


FCC PART 15 Subpart B
EMI MEASUREMENT AND TEST REPORT
For

LM TECHNOLOGIES LTD.
Unit 10, Caroline Point 62 Caroline Street, Birmingham, Kindom

FCC ID:VVXLM540

December 6, 2010

| | | | |
|--|---|---|--|
| This Report Concerns: Original Report | | Equipment Type : USB BLUETOOTH ADAPTER | |
| Test Engineer: | Eric Li <i>Eric Li</i> | | |
| Report No.: | BST10110612Y-1ER-3 | | |
| Receive EUT Date/Test Date: | Dec 1, 2010/ Dec 6, 2010 | | |
| Reviewed By: | Christina <i>Christina</i> | | |
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1. GENERAL INFORMATION

1.1. Report information

1.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

1.1.2.The sample/s mentioned in this report is/are supplied by Applicant, BST therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BST, unless the applicant has authorized BST in writing to do so.

Test Facility -

The test site used to collect the radiated data is located on the address of emitel (Shenzhen) Limited

(FCC Registered Test Site Number: 746887) on

Building 2, 171 Meihua Road, Futian District, Shenzhen, 518049 China

The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

Available upon request.

2. PRODUCT DESCRIPTION

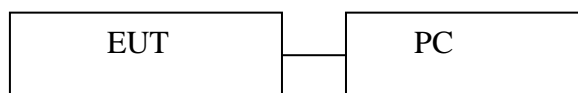
2.1. EUT Description

Description : USB BLUETOOTH ADAPTER
Applicant : LM TECHNOLOGIES LTD.
Unit 10, Caroline Point 62 Caroline Street, Birmingham,
Kindom
Model Number : VVXLM540

Additional Information

Power Supply : DC 5 V from PC USB port
Frequency : 2402MHz~2480MHz
Antenna : N/A

2.2. Block Diagram of EUT Configuration



2.3. Support Equipment List

| | | |
|----|----|-------|
| 1. | -- | ----- |
| 2. | -- | ----- |
| 3. | -- | ----- |

2.4. Test Conditions

Temperature: 23~25

Relative Humidity: 55~63 %

3. FCC ID LABEL

FCC ID:VVXLM540

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1. This device may not cause harmful interference, and 2. This device must accept any interference received, including interference that may cause undesired operation.

Label Location on EUT

EUT Bottom View/ FCC ID Label Location



4. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| Test Items | Test Results |
|-----------------------|--------------|
| Conducted disturbance | Pass |
| Radiated disturbance | Pass |

Remark: “N/A” means “Not applicable.”

Modifications

No modification was made.

5. TEST EQUIPMENT USED

5.1. For Conducted Emission Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|----------------|-----------------|-----------|------------|-------------|---------------|
| 1. | Test Receiver | Rohde & Schwarz | ESHS30 | 828985/018 | Jun. 01, 10 | 1 Year |
| 2. | Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | 100006 | Jun. 01, 10 | 1 Year |
| 3. | L.I.S.N. | Rohde & Schwarz | ESH2-Z5 | 834549/005 | Jun. 01, 10 | 1 Year |
| 4. | Conical | Emtek | N/A | N/A | N/A | N/A |
| 5. | Voltage Probe | Schwarzbeck | TK9416 | N/A | Jun. 01,10 | 1 Year |
| 6. | Coaxial Switch | Anritsu | MP59B | 6100214550 | Jun. 01, 10 | 1 Year |

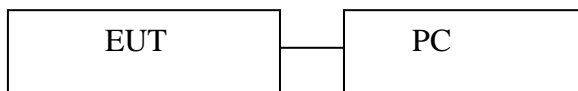
5.2. For Radiated Emission Measurement

Anechoic Chamber

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|--------------------------------|---------------|-----------|------------|-----------|---------------|
| 1. | Spectrum Analyzer | ANRITSU | MS2661C | 6200140915 | Jun 01,10 | 1 Year |
| 2. | Test Receiver | Rohde&Schwarz | ESC830 | 828982/018 | Jun 01,10 | 1 Year |
| 3. | Bilog Antenna | Rohde&Schwarz | HL562 | 142 | Jun 01,10 | 1 Year |
| 4. | 50 Coaxial Switch | Anritsu Corp | MP59B | 6100237248 | Jun 01,10 | 1 Year |
| 5. | Cable | Schwarzbeck | AK9513 | ACRX1 | Jun 01,10 | 1 Year |
| 6. | Cable | Rosenberger | N/A | FR2RX2 | Jun 01,10 | 1 Year |
| 7. | Cable | Schwarzbeck | AK9513 | CRRX2 | Jun 01,10 | 1 Year |
| 8. | Cable | Schwarzbeck | AK9513 | CRRX2 | Jun 01,10 | 1 Year |
| 9. | Single Phase Power Line Filter | MPE | 23332C | N/A | Jun 01,10 | 1 Year |
| 10. | Single Phase Power Line Filter | MPE | 23333C | N/A | Jun 01,10 | 1 Year |
| 11. | Signal Generator | HP | 864A | 3625U00573 | Jun 01,10 | 1 Year |

6. CONDUCTED EMISSION TEST

6.1. Block Diagram of Test Setup



6.2. Test Standard

FCC Part 15 CLASS B

6.3. Conducted Emission Limit(Class B)

| Frequency MHz | Limits dB(μV) | |
|------------------|------------------|---------------|
| | Quasi-peak Level | Average Level |
| 0.15 ~ 0.50 | 66 ~ 56* | 56 ~ 46* |
| 0.50 ~ 5.00 | 56 | 46 |
| 5.00 ~ 30.00 | 60 | 50 |

Notes: 1. *Decreasing linearly with logarithm of frequency.

6.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet Part 15 requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

6.4.1.EUT Information

Model Number : **VVXLM540**
Serial Number : **N/A**

6.5. Operating Condition of EUT

6.5.1.Setup the EUT and simulators as shown in Section 5.1.

6.5.2.Turn on the power of all equipments.

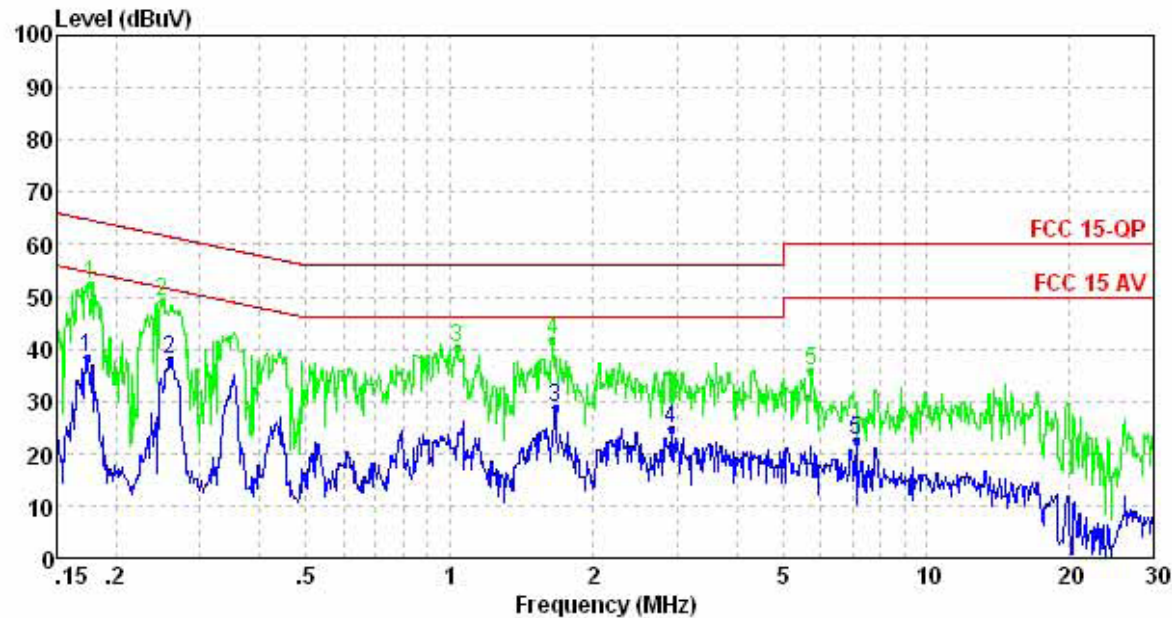
6.5.3.Let the EUT work in test modes (EUT Working) and test it.

6.6. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions form both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz. The bandwidth of the test receiver (R&S Test Receiver ESHS30) is set at 10KHz.

6.7. Test Result

Test Data is L



Site : Shenzhen BST Technology Co.,Ltd.

Condition:

: RBW:9.000KHz VBW:30.000KHz

| | Freq | Level | Limit | Over | | |
|-------|------|-------|-------|--------|---------|-----------|
| | MHz | dBuV | Line | Limit | Remark | Pol/Phase |
| | | | dBuV | dB | | |
| 1 Max | 0.17 | 38.47 | 54.77 | -16.30 | Average | LINE |
| 2 | 0.26 | 38.00 | 51.47 | -13.47 | Average | LINE |
| 3 | 1.67 | 28.75 | 46.00 | -17.25 | Average | LINE |
| 4 | 2.92 | 24.79 | 46.00 | -21.21 | Average | LINE |
| 5 | 7.14 | 22.57 | 50.00 | -27.43 | Average | LINE |

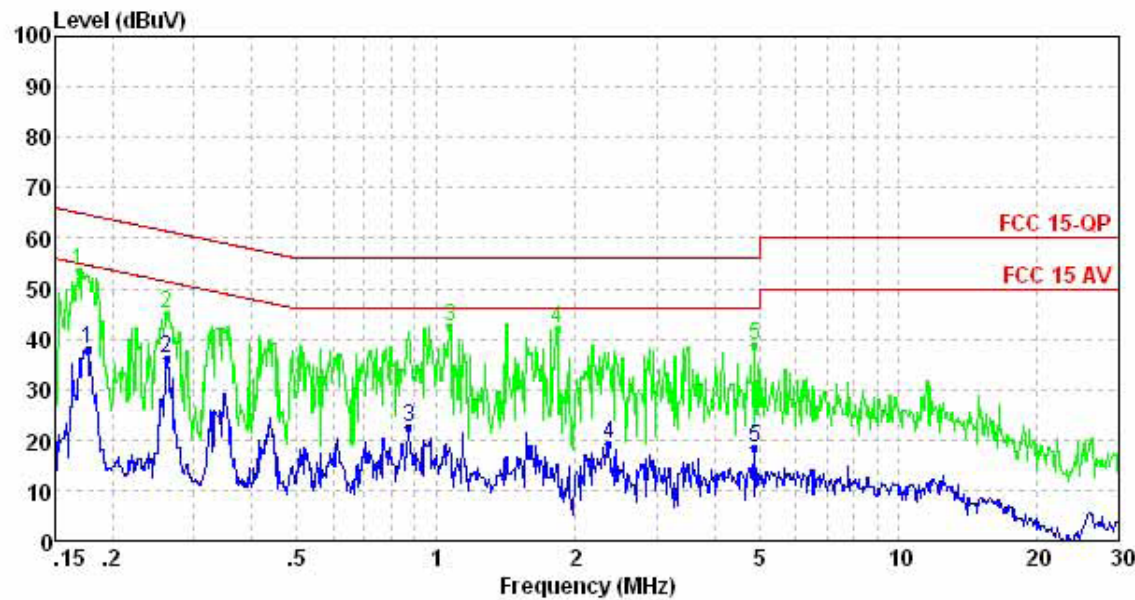
Site : Shenzhen BST Technology Co.,Ltd.

Condition:

: RBW:9.000KHz VBW:30.000KHz

| | Freq | Level | Limit | Over | | |
|-------|------|-------|-------|--------|--------|-----------|
| | MHz | dBuV | Line | Limit | Remark | Pol/Phase |
| | | | dBuV | dB | | |
| 1 Max | 0.18 | 52.31 | 64.64 | -12.33 | Peak | LINE |
| 2 | 0.25 | 49.02 | 61.78 | -12.76 | Peak | LINE |
| 3 | 1.04 | 40.20 | 56.00 | -15.80 | Peak | LINE |
| 4 | 1.64 | 41.60 | 56.00 | -14.40 | Peak | LINE |
| 5 | 5.74 | 35.86 | 60.00 | -24.14 | Peak | LINE |

Test Data is N



Site : Shenzhen BST Technology Co.,Ltd.

Condition:

: RBW:9.000KHz VBW:30.000KHz

| | Freq | Level | Limit | Over | | Pol/Phase |
|-------|------|-------|-------|--------|---------|-----------|
| | MHz | dBuV | Line | Limit | Remark | |
| | | | dBuV | dB | | |
| 1 Max | 0.18 | 38.12 | 54.64 | -16.52 | Average | NEUTRAL |
| 2 | 0.26 | 36.12 | 51.38 | -15.26 | Average | NEUTRAL |
| 3 | 0.88 | 22.37 | 46.00 | -23.63 | Average | NEUTRAL |
| 4 | 2.37 | 19.26 | 46.00 | -26.74 | Average | NEUTRAL |
| 5 | 4.90 | 18.33 | 46.00 | -27.67 | Average | NEUTRAL |

Site : Shenzhen BST Technology Co.,Ltd.

Condition:

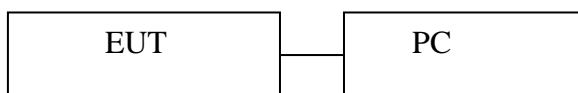
: RBW:9.000KHz VBW:30.000KHz

| | Freq | Level | Limit | Over | | Pol/Phase |
|-------|------|-------|-------|--------|--------|-----------|
| | MHz | dBuV | Line | Limit | Remark | |
| | | | dBuV | dB | | |
| 1 Max | 0.17 | 53.35 | 65.03 | -11.68 | Peak | NEUTRAL |
| 2 | 0.26 | 44.87 | 61.38 | -16.51 | Peak | NEUTRAL |
| 3 | 1.07 | 42.44 | 56.00 | -13.56 | Peak | NEUTRAL |
| 4 | 1.83 | 42.07 | 56.00 | -13.93 | Peak | NEUTRAL |
| 5 | 4.90 | 38.87 | 56.00 | -17.13 | Peak | NEUTRAL |

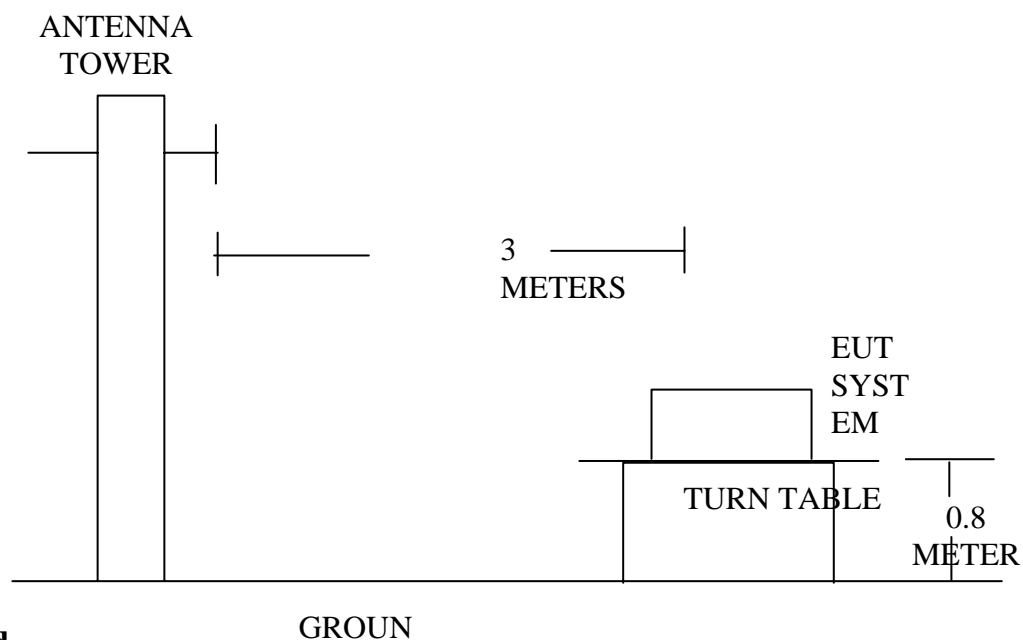
7. RADIATED EMISSION MEASUREMENT

7.1. Block Diagram of EUT Configuration

7.1.1. Block Diagram of connection between the EUT and the simulators



7.1.2. Anechoic Chamber Test Setup Diagram



7.2. Test Standard

FCC Part 15 CLASS B

7.3. Radiated Emission Limit(Class B)

| FREQUENCY (MHz) | DISTANCE (Meters) | FIELD STRENGTHS LIMITS (dB μ V/m) |
|--------------------|----------------------|---|
| 30 ~ 88 | 3 | 40.0 |
| 88 ~ 216 | 3 | 43.5 |
| 216 ~ 960 | 3 | 46.0 |
| 960 ~ 1000 | 3 | 54.0 |

Note:(1) The smaller limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT or system.

7.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Measurement to meet the Commission requirements and operating regulations in a manner which tends to maximize Its emission characteristics in normal application.

7.5. Operating Condition of EUT

7.5.1.Setup the EUT as shown on Section 6.1.2

7.5.2.Turn on the power of all equipments.

7.5.3.Let the EUT work in test mode(EUT working) and measure it.

7.6. Test Procedure

The measurement procedures found in ANSI C63.4-2003 as required by 47 CFR Part 15 Subpart A Section 15.31(a)(3).

The EUT is 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 is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement.

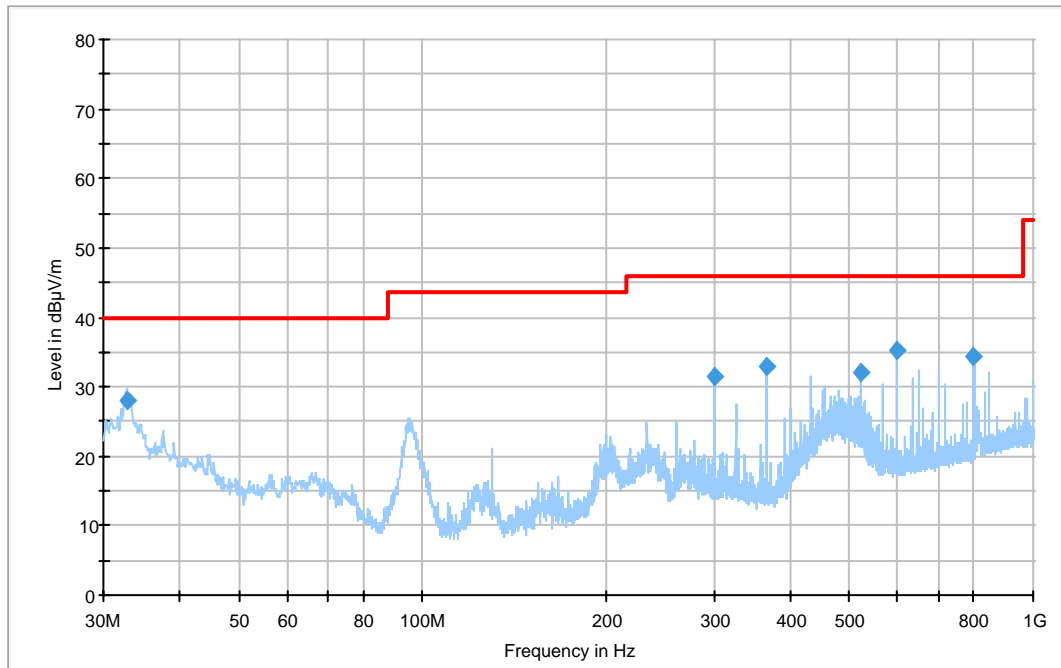
The bandwidth setting on the test receiver (R&S TEST RECEIVER ESCS20) is 120 KHz. The EUT is tested in Anechoic Chamber. The frequency range from 30MHz to 1000 MHz is checked.All the test results are listed in Section 7.7. and all the scanning waveform are attached within **Appendix I**.

7.7. Test Result

PASS

APPENDIX I

Test Mode: *operating* (worse case mode)



| Frequency (MHz) | Corrected Amplitude (dBμV/m) | Ant. Height (cm) | Ant. Polarity (H/V) | Turntable Position (deg) | Correction Factor (dB) | Limit (dBμV/m) | Margin (dB) |
|-----------------|------------------------------|------------------|---------------------|--------------------------|------------------------|----------------|-------------|
| 600.078200 | 35.3 | 104.0 | V | 3.0 | -8.7 | 46.0 | 10.7 |
| 800.140775 | 34.5 | 129.0 | V | 196.0 | -5.4 | 46.0 | 11.5 |
| 32.893900 | 28.1 | 107.0 | V | 198.0 | -10.5 | 40.0 | 11.9 |
| 366.718675 | 33.0 | 174.0 | V | 0.0 | -12.9 | 46.0 | 13.0 |
| 521.176850 | 32.2 | 132.0 | V | 334.0 | -10.2 | 46.0 | 13.8 |
| 300.023750 | 31.5 | 249.0 | H | 218.0 | -3.6 | 46.0 | 14.5 |

| Frequency (MHz) | Antenna Polarization | Emission Level (PK)(dBuV/m) | FCC 15 Subpart C Limit (AV)(dBuV/m) |
|-----------------|----------------------|-----------------------------|-------------------------------------|
| 433.92 | V | 65.70 | 80.8 |
| 433.92 | H | 61.51 | 80.8 |
| 867.64 | V | 45.72 | 60.8 |
| 867.64 | H | 41.53 | 60.8 |
| 1301.76 | V | 43.84 | 54 |
| 1301.76 | H | 43.82 | 54 |
| 1735.68 | V | 41.53 | 60.8 |
| 1735.68 | H | 40.45 | 60.8 |
| 2169.60 | V | ----- | 60.8 |
| 2169.60 | H | ----- | 60.8 |
| 2603.52 | V | ----- | 60.8 |
| 2603.52 | H | ----- | 60.8 |
| 3037.44 | V | ----- | 60.8 |
| 3037.44 | H | ----- | 60.8 |
| 3471.36 | V | ----- | 60.8 |
| 3471.36 | H | ----- | 60.8 |
| 3905.28 | V | ----- | 54 |
| 3905.28 | H | ----- | 54 |
| 4339.2 | V | ----- | 54 |
| 4339.2 | H | ----- | 54 |