MRT Technology (Suzhou) Co., Ltd
Phone: +86-512-66308358
Fax: +86-512-66308368
Web: www.mrt-cert.com

Report No.: 1403ESU01401
Report Version: V02
Issue Date: 04-24-2014

MEASUREMENT REPORT

FCC Part 18 Subpart C: 2013

FCC ID:	2AA551106610665
APPLICANT:	Shanghai Senben Lighting Technology Incorporated Company
Product:	FACTORY LAMP
Model No.:	SBD1106-YQL65, SBF6106-YQL65
Standards:	FCC Part 18 Subpart C: 2013 MP5: 1986
Result:	Complies
Test Date:	March 19 ~ 22, 2014

Reviewed By : Robin Wu
(Robin Wu)

Approved By : Marlin Chen
(Marlin Chen)

Revision History

Report No.	Version	Description	Issue Date
1403ESU01401	Rev. 01	Initial report	04-17-2014
1403ESU01401	Rev. 02	Revised the Magnetic Field Emission Limit	04-24-2014

CONTENTS

Description Page

1. General Information

1.1. Applicant

Shanghai Senben Lighting Technology Incorporated Company
Zone B, Block 2, No. 4800, Baoqian Highway, Jiading District, Shanghai City, China

1.2. Manufacturer

Shanghai Senben Lighting Technology Incorporated Company
Zone B, Block 2, No. 4800, Baoqian Highway, Jiading District, Shanghai City, China

1.3. Feature of Product

Product Name	FACTORY LAMP
FCC ID	2AA551106610665
Model No.	SBD1106-YQL65, SBF6106-YQL65
Model Difference	The structure and appearance are the same, but used in the different sites.
Working Frequency	220kHz
Working Voltage	AC 120V, 60Hz

Note: The Lights belong to Consumer equipment, so the corresponding limits are presented according to FCC Part 18 Subpart C. This test report has assessed the Model No.: SBF6106-YQL65

1.4. Testing Facility

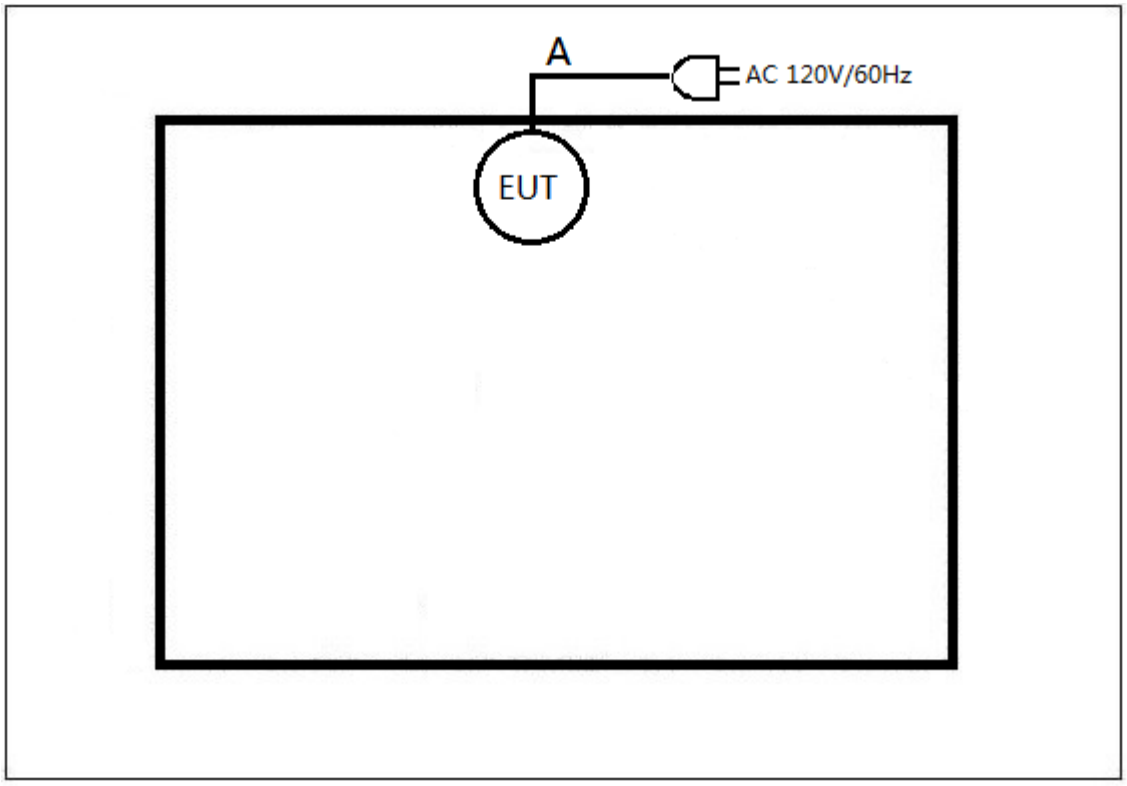
Test Site	MRT Technology (Suzhou) Co., Ltd
Test Site Location	D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
Registration No.	809388

2. Test Configuration of Equipment Under Test

2.1. Test Mode

Final Test Mode	
Test Mode	Mode 1: Power On

2.2. Configuration of Tested System

Connection Diagram


Cable Type		Cable Description
A	Power Cable	1.6m

2.3. Accessories Description

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
N/A	N/A	N/A	N/A	N/A

2.4. Tested Software

Not Applicable.

3. Test Summary

Normative References	Test Description	Test Result (Pass/Fail)
FCC Part 18 Subpart C: 2013 MP5: 1986	Conducted Emission	Pass
FCC Part 18 Subpart C: 2013 MP5: 1986	Radiated Emission	Pass
FCC Part 18 Subpart C: 2013 MP-5: 1986	Magnetic Field Emission	Pass

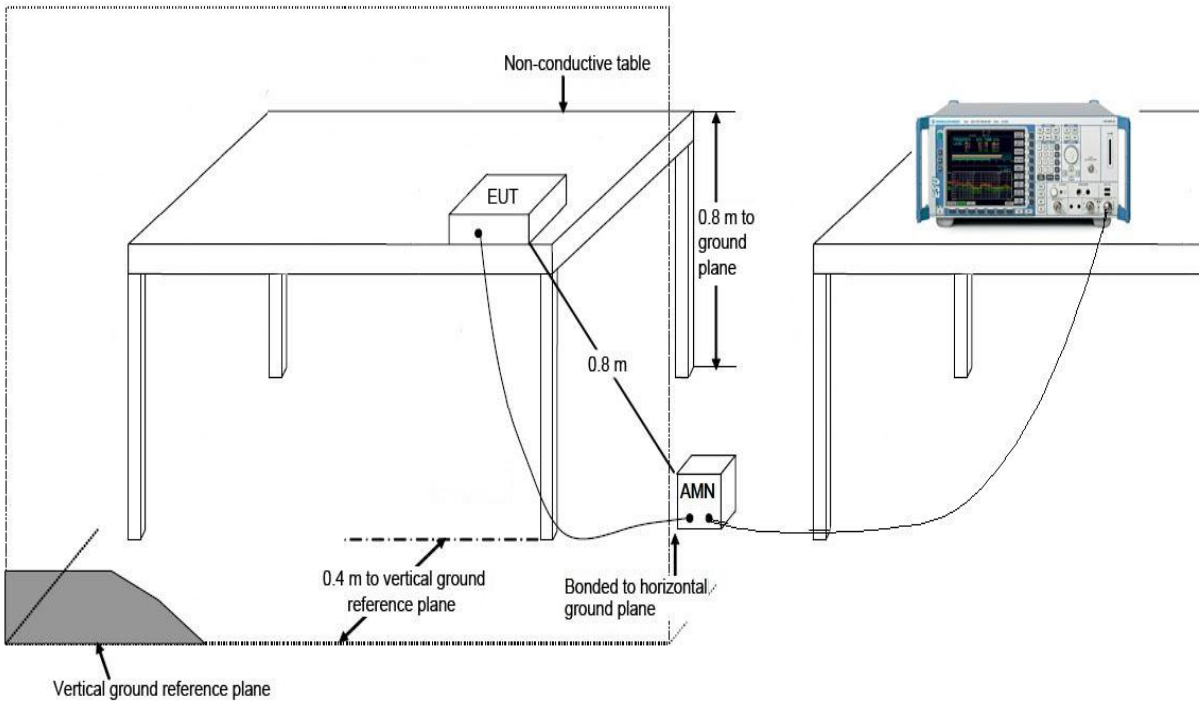
4. Conducted Emission

4.1. Limit of Conducted Emission

FCC Part 18 Subpart C Paragraph 18.307(c) Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.45 – 2.51	48	--
2.51 – 3.0	70	--
3.0 - 30	48	--

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

4.2. Test Setup



4.3. Test Procedure

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)

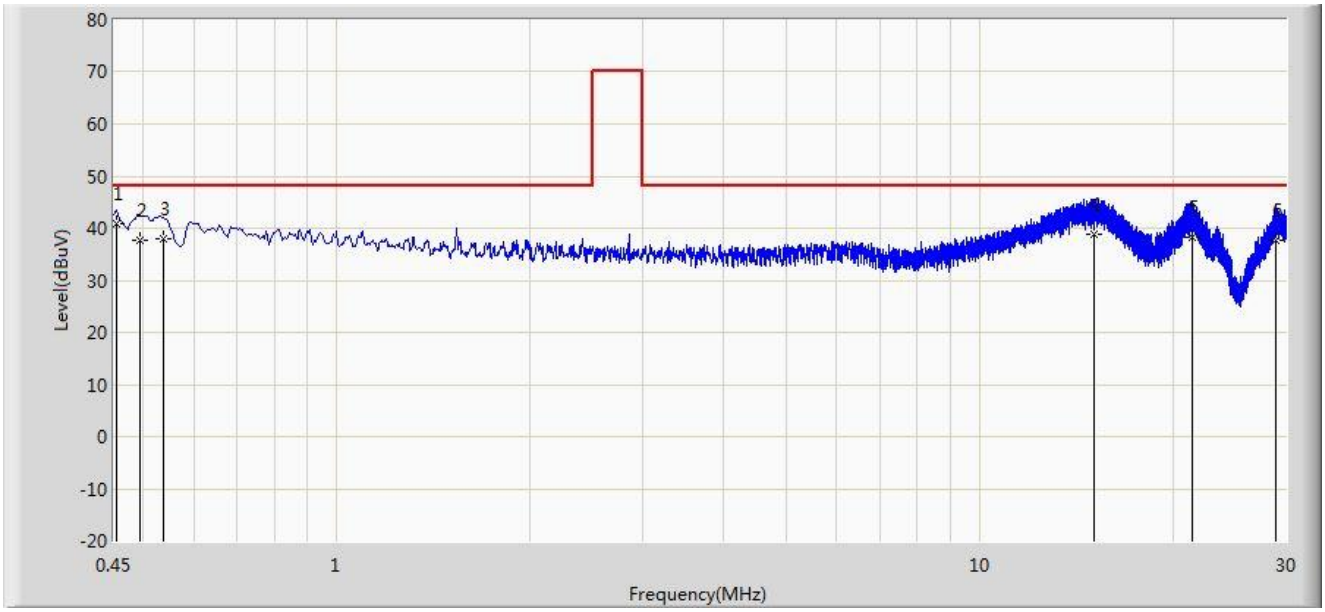
Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

4.4. Test Result

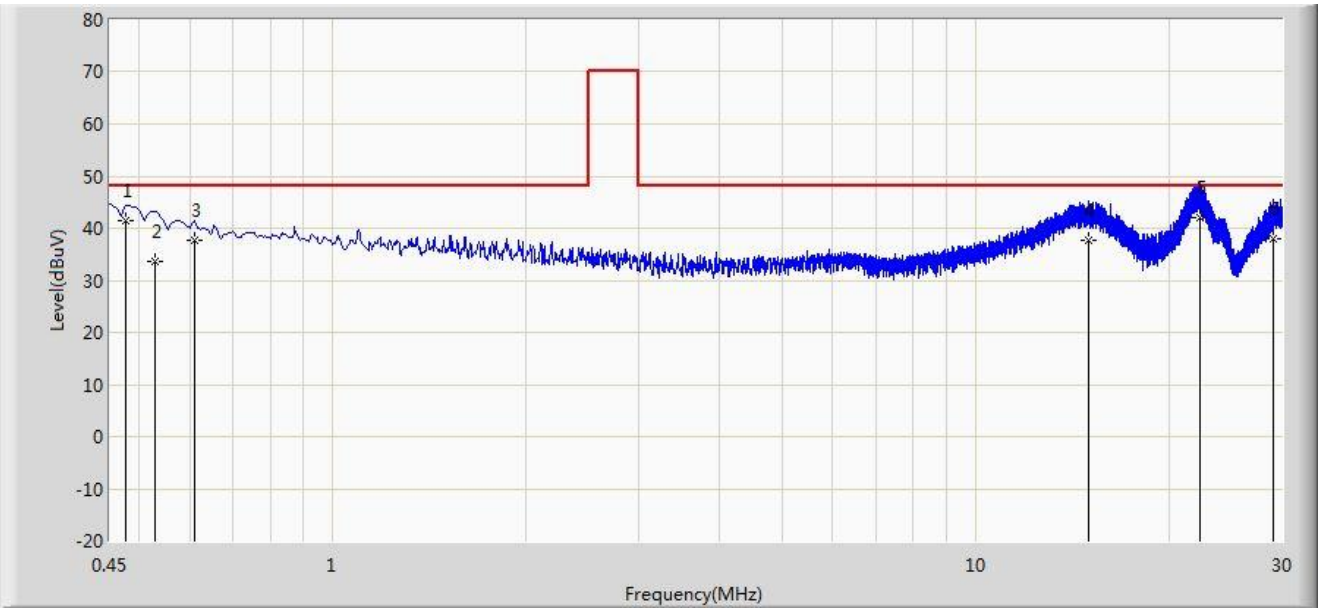
Tested By	Roy Cheng	Test Data	2014/03/20 - 10:38
Site	SR2	Power	AC 120V/60Hz
Limit	FCC_Part18_ RF lighting_ CE	Polarity	Line
AMN	LISN_101683-FILTER ON	Test Mode	Mode 1
EUT	FACTORY LAMP	EUT Model	SBF6106-YQL65



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	AMN Factor (dB)	Cable Loss (dB)	Type
1			0.454	40.751	30.621	-7.249	48.000	10.113	0.016	QP
2			0.494	37.794	27.636	-10.206	48.000	10.142	0.016	QP
3			0.538	38.042	27.895	-9.958	48.000	10.130	0.017	QP
4			15.046	38.977	28.913	-9.023	48.000	9.770	0.294	QP
5			21.386	38.118	27.957	-9.882	48.000	9.813	0.348	QP
6			28.950	37.777	27.490	-10.223	48.000	9.796	0.491	QP

Remarks: Measure Level = Reading Level + AMN Factor + Cable Loss

Tested By	Roy Cheng	Test Data	2014/03/20 - 10:52
Site	SR2	Power	AC 120V/60Hz
Limit	FCC_Part18_ RF lighting_ CE	Polarity	Neutral
AMN	LISN_101683-FILTER ON	Test Mode	Mode 1
EUT	FACTORY LAMP	EUT Model	SBF6106-YQL65



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	AMN Factor (dB)	Cable Loss (dB)	Type
1			0.478	41.528	31.358	-6.472	48.000	10.154	0.016	QP
2			0.530	33.549	23.380	-14.451	48.000	10.153	0.016	QP
3			0.610	37.599	27.473	-10.401	48.000	10.109	0.017	QP
4			14.990	37.559	27.446	-10.441	48.000	9.820	0.293	QP
5			22.386	42.009	31.793	-5.991	48.000	9.873	0.342	QP
6			29.110	37.959	27.554	-10.041	48.000	9.951	0.454	QP

Remarks: Measure Level = Reading Level + AMN Factor + Cable Loss

5. Radiated Emission

5.1. Limit

FCC Part 18 Subpart C Paragraph 18.305(c)		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40.0
88 - 216	3	43.5
216 - 1000	3	46.0

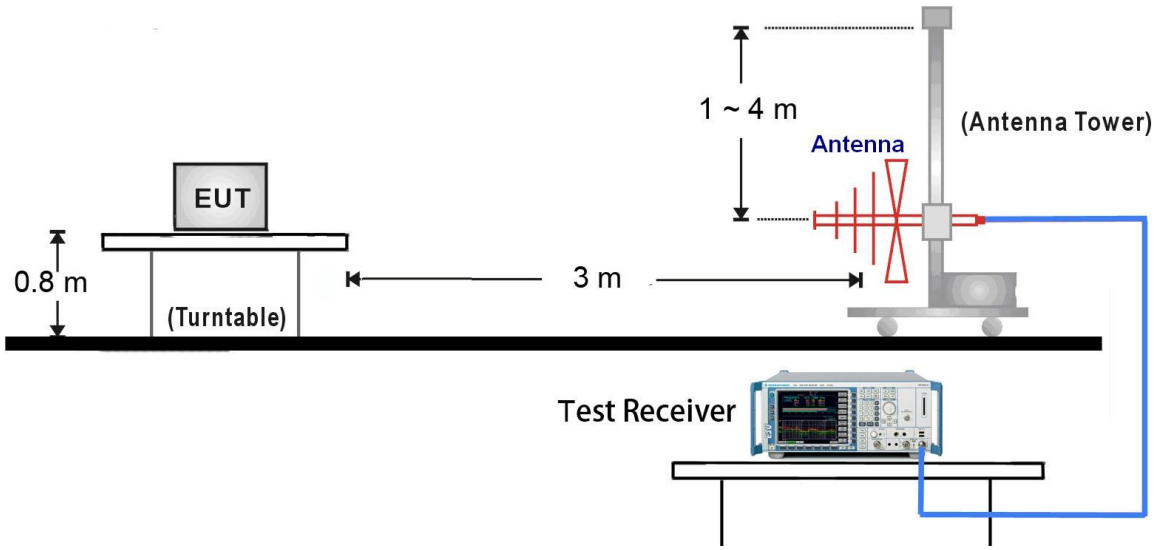
Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

5.2. Test Setup

30MHz ~ 1GHz Test Setup:



5.3. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Horizontal or vertical polarization of the antenna is set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

On any frequency or frequencies below or equal to 1000 MHz, the radiated limits shown are based on measuring equipment employing a quasi-peak detector function and above 1000 MHz, the radiated limits shown are based measuring equipment employing an average detector function. When average radiated emission measurement are included emission measurement Above 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

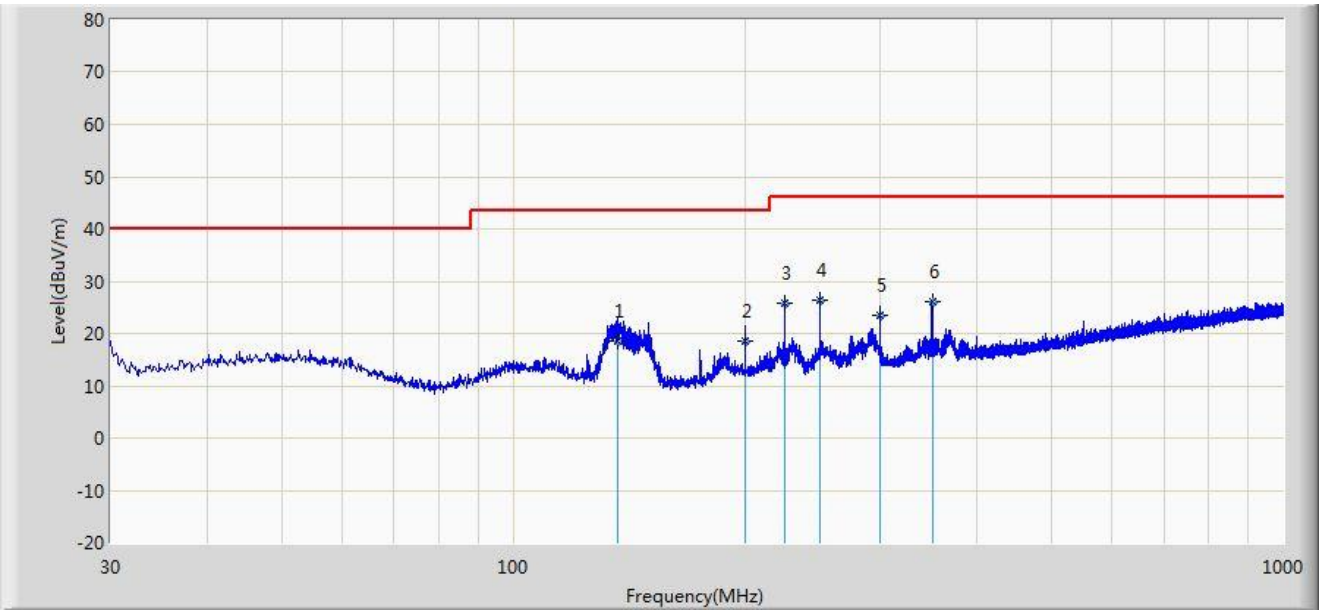
For class A, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and above 1GHz.

For class B, the measurement distance between the EUT and antenna is 3 meters for under 1GHz and 3 meters for above 1GHz.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESR) is 120 kHz and above 1GHz is 1MHz.

5.4. Test Result

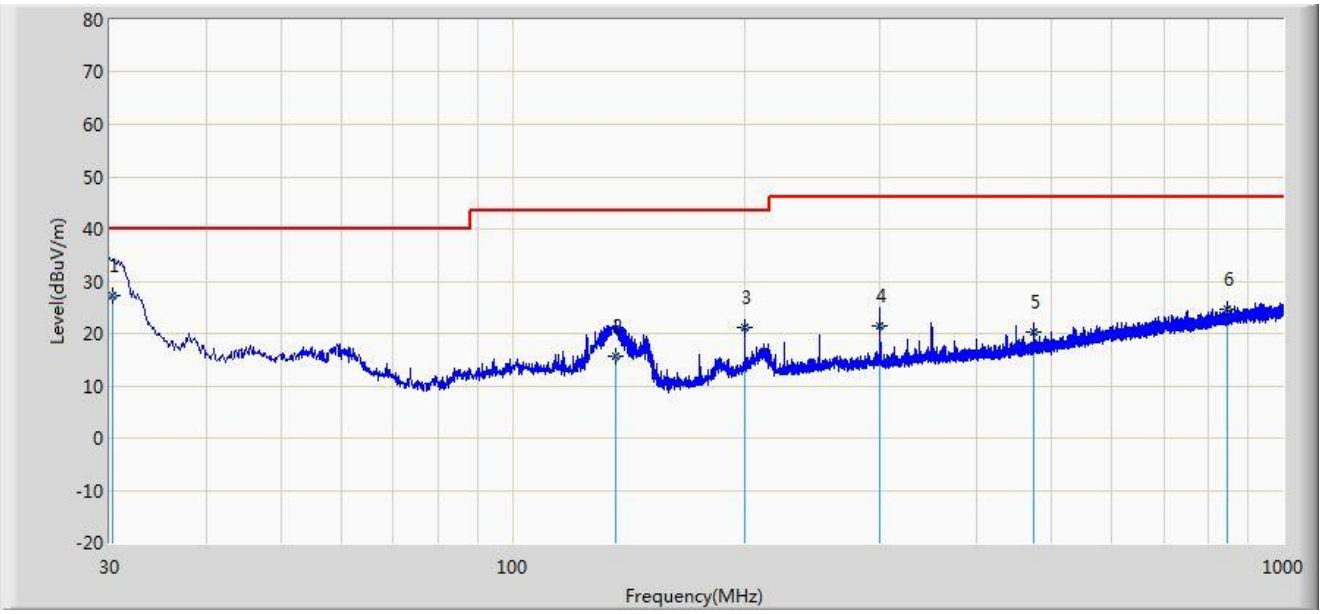
Tested By	Roy Cheng	Test Data	2014/03/21 - 09:03
Site	AC1	Power	AC 120V/60Hz
Limit	FCC_Part18_RF Lighting _ RE(3m)	Polarity	Horizontal
Antenna	VULB9162_0.03-8GHz	Test Mode	Mode 1
EUT	FACTORY LAMP	EUT Model	SBF6106-YQL65



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Ant Factor (dB/m)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		136.852	18.654	9.300	-24.846	43.500	8.625	0.729	100	102	QP
2		199.968	18.618	6.700	-24.882	43.500	11.044	0.874	100	254	QP
3		225.037	25.771	13.300	-20.229	46.000	11.551	0.920	100	25	QP
4		250.054	26.481	13.200	-19.519	46.000	12.308	0.973	100	41	QP
5	*	300.146	23.428	9.300	-22.572	46.000	13.065	1.062	100	92	QP
6		350.076	26.173	10.800	-19.827	46.000	14.216	1.157	100	320	QP

Remarks: Measure Level = Reading Level + Ant Factor + Cable Loss

Tested By	Roy Cheng	Test Data	2014/03/21 - 09:15
Site	AC1	Power	AC 120V/60Hz
Limit	FCC_Part18_RF Lighting _ RE(3m)	Polarity	Vertical
Antenna	VULB9162_0.03-8GHz	Test Mode	Mode 1
EUT	FACTORY LAMP	EUT Model	SBF6106-YQL65



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Ant Factor (dB/m)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1	*	30.250	27.346	15.400	-12.654	40.000	11.603	0.343	100	124	QP
2		135.963	15.691	6.300	-27.809	43.500	8.665	0.725	100	254	QP
3		200.010	21.119	9.200	-22.381	43.500	11.045	0.874	100	24	QP
4		300.002	21.490	7.365	-24.510	46.000	13.062	1.063	100	52	QP
5		475.002	20.321	3.001	-25.679	46.000	15.980	1.340	100	302	QP
6		845.024	24.721	1.950	-21.279	46.000	20.958	1.813	100	157	QP

Remarks: Measure Level = Reading Level + Ant Factor + Cable Loss

6. Magnetic Field Emission

6.1. Limit

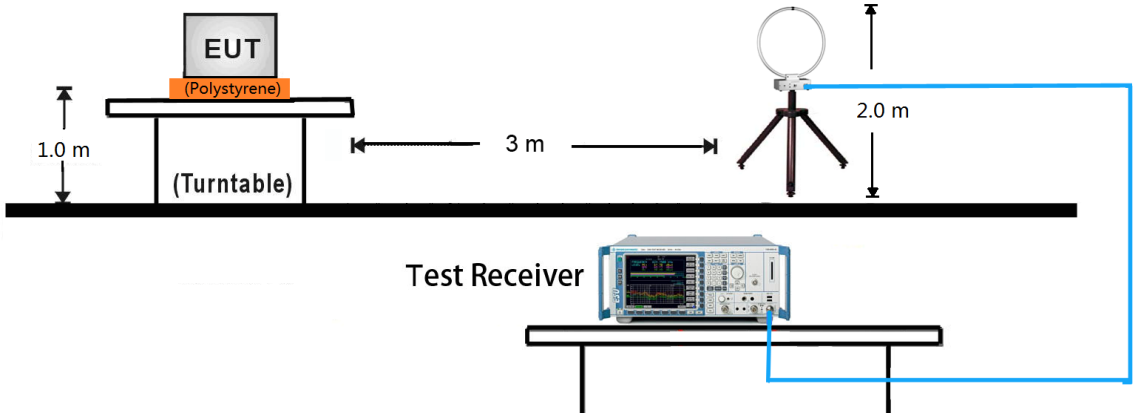
Frequency (MHz)	Distance (m)	Level (dBuV/m)
0.009 ~ 30	3	N/A

Note 1: Distance refers to the distance in meters between the test antenna and the closed point of any part of the EUT.

Note 2: This test report used 3 meters measuring distance and converted limits to judge the EUT compliance with or not.

6.2. Test Setup

9 kHz ~ 30MHz Test Setup:



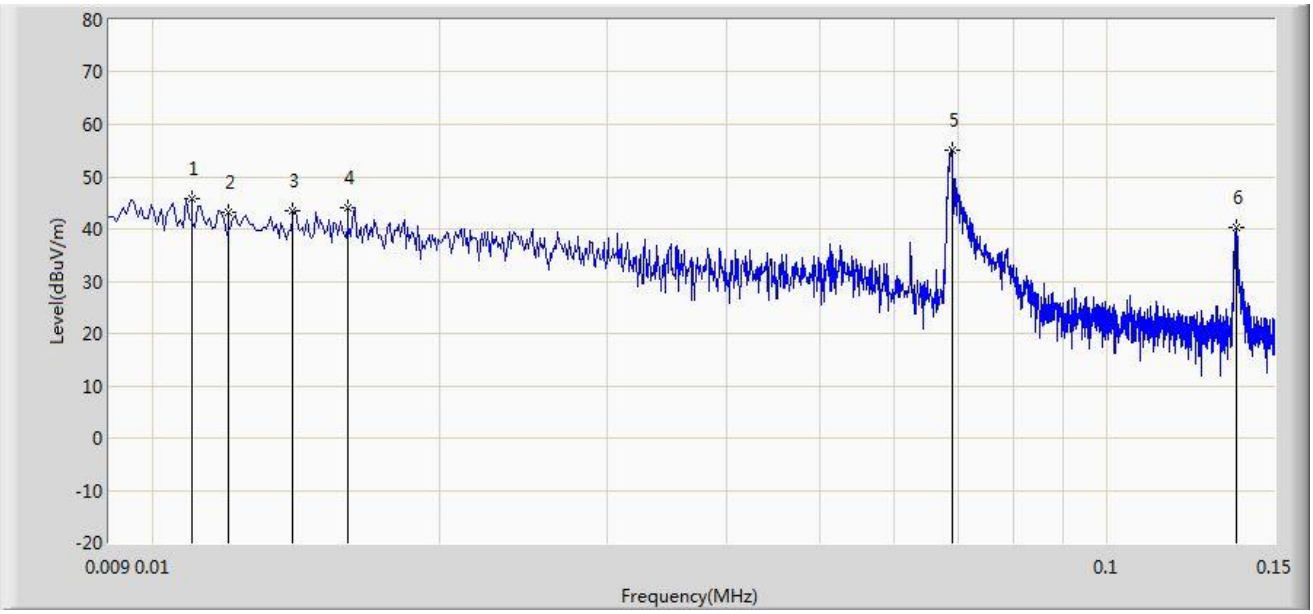
6.3. Test Procedure

The EUT was placed on a table, which is 1.0 meter above ground. Measurements are performed at distance 3.0m with a 0.6m loop antenna as described in 2.2.4 of MP-5. The antenna shall be set at height 2m above the floor.

The bandwidth setting on the test receiver (R&S Test Receiver ESCI) is 200Hz from 9kHz to 150kHz and 9kHz from 150kHz to 30MHz. The EUT is tested in a semi-anechoic chamber.

6.4. Test Result

Tested By	Roy Cheng	Test Data	2014/03/24 - 18:46
Site	AC1	Power	AC 120V/60Hz
Limit	FCC_Part18_RF Lighting _ RE(3m)	Polarity	Face On
Antenna	FMZB1519_0.009-30MHz	Test Mode	Mode 1
EUT	FACTORY LAMP	EUT Model	SBF6106-YQL65

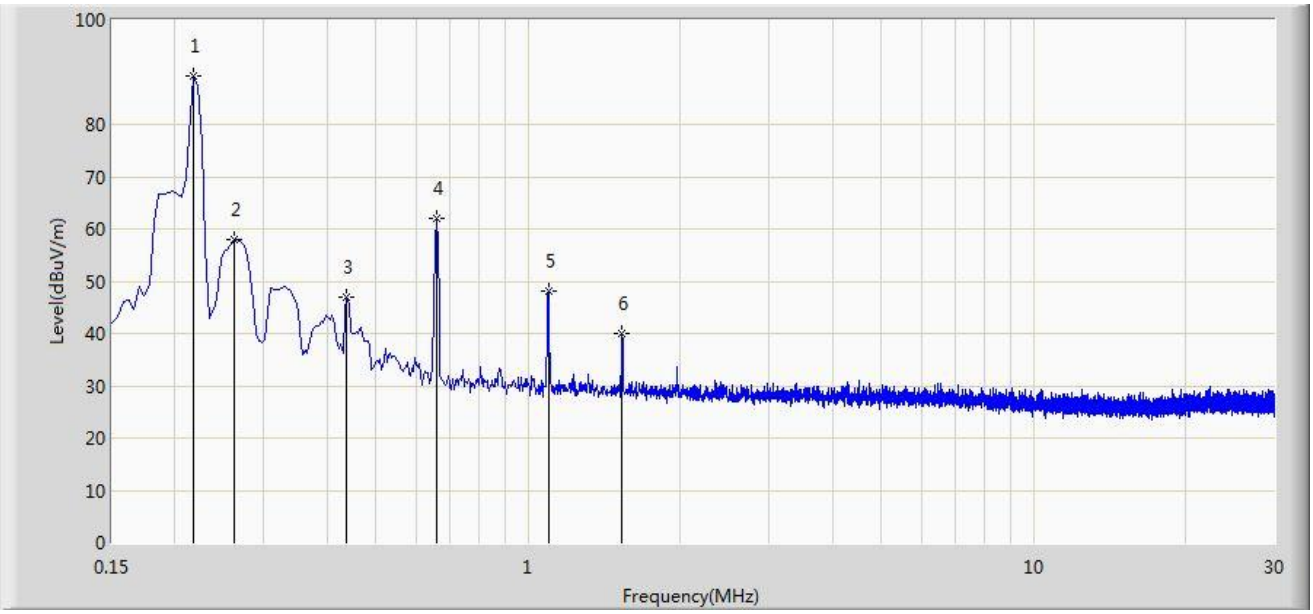


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Ant Factor (dB/m)	Cable Loss (dB)	Type
1		0.011	45.715	24.226	N/A	N/A	21.371	0.118	PK
2		0.012	43.252	21.787	N/A	N/A	21.347	0.118	PK
3		0.014	43.425	22.009	N/A	N/A	21.298	0.118	PK
4		0.016	43.943	22.576	N/A	N/A	21.249	0.118	PK
5	*	0.069	55.037	34.746	N/A	N/A	20.173	0.118	PK
6		0.137	40.325	20.137	N/A	N/A	20.071	0.117	PK

Remarks: 1. Measure Level = Reading Level + Ant Factor + Cable Loss

2. According to Section 18.309, for products with operation frequency below 1.705 MHz, field strength measurements are conducted up to 30MHz. No field strength limits is specified in Section 18.305 for measurements below 30MHz.

Tested By	Roy Cheng	Test Data	2014/03/24 - 18:49
Site	AC1	Power	AC 120V/60Hz
Limit	FCC_Part18_RF Lighting _ RE(3m)	Polarity	Face On
Antenna	FMZB1519_0.009-30MHz	Test Mode	Mode 1
EUT	FACTORY LAMP	EUT Model	SBF6106-YQL65



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Ant Factor (dB/m)	Cable Loss (dB)	Type
1	*	0.218	89.147	68.904	N/A	N/A	20.080	0.163	PK
2		0.262	57.953	37.695	N/A	N/A	20.081	0.177	PK
3		0.438	46.847	26.493	N/A	N/A	20.176	0.177	PK
4		0.658	61.926	41.384	N/A	N/A	20.312	0.231	PK
5		1.098	48.134	27.608	N/A	N/A	20.261	0.265	PK
6		1.534	39.902	19.444	N/A	N/A	20.153	0.305	PK

Remarks: 1. Measure Level = Reading Level + Ant Factor + Cable Loss

2. According to Section 18.309, for products with operation frequency below 1.705 MHz, field strength measurements are conducted up to 30MHz. No field strength limits is specified in Section 18.305 for measurements below 30MHz.

7. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Conducted Emission
The maximum measurement uncertainty is evaluated as: 9kHz~150kHz: 3.84dB 150kHz~30MHz: 3.46dB
Radiated disturbance
The maximum measurement uncertainty is evaluated as: Horizontal: 30MHz~300MHz: 4.07dB 300MHz~1GHz: 3.63 dB Vertical: 30MHz~300MHz: 4.18 dB 300MHz~1GHz: 3.60 dB

8. List of Measuring Instrument

Conducted Emission

Instrument	Manufacturer	Model No.	Serial No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	101209	1 year	2014/11/08
Two-Line V-Network	R&S	ENV216	101683	1 year	2014/11/08
Two-Line V-Network	R&S	ENV216	101684	1 year	2014/11/08
Temperature/Humidity Meter	Anymetre	TH101B	SR2-01	1 year	2014/11/15

Radiated disturbance

Instrument	Manufacturer	Model No.	Serial No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	101209	1 year	2014/11/08
Loop Antenna	Schwarzbeck	FMZB1519	1519-041	1 year	2014/11/24
Bilog Period Antenna	Schwarzbeck	VULB 9162	9162-047	1 year	2014/11/24
Temperature/Humidity Meter	Anymetre	TH101B	AC1-01	1 year	2014/11/15

The End