

FCC TEST REPORT

FCC ID : SLBSBL-XWSE
Applicant : SINBON Electronics Co., Ltd.
Address : 4F-13, No.79, Sec.1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan

Equipment Under Test (EUT) :

Product Name : LED Bulb
Model No. : SBL-7W-W3, SBL-7W-Y3, SBL-5W-W3,
SBL-5W-Y3, SBL-5W-W3A, SBL-5W-Y3A

Standards : FCC CFR47 Part 18 Section 18.305:2010

Date of Test : February 6 ~ February 14, 2012
Date of Issue : February 20, 2012

Test Engineer : Hunk yan / Engineer

Hunk yan

Reviewed By : Philo zhong / Manager

Philo zhong

Test Result	: PASS
--------------------	---------------

Prepared By:

Waltek Services (Shenzhen) Co., Ltd.

1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District,
Shenzhen 518105, China

Tel :+86-755-27553488

Fax:+86-755-27553868

❖ The sample detailed above has been tested to the requirements of Council Directives ANSI C63.4:2003. The test results have been reviewed against the Directives above and found to meet their essential requirements.

2 Test Summary

Test Item	Test Requirement	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	FCC CFR47 Part 18 Section 18.305	Class B	PASS
Conducted Emission (450KHz to 30MHz)	FCC CFR47 Part 18 Section 18.307	Class B	PASS

The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

3 Contents

	Page
1 COVER PAGE	1
2 TEST SUMMARY	2
3 CONTENTS.....	3
4 GENERAL INFORMATION	4
4.1 CLIENT INFORMATION	4
4.2 GENERAL DESCRIPTION OF E.U.T	4
4.3 DETAILS OF E.U.T	4
4.4 DESCRIPTION OF SUPPORT UNITS	4
4.5 STANDARDS APPLICABLE FOR TESTING	4
4.6 TEST FACILITY	5
4.7 TEST LOCATION	5
5 EQUIPMENT USED DURING TEST	6
6 CONDUCTED EMISSION DATA.....	7
6.1 TEST EQUIPMENT	7
6.2 TEST PROCEDURE.....	7
6.3 CONDUCTED TEST SETUP	8
6.4 EUT OPERATING CONDITION.....	8
6.5 CONDUCTED EMISSION LIMITS.....	9
6.6 SPECTRUM ANALYZER	9
6.7 CONDUCTED EMISSION TEST RESULT	9
6.8 MEASUREMENT DATA.....	9
6.9 PHOTOGRAPH – CONDUCTED EMISSION TEST SETUP	12
7 RADIATION EMISSION DATA	13
7.1 MEASUREMENT UNCERTAINTY	13
7.2 EUT SETUP	14
7.3 SPECTRUM ANALYZER SETUP	14
7.4 TEST PROCEDURE.....	15
7.5 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	15
7.6 SUMMARY OF TEST RESULTS	16
7.7 PHOTOGRAPH – RADIATION EMISSION TEST SETUP	18
8 PHOTOGRAPHS - CONSTRUCTIONAL DETAILS.....	19
8.1 EUT – APPEARANCE VIEW	19
8.2 EUT – OPEN VIEW	20
8.3 EUT - PCB VIEW	21
9 FCC LABEL.....	23

4 General Information

4.1 Client Information

Applicant : SINBON Electronics Co., Ltd.
Address of Applicant : 4F-13, No.79, Sec.1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan
Manufacturer : SINBON Electronics Co., Ltd.
Address of Manufacturer : No.582, Kuo-Hwa Rd., Miaoli 360, Taiwan

4.2 General Description of E.U.T.

Product Name : LED Bulb
Model No. : SBL-7W-W3, SBL-7W-Y3, SBL-5W-W3, SBL-5W-Y3, SBL-5W-W3A, SBL-5W-Y3A
Difference Description : The models of SBL-7W series are exactly same, except for the appearance, and so are the SBL-5W series. The SBL-7W series and the SBL-5W series have the same construction and PCB, similar key components, materials and electrical connections, only the power is different. These have minor influence in respect of the EMC. On the basis of these we choose the higher power model SBL-7W-W3 as the test sample and the data showing in the report is that model's only, but this report is also applicable to the other models.

4.3 Details of E.U.T.

Technical Data: 120VAC, 60Hz

4.4 Description of Support Units

The EUT has been tested as an independent unit. All the test was performed in the condition of AC 120V/60Hz input.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a LED Bulb. The standards used were FCC CFR47 Part 18 Section 18.305 and Section 18.307.

4.6 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: IC7760A**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration IC7760A, August 3, 2010.

- **FCC – Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, May 26, 2011.

4.7 Test Location

All the tests were performed at:-

Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District, Shenzhen, China

5 Equipment Used during Test

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY451149 43	W2008001	9k-26.5GHz	Aug. 2, 2011	Aug. 1, 2012	±1dB
Trilog Broadband Antenne	SCHWARZB ECK MESS-ELEKTROM / VULB9163	336	W2008002	30-3000 MHz	Aug. 2, 2011	Aug. 1, 2012	±1dB
Broad-band Horn Antenna	SCHWARZB ECK MESS-ELEKTROM / BBHA 9120D(1201)	667	W2008003	1-18GHz	Aug. 2, 2011	Aug. 1, 2012	f < 10 GHz : ±1dB 10GHz < f < 18 GHz : ±1.5dB
Broadband Preamplifier	SCHWARZB ECK MESS-ELEKTROM / BBV 9718	9718-148	W2008004	0.5-18GHz	Aug. 2, 2011	Aug. 1, 2012	±1.2dB
10m Coaxial Cable with N-male Connectors	SCHWARZB ECK MESS-ELEKTROM / AK 9515 H	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-
10m 50 Ohm Coaxial Cable	SCHWARZB ECK MESS-ELEKTROM / AK 9513	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-
Positioning Controller	C&C LAB/ CC-C-IF	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-
Color Monitor	SUNSPO/ SP-14C	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-
Test Receiver	ROHDE&SC HWARZ/ ESPI	101155	W2005001	9k-3GHz	Aug. 2, 2011	Aug. 1, 2012	±1dB
Two-Line V-Network	ROHDE&SC HWARZ/ ENV216	100115	W2005002	50Ω/50μH	Aug. 2, 2011	Aug. 1, 2012	±10%
Active Loop Antenna	Beijing Dazhi / ZN30900A	-	-	-	Aug. 2, 2011	Aug. 1, 2012	±1dB

The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

6 Conducted Emission Data

Test Requirement:	FCC CFR47 Part 18 Section 18.307
Test Method:	Based on ANSI C63.4:2003
Frequency Range:	450kHz to 30MHz
Class:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak if maximised peak within 6dB of Quasi-Peak Limit

6.1 Test Equipment

Please refer to Section 5 this report.

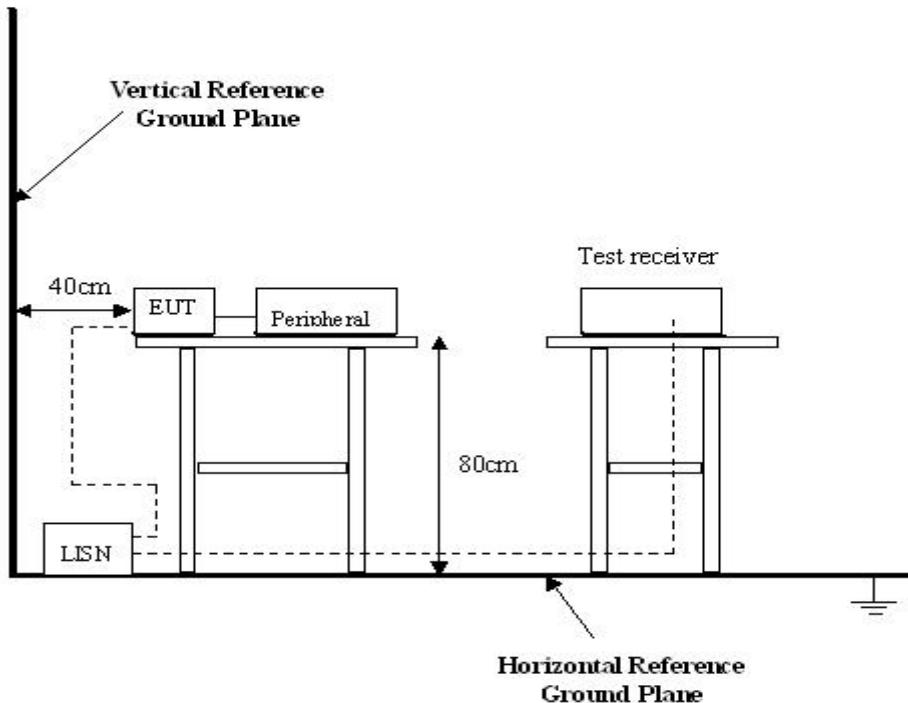
6.2 Test Procedure

1. During the conducted emission test, the power cord of the EUT is connected to the auxiliary outlet of the LISN.
2. The EUT was tested according to FCC MP-5. The frequency spectrum from 450kHz to 30MHz was investigated.
3. The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.3 Conducted Test Setup

The conducted emission tests were performed using the setup accordance with the FCC MP-5 measurement procedure.

The power supply used by the EUT is connected to a 120VAC / 60Hz power source.

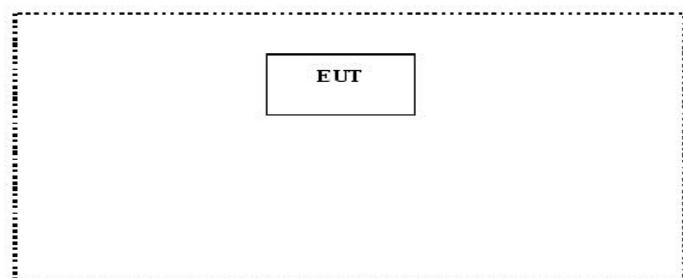


The EUT was placed on the test table in ON mode.

6.4 EUT Operating Condition

Operating condition is according to FCC MP-5.

- Setup the EUT and simulators as shown on follow.
- Enable RF signal and confirm EUT active.
- Modulate output capacity of EUT up to specification.



6.5 Conducted Emission Limits

Frequency of Emission (MHz)	Conducted Limit (dBuV)- Quasi-peak
0.45— 2.51	48
2.51 — 3.0	69.54
3.0 — 30	48

Note: In the above limits, the tighter limit applies at the band edges.

6.6 Spectrum Analyzer

The spectrum analyzer is configured during the conduction test is as follows:

Start Frequency 450 kHz
 Stop Frequency 30 MHz
 Sweep Speed Auto
 IF Bandwidth 9 kHz
 Video Bandwidth 100 kHz
 Quasi-Peak Adaptor Bandwidth 9 kHz
 Quasi-Peak Adaptor Mode Normal

6.7 Conducted Emission Test Result

Test Item:	Conducted Emission Test
Test Voltage:	120VAC / 60Hz
Test Mode:	On
Temperature:	25.5 °C
Humidity:	51%RH
Test Result:	PASS

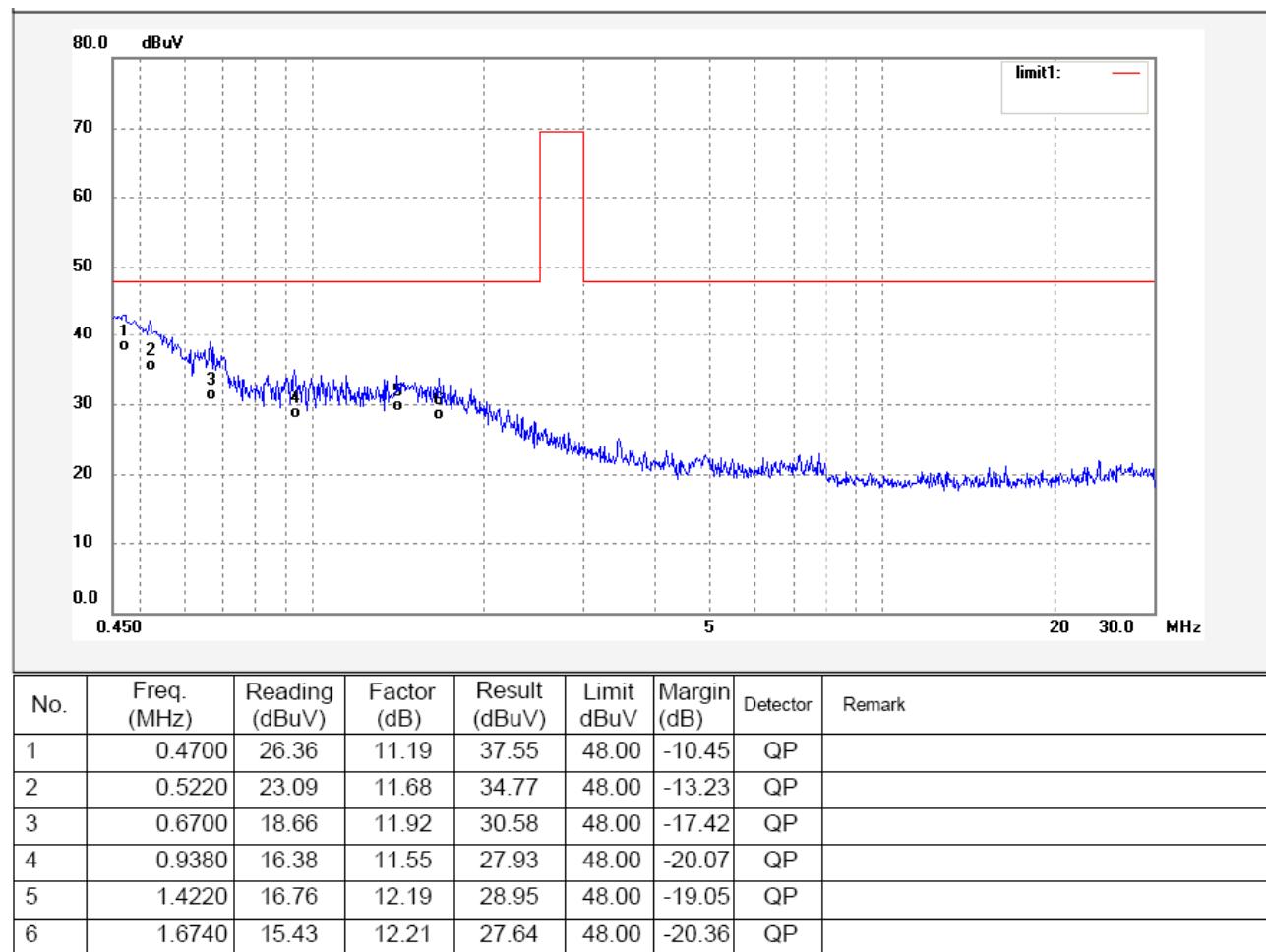
6.8 Measurement Data

An initial pre-scan was performed on the live and neutral lines.

No further quasi-peak or average measurements were performed since no peak emissions were detected within 10dB line below the average limit.

Please refer to the following peak scan graph for reference.

Live line:

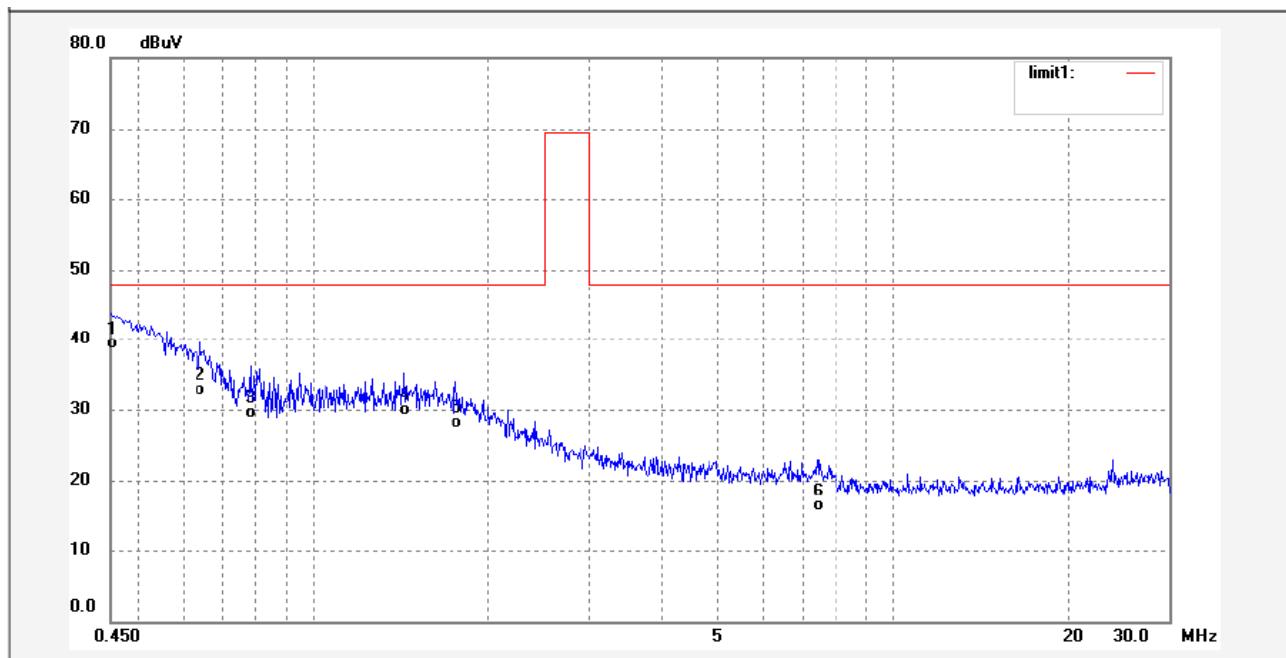


The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.4500	27.72	10.77	38.49	48.00	-9.51	QP	
2	0.6419	20.33	11.62	31.95	48.00	-16.05	QP	
3	0.7860	16.58	12.18	28.76	48.00	-19.24	QP	
4	1.4460	16.97	12.19	29.16	48.00	-18.84	QP	
5	1.7740	15.17	12.22	27.39	48.00	-20.61	QP	
6	7.4380	3.62	11.95	15.57	48.00	-32.43	QP	

The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

6.9 Photograph –Conducted Emission Test Setup



The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

7 Radiation Emission Data

Test Requirement:	FCC CFR47 Part 18 Section 18.305
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dB μ V/m between 30MHz & 88MHz 43.5 dB μ V/m between 88MHz & 216MHz 46.0 dB μ V/m between 216MHz & 1000MHz
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

EUT Operation :

Compliance test was performed in ON mode.

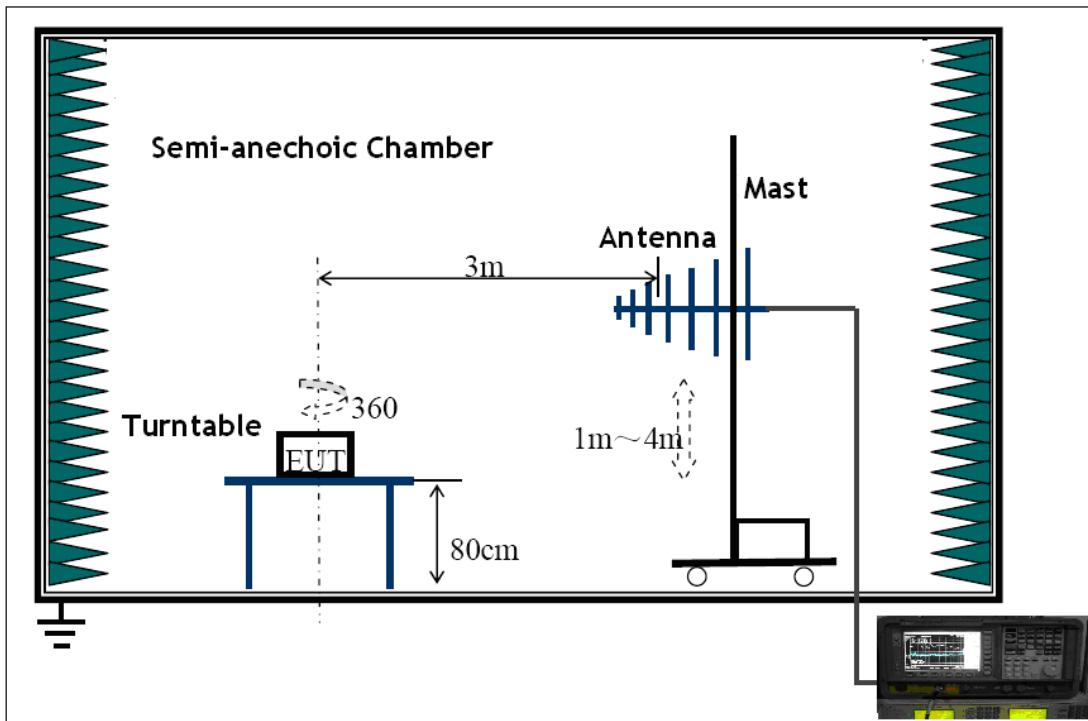
7.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on ANSI C63.4:2003, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek Lab is ± 5.03 dB.

7.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC CFR47 Part 18 Section 18.305 (C) Consumer equipment limits.



The EUT was placed on the test table in shielding room.

7.3 Spectrum Analyzer Setup

According to FCC CFR47 Part 18 Section 18.305 Rules, the system was tested 30 to 1000MHz.

Start Frequency	30 MHz
Stop Frequency	1000MHz
Sweep Speed	Auto
IF Bandwidth.....	120 KHz
Video Bandwidth.....	100KHz
Quasi-Peak Adapter Bandwidth	120 KHz
Quasi-Peak Adapter Mode	Normal
Resolution Bandwidth	100KHz

7.4 Test Procedure

For the radiated emissions test, maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB μ V of specification limits), and are distinguished with a "Qp" in the data table.

The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.

7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

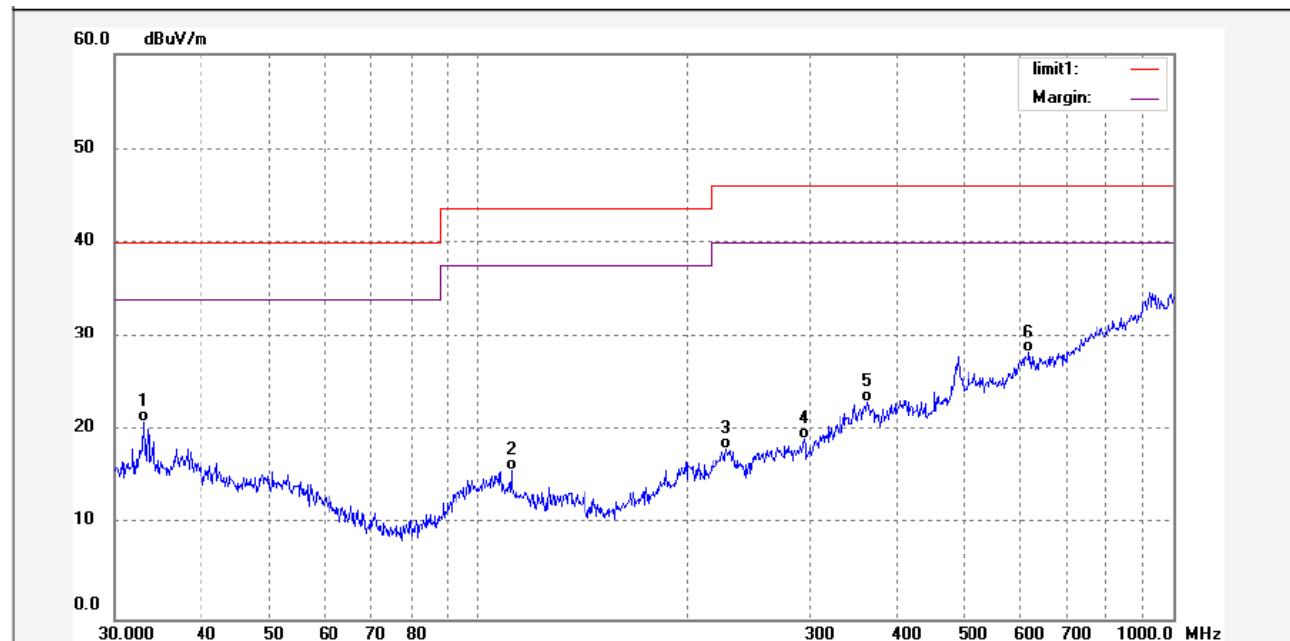
The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

7.6 Summary of Test Results

According to the data in this section, the EUT complied with the FCC CFR47 Part 18 standards.

Antenna polarization: Vertical



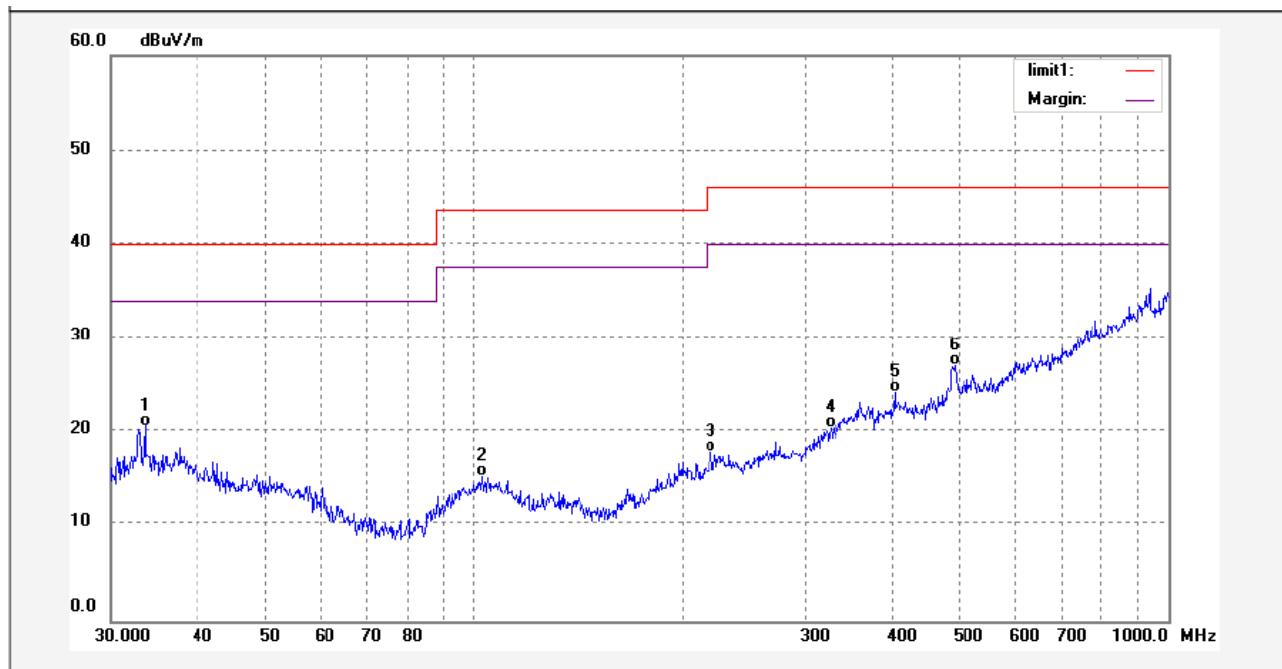
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	32.9854	4.30	16.57	20.87	40.00	-19.13	QP	
2	111.6399	2.52	13.37	15.89	43.50	-27.61	QP	
3	227.8155	1.84	16.27	18.11	46.00	-27.89	QP	
4	294.4260	2.27	16.83	19.10	46.00	-26.90	QP	
5	363.5231	2.32	20.69	23.01	46.00	-22.99	QP	
6	620.1167	2.22	25.99	28.21	46.00	-17.79	QP	

The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

Antenna polarization: Horizontal



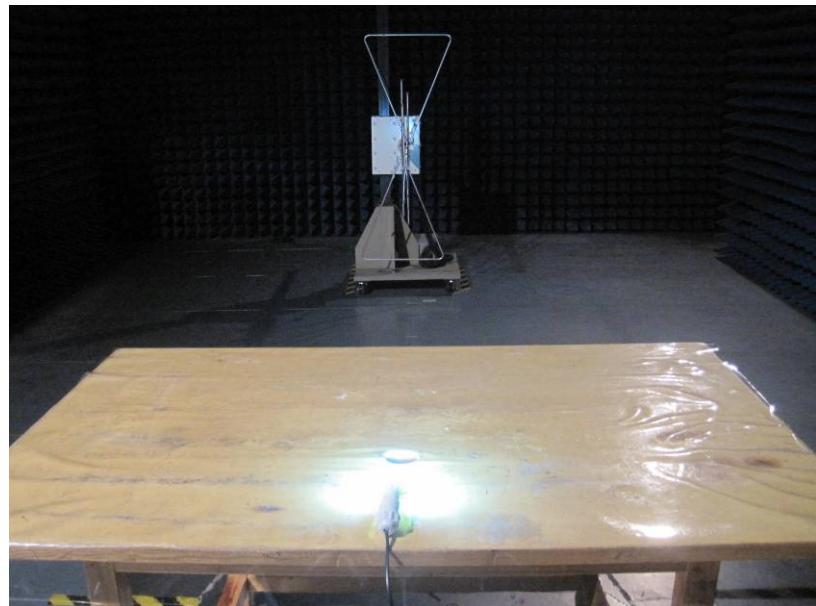
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	33.5700	4.02	16.55	20.57	40.00	-19.43	QP	
2	102.9729	1.21	14.15	15.36	43.50	-28.14	QP	
3	219.1785	1.99	15.97	17.96	46.00	-28.04	QP	
4	326.0079	1.48	18.95	20.43	46.00	-25.57	QP	
5	403.9335	3.15	21.14	24.29	46.00	-21.71	QP	
6	493.5009	2.19	24.83	27.02	46.00	-18.98	QP	

The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

7.7 Photograph – Radiation Emission Test Setup



The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

8 Photographs - Constructional Details

8.1 EUT – Appearance View

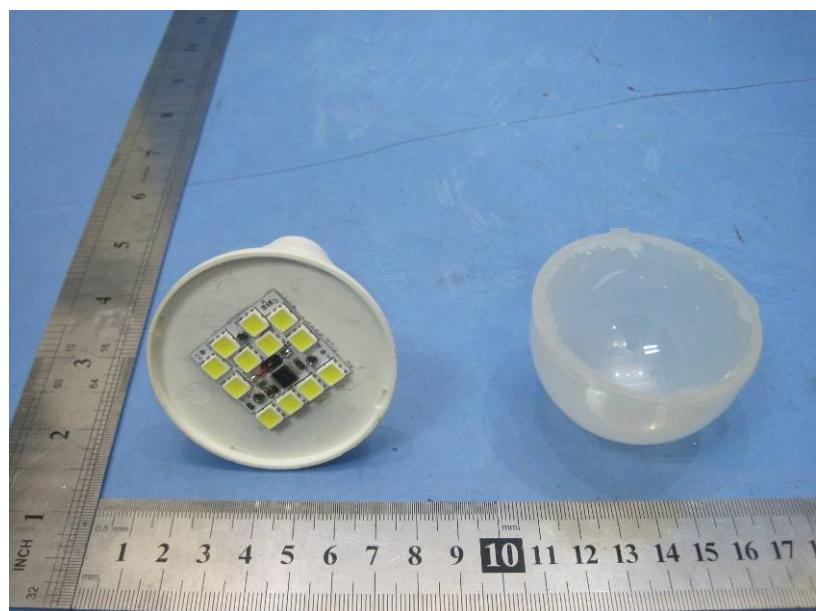


The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

8.2 EUT – Open View

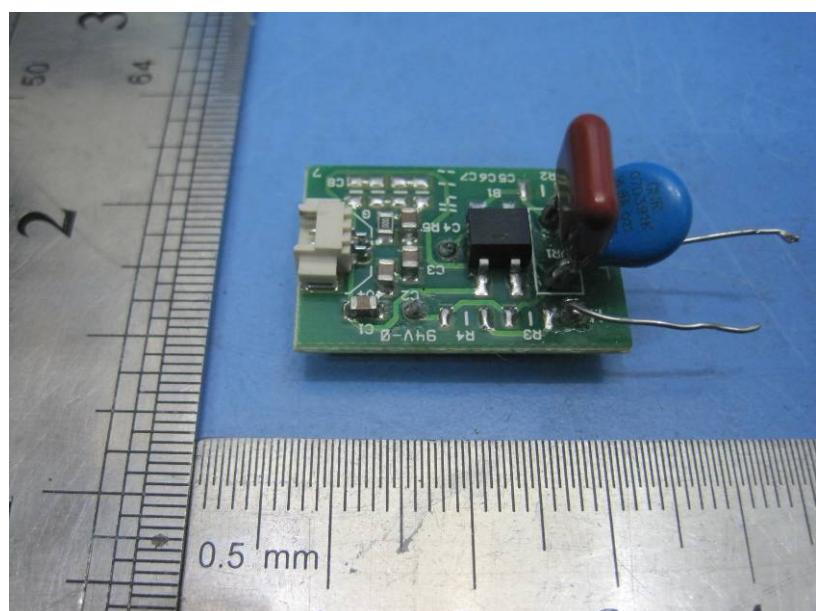
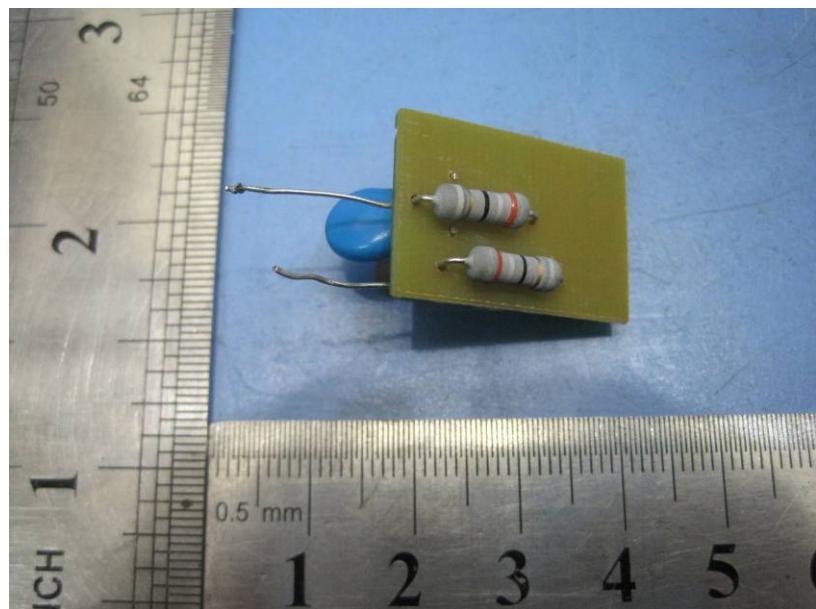


The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

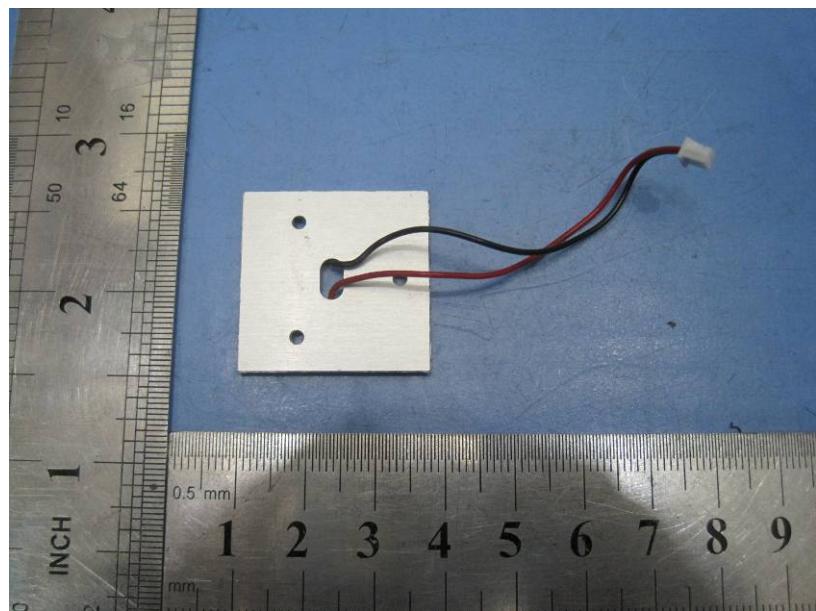
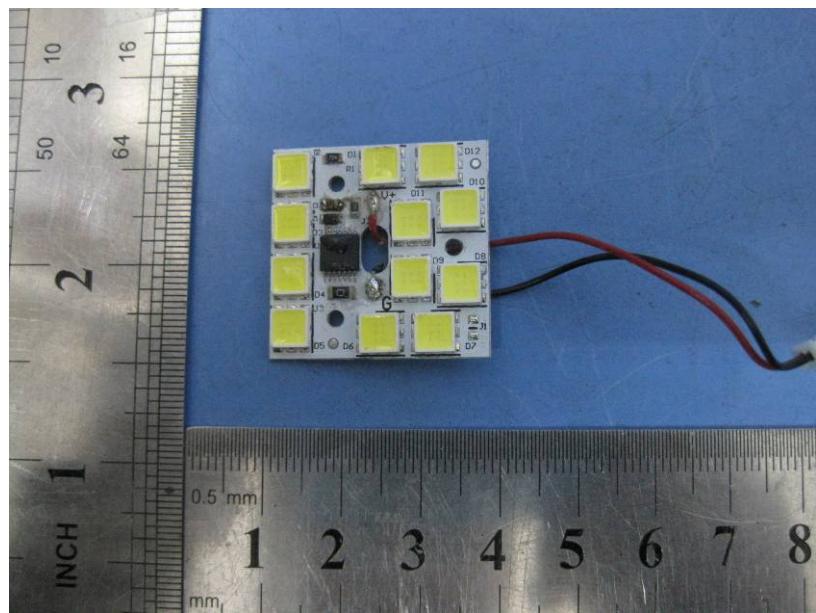
8.3 EUT - PCB View



The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F



The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F

9 FCC Label

This device complies with Part 18 of the FCC Rules. This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45–30 MHz.

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT

EUT Side View/proposed FCC Label Location



The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT12020360-U-E-F