

# FCC TEST REPORT

UNDER  
FCC Part 18 RF Lighting Device


PREPARED FOR :

**Zhongshan Tianpeng Electronic Lighting and Communication  
Equipment Factory**

Tian Peng Industrial District HengLan Town, Zhongshan, GuangDong, China

<b>FCC ID: QXGEIMEUB</b>
<b>EUT: Self-Ballasted Fluorescent Lamp</b>
<b>Model: EIM-3W; EIM-5W; EIM-7W; EUB-5W; EUB-7W</b>

February 18, 2003

<b>Report Type:</b> Original Report
<b>Test Engineer:</b> <u>Peter Lin</u>
<b>Test Date:</b> <u>January 16, 2003</u>
 <b>Review By:</b> <u>Apollo Liu</u>

PREPARED BY :

**Shenzhen Academy of Metrology & Quality Inspection**  
Longzhu Road, Nanshan

FCC Registration Number: 97379

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## 1. Summary of Test Results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 18	Conducted Test	PASS	The test results meet limit
FCC Part 18	Radiated Test	PASS	The test results meet limit.

## 2. Test Statement

### 2.1 Test Statement

- A. This statement explains the test condition of this project. The EUT was tested under the condition of each test item.
- B. The data shown in this report reflects the worst – case data for the condition as the summary of test result.
- C. EUT conditions.

**Note:** (1)The EUT is Self-Ballasted Fluorescent Lamp; Working Frequency: (0.040~0.045)MHz.  
(2)It is acknowledged by Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory the Selling Model No.: EIM-3W; EIM-5W; EIM-7W; EUB-5W; EUB-7W are identical. The Model difference is for marketing purposes only.

Model	Rating	Power (W)
EIM-3W	120V/60Hz, 54mA	2.23
EIM-5W	120V/60Hz, 82mA	4.12
EIM-7W	120V/60Hz, 108mA	6.02
EUB-5W	120V/60Hz, 82mA	4.06
EUB-7W	120V/60Hz, 108mA	6.04

### 2.2 Departure From Document Policies, Procedure or Specifications, The Statement

1. Did have Any departure from document policies & procedures or from specifications.  
Yes ☐ , No ☐  
If yes , the description as below.
2. The report must not be used by the client to claim product endorsement by any agency the government.
3. This product is a test sample that was shown as the photos of this test report only.
4. The effect that the results relate only to the items tested.

### **3. EUT Modifications**

No modification by Shenzhen Academy of Metrology & Quality Inspection.

## 4. Conducted Power Line Test

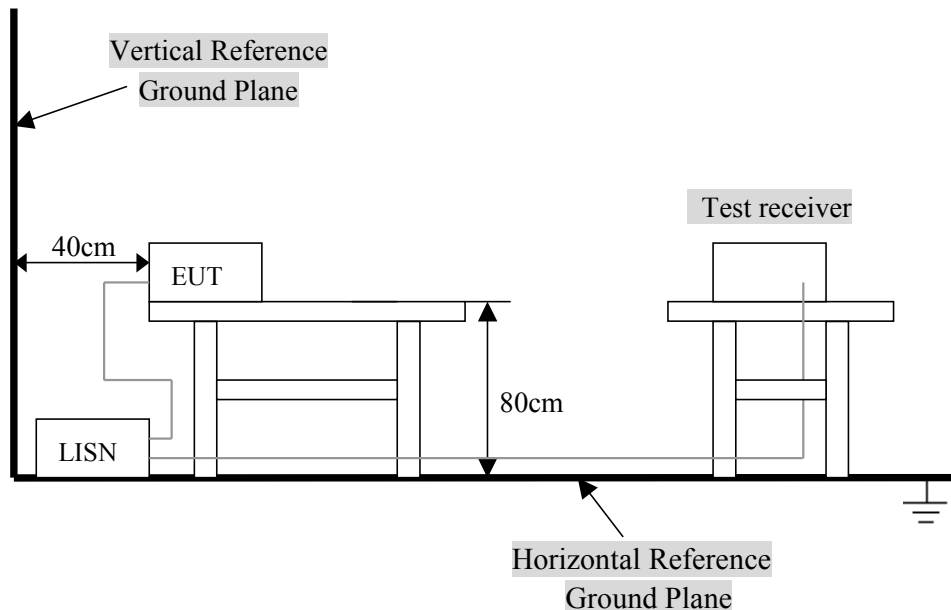
### 4.1 Test Equipment

Please refer to Section 8 this report.

### 4.2 Test Procedure

The EUT was tested according to ANSI C63.4 - 1992. The frequency spectrum from 0.45 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 uHenry as specified by section 5.1 OF ANSI C63.4 - 1992. cables and peripherals were moved to find the maximum emission levels for each frequency.

### 4.3 Test Setup



For the actual test configuration, Please refer to the related items – Photos of Testing.

#### 4. 4 Configuration of The EUT

The EUT was configured according to ANSI C63.4-1992. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

##### A. EUT

DEVICE	MANUFACTURER	MODEL #	FCCID / DoC
Self-Ballasted Fluorescent Lamp	Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory	EIM-3W; EIM-5W; EIM-7W; EUB-5W; EUB-7W	QXGEIMEUB

##### B. Internal Devices

DEVICE	MANUFACTURER	MODEL #	FCCID / DoC
N/A			

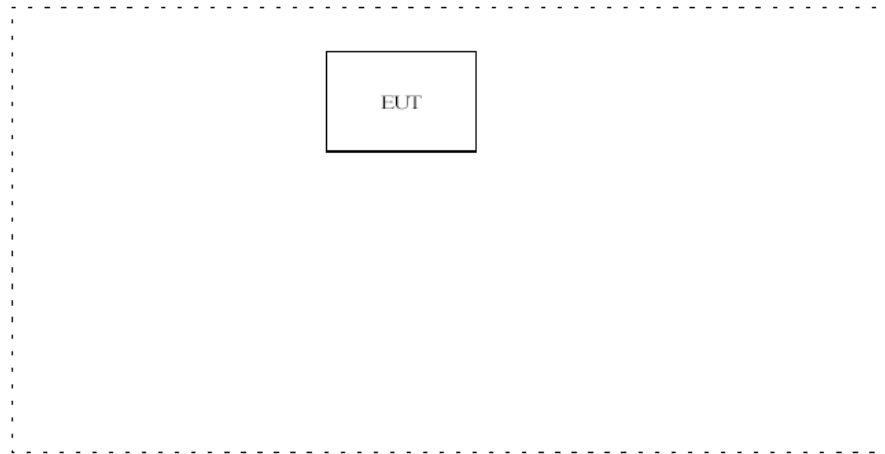
##### C. Peripherals

DEVICE	MANUFAC-TURER	MODEL # SERIAL #	FCC ID/ DoC	CABLE
N/A				

#### 4.5 EUT Operating Condition

Operating condition is according to ANSI C63.4 - 1992.

- A. Setup the EUT and simulators as shown on follow.
- B. The EUT was connected to the power main through a Line Impedance Stabilization Network (LISN).
- C. This provided a 50 ohm coupling impedance for the measuring equipment..



#### 4.6 Conducted Power Line Emission Limits

FCC Part 18 (dBuV)	
FREQUENCY RANGE (MHz)	Limits (dBuV)
0.45 – 2.51	48
2.51 – 3.0	69.5
3.0 – 30	48

**NOTE** : In the above table, the tighter limit applies at the band edges.



#### 4. 7 Conducted Power Line Test Result

Product : Self-Ballasted Fluorescent Lamp  
 Test Item : General Conducted Emission Data  
 Test Voltage : 120V/60Hz AC  
 Test Mode : EIM-3W  
 Temperature : 24 °C  
 Humidity : 52%RH  
 Test Result : PASS

FREQ. (MHz)	EMISSION (dBuV)	Va/Vb	LIMITS QP (dBuV)	MARGIN (dB)
0.670	37.1.	Va	48.0	-10.9
0.758	44.9	Va	48.0	-3.1
0.804	40.3	Va	48.0	-7.7
0.659	38.7	Vb	48.0	-9.3
0.748	45.6	Vb	48.0	-2.4
0.790	44.0	Vb	48.0	-4.0

**Note:**

- 1.Uncertainty in conducted emission measured is <+/- -2dB.
- 2.The emission levels of other frequencies were very low against the limit.
- 3.The Quasi-peak emission level also meets average limit and measurement with the average detector is unnecessary.
- 4.Emission = Meter Reading + Factor ; Factor = Insertion Loss + Cable Loss.
- 5.Margin Value = EMISSION Level - LIMIT Value. All reading are Quasi-Peak Values.

Product : Self-Ballasted Fluorescent Lamp  
 Test Item : General Conducted Emission Data  
 Test Voltage : 120V/60Hz AC  
 Test Mode : EIM-5W  
 Temperature : 24 °C  
 Humidity : 52%RH  
 Test Result : PASS

FREQ. (MHz)	EMISSION (dBuV)	Va/Vb	LIMITS QP (dBuV)	MARGIN (dB)
0.460	32.5	Va	48.0	-15.5
0.508	33.5	Va	48.0	-14.5
0.688	31.8	Va	48.0	-16.2
0.453	33.7	Vb	48.0	-14.3
0.498	32.6	Vb	48.0	-15.4
0.765	28.2	Vb	48.0	-19.8

**Note:**

- 1.Uncertainty in conducted emission measured is <+/- -2dB.
- 2.The emission levels of other frequencies were very low against the limit.
- 3.The Quasi-peak emission level also meets average limit and measurement with the average detector is unnecessary.
- 4.Emission = Meter Reading + Factor ; Factor = Insertion Loss + Cable Loss.
- 5.Margin Value = EMISSION Level - LIMIT Value. All reading are Quasi-Peak Values.

Product : Self-Ballasted Fluorescent Lamp  
 Test Item : General Conducted Emission Data  
 Test Voltage : 120V/60Hz AC  
 Test Mode : EIM-7W  
 Temperature : 24 °C  
 Humidity : 52%RH  
 Test Result : PASS

FREQ. (MHz)	EMISSION (dBuV)	Va/Vb	LIMITS QP (dBuV)	MARGIN (dB)
0.652	41.9	Va	48.0	-6.1
0.694	43.8	Va	48.0	-4.2
0.768	42.5	Va	48.0	-5.5
0.494	34.6	Vb	48.0	-13.4
0.580	35.9	Vb	48.0	-12.1
0.816	35.5	Vb	48.0	-12.5

**Note:**

- 1.Uncertainty in conducted emission measured is <+/- 2dB.
- 2.The emission levels of other frequencies were very low against the limit.
- 3.The Quasi-peak emission level also meets average limit and measurement with the average detector is unnecessary.
- 4.Emission = Meter Reading + Factor ; Factor = Insertion Loss + Cable Loss.
- 5.Margin Value = EMISSION Level - LIMIT Value. All reading are Quasi-Peak Values.

Product : Self-Ballasted Fluorescent Lamp  
 Test Item : General Conducted Emission Data  
 Test Voltage : 120V/60Hz AC  
 Test Mode : EUB-5W  
 Temperature : 24 °C  
 Humidity : 52%RH  
 Test Result : PASS

FREQ. (MHz)	EMISSION (dBuV)	Va/Vb	LIMITS QP (dBuV)	MARGIN (dB)
0.450	40.0	Va	48.0	-8.0
0.485	40.2	Va	48.0	-7.8
0.545	39.2	Va	48.0	-8.8
0.450	35.4	Vb	48.0	-12.6
0.481	37.1	Vb	48.0	-10.9
0.577	30.1	Vb	48.0	-17.9

**Note:**

- 1.Uncertainty in conducted emission measured is <+/- 2dB.
- 2.The emission levels of other frequencies were very low against the limit.
- 3.The Quasi-peak emission level also meets average limit and measurement with the average detector is unnecessary.
- 4.Emission = Meter Reading + Factor ; .Factor = Insertion Loss + Cable Loss.
- 5.Margin Value = EMISSION Level - LIMIT Value. All reading are Quasi-Peak Values.

Product : Self-Ballasted Fluorescent Lamp  
 Test Item : General Conducted Emission Data  
 Test Voltage : 120V/60Hz AC  
 Test Mode : EUB-7W  
 Temperature : 24 °C  
 Humidity : 52%RH  
 Test Result : PASS

FREQ. (MHz)	EMISSION (dBuV)	Va/Vb	LIMITS QP (dBuV)	MARGIN (dB)
0.0.617	39.4	Va	48.0	-8.6
0.700	41.3	Va	48.0	-6.7
0.744	43.4	Va	48.0	-4.6
0.595	39.3	Vb	48.0	-8.7
0.733	40.5	Vb	48.0	-7.5
0.752	44.3	Vb	48.0	-3.7

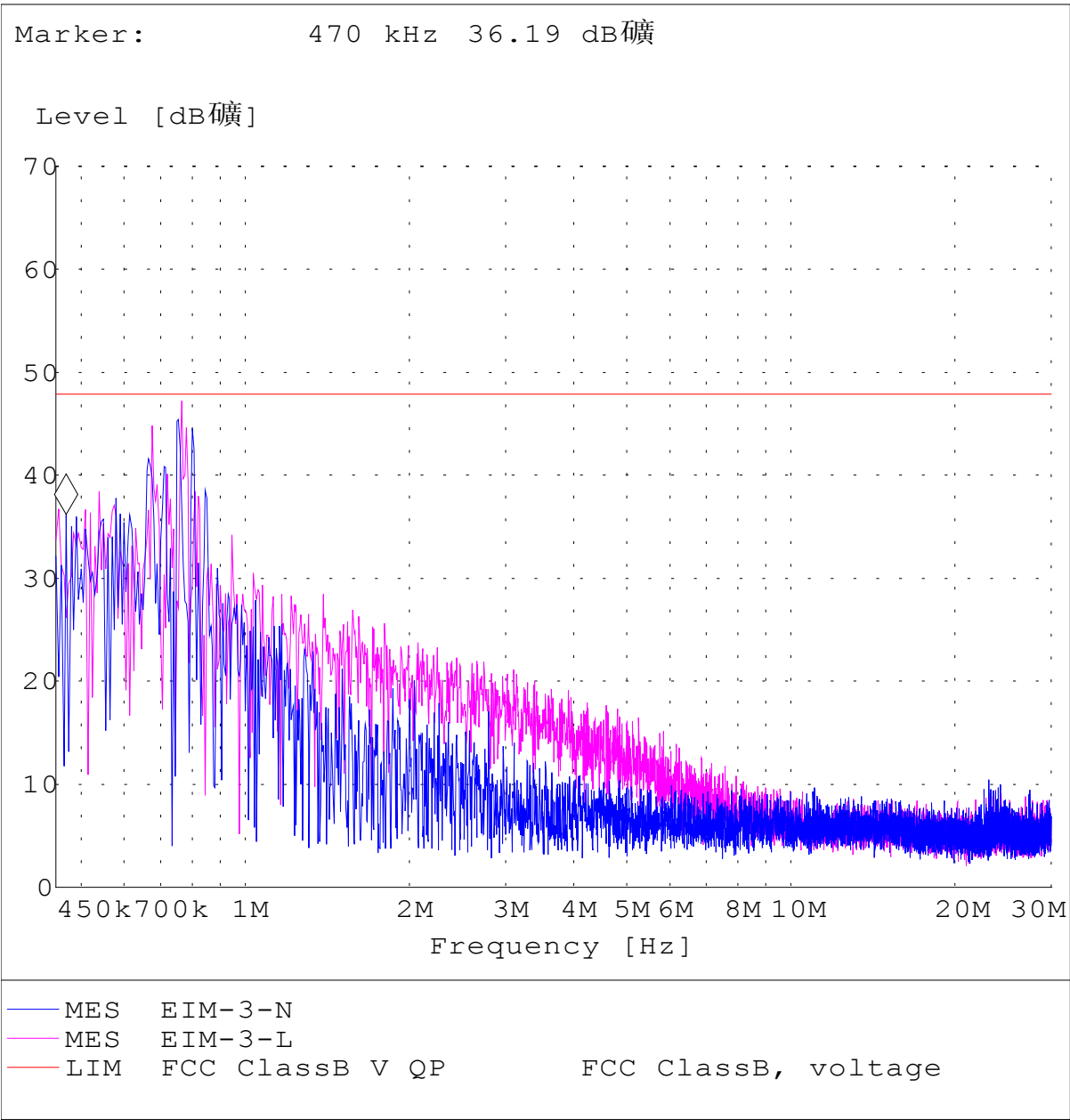
**Note:**

- 1.Uncertainty in conducted emission measured is <+/-2dB.
- 2.The emission levels of other frequencies were very low against the limit.
- 3.The Quasi-peak emission level also meets average limit and measurement with the average detector is unnecessary.
- 4.Emission = Meter Reading + Factor ; Factor = Insertion Loss + Cable Loss.
- 5.Margin Value = EMISSION Level - LIMIT Value. All reading are Quasi-Peak Values.

Conducted Emission

FCC Part 18

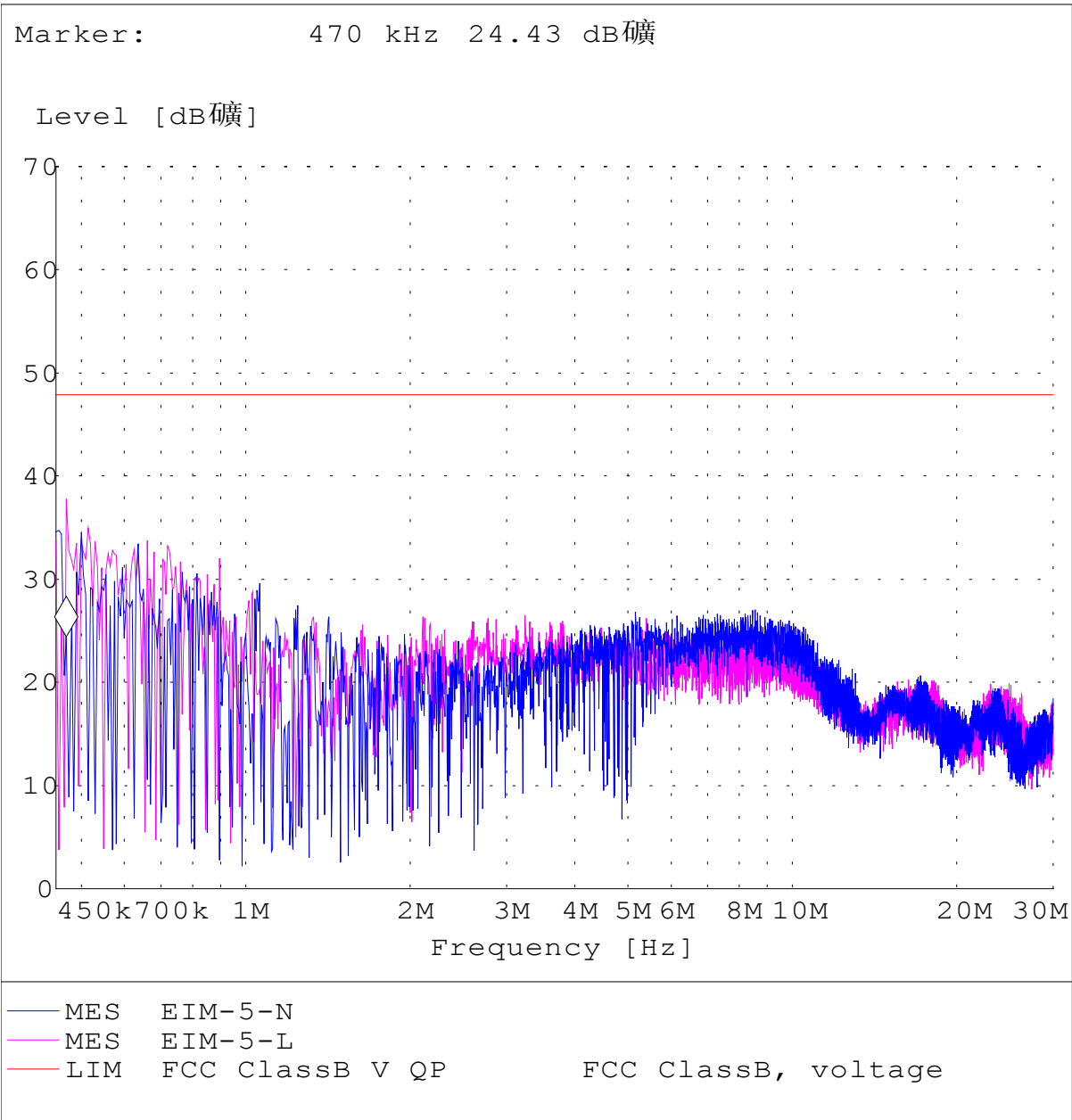
EUT: Self-Ballasted Fluorescent Lamp M/N: EIM-3W  
Manufacturer: Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory  
Operating Condition: Normal  
Test Site: SMQ EMC LAB.  
Operator: Peter Lin  
Test Specification: LINE&NEUTRAL  
Comment:



Conducted Emission

FCC Part 18

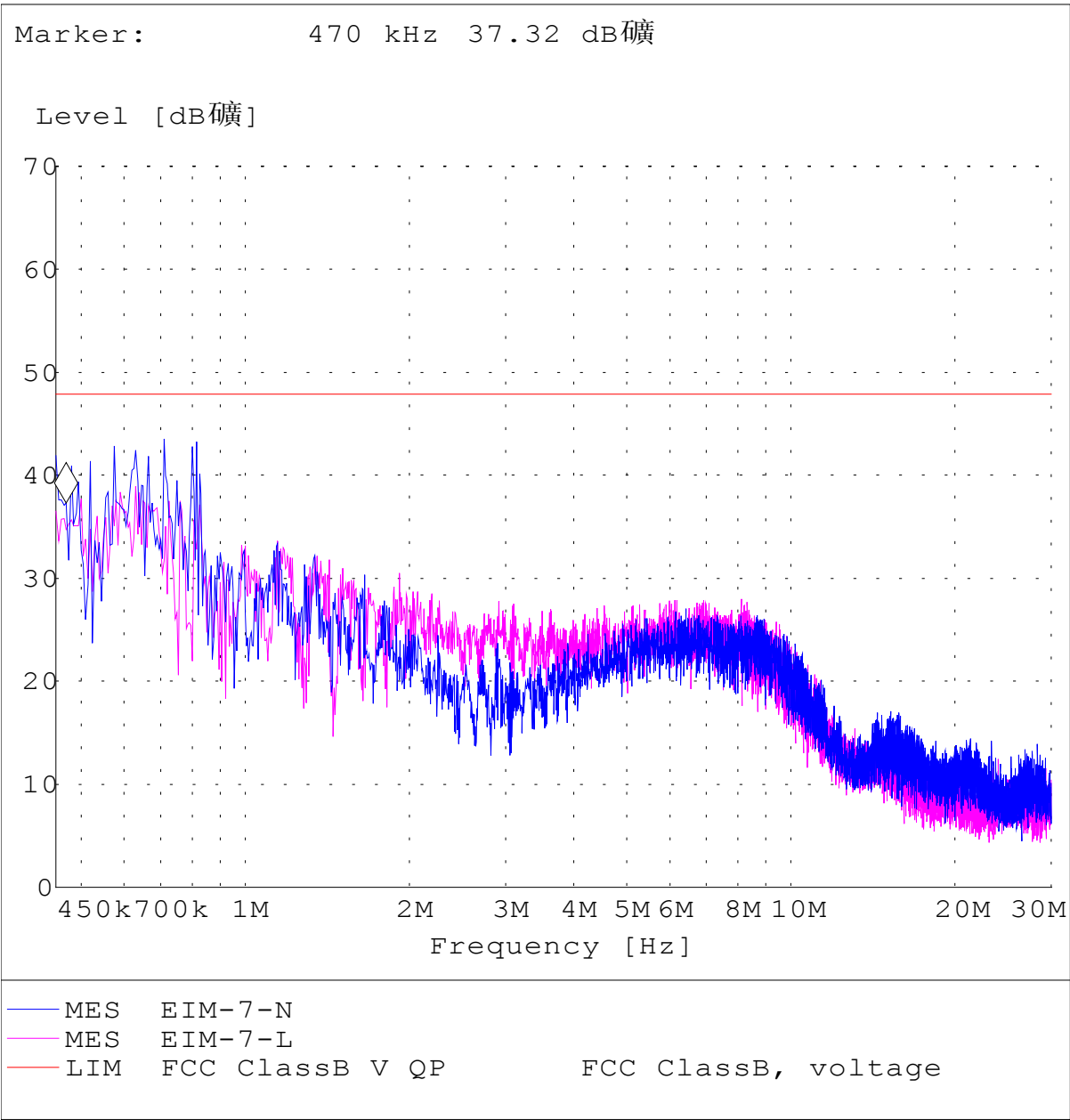
EUT: Self-Ballasted Fluorescent Lamp M/N: EIM-5W  
Manufacturer: Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory  
Operating Condition: Normal  
Test Site: SMQ EMC LAB.  
Operator: Peter Lin  
Test Specification: LINE&NEUTRAL  
Comment:



Conducted Emission

FCC Part 18

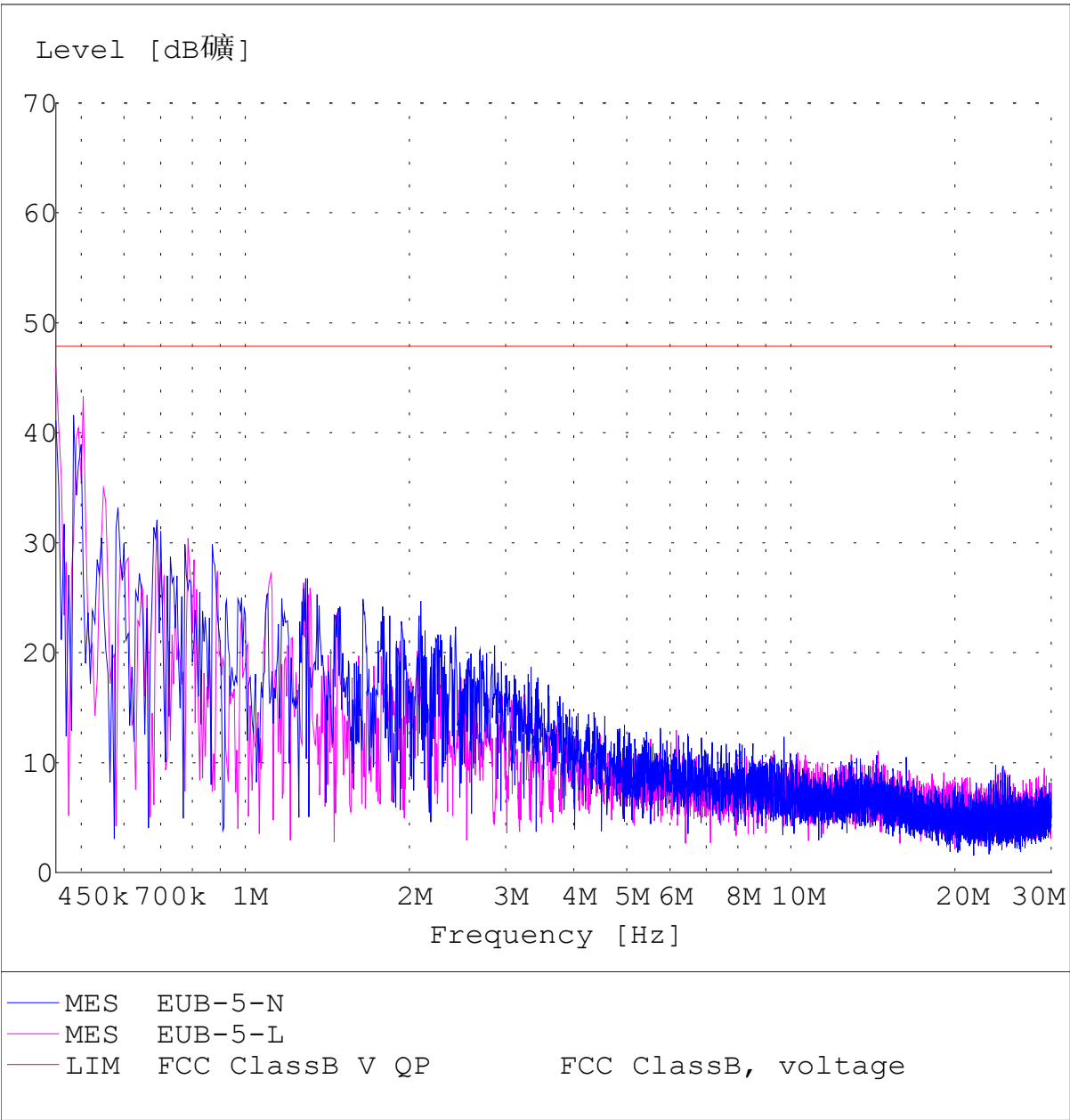
EUT: Self-Ballasted Fluorescent Lamp M/N: EIM-7W  
Manufacturer: Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory  
Operating Condition: Normal  
Test Site: SMQ EMC LAB.  
Operator: Peter Lin  
Test Specification: LINE&NEUTRAL  
Comment:



Conducted Emission

FCC Part 18

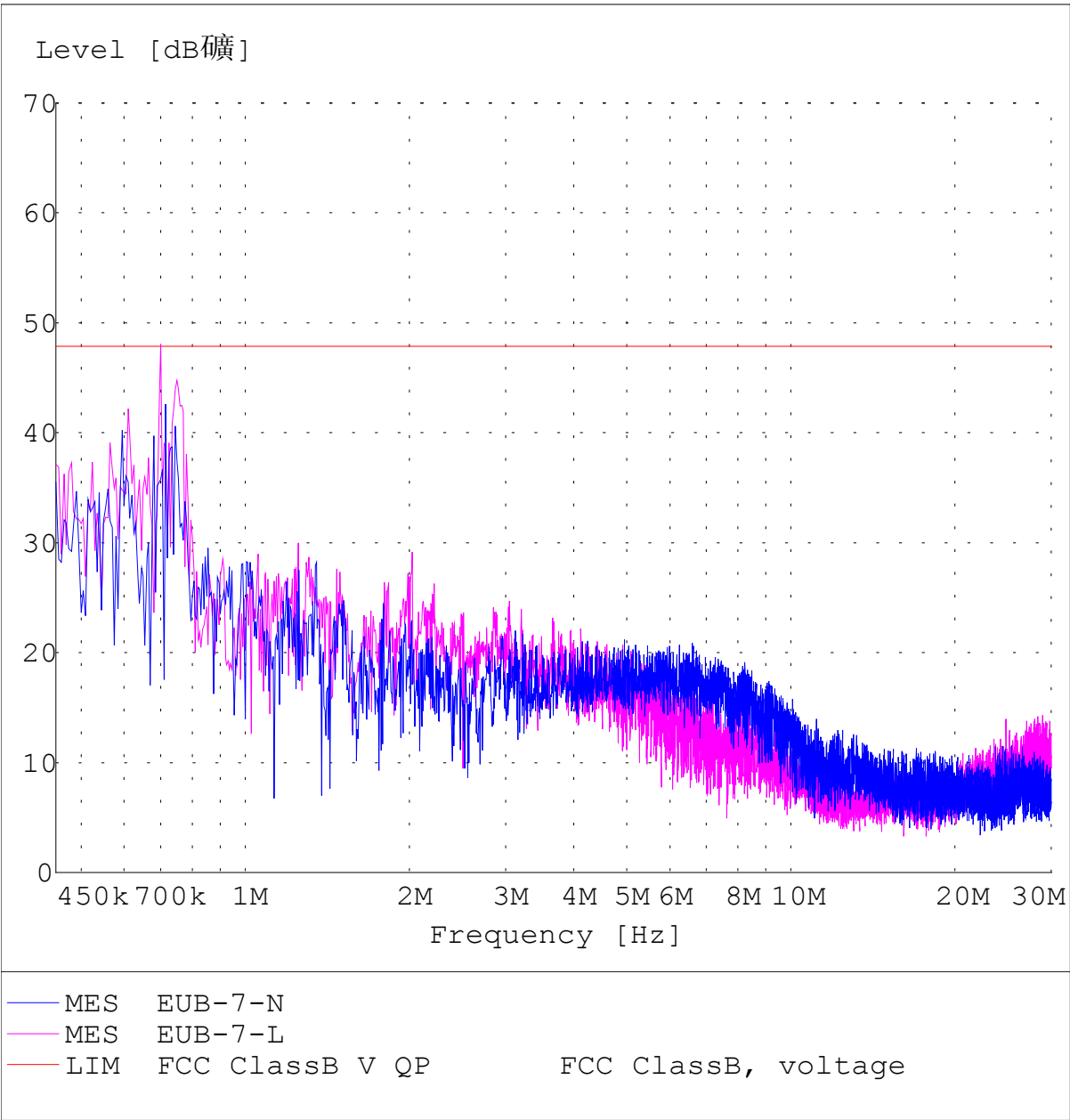
EUT: Self-Ballasted Fluorescent Lamp M/N: EUB-5W  
Manufacturer: Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory  
Operating Condition: Normal  
Test Site: SMQ EMC LAB.  
Operator: Peter Lin  
Test Specification: LINE&NEUTRAL  
Comment:



Conducted Emission

FCC Part 18

EUT: Self-Ballasted Fluorescent Lamp M/N: EUB-7W  
Manufacturer: Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory  
Operating Condition: Normal  
Test Site: SMQ EMC LAB.  
Operator: Peter Lin  
Test Specification: LINE&NEUTRAL  
Comment:





## 5. Radiated Emission Test

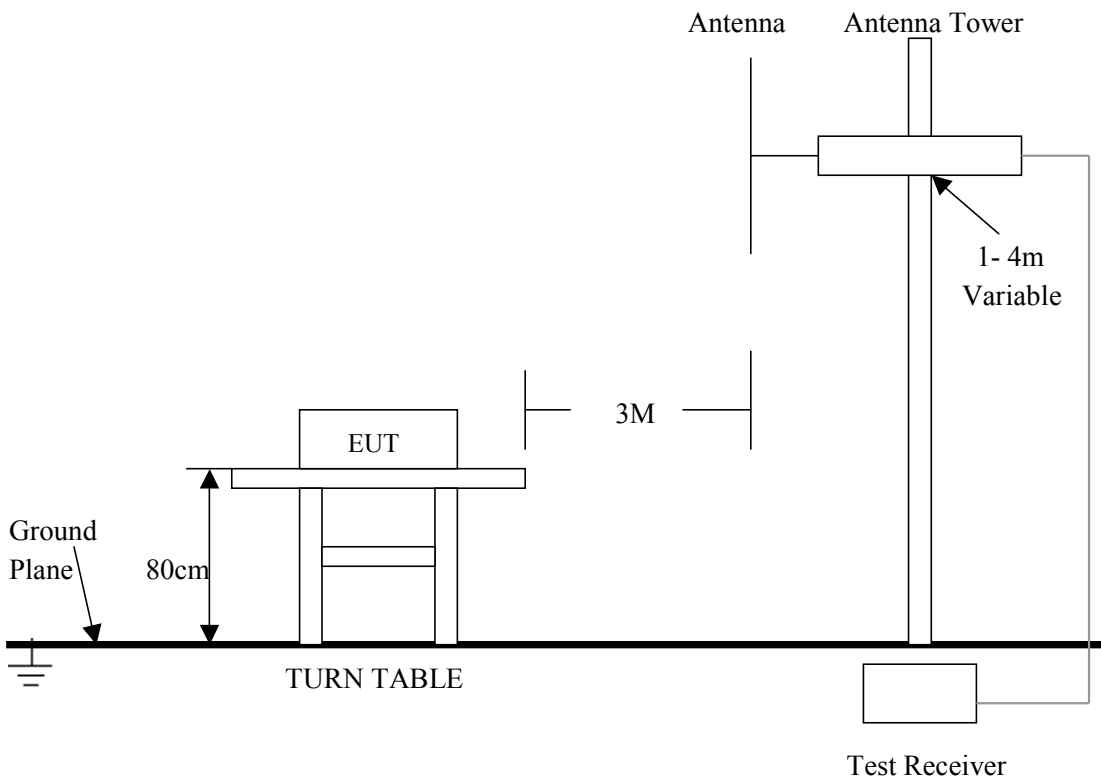
### 5.1 Test Equipment

Please refer to Section 8 this report.

### 5.2 Test Procedure

1. The EUT was tested according to ANSI C63.4 - 1992. The radiated test was performed at Shenzhen Academy of Metrology and Quality Inspection. This site is on file with the FCC laboratory division, Registration No. 97379.
2. The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-1992.
3. The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
4. The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
5. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is 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 of specification limit), and are distinguished with a "QP" in the data table.
6. The antenna polarization : Vertical polarization and Horizontal polarization.

### 5.3 Radiated Test Setup



**For the actual test configuration , please refer to the related items – Photos of Testing.**

#### 5.4 Configuration of The EUT

Same as section 4.4 of this report

#### 5.5 EUT Operating Condition

Same as section 4.5 of this report.

#### 5.6 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below :

**Frequencies in restricted band are complied to limit on FCC Part 18.**

Frequency (MHz)	Distance (m)	Field Strength (dBuV/m)
30 - 88	3	40.0
88 - 216	3	43.5
216 - 1000	3	46.0

**Note:**

- (1) RF Voltage (dBuV) = 20 log RF Voltage (uV)
- (2) In the Above Table, the tighter limit applies at the band edges.
- (3) Distance refers to the distance in meters between the measuring instrument antenna and the

## 5. 7 Radiated Emission Test Result

Product : Self-Ballasted Fluorescent Lamp  
Test Item : General Conducted Emission Data  
Test Voltage : 120V/60Hz AC  
Test Mode : EIM-3W  
Temperature : 24 °C  
Humidity : 52%RH  
Test Result : PASS

**Note:** The RF voltages was scanned from 30MHz to 1000MHz on Radiated Emission of Self-Ballasted Fluorescent Lamp and no significant emissions were found in this frequency band. Test Results were under the required limit with 20dB margin or more.

Product : Self-Ballasted Fluorescent Lamp  
Test Item : General Conducted Emission Data  
Test Voltage : 120V/60Hz AC  
Test Mode : EIM-5W  
Temperature : 24 °C  
Humidity : 52%RH  
Test Result : PASS

**Note:** The RF voltages was scanned from 30MHz to 1000MHz on Radiated Emission of Self-Ballasted Fluorescent Lamp and no significant emissions were found in this frequency band. Test Results were under the required limit with 20dB margin or more.

Product : Self-Ballasted Fluorescent Lamp  
Test Item : General Conducted Emission Data  
Test Voltage : 120V/60Hz AC  
Test Mode : EIM-7W  
Temperature : 24 °C  
Humidity : 52%RH  
Test Result : PASS

**Note:** The RF voltages was scanned from 30MHz to 1000MHz on Radiated Emission of Self-Ballasted Fluorescent Lamp and no significant emissions were found in this frequency band. Test Results were under the required limit with 20dB margin or more.

Product : Self-Ballasted Fluorescent Lamp  
 Test Item : General Conducted Emission Data  
 Test Voltage : 120V/60Hz AC  
 Test Mode : EUB-5W  
 Temperature : 24 °C  
 Humidity : 52%RH  
 Test Result : PASS

**Note:** The RF voltages was scanned from 30MHz to 1000MHz on Radiated Emission of Self-Ballasted Fluorescent Lamp and no significant emissions were found in this frequency band. Test Results were under the required limit with 20dB margin or more.

Product : Self-Ballasted Fluorescent Lamp  
 Test Item : General Conducted Emission Data  
 Test Voltage : 120V/60Hz AC  
 Test Mode : EUB-7W  
 Temperature : 24 °C  
 Humidity : 52%RH  
 Test Result : PASS

FREQ. (MHz)	EMISSION (dBuV/m)	HORIZ / VERT	LIMITS (dBuV/m)	MARGIN (dB)
32.598	26.0	HORIZ	40.0	-14.0
43.179	25.0	VERT	40.0	-15.0
50.898	21.6	VERT	40.0	-18.4

**Note:**

- (1) All Reading Levels below 1GHz are Quasi-Peak, above are peak and average value.
- (2) Emission = Reading Level + Probe Factor + Cable Loss.
- (3) Margin Value = EMISSION Level - LIMIT Value. All reading are Quasi-Peak Values.

**Radiated Emission****FCC Part 18**

EUT: Self-Ballasted Fluorescent Lamp M/N: EIM-3W

Manufacturer: Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory

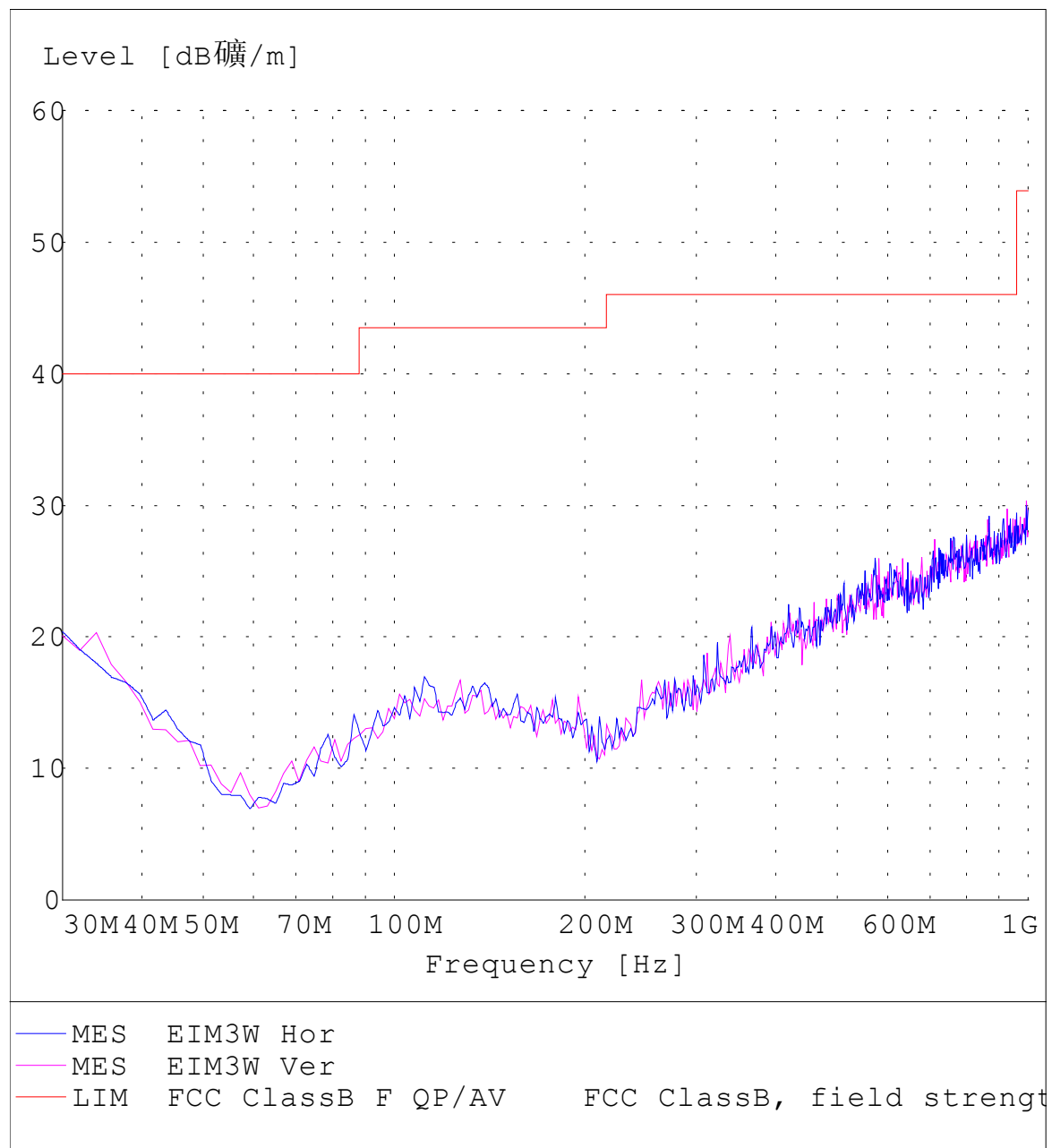
Operating Condition: Normal

Test Site: SMQ EMC Laboratory, SAC

Operator: Peter Lin

Test Specification: Vertical & Horizontal

Comment: 120V/60Hz



**Radiated Emission****FCC Part 18**

EUT: Self-Ballasted Fluorescent Lamp M/N: EIM-5W

Manufacturer: Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory

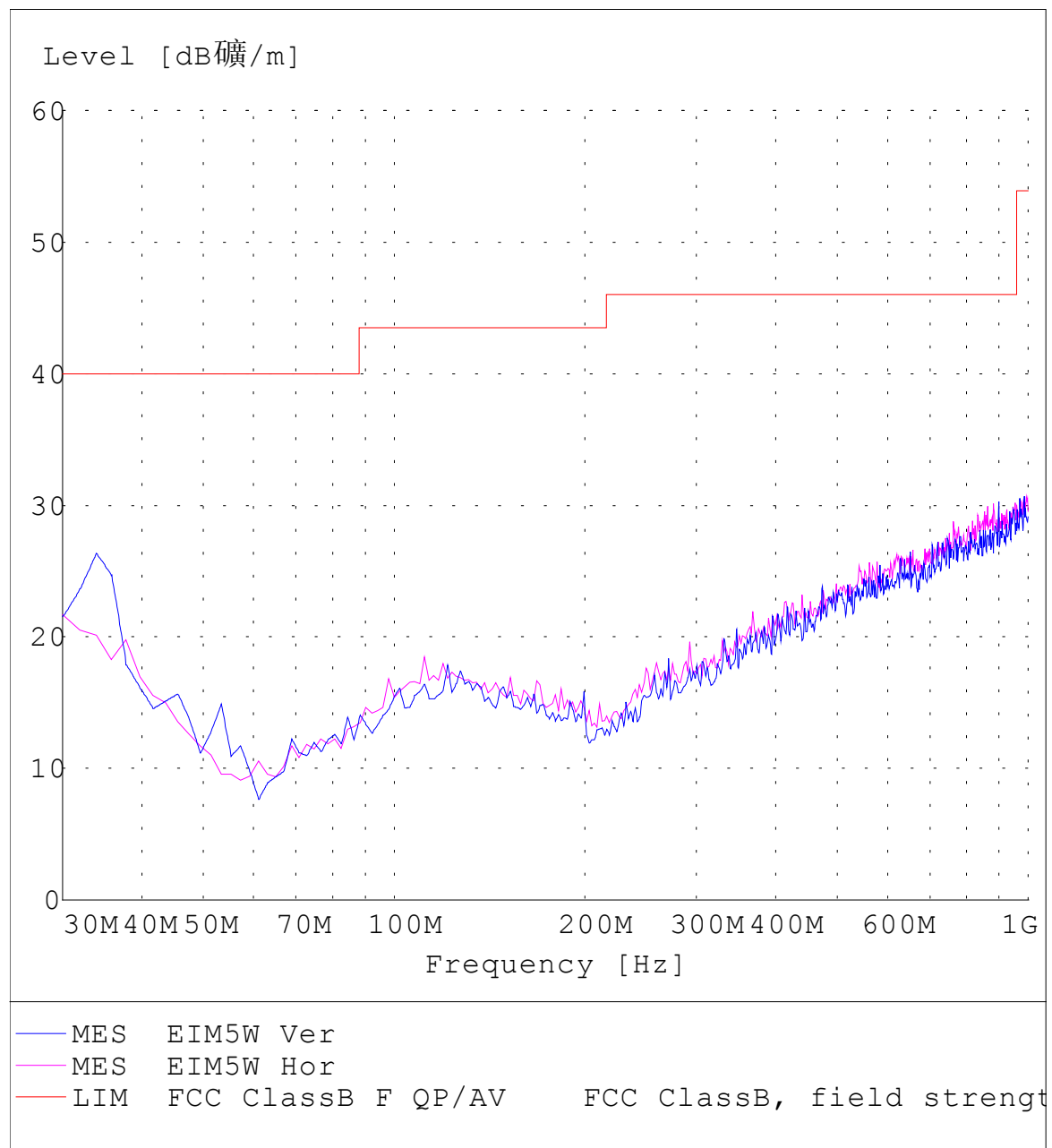
Operating Condition: Normal

Test Site: SMQ EMC Laboratory, SAC

Operator: Peter Lin

Test Specification: Vertical & Horizontal

Comment: 120V/60Hz



**Radiated Emission****FCC Part 18**

EUT: Self-Ballasted Fluorescent Lamp M/N: EIM-7W

Manufacturer: Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory

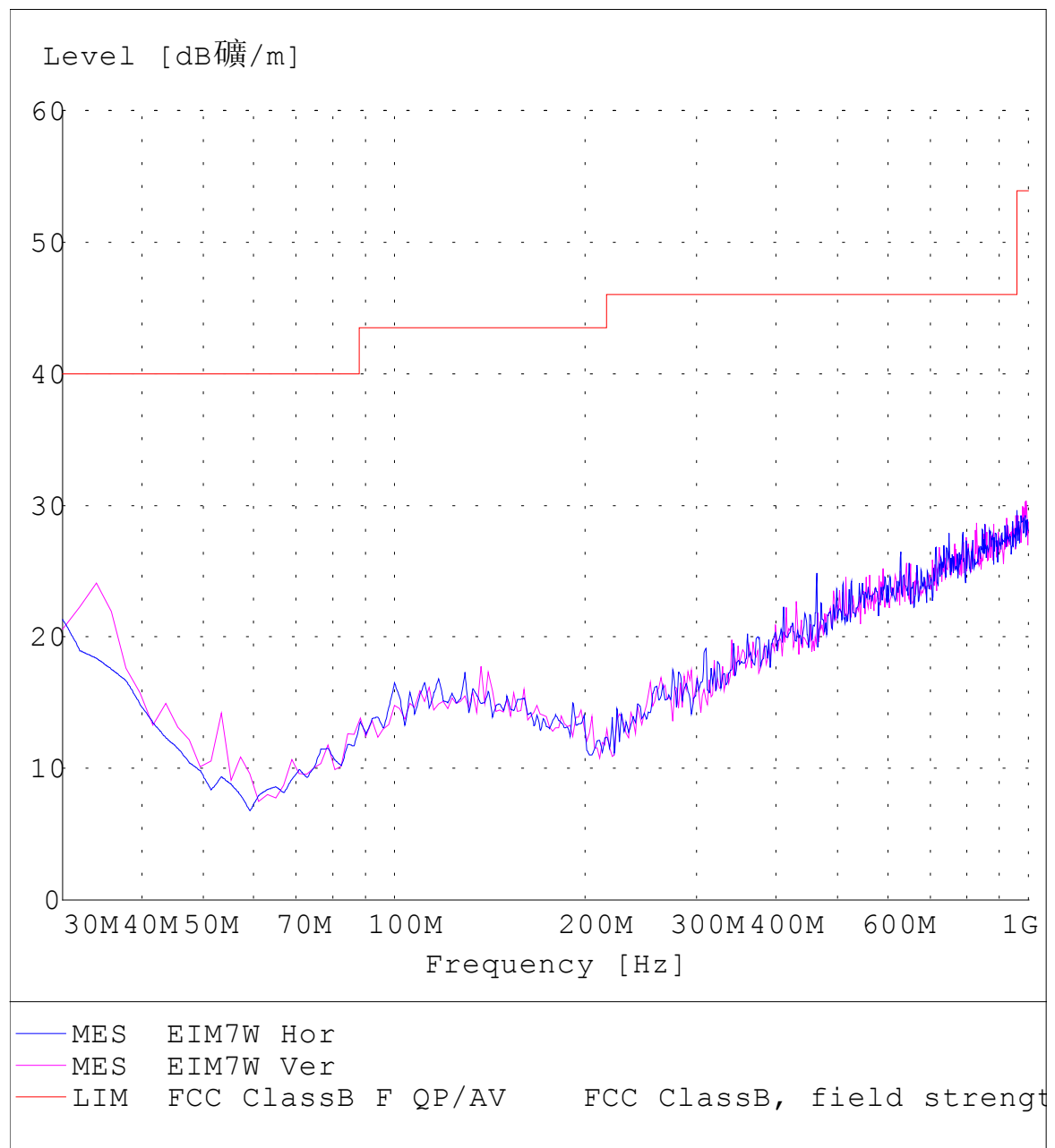
Operating Condition: Normal

Test Site: SMQ EMC Laboratory, SAC

Operator: Peter Lin

Test Specification: Vertical & Horizontal

Comment: 120V/60Hz



**Radiated Emission****FCC Part 18**

EUT: Self-Ballasted Fluorescent Lamp M/N: EUB-5W

Manufacturer: Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory

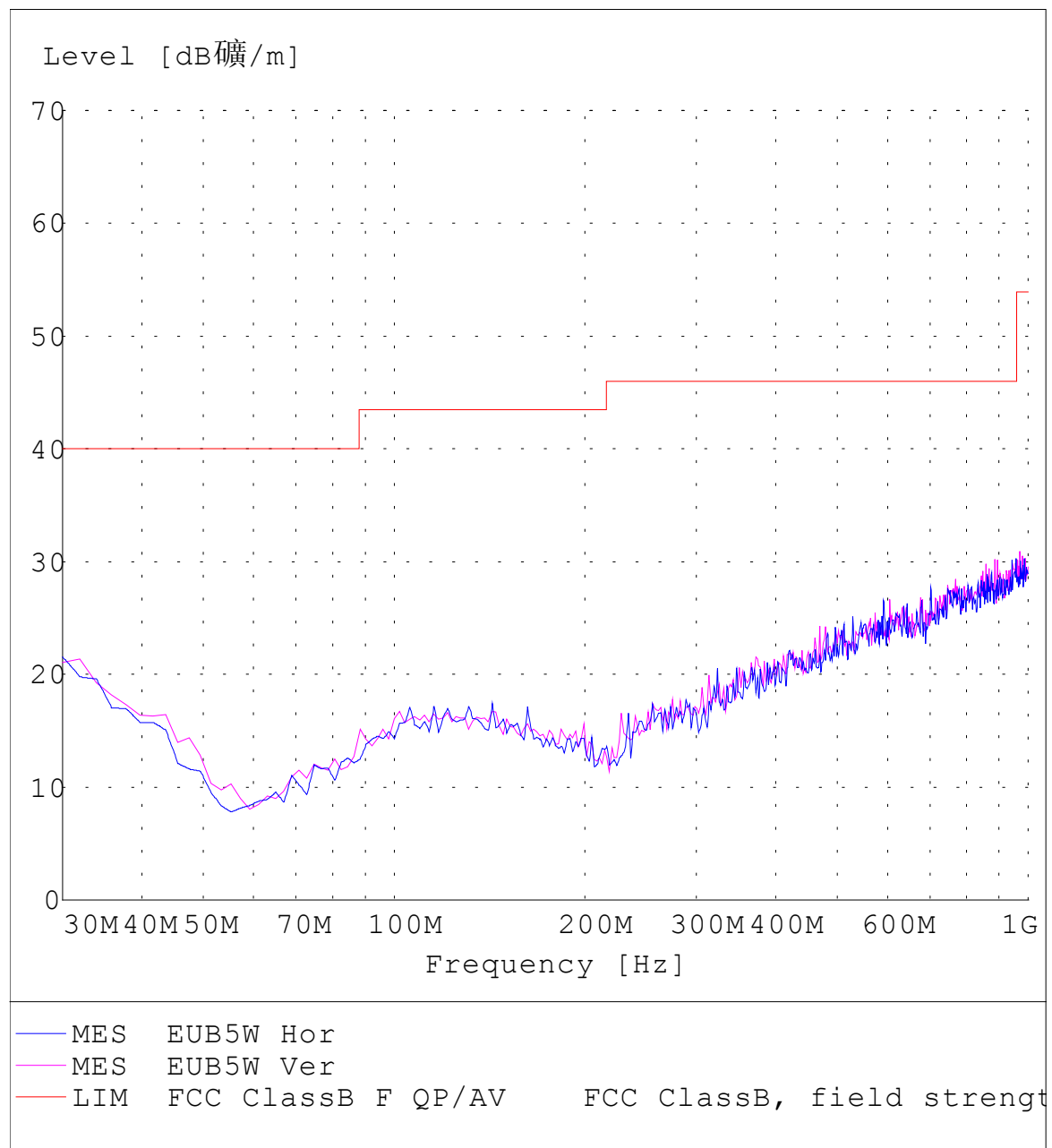
Operating Condition: Normal

Test Site: SMQ EMC Laboratory, SAC

Operator: Peter Lin

Test Specification: Vertical & Horizontal

Comment: 120V/60Hz





**Radiated Emission****FCC Part 18**

EUT: Self-Ballasted Fluorescent Lamp M/N: EUB-7W

Manufacturer: Zhongshan Tianpeng Electronic Lighting and Communication Equipment Factory

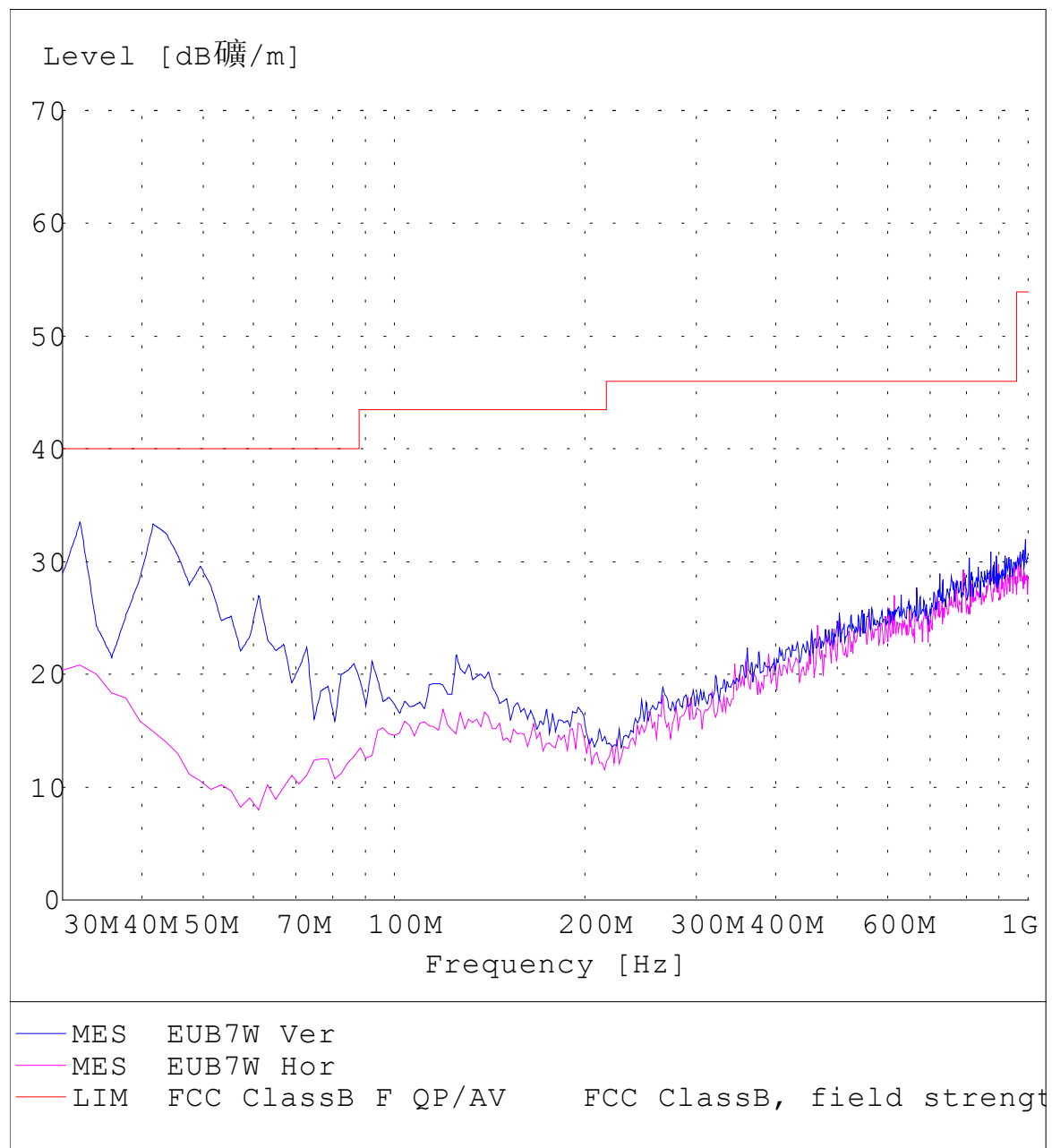
Operating Condition: Normal

Test Site: SMQ EMC Laboratory, SAC

Operator: Peter Lin

Test Specification: Vertical & Horizontal

Comment: 120V/60Hz



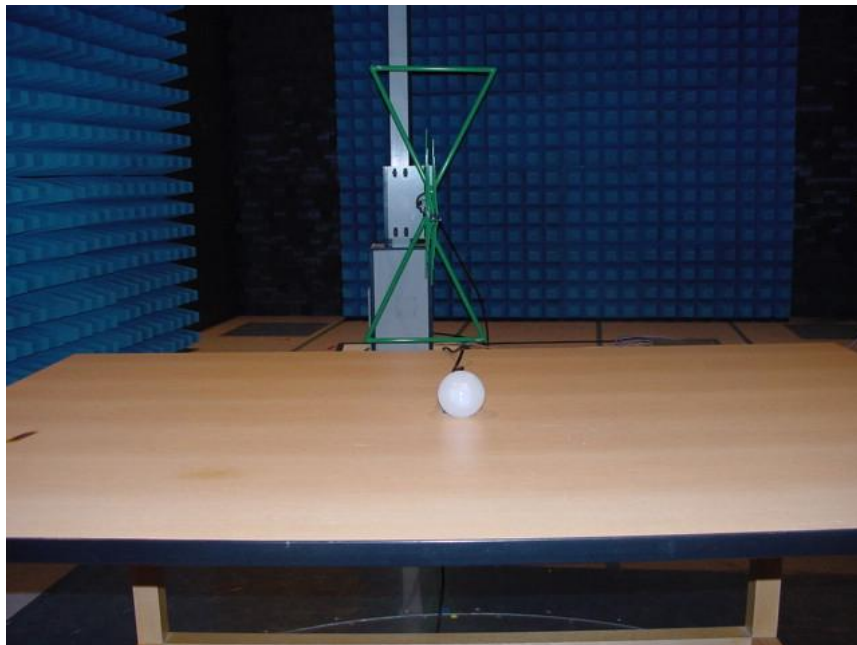
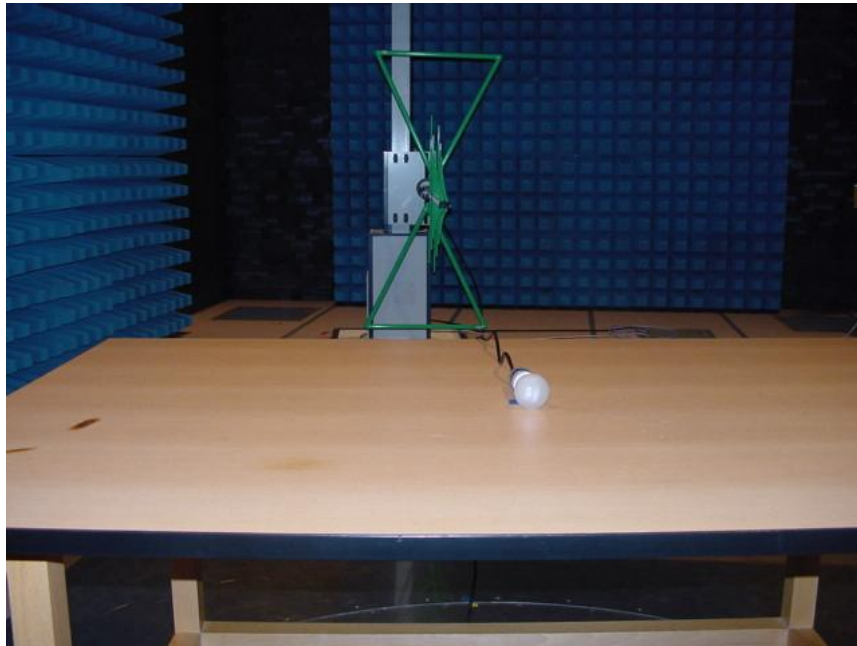
## 6. Photos of Testing

### 6.1 EUT Test Photographs

Conducted Emission Test View



### Radiated emission test view



## **6. 2 EUT Detailed Photographs**

## 7. FCC ID Label

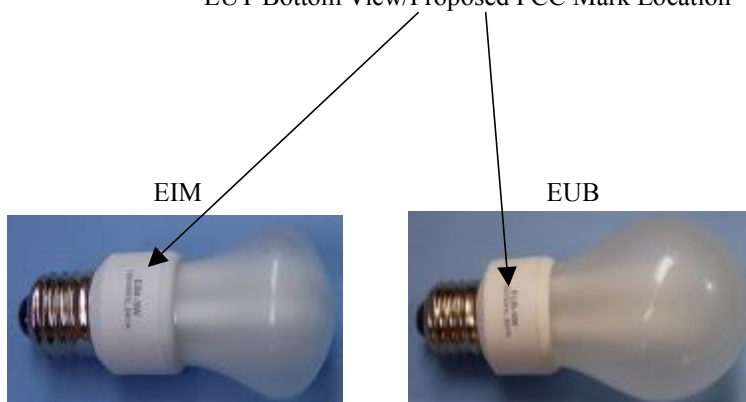
**FCC ID: QXGEIMEUB**

The Label shown shall be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.

The Label must not be a stick-on paper label. 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 Bottom View/Proposed FCC Mark Location



## 8. Test Equipment

The following test equipments were used during the radiated & conducted emission test:

Equipment/ Facilities	Manufacturer	Model #	Serial No.	Date of Cal.	Due Date
EMI Test Receiver	Rohde & Schwarz	ESCS30	100003	Feb27, 2002	Feb 27, 2003
AMN	Rohde & Schwarz	ESH3-Z5	100002	Feb 01, 2002	Feb 01, 2003
LISN	Kyoritsu	KNW-407	8-1441-8	Feb 23, 2002	Feb 23, 2003
EMI Test Receiver	Rohde & Schwarz	ESI26	838786/013	Feb 01, 2002	Feb 01, 2003
Bilog Antenna	Chase	CBL6112B	2591	Feb 01, 2002	Feb 01, 2003
Horn Antenna	Rohde & Schwarz	HF906	100014	Feb 01, 2002	Feb 01, 2003
3m Semi-Anechoic Chamber	Albatross Projects	9mX6mX6m	N/A	Feb 01, 2002	Feb 01, 2003