



# FCC RF Test Report

**APPLICANT** : Lenovo (Shanghai) Electronics Technology Co., Ltd.  
**EQUIPMENT** : Tablet PC  
**BRAND NAME** : lenovo  
**MODEL NAME** : 60015, 2298  
**FCC ID** : O57A2107ATT3G  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DSS) Spread Spectrum Transmitter

The product was received on Jun. 25, 2012 and completely tested on Aug. 15, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures 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)(1)       | A8.4(2)   | Number of Channels          | ≥ 15Chs                    | Pass   | -   |
| 3.2            | 15.247(a)(1)       | A8.1(b)   | Hopping Channel Separation  | ≥ 2/3 of 20dB BW           | Pass   | -   |
| 3.3            | 15.247(a)(1)       | A8.1(d)   | Dwell Time of Each Channel  | ≤ 0.4sec in 31.6sec period | Pass   | -   |
| 3.4            | 15.247(a)(1)       | A8.1(a)   | 20dB Bandwidth              | NA                         | Pass   | -   |
| 3.5            | 15.247(b)(1)       | A8.1(b)   | Peak Output Power           | ≤ 125 mW                   | Pass   | -   |
| 3.6            | 15.247(d)          | A8.5      | Conducted Band Edges        | ≤ 20dBc                    | Pass   | -   |
| 1.3.6.6        | 15.247(d)          | A8.5      | Conducted Spurious Emission | ≤ 20dBc                    | Pass   | -   |
| 3.8            | 15.247(d)          | A8.5      | Radiated Band Edges         | 15.209(a) & 15.247(d)      | Pass   | -   |
| 3.9            | 15.247(d)          | A8.5      | Radiated Spurious Emission  | 15.209(a) & 15.247(d)      | Pass   | Under limit 4.73 dB at 430.610 MHz for Quasi-Peak |
| 3.10           | 15.207             | Gen 7.2.4 | AC Conducted Emission       | 15.207(a)                  | Pass   | Under limit 13.64 dB at 1.030 MHz                 |
| 3.11           | 15.203 & 15.247(b) | A8.4      | Antenna Requirement         | N/A                        | Pass   | -   |

# 1 General Description

## 1.1 Applicant

**Lenovo (Shanghai) Electronics Technology Co., Ltd.**

No. 68 Building, 199 Fenju Road, Wai Gao Qiao FTZ, Shanghai, China

## 1.2 Manufacturer

**Lenovo (Singapore) Pte Ltd.**

151, Lorong Chuan, #02-01, New Tech Park, 556741, Singapore

## 1.3 Feature of Equipment Under Test

| Product Feature                        |  |
|--|--|
| <b>Equipment</b>                       | Tablet PC  |
| <b>Brand Name</b>                      | lenovo   |
| <b>Model Name</b>                      | 60015, 2298  |
| <b>FCC ID</b>                          | O57A2107ATT3G  |
| <b>EUT supports Radios application</b> | GSM/EGPRS/WCDMA/HSPA/<br>WLAN 11bgn/Bluetooth/Bluetooth4.0 |
| <b>HW Version</b>                      | A2-MB-H302-A   |
| <b>SW Version</b>                      | A2107A_A404_000_002_120612_ATT                             |
| <b>EUT Stage</b>                       | Production Unit  |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

| Product Specification subjective to this standard |   |
|---|---|
| <b>Tx/Rx Frequency Range</b>                      | 2402 MHz ~ 2480 MHz   |
| <b>Number of Channels</b>                         | 79  |
| <b>Carrier Frequency of Each Channel</b>          | 2402+n*1 MHz; n=0~78  |
| <b>Maximum Output Power to Antenna</b>            | Bluetooth (1Mbps) : 6.38 dBm (0.0043 W)<br>Bluetooth EDR (2Mbps) : 5.93 dBm (0.0039 W)<br>Bluetooth EDR (3Mbps) : 6.14 dBm (0.0041 W) |
| <b>Antenna Type</b>                               | PIFA Antenna with gain 2.23 dBi   |
| <b>Type of Modulation</b>                         | Bluetooth (1Mbps) : GFSK<br>Bluetooth 2.1 EDR (2Mbps) : $\pi/4$ -DQPSK<br>Bluetooth 2.1 EDR (3Mbps) : 8-DPSK                          |



### 1.4 Testing Site

|                    |  |         |           |                         |
|--------------------|--|---------|-----------|-------------------------|
| Test Site          | SPORTON INTERNATIONAL (KUNSHAN) INC.   |         |           |                         |
| Test Site Location | No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.<br>TEL: +86-0512-5790-0158<br>FAX: +86-0512-5790-0958 |         |           |                         |
| Test Site No.      | Sporton Site No.   |         |           | FCC/IC Registration No. |
|                    | TH01-KS  | CO01-KS | 03CH01-KS | 149928/4086E-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 Public Notice DA 00-705
- ♦ ANSI C63.4-2003 and ANSI C63.10-2009
- ♦ 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        | CMU 200     | N/A         | N/A        | Unshielded, 1.8 m  |
| 2.   | WLAN AP                | D-link     | DIR-855     | KA2DIR855A2 | N/A        | Unshielded, 1.8 m  |
| 3.   | Notebook               | DELL       | VOSTRO 1450 | PPD-AR5B195 | N/A        | AC I/P:<br>Unshielded, 1.8 m<br>DC O/P:<br>Shielded, 1.8 m |
| 4.   | Bluetooth Earphone     | Lenovo     | LBH301      | N/A         | N/A        | N/A  |
| 5.   | Bluetooth Base Station | R&S        | CBT         | N/A         | N/A        | Unshielded,1.8m  |
| 6.   | DC Power Supply        | GWINSTEK   | GPS-3030D   | N/A         | N/A        | Unshielded, 1.8 m  |

## 2 Test Configuration of Equipment Under Test

### 2.1 RF Output Power

Preliminary tests were performed in different data rate and recorded the RF output power in the following table:

| Channel | Frequency | Bluetooth RF Output Power |                |          |
|---------|-----------|---------------------------|----------------|----------|
|         |           | Data Rate / Modulation    |                |          |
|         |           | GFSK                      | $\pi/4$ -DQPSK | 8-DPSK   |
|         |           | 1Mbps                     | 2Mbps          | 3Mbps    |
| Ch00    | 2402MHz   | 5.21 dBm                  | 4.89 dBm       | 4.88 dBm |
| Ch39    | 2441MHz   | 5.53 dBm                  | 5.26 dBm       | 5.22 dBm |
| Ch78    | 2480MHz   | <b>6.38 dBm</b>           | 5.93 dBm       | 6.14 dBm |

**Remark:**

1. All the test data for each data rate were verified, but only the worst case was reported.
2. The data rate was set in 1Mbps for all the test items due to the highest RF output power.
3. The EUT is programmed to transmit signals continuously for all testing.

## 2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and ANSI C63.10-2009 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).

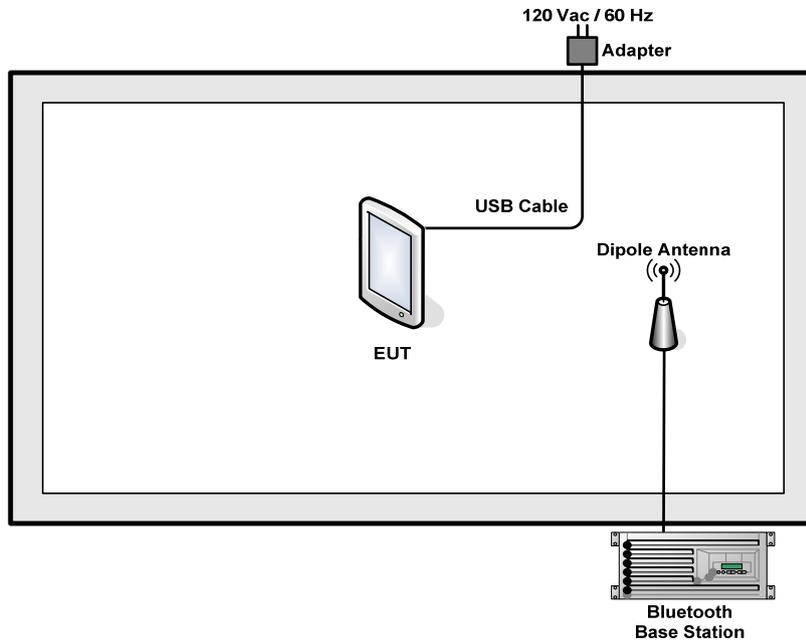
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

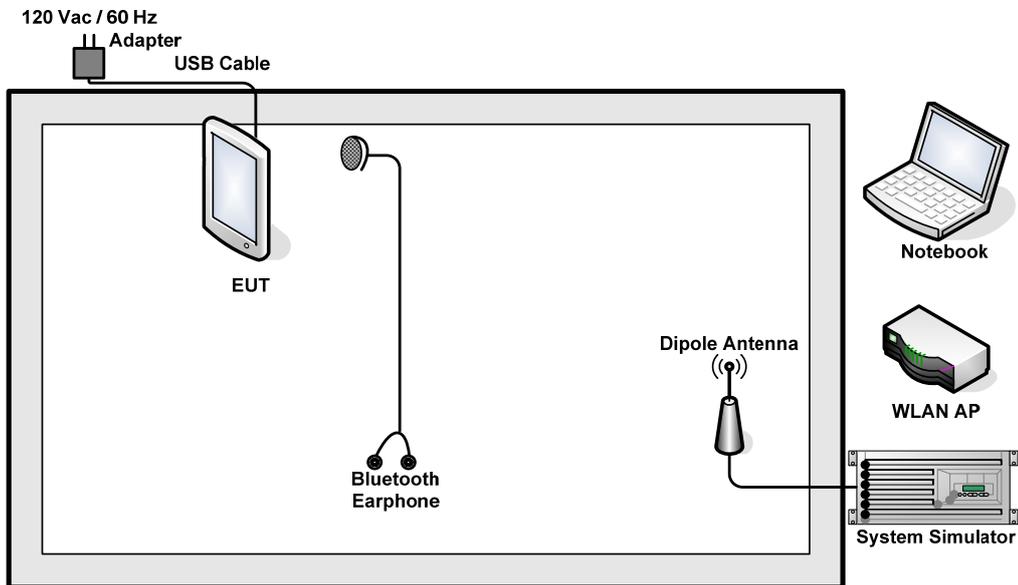
| Test Cases   |   |   |   |
|--|---|---|---|
| Test Item  | Data Rate / Modulation  |   |   |
|  | Bluetooth 1Mbps<br>GFSK   | Bluetooth EDR 2Mbps<br>$\pi/4$ -DQPSK                                   | Bluetooth EDR 3Mbps<br>8-DPSK   |
| Conducted<br>TCs   | Mode 1: CH00_2402 MHz<br>Mode 2: CH39_2441 MHz<br>Mode 3: CH78_2480 MHz                                   | Mode 4: CH00_2402 MHz<br>Mode 5: CH39_2441 MHz<br>Mode 6: CH78_2480 MHz | Mode 7: CH00_2402 MHz<br>Mode 8: CH39_2441 MHz<br>Mode 9: CH78_2480 MHz |
| Radiated<br>TCs  | Mode 1: CH00_2402 MHz<br>Mode 2: CH39_2441 MHz<br>Mode 3: CH78_2480 MHz                                   | Pretest   | Pretest   |
| AC<br>Conducted<br>Emission  | Mode 1 :GSM850 (GPRS 8) Idle + Bluetooth Link + WLAN Link + USB Cable<br>(Charging from Adapter) + Camera |   |   |
| <b>Remark:</b> For radiated TCs, the data rate was set in 1Mbps due to the highest RF output power; only the data of these modes was reported. |   |   |   |

## 2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



<AC Conducted Emission Mode>



## 2.4 RF Utility

For Bluetooth function, key in “\* # \* # 4636633 # \* # \*” on the EUT directly. Then, the EUT will get into the engineering modes to contact with Bluetooth base station for continuous transmitting and receiving signals.

### 3 Test Result

#### 3.1 Number of Channel Measurement

##### 3.1.1 Limits of Number of Hopping Frequency

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

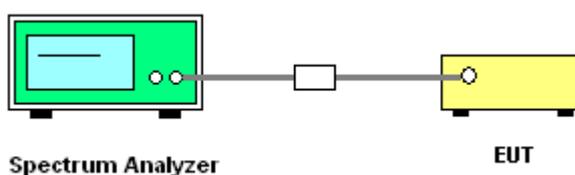
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedure

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The modulation types of EUT are irrelevant to number of hopping channels deviation.  
The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:  
Span = the frequency band of operation; RBW  $\geq$  1% of the span; VBW  $\geq$  RBW; Sweep = auto;  
Detector function = peak; Trace = max hold.
4. The number of hopping frequency used is defined as the device has the numbers of total channel.

##### 3.1.4 Test Setup

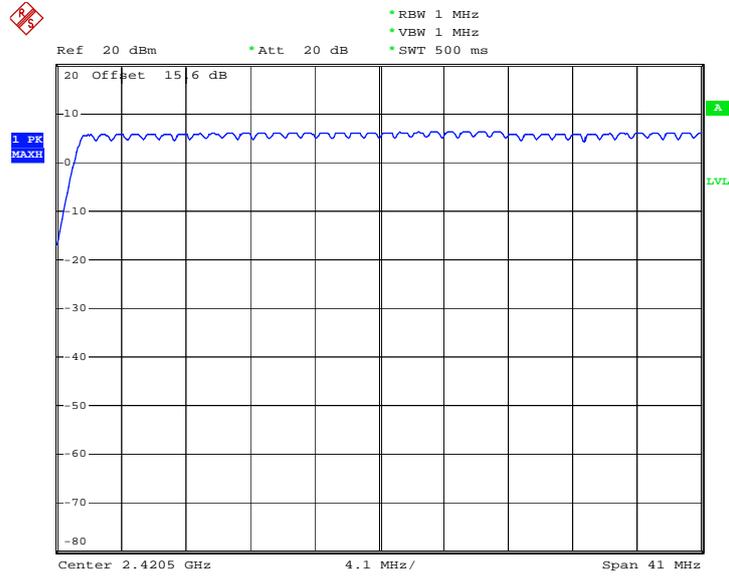


##### 3.1.5 Test Result of Number of Hopping Frequency

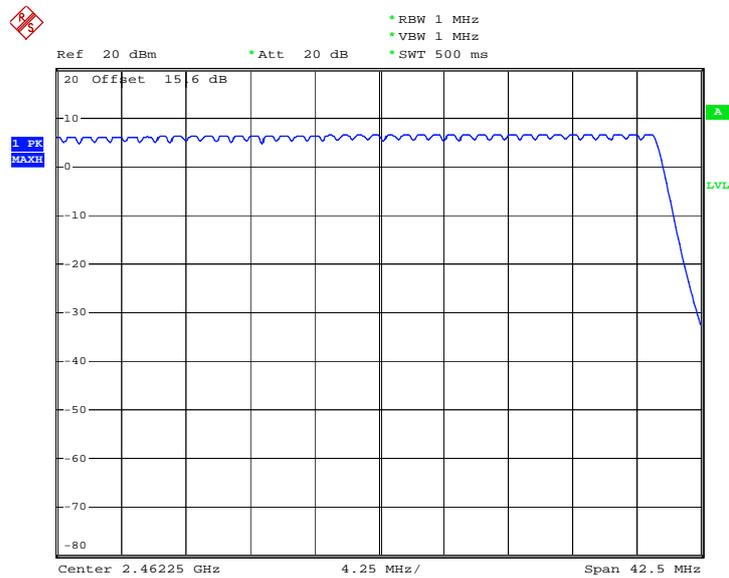
| Test Mode :                             | 1Mbps  | Temperature :       | 23~24°C   |
|---|--------|---------------------|-----------|
| Test Engineer :                         | Zhi Lu | Relative Humidity : | 47~48%    |
| Number of Hopping Channels<br>(Channel) |        | Limits<br>(Channel) | Pass/Fail |
| 79                                      |        | > 15                | Pass      |



Number of Hopping Channel Plot on Channel 00 - 78



Date: 9.JUL.2012 22:07:26



Date: 9.JUL.2012 22:17:29

## 3.2 Hopping Channel Separation Measurement

### 3.2.1 Limit of Hopping Channel Separation

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 KHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

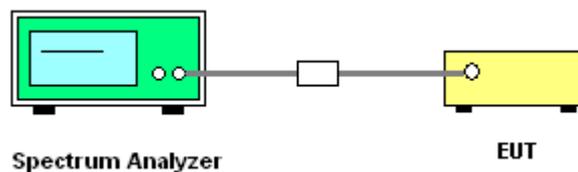
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

1. Please refer FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. Use the following spectrum analyzer settings:  
Span = wide enough to capture the peaks of two adjacent channels;  $RBW \geq 1\%$  of the span;  
VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold.
5. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

### 3.2.4 Test Setup

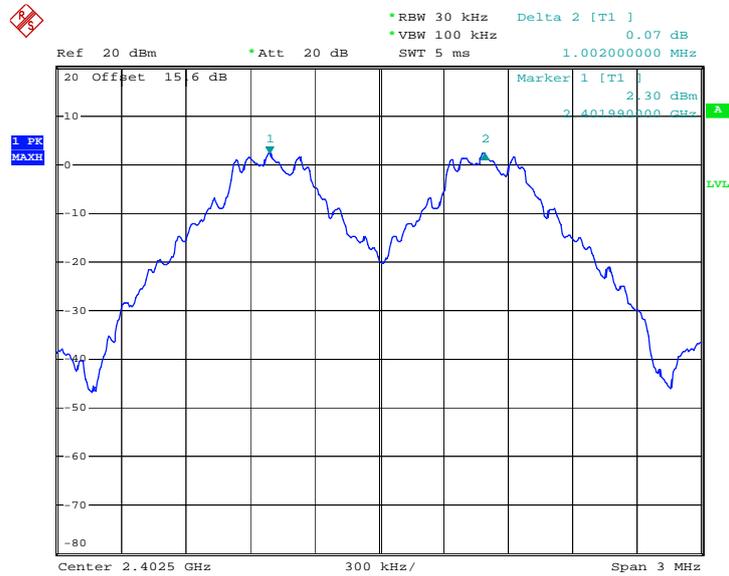


### 3.2.5 Test Result of Hopping Channel Separation

|                 |        |                     |         |
|-----------------|--------|---------------------|---------|
| Test Mode :     | 1Mbps  | Temperature :       | 23~24°C |
| Test Engineer : | Zhi Lu | Relative Humidity : | 47~48%  |

| Channel | Frequency (MHz) | Frequency Separation (MHz) | (2/3 of 20dB BW) Limits (MHz) | Pass/Fail |
|---------|-----------------|----------------------------|-------------------------------|-----------|
| 00      | 2402            | 1.002                      | 0.5947                        | Pass      |
| 39      | 2441            | 1.002                      | 0.6267                        | Pass      |
| 78      | 2480            | 1.002                      | 0.6000                        | Pass      |

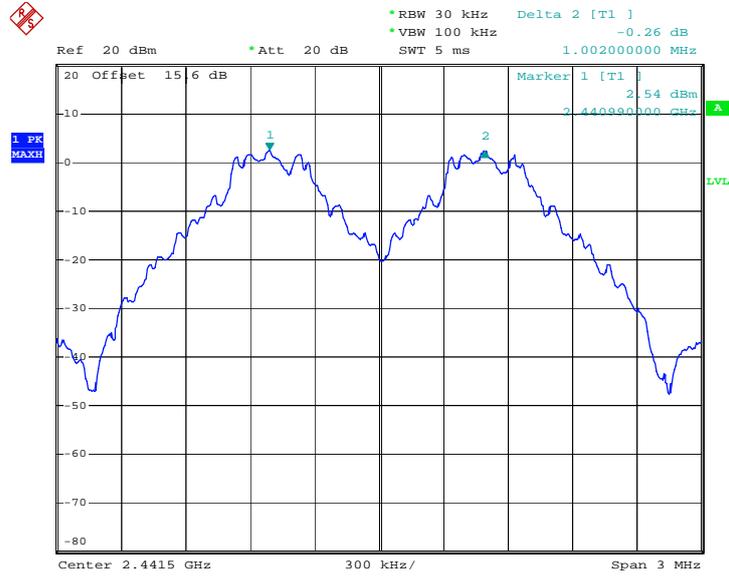
Channel Separation Plot on Channel 00 - 01



Date: 26.JUN.2012 00:28:35

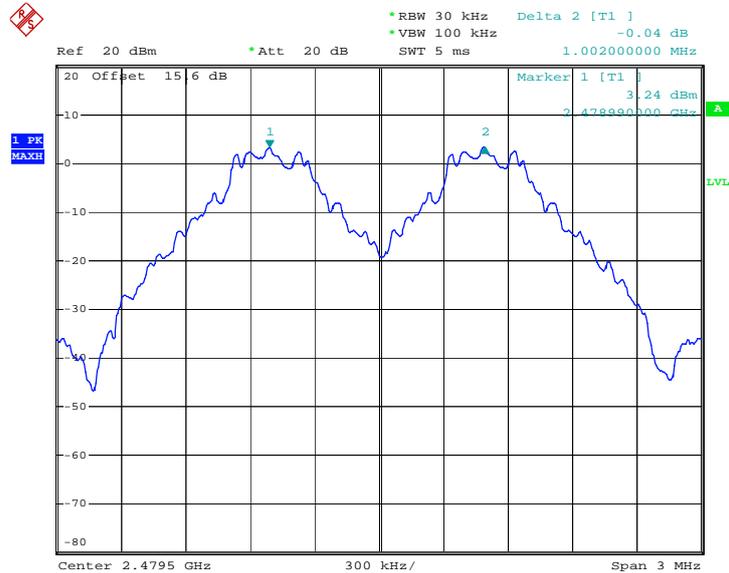


### Channel Separation Plot on Channel 39 - 40



Date: 26.JUN.2012 00:29:41

### Channel Separation Plot on Channel 77 - 78



Date: 26.JUN.2012 00:30:28

### 3.3 Dwell Time Measurement

#### 3.3.1 Limit of Dwell Time

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

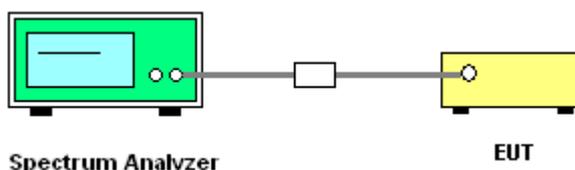
#### 3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:  
Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
5. Use the marker-delta function to calculate the dwell time.

#### 3.3.4 Test Setup



#### 3.3.5 Test Result of Dwell Time

|                 |        |                     |         |
|-----------------|--------|---------------------|---------|
| Test Mode :     | DH5    | Temperature :       | 23~24°C |
| Test Engineer : | Zhi Lu | Relative Humidity : | 47~48%  |

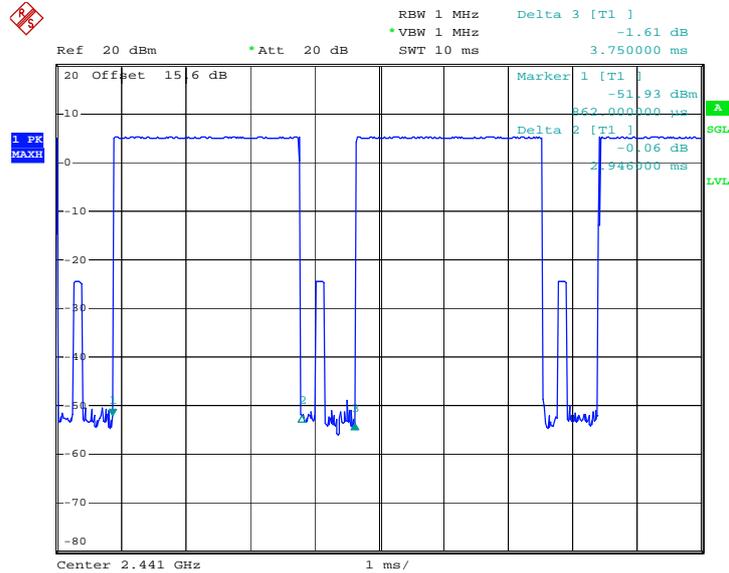
| Package Mode | Average Hopping Channel | Package Transfer Time (usec) | Dwell Time (sec) | Limits (sec) | Pass/Fail |
|--------------|-------------------------|------------------------------|------------------|--------------|-----------|
| DH5          | 3.70                    | 2946.00                      | 0.34             | 0.4          | Pass      |

**Remark:**

1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
2. 79 channels come from the Hopping Channel number.
3. Average Hopping Channel = hops/sweep time
4. T: Package Transfer Time(us)

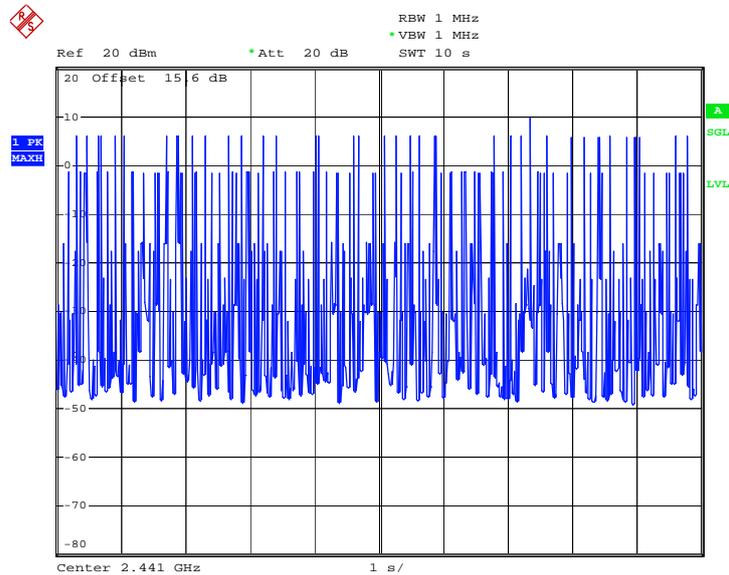


### DH5 Dwell Time (One Pulse) Plot on Channel 39



Date: 26.JUN.2012 00:25:09

### DH5 Dwell Time (Count Pulses) Plot on Channel 39



Date: 9.JUL.2012 21:38:29

### 3.4 20dB Bandwidth Measurement

#### 3.4.1 Limit of 20dB Bandwidth

N/A

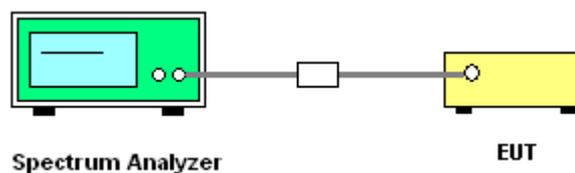
#### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.4.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. Use the following spectrum analyzer settings:  
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel;  
RBW  $\geq$  1% of the 20 dB bandwidth; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak;  
Trace = max hold.
5. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

#### 3.4.4 Test Setup

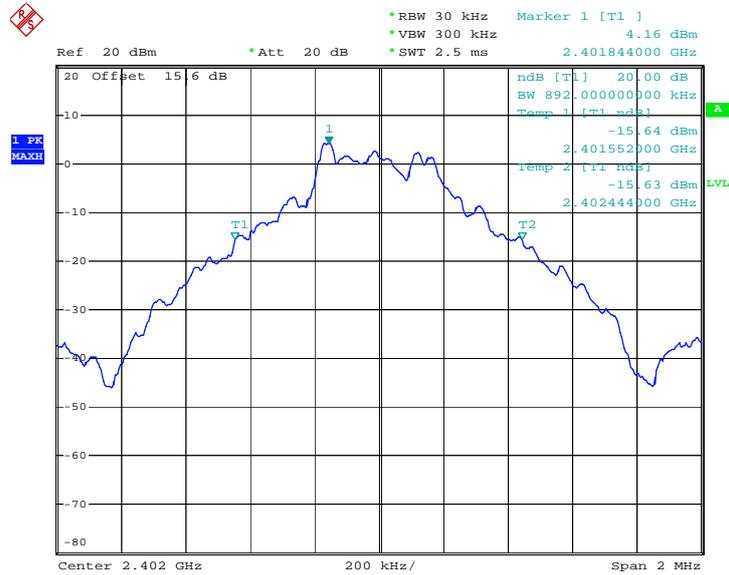


3.4.5 Test Result of 20dB Bandwidth

|                 |        |                     |         |
|-----------------|--------|---------------------|---------|
| Test Mode :     | 1Mbps  | Temperature :       | 23~24°C |
| Test Engineer : | Zhi Lu | Relative Humidity : | 47~48%  |

| Channel | Frequency (MHz) | 20dB Bandwidth (MHz) |
|---------|-----------------|----------------------|
| 00      | 2402            | 0.892                |
| 39      | 2441            | 0.940                |
| 78      | 2480            | 0.900                |

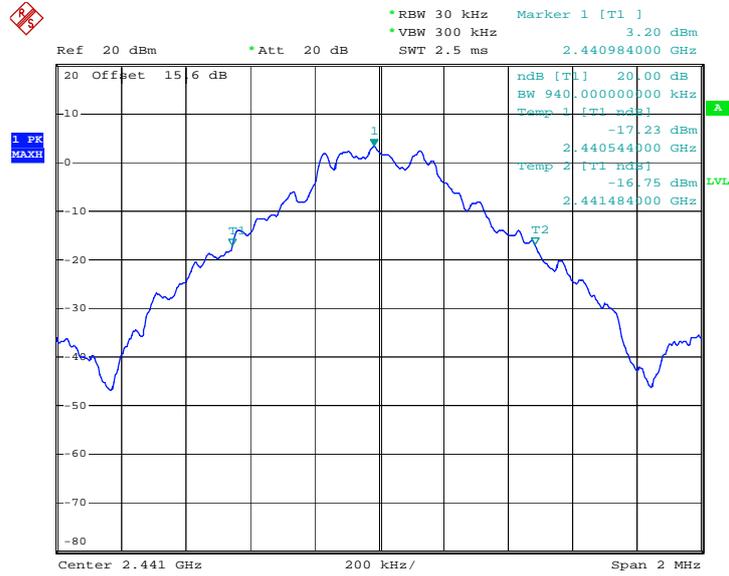
20 dB Bandwidth Plot on Channel 00



Date: 6.JUL.2012 02:36:47

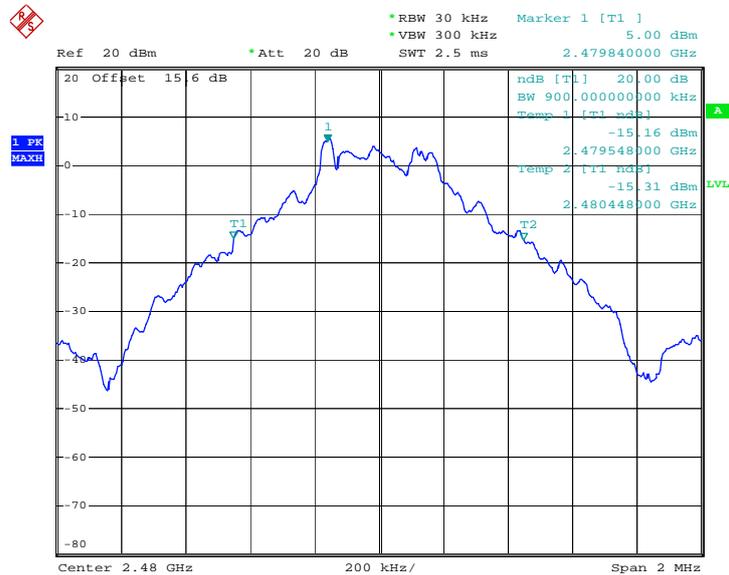


20 dB Bandwidth Plot on Channel 39



Date: 9.JUL.2012 23:05:38

20 dB Bandwidth Plot on Channel 78



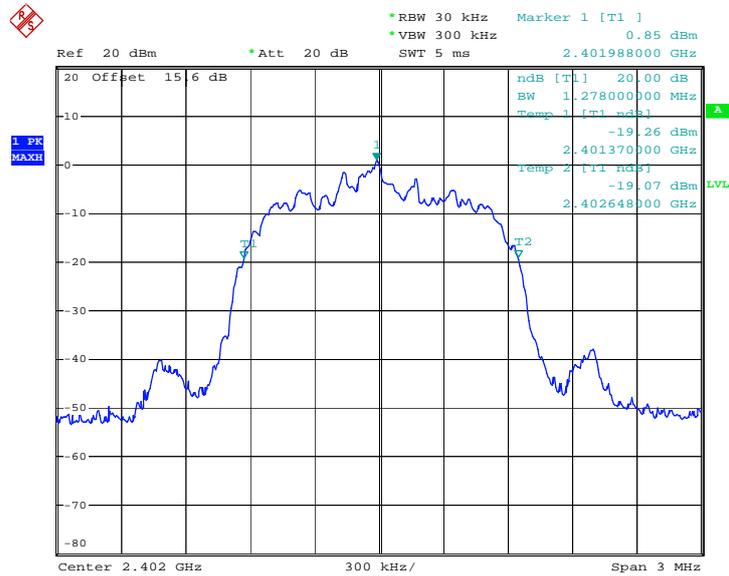
Date: 9.JUL.2012 23:16:12



|                 |        |                     |         |
|-----------------|--------|---------------------|---------|
| Test Mode :     | 2Mbps  | Temperature :       | 23~24°C |
| Test Engineer : | Zhi Lu | Relative Humidity : | 47~48%  |

| Channel | Frequency (MHz) | 20dB Bandwidth (MHz) |
|---------|-----------------|----------------------|
| 00      | 2402            | 1.278                |
| 39      | 2441            | 1.278                |
| 78      | 2480            | 1.278                |

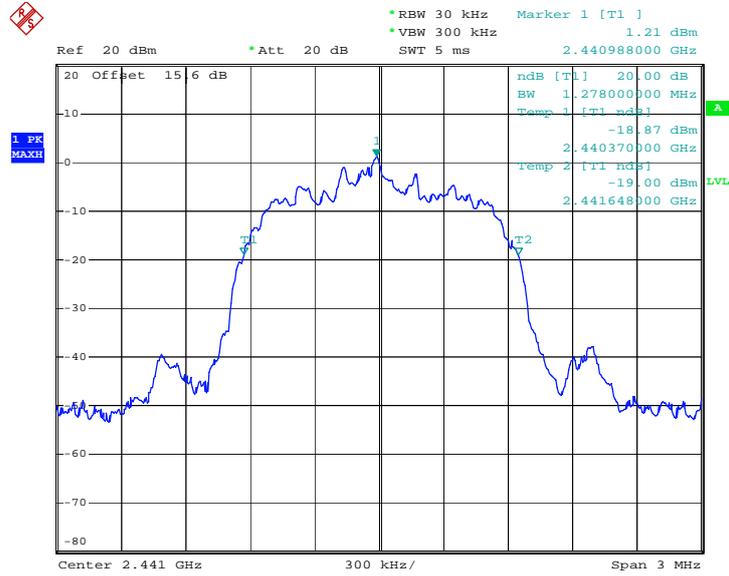
20 dB Bandwidth Plot on Channel 00



Date: 26.JUN.2012 00:38:35

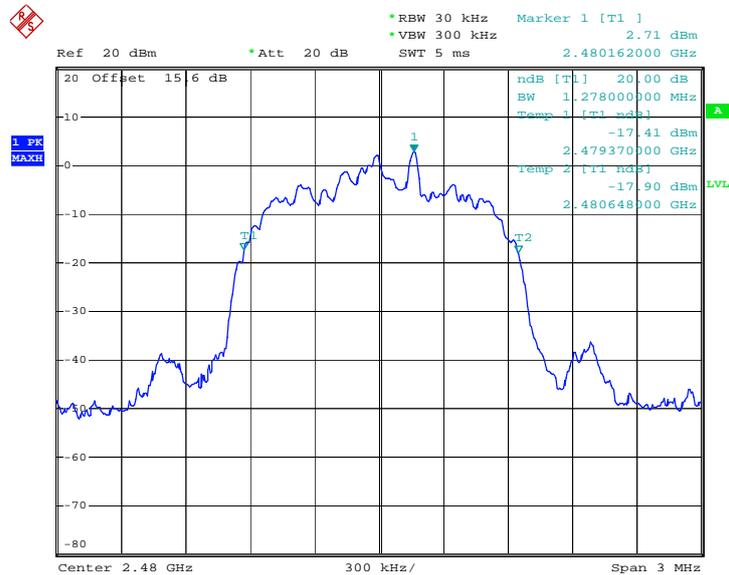


20 dB Bandwidth Plot on Channel 39



Date: 26.JUN.2012 00:38:45

20 dB Bandwidth Plot on Channel 78



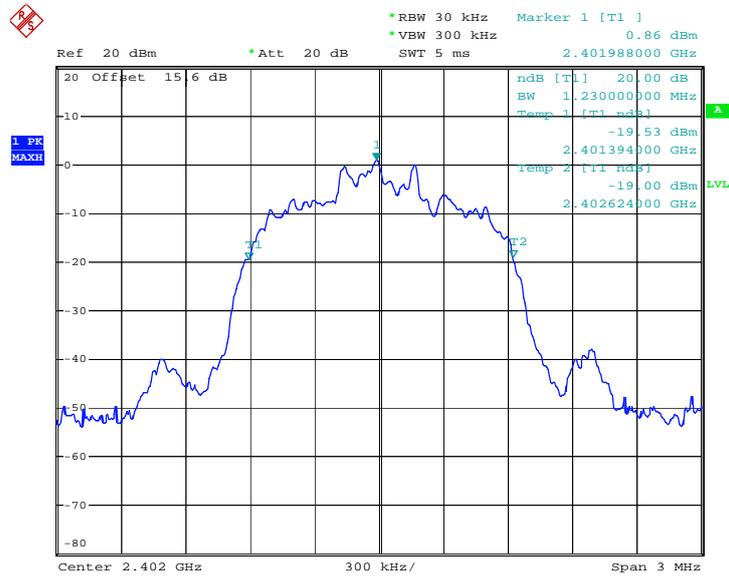
Date: 26.JUN.2012 00:39:03



|                 |        |                     |         |
|-----------------|--------|---------------------|---------|
| Test Mode :     | 3Mbps  | Temperature :       | 23~24°C |
| Test Engineer : | Zhi Lu | Relative Humidity : | 47~48%  |

| Channel | Frequency (MHz) | 20dB Bandwidth (MHz) |
|---------|-----------------|----------------------|
| 00      | 2402            | 1.230                |
| 39      | 2441            | 1.224                |
| 78      | 2480            | 1.230                |

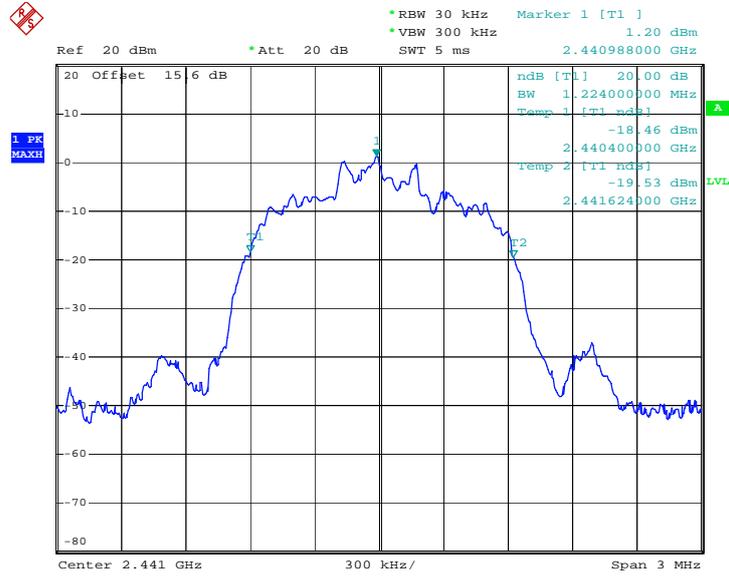
20 dB Bandwidth Plot on Channel 00



Date: 26.JUN.2012 00:39:21

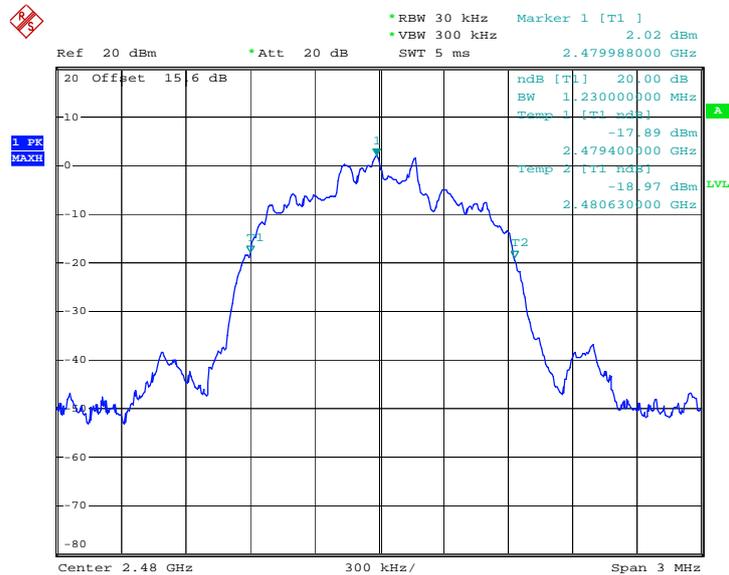


20 dB Bandwidth Plot on Channel 39



Date: 26.JUN.2012 00:39:30

20 dB Bandwidth Plot on Channel 78



Date: 26.JUN.2012 00:39:40

### 3.5 Peak Output Power Measurement

#### 3.5.1 Limit of Peak Output Power

Section 15.247 (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following: (1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts. The power limit for 1Mbps is 1watt, and for 2Mbps, and 3Mbps are 0.125 watts.

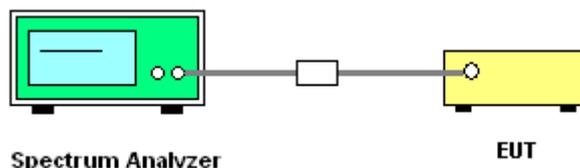
#### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.5.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.

#### 3.5.4 Test Setup



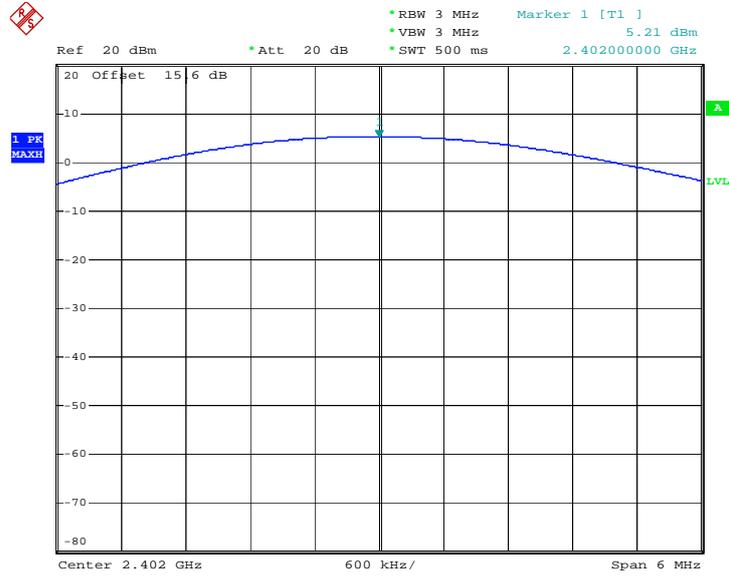
#### 3.5.5 Test Result of Peak Output Power

|                 |        |                     |         |
|-----------------|--------|---------------------|---------|
| Test Mode :     | 1Mbps  | Temperature :       | 23~24°C |
| Test Engineer : | Zhi Lu | Relative Humidity : | 47~48%  |

| Channel | Frequency (MHz) | RF Power (dBm) |                   |           |
|---------|-----------------|----------------|-------------------|-----------|
|         |                 | GFSK           | Max. Limits (dBm) | Pass/Fail |
|         |                 | 1 Mbps         |                   |           |
| 00      | 2402            | 5.21           | 30                | Pass      |
| 39      | 2441            | 5.53           | 30                | Pass      |
| 78      | 2480            | 6.38           | 30                | Pass      |

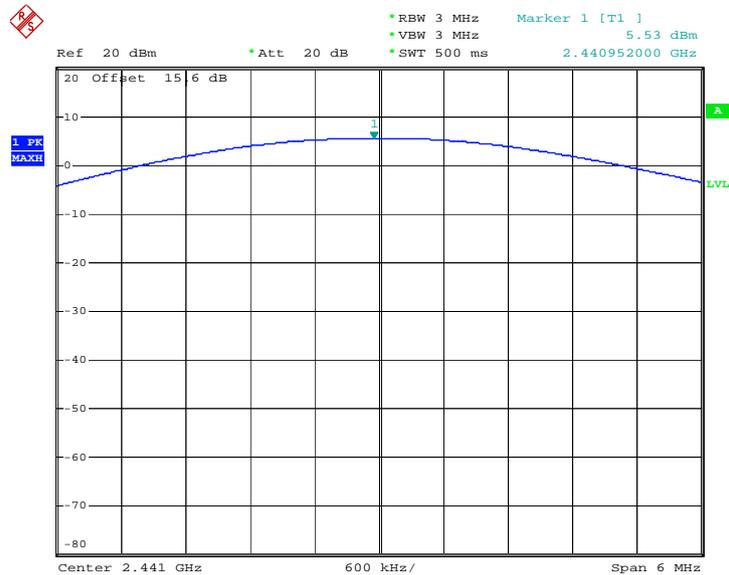


Peak Output Power Plot on Channel 00



Date: 21.JUN.2012 23:07:37

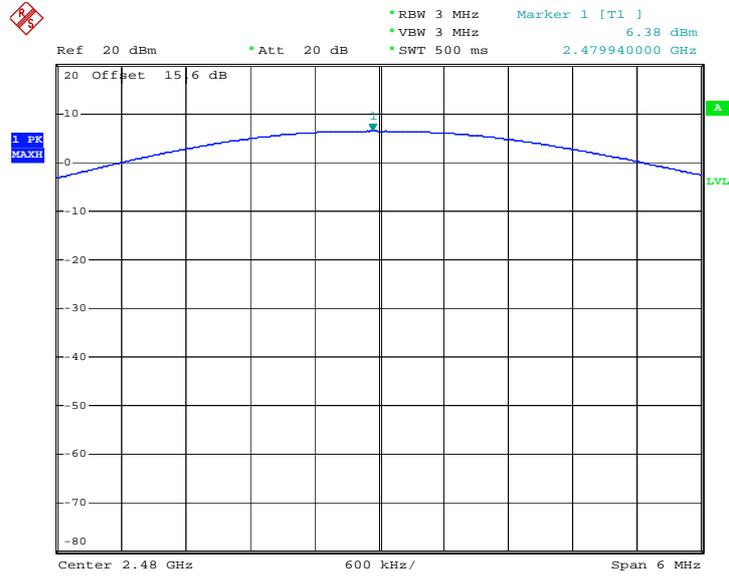
Peak Output Power Plot on Channel 39



Date: 21.JUN.2012 23:08:48



Peak Output Power Plot on Channel 78



Date: 21.JUN.2012 23:10:02

## 3.6 Conducted Band Edges Measurement

### 3.6.1 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.

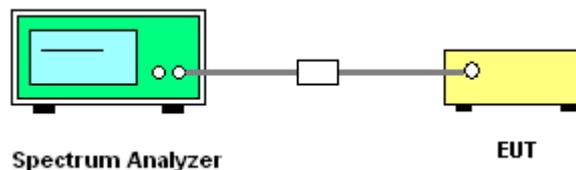
### 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.6.3 Test Procedures

1. The testing follows the guidelines in Band-edge Compliance of RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines.
2. Set RBW = 300KHz ( $\geq 1\%$  span=30MHz ), VBW = 300KHz ( $\geq$  RBW). Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 300k Hz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

### 3.6.4 Test Setup

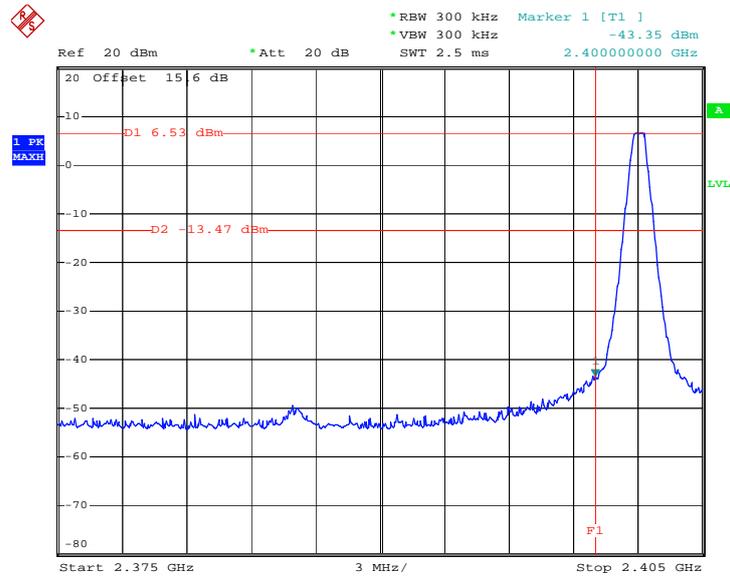




### 3.6.5 Test Result of Conducted Band Edges

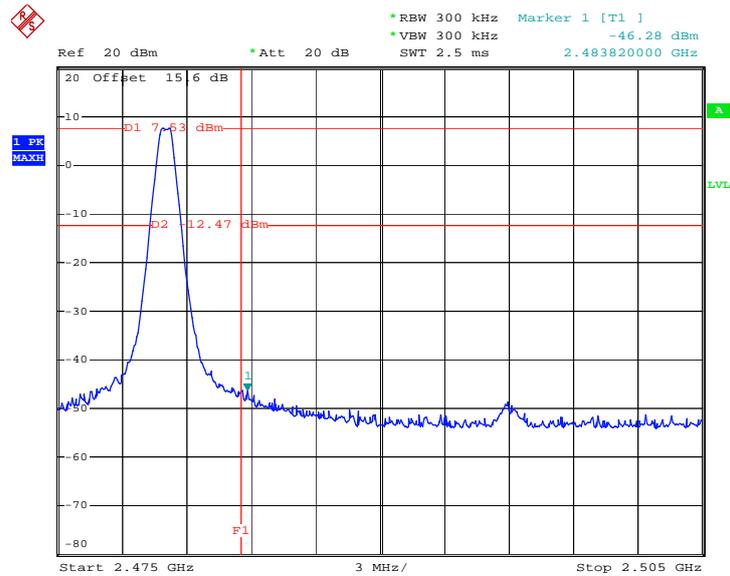
|                |           |                     |         |
|----------------|-----------|---------------------|---------|
| Test Mode :    | 1Mbps     | Temperature :       | 23~24°C |
| Test Channel : | 00 and 78 | Relative Humidity : | 47~48%  |
|                |           | Test Engineer :     | Zhi Lu  |

Low Band Edge Plot on Channel 00



Date: 15.AUG.2012 15:46:14

High Band Edge Plot on Channel 78

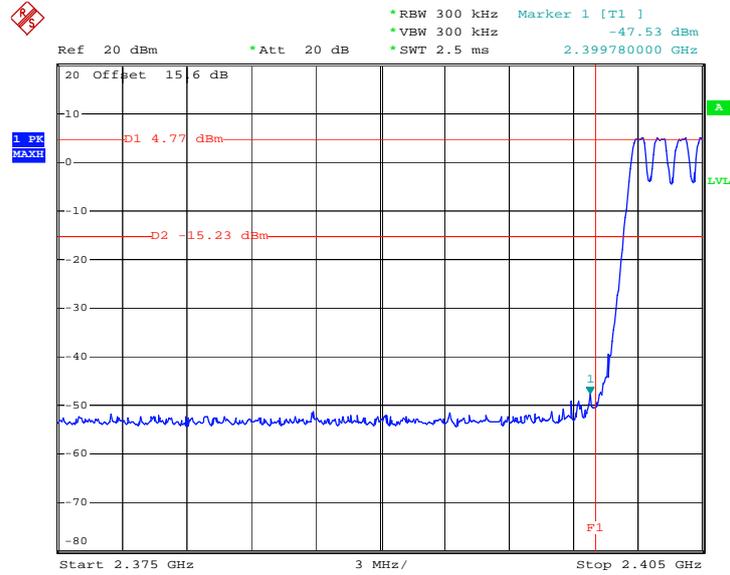


Date: 15.AUG.2012 15:47:17

### 3.6.6 Test Result of Conducted Hopping Mode Band Edges

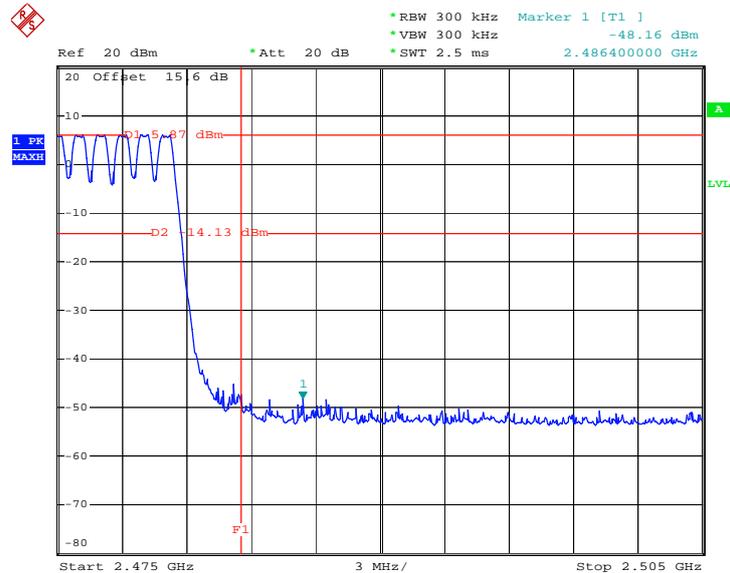
|                 |        |                     |         |
|-----------------|--------|---------------------|---------|
| Test Mode :     | 1Mbps  | Temperature :       | 23~24°C |
| Test Engineer : | Zhi Lu | Relative Humidity : | 47~48%  |

Hopping Mode Low Band Edge Plot



Date: 2.AUG.2012 13:48:00

Hopping Mode High Band Edge Plot



Date: 2.AUG.2012 13:55:46

## 3.7 Conducted Spurious Emission Measurement

### 3.7.1 Limit of Spurious Emission Measurement

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.

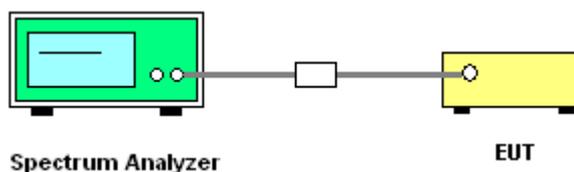
### 3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.7.3 Test Procedure

1. The testing follows the guidelines in Spurious RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines
2. The transmitter output was connected to the spectrum analyzer via a low lose cable.
3. Set RBW = 100 KHz, VBW = 300KHz, 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.

### 3.7.4 Test Setup

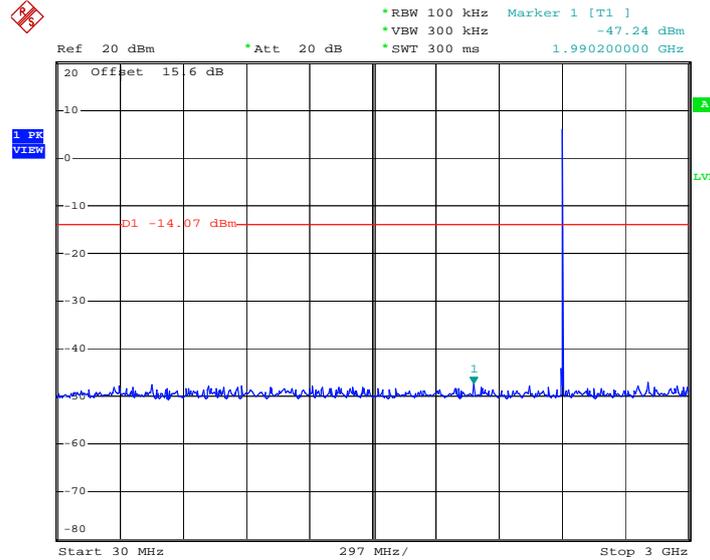




3.7.5 Test Result

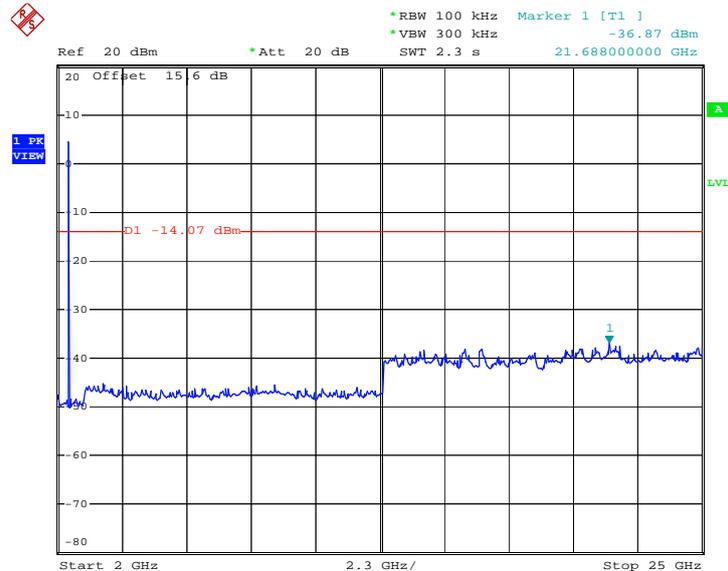
|                |       |                     |         |
|----------------|-------|---------------------|---------|
| Test Mode :    | 1Mbps | Temperature :       | 23~24°C |
| Test Channel : | 00    | Relative Humidity : | 47~48%  |
|                |       | Test Engineer :     | Zhi Lu  |

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.AUG.2012 16:04:38

Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz

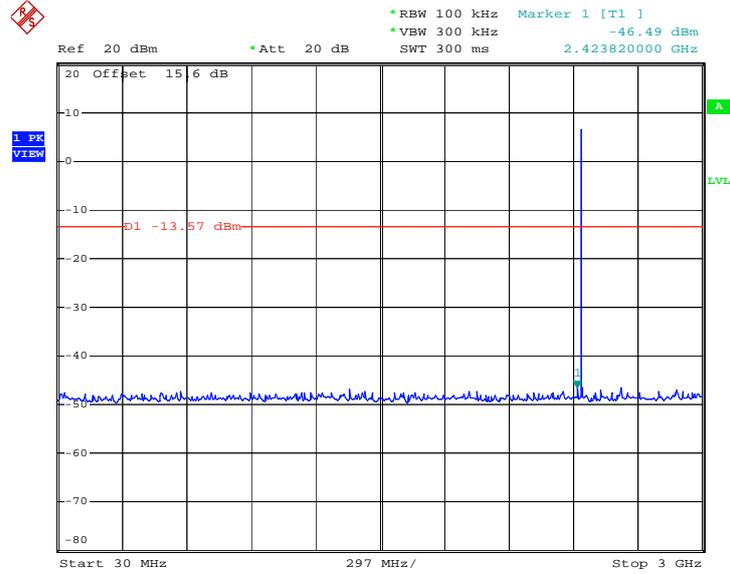


Date: 15.AUG.2012 16:07:13



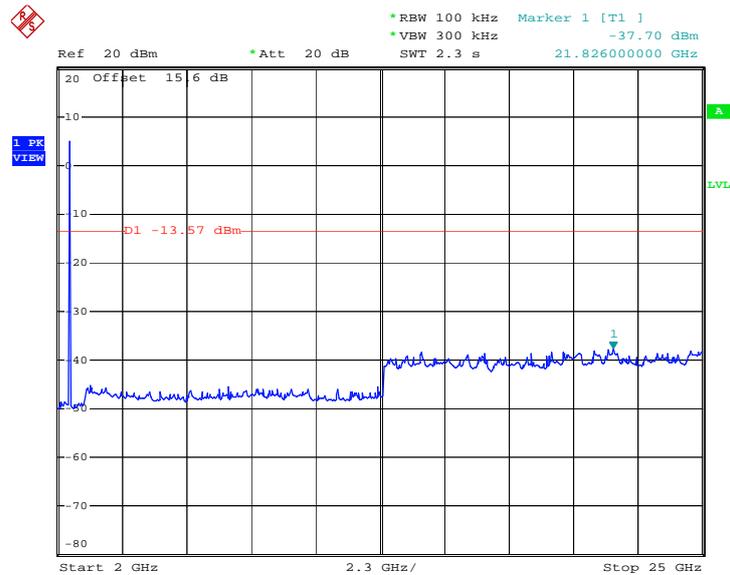
|                |       |                     |         |
|----------------|-------|---------------------|---------|
| Test Mode :    | 1Mbps | Temperature :       | 23~24°C |
| Test Channel : | 39    | Relative Humidity : | 47~48%  |
|                |       | Test Engineer :     | Zhi Lu  |

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.AUG.2012 16:16:19

Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz

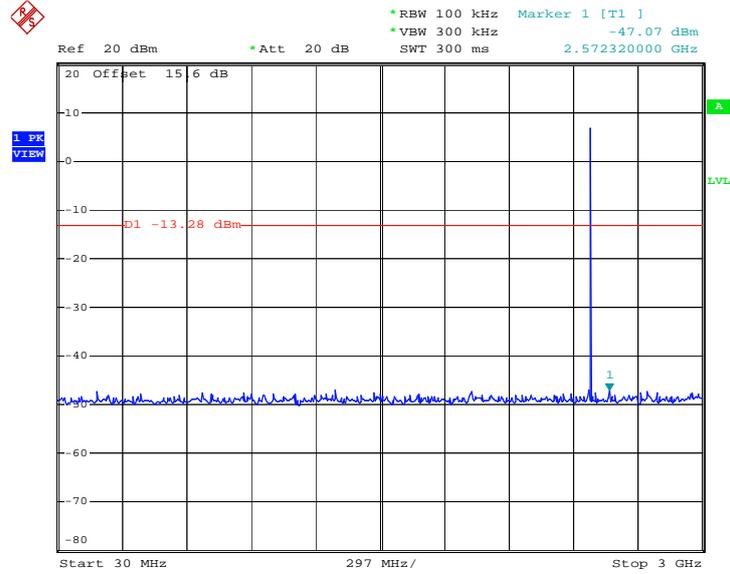


Date: 15.AUG.2012 16:19:41



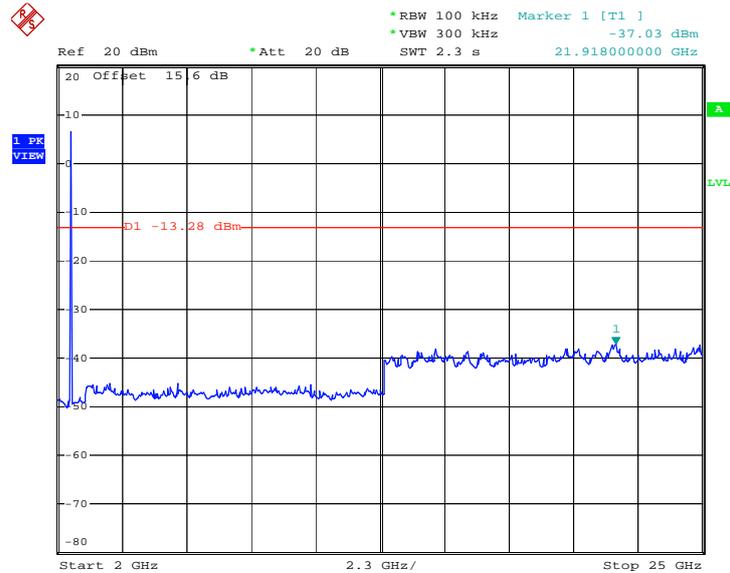
|                |       |                     |         |
|----------------|-------|---------------------|---------|
| Test Mode :    | 1Mbps | Temperature :       | 23~24°C |
| Test Channel : | 78    | Relative Humidity : | 47~48%  |
|                |       | Test Engineer :     | Zhi Lu  |

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.AUG.2012 16:24:44

Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 15.AUG.2012 16:29:03

### 3.8 Radiated Band Edges Measurement

#### 3.8.1 Limit of Radiated Band Edges

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                             |

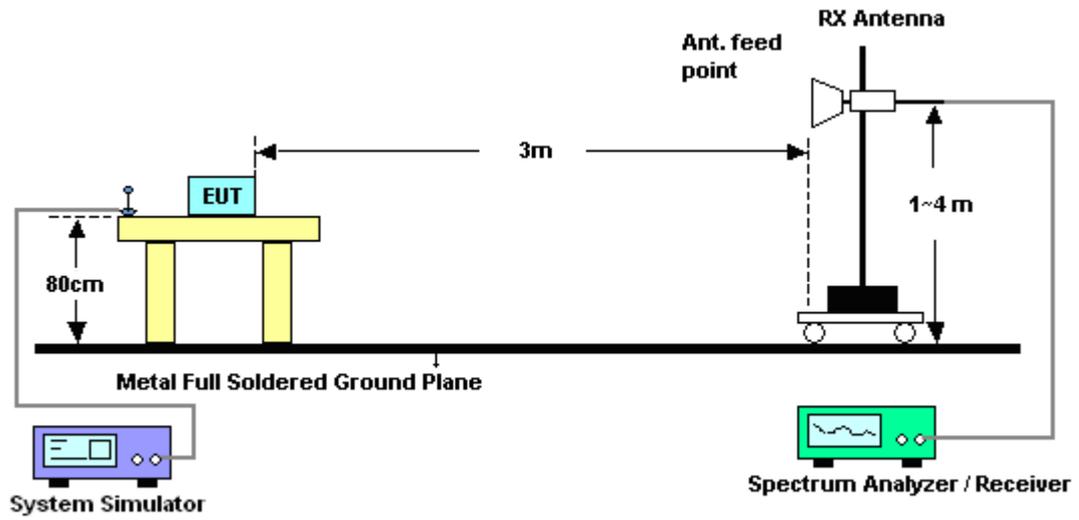
#### 3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.8.3 Test Procedures

1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement.
2. Applies to band edge emissions that fall in 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 measurements above 1 GHz, set RBW = 1MHz, VBW = 1MHz, Sweep: Auto for Peak; set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto for Average. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation. See FCC Section 15.35(b) and (c).
3. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

### 3.8.4 Test Setup





3.8.5 Test Result of Radiated Band Edges

|                |       |                     |         |
|----------------|-------|---------------------|---------|
| Test Mode :    | 1Mbps | Temperature :       | 19~20°C |
| Test Channel : | 00    | Relative Humidity : | 41~42%  |
|                |       | Test Engineer :     | Jack Li |

| ANTENNA POLARITY : HORIZONTAL |                     |                         |                             |                           |                             |                         |                            |                      |                         |         |
|-------------------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| Frequency<br>( MHz )          | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | 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  |
| 2385.81                       | 46.97               | -27.03                  | 74                          | 44.69                     | 32.86                       | 3.47                    | 34.05                      | 120                  | 103                     | Peak    |
| 2385.81                       | 34.89               | -19.11                  | 54                          | 32.61                     | 32.86                       | 3.47                    | 34.05                      | 120                  | 103                     | Average |

| ANTENNA POLARITY : VERTICAL |                     |                         |                             |                           |                             |                         |                            |                      |                         |         |
|-----------------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| Frequency<br>( MHz )        | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | 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  |
| 2341.35                     | 46.68               | -27.32                  | 74                          | 44.51                     | 32.78                       | 3.33                    | 33.94                      | 114                  | 175                     | Peak    |
| 2341.35                     | 34.33               | -19.67                  | 54                          | 32.16                     | 32.78                       | 3.33                    | 33.94                      | 114                  | 175                     | Average |



|                |       |                     |         |
|----------------|-------|---------------------|---------|
| Test Mode :    | 1Mbps | Temperature :       | 19~20°C |
| Test Channel : | 78    | Relative Humidity : | 41~42%  |
|                |       | Test Engineer :     | Jack Li |

| 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  |
| 2484.11                       | 45.84               | -28.16                  | 74                          | 43.35                     | 33.01                       | 3.68                    | 34.2                       | 120                  | 245                     | Peak    |
| 2484.11                       | 32.37               | -21.63                  | 54                          | 29.88                     | 33.01                       | 3.68                    | 34.2                       | 120                  | 245                     | Average |

Summary results of marker-delta method:

| Test mode           | Maximum field strength of<br>the fundamental emission<br>(dBµV/m) | Delta<br>Result<br>(dB) | Average<br>Result<br>(dBµV/m) | Average<br>Limit<br>(dBµV/m) | Margin<br>(dB) | Result |
|---------------------|---|-------------------------|-------------------------------|------------------------------|----------------|--------|
| Single Carrier Mode | 85.48   | 53.11                   | 32.37                         | 54                           | -21.63         | Pass   |
| Hopping Mode        | 85.48   | 55.16                   | 30.32                         | 54                           | -23.68         | Pass   |

Note: Average result = Maximum field strength – Delta result

| 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  |
| 2484.28                     | 45.78               | -28.22                  | 74                          | 43.29                     | 33.01                       | 3.68                    | 34.2                       | 167                  | 348                     | Peak    |
| 2484.28                     | 33.46               | -20.54                  | 54                          | 30.97                     | 33.01                       | 3.68                    | 34.2                       | 167                  | 348                     | Average |

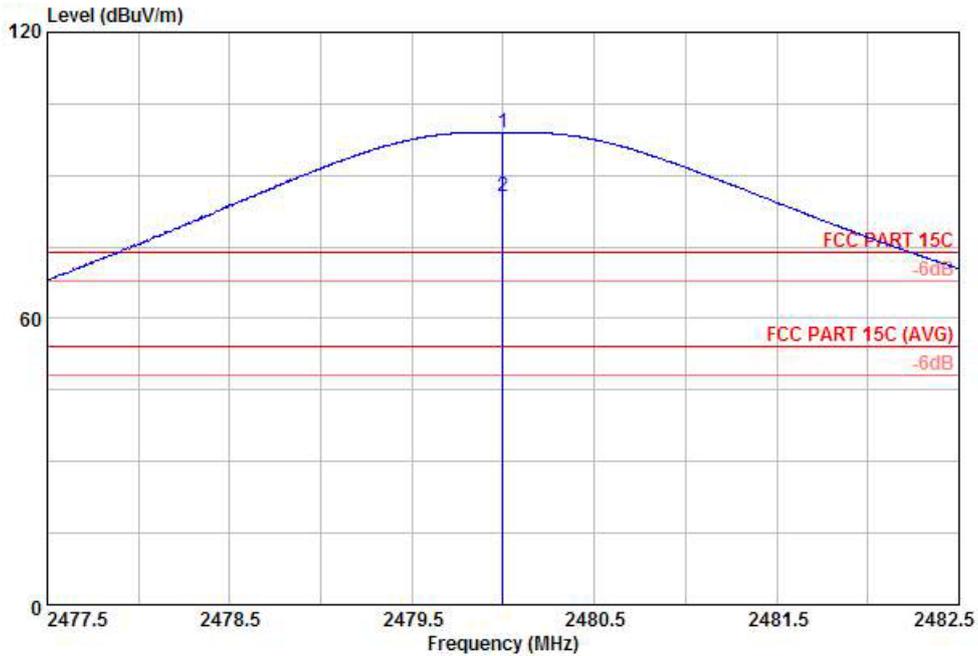
Summary results of marker-delta method:

| Test mode           | Maximum field strength of<br>the fundamental emission<br>(dBµV/m) | Delta<br>Result<br>(dB) | Average<br>Result<br>(dBµV/m) | Average<br>Limit<br>(dBµV/m) | Margin<br>(dB) | Result |
|---------------------|---|-------------------------|-------------------------------|------------------------------|----------------|--------|
| Single Carrier Mode | 84.26   | 50.80                   | 33.46                         | 54                           | -20.54         | Pass   |
| Hopping Mode        | 84.26   | 51.41                   | 32.85                         | 54                           | -21.15         | Pass   |

Note: Average result = Maximum field strength – Delta result



|                 |         |                     |            |
|-----------------|---------|---------------------|------------|
| Test Mode :     | 1Mbps   | Temperature :       | 19~20°C    |
| Test Channel :  | 78      | Relative Humidity : | 41~42%     |
| Test Engineer : | Jack Li | Polarization :      | Horizontal |



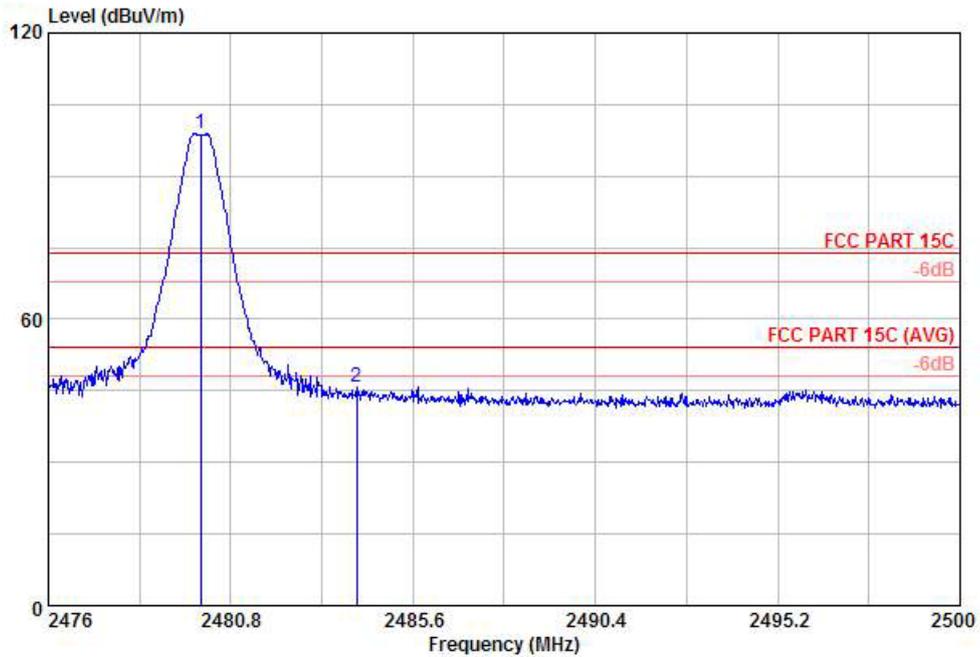
Site : 03CH01-KS  
 Condition: FCC PART 15C 3m HF ANI-100803 HORIZONTAL

|     | Freq    | Level  | Over  | Limit  | ReadAntenna | Cable | Preamp | Ant   | Table | Remark      |
|-----|---------|--------|-------|--------|-------------|-------|--------|-------|-------|-------------|
|     | MHz     | dBuV/m | dB    | dBuV/m | dBuV        | Loss  | Factor | Pos   | Pos   |             |
|     |         |        |       |        | dB          | dB    |        | cm    | deg   |             |
| 1 X | 2480.00 | 99.00  | 25.00 | 74.00  | 96.51       | 33.01 | 3.68   | 34.20 | 116   | 143 Peak    |
| 2 X | 2480.00 | 85.48  | 31.48 | 54.00  | 82.99       | 33.01 | 3.68   | 34.20 | 116   | 143 Average |

\* Maximum field strength of the fundamental emission



|                 |         |                     |            |
|-----------------|---------|---------------------|------------|
| Test Mode :     | 1Mbps   | Temperature :       | 19~20°C    |
| Test Channel :  | 78      | Relative Humidity : | 41~42%     |
| Test Engineer : | Jack Li | Polarization :      | Horizontal |



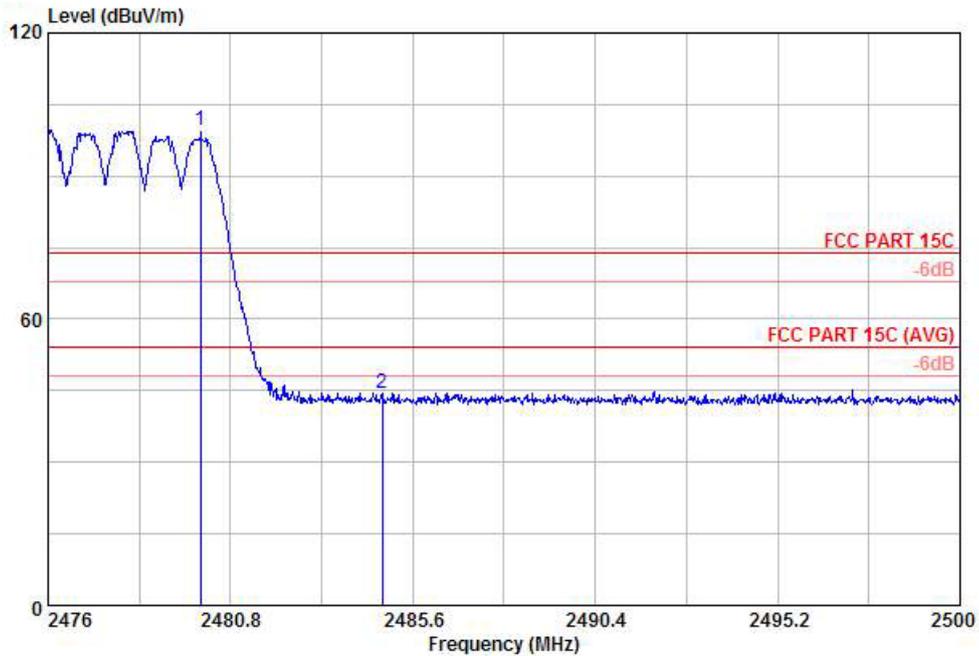
Site : 03CH01-KS  
 Condition: FCC PART 15C 3m HF ANTI-100803 HORIZONTAL

|     | Freq    | Level  | Over   | Limit  | ReadAntenna | Cable  | Preamp | Ant   | Table |          |
|-----|---------|--------|--------|--------|-------------|--------|--------|-------|-------|----------|
|     | MHz     | dBUV/m | dB     | dBUV/m | Level       | Loss   | Factor | Pos   | Pos   | Remark   |
|     |         |        |        |        | Factor      | Factor |        | cm    | deg   |          |
| 1 X | 2480.00 | 98.95  | 24.95  | 74.00  | 96.46       | 33.01  | 3.68   | 34.20 | 115   | 144 Peak |
| 2   | 2484.11 | 45.84  | -28.16 | 74.00  | 43.35       | 33.01  | 3.68   | 34.20 | 120   | 245 Peak |

\* Marker-Delta Method (RBW/VBW=100KHz): 53.11 dB , single carrier Mode



|                 |         |                     |            |
|-----------------|---------|---------------------|------------|
| Test Mode :     | 1Mbps   | Temperature :       | 19~20°C    |
| Test Channel :  | 78      | Relative Humidity : | 41~42%     |
| Test Engineer : | Jack Li | Polarization :      | Horizontal |



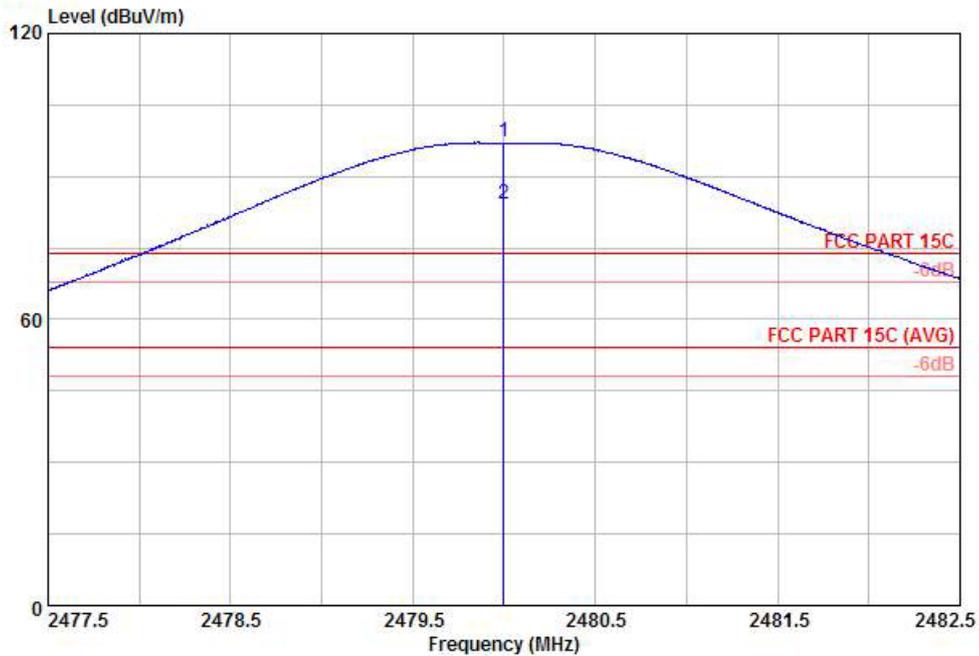
Site : 03CH01-KS  
 Condition: FCC PART 15C 3m HF ANI-100803 HORIZONTAL

|     | Freq    | Level  | Over   | Limit  | ReadAntenna | Cable | Preamp | Ant   | Table | Remark   |
|-----|---------|--------|--------|--------|-------------|-------|--------|-------|-------|----------|
|     | MHz     | dBuV/m | dB     | dBuV/m | dBuV        | dB/m  | dB     | dB    | cm    | deg      |
| 1 X | 2480.00 | 99.74  | 25.74  | 74.00  | 97.25       | 33.01 | 3.68   | 34.20 | 115   | 144 Peak |
| 2   | 2484.78 | 44.58  | -29.42 | 74.00  | 42.09       | 33.01 | 3.68   | 34.20 | 200   | 0 Peak   |

\* Marker-Delta Method (RBW/VBW=100KHz): 55.16 dB , Hopping Mode



|                 |         |                     |          |
|-----------------|---------|---------------------|----------|
| Test Mode :     | 1Mbps   | Temperature :       | 19~20°C  |
| Test Channel :  | 78      | Relative Humidity : | 41~42%   |
| Test Engineer : | Jack Li | Polarization :      | Vertical |



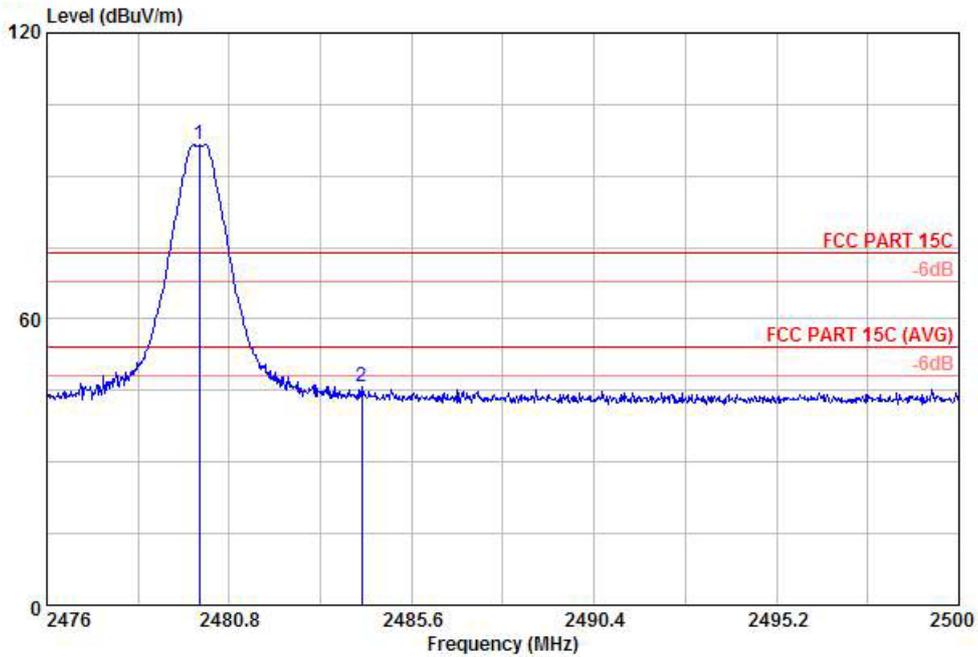
Site : 03CH01-KS  
 Condition: FCC PART 15C 3m HF ANI-100803 VERTICAL

|     | Freq    | Level  | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Ant Pos | Table Pos | Remark  |
|-----|---------|--------|------------|------------|-------------------|----------------|------------|---------------|---------|-----------|---------|
|     | MHz     | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m           | dB         | dB            | cm      | deg       |         |
| 1 X | 2480.00 | 97.13  | 23.13      | 74.00      | 94.64             | 33.01          | 3.68       | 34.20         | 102     | 281       | Peak    |
| 2 X | 2480.00 | 84.26  | 30.26      | 54.00      | 81.77             | 33.01          | 3.68       | 34.20         | 102     | 281       | Average |

\* Maximum field strength of the fundamental emission



|                 |         |                     |          |
|-----------------|---------|---------------------|----------|
| Test Mode :     | 1Mbps   | Temperature :       | 19~20°C  |
| Test Channel :  | 78      | Relative Humidity : | 41~42%   |
| Test Engineer : | Jack Li | Polarization :      | Vertical |



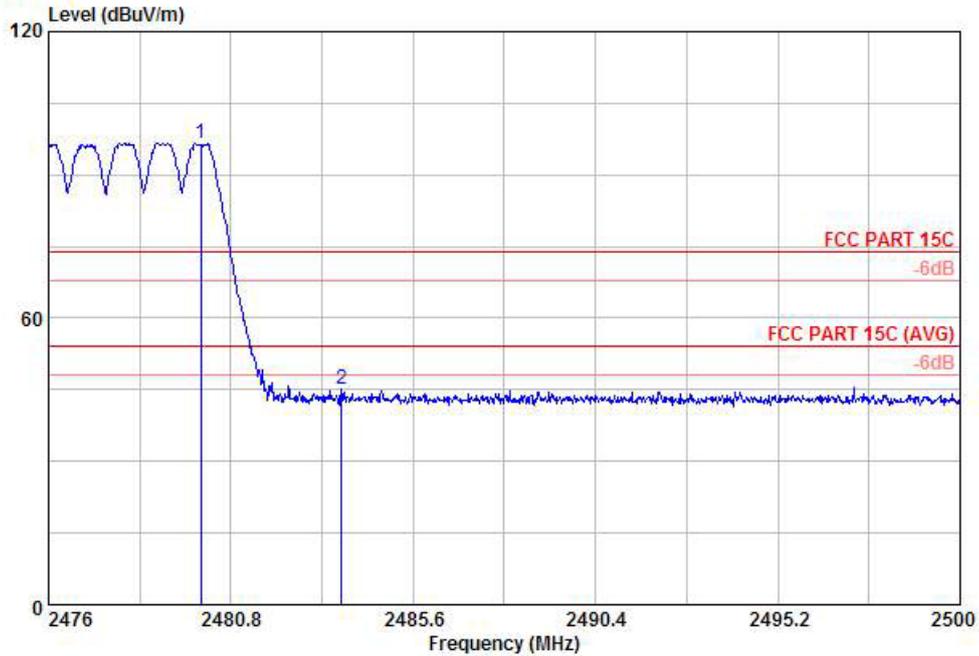
Site : 03CH01-KS  
 Condition: FCC PART 15C 3m HF ANT-100803 VERTICAL

|     | Freq    | Level  | Over   | Limit  | Read  | Antenna | Cable | Preamp | Ant | Table |        |
|-----|---------|--------|--------|--------|-------|---------|-------|--------|-----|-------|--------|
|     | MHz     | dBuV/m | dB     | dBuV/m | Level | Factor  | Loss  | Factor | Pos | Pos   | Remark |
|     |         |        |        |        | dBuV  | dB/m    | dB    | dB     | cm  | deg   |        |
| 1 X | 2480.00 | 96.58  | 22.58  | 74.00  | 94.09 | 33.01   | 3.68  | 34.20  | 100 | 285   | Peak   |
| 2   | 2484.28 | 45.78  | -28.22 | 74.00  | 43.29 | 33.01   | 3.68  | 34.20  | 167 | 348   | Peak   |

\* Marker-Delta Method (RBW/VBW=100KHz): 50.80 dB , single carrier Mode



|                 |         |                     |          |
|-----------------|---------|---------------------|----------|
| Test Mode :     | 1Mbps   | Temperature :       | 19~20°C  |
| Test Channel :  | 78      | Relative Humidity : | 41~42%   |
| Test Engineer : | Jack Li | Polarization :      | Vertical |



Site : 03CH01-KS  
 Condition: FCC PART 15C 3m HF ANI-100803 VERTICAL

|     | Freq    | Level  | Over   | Limit  | ReadAntenna | Cable | Preamp | Ant   | Table | Remark   |
|-----|---------|--------|--------|--------|-------------|-------|--------|-------|-------|----------|
|     | MHz     | dBuV/m | dB     | dBuV/m | dBuV        | dB    | dB     | cm    | deg   |          |
| 1 X | 2480.00 | 96.61  | 22.61  | 74.00  | 94.12       | 33.01 | 3.68   | 34.20 | 100   | 282 Peak |
| 2   | 2483.70 | 45.20  | -28.80 | 74.00  | 42.71       | 33.01 | 3.68   | 34.20 | 122   | 360 Peak |

\* Marker-Delta Method (RBW/VBW=100KHz): 51.41. dB , Hopping Mode

## 3.9 Radiated Spurious Emission Measurement

### 3.9.1 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<br>(MHz) | Field Strength<br>(microvolts/meter) | Measurement Distance<br>(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                                |

### 3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

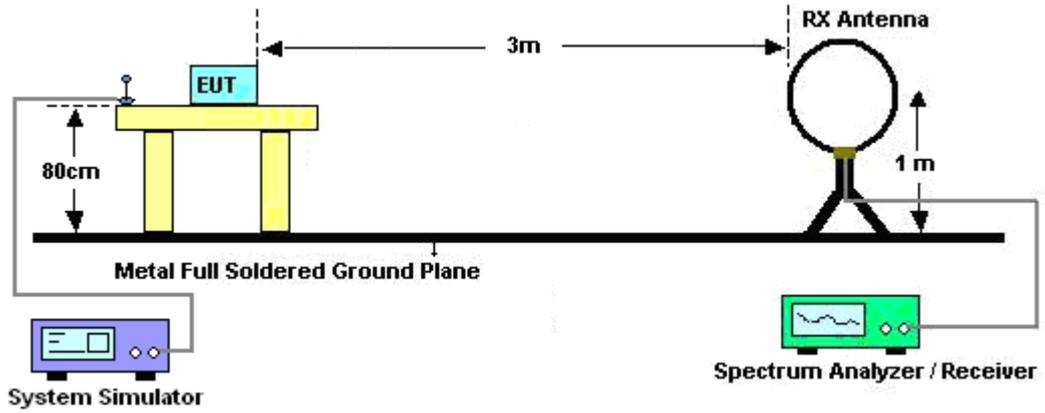


### **3.9.3 Test Procedures**

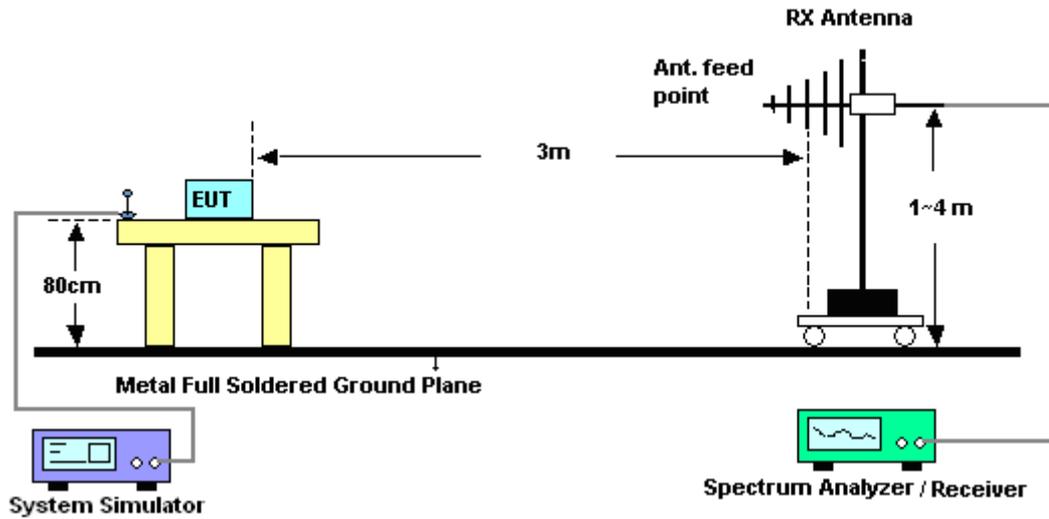
1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement.
2. Applies to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 1MHz, Sweep: Auto for Peak; set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto for Average. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation. See FCC Section 15.35(b) and (c).
3. Follow the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.
4. Measured average value if the peak value is greater than 54 dBu/m

### 3.9.4 Test Setup

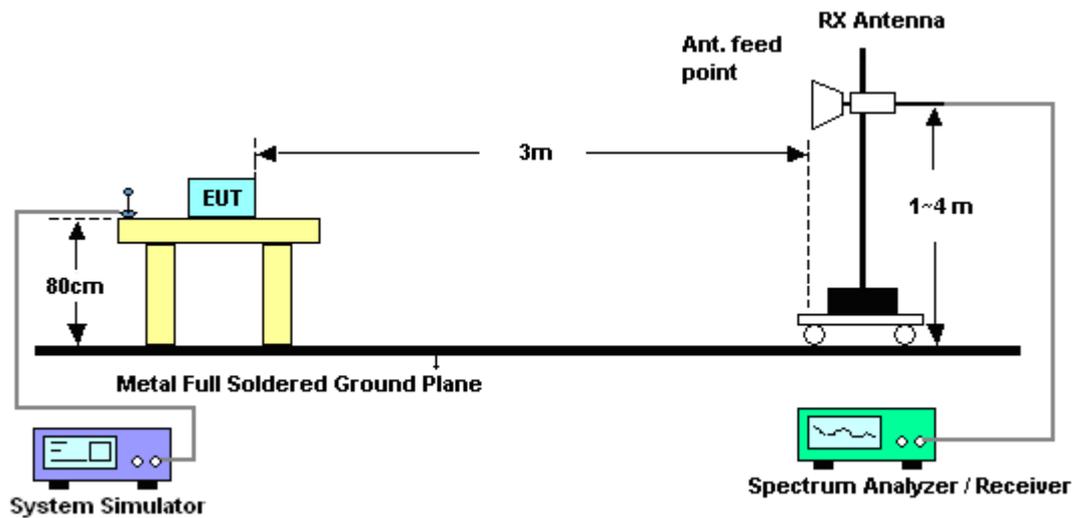
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



### 3.9.5 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.



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

|                 |  |                     |            |
|-----------------|--|---------------------|------------|
| Test Mode :     | 1Mbps  | Temperature :       | 19~20°C    |
| Test Channel :  | 00   | Relative Humidity : | 41~42%     |
| Test Engineer : | Jack Li  | Polarization :      | Horizontal |
| Remark :        | 2402 MHz is fundamental signal which can be ignored. |                     |            |

| Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>(dBμV) | 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 30                   | 30.96               | -9.04                   | 40                          | 42.78                   | 18                          | 0.26                    | 30.08                      | -                    | -                       | Peak    |
| 177.44               | 29.2                | -14.3                   | 43.5                        | 49.9                    | 8.63                        | 0.56                    | 29.89                      | -                    | -                       | Peak    |
| 249.22               | 32.91               | -13.09                  | 46                          | 50.12                   | 11.96                       | 0.67                    | 29.84                      | -                    | -                       | Peak    |
| 337.49               | 37.31               | -8.69                   | 46                          | 52.25                   | 14.2                        | 0.8                     | 29.94                      | -                    | -                       | Peak    |
| 366.59               | 36.75               | -9.25                   | 46                          | 50.91                   | 14.92                       | 0.83                    | 29.91                      | -                    | -                       | Peak    |
| 433.52               | 39.16               | -6.84                   | 46                          | 51.86                   | 16.22                       | 0.88                    | 29.8                       | 200                  | 2                       | Peak    |
| 2385.81              | 46.97               | -27.03                  | 74                          | 44.69                   | 32.86                       | 3.47                    | 34.05                      | 120                  | 103                     | Peak    |
| 2385.81              | 34.89               | -19.11                  | 54                          | 32.61                   | 32.86                       | 3.47                    | 34.05                      | 120                  | 103                     | Average |
| 2402                 | 96.9                | -                       | -                           | 94.62                   | 32.86                       | 3.47                    | 34.05                      | 119                  | 68                      | Peak    |
| 2402                 | 80.17               | -                       | -                           | 77.89                   | 32.86                       | 3.47                    | 34.05                      | 119                  | 68                      | Average |
| 2485.37              | 46.7                | -27.3                   | 74                          | 44.21                   | 33.01                       | 3.68                    | 34.2                       | 200                  | 360                     | Peak    |
| 2485.37              | 34.49               | -19.51                  | 54                          | 32                      | 33.01                       | 3.68                    | 34.2                       | 200                  | 360                     | Average |



|                 |  |                     |          |
|-----------------|--|---------------------|----------|
| Test Mode :     | 1Mbps  | Temperature :       | 19~20°C  |
| Test Channel :  | 00   | Relative Humidity : | 41~42%   |
| Test Engineer : | Jack Li  | Polarization :      | Vertical |
| Remark :        | 2402 MHz is fundamental signal which can be ignored. |                     |          |

| Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>(dBμV) | 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 30                   | 34.19               | -5.81                   | 40                          | 46.01                   | 18                          | 0.26                    | 30.08                      | -                    | -                       | Peak    |
| 84.32                | 26.32               | -13.68                  | 40                          | 48.44                   | 7.53                        | 0.37                    | 30.02                      | -                    | -                       | Peak    |
| 334.58               | 29.49               | -16.51                  | 46                          | 44.52                   | 14.12                       | 0.79                    | 29.94                      | -                    | -                       | Peak    |
| 373.38               | 34.03               | -11.97                  | 46                          | 47.93                   | 15.16                       | 0.83                    | 29.89                      | -                    | -                       | Peak    |
| 432.55               | 38.99               | -7.01                   | 46                          | 51.7                    | 16.21                       | 0.88                    | 29.8                       | 102                  | 93                      | QP      |
| 943.74               | 31.79               | -14.21                  | 46                          | 39.28                   | 20.71                       | 1.33                    | 29.53                      | -                    | -                       | Peak    |
| 2341.35              | 46.68               | -27.32                  | 74                          | 44.51                   | 32.78                       | 3.33                    | 33.94                      | 114                  | 175                     | Peak    |
| 2341.35              | 34.33               | -19.67                  | 54                          | 32.16                   | 32.78                       | 3.33                    | 33.94                      | 114                  | 175                     | Average |
| 2402                 | 95.78               | -                       | -                           | 93.5                    | 32.86                       | 3.47                    | 34.05                      | 100                  | 86                      | Peak    |
| 2402                 | 79.8                | -                       | -                           | 77.52                   | 32.86                       | 3.47                    | 34.05                      | 100                  | 86                      | Average |
| 2488.41              | 46.41               | -27.59                  | 74                          | 43.87                   | 33.05                       | 3.72                    | 34.23                      | 200                  | 226                     | Peak    |
| 2488.41              | 33.58               | -20.42                  | 54                          | 31.04                   | 33.05                       | 3.72                    | 34.23                      | 200                  | 226                     | Average |



|                        |  |                            |            |
|------------------------|--|----------------------------|------------|
| <b>Test Mode :</b>     | 1Mbps  | <b>Temperature :</b>       | 19~20°C    |
| <b>Test Channel :</b>  | 39   | <b>Relative Humidity :</b> | 41~42%     |
| <b>Test Engineer :</b> | Jack Li  | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 2441 MHz is fundamental signal which can be ignored. |                            |            |

| Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>(dBμV) | 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 30                   | 29.09               | -10.91                  | 40                          | 40.91                   | 18                          | 0.26                    | 30.08                      | -                    | -                       | Peak    |
| 253.1                | 29.96               | -16.04                  | 46                          | 47.1                    | 12.04                       | 0.67                    | 29.85                      | -                    | -                       | Peak    |
| 339.43               | 36.01               | -9.99                   | 46                          | 50.9                    | 14.25                       | 0.8                     | 29.94                      | -                    | -                       | Peak    |
| 370.47               | 37.74               | -8.26                   | 46                          | 51.76                   | 15.05                       | 0.83                    | 29.9                       | -                    | -                       | Peak    |
| 430.61               | 40.31               | -5.69                   | 46                          | 53.03                   | 16.2                        | 0.88                    | 29.8                       | 197                  | 10                      | Peak    |
| 951.5                | 31.4                | -14.6                   | 46                          | 38.87                   | 20.74                       | 1.33                    | 29.54                      | -                    | -                       | Peak    |
| 2321.59              | 46.79               | -27.21                  | 74                          | 44.66                   | 32.76                       | 3.27                    | 33.9                       | 112                  | 217                     | Peak    |
| 2321.59              | 33.87               | -20.13                  | 54                          | 31.74                   | 32.76                       | 3.27                    | 33.9                       | 112                  | 217                     | Average |
| 2441                 | 97.49               | -                       | -                           | 95.09                   | 32.95                       | 3.6                     | 34.15                      | 143                  | 67                      | Peak    |
| 2441                 | 79.79               | -                       | -                           | 77.39                   | 32.95                       | 3.6                     | 34.15                      | 143                  | 67                      | Average |
| 2492.02              | 46.51               | -27.49                  | 74                          | 43.97                   | 33.05                       | 3.72                    | 34.23                      | 200                  | 158                     | Peak    |
| 2492.02              | 33.82               | -20.18                  | 54                          | 31.28                   | 33.05                       | 3.72                    | 34.23                      | 200                  | 158                     | Average |



|                 |  |                     |          |
|-----------------|--|---------------------|----------|
| Test Mode :     | 1Mbps  | Temperature :       | 19~20°C  |
| Test Channel :  | 39   | Relative Humidity : | 41~42%   |
| Test Engineer : | Jack Li  | Polarization :      | Vertical |
| Remark :        | 2441 MHz is fundamental signal which can be ignored. |                     |          |

| Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>(dBμV) | 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 30                   | 33.64               | -6.36                   | 40                          | 45.46                   | 18                          | 0.26                    | 30.08                      | -                    | -                       | Peak    |
| 84.32                | 26.84               | -13.16                  | 40                          | 48.96                   | 7.53                        | 0.37                    | 30.02                      | -                    | -                       | Peak    |
| 336.52               | 29.75               | -16.25                  | 46                          | 44.72                   | 14.17                       | 0.8                     | 29.94                      | -                    | -                       | Peak    |
| 368.53               | 34.47               | -11.53                  | 46                          | 48.56                   | 14.98                       | 0.83                    | 29.9                       | -                    | -                       | Peak    |
| 430.61               | 41.27               | -4.73                   | 46                          | 53.99                   | 16.2                        | 0.88                    | 29.8                       | 100                  | 103                     | QP      |
| 939.86               | 31.57               | -14.43                  | 46                          | 39.08                   | 20.69                       | 1.33                    | 29.53                      | -                    | -                       | Peak    |
| 2319.69              | 46.75               | -27.25                  | 74                          | 44.62                   | 32.76                       | 3.27                    | 33.9                       | 120                  | 249                     | Peak    |
| 2319.69              | 34.29               | -19.71                  | 54                          | 32.16                   | 32.76                       | 3.27                    | 33.9                       | 120                  | 249                     | Average |
| 2441                 | 95.68               | -                       | -                           | 93.28                   | 32.95                       | 3.6                     | 34.15                      | 101                  | 87                      | Peak    |
| 2441                 | 79.92               | -                       | -                           | 77.52                   | 32.95                       | 3.6                     | 34.15                      | 101                  | 87                      | Average |
| 2497.53              | 46.45               | -27.55                  | 74                          | 43.91                   | 33.05                       | 3.72                    | 34.23                      | 200                  | 314                     | Peak    |
| 2497.53              | 33.57               | -20.43                  | 54                          | 31.03                   | 33.05                       | 3.72                    | 34.23                      | 200                  | 314                     | Average |



|                        |  |                            |            |
|------------------------|--|----------------------------|------------|
| <b>Test Mode :</b>     | 1Mbps  | <b>Temperature :</b>       | 19~20°C    |
| <b>Test Channel :</b>  | 78   | <b>Relative Humidity :</b> | 41~42%     |
| <b>Test Engineer :</b> | Jack Li  | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 2480 MHz is fundamental signal which can be ignored. |                            |            |

| Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>(dBμV) | 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 30                   | 29.85               | -10.15                  | 40                          | 41.67                   | 18                          | 0.26                    | 30.08                      | -                    | -                       | Peak    |
| 248.25               | 29.87               | -16.13                  | 46                          | 47.12                   | 11.92                       | 0.67                    | 29.84                      | -                    | -                       | Peak    |
| 340.4                | 35.9                | -10.1                   | 46                          | 50.75                   | 14.28                       | 0.81                    | 29.94                      | -                    | -                       | Peak    |
| 374.35               | 37.25               | -8.75                   | 46                          | 51.1                    | 15.21                       | 0.83                    | 29.89                      | -                    | -                       | Peak    |
| 430.61               | 40.17               | -5.83                   | 46                          | 52.89                   | 16.2                        | 0.88                    | 29.8                       | 200                  | 0                       | Peak    |
| 780.78               | 32.83               | -13.17                  | 46                          | 41.3                    | 19.87                       | 1.23                    | 29.57                      | -                    | -                       | Peak    |
| 2378                 | 46.81               | -27.19                  | 74                          | 44.57                   | 32.83                       | 3.42                    | 34.01                      | 102                  | 34                      | Peak    |
| 2378                 | 33.61               | -20.39                  | 54                          | 31.37                   | 32.83                       | 3.42                    | 34.01                      | 102                  | 34                      | Average |
| 2480                 | 99                  | -                       | -                           | 96.51                   | 33.01                       | 3.68                    | 34.2                       | 116                  | 143                     | Peak    |
| 2480                 | 85.48               | -                       | -                           | 82.99                   | 33.01                       | 3.68                    | 34.2                       | 116                  | 143                     | Average |
| 2484.11              | 45.84               | -28.16                  | 74                          | 43.35                   | 33.01                       | 3.68                    | 34.2                       | 120                  | 245                     | Peak    |
| 2484.11              | 32.37               | -21.63                  | 54                          | 29.88                   | 33.01                       | 3.68                    | 34.2                       | 120                  | 245                     | Average |



|                 |  |                     |          |
|-----------------|--|---------------------|----------|
| Test Mode :     | 1Mbps  | Temperature :       | 19~20°C  |
| Test Channel :  | 78   | Relative Humidity : | 41~42%   |
| Test Engineer : | Jack Li  | Polarization :      | Vertical |
| Remark :        | 2480 MHz is fundamental signal which can be ignored. |                     |          |

| Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>(dBμV) | 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 30                   | 32.21               | -7.79                   | 40                          | 44.03                   | 18                          | 0.26                    | 30.08                      | -                    | -                       | Peak    |
| 88.2                 | 24.7                | -18.8                   | 43.5                        | 46.02                   | 8.3                         | 0.38                    | 30                         | -                    | -                       | Peak    |
| 380.17               | 34.35               | -11.65                  | 46                          | 47.93                   | 15.46                       | 0.83                    | 29.87                      | -                    | -                       | Peak    |
| 436.43               | 40.52               | -5.48                   | 46                          | 53.2                    | 16.23                       | 0.89                    | 29.8                       | 100                  | 112                     | QP      |
| 529.55               | 28.71               | -17.29                  | 46                          | 39.4                    | 18.02                       | 0.99                    | 29.7                       | -                    | -                       | Peak    |
| 943.74               | 31.65               | -14.35                  | 46                          | 39.14                   | 20.71                       | 1.33                    | 29.53                      | -                    | -                       | Peak    |
| 2376                 | 46.16               | -27.84                  | 74                          | 43.92                   | 32.83                       | 3.42                    | 34.01                      | 200                  | 173                     | Peak    |
| 2376                 | 33.31               | -20.69                  | 54                          | 31.07                   | 32.83                       | 3.42                    | 34.01                      | 200                  | 173                     | Average |
| 2480                 | 97.13               | -                       | -                           | 94.64                   | 33.01                       | 3.68                    | 34.2                       | 102                  | 281                     | Peak    |
| 2480                 | 84.26               | -                       | -                           | 81.77                   | 33.01                       | 3.68                    | 34.2                       | 102                  | 281                     | Average |
| 2484.28              | 45.78               | -28.22                  | 74                          | 43.29                   | 33.01                       | 3.68                    | 34.2                       | 167                  | 348                     | Peak    |
| 2484.28              | 33.46               | -20.54                  | 54                          | 30.97                   | 33.01                       | 3.68                    | 34.2                       | 167                  | 348                     | Average |

## 3.10 AC Conducted Emission Measurement

### 3.10.1 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.

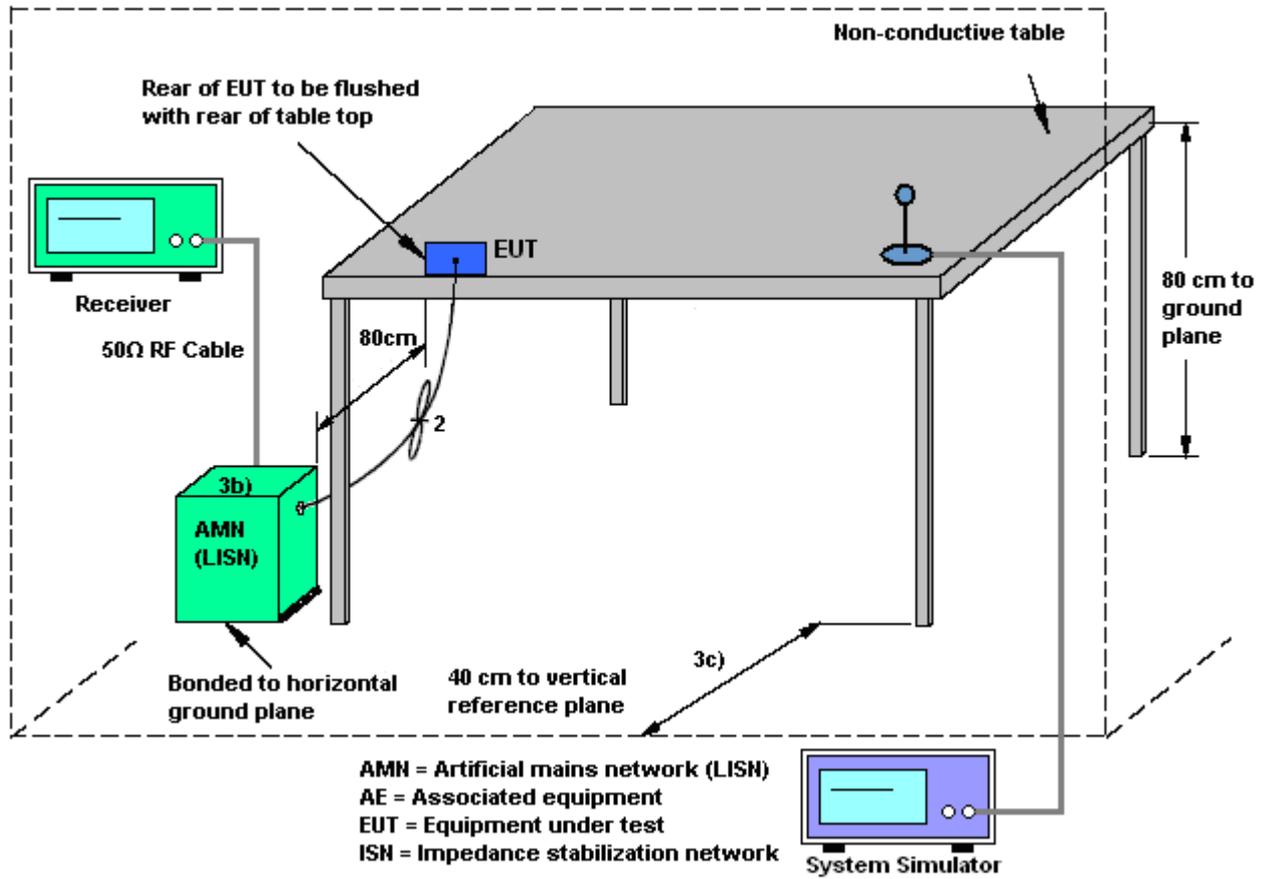
### 3.10.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.10.3 Test Procedures

1. Please follow the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 test site requirement.
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.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 KHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

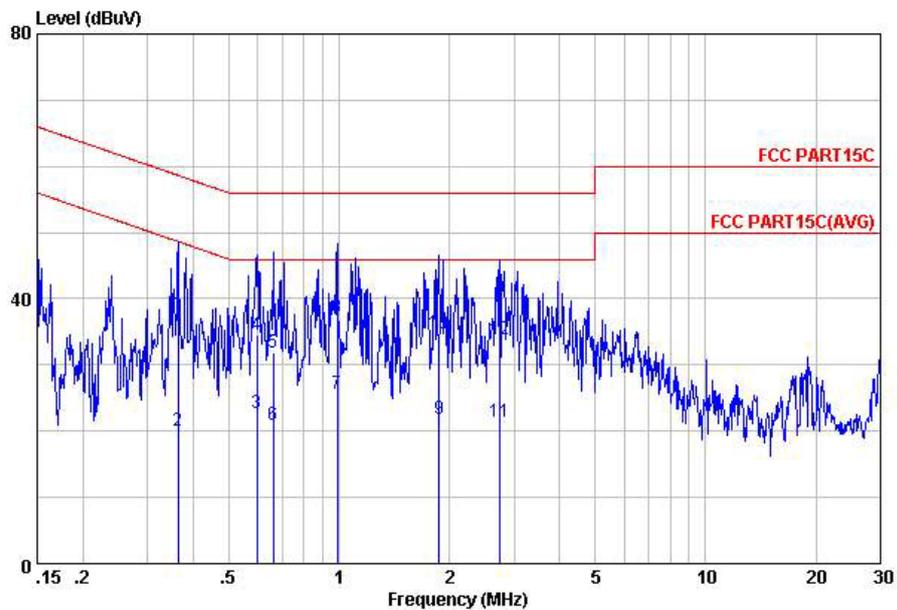
### 3.10.4 Test Setup





3.10.5 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 : | GSM850 (GPRS 8) Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Camera |                     |         |
| Remark :        | All emissions not reported here are more than 10 dB below the prescribed limit.                |                     |         |

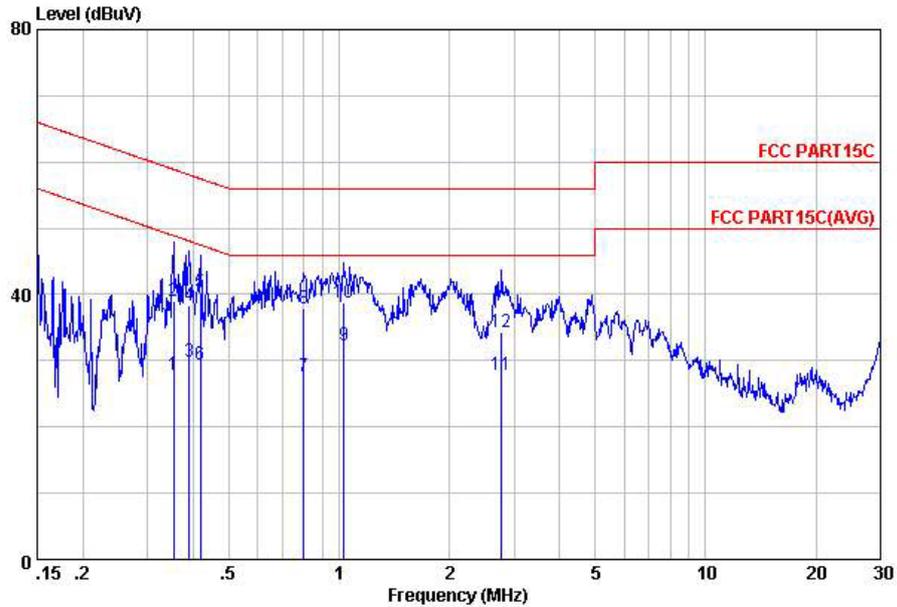


Site : C001-KS  
 Condition: FCC PART15C LISN-111230 LINE  
 mode : Mode 1

|    | Freq | Level | Over   | Limit | Read  | LISN   | Cable | Remark  |
|----|------|-------|--------|-------|-------|--------|-------|---------|
|    | MHz  | dBuV  | Limit  | Line  | Level | Factor | Loss  |         |
|    |      |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1  | 0.36 | 37.63 | -21.02 | 58.65 | 27.10 | -0.08  | 10.61 | QP      |
| 2  | 0.36 | 20.03 | -28.62 | 48.65 | 9.50  | -0.08  | 10.61 | Average |
| 3  | 0.60 | 22.65 | -23.35 | 46.00 | 12.11 | -0.09  | 10.63 | Average |
| 4  | 0.60 | 34.55 | -21.45 | 56.00 | 24.01 | -0.09  | 10.63 | QP      |
| 5  | 0.66 | 31.95 | -24.05 | 56.00 | 21.40 | -0.09  | 10.64 | QP      |
| 6  | 0.66 | 21.05 | -24.95 | 46.00 | 10.50 | -0.09  | 10.64 | Average |
| 7  | 0.99 | 25.65 | -20.35 | 46.00 | 15.10 | -0.10  | 10.65 | Average |
| 8  | 0.99 | 37.15 | -18.85 | 56.00 | 26.60 | -0.10  | 10.65 | QP      |
| 9  | 1.88 | 21.79 | -24.21 | 46.00 | 11.20 | -0.11  | 10.70 | Average |
| 10 | 1.88 | 34.69 | -21.31 | 56.00 | 24.10 | -0.11  | 10.70 | QP      |
| 11 | 2.74 | 21.44 | -24.56 | 46.00 | 10.81 | -0.12  | 10.75 | Average |
| 12 | 2.74 | 33.84 | -22.16 | 56.00 | 23.21 | -0.12  | 10.75 | 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 : | GSM850 (GPRS 8) Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Camera |                     |         |
| Remark :        | All emissions not reported here are more than 10 dB below the prescribed limit.                |                     |         |



Site : C001-KS  
 Condition: FCC PART15C LISN-111230 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  | 0.35 | 27.93 | -20.94 | 48.87 | 17.40 | -0.08  | 10.61 | Average |
| 2  | 0.35 | 39.03 | -19.84 | 58.87 | 28.50 | -0.08  | 10.61 | QP      |
| 3  | 0.39 | 29.94 | -18.14 | 48.08 | 19.40 | -0.08  | 10.62 | Average |
| 4  | 0.39 | 38.24 | -19.84 | 58.08 | 27.70 | -0.08  | 10.62 | QP      |
| 5  | 0.42 | 40.44 | -17.02 | 57.46 | 29.90 | -0.08  | 10.62 | QP      |
| 6  | 0.42 | 29.34 | -18.12 | 47.46 | 18.80 | -0.08  | 10.62 | Average |
| 7  | 0.80 | 27.66 | -18.34 | 46.00 | 17.09 | -0.08  | 10.65 | Average |
| 8  | 0.80 | 37.96 | -18.04 | 56.00 | 27.39 | -0.08  | 10.65 | QP      |
| 9  | 1.03 | 32.36 | -13.64 | 46.00 | 21.80 | -0.09  | 10.65 | Average |
| 10 | 1.03 | 38.86 | -17.14 | 56.00 | 28.30 | -0.09  | 10.65 | QP      |
| 11 | 2.78 | 27.84 | -18.16 | 46.00 | 17.20 | -0.12  | 10.76 | Average |
| 12 | 2.78 | 34.34 | -21.66 | 56.00 | 23.70 | -0.12  | 10.76 | QP      |



## **3.11 Antenna Requirements**

### **3.11.1 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.

### **3.11.2 Antenna Connected Construction**

Non-standard connector used.

### **3.11.3 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     | 100319      | 9kHz~40GHz      | Dec. 30, 2011    | Jun. 21, 2012~<br>Aug. 15, 2012 | Dec. 29, 2012 | Conducted (TH01-KS)   |
| Power Meter               | Agilent      | E4416A    | MY45101555  | N/A             | Aug. 23, 2011    | Jun. 21, 2012~<br>Aug. 15, 2012 | Aug. 22, 2012 | Conducted (TH01-KS)   |
| Power Sensor              | Agilent      | E9327A    | MY44421198  | N/A             | Aug. 23, 2011    | Jun. 21, 2012~<br>Aug. 15, 2012 | Aug. 22, 2012 | Conducted (TH01-KS)   |
| DC Power Supply           | GWINSTEK     | GPS-3030D | E1884515    | N/A             | Aug. 23, 2011    | Jun. 21, 2012~<br>Aug. 15, 2012 | Aug. 22, 2012 | Conducted (TH01-KS)   |
| Thermal Chamber           | Ten Billion  | TTC-B3S   | TBN-960502  | N/A             | Dec. 30, 2011    | Jun. 21, 2012~<br>Aug. 15, 2012 | Dec. 29, 2012 | Conducted (TH01-KS)   |
| Bluetooth Base Station    | R&S          | CBT       | 100783      | N/A             | Aug. 18, 2011    | Jun. 21, 2012~<br>Aug. 15, 2012 | Aug. 17, 2012 | Conducted (TH01-KS)   |
| EMI Test Receiver         | R&S          | ESCI      | 100534      | 9kHz~3GHz       | Nov. 09, 2011    | Jul. 05, 2012                   | Nov. 08, 2012 | Radiation (03CH01-KS) |
| Spectrum Analyzer         | R&S          | FSP40     | 100319      | 9kHz~40GHz      | Dec. 30, 2011    | Jul. 05, 2012                   | Dec. 29, 2012 | Radiation (03CH01-KS) |
| Bilog Antenna             | SCHAFFNER    | CBL6112D  | 23182       | 25MHz~2GHz      | Dec. 08, 2011    | Jul. 05, 2012                   | Dec. 07, 2012 | Radiation (03CH01-KS) |
| Loop Antenna              | R&S          | HFH2-Z2   | 860004/00   | 9 kHz~30 MHz    | Jul. 28, 2011    | Jul. 05, 2012                   | Jul. 27, 2012 | Radiation (03CH01-KS) |
| Double Ridge Horn Antenna | EMCO         | 3117      | 00075959    | 1GHz~18GHz      | Jan. 06, 2012    | Jul. 05, 2012                   | Jan. 05, 2013 | Radiation (03CH01-KS) |
| Amplifier                 | Wireless     | FPA-6592G | 060004      | 30MHz~2GHz      | Dec. 30, 2011    | Jul. 05, 2012                   | Dec. 29, 2012 | Radiation (03CH01-KS) |
| Amplifier                 | Agilent      | 8449B     | 3008A02370  | 1GHz~26.5GHz    | Dec. 30, 2011    | Jul. 05, 2012                   | Dec. 29, 2012 | Radiation (03CH01-KS) |
| Active Horn Antenna       | com-power    | AHA-118   | 701023      | 1GHz~18GHz      | Nov. 07, 2011    | Jul. 05, 2012                   | Nov. 06, 2012 | Radiation (03CH01-KS) |
| SHF-EHF Horn              | Schwarzbeck  | BBHA 9170 | BBHA170249  | 15GHz~40GHz     | Oct. 11, 2011    | Jul. 05, 2012                   | Oct.10, 2012  | Radiation (03CH01-KS) |
| Bluetooth Base Station    | R&S          | CBT       | 100783      | N/A             | Aug. 18, 2011    | Jul. 05, 2012                   | Aug. 17, 2012 | Radiation (03CH01-KS) |
| EMI Receiver              | R&S          | ESCI7     | 100768      | 9kHz~7GHz       | Jun. 01, 2012    | Jun. 27, 2012                   | May 31, 2013  | Conduction (CO01-KS)  |
| LISN                      | MessTec      | AN3016    | 60103       | 9kHz~30MHz      | Dec. 30, 2011    | Jun. 27, 2012                   | Dec. 29, 2012 | Conduction (CO01-KS)  |
| LISN                      | MessTec      | AN3016    | 60105       | 9kHz~30MHz      | Dec. 30, 2011    | Jun. 27, 2012                   | Dec. 29, 2012 | Conduction (CO01-KS)  |
| AC Power Source           | Chroma       | 61602     | ABP00000811 | N/A             | Nov. 16, 2011    | Jun. 27, 2012                   | Nov. 15, 2012 | Conduction (CO01-KS)  |
| System Simulator          | R&S          | CMU200    | 837587/066  | 2G Full-Band    | Dec. 30, 2011    | Jun. 27, 2012                   | Dec. 29, 2012 | Conduction (CO01-KS)  |



## 5 Uncertainty of Evaluation

### 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 |
|---|------|

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

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



## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP262503 as below.