

# FCC RF Test Report

**APPLICANT** : ZTE CORPORATION  
**EQUIPMENT** : CDMA 1X-EVDO Digital Mobile Phone  
**BRAND NAME** : ZTE  
**MODEL NAME** : ZTE N861  
**FCC ID** : Q78-ZTEN861  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DTS) Digital Transmission System

The product was received on May 15, 2012 and completely tested on Jul. 18, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



**SPORTON INTERNATIONAL (KUNSHAN) INC.**  
**No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.**



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## SUMMARY OF TEST RESULT

| Report Section | FCC Rule              | IC Rule   | Description                   | Limit                    | Result | Remark                                   |
|----------------|-----------------------|-----------|-------------------------------|--------------------------|--------|--|
| 3.1            | 15.247(a)(2)          | A8.2(a)   | 6dB Bandwidth                 | $\geq 0.5\text{MHz}$     | Pass   | -  |
| 3.2            | 15.247(b)(1)          | A8.1(b)   | Peak Output Power             | $\leq 30\text{dBm}$      | Pass   | -  |
| 3.3            | 15.247(d)             | A8.5      | Frequency Band Edges          | $\leq 20\text{dBc}$      | Pass   | -  |
| 3.4            | 15.247(d)             | A8.5      | Spurious Emission             | $\leq 20\text{dBc}$      | Pass   | -  |
| 3.5            | 15.247(e)             | A8.2(b)   | Power Spectral Density        | $\leq 8\text{dBm}$       | Pass   | -  |
| 3.6            | 15.207                | Gen 7.2.2 | AC Conducted Emission         | 15.207(a)                | Pass   | Under limit<br>11.90 dB at<br>0.380 MHz  |
| 3.7            | 15.247(d)             | A8.5      | Transmitter Radiated Emission | 15.209(a) &<br>15.247(d) | Pass   | Under limit<br>7.00 dB at<br>184.440 MHz |
| 3.8            | 15.203 &<br>15.247(b) | A8.4      | Antenna Requirement           | N/A                      | Pass   | -  |



# 1 General Description

## 1.1 Applicant

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

## 1.2 Manufacturer

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

## 1.3 Feature of Equipment Under Test

| Product Feature & Specification   |  |
|-----------------------------------|--|
| Equipment                         | CDMA 1X-EVDO Digital Mobile Phone              |
| Brand Name                        | ZTE  |
| Model Name                        | ZTE N861                                       |
| FCC ID                            | Q78-ZTEN861                                    |
| Tx/Rx Frequency Range             | 2402 MHz ~ 2480 MHz                            |
| Number of Channels                | 40   |
| Carrier Frequency of Each Channel | 40 Channel(37 hopping + 3 advertising channel) |
| Channel Spacing                   | 2 MHz  |
| Maximum Output Power to Antenna   | Bluetooth 4.0 : 8.99 dBm (0.0079 W)            |
| Antenna Type                      | PIFA Antenna with gain -1.50 dBi               |
| HW Version                        | c7xB   |
| SW Version                        | N861V1.0.0B05                                  |
| Type of Modulation                | Bluetooth 4.0 : GFSK                           |
| EUT Stage                         | Identical Prototype                            |

**Remark:**

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of (DTS) Digital Transmission System.
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

### 1.4 Testing Site

|                           |  |                                |
|---------------------------|--|--------------------------------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL (KUNSHAN) INC.   |                                |
| <b>Test Site Location</b> | No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.<br>TEL: +86-0512-5790-0158<br>FAX: +86-0512-5790-0958 |                                |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>  | <b>FCC/IC Registration No.</b> |
|                           | CO01-KS  | 149928/4086E-1                 |

|                           |  |                                |
|---------------------------|--|--------------------------------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC.   |                                |
| <b>Test Site Location</b> | No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park,<br>Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL: +886-3-3273456 / FAX: +886-3-3284978 |                                |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>  | <b>FCC/IC Registration No.</b> |
|                           | TH02-HY      03CH05-HY   | 722060/4086B-1                 |

### 1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01
- FCC TCB Workshop 2012, April
- ANSI C63.4-2003
- IC RSS-210 Issue 8
- IC RSS-Gen Issue 3

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



### 1.6 Ancillary Equipment List

| Item | Equipment          | Trade Name | Model Name | FCC ID      | Data Cable | Power Cord   |
|------|--------------------|------------|------------|-------------|------------|--|
| 1.   | System Simulator   | R&S        | CMU200     | N/A         | N/A        | Unshielded, 1.8 m  |
| 2.   | Router             | D-Link     | DIR-855    | KA2DIR855A2 | N/A        | Unshielded, 1.8 m  |
| 3.   | Bluetooth Earphone | Nokia      | BH-106     | QTLBH-106   | N/A        | N/A  |
| 4.   | DC Power Supply    | GWINSTEK   | GPS-3030D  | N/A         | N/A        | Unshielded, 1.8 m  |
| 5.   | Notebook           | ASUS       | VOSTRO1450 | PPD-AR5B195 | N/A        | AC I/P:<br>Unshielded, 1.8 m<br>DC O/P:<br>Shielded, 1.8 m |



## 2 Test Configuration of Equipment Under Test

### 2.1 RF Output Power

The RF output power was recorded in the following table:

| Channel | Frequency | Bluetooth 4.0 RF Output Power |  |
|---------|-----------|-------------------------------|--|
|         |           | Data Rate / Modulation        |  |
|         |           | GFSK                          |  |
|         |           | 1Mbps                         |  |
| Ch00    | 2402MHz   | 7.80 dBm                      |  |
| Ch19    | 2440MHz   | 8.61 dBm                      |  |
| Ch39    | 2480MHz   | <b>8.99 dBm</b>               |  |

## 2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

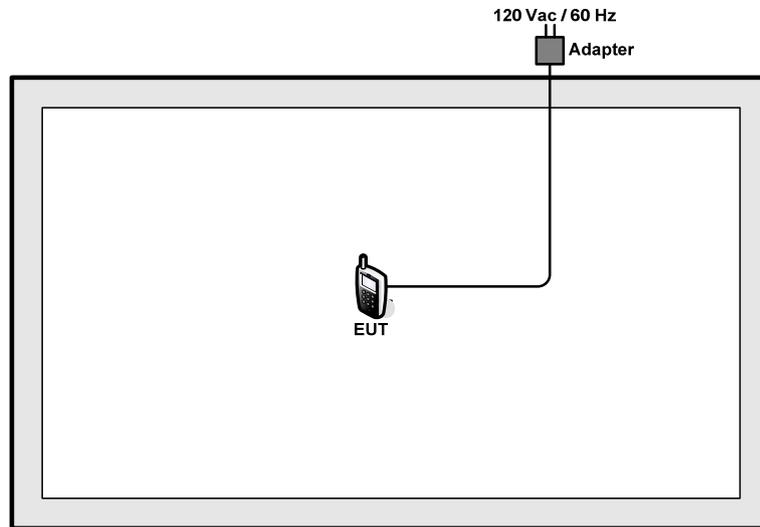
The following tables are showing the test modes as the worst cases (X plane) and recorded in this report.

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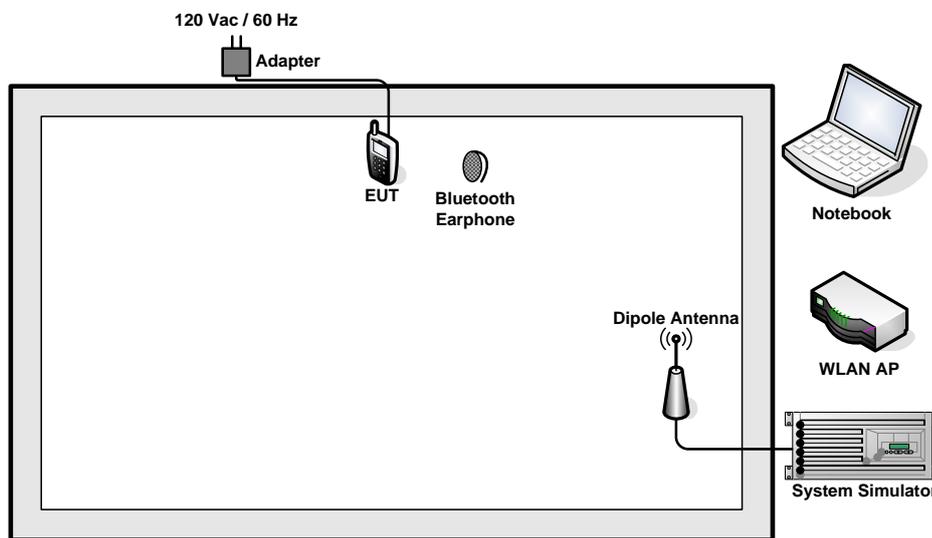
| Test Cases            |  |
|-----------------------|--|
| Test Item             | Data Rate / Modulation   |
|                       | Bluetooth 4.0 / GFSK   |
| Conducted TCs         | Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps   |
|                       | Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps   |
|                       | Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps   |
| Radiated TCs          | Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps   |
|                       | Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps   |
|                       | Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps   |
| AC Conducted Emission | Mode 1 :CDMA2000 BC1 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) |

## 2.3 Connection Diagram of Test System

<Bluetooth 4.0 Tx Mode>



<AC Conducted Emission Mode>



## 2.4 RF Utility

For Bluetooth function, programmed RF utility, "CMD" installed in the Notebook make the EUT provides functions like channel selection and power level for continuous transmitting and receiving signals.

### 3 Test Result

#### 3.1 6dB Bandwidth Measurement

##### 3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 KHz.

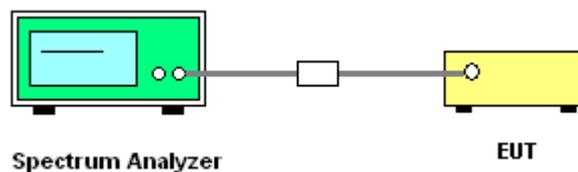
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

##### 3.1.4 Test Setup



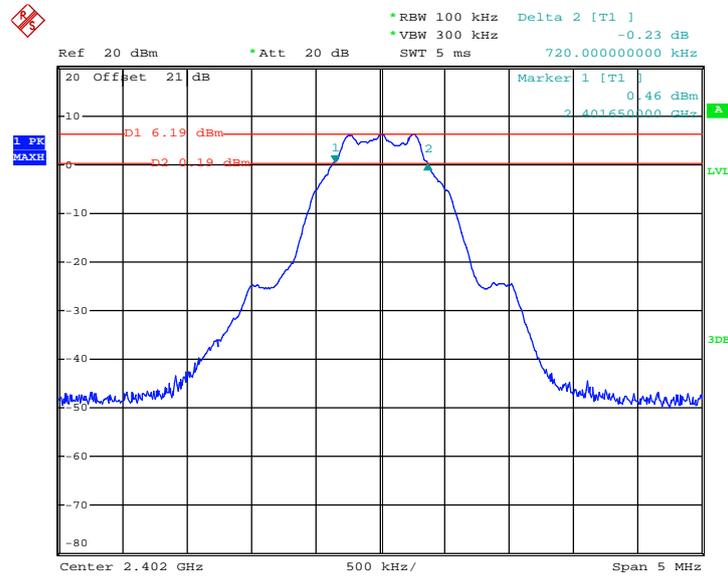


3.1.5 Test Result of 6dB Bandwidth

|                 |  |                     |         |
|-----------------|--|---------------------|---------|
| Test Mode :     | Bluetooth LE 1Mbps<br>GFSK L/M/H channel | Temperature :       | 24~26°C |
| Test Engineer : | Pinkston Tu                              | Relative Humidity : | 58~61%  |

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) |
|---------|-----------------|---------------------|
| 00      | 2402            | 0.72                |
| 19      | 2440            | 0.72                |
| 39      | 2480            | 0.71                |

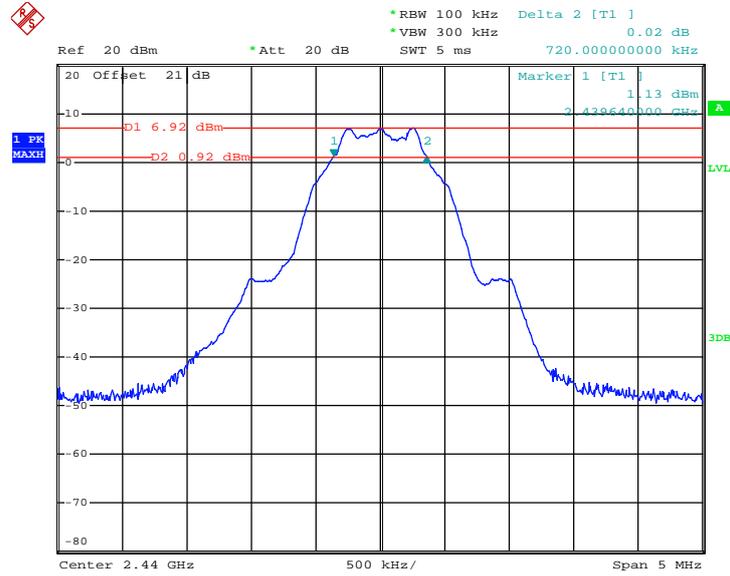
6 dB Bandwidth Plot on Channel 00



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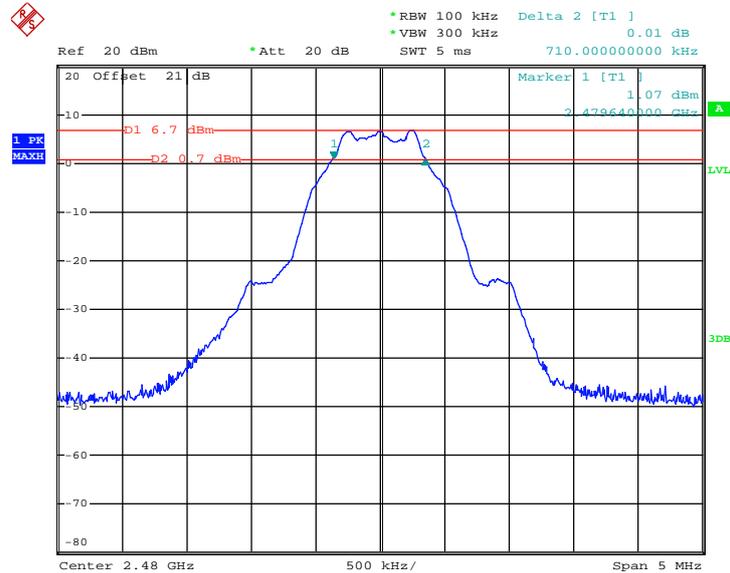


6 dB Bandwidth Plot on Channel 19



Date: 13.JUL.2012 13:49:12

6 dB Bandwidth Plot on Channel 39



Date: 13.JUL.2012 13:51:34

## 3.2 Peak Output Power Measurement

### 3.2.1 Limit of Peak Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

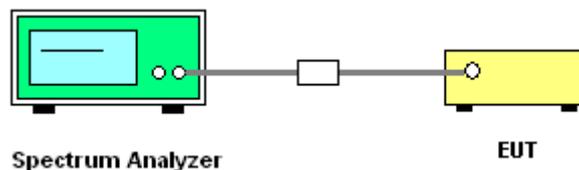
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance and TCB Workshop 2012, April.
2. The RF output of EUT was connected to the power meter by a low loss cable
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

### 3.2.4 Test Setup



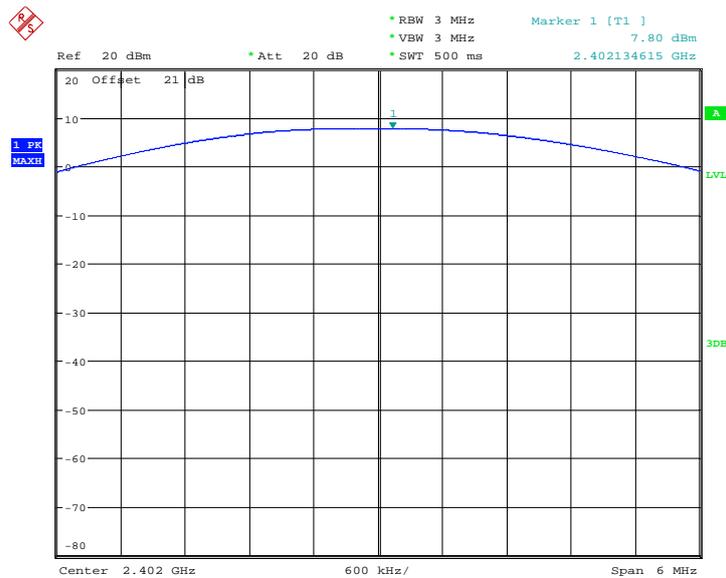


3.2.5 Test Result of Peak Output Power

|                 |  |                     |         |
|-----------------|--|---------------------|---------|
| Test Mode :     | Bluetooth LE 1Mbps<br>GFSK L/M/H channel | Temperature :       | 24~26°C |
| Test Engineer : | Pinkston Tu                              | Relative Humidity : | 58~61%  |

| Channel | Frequency (MHz) | RF Power (dBm) |                   |           |
|---------|-----------------|----------------|-------------------|-----------|
|         |                 | GFSK           | Max. Limits (dBm) | Pass/Fail |
|         |                 | 1 Mbps         |                   |           |
| 00      | 2402            | 7.80           | 30.00             | Pass      |
| 19      | 2440            | 8.61           | 30.00             | Pass      |
| 39      | 2480            | 8.99           | 30.00             | Pass      |

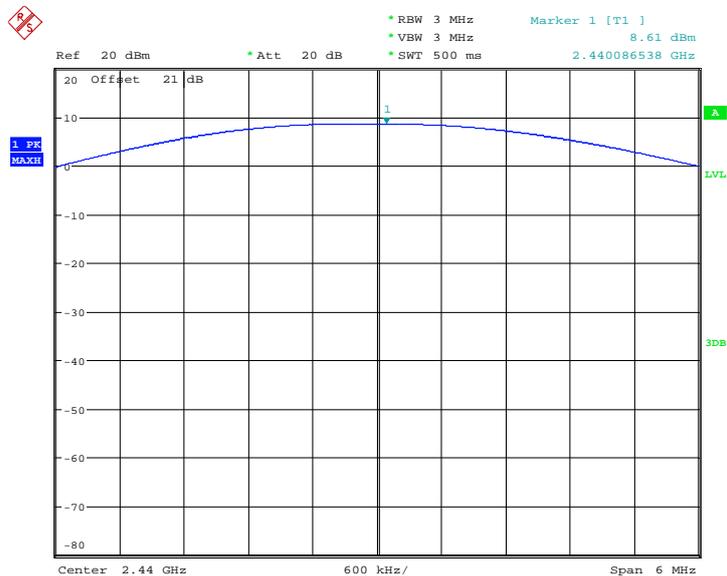
Peak Output Power Plot on Channel 00



Date: 13.JUL.2012 02:10:36

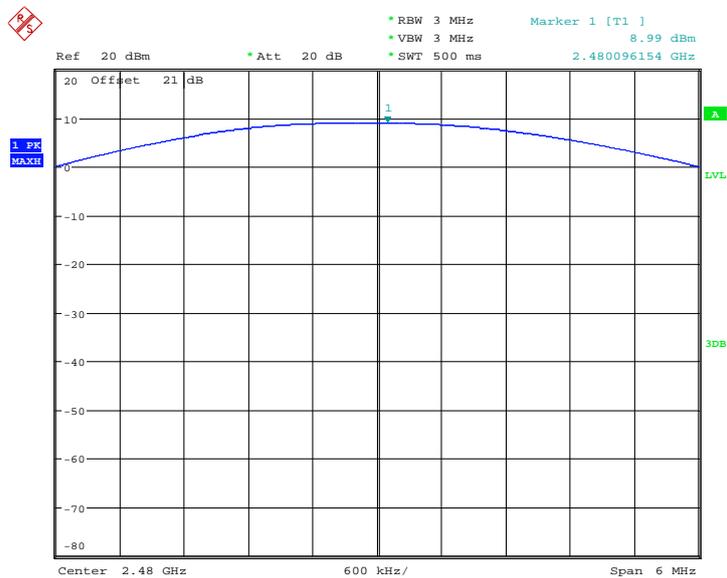


### Peak Output Power Plot on Channel 19



Date: 13.JUL.2012 02:12:36

### Peak Output Power Plot on Channel 39



Date: 13.JUL.2012 02:13:22

### 3.3 Band Edges Measurement

#### 3.3.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

#### 3.3.2 Measuring Instruments

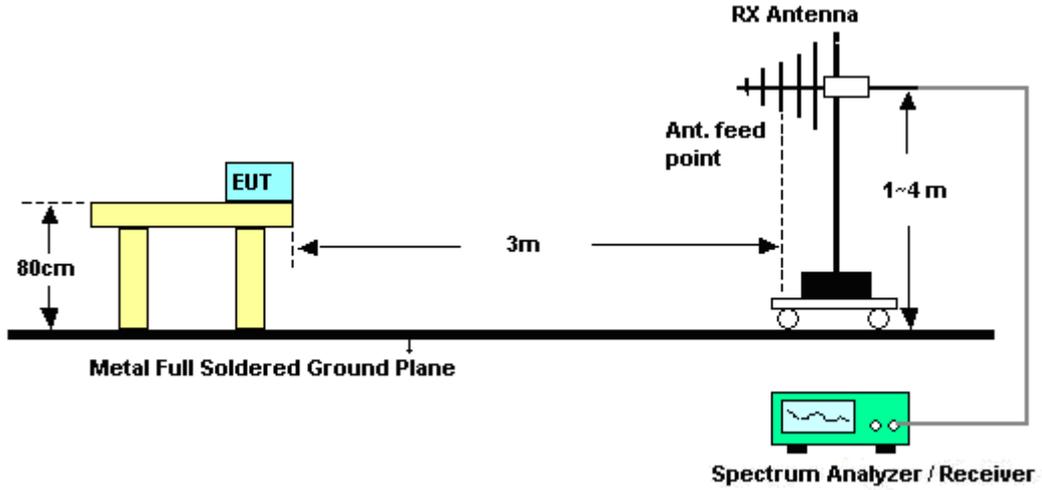
See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

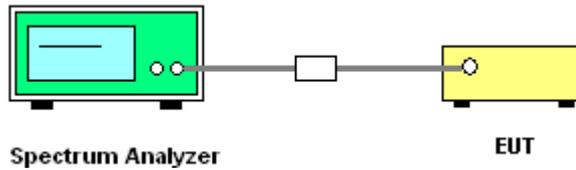
1. The testing follows the guidelines in ANSI C63.4-2003 and the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW)  $\geq$  RBW. Out of the authorized frequency band emissions must be at least 20 dB lower than the highest emission level within the authorized band as measured with a 100 KHz RBW. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
1. Radiated emission test: Apply to band edge emissions that falling on the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, then modify the unit for continuous operation. Use the settings in this paragraph to correct the reading level by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation per 15.35(b) and (c).

### 3.3.4 Test Setup

#### <Radiated Band Edges>



#### <Conducted Band Edges>





3.3.5 Test Result of Radiated Band Edges

|                |        |                     |            |
|----------------|--------|---------------------|------------|
| Test Mode :    | Mode 1 | Temperature :       | 22~24°C    |
| Test Channel : | 00     | Relative Humidity : | 50~52%     |
|                |        | Test Engineer :     | David Yang |

| ANTENNA POLARITY : HORIZONTAL |                     |                         |                             |                           |                             |                         |                            |                      |                         |         |
|-------------------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| Frequency<br>( MHz )          | Level<br>( dBuV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBuV/m ) | Read<br>Level<br>( dBuV ) | Antenna<br>Factor<br>( dB ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Remark  |
| 2359.86                       | 47.84               | -26.16                  | 74                          | 47.17                     | 31.99                       | 4.57                    | 35.89                      | 103                  | 5                       | Peak    |
| 2379.12                       | 34.89               | -19.11                  | 54                          | 34.2                      | 32                          | 4.57                    | 35.88                      | 103                  | 5                       | Average |

| ANTENNA POLARITY : VERTICAL |                     |                         |                             |                           |                             |                         |                            |                      |                         |         |
|-----------------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| Frequency<br>( MHz )        | Level<br>( dBuV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBuV/m ) | Read<br>Level<br>( dBuV ) | Antenna<br>Factor<br>( dB ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Remark  |
| 2327.19                     | 46.14               | -27.86                  | 74                          | 45.55                     | 31.96                       | 4.53                    | 35.9                       | 108                  | 145                     | Peak    |
| 2385.6                      | 34.77               | -19.23                  | 54                          | 34.05                     | 32.02                       | 4.58                    | 35.88                      | 108                  | 145                     | Average |

|                |        |                     |            |
|----------------|--------|---------------------|------------|
| Test Mode :    | Mode 3 | Temperature :       | 22~24°C    |
| Test Channel : | 39     | Relative Humidity : | 50~52%     |
|                |        | Test Engineer :     | David Yang |

| ANTENNA POLARITY : HORIZONTAL |                     |                         |                             |                           |                             |                         |                            |                      |                         |         |
|-------------------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| Frequency<br>( MHz )          | Level<br>( dBuV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBuV/m ) | Read<br>Level<br>( dBuV ) | Antenna<br>Factor<br>( dB ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Remark  |
| 2483.5                        | 58.73               | -15.27                  | 74                          | 57.81                     | 32.09                       | 4.64                    | 35.81                      | 122                  | 7                       | Peak    |
| 2483.5                        | 47.16               | -6.84                   | 54                          | 46.24                     | 32.09                       | 4.64                    | 35.81                      | 122                  | 7                       | Average |

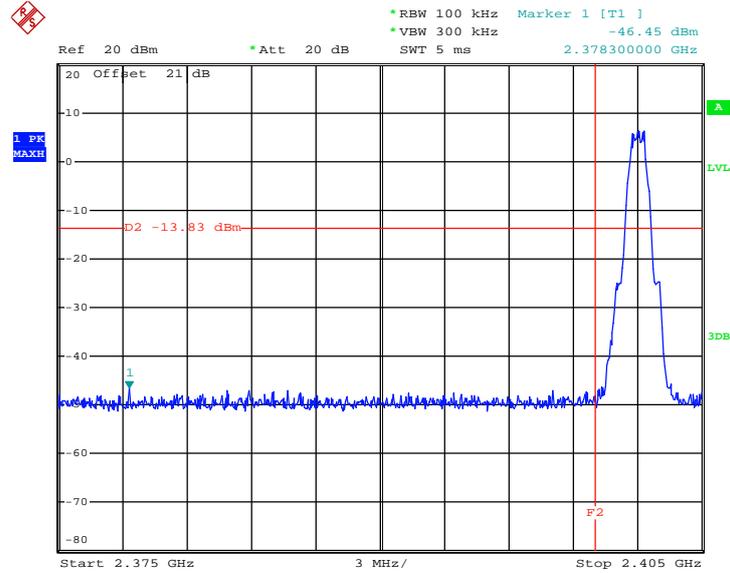
| ANTENNA POLARITY : VERTICAL |                     |                         |                             |                           |                             |                         |                            |                      |                         |         |
|-----------------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| Frequency<br>( MHz )        | Level<br>( dBuV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBuV/m ) | Read<br>Level<br>( dBuV ) | Antenna<br>Factor<br>( dB ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Remark  |
| 2483.5                      | 57.68               | -16.32                  | 74                          | 56.76                     | 32.09                       | 4.64                    | 35.81                      | 107                  | 305                     | Peak    |
| 2483.5                      | 46.28               | -7.72                   | 54                          | 45.36                     | 32.09                       | 4.64                    | 35.81                      | 107                  | 305                     | Average |



### 3.3.6 Test Result of Conducted Band Edges

|                |   |                     |             |
|----------------|---|---------------------|-------------|
| Test Mode :    | Bluetooth LE 1Mbps<br>GFSK Low/High channel | Temperature :       | 24~26°C     |
| Test Channel : | 00 and 39                                   | Relative Humidity : | 58~61%      |
|                |   | Test Engineer :     | Pinkston Tu |

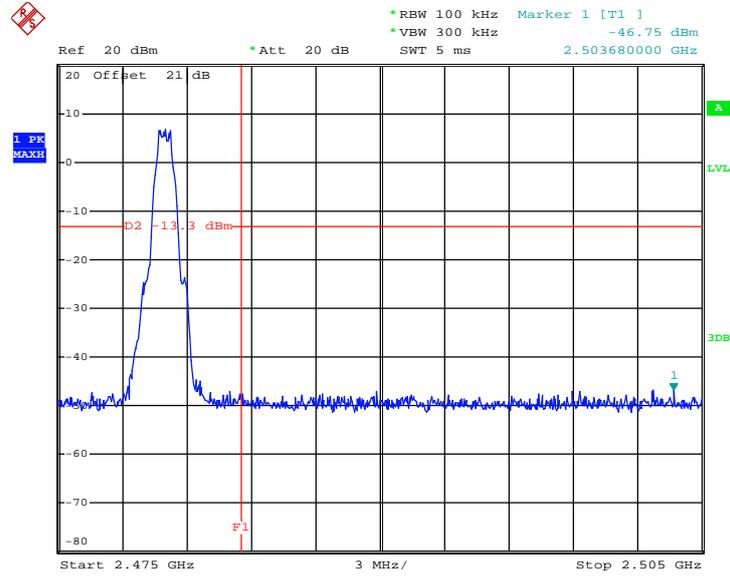
Low Band Edge Plot on Channel 00



Date: 13.JUL.2012 13:46:46



High Band Edge Plot on Channel 39



Date: 13.JUL.2012 13:52:14

## 3.4 Spurious Emission Measurement

### 3.4.1 Limit of Spurious Emission Measurement

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

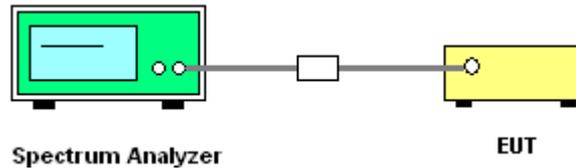
### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.4.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW)  $\geq$  RBW, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

### 3.4.4 Test Setup

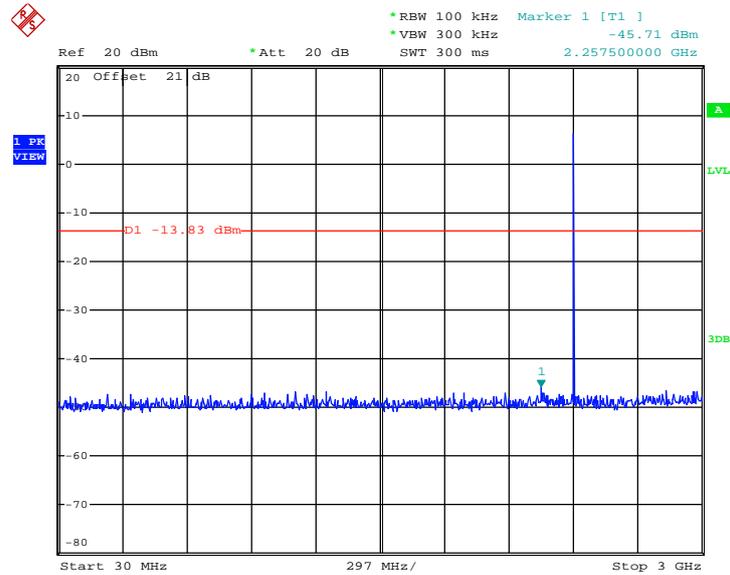




3.4.5 Test Result

|                |  |                     |             |
|----------------|--|---------------------|-------------|
| Test Mode :    | Bluetooth LE 1Mbps<br>GFSK Low channel | Temperature :       | 24~26°C     |
| Test Channel : | 00                                     | Relative Humidity : | 58~61%      |
|                |  | Test Engineer :     | Pinkston Tu |

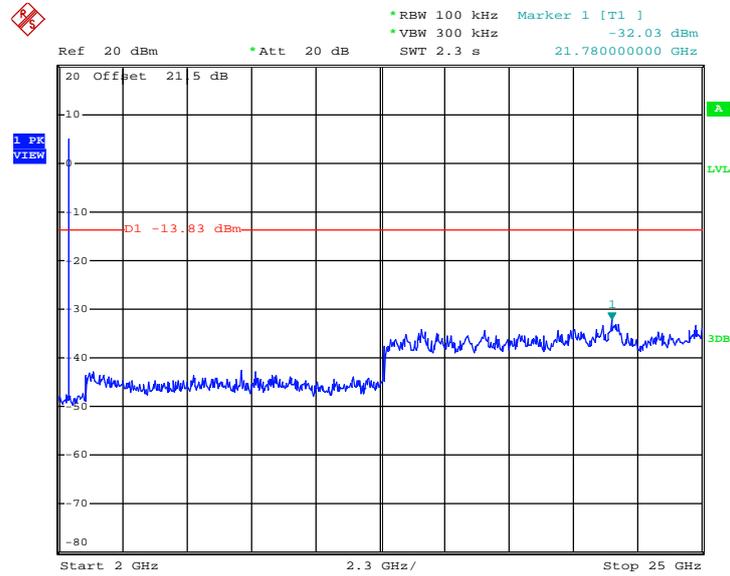
Conducted Spurious Emission Plot on Bluetooth LE 1Mbps  
GFSK Channel 00



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### Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 00

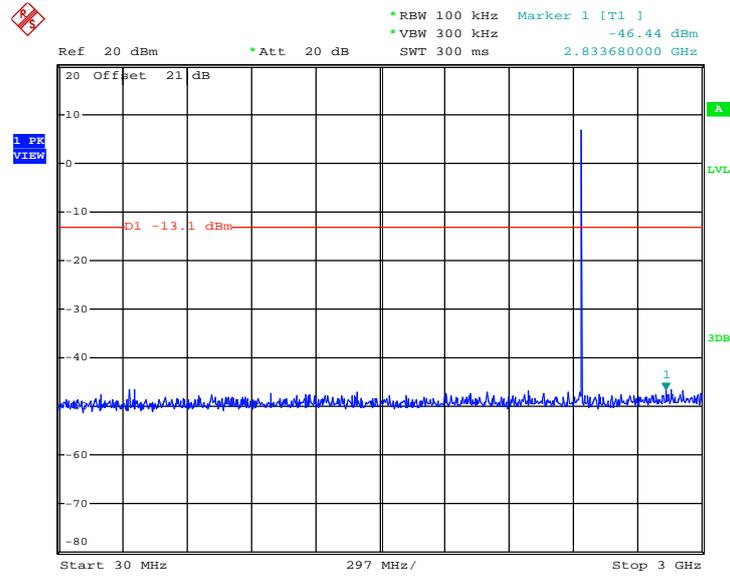


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|                |   |                     |             |
|----------------|---|---------------------|-------------|
| Test Mode :    | Bluetooth LE 1Mbps<br>GFSK Middle channel | Temperature :       | 24~26°C     |
| Test Channel : | 19  | Relative Humidity : | 58~61%      |
|                |   | Test Engineer :     | Pinkston Tu |

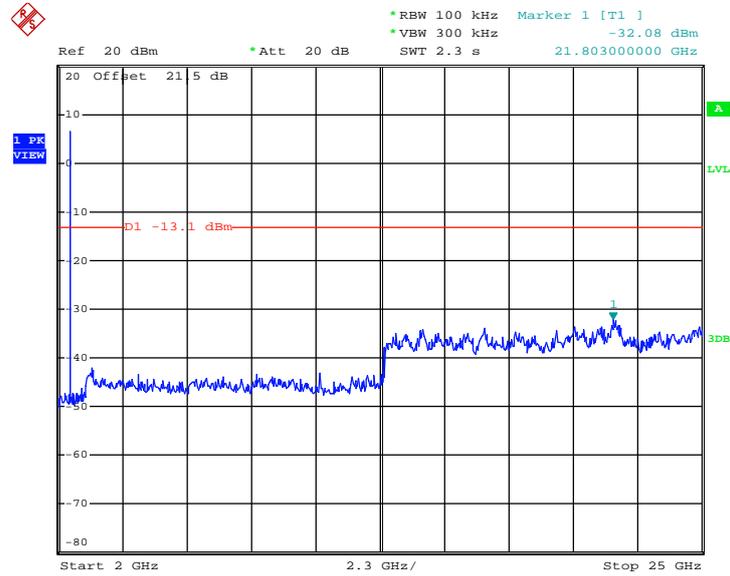
Conducted Spurious Emission Plot on Bluetooth LE 1Mbps  
GFSK Channel 19



Date: 13.JUL.2012 13:49:58



Conducted Spurious Emission Plot on Bluetooth LE 1Mbps  
GFSK Channel 19

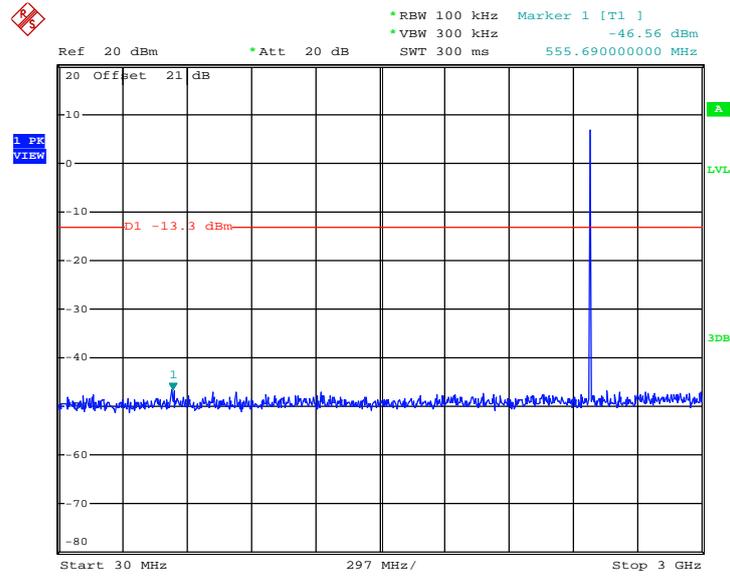


Date: 13.JUL.2012 13:50:16



|                |   |                     |             |
|----------------|---|---------------------|-------------|
| Test Mode :    | Bluetooth LE 1Mbps<br>GFSK High channel | Temperature :       | 24~26°C     |
| Test Channel : | 39                                      | Relative Humidity : | 58~61%      |
|                |   | Test Engineer :     | Pinkston Tu |

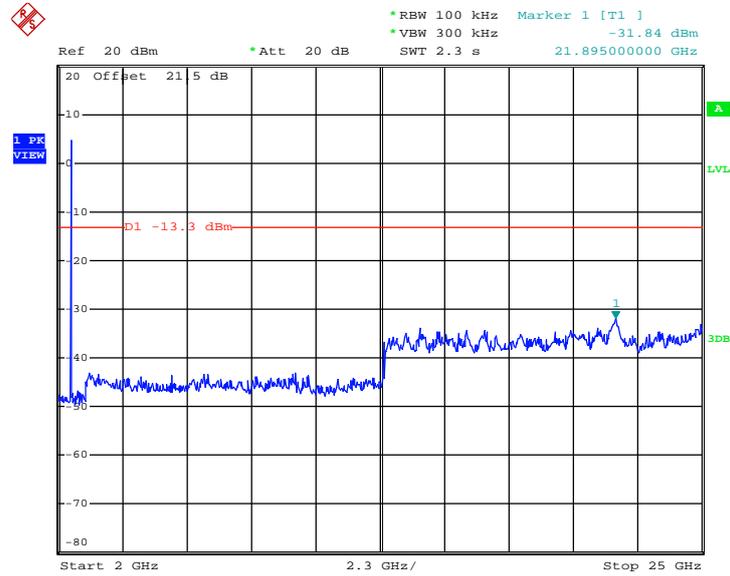
Conducted Spurious Emission Plot on Bluetooth LE 1Mbps  
GFSK Channel 39



Date: 13.JUL.2012 13:52:37



Conducted Spurious Emission Plot on Bluetooth LE 1Mbps  
GFSK Channel 39



Date: 13.JUL.2012 13:52:55

## 3.5 Power Spectral Density Measurement

### 3.5.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3KHz band at any time interval of continuous transmission.

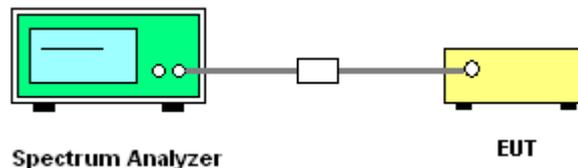
### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.5.3 Test Procedures

1. The testing follows Measurement Procedure PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Record the measurement data derived from spectrum analyzer.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 KHz. Video bandwidth (VBW)  $\geq$  300 KHz In order to make an accurate measurement, set the span to 5-30% greater than Emission Bandwidth (EBW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(3\text{ kHz}/100\text{ kHz} = -15.2\text{ dB})$ .

### 3.5.4 Test Setup





3.5.5 Test Result of Power Spectral Density

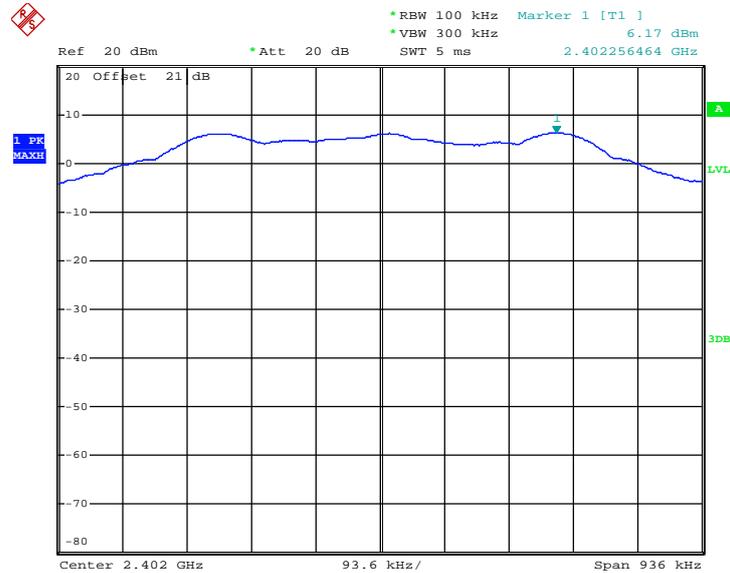
|                 |                    |                     |         |
|-----------------|--------------------|---------------------|---------|
| Test Mode :     | Bluetooth LE 1Mbps | Temperature :       | 24~26°C |
| Test Engineer : | Pinkston Tu        | Relative Humidity : | 58~61%  |

| Channel | Frequency (MHz) | Power Density             |                | Max. Limits (dBm) | Pass/Fail |
|---------|-----------------|---------------------------|----------------|-------------------|-----------|
|         |                 | Measured PSD/100KHz (dBm) | PSD/3KHz (dBm) |                   |           |
| 00      | 2402            | 6.17                      | -9.03          | 8                 | Pass      |
| 19      | 2440            | 6.90                      | -8.30          | 8                 | Pass      |
| 39      | 2480            | 6.70                      | -8.50          | 8                 | Pass      |

Note:

1. Measured power density (dBm) has offset with cable loss.
2. BWCF (dB) = 10 log (3k/100k) = -15.2 dB
3. Power Density/ 3kHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)

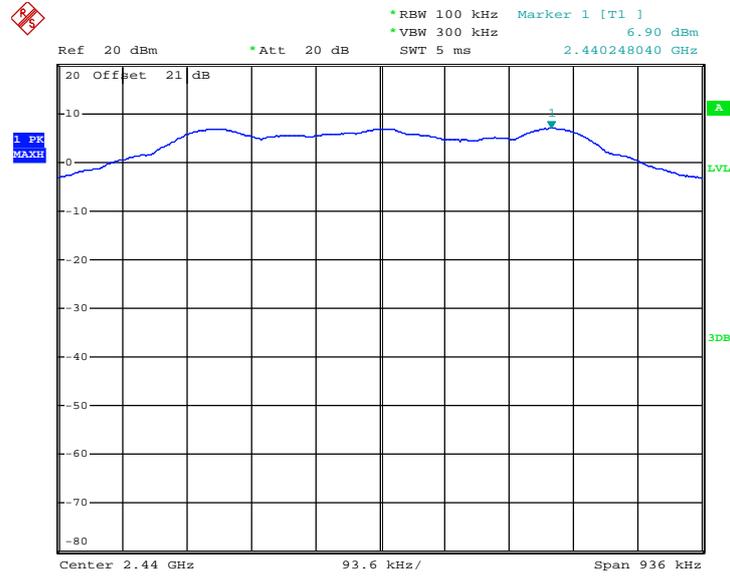
PSD Plot on Channel 00



Date: 13.JUL.2012 13:46:29

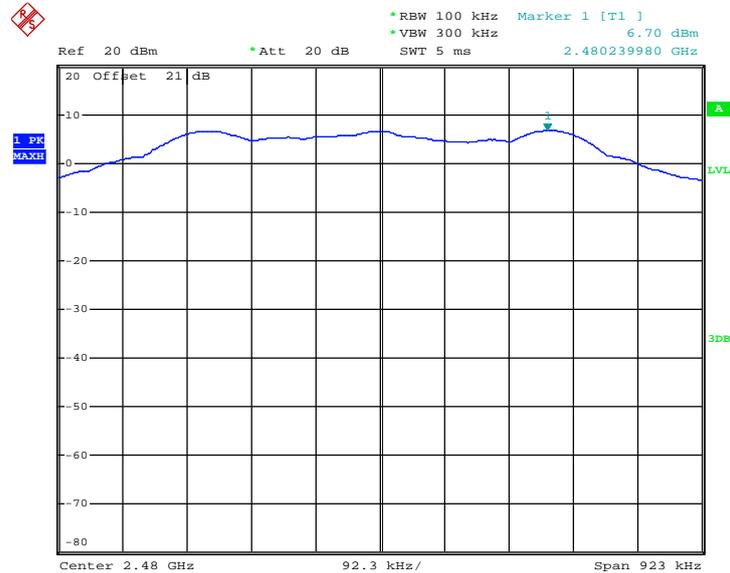


PSD Plot on Channel 19



Date: 13.JUL.2012 13:49:32

PSD Plot on Channel 39



Date: 13.JUL.2012 13:51:54

## 3.6 AC Conducted Emission Measurement

### 3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

| Frequency of emission (MHz) | Conducted limit (dBuV) |           |
|-----------------------------|------------------------|-----------|
|                             | Quasi-peak             | Average   |
| 0.15-0.5                    | 66 to 56*              | 56 to 46* |
| 0.5-5                       | 56                     | 46        |
| 5-30                        | 60                     | 50        |

\*Decreases with the logarithm of the frequency.

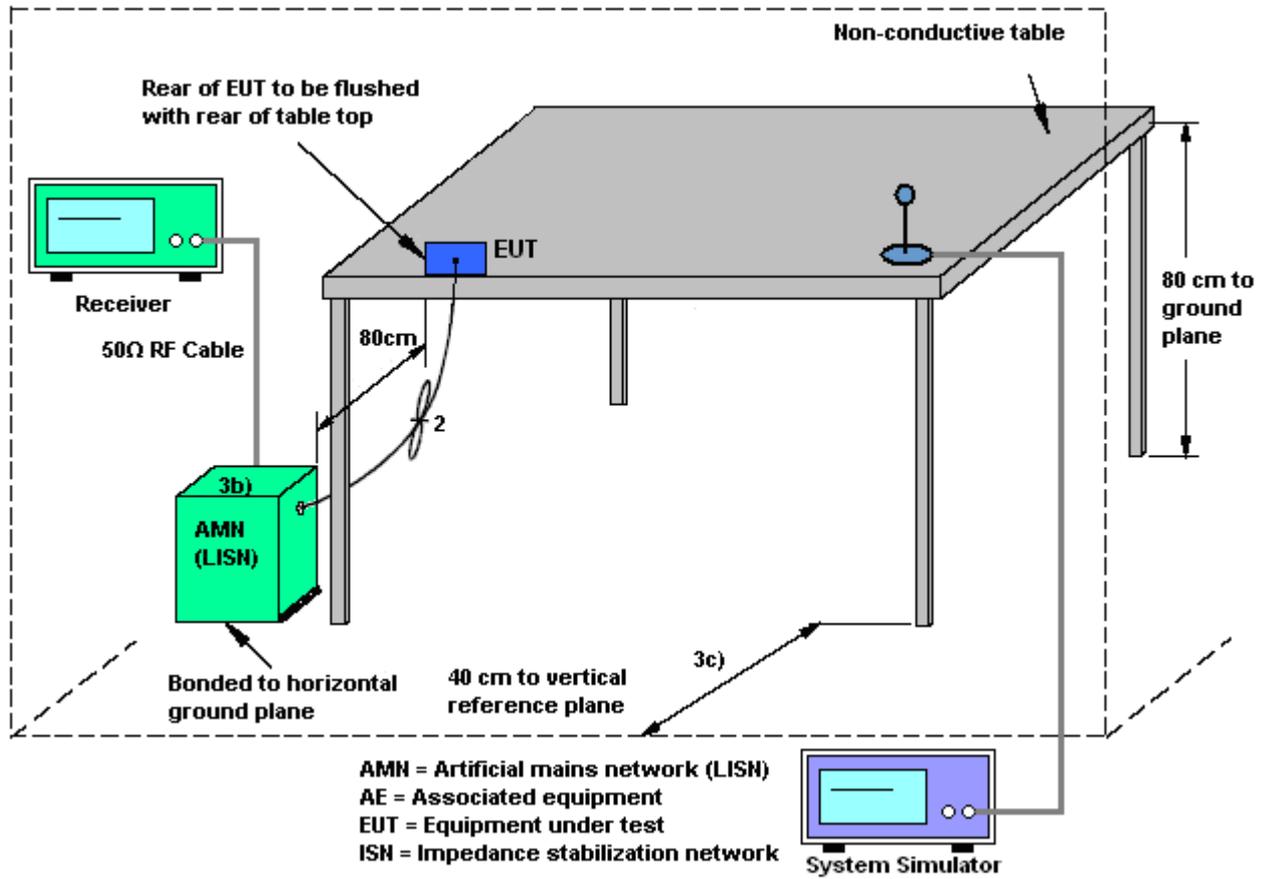
### 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.6.3 Test Procedures

1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
1. Connect EUT to the power mains through a line impedance stabilization network (LISN).
2. All the support units are connecting to the other LISN.
3. The LISN provides 50 ohm coupling impedance for the measuring instrument.
4. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

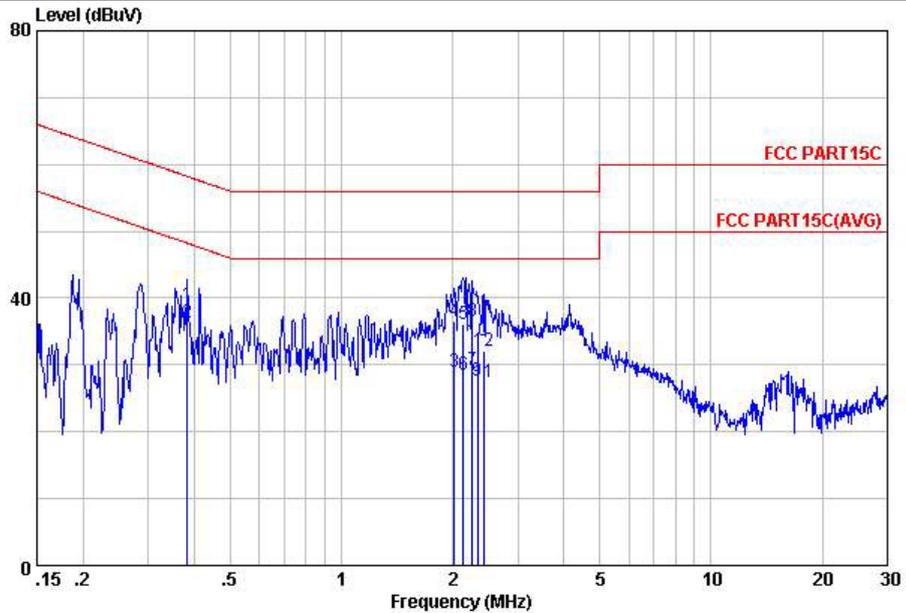
### 3.6.4 Test Setup





3.6.5 Test Result of AC Conducted Emission

|                 |  |                     |         |
|-----------------|--|---------------------|---------|
| Test Mode :     | Mode 1   | Temperature :       | 19~20°C |
| Test Engineer : | Tom Wang   | Relative Humidity : | 39~40%  |
| Test Voltage :  | 120Vac / 60Hz  | Phase :             | Line    |
| Function Type : | CDMA2000 BC1 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) |                     |         |
| Remark :        | All emissions not reported here are more than 10 dB below the prescribed limit.    |                     |         |



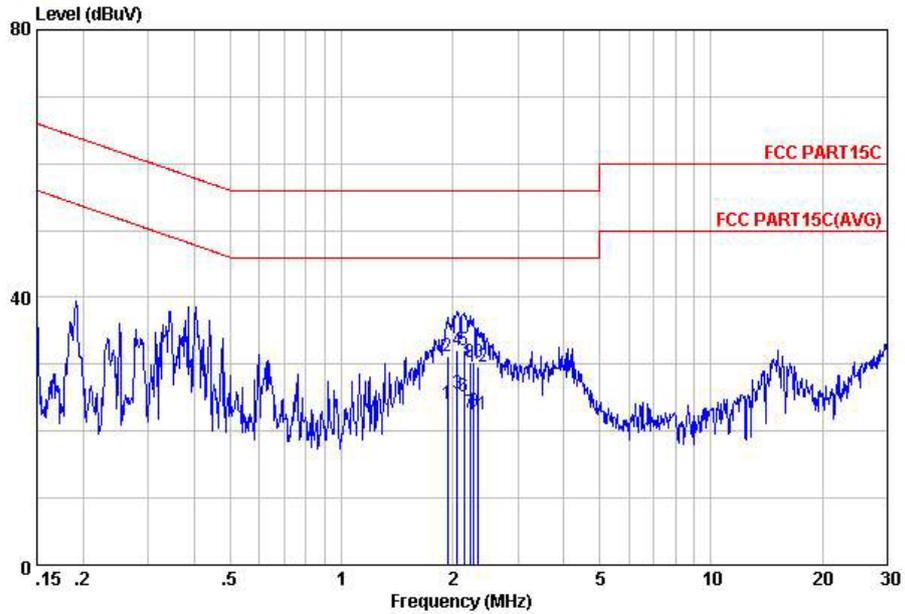
Site : C001-KS  
 Condition: FCC PART15C LISN-100807 LINE

mode : Mode 1

|    | Freq | Level | Over   | Limit | Read  | LISN  | Cable | Remark  |
|----|------|-------|--------|-------|-------|-------|-------|---------|
|    | MHz  | dBuV  | dB     | dBuV  | dBuV  | dB    | dB    |         |
| 1  | 0.38 | 39.01 | -19.20 | 58.21 | 28.90 | -0.08 | 10.19 | QP      |
| 2  | 0.38 | 36.31 | -11.90 | 48.21 | 26.20 | -0.08 | 10.19 | Average |
| 3  | 2.02 | 29.02 | -16.98 | 46.00 | 18.80 | -0.11 | 10.33 | Average |
| 4  | 2.02 | 36.52 | -19.48 | 56.00 | 26.30 | -0.11 | 10.33 | QP      |
| 5  | 2.13 | 36.13 | -19.87 | 56.00 | 25.90 | -0.11 | 10.34 | QP      |
| 6  | 2.13 | 28.63 | -17.37 | 46.00 | 18.40 | -0.11 | 10.34 | Average |
| 7  | 2.26 | 29.13 | -16.87 | 46.00 | 18.90 | -0.11 | 10.34 | Average |
| 8  | 2.26 | 36.63 | -19.37 | 56.00 | 26.40 | -0.11 | 10.34 | QP      |
| 9  | 2.33 | 27.63 | -18.37 | 46.00 | 17.39 | -0.11 | 10.35 | Average |
| 10 | 2.33 | 33.63 | -22.37 | 56.00 | 23.39 | -0.11 | 10.35 | QP      |
| 11 | 2.42 | 27.34 | -18.66 | 46.00 | 17.10 | -0.11 | 10.35 | Average |
| 12 | 2.42 | 32.14 | -23.86 | 56.00 | 21.90 | -0.11 | 10.35 | QP      |



|                 |  |                     |         |
|-----------------|--|---------------------|---------|
| Test Mode :     | Mode 1   | Temperature :       | 19~20°C |
| Test Engineer : | Tom Wang   | Relative Humidity : | 39~40%  |
| Test Voltage :  | 120Vac / 60Hz  | Phase :             | Neutral |
| Function Type : | CDMA2000 BC1 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) |                     |         |
| Remark :        | All emissions not reported here are more than 10 dB below the prescribed limit.    |                     |         |



Site : C001-KS  
 Condition: FCC PART15C LISN-100807 NEUTRAL  
 mode : Mode 1

|    | Freq | Level | Over   | Limit | Read  | LISN   | Cable | Remark  |
|----|------|-------|--------|-------|-------|--------|-------|---------|
|    | MHz  | dBuV  | Limit  | Line  | Level | Factor | Loss  |         |
|    |      |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1  | 1.94 | 24.12 | -21.88 | 46.00 | 13.90 | -0.11  | 10.33 | Average |
| 2  | 1.94 | 31.12 | -24.88 | 56.00 | 20.90 | -0.11  | 10.33 | QP      |
| 3  | 2.05 | 25.72 | -20.28 | 46.00 | 15.50 | -0.11  | 10.33 | Average |
| 4  | 2.05 | 32.12 | -23.88 | 56.00 | 21.90 | -0.11  | 10.33 | QP      |
| 5  | 2.14 | 32.03 | -23.97 | 56.00 | 21.80 | -0.11  | 10.34 | QP      |
| 6  | 2.14 | 25.23 | -20.77 | 46.00 | 15.00 | -0.11  | 10.34 | Average |
| 7  | 2.22 | 22.83 | -23.17 | 46.00 | 12.60 | -0.11  | 10.34 | Average |
| 8  | 2.22 | 30.23 | -25.77 | 56.00 | 20.00 | -0.11  | 10.34 | QP      |
| 9  | 2.28 | 23.03 | -22.97 | 46.00 | 12.80 | -0.11  | 10.34 | Average |
| 10 | 2.28 | 30.33 | -25.67 | 56.00 | 20.10 | -0.11  | 10.34 | QP      |
| 11 | 2.33 | 22.53 | -23.47 | 46.00 | 12.29 | -0.11  | 10.35 | Average |
| 12 | 2.33 | 29.53 | -26.47 | 56.00 | 19.29 | -0.11  | 10.35 | QP      |

## 3.7 Radiated Emission Measurement

### 3.7.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009 – 0.490   | 2400/F(kHz)                       | 300                           |
| 0.490 – 1.705   | 24000/F(kHz)                      | 30                            |
| 1.705 – 30.0    | 30                                | 30                            |
| 30 – 88         | 100                               | 3                             |
| 88 – 216        | 150                               | 3                             |
| 216 - 960       | 200                               | 3                             |
| Above 960       | 500                               | 3                             |

### 3.7.2 Measuring Instruments

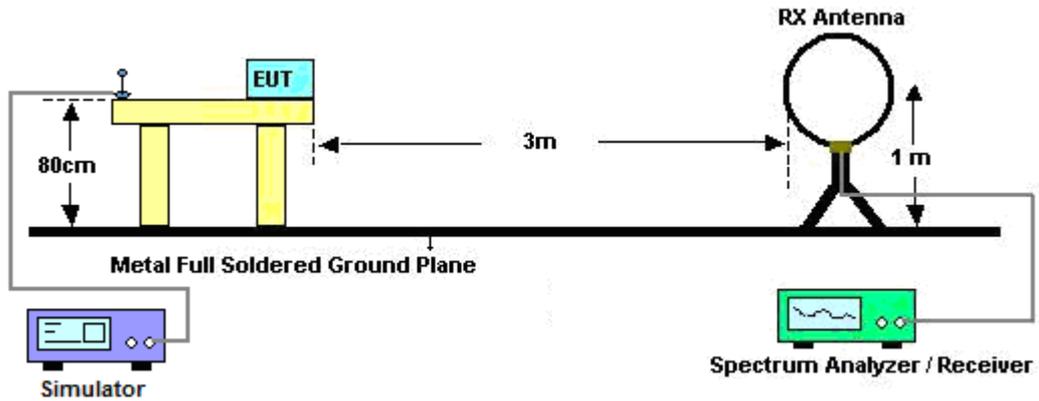
See list of measuring instruments of this test report.

### 3.7.3 Test Procedures

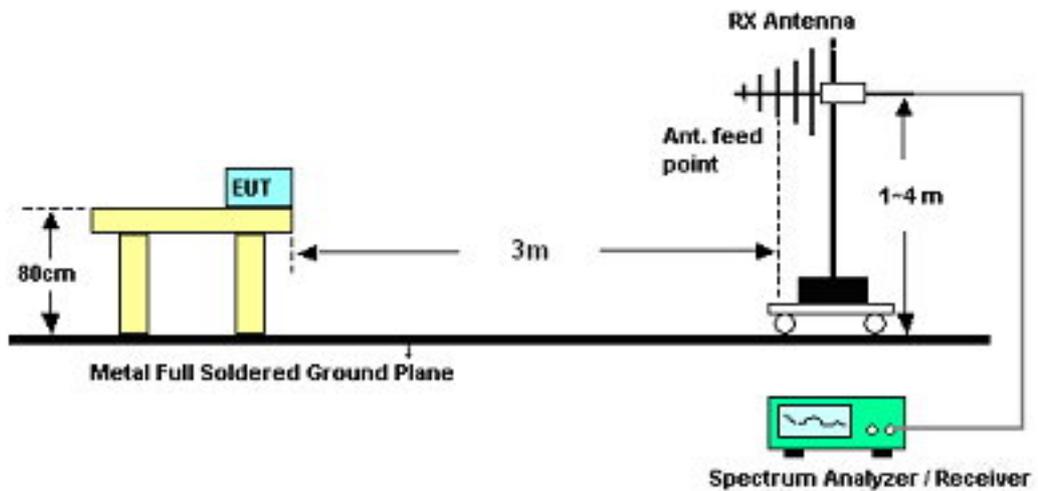
1. The testing follows TCB Workshop 2012, April and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving Antenna, which was mounted on the top of a variable height Antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest radiation.
5. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 KHz for  $f < 1$  GHz;  $VBW \geq RBW$ ; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for Peak measurement, and then set VBW=10Hz, while maintaining all of the other instrument settings for Average measurement.
6. If the emission level of the EUT measured by the peak detector is more than 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

### 3.7.4 Test Setup

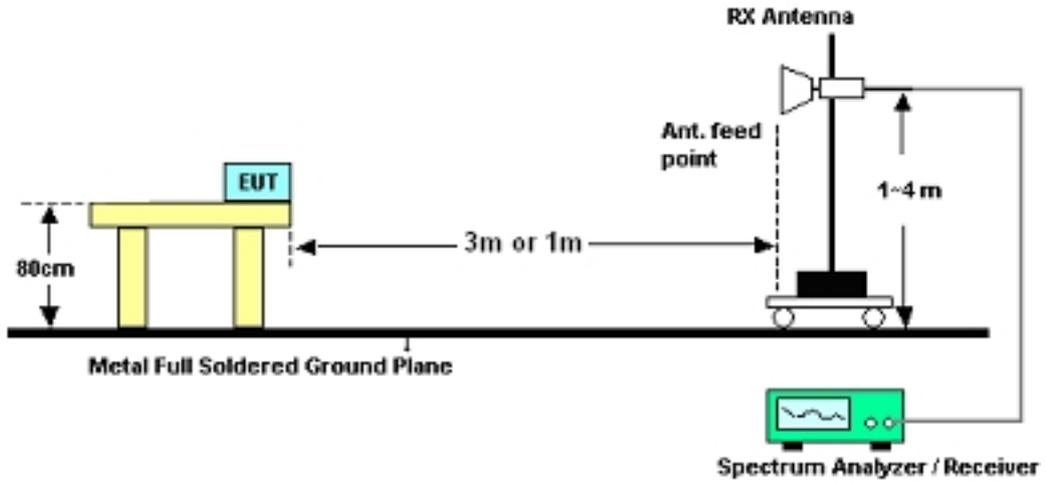
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



### 3.7.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.7.6 Test Result of Radiated Emission (30 MHz ~ 10<sup>th</sup> Harmonic)

|                        |  |                            |            |
|------------------------|--|----------------------------|------------|
| <b>Test Mode :</b>     | Mode 1   | <b>Temperature :</b>       | 22~24°C    |
| <b>Test Channel :</b>  | 00   | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang   | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 2402 MHz is fundamental signal which can be ignored.<br>2. 3201 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 100.33 dBuV/m - 20dB = 80.33 dBuV/m. |                            |            |

| Frequency ( MHz ) | Level ( dBuV/m ) | Over Limit ( dB ) | Limit Line ( dBuV/m ) | Read Level ( dBuV ) | Antenna Factor ( dB ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Remark  |
|-------------------|------------------|-------------------|-----------------------|---------------------|-----------------------|-------------------|----------------------|----------------|-------------------|---------|
| 2402              | 74.8             | -                 | -                     | 74.06               | 32.02                 | 4.58              | 35.86                | 103            | 5                 | Average |
| 2402              | 100.33           | -                 | -                     | 99.59               | 32.02                 | 4.58              | 35.86                | 103            | 5                 | Peak    |
| 3201              | 43.27            | -37.06            | 80.33                 | 63.54               | 32.76                 | 5.56              | 58.59                | 100            | 0                 | Peak    |
| 4804              | 45.16            | -28.84            | 74                    | 63.88               | 33.84                 | 6.5               | 59.06                | 100            | 0                 | Peak    |

|                        |   |                            |          |
|------------------------|---|----------------------------|----------|
| <b>Test Mode :</b>     | Mode 1  | <b>Temperature :</b>       | 22~24°C  |
| <b>Test Channel :</b>  | 00  | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang  | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2402 MHz is fundamental signal which can be ignored.<br>2. 3201 MHz is not within a restricted band. |                            |          |

| Frequency ( MHz ) | Level ( dBuV/m ) | Over Limit ( dB ) | Limit Line ( dBuV/m ) | Read Level ( dBuV ) | Antenna Factor ( dB ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Remark  |
|-------------------|------------------|-------------------|-----------------------|---------------------|-----------------------|-------------------|----------------------|----------------|-------------------|---------|
| 2402              | 72.95            | -                 | -                     | 72.21               | 32.02                 | 4.58              | 35.86                | 108            | 145               | Average |
| 2402              | 97               | -                 | -                     | 96.26               | 32.02                 | 4.58              | 35.86                | 108            | 145               | Peak    |
| 3201              | 44.05            | -32.95            | 77                    | 64.32               | 32.76                 | 5.56              | 58.59                | 100            | 0                 | Peak    |
| 4804              | 48.18            | -25.82            | 74                    | 66.9                | 33.84                 | 6.5               | 59.06                | 100            | 0                 | Peak    |



|                        |  |                            |            |
|------------------------|--|----------------------------|------------|
| <b>Test Mode :</b>     | Mode 2   | <b>Temperature :</b>       | 22~24°C    |
| <b>Test Channel :</b>  | 19   | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang   | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 2440 MHz is fundamental signal which can be ignored. |                            |            |

| Frequency<br>( MHz ) | Level<br>( dBuV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBuV/m ) | Read<br>Level<br>( dBuV ) | Antenna<br>Factor<br>( dB ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Remark  |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2440                 | 76.29               | -                       | -                           | 75.46                     | 32.06                       | 4.61                    | 35.84                      | 103                  | 7                       | Average |
| 2440                 | 102.56              | -                       | -                           | 101.73                    | 32.06                       | 4.61                    | 35.84                      | 103                  | 7                       | Peak    |
| 4880                 | 44.01               | -29.99                  | 74                          | 62.53                     | 33.82                       | 6.54                    | 58.88                      | 100                  | 0                       | Peak    |

|                        |   |                            |          |
|------------------------|---|----------------------------|----------|
| <b>Test Mode :</b>     | Mode 2  | <b>Temperature :</b>       | 22~24°C  |
| <b>Test Channel :</b>  | 19  | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang  | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2440 MHz is fundamental signal which can be ignored.<br>2. 3252MHz is not within a restricted band |                            |          |

| Frequency<br>( MHz ) | Level<br>( dBuV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBuV/m ) | Read<br>Level<br>( dBuV ) | Antenna<br>Factor<br>( dB ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Remark  |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2440                 | 74.81               | -                       | -                           | 73.98                     | 32.06                       | 4.61                    | 35.84                      | 109                  | 302                     | Average |
| 2440                 | 100.22              | -                       | -                           | 99.39                     | 32.06                       | 4.61                    | 35.84                      | 109                  | 302                     | Peak    |
| 3252                 | 42.78               | -37.44                  | 80.22                       | 63.1                      | 32.75                       | 5.58                    | 58.65                      | 100                  | 0                       | Peak    |
| 4880                 | 48.45               | -25.55                  | 74                          | 66.97                     | 33.82                       | 6.54                    | 58.88                      | 100                  | 0                       | Peak    |



|                        |  |                            |            |
|------------------------|--|----------------------------|------------|
| <b>Test Mode :</b>     | Mode 3   | <b>Temperature :</b>       | 22~24°C    |
| <b>Test Channel :</b>  | 39   | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang   | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 2480 MHz is fundamental signal which can be ignored. |                            |            |

| Frequency<br>( MHz ) | Level<br>( dBuV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBuV/m ) | Read<br>Level<br>( dBuV ) | Antenna<br>Factor<br>( dB ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Remark  |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 142.59               | 33.7                | -9.8                    | 43.5                        | 52.49                     | 11.2                        | 1.27                    | 31.26                      | -                    | -                       | Peak    |
| 184.44               | 36.5                | -7                      | 43.5                        | 57.3                      | 8.82                        | 1.42                    | 31.04                      | 135                  | 224                     | Peak    |
| 215.49               | 34.59               | -8.91                   | 43.5                        | 54.89                     | 9.25                        | 1.52                    | 31.07                      | -                    | -                       | Peak    |
| 307                  | 29.08               | -16.92                  | 46                          | 44.88                     | 13.33                       | 1.8                     | 30.93                      | -                    | -                       | Peak    |
| 373.5                | 28.74               | -17.26                  | 46                          | 42.82                     | 14.99                       | 1.95                    | 31.02                      | -                    | -                       | Peak    |
| 774.6                | 25.3                | -20.7                   | 46                          | 30.36                     | 22.15                       | 2.79                    | 30                         | -                    | -                       | Peak    |
| 2480                 | 75.54               | -                       | -                           | 74.62                     | 32.09                       | 4.64                    | 35.81                      | 122                  | 7                       | Average |
| 2480                 | 101.48              | -                       | -                           | 100.56                    | 32.09                       | 4.64                    | 35.81                      | 122                  | 7                       | Peak    |
| 4960                 | 42.58               | -31.42                  | 74                          | 60.85                     | 33.81                       | 6.57                    | 58.65                      | 100                  | 0                       | Peak    |



|                 |  |                     |          |
|-----------------|--|---------------------|----------|
| Test Mode :     | Mode 3   | Temperature :       | 22~24°C  |
| Test Channel :  | 39   | Relative Humidity : | 50~52%   |
| Test Engineer : | David Yang   | Polarization :      | Vertical |
| Remark :        | 2480 MHz is fundamental signal which can be ignored. |                     |          |

| Frequency<br>( MHz ) | Level<br>( dBuV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBuV/m ) | Read<br>Level<br>( dBuV ) | Antenna<br>Factor<br>( dB ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Remark  |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 32.16                | 29.12               | -10.88                  | 40                          | 41.6                      | 18.44                       | 0.72                    | 31.64                      | -                    | -                       | Peak    |
| 184.44               | 32.98               | -10.52                  | 43.5                        | 53.78                     | 8.82                        | 1.42                    | 31.04                      | 100                  | 317                     | Peak    |
| 253.29               | 34.88               | -11.12                  | 46                          | 51.15                     | 12.99                       | 1.67                    | 30.93                      | -                    | -                       | Peak    |
| 308.4                | 24.65               | -21.35                  | 46                          | 40.45                     | 13.32                       | 1.8                     | 30.92                      | -                    | -                       | Peak    |
| 384.7                | 26.81               | -19.19                  | 46                          | 40.53                     | 15.35                       | 1.98                    | 31.05                      | -                    | -                       | Peak    |
| 733.3                | 25.25               | -20.75                  | 46                          | 30.64                     | 22.09                       | 2.72                    | 30.2                       | -                    | -                       | Peak    |
| 2480                 | 74.69               | -                       | -                           | 73.77                     | 32.09                       | 4.64                    | 35.81                      | 107                  | 305                     | Average |
| 2480                 | 99.87               | -                       | -                           | 98.95                     | 32.09                       | 4.64                    | 35.81                      | 107                  | 305                     | Peak    |
| 4960                 | 46.47               | -27.53                  | 74                          | 64.74                     | 33.81                       | 6.57                    | 58.65                      | 100                  | 0                       | Peak    |



## **3.8 Antenna Requirements**

### **3.8.1 Standard Applicable**

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

### **3.8.2 Antenna Connected Construction**

Non-standard connector used.

### **3.8.3 Antenna Gain**

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



## 4 List of Measuring Equipment

| Instrument           | Manufacturer | Model No.                  | Serial No.       | Characteristics                | Calibration Date | Test Date     | Due Date      | Remark                |
|----------------------|--------------|----------------------------|------------------|--------------------------------|------------------|---------------|---------------|-----------------------|
| Spectrum Analyzer    | R&S          | FSP40                      | 100055           | 9kHz~40GHz                     | Jun. 06, 2012    | Jul. 13, 2012 | Jun. 05, 2013 | Conducted (TH02-HY)   |
| Power Meter          | Anritsu      | ML2495A                    | 0932001          | N/A                            | Sep. 18, 2011    | Jul. 13, 2012 | Sep. 17, 2012 | Conducted (TH02-HY)   |
| Power Sensor         | Anritsu      | MA2411B                    | 0846202          | N/A                            | Sep. 18, 2011    | Jul. 13, 2012 | Sep. 17, 2012 | Conducted (TH02-HY)   |
| EMI Receiver         | R&S          | ESCI7                      | 100768           | 9kHz~7GHz                      | Jun. 02, 2011    | May 28, 2012  | Jun. 01, 2012 | Conduction (CO01-KS)  |
| LISN                 | MessTec      | AN3016                     | 60103            | 9kHz~30MHz                     | Dec. 30, 2011    | May 28, 2012  | Dec. 29, 2012 | Conduction (CO01-KS)  |
| LISN                 | MessTec      | AN3016                     | 60105            | 9kHz~30MHz                     | Dec. 30, 2011    | May 28, 2012  | Dec. 29, 2012 | Conduction (CO01-KS)  |
| AC Power Source      | Chroma       | 61602                      | ABP0000008<br>11 | N/A                            | Nov. 16, 2011    | May 28, 2012  | Nov. 15, 2012 | Conduction (CO01-KS)  |
| System Simulator     | R&S          | CMU200                     | 837587/066       | Full-Band                      | Dec. 30, 2011    | May 28, 2012  | Dec. 29, 2012 | Conduction (CO01-KS)  |
| Spectrum Analyzer    | R&S          | ESU26                      | 100390           | 20Hz ~ 26.5GHz                 | Dec. 22, 2011    | Jul. 18, 2012 | Dec. 21, 2012 | Radiation (03CH05-HY) |
| Bilog Antenna        | SCHAFFNER    | CBL6111C                   | 2725             | 30MHz ~ 2GHz                   | Oct. 22, 2011    | Jul. 18, 2012 | Oct. 21, 2012 | Radiation (03CH05-HY) |
| Turn Table           | HD           | Deis HD 2000               | 420/611          | 0 ~ 360 degree                 | N/A              | Jul. 18, 2012 | N/A           | Radiation (03CH05-HY) |
| Antenna Mast         | HD           | MA 240                     | 240/666          | 1 m ~ 4 m                      | N/A              | Jul. 18, 2012 | N/A           | Radiation (03CH05-HY) |
| Horn Antenna         | ESCO         | 3117                       | 66584            | 1GHz ~ 18GHz                   | Aug. 04, 2011    | Jul. 18, 2012 | Aug. 03, 2012 | Radiation (03CH05-HY) |
| Pre Amplifier        | COM-POWER    | PA-103A                    | 161075           | 10Hz ~<br>1000MHz<br>Gain:32dB | Feb. 27, 2012    | Jul. 18, 2012 | Feb. 26, 2013 | Radiation (03CH05-HY) |
| Pre Amplifier        | MITEQ        | AMF-7D-0010<br>1800-30-10P | 159087           | 1GHz~18GHz                     | Feb. 27, 2012    | Jul. 18, 2012 | Feb. 26, 2013 | Radiation (03CH05-HY) |
| Pre Amplifier        | Agilent      | 8449B                      | 3008A01917       | 1GHz~26.5GHz                   | Aug. 30, 2011    | Jul. 18, 2012 | Aug. 29, 2012 | Radiation (03CH05-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK  | BBHA 9170                  | BBHA91702<br>51  | 15GHz ~ 40GHz                  | Oct. 21, 2011    | Jul. 18, 2012 | Oct. 20, 2012 | Radiation (03CH05-HY) |
| Loop Antenna         | R&S          | HFH2-Z2                    | 860004/001       | 9 kHz~30 MHz                   | Jul. 29, 2010    | Jul. 18, 2012 | Jul. 28, 2012 | Radiation (03CH05-HY) |

## 5 Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

|   |      |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.26 |
|---|------|

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|   |      |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.54 |
|---|------|

### Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

|   |      |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 4.72 |
|---|------|