

FCC TEST REPORT

FCC ID : WK8-GX318D

Applicant : TOP BRILLIANT TECHNOLOGY LTD.

Address : Suite 101-102,1st Floor,Building7,No.5 Science park,Shatin, New Territories,Hong Kong

Equipment Under Test (EUT) :

Product description : Self ballasted lamp

Model No. : GX318D,GP318D,GU318D

Standards : FCC Part18:2009

Date of Test : March 2~5,2010

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3 Test Summary

| Test | Test Requirement | Test Method | Class / Severity | Result |
|---|-------------------|-----------------|------------------|--------|
| Radiated Emission (30MHz to 1GHz) | FCC PART 18: 2009 | ANSI C63.4:2009 | N/A | PASS |
| Conducted Emission (150KHz to 30MHz) | FCC PART 18: 2009 | ANSI C63.4:2009 | N/A | PASS |

4 General Information

4.1 Client Information

Applicant: TOP BRILLIANT TECHNOLOGY LTD.

Address of Applicant: Suite 101-102,1st Floor,Building7,No.5 Science park,Shatin, New Territories,Hong Kong

Manufacturer: Dong Guan Wei Cheng Lighting CO., LTD

Address of Manufacturer: Cai Wu Industrial Park , Wusha, Chang An , Dongguan City,Guangdong Province,PRC

4.2 General Description of E.U.T.

Product description: Self ballasted lamp

Model No.: GX318D GP318D GU318D

Remark: The PCB of all models are identical except the cap.
GX318D is the test sample.

4.3 Details of E.U.T.

Power Supply: 120VAC / 60Hz 330mA

4.4 Description of Support Units

The EUT has been tested as an independent unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a Self ballasted lamp. The standards used were FCC Part18:2009.

4.6 Test Methodology

All measurements contained in this report are conducted with FCC Measurement Procedure MP-5, technical requirements for Methods of Measurement of Radio-Noise Emission from ISM Equipment.

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **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.June 24, 2008.

- **IC – Registration No.: 7760A**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory 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,July 24, 2008.

4.8 Test Location

All Emission tests were performed at:-

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

5 Equipment Used during Test

| NO | Equipment Name | Manufacturer Model | Equipment No | Internal No | Specification | Cal. Date | Due Date | Cert. No | Uncertainty |
|-----|--|--------------------------------------|----------------|-------------|---------------|-----------|----------|-----------------|---|
| 1. | EMC Analyzer | Agilent/ E7405A | MY45114 943 | W2008001 | 9k-26.5GHz | Jul-09 | Jul-10 | Wws200 81596 | ±1dB |
| 2. | Trilog Broadband Antenne 30-3000 MHz | SCHWARZBECK MESS-ELEKTROM/ VULB9163 | 336 | W2008002 | 30-3000 MHz | Jul-09 | Jul-10 | | ±1dB |
| 3. | Broad-band Horn Antenna 1-18 GHz | SCHWARZBECK MESS-ELEKTROM/ VULB9163 | 667 | W2008003 | 1-18GHz | Jul-09 | Jul-10 | | $f < 10$ GHz: ±1dB 10GHz < f < 18 GHz : ±1.5dB |
| 4. | Broadband Preamplifier 0.5-18 GHz | SCHWARZBECK MESS-ELEKTROM/ BBV 9718 | 9718-148 | W2008004 | 0.5-18GHz | Jul-09 | Jul-10 | | ±1.2dB |
| 5. | 10m Coaxial Cable with N-male Connectors usable up to 18GHz, | SCHWARZBECK MESS-ELEKTROM/ AK 9515 H | - | - | - | Jul-09 | Jul-10 | - | - |
| 6. | 10m 50 Ohm Coaxial Cable with N-plug,individual length,usable up to 3(5)GHz, Connector | SCHWARZBECK MESS-ELEKTROM/ AK 9513 | | | | Jul-09 | Jul-10 | | |
| 7. | Positioning Controller | C&C LAB/ CC-C-IF | | | | | | | |
| 8. | Color Monitor | SUNSPO/ SP-14C | | | | | | | |
| 9. | Test Receiver | ROHDE&SCHWARZ/ ESPI | 101155 | W2005001 | 9k-3GHz | Jul-09 | Jul-10 | Wws200 80942 | ±1dB |
| 10. | EMI Receiver | Beijingkehuan | KH3931 | | 9k-1GHz | Jul-09 | Jul-10 | | |
| 11. | Two-Line V-Network | ROHDE&SCHWARZ/ ENV216 | 100115 | W2005002 | 50Ω/50μH | Jul-09 | Jul-10 | Wws200 80941 | ±10% |
| 12. | V-LISN | SCHWARZBECK MESS ELEKTRONIK | NSLK 8128 | 8128-259 | 9k-30MHz | Jul-09 | Jul-10 | | |

| NO | Equipment Name | Manufacturer Model | Equipment No | Internal No | Specification | Cal. Date | Due Date | Cert. No | Uncertainty |
|-----|--|------------------------------------|--------------|-------------|-------------------------------------|-----------|----------|-----------------|-------------|
| 13. | Absorbing Clamp | ROHDE&SCHWARTZ/ MDS-21 | 100205 | W2005003 | impedance 50Ω loss : 17 dB | Jul-09 | Jul-10 | Wws200 80943 | ±1dB |
| 14. | 10m 50 Ohm Coaxial Cable with N- plug,individual length,usable up to 3(5)GHz, Connectors | SCHWARZBECK MESS-ELEKTROM/ AK 9514 | | | | Jul-09 | Jul-10 | | |

6 Emission Test

6.1 Conducted Emission Data

| | |
|-------------------|--|
| Test Requirement: | FCC Part 18.307 |
| Test Method: | ANSI C63.4:2009 |
| Test Result: | PASS |
| Frequency Range: | 150kHz to 30MHz |
| Class: | Class B |
| Detector: | Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit |

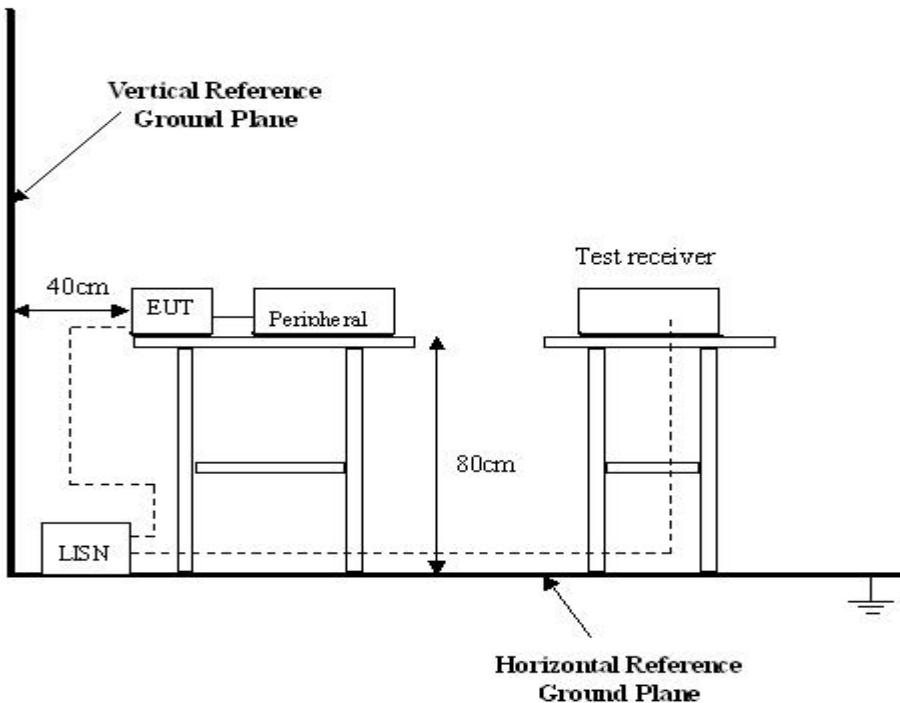
6.1.1 Test Procedure

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 150kHz 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.

6.1.2 Conducted Test Setup

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

The EUT is tested in ON mode.

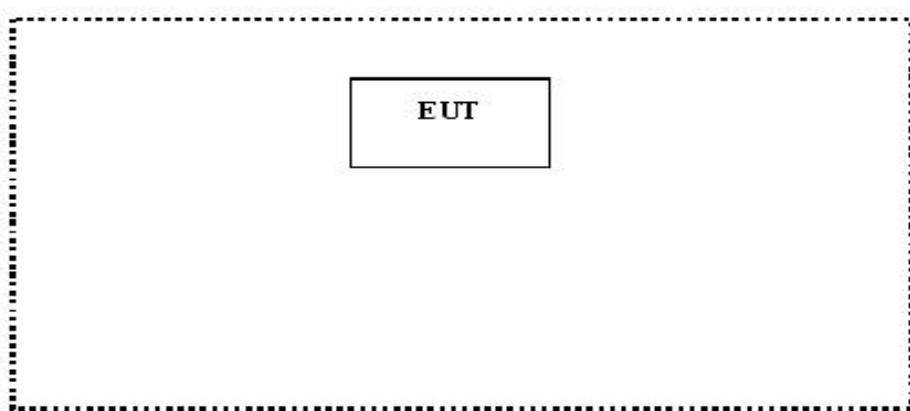


6.1.3 EUT Operating Condition

Operating condition is according to FCC MP-5.

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

6.1.4



| 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.

6.1.5 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

6.1.6 Conducted Emission Test Result

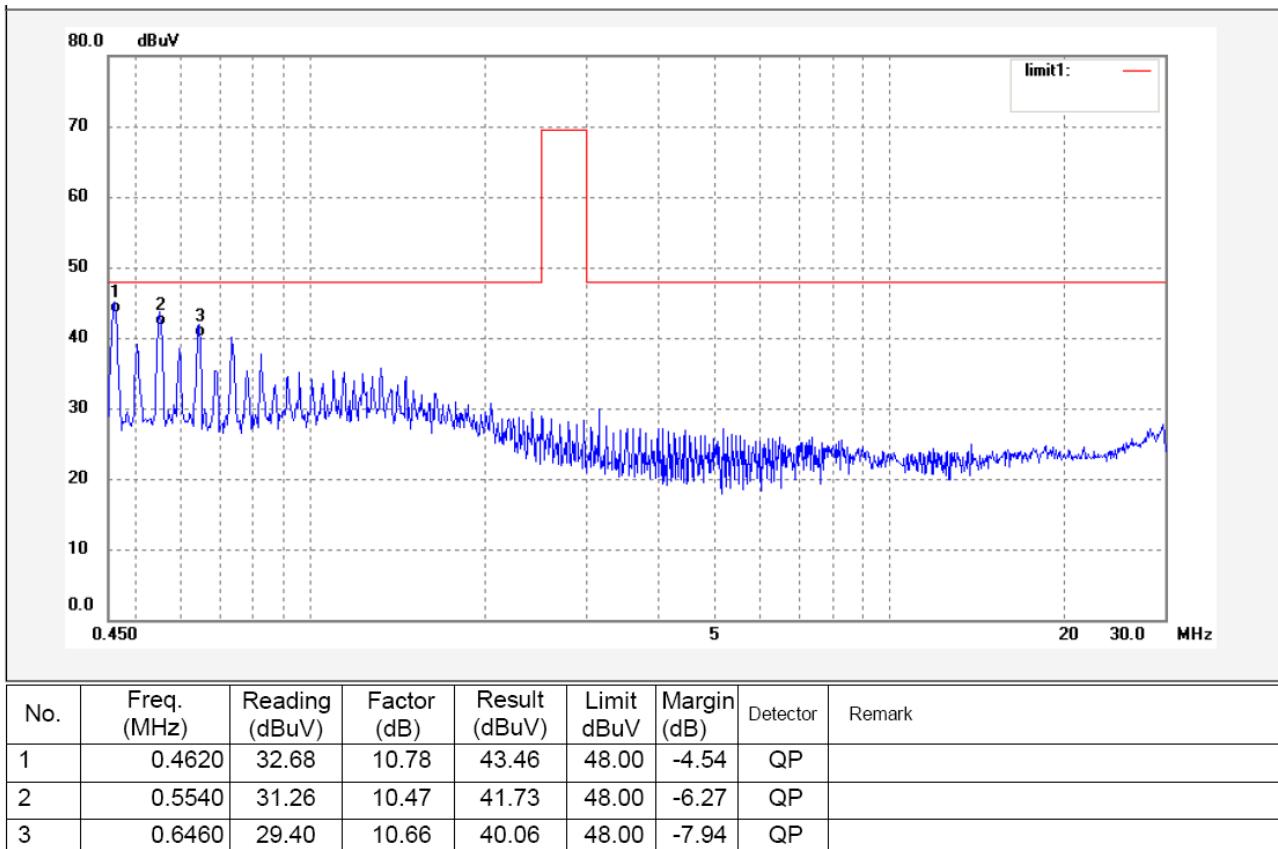
| | |
|---------------|-------------------------|
| Test Item: | Conducted Emission Test |
| Test Voltage: | 120VAC / 60Hz |
| Test Mode: | Normal |
| Temperature: | 25.5 °C |
| Humidity: | 51%RH |
| Test Result: | PASS |

6.1.7 Measurement Data

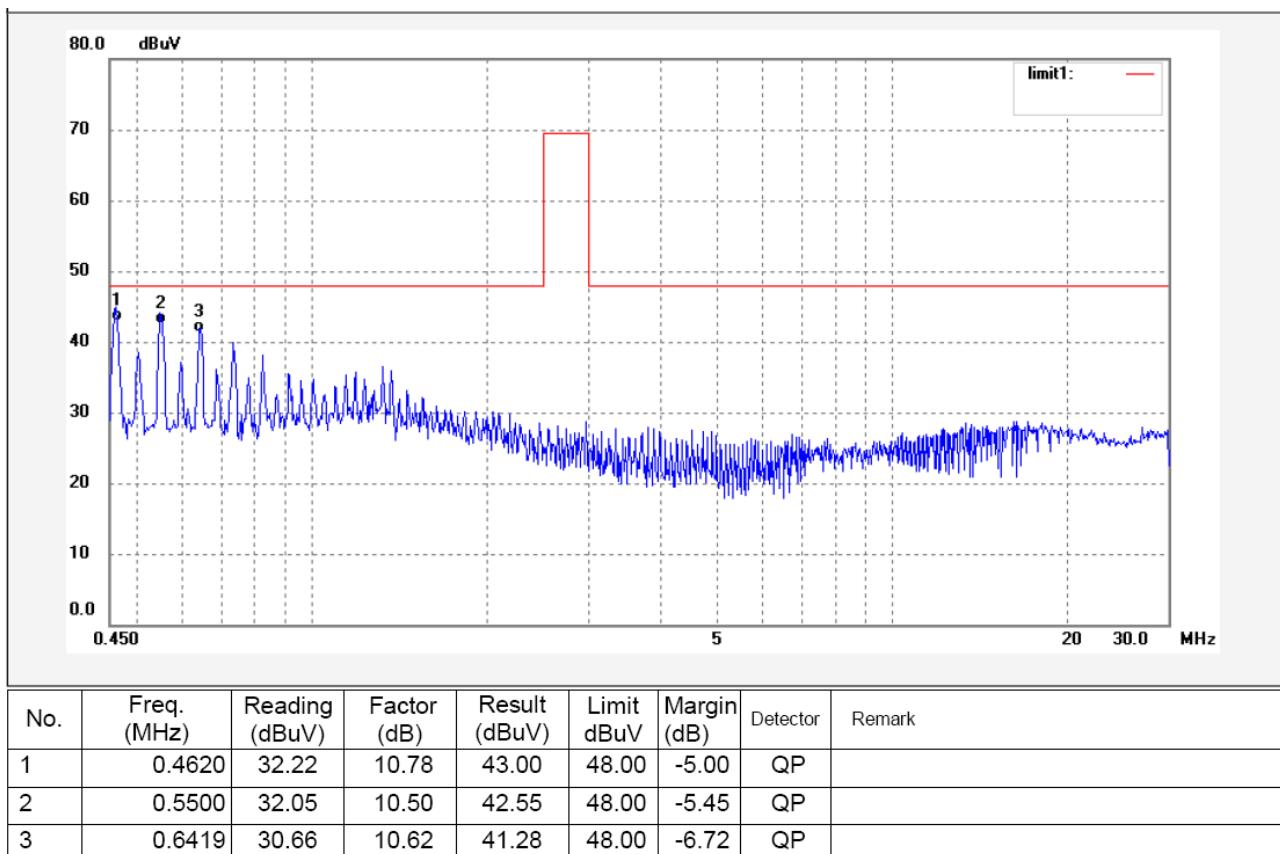
An initial pre-scan was performed on the live and neutral lines.

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

Nentual Live



6.2 Radiated Emission Data

| | |
|-----------------------|---|
| Test Requirement: | FCC Part18 15.305 |
| Test Method: | ANSI C63.4:2009 |
| Test Result: | PASS |
| Frequency Range: | 30MHz to 1GHz |
| Measurement Distance: | 3m |
| Class: | Class B |
| Limit: | 40 dB μ V/m between 30MHz & 88MHz 43.5 dB μ V/m between 88MHz & 216MHz 46 dB μ V/m between 216MHz & 1000MHz |
| Detector: | Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit |

6.2.1 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 NIS81, 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.

6.2.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2009, The specification used in this report was the FCC Part18.305 (C) Consumer equipment limits.

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

6.2.3 Spectrum Analyzer Setup

According to FCC Part18.305 Rules, the system was tested 30 to 1000MHz.

| | |
|------------------------------------|---------|
| Start Frequency | 30 MHz |
| Stop Frequency | 1 GHz |
| Sweep Speed Auto | |
| IF Bandwidth | 120 kHz |
| Video Bandwidth | 100KHz |
| Quasi-Peak Adapter Bandwidth | 120 kHz |
| Quasi-Peak Adapter Mode..... | Normal |
| Resolution Bandwidth | 100KHz |

6.2.4 Test Procedure

For the radiated emissions test, maximizing procedure was performed on the six (6) Largeest 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. But any frequency above 1000 MHz, the limit is based on average detector.

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

6.2.5 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 folsmalls:

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

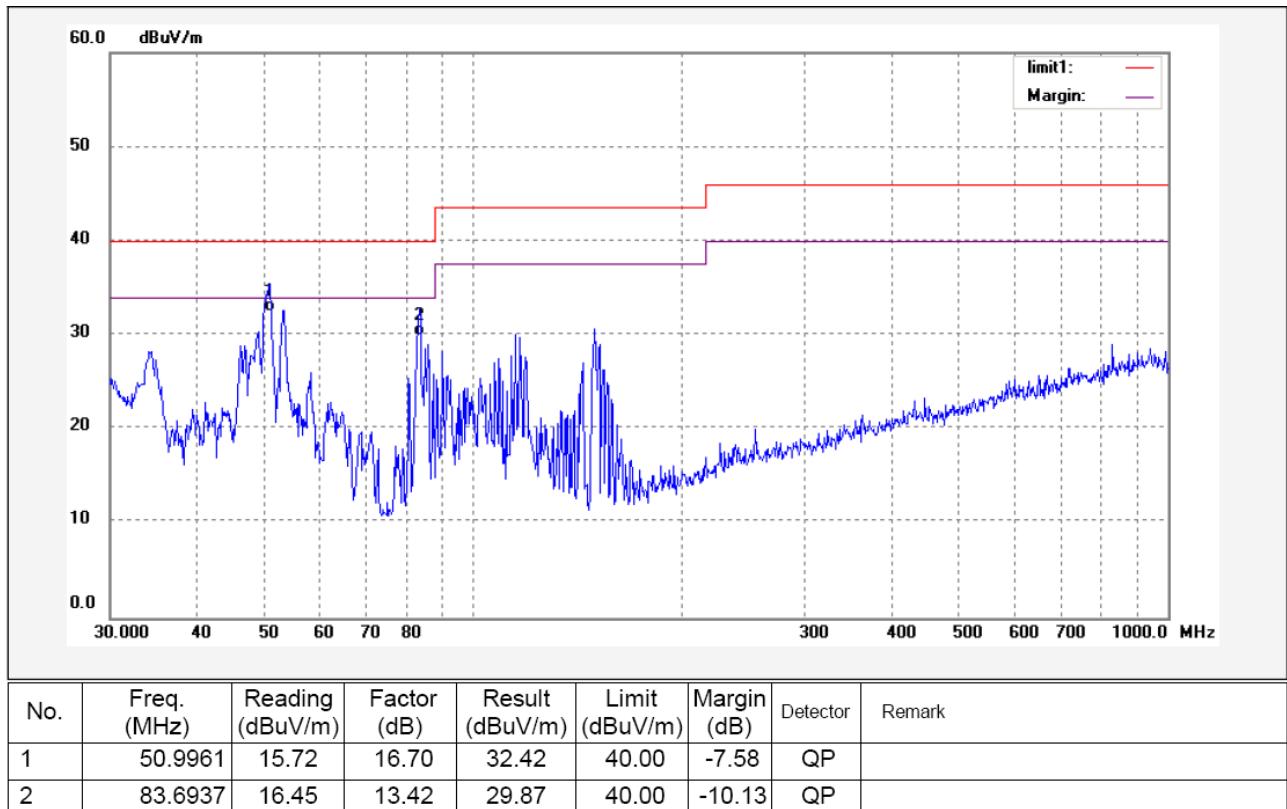
The “**Margin**” column of the folsmalling data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB μ V means the emission is 7dB μ V besmall the maximum limit for Class B. The equation for margin calculation is as folsmalls:

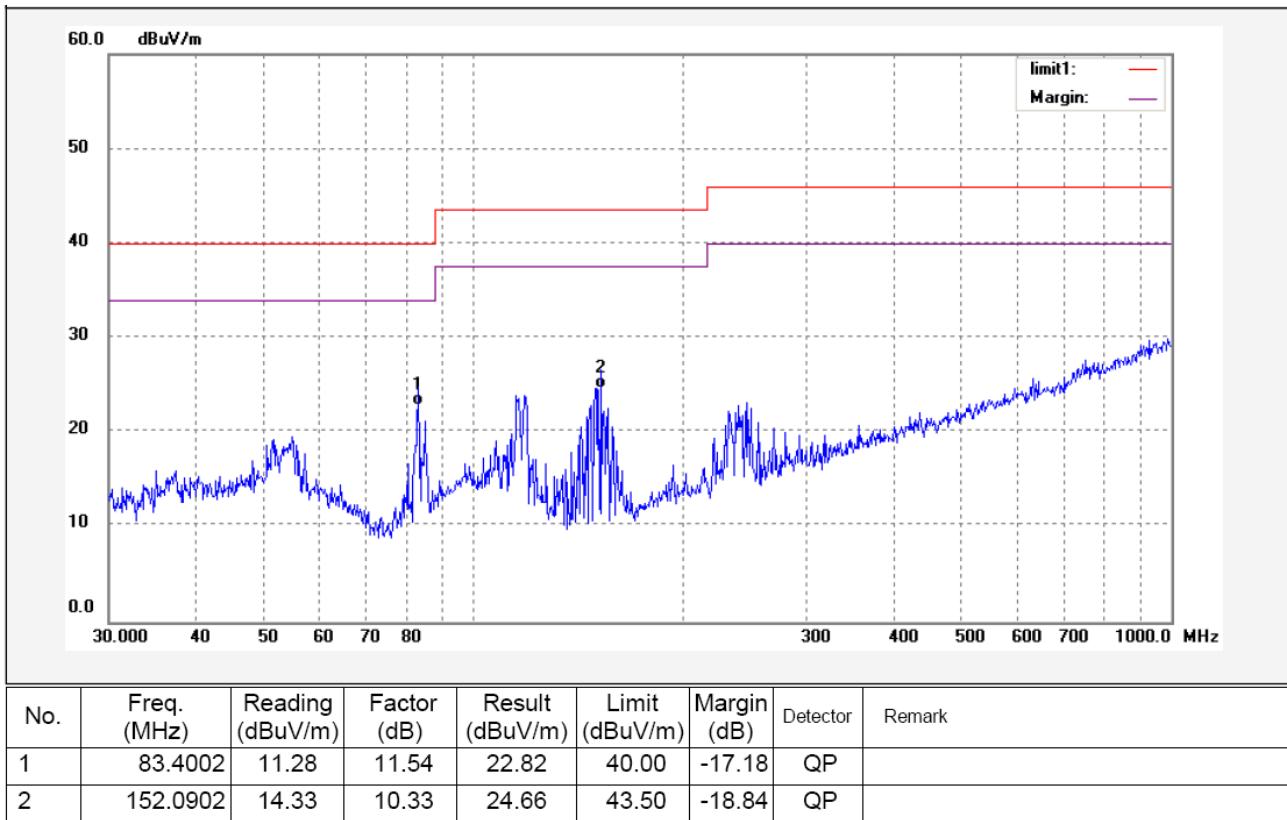
$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

6.2.6 Summary of Test Results

According to the data in this section, the EUT complied with the FCC Part18 standards.

Horizontal



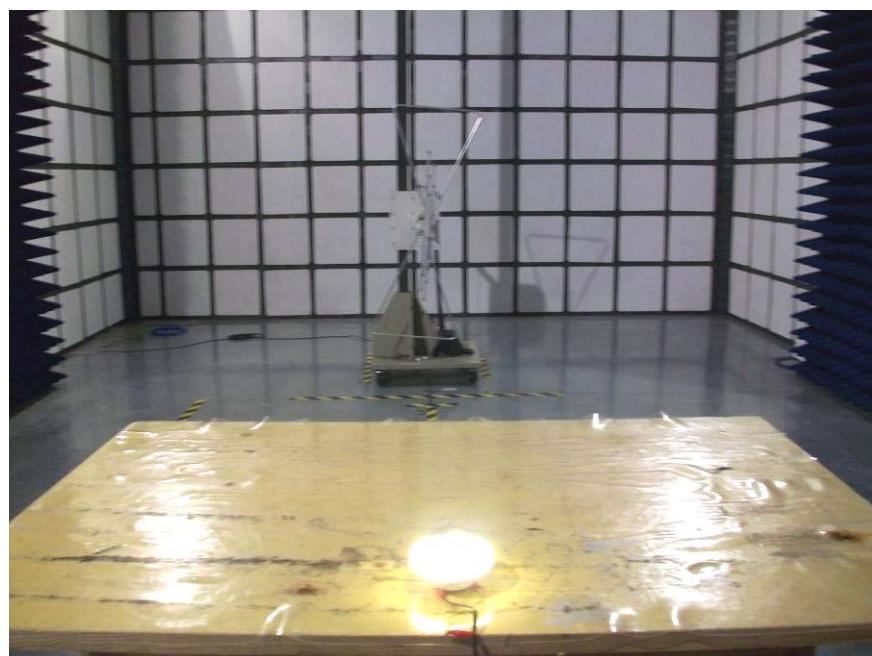
Vertical

7 Photographs of Testing

7.1 Conducted Emission Test View

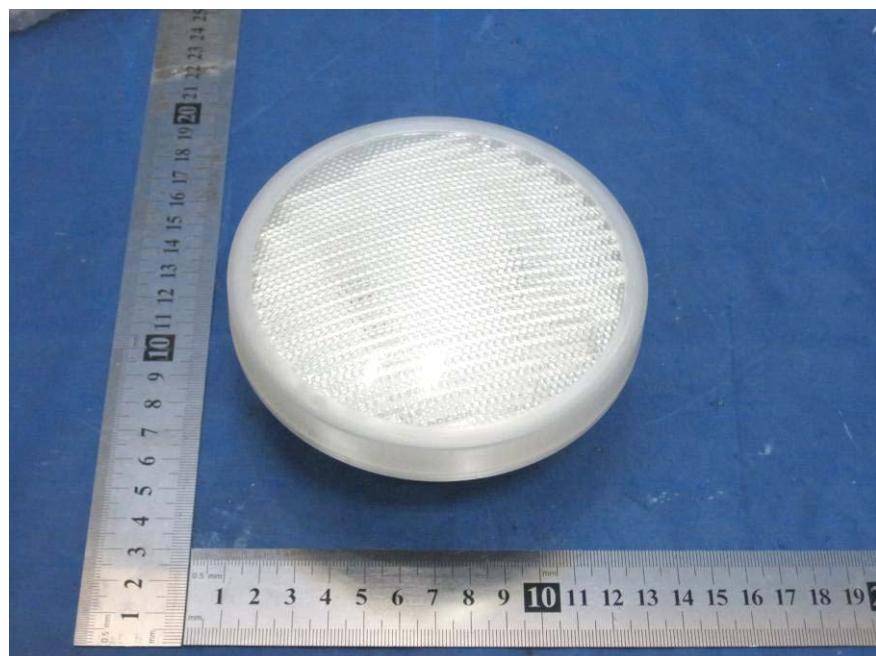


7.2 Radiation Emission Test View



8 Photographs - Constructional Details

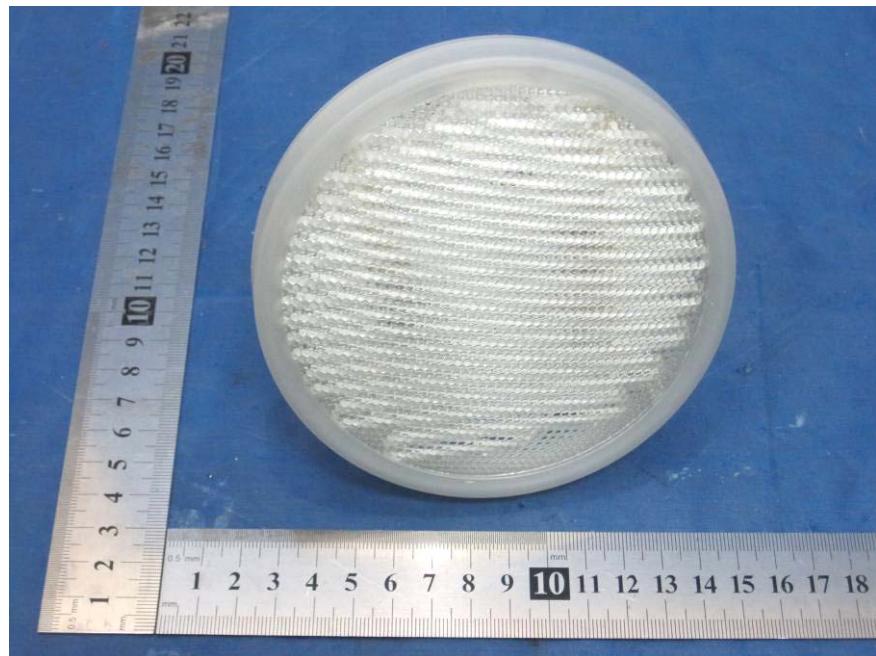
8.1 EUT(GX318D) - Front View



8.2 EUT(GX318D) - Back View



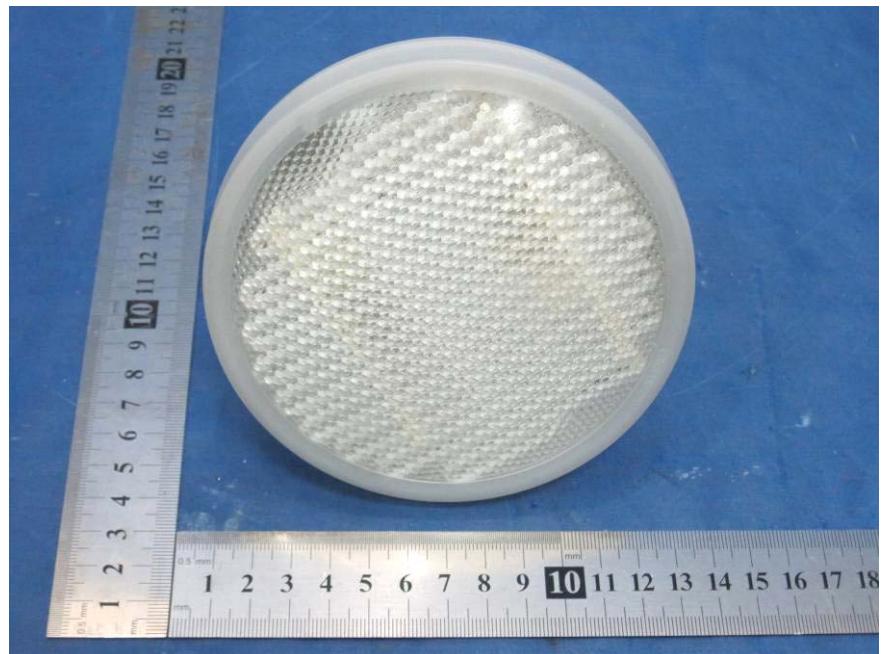
8.3 EUT(GU318D) - Front View



8.4 EUT(GU318D) - Back View



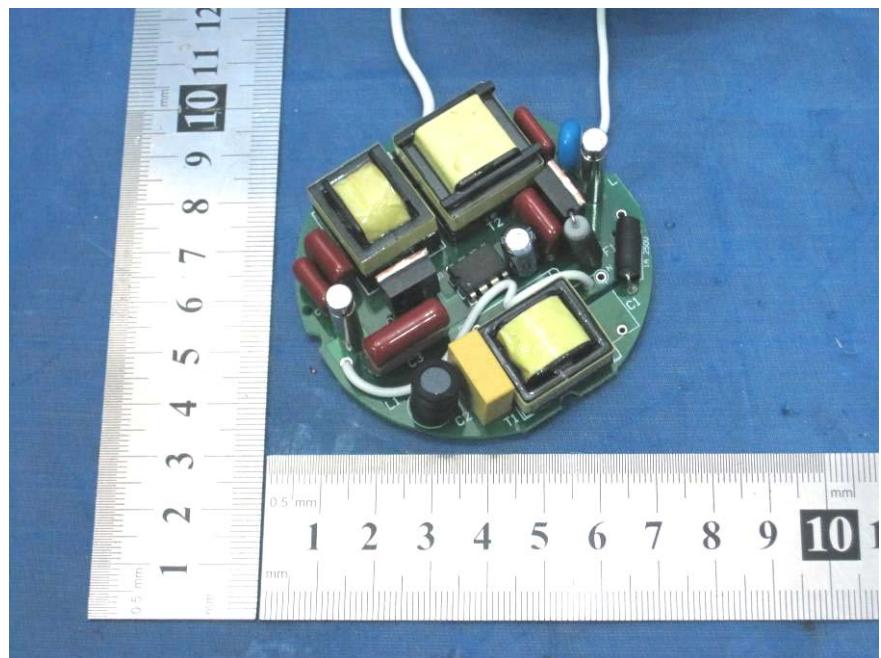
8.5 EUT(GP318D) - Front View



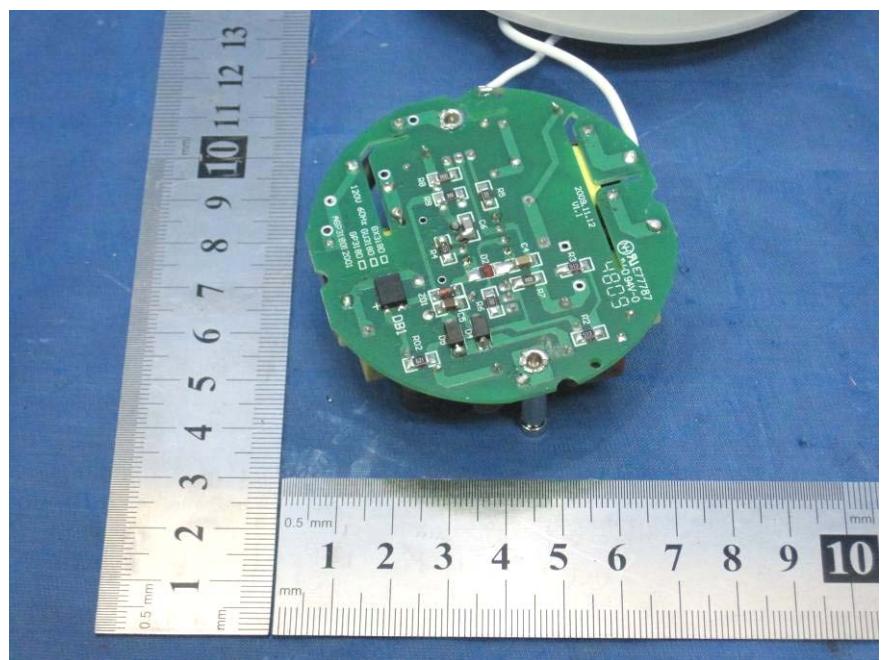
8.6 EUT(GP318D) - Back View



8.7 PCB - Front View



8.8 PCB - Back View



9 FCC ID Label

This device complies with Part 18 of the FCC Rules.

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 Top View/ proposed FCC Label Location

