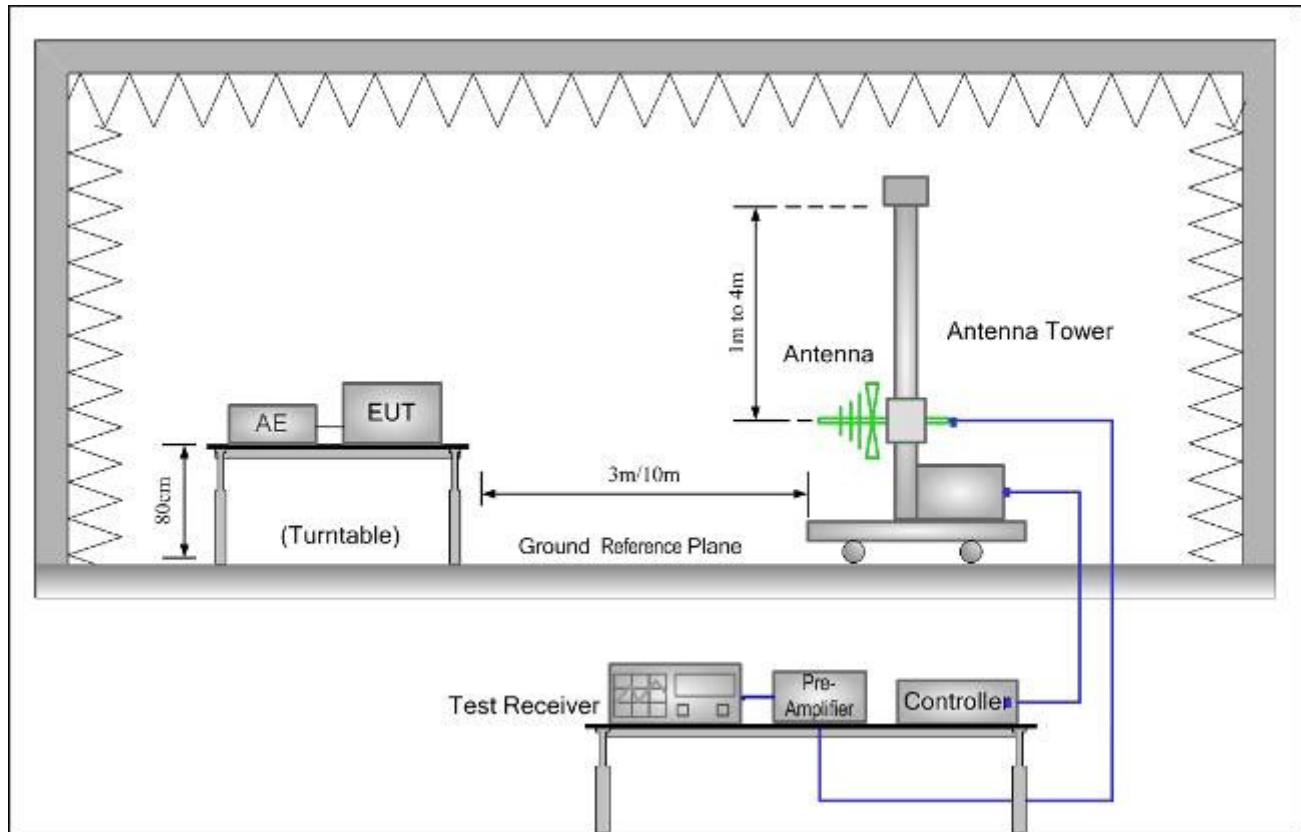
Test mode:      Lighting mode & Charging mode

Pre-scan was performed with peak detected on all ports, Quasi-peak measurements was performed at the frequencies at which maximum peak emission level were detected.

Please see the attached Quasi-peak test results.

For radiated emission: Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

## 7.2.2 Test Setup and Procedure



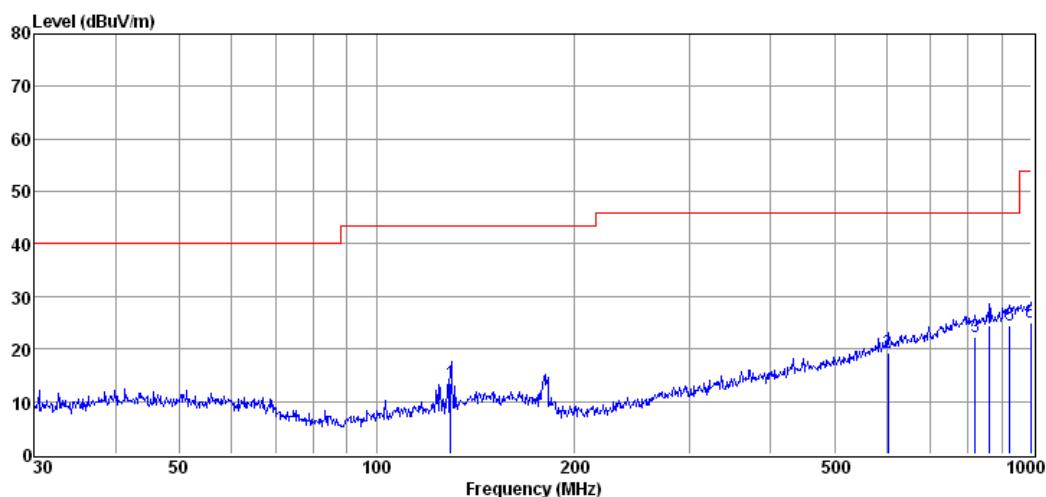
1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. The EUT was connected to AC power source through a mains power outlet which was bonded to the ground reference plane; The mains cables shall drape to the ground reference plane.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum signature data plots of the EUT.
5. The frequencies of maximum emission were determined in the final radiated emissions measurement, the physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.



### 7.2.3 Measurement Data

Vertical:

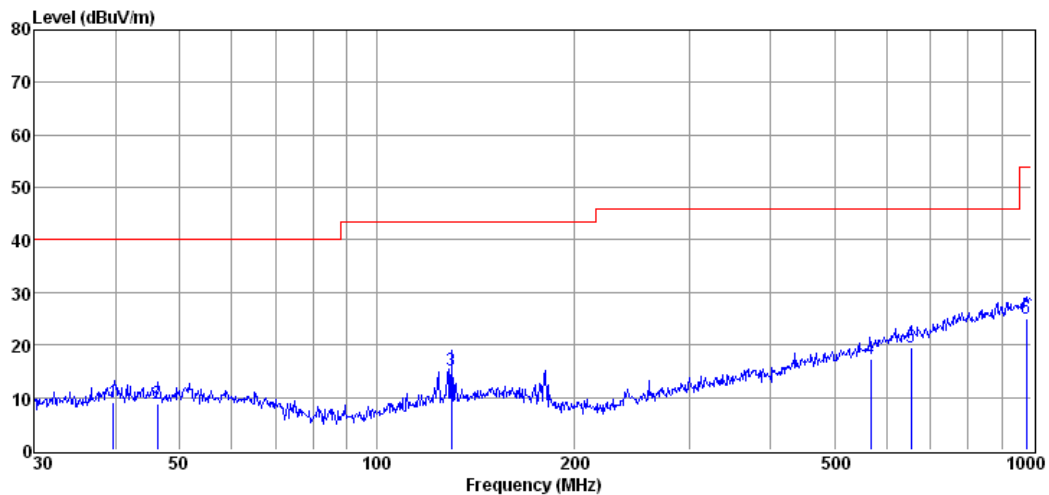
Lighting mode



Item	Freq.	Read Level	Antenna Factor	Preamplifier Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	129.70	26.42	10.59	24.70	1.18	13.49	43.50	-30.01	QP
2	603.25	21.25	19.26	24.20	2.92	19.23	46.00	-26.77	QP
3	819.80	20.39	22.42	23.92	3.49	22.38	46.00	-23.62	QP
4	863.80	22.11	22.66	23.90	3.58	24.45	46.00	-21.55	QP
5	926.17	21.06	23.42	23.80	3.72	24.40	46.00	-21.60	QP
6	996.50	20.49	24.27	23.70	3.88	24.94	54.00	-29.06	QP

Horizontal:

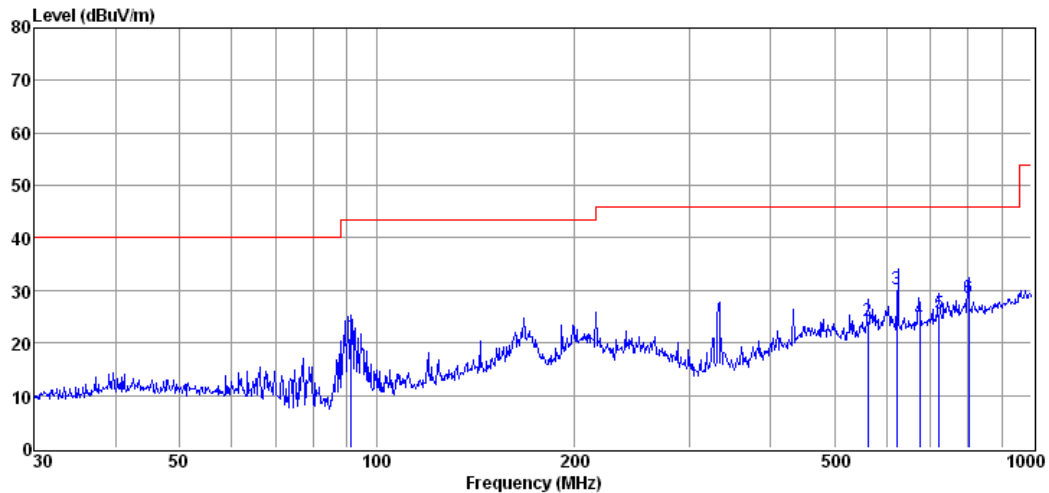
Lighting mode



Item	Freq.	Read Level	Antenna Factor	Preamplifier Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	39.66	20.06	13.24	24.70	0.56	9.16	40.00	-30.84	QP
2	46.24	19.99	13.03	24.70	0.61	8.93	40.00	-31.07	QP
3	129.89	26.95	11.60	24.70	1.18	15.03	43.50	-28.47	QP
4	568.23	20.43	18.41	24.23	2.81	17.42	46.00	-28.58	QP
5	655.62	20.72	19.94	24.14	3.03	19.55	46.00	-26.45	QP
6	982.71	20.78	24.16	23.70	3.86	25.10	54.00	-28.90	QP

Vertical:

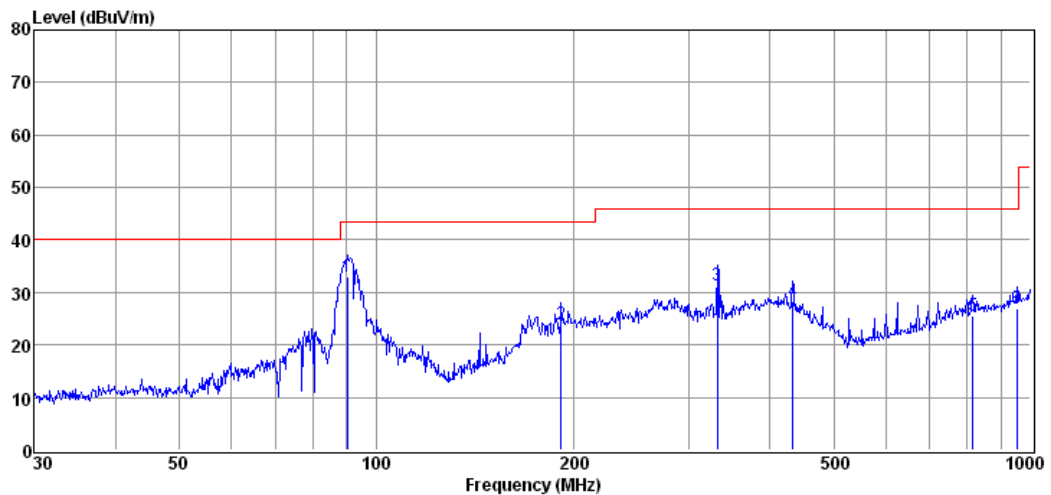
Charging mode



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	91.49	36.35	8.60	24.70	0.96	21.21	43.50	-22.29	QP
2	561.84	27.51	18.23	24.25	2.79	24.28	46.00	-21.72	QP
3	623.12	31.77	19.66	24.20	2.97	30.20	46.00	-15.80	QP
4	674.59	25.52	20.10	24.10	3.06	24.58	46.00	-21.42	QP
5	722.79	25.27	21.04	24.10	3.23	25.44	46.00	-20.56	QP
6	801.62	26.56	22.49	23.99	3.45	28.51	46.00	-17.49	QP

Horizontal:

Charging mode



Item	Freq.	Read Level	Antenna Factor	Preamplifier Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	90.34	48.36	8.52	24.70	0.95	33.13	43.50	-10.37	QP
2	191.71	37.44	9.63	24.60	1.47	23.94	43.50	-19.56	QP
3	332.09	40.43	13.24	24.50	2.06	31.23	46.00	-14.77	QP
4	433.27	34.60	15.66	24.40	2.39	28.25	46.00	-17.75	QP
5	816.29	23.63	22.33	23.93	3.48	25.51	46.00	-20.49	QP
6	952.18	23.04	23.92	23.79	3.80	26.97	46.00	-19.03	QP

## 8 Photographs (Test Setup For the EUT)

### 8.1 Conducted Emissions on Mains Terminals Test Setup



### 8.2 Radiated Emission Test Setup

Lighting mode



## Charging mode





## 9 EUT Constructional Details

### 9.1 Exterior of EUT

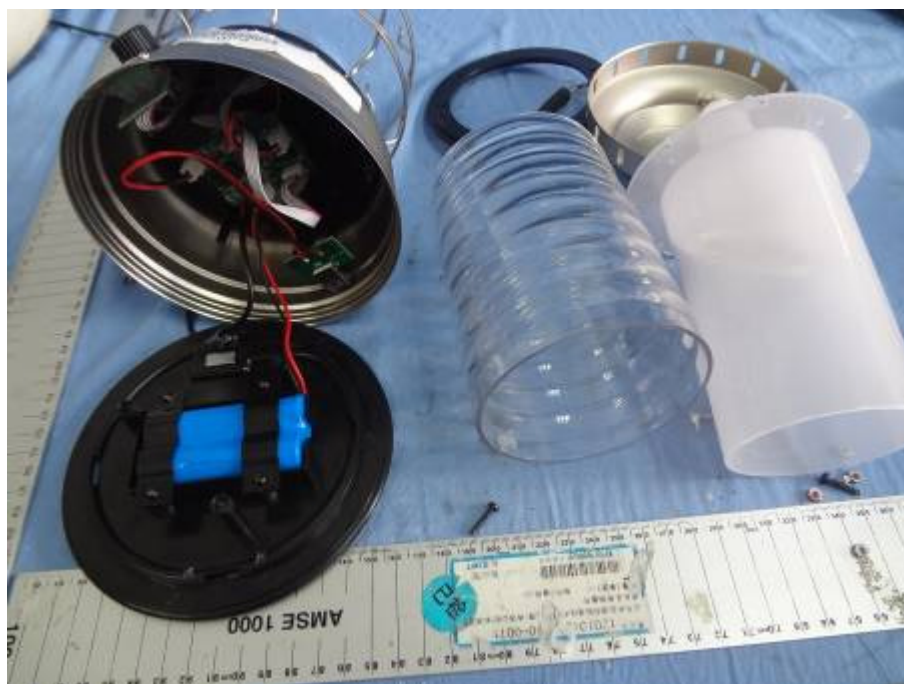






## 9.2 Interior of EUT

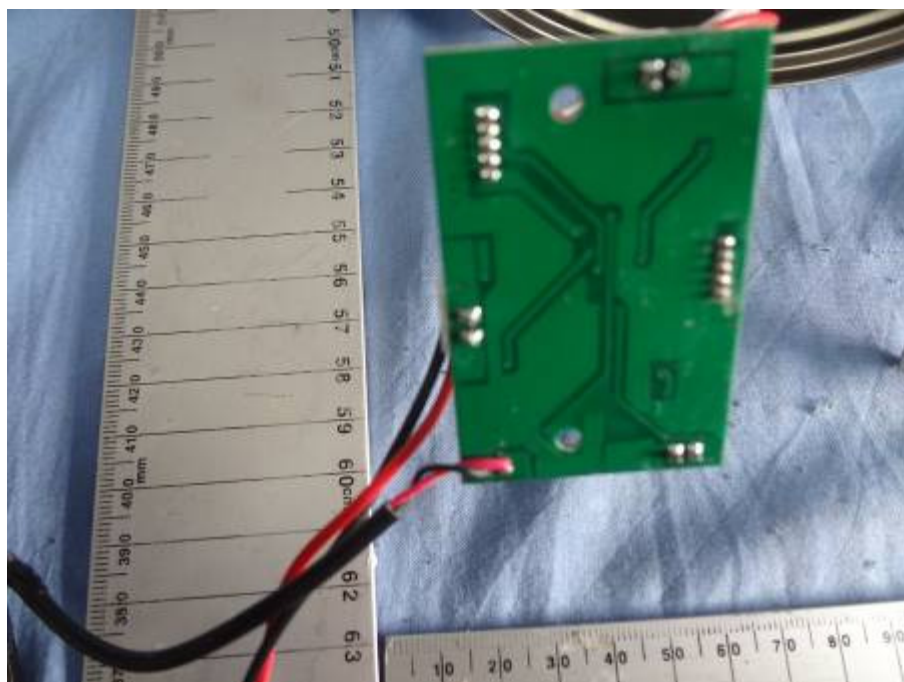












**--End of the Report--**