

# FCC RF Test Report

APPLICANT : SAMSUNG Electronics Co., LTD.  
EQUIPMENT : Mobile Phone  
BRAND NAME : Samsung  
MODEL NAME : SCH-W2013  
MARKETING NAME : Grande  
FCC ID : A3LSCHW2013  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Sep. 27, 2012 and completely tested on Oct. 19, 2012. We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.

Reviewed by:



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Jones Tsai / Manager



## SPORTON INTERNATIONAL INC.

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SPORTON INTERNATIONAL INC.

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FCC ID : A3LSCHW2013

Page Number : 1 of 104

Report Issued Date : Oct. 30, 2012

Report Version : Rev. 01



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## REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FR2O0932B  | Rev. 01 | Initial issue of report | Oct. 30, 2012 |
|            |         |                         |               |
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|            |         |                         |               |

## SUMMARY OF TEST RESULT

| Report Section | FCC Rule           | IC Rule   | Description                 | Limit                          | Result | Remark                              |
|----------------|--------------------|-----------|-----------------------------|--------------------------------|--------|-------------------------------------|
| 3.1            | 15.247(a)(2)       | A8.2(a)   | 6dB Bandwidth               | $\geq 0.5\text{MHz}$           | Pass   | -                                   |
| 3.2            | 15.247(b)          | A8.4      | Power Output Measurement    | $\leq 30\text{dBm}$            | Pass   | -                                   |
| 3.3            | 15.247(e)          | A8.2(b)   | Power Spectral Density      | $\leq 8\text{dBm}/3\text{kHz}$ | Pass   | -                                   |
| 3.4            | 15.247(d)          | A8.5      | Conducted Band Edges        | $\leq 20\text{dBc}$            | Pass   | -                                   |
|                |                    |           | Conducted Spurious Emission |                                | Pass   | -                                   |
| 3.5            | 15.247(d)          | A8.5      | Radiated Band Edges         | 15.209(a) & 15.247(d)          | Pass   | -                                   |
|                |                    |           | Radiated Spurious Emission  |                                | Pass   | Under limit 0.16 dB at 4824.000 MHz |
| 3.6            | 15.207             | Gen 7.2.4 | AC Conducted Emission       | 15.207(a)                      | Pass   | Under limit 14.90 dB at 2.526 MHz   |
| 3.7            | 15.203 & 15.247(b) | A8.4      | Antenna Requirement         | N/A                            | Pass   | -                                   |

# 1 General Description

## 1.1 Applicant

**SAMSUNG Electronics Co., LTD.**

IT center, 416, Maetan-3dong, Yeongtong-gu, Suwon-city, Gyeonggi-do, Korea

## 1.2 Manufacturer

**SAMSUNG Electronics Co., LTD.**

IT center, 416, Maetan-3dong, Yeongtong-gu, Suwon-city, Gyeonggi-do, Korea

## 1.3 Feature of Equipment Under Test

| Product Feature                 |                                                  |
|---------------------------------|--------------------------------------------------|
| Equipment                       | Mobile Phone                                     |
| Brand Name                      | Samsung                                          |
| Model Name                      | SCH-W2013                                        |
| Marketing Name                  | Grande                                           |
| FCC ID                          | A3LSCHW2013                                      |
| EUT supports Radios application | CDMA/EV-DO/GSM/EGPRS/<br>WLAN 11abgn / Bluetooth |
| HW Version                      | W2013.05                                         |
| SW Version                      | W2013KELG4                                       |
| EUT Stage                       | Identical Prototype                              |

**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 |                                                                                                                                                                                                                                                              |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tx/Rx Channel Frequency Range                     | 802.11b/g/n : 2412 MHz ~ 2462 MHz<br>802.11a/n: 5745~5825MHz.                                                                                                                                                                                                |
| Maximum Output Power to Antenna                   | <b>&lt;2412 MHz ~ 2462 MHz&gt;</b><br>802.11b : 19.84 dBm (0.0964 W)<br>802.11g : 22.51 dBm (0.1782 W)<br>802.11n HT20 : 21.78 dBm (0.1507 W)<br><b>&lt;5745 MHz ~ 5825 MHz&gt;</b><br>802.11a : 23.14 dBm (0.2061 W)<br>802.11n HT20 : 22.48 dBm (0.1770 W) |
| Antenna Type                                      | 802.11b/g/n : FPCB Antenna type with gain -2.00 dBi<br>802.11a/n : FPCB Antenna type with gain -2.00 dBi                                                                                                                                                     |
| Type of Modulation                                | 802.11b : DSSS (BPSK / QPSK / CCK)<br>802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)                                                                                                                                                                       |

## 1.4 Testing Site

|                           |                                                                                                                                                              |         |           |                                |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|--------------------------------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC.                                                                                                                                   |         |           |                                |
| <b>Test Site Location</b> | No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park,<br>Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL: +886-3-3273456 / FAX: +886-3-3284978 |         |           |                                |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                      |         |           | <b>FCC/IC Registration No.</b> |
|                           | TH02-HY                                                                                                                                                      | CO05-HY | 03CH05-HY | 722060/4086B-1                 |

## 1.5 Applied Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
- ANSI C63.4-2003 and ANSI C63.10-2009
- IC RSS-210 Issue 8
- IC RSS-Gen Issue 3

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.

## 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-628           | KA2DIR628A2 | N/A        | Unshielded, 1.8 m                                          |
| 3.   | Bluetooth Earphone | Sony<br>Ericsson | MW600             | PY7DDA-2029 | N/A        | N/A                                                        |
| 4.   | Notebook           | DELL             | Latitude<br>E6320 | FCC DoC     | N/A        | AC I/P:<br>Unshielded, 1.2 m<br>DC O/P:<br>Shielded, 1.8 m |

## 2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 KHz to 30 MHz) and radiated emission (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane for 2.4G and Y plane for 5G) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

### 2.1 Carrier Frequency Channel

| Frequency Band  | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|-----------------|---------|-------------|---------|-------------|
| 2400-2483.5 MHz | 1       | 2412        | 7       | 2442        |
|                 | 2       | 2417        | 8       | 2447        |
|                 | 3       | 2422        | 9       | 2452        |
|                 | 4       | 2427        | 10      | 2457        |
|                 | 5       | 2432        | 11      | 2462        |
|                 | 6       | 2437        |         |             |

| Frequency Band          | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|-------------------------|---------|-------------|---------|-------------|
| 5725-5850 MHz<br>Band 4 | 149     | 5745        | 159     | 5795        |
|                         | 151     | 5755        | 161     | 5805        |
|                         | 157     | 5785        | 165     | 5825        |

## 2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and antenna configurations as following table and the highest power data rates were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

| 2.4GHz 802.11b mode |        |        |          |         |
|---------------------|--------|--------|----------|---------|
| Data Rate (MHz)     | 1M bps | 2M bps | 5.5M bps | 11M bps |
| Peak Power (dBm)    | 19.84  | 19.83  | 19.78    | 19.82   |

| 2.4GHz 802.11g mode |        |        |         |         |         |         |         |         |
|---------------------|--------|--------|---------|---------|---------|---------|---------|---------|
| Data Rate (MHz)     | 6M bps | 9M bps | 12M bps | 18M bps | 24M bps | 36M bps | 48M bps | 54M bps |
| Peak Power (dBm)    | 22.51  | 22.25  | 22.16   | 22.07   | 22.34   | 22.35   | 22.16   | 22.14   |

| 2.4GHz 802.11n HT20 mode |       |       |       |       |       |       |       |       |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Data Rate (MHz)          | MCS0  | MCS1  | MCS2  | MCS3  | MCS4  | MCS5  | MCS6  | MCS7  |
| Peak Power (dBm)         | 21.78 | 21.26 | 21.39 | 21.45 | 21.11 | 21.31 | 21.24 | 21.36 |

| 5GHz 802.11a mode |        |        |         |         |         |         |         |         |
|-------------------|--------|--------|---------|---------|---------|---------|---------|---------|
| Data Rate (MHz)   | 6M bps | 9M bps | 12M bps | 18M bps | 24M bps | 36M bps | 48M bps | 54M bps |
| Peak Power (dBm)  | 23.14  | 23.02  | 22.95   | 22.83   | 22.89   | 22.83   | 22.97   | 22.84   |

| 5GHz 802.11n HT20 mode |       |       |       |       |       |       |       |       |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Data Rate (MHz)        | MCS0  | MCS1  | MCS2  | MCS3  | MCS4  | MCS5  | MCS6  | MCS7  |
| Peak Power (dBm)       | 22.48 | 21.95 | 21.86 | 22.02 | 22.07 | 22.32 | 22.13 | 22.17 |

## 2.3 Test Mode

Final results of test modes, data rates and test channels are shown as following table.

<2.4GHz>

| Test Cases       |                                  |              |           |              |
|------------------|----------------------------------|--------------|-----------|--------------|
| Conducted<br>TCs | Test Items                       | Mode         | Data Rate | Test Channel |
|                  | 6dB BW<br>Power Spectral Density | 802.11b      | 1 Mbps    | 1/6/11       |
|                  |                                  | 802.11g      | 6 Mbps    | 1/6/11       |
|                  |                                  | 802.11n HT20 | 6.5 Mbps  | 1/6/11       |
|                  | Output Power                     | 802.11b      | 1 Mbps    | 1/6/11       |
|                  |                                  | 802.11g      | 6 Mbps    | 1/6/11       |
|                  |                                  | 802.11n HT20 | 6.5 Mbps  | 1/6/11       |
|                  | Conducted Band Edge              | 802.11b      | 1 Mbps    | 1/11         |
|                  |                                  | 802.11g      | 6 Mbps    | 1/11         |
|                  |                                  | 802.11n HT20 | 6.5 Mbps  | 1/11         |
|                  | Conducted Spurious<br>Emission   | 802.11b      | 1 Mbps    | 1/6/11       |
|                  |                                  | 802.11g      | 6 Mbps    | 1/6/11       |
|                  |                                  | 802.11n HT20 | 6.5 Mbps  | 1/6/11       |
| Radiated<br>TCs  | Radiated Band Edge               | 802.11b      | 1 Mbps    | 1/11         |
|                  |                                  | 802.11g      | 6 Mbps    | 1/11         |
|                  |                                  | 802.11n HT20 | 6.5 Mbps  | 1/11         |
|                  | Radiated Spurious<br>Emission    | 802.11b      | 1 Mbps    | 1/6/11       |
|                  |                                  | 802.11g      | 6 Mbps    | 1/6/11       |
|                  |                                  | 802.11n HT20 | 6.5 Mbps  | 1/6/11       |

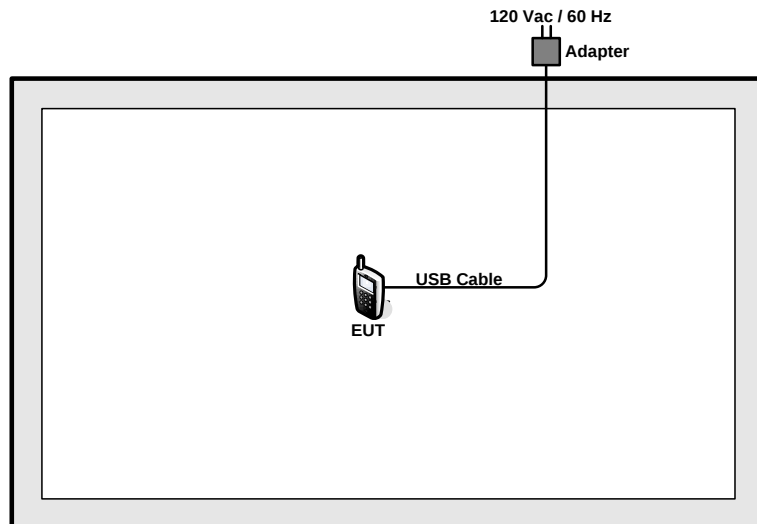
<5GHz>

| Test Cases       |                             |                            |              |              |
|------------------|-----------------------------|----------------------------|--------------|--------------|
| Conducted<br>TCs | Test Items                  | Mode                       | Data Rate    | Test Channel |
|                  | 6dB BW                      | 802.11a                    | 6 Mbps       | 149/157/165  |
|                  | Power Spectral Density      | 802.11n HT20               | 6.5 Mbps     | 149/157/165  |
|                  | Output Power                | 802.11a                    | 6 Mbps       | 149/157/165  |
|                  |                             | 802.11n HT20               | 6.5 Mbps     | 149/157/165  |
|                  | Conducted Band Edge         | 802.11a                    | 6 Mbps       | 149/165      |
|                  |                             | 802.11n HT20               | 6.5 Mbps     | 149/165      |
|                  | Conducted Spurious Emission | 802.11a                    | 6 Mbps       | 149/157/165  |
|                  |                             | 802.11n HT20               | 6.5 Mbps     | 149/157/165  |
|                  | Radiated<br>TCs             | Radiated Band Edge         | 802.11a      | 149/165      |
|                  |                             |                            | 802.11n HT20 | 149/165      |
|                  |                             | Radiated Spurious Emission | 802.11a      | 149/157/165  |
|                  |                             |                            | 802.11n HT20 | 149/157/165  |

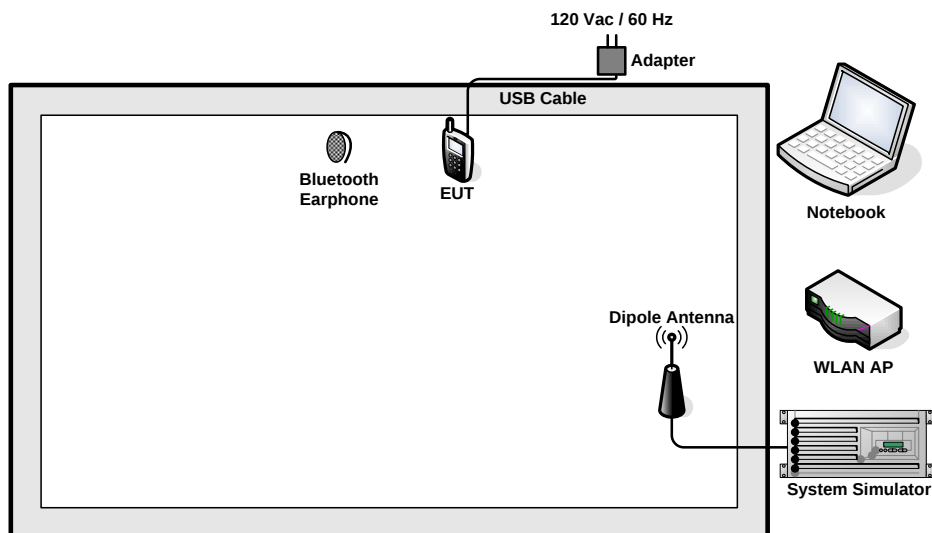
| Test Cases                  |                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------|
| AC<br>Conducted<br>Emission | Mode 1 :GSM900 Idle + Bluetooth Link + WLAN (2.4G) Link + MP3 + USB Cable<br>(Charging from Adapter) |

## 2.4 Connection Diagram of Test System

### <WLAN Tx Mode>



### <AC Conducted Emission Mode>



## 2.5 RF Utility

For WLAN function, key in “\* # 232339 #” on the EUT directly. Then, the EUT will get into the engineering modes for continuous transmitting and receiving signals.

### 3 Test Result

#### 3.1 6dB Bandwidth Measurement

##### 3.1.1 Limit of 6dB Bandwidth

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

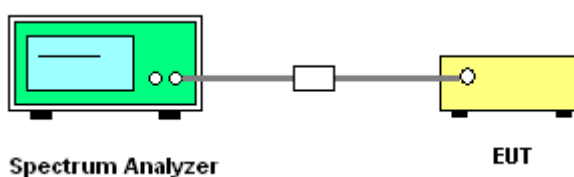
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1-5% of the emission bandwidth (EBW). Set the Video bandwidth (VBW)  $\geq 3 * RBW$ . In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.

##### 3.1.4 Test Setup



**3.1.5 Test Result of 6dB Bandwidth**

|                        |          |                            |         |
|------------------------|----------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11b  | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency (MHz) | 802.11b<br>6dB Bandwidth (MHz) | 6dB Bandwidth<br>Min. Limit (MHz) | Pass/Fail |
|---------|-----------------|--------------------------------|-----------------------------------|-----------|
| 01      | 2412            | 8.08                           | 0.5                               | Pass      |
| 06      | 2437            | 8.08                           | 0.5                               | Pass      |
| 11      | 2462            | 8.12                           | 0.5                               | Pass      |

|                        |          |                            |         |
|------------------------|----------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11g  | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency (MHz) | 802.11g<br>6dB Bandwidth (MHz) | 6dB Bandwidth<br>Min. Limit (MHz) | Pass/Fail |
|---------|-----------------|--------------------------------|-----------------------------------|-----------|
| 01      | 2412            | 15.88                          | 0.5                               | Pass      |
| 06      | 2437            | 16.04                          | 0.5                               | Pass      |
| 11      | 2462            | 16.00                          | 0.5                               | Pass      |

|                        |              |                            |         |
|------------------------|--------------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11n HT20 | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo     | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency (MHz) | 2.4GHz 802.11n HT20<br>6dB Bandwidth (MHz) | 6dB Bandwidth<br>Min. Limit (MHz) | Pass/Fail |
|---------|-----------------|--------------------------------------------|-----------------------------------|-----------|
| 01      | 2412            | 17.24                                      | 0.5                               | Pass      |
| 06      | 2437            | 17.24                                      | 0.5                               | Pass      |
| 11      | 2462            | 17.24                                      | 0.5                               | Pass      |



|                        |          |                            |        |
|------------------------|----------|----------------------------|--------|
| <b>Test Mode :</b>     | 802.11a  | <b>Temperature :</b>       | 24~26℃ |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53% |

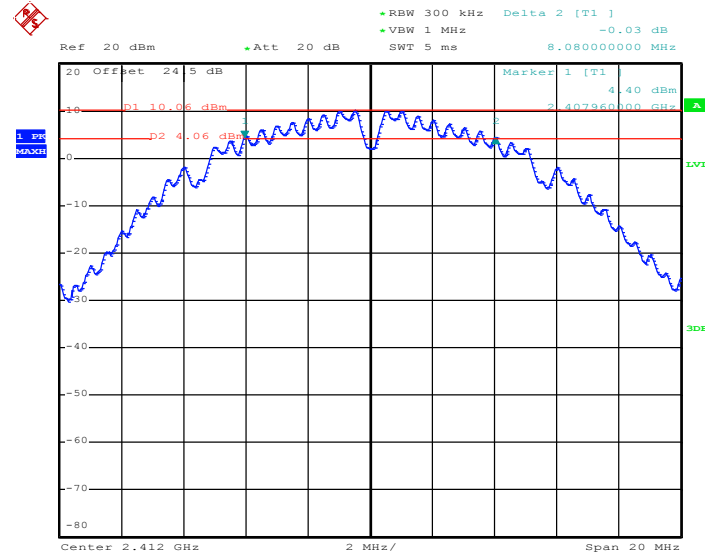
| Channel | Frequency (MHz) | 802.11a<br>6dB Bandwidth (MHz) | 6dB Bandwidth<br>Min. Limit (MHz) | Pass/Fail |
|---------|-----------------|--------------------------------|-----------------------------------|-----------|
| 149     | 5745            | 16.64                          | 0.5                               | Pass      |
| 157     | 5785            | 16.64                          | 0.5                               | Pass      |
| 165     | 5825            | 16.64                          | 0.5                               | Pass      |

|                        |              |                            |        |
|------------------------|--------------|----------------------------|--------|
| <b>Test Mode :</b>     | 802.11n HT20 | <b>Temperature :</b>       | 24~26℃ |
| <b>Test Engineer :</b> | Bill Kuo     | <b>Relative Humidity :</b> | 50~53% |

| Channel | Frequency (MHz) | 5GHz 802.11n HT20<br>6dB Bandwidth (MHz) | 6dB Bandwidth<br>Min. Limit (MHz) | Pass/Fail |
|---------|-----------------|------------------------------------------|-----------------------------------|-----------|
| 149     | 5745            | 17.88                                    | 0.5                               | Pass      |
| 157     | 5785            | 17.84                                    | 0.5                               | Pass      |
| 165     | 5825            | 17.84                                    | 0.5                               | Pass      |

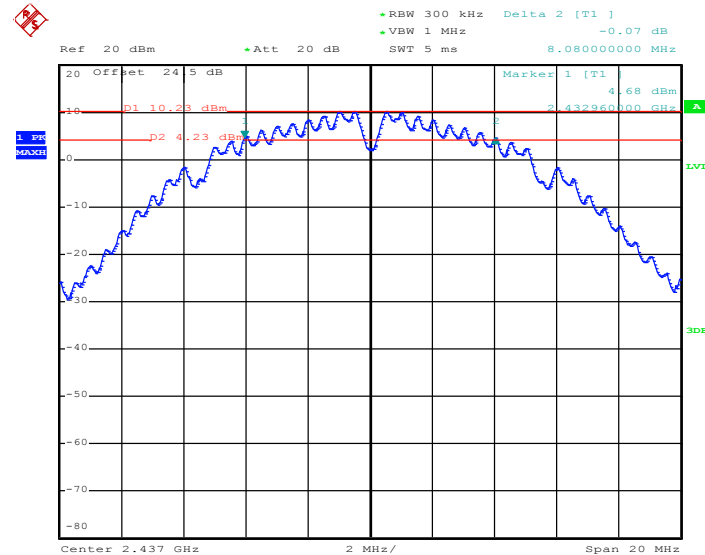
### 3.1.6 Test Result of 6dB Bandwidth Plots

#### 6 dB Bandwidth Plot on 802.11b Channel 01



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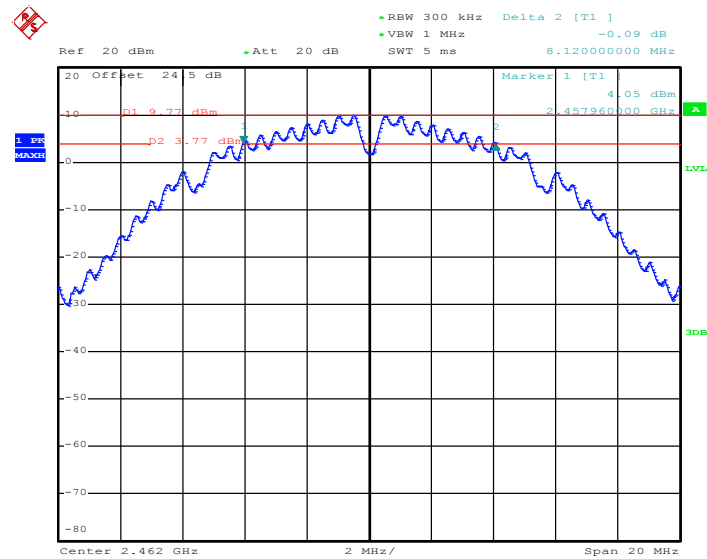
#### 6 dB Bandwidth Plot on 802.11b Channel 06



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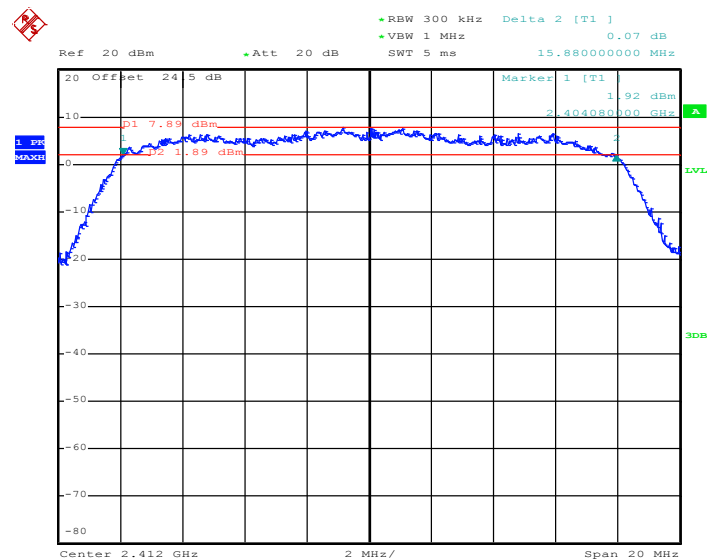


6 dB Bandwidth Plot on 802.11b Channel 11



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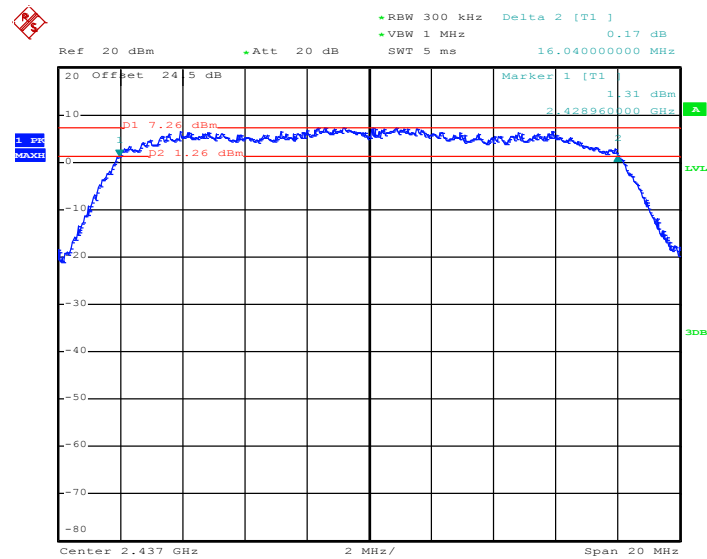
6 dB Bandwidth Plot on 802.11g Channel 01



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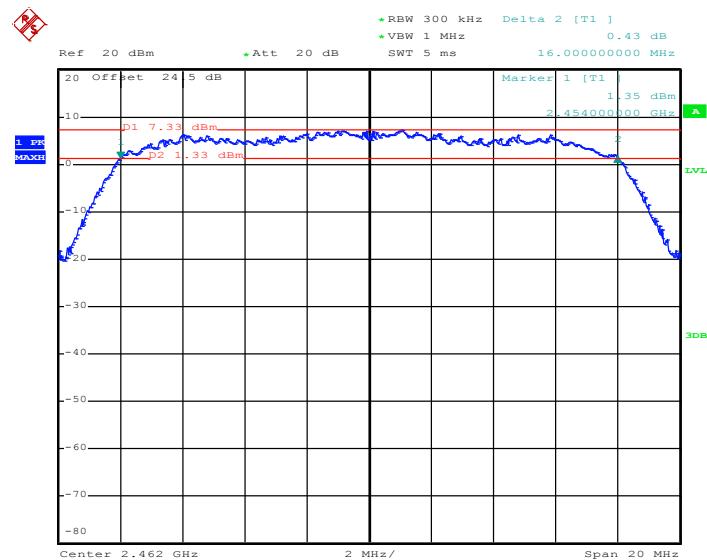


### 6 dB Bandwidth Plot on 802.11g Channel 06

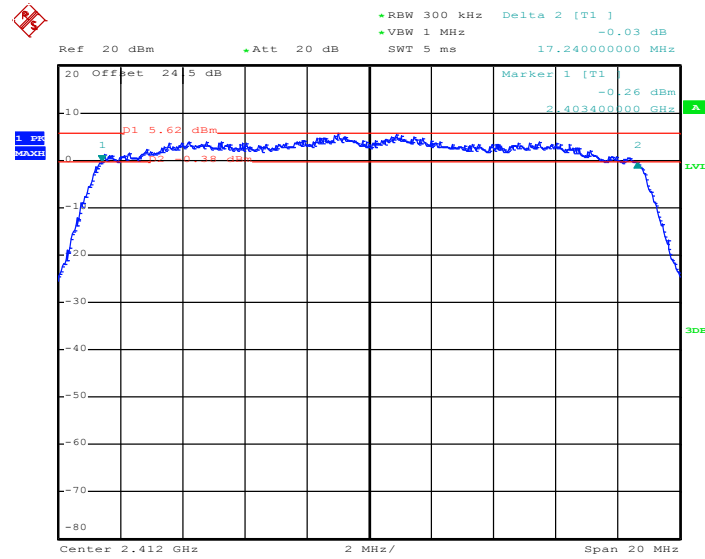


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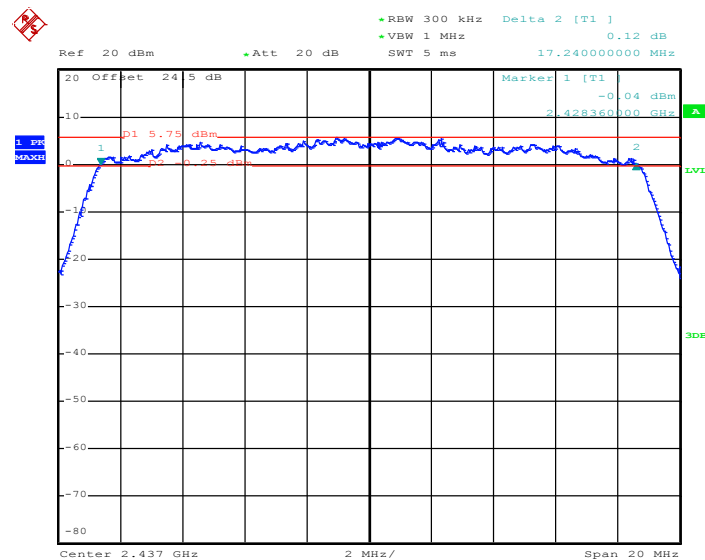
### 6 dB Bandwidth Plot on 802.11g Channel 11



Date: 15.OCT.2012 21:09:29

**6 dB Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 01**


Date: 15.OCT.2012 21:22:29

**6 dB Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 06**


Date: 15.OCT.2012 21:34:49

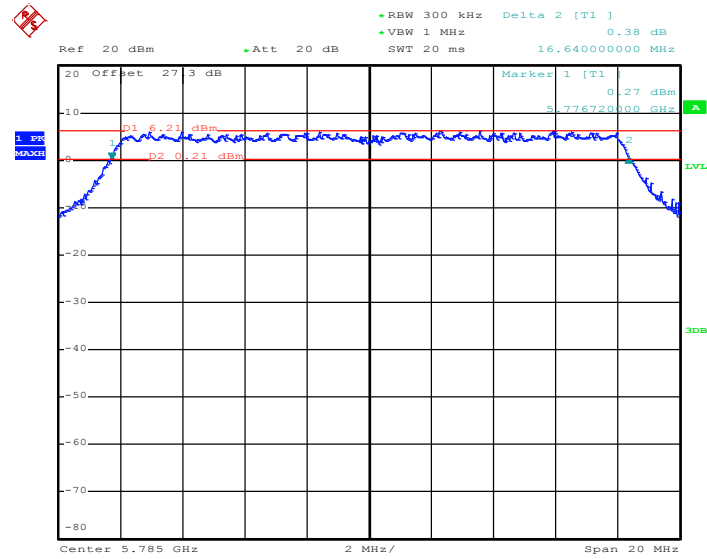


### 6 dB Bandwidth Plot on 802.11a Channel 149



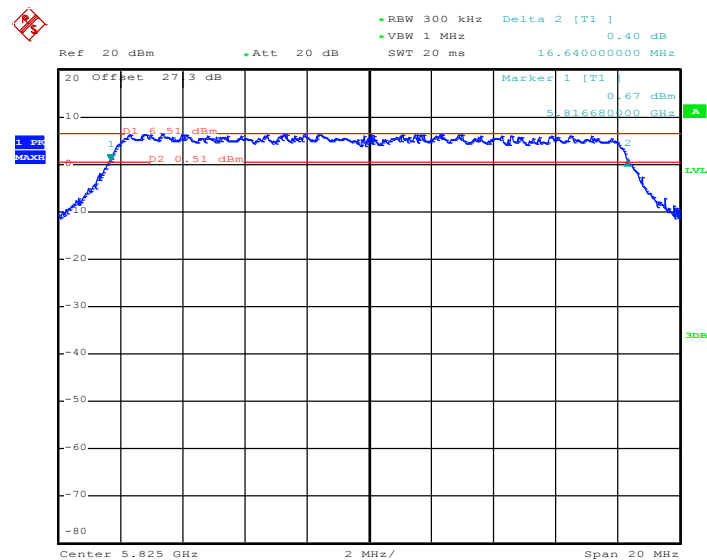


6 dB Bandwidth Plot on 802.11a Channel 157

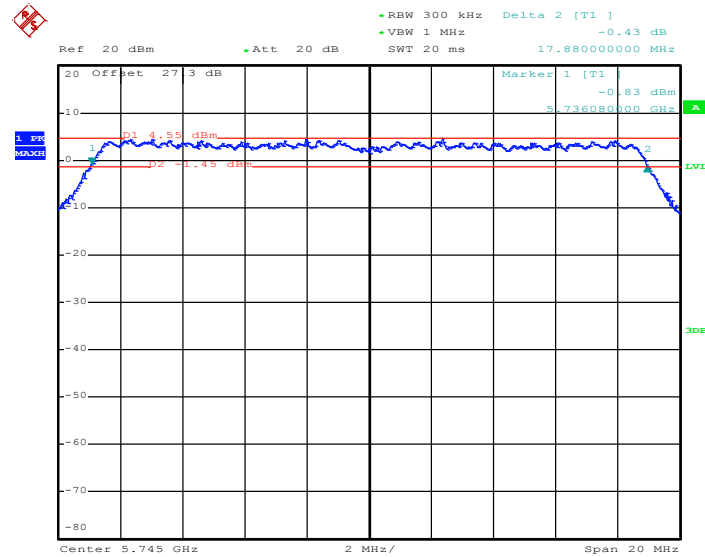


Date: 15.OCT.2012 21:45:52

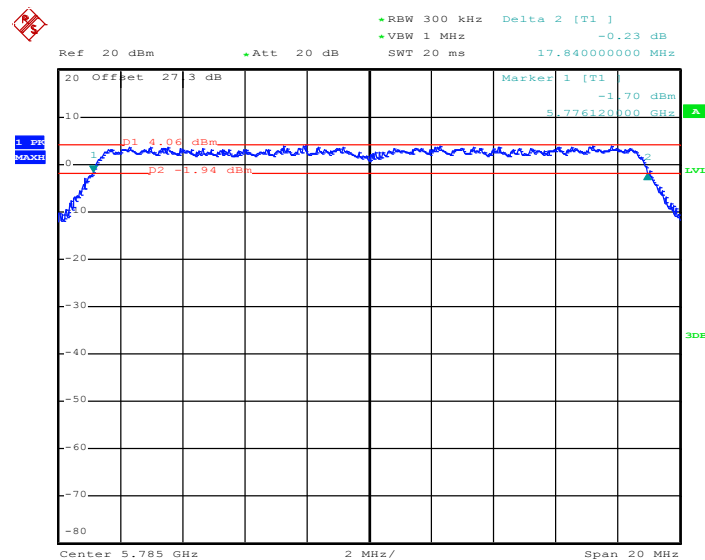
6 dB Bandwidth Plot on 802.11a Channel 165



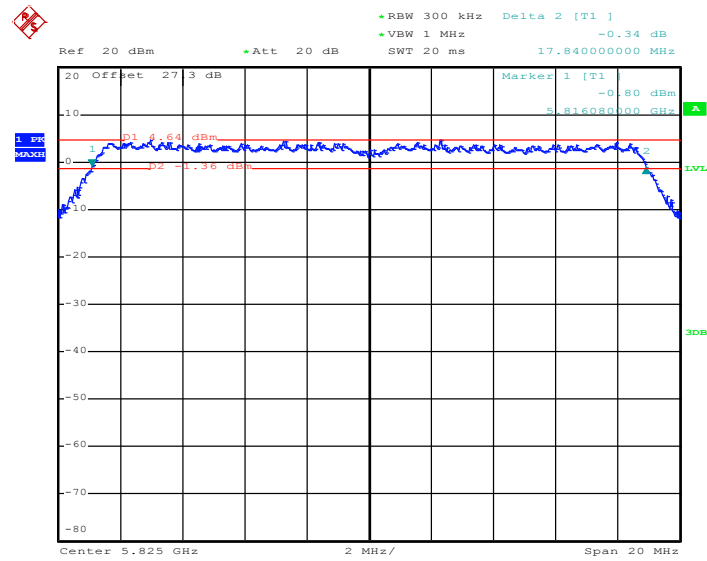
Date: 15.OCT.2012 21:49:35

**6 dB Bandwidth Plot on 5GHz 802.11n HT20 Channel 149**


Date: 15.OCT.2012 22:06:56

**6 dB Bandwidth Plot on 5GHz 802.11n HT20 Channel 157**


Date: 15.OCT.2012 21:57:51

**6 dB Bandwidth Plot on 5GHz 802.11n HT20 Channel 165**


Date: 15.OCT.2012 21:53:08

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz and 5725-5850MHz, the limit for peak output power is 30dBm. If transmitting Antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the Antenna exceeds 6dBi.

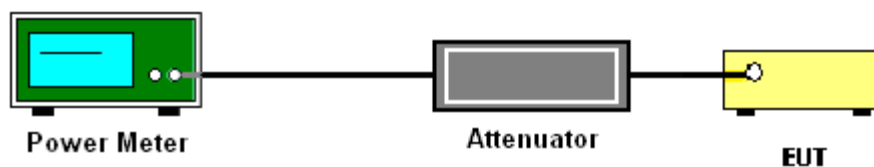
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the power meter by a low loss cable
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

### 3.2.4 Test Setup



**3.2.5 Test Result of Peak Output Power**

|                        |          |                            |         |
|------------------------|----------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11b  | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency (MHz) | 802.11b<br>Peak Output Power (dBm) | Max. Limits (dBm) | Pass/Fail |
|---------|-----------------|------------------------------------|-------------------|-----------|
| 01      | 2412            | 19.74                              | 30                | Pass      |
| 06      | 2437            | 19.84                              | 30                | Pass      |
| 11      | 2462            | 19.68                              | 30                | Pass      |

|                        |          |                            |         |
|------------------------|----------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11g  | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency (MHz) | 802.11g<br>Peak Output Power (dBm) | Max. Limits (dBm) | Pass/Fail |
|---------|-----------------|------------------------------------|-------------------|-----------|
| 01      | 2412            | 22.25                              | 30                | Pass      |
| 06      | 2437            | 22.51                              | 30                | Pass      |
| 11      | 2462            | 22.15                              | 30                | Pass      |

|                        |              |                            |         |
|------------------------|--------------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11n HT20 | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo     | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency (MHz) | 2.4GHz 802.11n HT20<br>Peak Output Power (dBm) | Max. Limits (dBm) | Pass/Fail |
|---------|-----------------|------------------------------------------------|-------------------|-----------|
| 01      | 2412            | 21.78                                          | 30                | Pass      |
| 06      | 2437            | 21.35                                          | 30                | Pass      |
| 11      | 2462            | 21.34                                          | 30                | Pass      |

|                        |          |                            |         |
|------------------------|----------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11 a | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency (MHz) | 802.11a<br>Peak Output Power (dBm) | Max. Limits (dBm) | Pass/Fail |
|---------|-----------------|------------------------------------|-------------------|-----------|
| 149     | 5745            | 22.84                              | 30                | Pass      |
| 157     | 5785            | 22.94                              | 30                | Pass      |
| 165     | 5825            | 23.14                              | 30                | Pass      |

|                        |              |                            |         |
|------------------------|--------------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11n HT20 | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo     | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency (MHz) | 5GHz 802.11n HT20<br>Peak Output Power (dBm) | Max. Limits (dBm) | Pass/Fail |
|---------|-----------------|----------------------------------------------|-------------------|-----------|
| 149     | 5745            | 22.48                                        | 30                | Pass      |
| 157     | 5785            | 22.17                                        | 30                | Pass      |
| 165     | 5825            | 22.14                                        | 30                | Pass      |

**3.2.6 Test Result of Average output Power (Reporting Only)**

|                        |          |                            |         |
|------------------------|----------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11b  | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53%  |
| <b>Duty Cycle:</b>     | 98.76%   | <b>Duty Factor:</b>        | 0.05dB  |

| Channel | Frequency (MHz) | 802.11b<br>Average Output Power (dBm) |
|---------|-----------------|---------------------------------------|
| 01      | 2412            | 17.22                                 |
| 06      | 2437            | 17.37                                 |
| 11      | 2462            | 17.03                                 |

|                        |          |                            |         |
|------------------------|----------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11g  | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53%  |
| <b>Duty Cycle:</b>     | 93.46%   | <b>Duty Factor:</b>        | 0.29dB  |

| Channel | Frequency (MHz) | 802.11g<br>Average Output Power (dBm) |
|---------|-----------------|---------------------------------------|
| 01      | 2412            | 14.16                                 |
| 06      | 2437            | 14.20                                 |
| 11      | 2462            | 13.92                                 |

|                        |              |                            |         |
|------------------------|--------------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11n HT20 | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo     | <b>Relative Humidity :</b> | 50~53%  |
| <b>Duty Cycle:</b>     | 93.06%       | <b>Duty Factor:</b>        | 0.31dB  |

| Channel | Frequency (MHz) | 2.4GHz 802.11n HT20<br>Average Output Power (dBm) |
|---------|-----------------|---------------------------------------------------|
| 01      | 2412            | 12.13                                             |
| 06      | 2437            | 12.05                                             |
| 11      | 2462            | 11.70                                             |

|                        |          |                            |        |
|------------------------|----------|----------------------------|--------|
| <b>Test Mode :</b>     | 802.11a  | <b>Temperature :</b>       | 24~26℃ |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53% |
| <b>Duty Cycle:</b>     | 93.46%   | <b>Duty Factor:</b>        | 0.29dB |

| Channel | Frequency (MHz) | 802.11a<br>Average Output Power (dBm) |
|---------|-----------------|---------------------------------------|
| 149     | 5745            | 14.10                                 |
| 157     | 5785            | 14.03                                 |
| 165     | 5825            | 14.14                                 |

|                        |              |                            |        |
|------------------------|--------------|----------------------------|--------|
| <b>Test Mode :</b>     | 802.11n HT20 | <b>Temperature :</b>       | 24~26℃ |
| <b>Test Engineer :</b> | Bill Kuo     | <b>Relative Humidity :</b> | 50~53% |
| <b>Duty Cycle:</b>     | 93.06%       | <b>Duty Factor:</b>        | 0.31dB |

| Channel | Frequency (MHz) | 5GHz 802.11n HT20<br>Average Output Power (dBm) |
|---------|-----------------|-------------------------------------------------|
| 149     | 5745            | 12.17                                           |
| 157     | 5785            | 11.91                                           |
| 165     | 5825            | 12.07                                           |

### 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

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

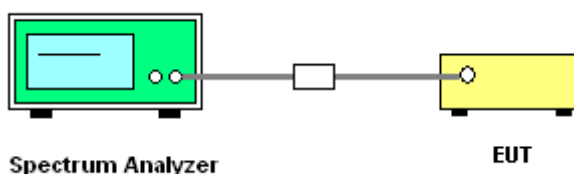
#### 3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

1. The testing follows Measurement Procedure 9.1 Option 1 of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Record the measurement data derived from spectrum analyzer.

#### 3.3.4 Test Setup



### 3.3.5 Test Result of Power Spectral Density

|                        |          |                            |         |
|------------------------|----------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11b  | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency<br>(MHz) | 802.11b Power Density |                | Max. Limits<br>(dBm/3KHz) | Pass/Fail |
|---------|--------------------|-----------------------|----------------|---------------------------|-----------|
|         |                    | PSD/100KHz (dBm)      | PSD/3KHz (dBm) |                           |           |
| 01      | 2412               | 9.23                  | -5.19          | 8                         | Pass      |
| 06      | 2437               | 8.98                  | -4.98          | 8                         | Pass      |
| 11      | 2462               | 8.68                  | -3.97          | 8                         | Pass      |

|                        |          |                            |         |
|------------------------|----------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11g  | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency<br>(MHz) | 802.11g Power Density |                | Max. Limits<br>(dBm/3KHz) | Pass/Fail |
|---------|--------------------|-----------------------|----------------|---------------------------|-----------|
|         |                    | PSD/100KHz (dBm)      | PSD/3KHz (dBm) |                           |           |
| 01      | 2412               | 3.55                  | -9.96          | 8                         | Pass      |
| 06      | 2437               | 3.17                  | -10.59         | 8                         | Pass      |
| 11      | 2462               | 2.95                  | -11.18         | 8                         | Pass      |

|                        |              |                            |         |
|------------------------|--------------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11n HT20 | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo     | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency<br>(MHz) | 2.4GHz 802.11n HT20 Power Density |                | Max. Limits<br>(dBm/3KHz) | Pass/Fail |
|---------|--------------------|-----------------------------------|----------------|---------------------------|-----------|
|         |                    | PSD/100KHz (dBm)                  | PSD/3KHz (dBm) |                           |           |
| 01      | 2412               | 1.30                              | -11.70         | 8                         | Pass      |
| 06      | 2437               | 0.80                              | -11.90         | 8                         | Pass      |
| 11      | 2462               | 1.26                              | -13.22         | 8                         | Pass      |

|                        |          |                            |         |
|------------------------|----------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11a  | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo | <b>Relative Humidity :</b> | 50~53%  |

| Channel | Frequency<br>(MHz) | 802.11a Power Density |                | Max. Limits<br>(dBm/3KHz) | Pass/Fail |
|---------|--------------------|-----------------------|----------------|---------------------------|-----------|
|         |                    | PSD/100KHz (dBm)      | PSD/3KHz (dBm) |                           |           |
| 149     | 5745               | 2.50                  | -11.53         | 8                         | Pass      |
| 157     | 5785               | 2.75                  | -11.70         | 8                         | Pass      |
| 165     | 5825               | 2.95                  | -11.50         | 8                         | Pass      |

|                        |              |                            |         |
|------------------------|--------------|----------------------------|---------|
| <b>Test Mode :</b>     | 802.11n HT20 | <b>Temperature :</b>       | 24~26°C |
| <b>Test Engineer :</b> | Bill Kuo     | <b>Relative Humidity :</b> | 50~53%  |

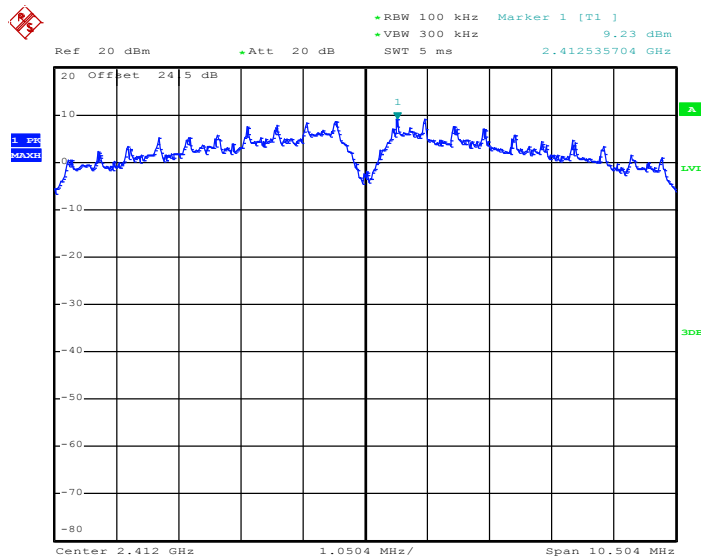
| Channel | Frequency<br>(MHz) | 5GHz 802.11n HT20 Power Density |                | Max. Limits<br>(dBm/3KHz) | Pass/Fail |
|---------|--------------------|---------------------------------|----------------|---------------------------|-----------|
|         |                    | PSD/100KHz (dBm)                | PSD/3KHz (dBm) |                           |           |
| 149     | 5745               | 0.64                            | -12.55         | 8                         | Pass      |
| 157     | 5785               | 1.04                            | -11.51         | 8                         | Pass      |
| 165     | 5825               | 0.62                            | -12.38         | 8                         | Pass      |

**Note:**

1. Measured power density (dBm) has offset with cable loss.
2. The Measured power density (dBm)/ 100KHz is reference level and used as 20dBc down for Conducted Band Edges and Conducted Spurious Emission limit line.

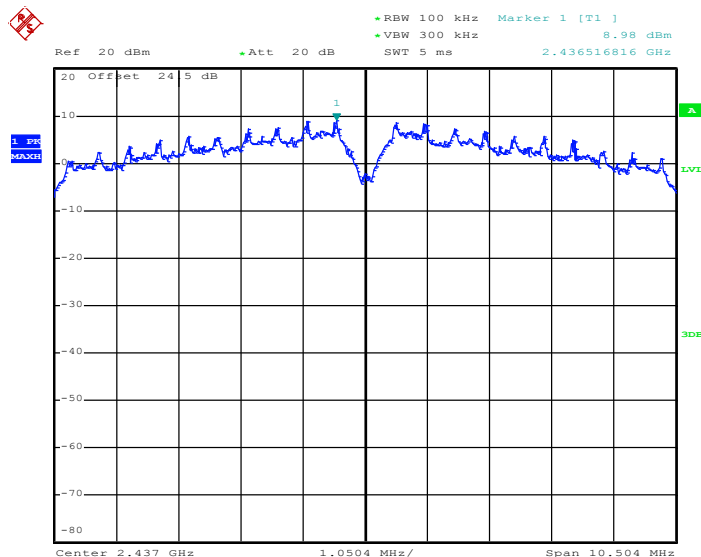
### 3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on 802.11b Channel 01

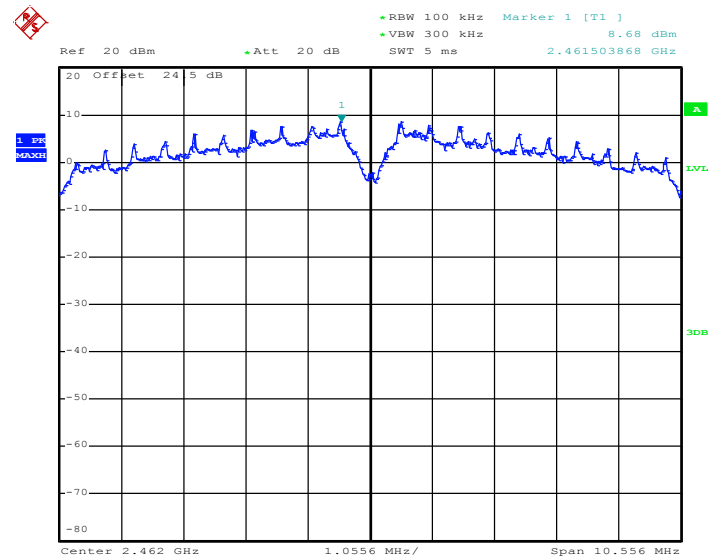


Date: 15.OCT.2012 20:49:18

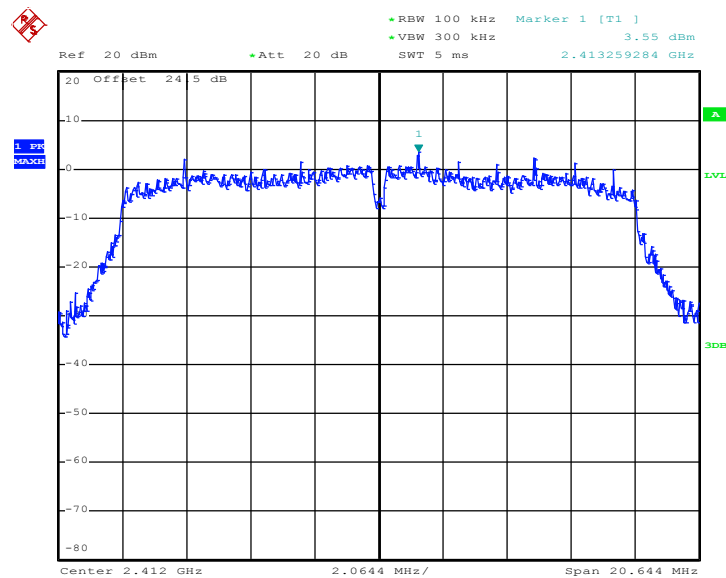
PSD 100kHz Plot on 802.11b Channel 06



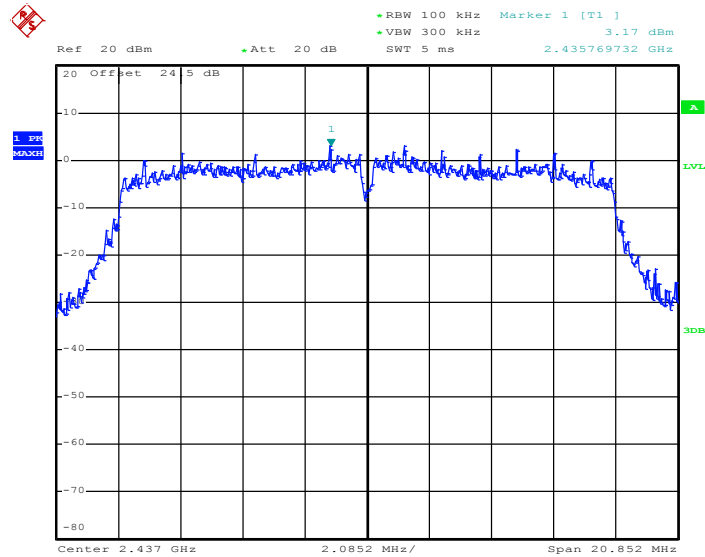
Date: 15.OCT.2012 20:52:58

**PSD 100kHz Plot on 802.11b Channel 11**


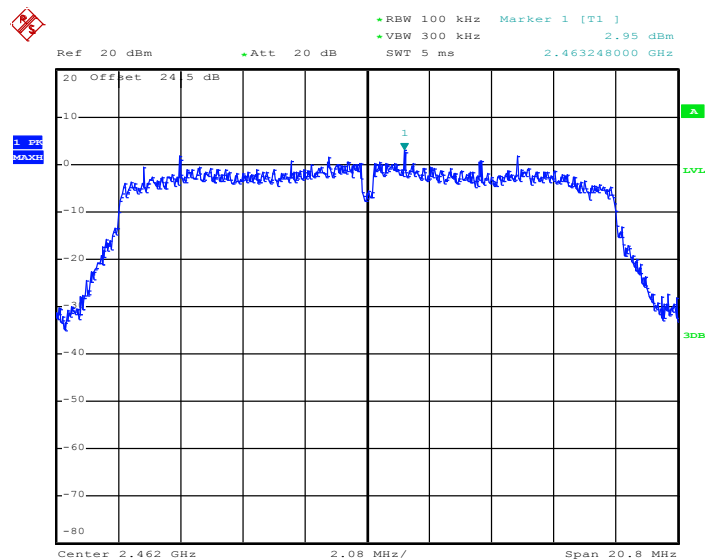
Date: 15.OCT.2012 20:59:51

**PSD 100kHz Plot on 802.11g Channel 01**


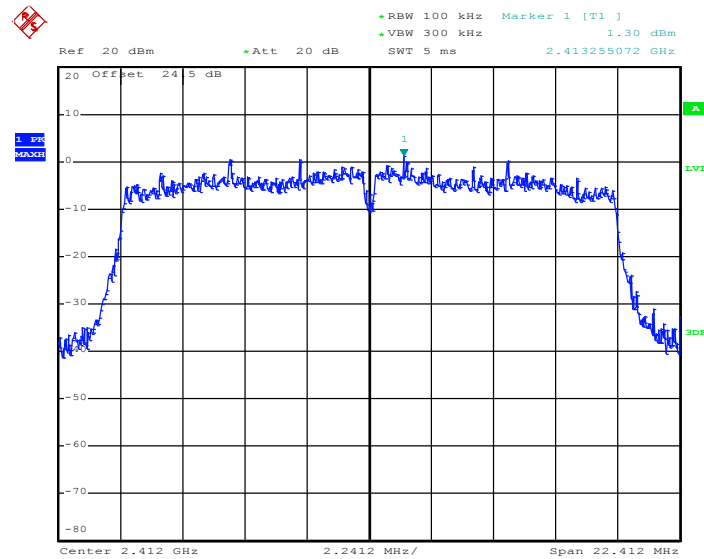
Date: 15.OCT.2012 21:19:34

**PSD 100kHz Plot 802.11g Channel 06**


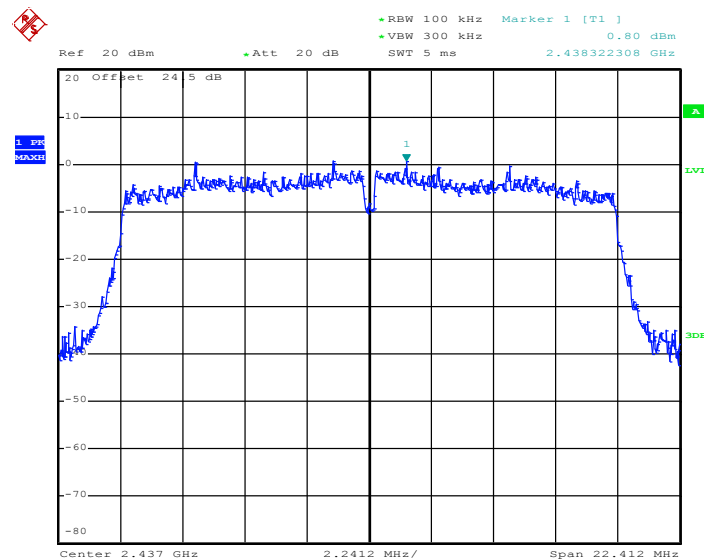
Date: 15.OCT.2012 22:16:07

**PSD 100kHz Plot 802.11g Channel 11**


Date: 15.OCT.2012 21:09:54

**PSD 100kHz Plot on 2.4GHz 802.11n HT20 Channel 01**


Date: 15.OCT.2012 21:24:36

**PSD 100kHz Plot on 2.4GHz 802.11n HT20 Channel 06**


Date: 15.OCT.2012 21:35:16



### PSD 100kHz Plot on 802.11a Channel 149





### PSD 100kHz Plot on 802.11a Channel 165

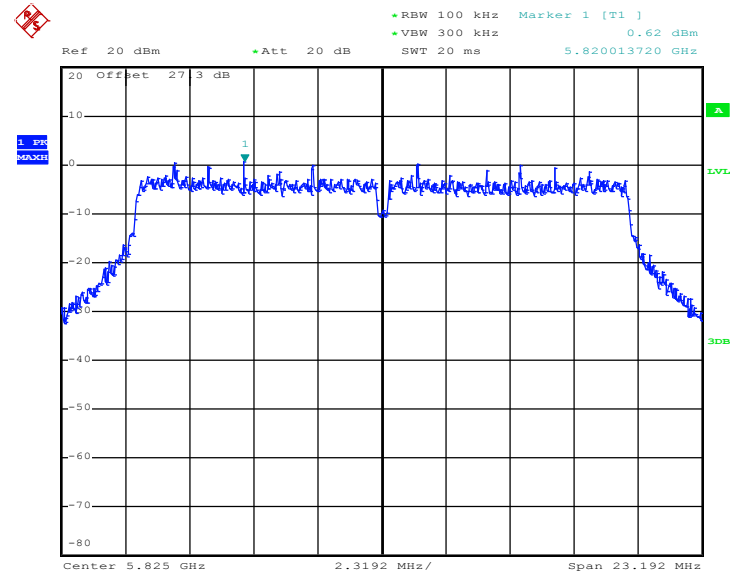




### PSD 100kHz Plot on 5GHz 802.11n HT20 Channel 157



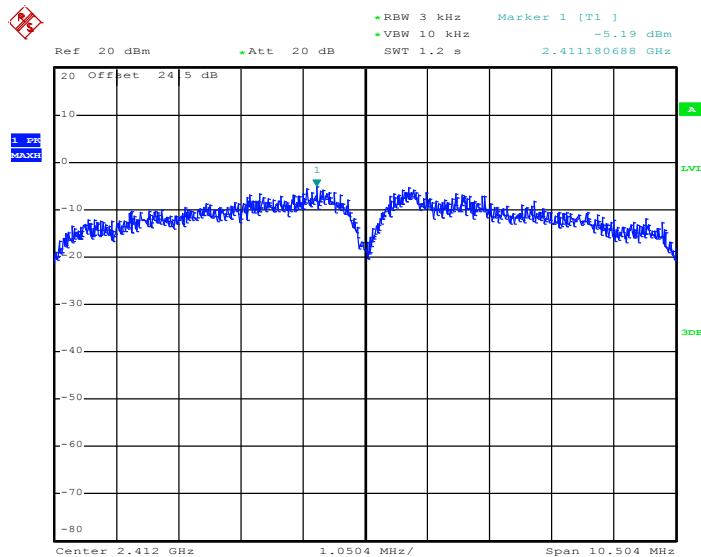
**PSD 100kHz Plot on 5GHz 802.11n HT20 Channel 165**



Date: 15.OCT.2012 21:53:33

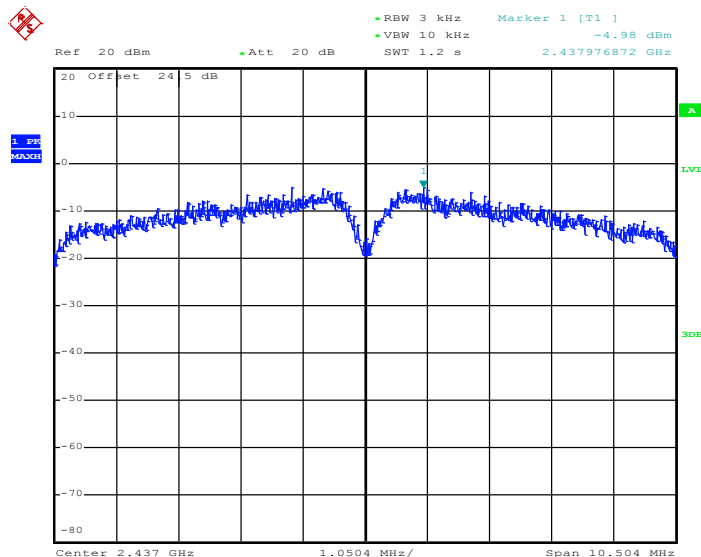
### 3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on 802.11b Channel 01



Date: 15.OCT.2012 20:49:13

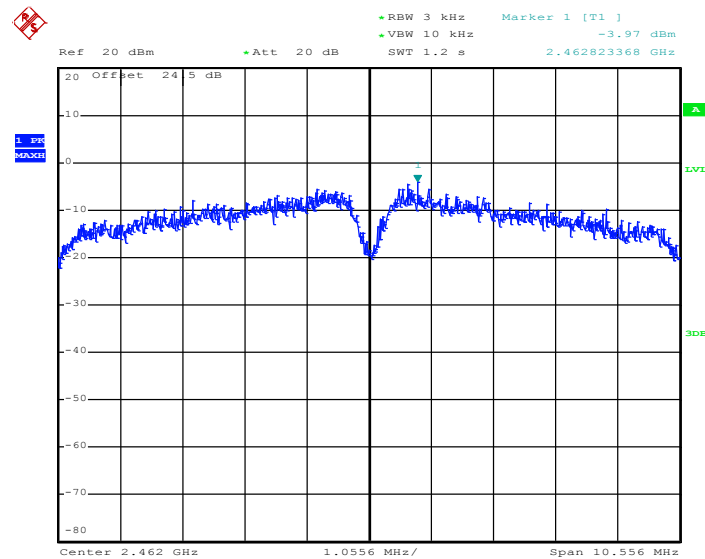
PSD 3kHz Plot on 802.11b Channel 06



Date: 15.OCT.2012 20:52:53

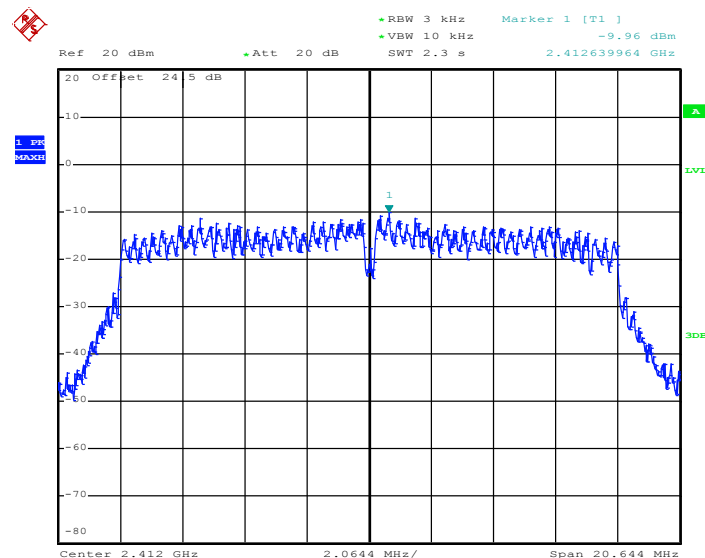


PSD 3kHz Plot on 802.11b Channel 11



Date: 15.OCT.2012 20:59:34

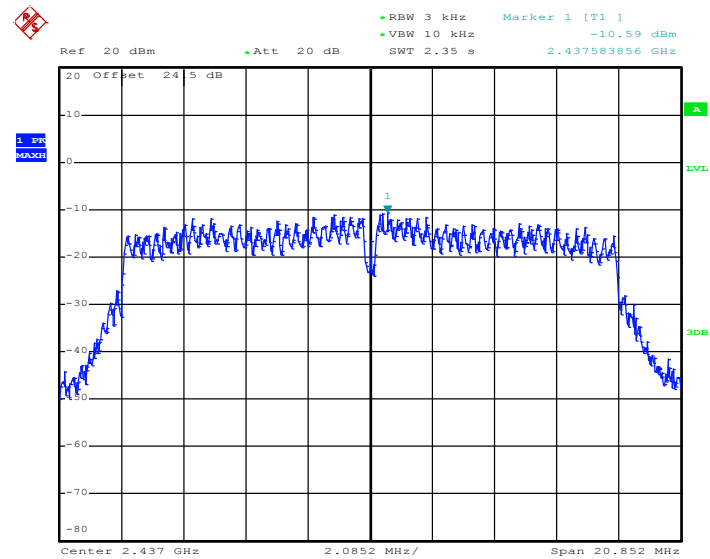
PSD 3kHz Plot on 802.11g Channel 01



Date: 15.OCT.2012 21:19:29

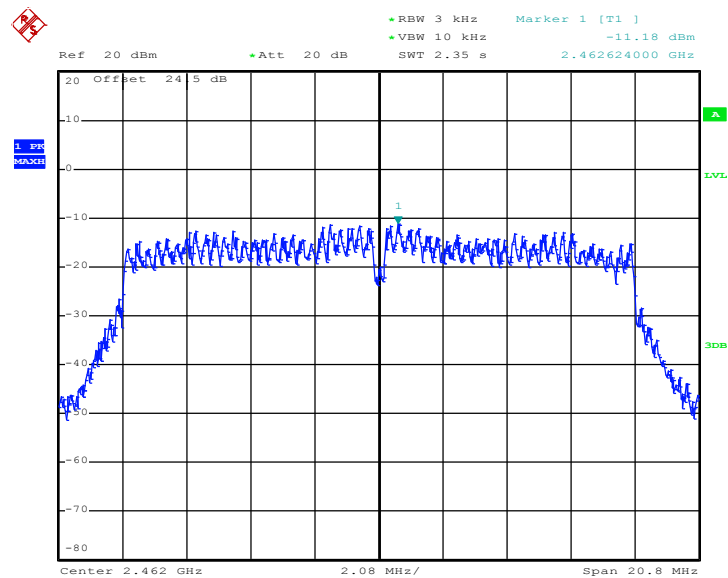


PSD 3kHz Plot on 802.11g Channel 06



Date: 15.OCT.2012 22:16:02

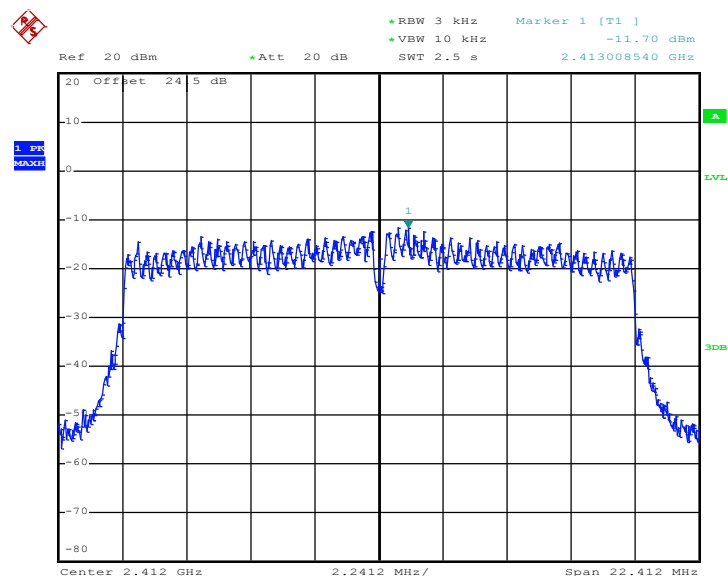
PSD 3kHz Plot on 802.11g Channel 11



Date: 15.OCT.2012 21:09:46

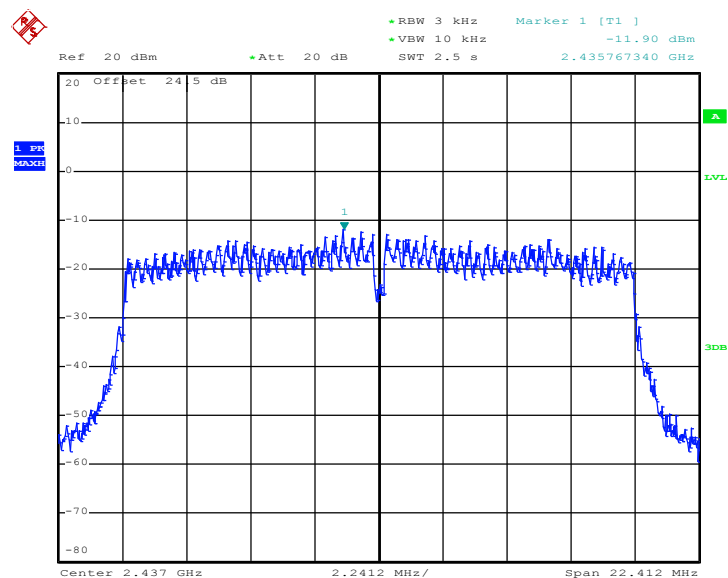


PSD 3kHz Plot on 2.4GHz 802.11n HT20 Channel 01

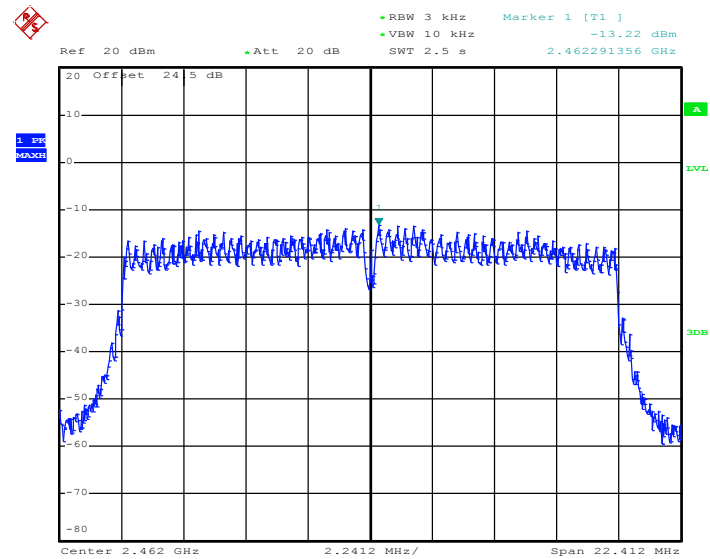


Date: 15.OCT.2012 21:25:29

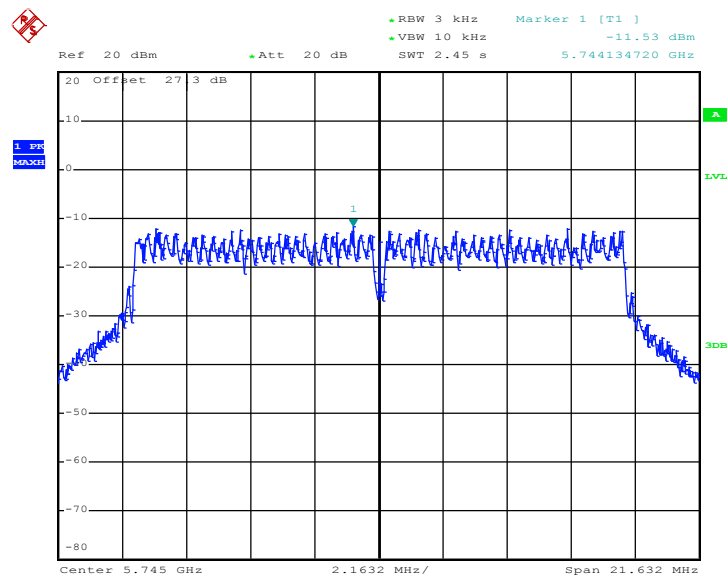
PSD 3kHz Plot on 2.4GHz 802.11n HT20 Channel 06



Date: 15.OCT.2012 21:35:08

**PSD 3kHz Plot on 2.4GHz 802.11n HT20 Channel 11**


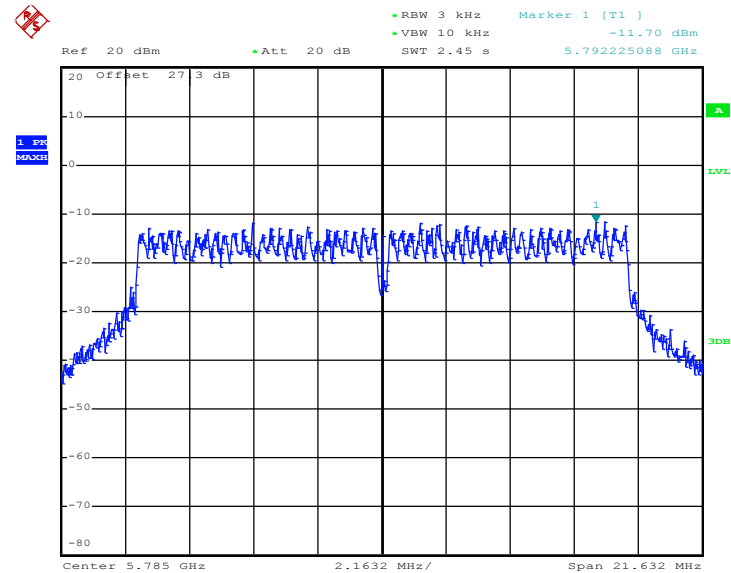
Date: 15.OCT.2012 21:38:12

**PSD 3kHz Plot on 802.11a Channel 149**


Date: 15.OCT.2012 21:42:19

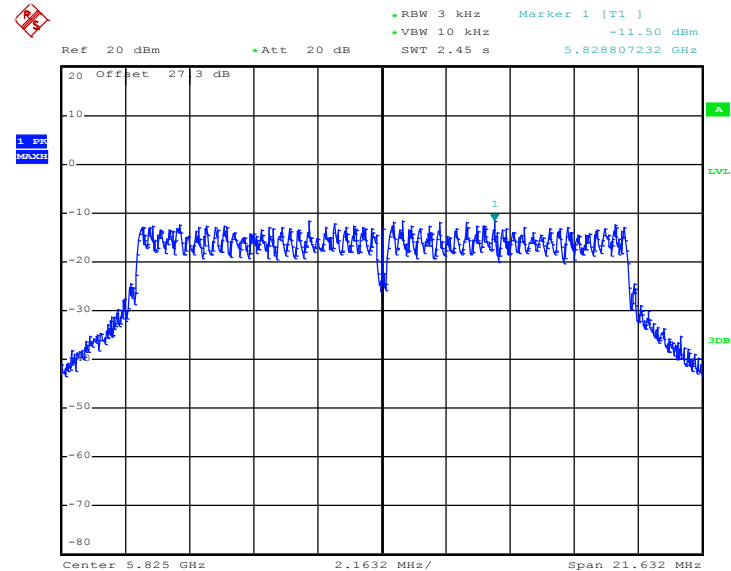


PSD 3kHz Plot on 802.11a Channel 157

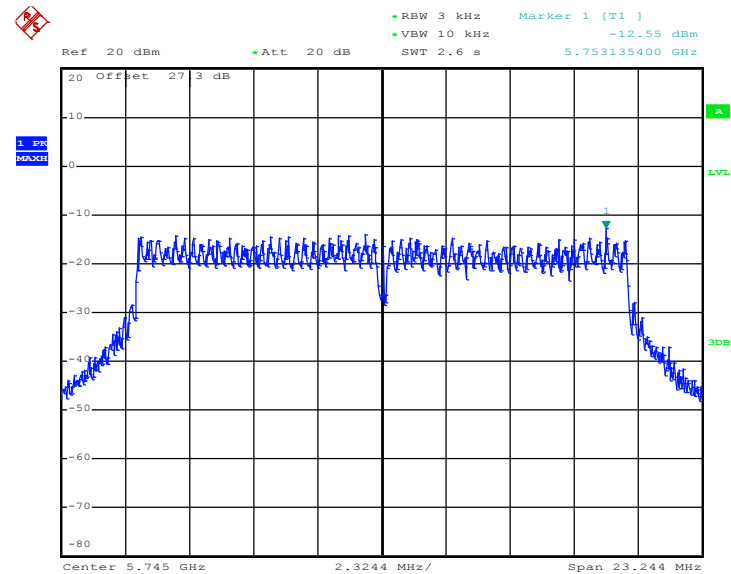


Date: 15.OCT.2012 21:46:13

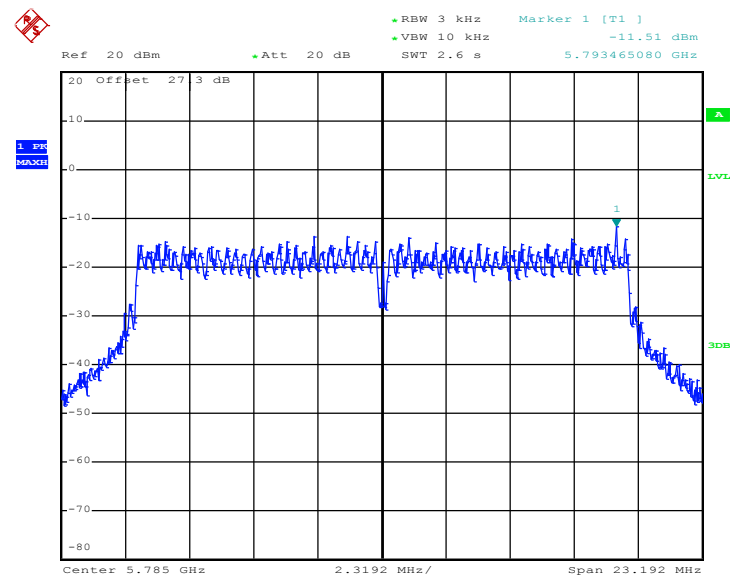
PSD 3kHz Plot on 802.11a Channel 165



Date: 15.OCT.2012 21:49:53

**PSD 3kHz Plot on 5GHz 802.11n HT20 Channel 149**


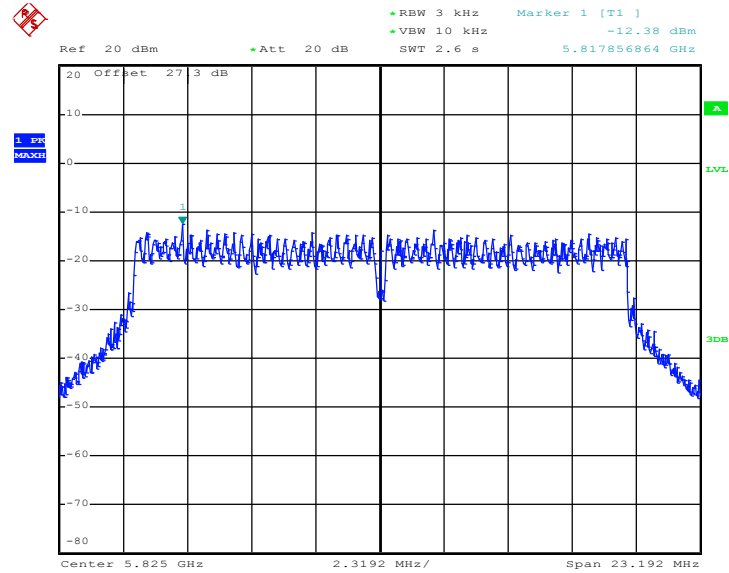
Date: 15.OCT.2012 22:07:21

**PSD 3kHz Plot on 5GHz 802.11n HT20 Channel 157**


Date: 15.OCT.2012 21:58:10



PSD 3kHz Plot on 5GHz 802.11n HT20 Channel 165



Date: 15.OCT.2012 21:53:26

## 3.4 Conducted Band Edges and Spurious Emission Measurement

### 3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

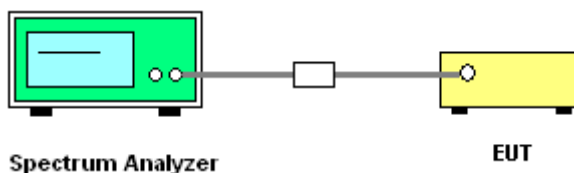
### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.4.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz, when maximum peak conducted output power procedure is used. The attenuation is set to 30dB, when maximum conducted output power procedure is used.
4. Measure and record the results in the test report.

### 3.4.4 Test Setup

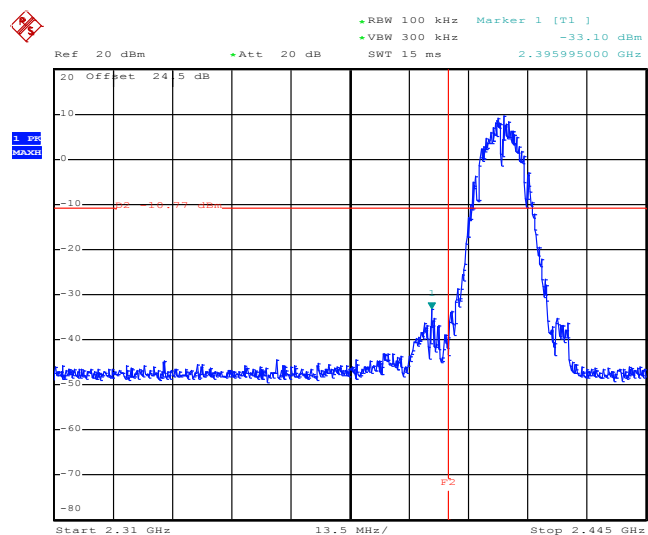




### 3.4.6 Test Result of Conducted Spurious at Band Edges

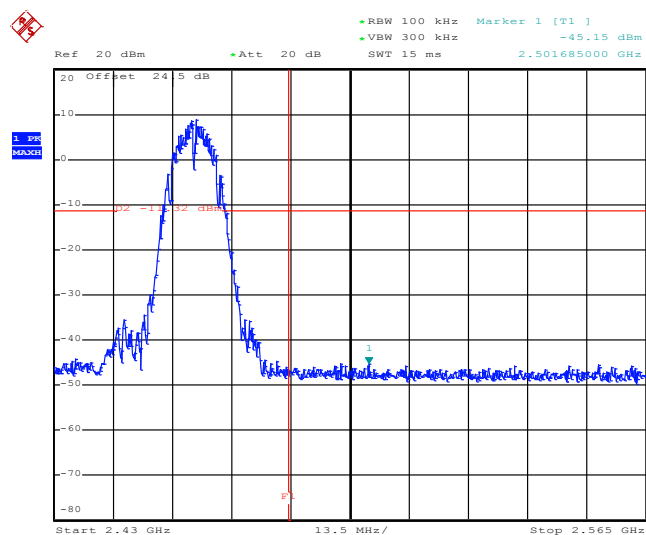
|                       |              |                            |          |
|-----------------------|--------------|----------------------------|----------|
| <b>Test Mode :</b>    | 802.11b      | <b>Temperature :</b>       | 24~26℃   |
| <b>Test Band :</b>    | Low and High | <b>Relative Humidity :</b> | 50~53%   |
| <b>Test Channel :</b> | 01 and 11    | <b>Test Engineer :</b>     | Bill Kuo |

### Low Band Edge Plot on 802.11b Channel 01



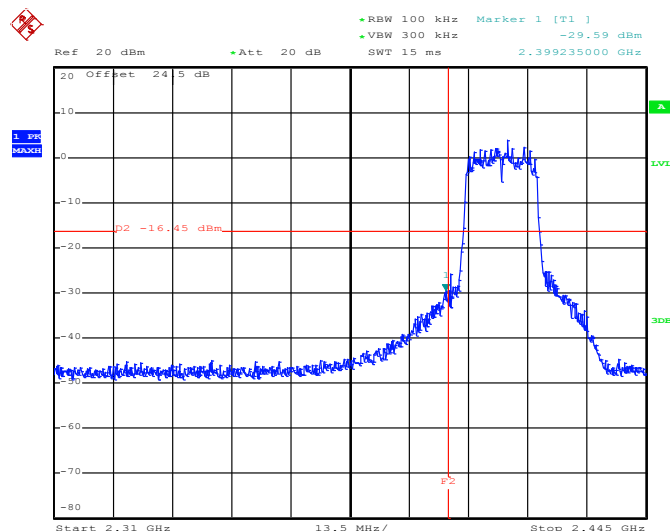
Date: 15.OCT.2012 20:49:30

### High Band Edge Plot on 802.11b Channel 11

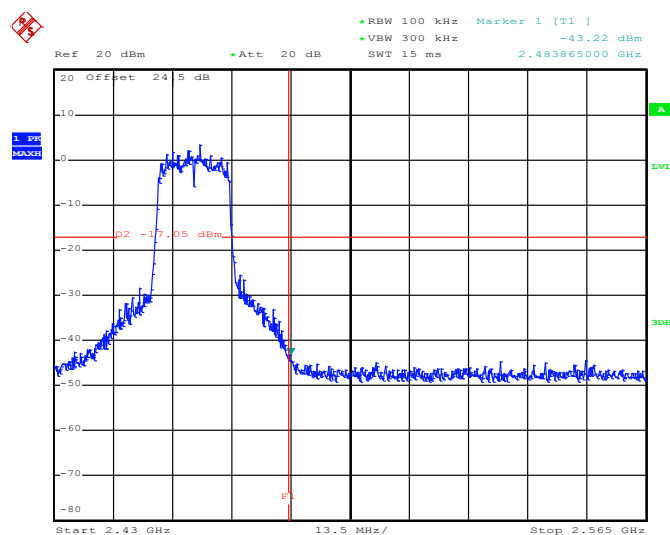


Date: 15.OCT.2012 21:00:10

|                       |              |                            |          |
|-----------------------|--------------|----------------------------|----------|
| <b>Test Mode :</b>    | 802.11g      | <b>Temperature :</b>       | 24~26°C  |
| <b>Test Band :</b>    | Low and High | <b>Relative Humidity :</b> | 50~53%   |
| <b>Test Channel :</b> | 01 and 11    | <b>Test Engineer :</b>     | Bill Kuo |

**Low Band Edge Plot on 802.11g Channel 01**


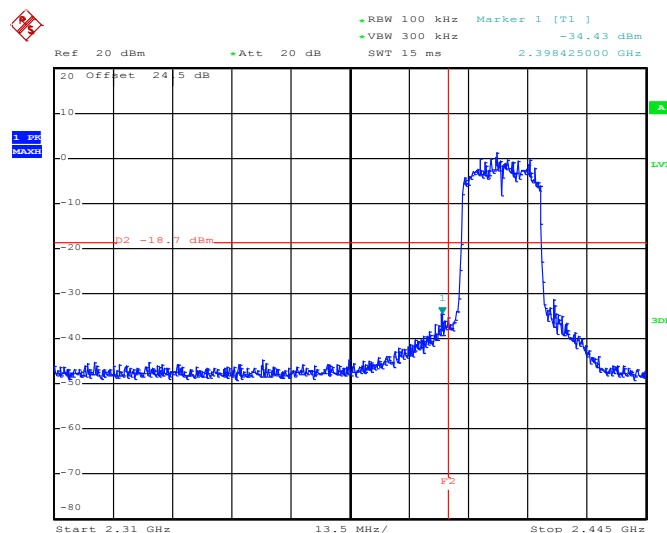
Date: 15.OCT.2012 21:19:48

**High Band Edge Plot on 802.11g Channel 11**


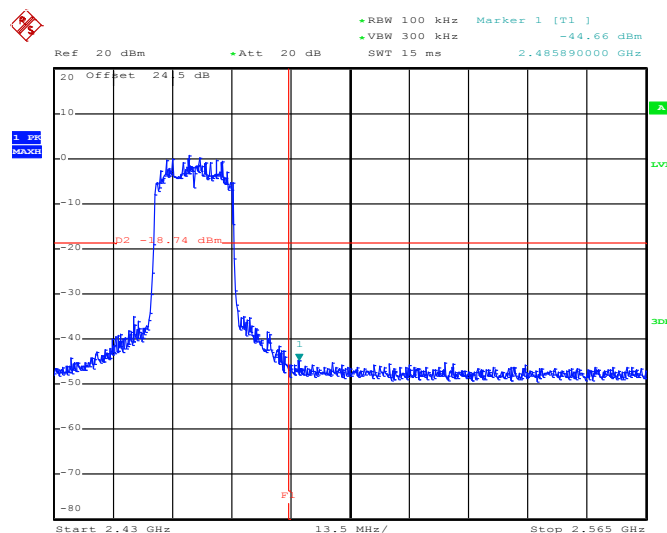
Date: 15.OCT.2012 21:10:17



|                |              |                     |          |
|----------------|--------------|---------------------|----------|
| Test Mode :    | 802.11n HT20 | Temperature :       | 24~26°C  |
| Test Band :    | Low and High | Relative Humidity : | 50~53%   |
| Test Channel : | 01 and 11    | Test Engineer :     | Bill Kuo |

**Low Band Edge Plot on 2.4GHz 802.11n HT20 Channel 01**

Date: 15.OCT.2012 21:26:07

**High Band Edge Plot on 2.4GHz 802.11n HT20 Channel 11**

Date: 15.OCT.2012 21:38:39



|                       |              |                            |          |
|-----------------------|--------------|----------------------------|----------|
| <b>Test Mode :</b>    | 802.11a      | <b>Temperature :</b>       | 24~26℃   |
| <b>Test Band :</b>    | Low and High | <b>Relative Humidity :</b> | 50~53%   |
| <b>Test Channel :</b> | 149 and 165  | <b>Test Engineer :</b>     | Bill Kuo |

1.9% MAX31

Ref 20 dBm Att 20 dB SWT 20 ms 5.72070000 GHz

RBW 100 kHz VBW 300 kHz -37.83 dBm

Marker 1 [T1]

Offset 27.13 dB

D2 -17.5 dBm

1

2

Start 5.675 GHz 10 MHz/ Stop 5.775 GHz

Date: 15.OCT.2012 21:43:10

Ref 20 dBm Att 20 dB BW 20 ms

RBW 100 kHz Marker 1 [T1] -39.81 dBm  
VBW 300 kHz 5.85840000 GHz

Offset 27.3 dB

1.9% MAGN

P2 -17.05 dBm

1

F1

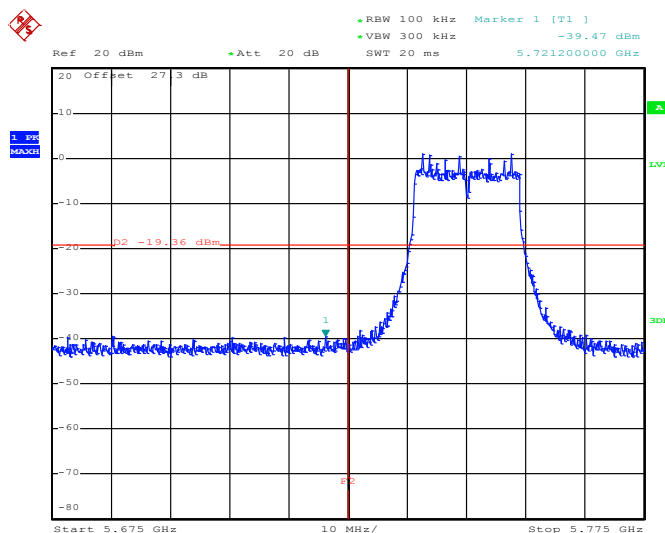
Start 5.775 GHz 10 MHz/ Stop 5.875 GHz

Date: 15.OCT.2012 21:50:14



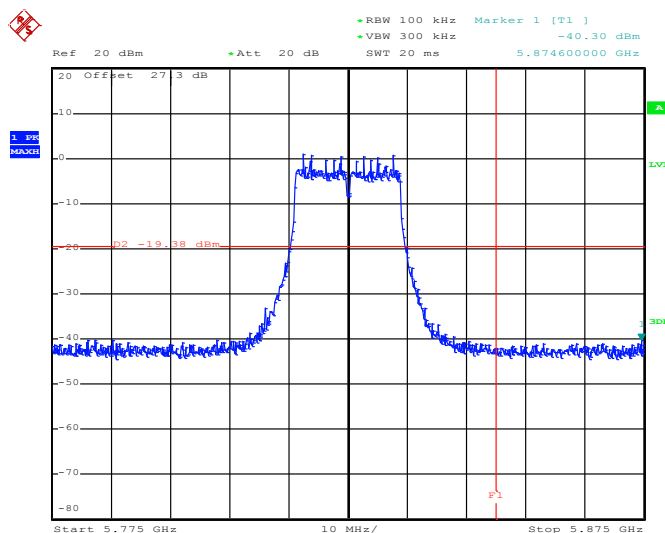
|                |              |                     |          |
|----------------|--------------|---------------------|----------|
| Test Mode :    | 802.11n HT20 | Temperature :       | 24~26°C  |
| Test Band :    | Low and High | Relative Humidity : | 50~53%   |
| Test Channel : | 149 and 165  | Test Engineer :     | Bill Kuo |

Low Band Edge Plot on 5GHz 802.11n HT20 Channel 149



Date: 15.OCT.2012 22:07:43

High Band Edge Plot on 5GHz 802.11n HT20 Channel 165



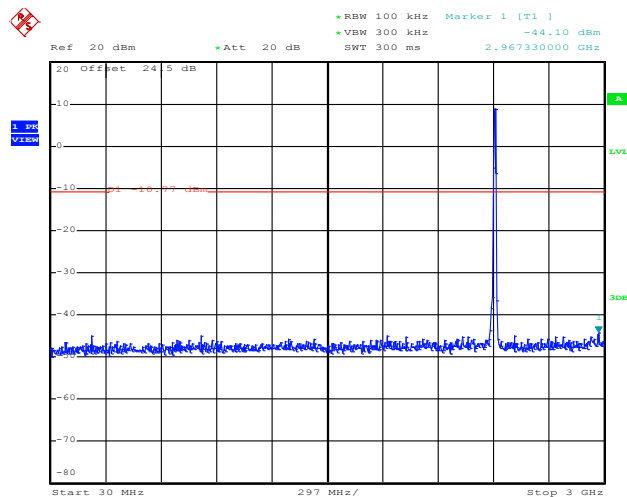
Date: 15.OCT.2012 21:53:49

### 3.4.7 Test Result of Conducted Spurious Emission

|                |                         |                     |          |
|----------------|-------------------------|---------------------|----------|
| Test Mode :    | 802.11b                 | Temperature :       | 24~26°C  |
| Test Band :    | 30MHz-3GHz and 2G-25GHz | Relative Humidity : | 50~53%   |
| Test Channel : | 01, 06, 11              | Test Engineer :     | Bill Kuo |

#### 802.11b 30 MHz~3 GHz

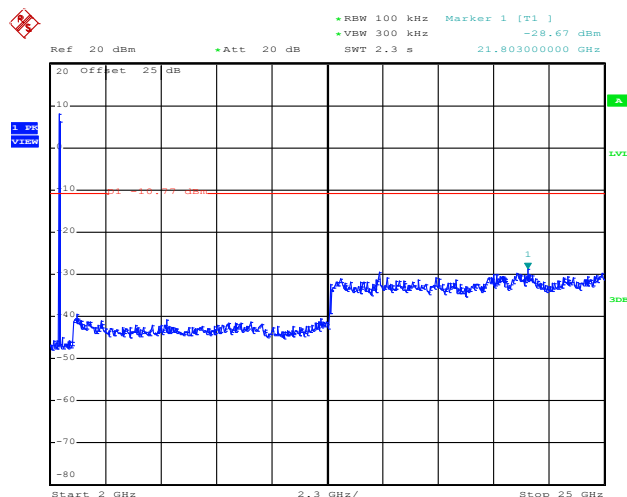
##### Conducted Spurious Emission Plot on Channel 01



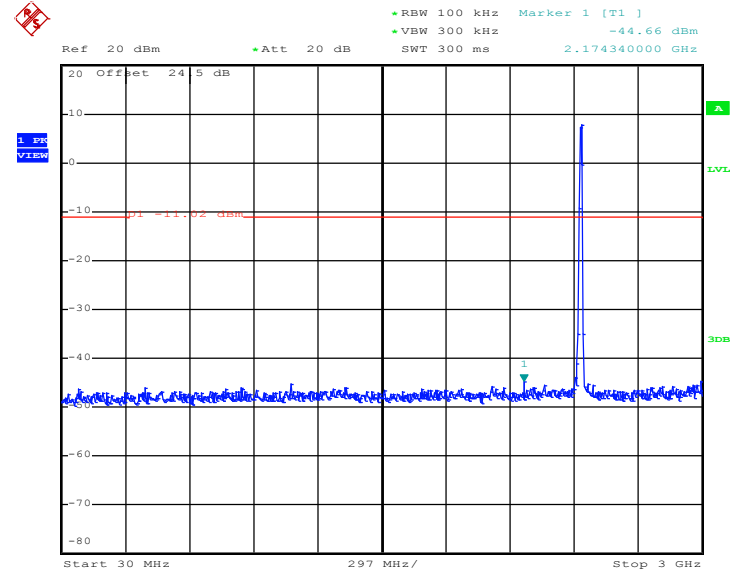
Date: 15.OCT.2012 20:49:49

#### 802.11b 2 GHz~25 GHz

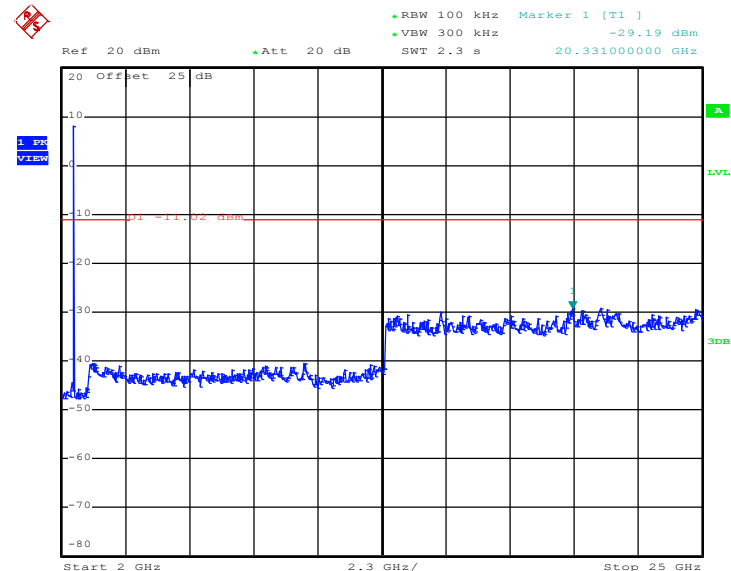
##### Conducted Spurious Emission Plot on Channel 01



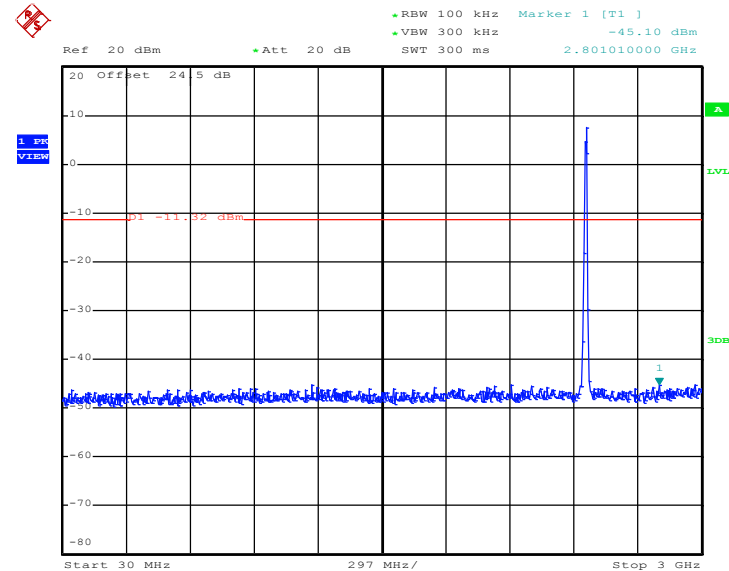
Date: 15.OCT.2012 20:50:07

**802.11b 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 06**


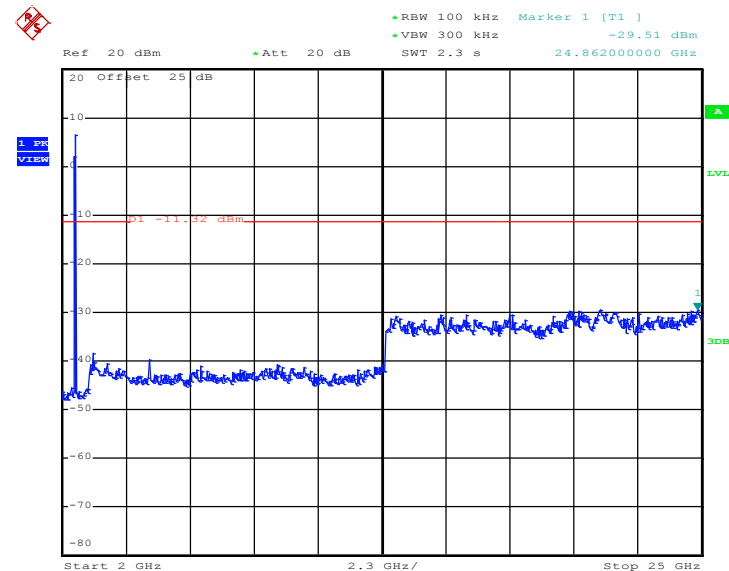
Date: 15.OCT.2012 20:53:18

**802.11b 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 06**


Date: 15.OCT.2012 20:53:35

**802.11b 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 15.OCT.2012 21:00:32

**802.11b 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 11**


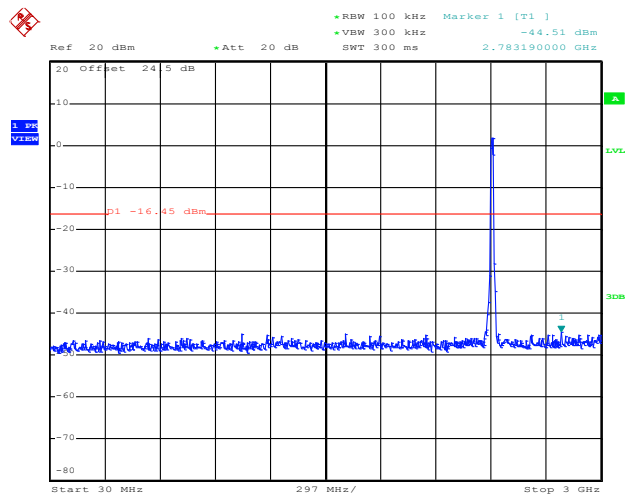
Date: 15.OCT.2012 21:00:50



|                |                         |                     |          |
|----------------|-------------------------|---------------------|----------|
| Test Mode :    | 802.11g                 | Temperature :       | 24~26°C  |
| Test Band :    | 30MHz-3GHz and 2G-25GHz | Relative Humidity : | 50~53%   |
| Test Channel : | 01, 06, 11              | Test Engineer :     | Bill Kuo |

### 802.11g 30 MHz~3 GHz

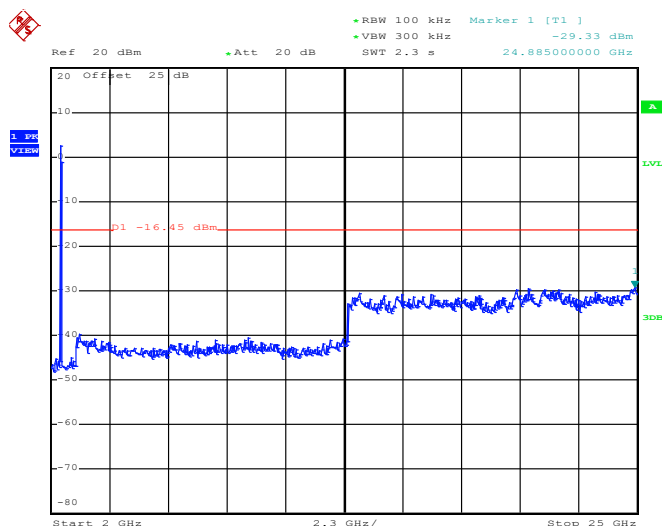
#### Conducted Spurious Emission Plot on Channel 01



Date: 15.OCT.2012 21:20:07

### 802.11g 2 GHz~25 GHz

#### Conducted Spurious Emission Plot on Channel 01

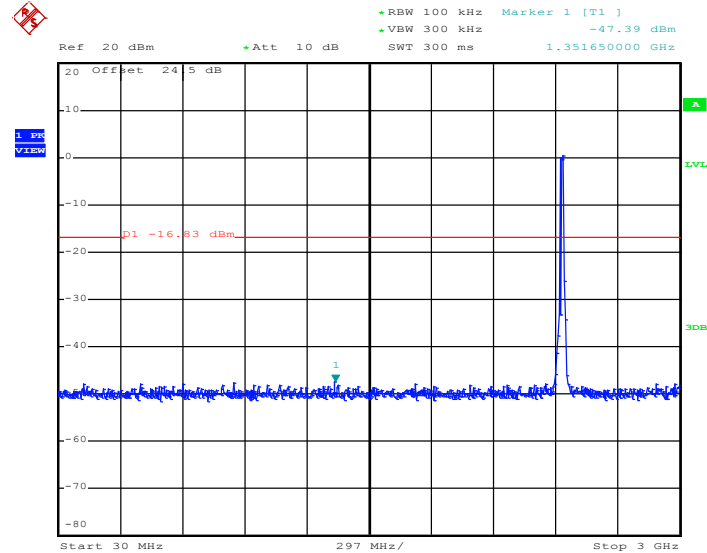


Date: 15.OCT.2012 21:20:24



802.11g 30 MHz~3 GHz

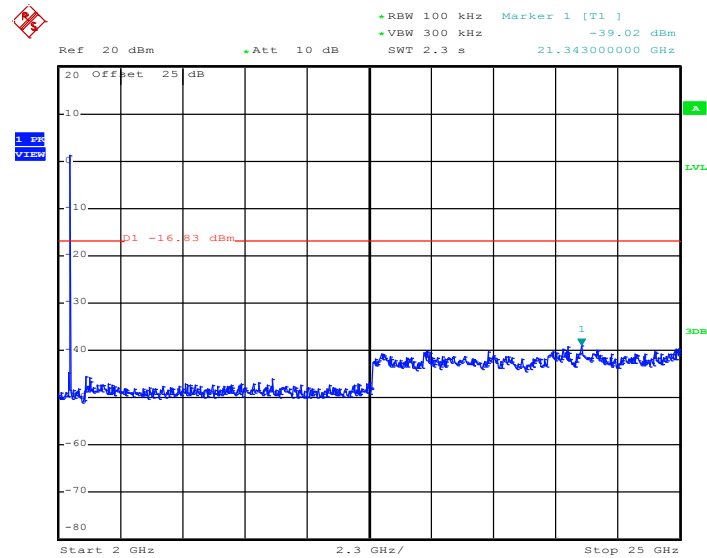
Conducted Spurious Emission Plot on Channel 06



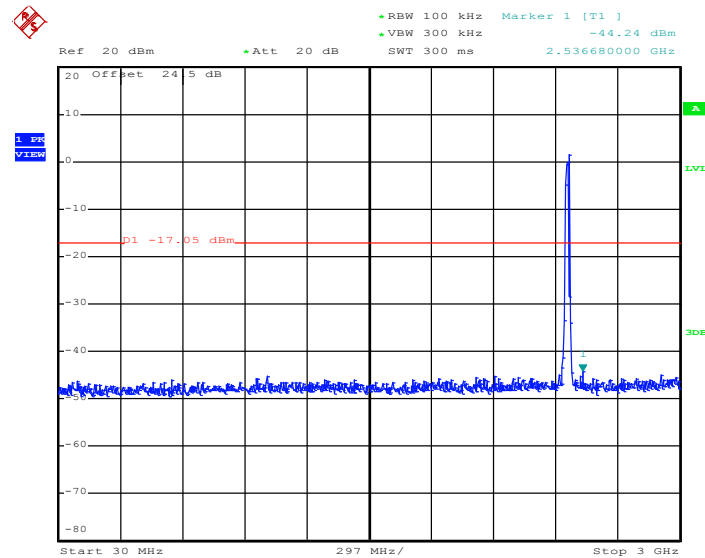
Date: 15.OCT.2012 22:16:34

802.11g 2 GHz~25 GHz

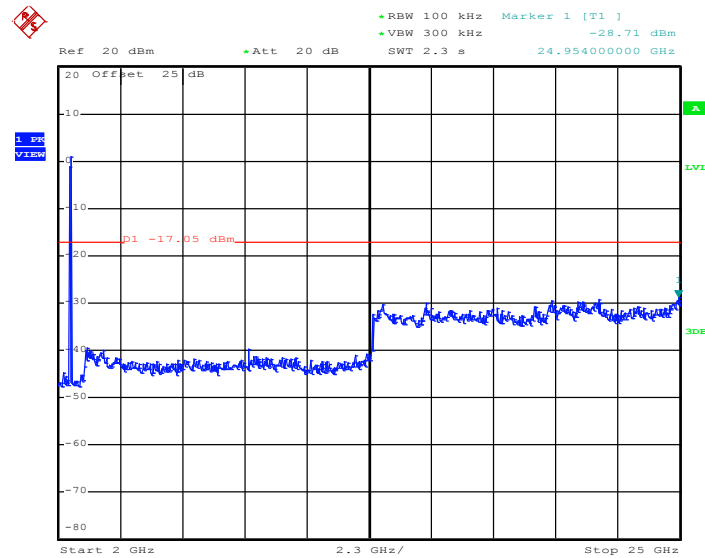
Conducted Spurious Emission Plot on Channel 06



Date: 15.OCT.2012 22:16:52

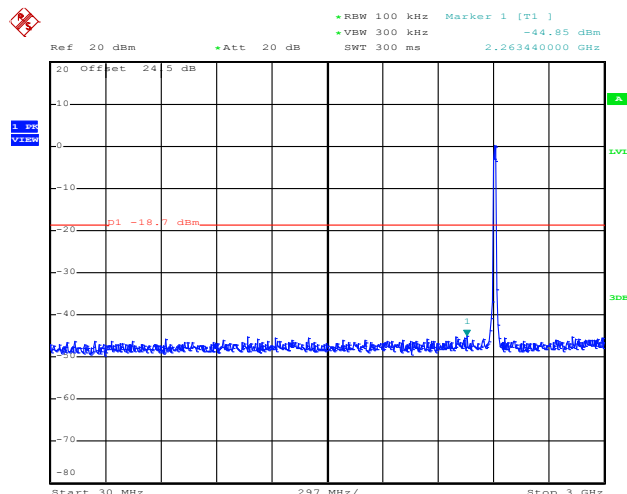
**802.11g 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 15.OCT.2012 21:11:51

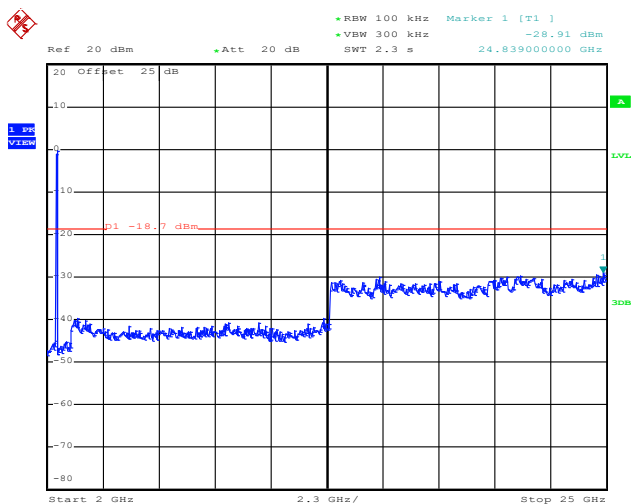
**802.11g 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 15.OCT.2012 21:12:08

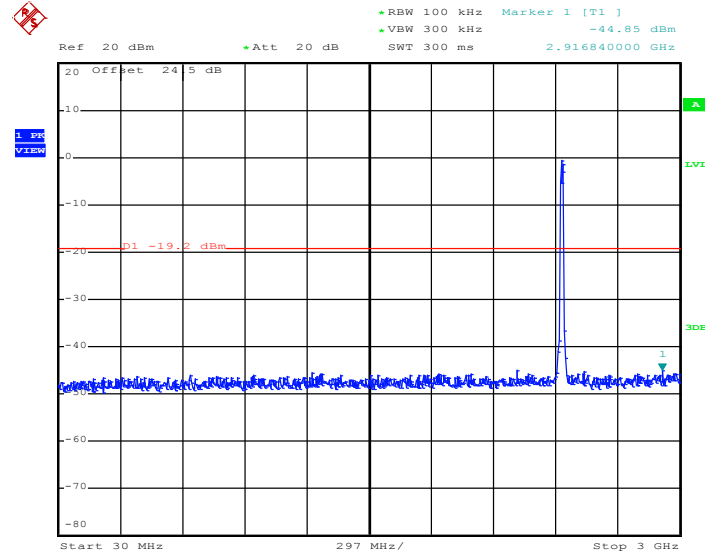
|                       |                         |                            |          |
|-----------------------|-------------------------|----------------------------|----------|
| <b>Test Mode :</b>    | 802.11n HT20            | <b>Temperature :</b>       | 24~26°C  |
| <b>Test Band :</b>    | 30MHz-3GHz and 2G-25GHz | <b>Relative Humidity :</b> | 50~53%   |
| <b>Test Channel :</b> | 01, 06, 11              | <b>Test Engineer :</b>     | Bill Kuo |

**2.4GHz 802.11n HT20 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 01**


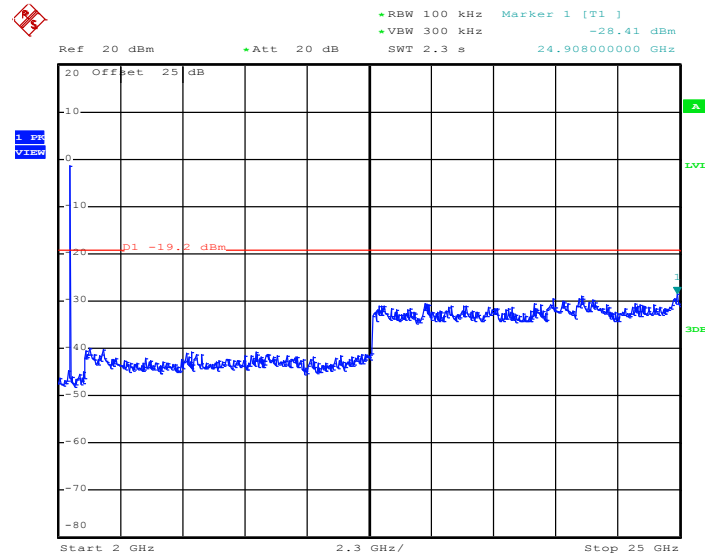
Date: 15.OCT.2012 21:27:49

**2.4GHz 802.11n HT20 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 01**


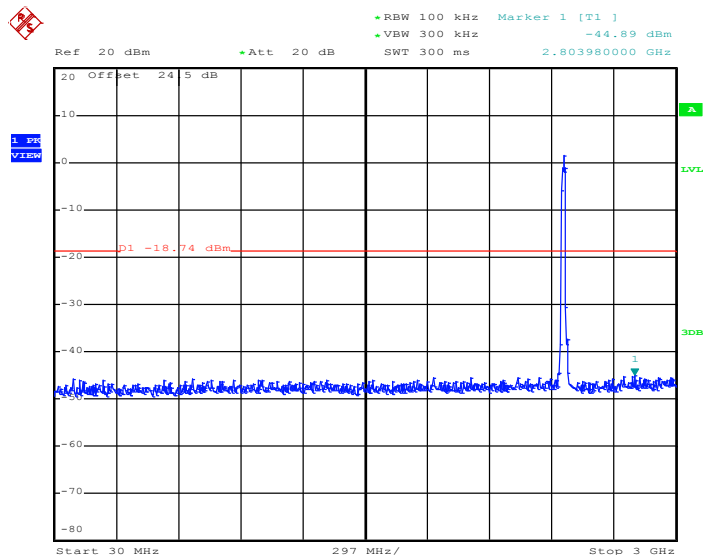
Date: 15.OCT.2012 21:28:07

**2.4GHz 802.11n HT20 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 06**


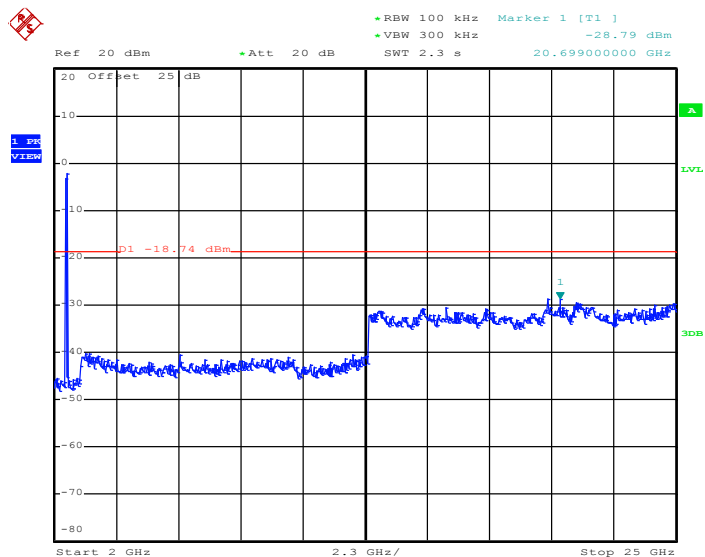
Date: 15.OCT.2012 21:35:36

**2.4GHz 802.11n HT20 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 06**


Date: 15.OCT.2012 21:35:54

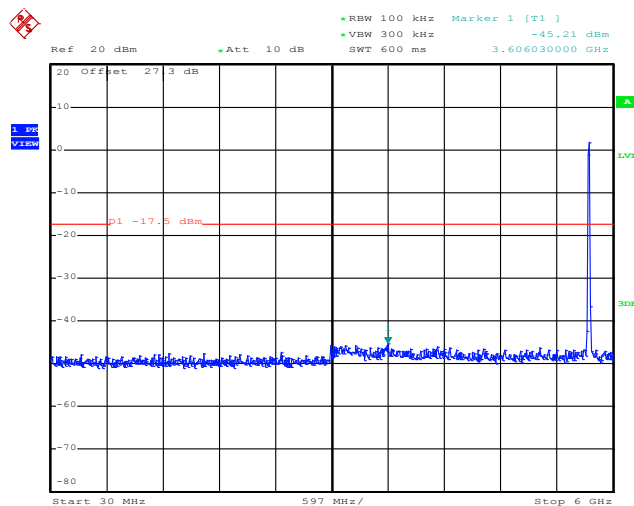
**2.4GHz 802.11n HT20 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 15.OCT.2012 21:38:58

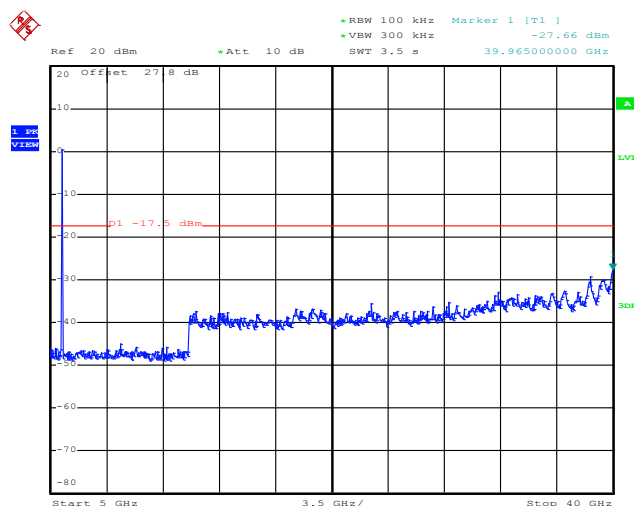
**2.4GHz 802.11n HT20 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 15.OCT.2012 21:39:15

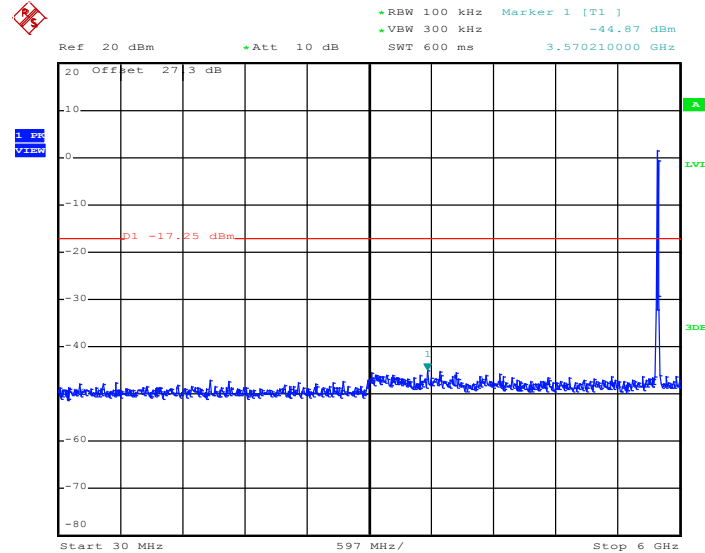
|                       |                         |                            |          |
|-----------------------|-------------------------|----------------------------|----------|
| <b>Test Mode :</b>    | 802.11a                 | <b>Temperature :</b>       | 24~26°C  |
| <b>Test Band :</b>    | 30MHz-6GHz and 5G-40GHz | <b>Relative Humidity :</b> | 50~53%   |
| <b>Test Channel :</b> | 149, 157, 165           | <b>Test Engineer :</b>     | Bill Kuo |

**802.11a 30 MHz~6 GHz**
**Conducted Spurious Emission Plot on Channel 149**


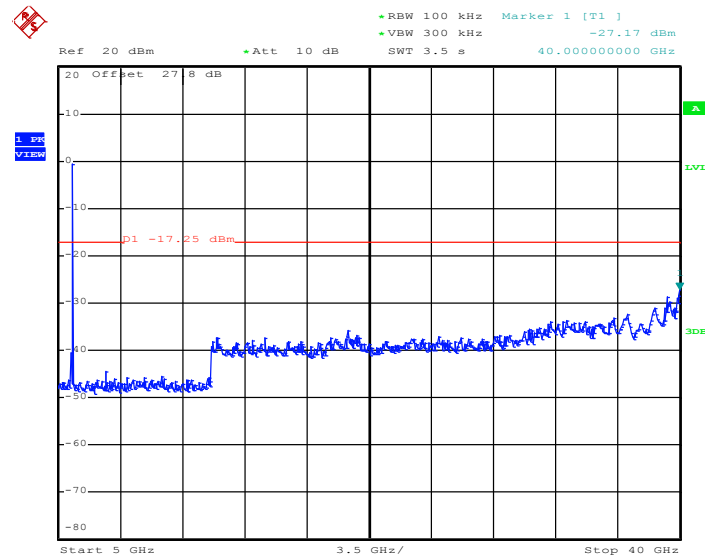
Date: 15.OCT.2012 21:44:15

**802.11a 5 GHz~40 GHz**
**Conducted Spurious Emission Plot on Channel 149**


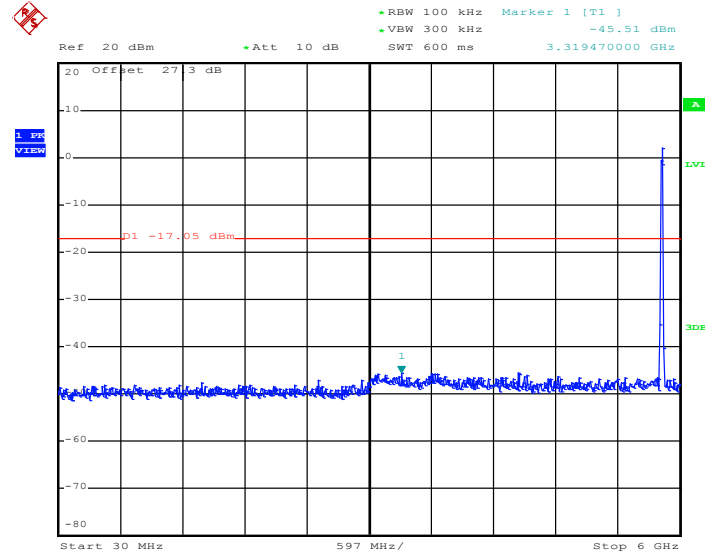
Date: 15.OCT.2012 21:44:33

**802.11a 30 MHz~6 GHz**
**Conducted Spurious Emission Plot on Channel 157**


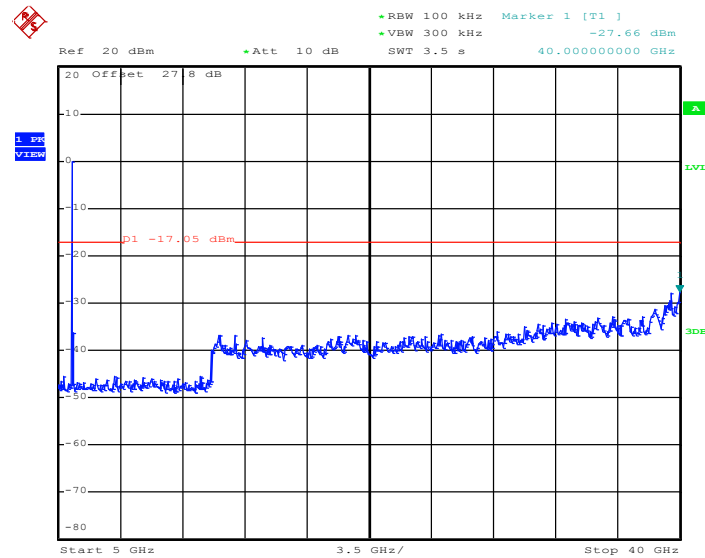
Date: 15.OCT.2012 21:46:44

**802.11a 5 GHz~40 GHz**
**Conducted Spurious Emission Plot on Channel 157**


Date: 15.OCT.2012 21:47:02

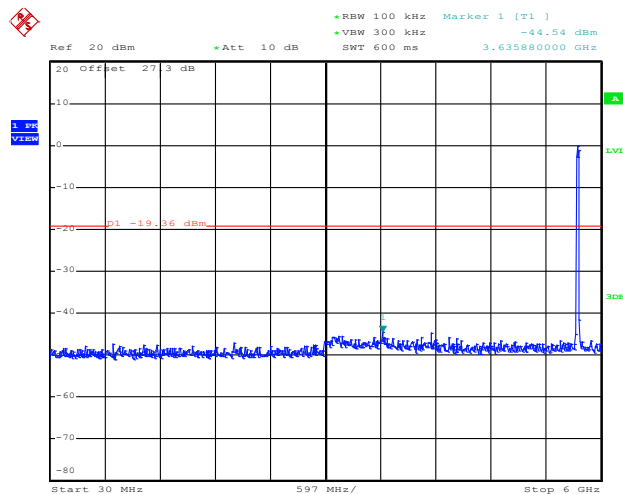
**802.11a 30 MHz~6 GHz**
**Conducted Spurious Emission Plot on Channel 165**


Date: 15.OCT.2012 21:50:33

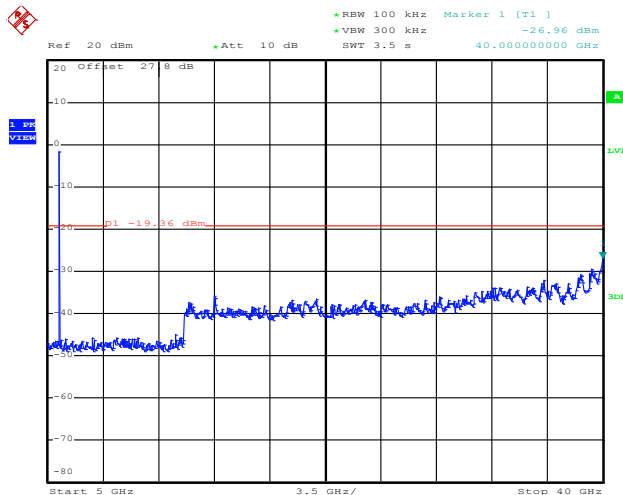
**802.11a 5 GHz~40 GHz**
**Conducted Spurious Emission Plot on Channel 165**


Date: 15.OCT.2012 21:50:50

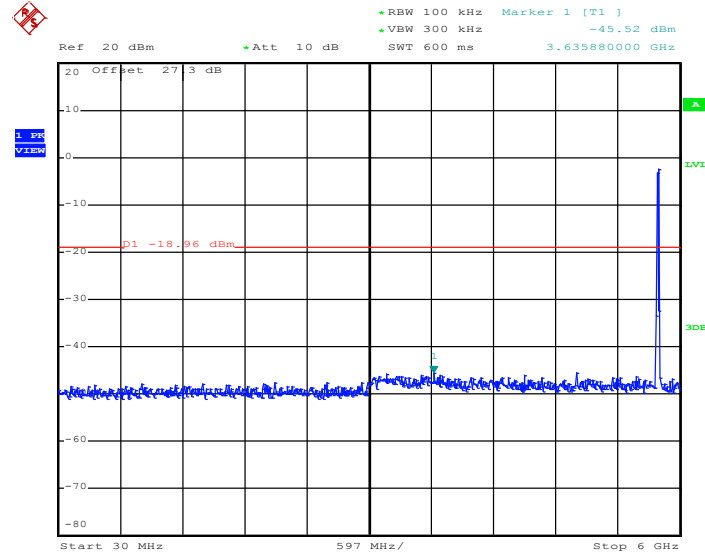
|                       |                         |                            |          |
|-----------------------|-------------------------|----------------------------|----------|
| <b>Test Mode :</b>    | 802.11n HT20            | <b>Temperature :</b>       | 24~26°C  |
| <b>Test Band :</b>    | 30MHz-6GHz and 5G-40GHz | <b>Relative Humidity :</b> | 50~53%   |
| <b>Test Channel :</b> | 149, 157, 165           | <b>Test Engineer :</b>     | Bill Kuo |

**5GHz 802.11n HT20 30 MHz~6 GHz**
**Conducted Spurious Emission Plot on Channel 149**


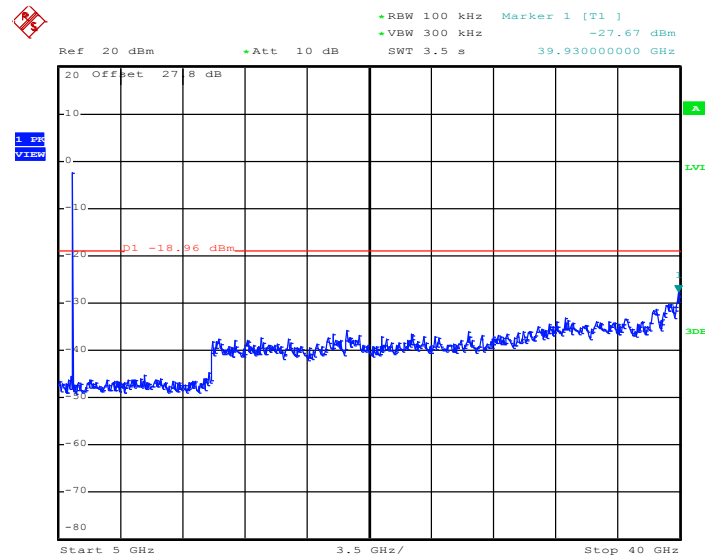
Date: 15.OCT.2012 22:08:11

**5GHz 802.11n HT20 5 GHz~40 GHz**
**Conducted Spurious Emission Plot on Channel 149**


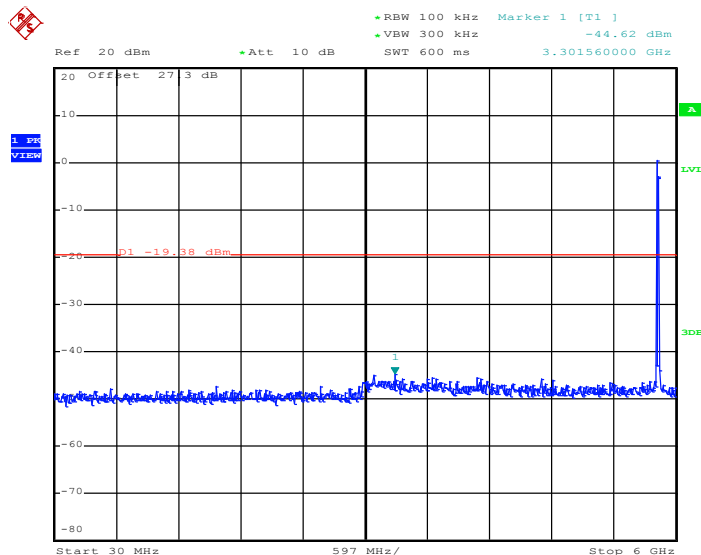
Date: 15.OCT.2012 22:08:29

**5GHz 802.11n HT20 30 MHz~6 GHz**
**Conducted Spurious Emission Plot on Channel 157**


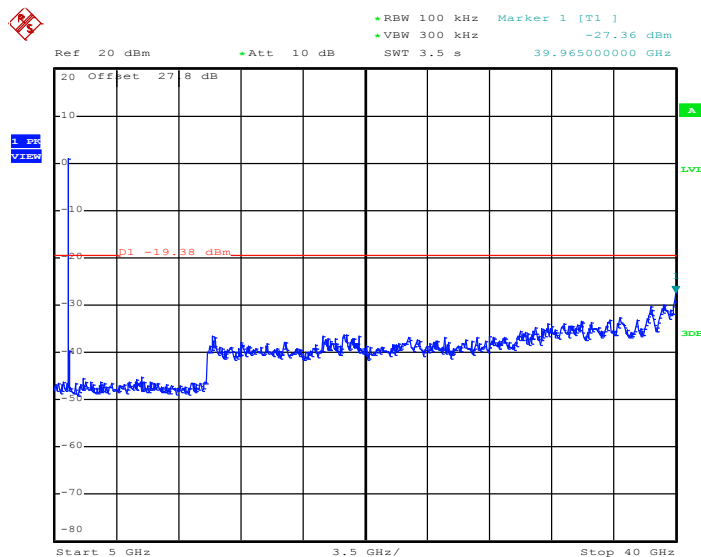
Date: 15.OCT.2012 21:58:37

**5GHz 802.11n HT20 5 GHz~40 GHz**
**Conducted Spurious Emission Plot on Channel 157**


Date: 15.OCT.2012 21:58:55

**5GHz 802.11n HT20 30 MHz~6 GHz**
**Conducted Spurious Emission Plot on Channel 165**


Date: 15.OCT.2012 21:54:17

**5GHz 802.11n HT20 5 GHz~40 GHz**
**Conducted Spurious Emission Plot on Channel 165**


Date: 15.OCT.2012 21:54:35

### 3.5 Radiated Band Edges and Spurious Emission Measurement

#### 3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. 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                                |

#### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.5.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 KHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.

For average measurement:

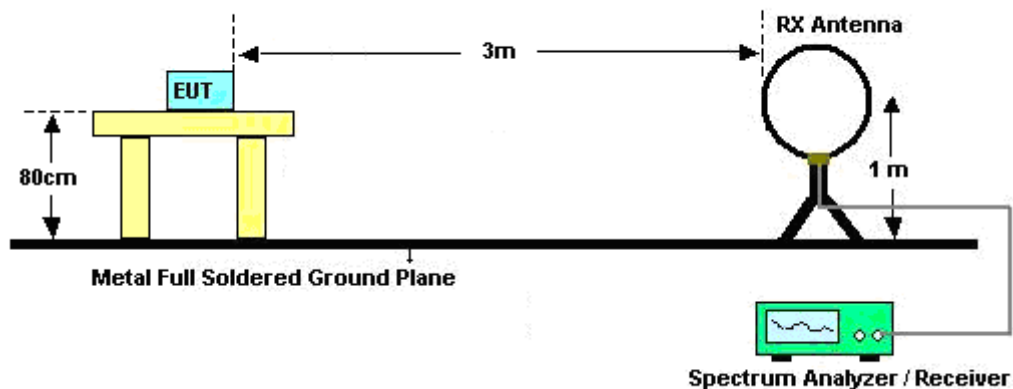
  - VBW = 10 Hz, when duty cycle is no less than 98 percent.
  - VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

| Band                | Duty Cycle(%) | T(us) | 1/T(KHz) | VBW Setting |
|---------------------|---------------|-------|----------|-------------|
| 802.11b             | 98.76         | -     | -        | 10Hz        |
| 802.11g             | 93.46         | 1430  | 0.70     | 1kHz        |
| 2.4GHz 802.11n HT20 | 93.06         | 1340  | 0.75     | 1kHz        |
| 802.11a             | 93.46         | 1430  | 0.70     | 1kHz        |
| 5GHz 802.11n HT20   | 93.06         | 1340  | 0.75     | 1kHz        |

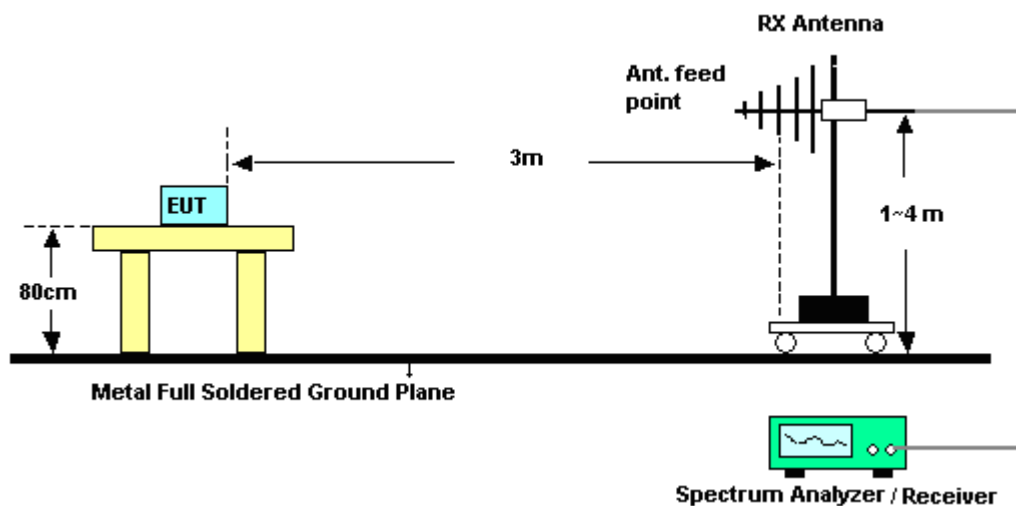
**Note:** For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

### 3.5.4 Test Setup

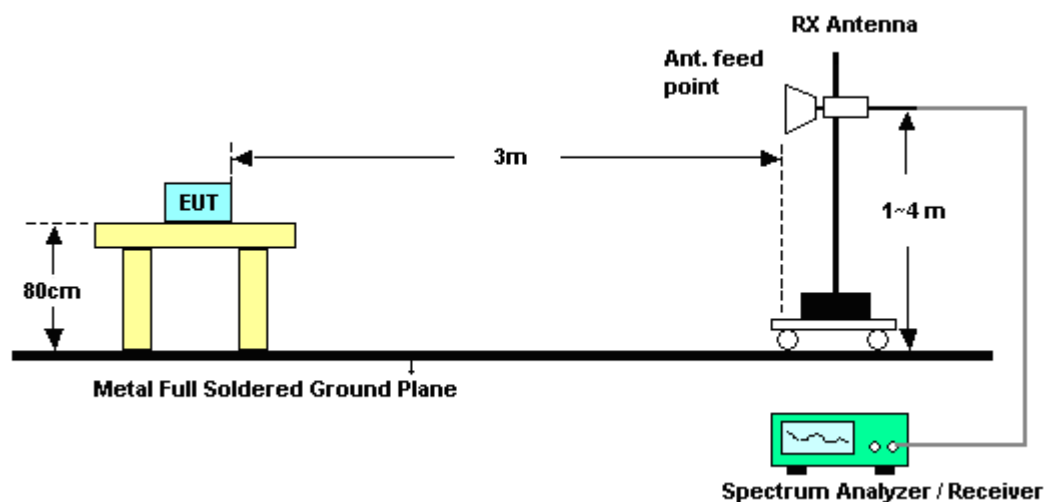
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



### 3.5.5 Test Results of Radiated Emissions (9KHz ~ 30MHz)

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.

### 3.5.6 Test Result of Radiated Band Edges

|                       |         |                            |            |
|-----------------------|---------|----------------------------|------------|
| <b>Test Mode :</b>    | 802.11b | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Band :</b>    | Low     | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Channel :</b> | 01      | <b>Test Engineer :</b>     | David Yang |

| 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  |
| 2384.34                       | 55.54               | -18.46                  | 74                          | 54.68                     | 32.16                       | 4.58                    | 35.88                      | 133                  | 316                     | Peak    |
| 2385.33                       | 46.61               | -7.39                   | 54                          | 45.75                     | 32.16                       | 4.58                    | 35.88                      | 133                  | 316                     | 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  |
| 2384.25                     | 53.47               | -20.53                  | 74                          | 52.61                     | 32.16                       | 4.58                    | 35.88                      | 101                  | 99                      | Peak    |
| 2385.24                     | 43.61               | -10.39                  | 54                          | 42.75                     | 32.16                       | 4.58                    | 35.88                      | 101                  | 99                      | Average |

|                       |         |                            |            |
|-----------------------|---------|----------------------------|------------|
| <b>Test Mode :</b>    | 802.11b | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Band :</b>    | High    | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Channel :</b> | 11      | <b>Test Engineer :</b>     | David Yang |

| 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  |
| 2485.34                       | 52.04               | -21.96                  | 74                          | 50.93                     | 32.28                       | 4.64                    | 35.81                      | 130                  | 313                     | Peak    |
| 2484.72                       | 39.34               | -14.66                  | 54                          | 38.23                     | 32.28                       | 4.64                    | 35.81                      | 130                  | 313                     | 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  |
| 2484.32                     | 50.24               | -23.76                  | 74                          | 49.13                     | 32.28                       | 4.64                    | 35.81                      | 103                  | 95                      | Peak    |
| 2484.74                     | 37.69               | -16.31                  | 54                          | 36.58                     | 32.28                       | 4.64                    | 35.81                      | 103                  | 95                      | Average |



|                       |         |                            |            |
|-----------------------|---------|----------------------------|------------|
| <b>Test Mode :</b>    | 802.11g | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Band :</b>    | Low     | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Channel :</b> | 01      | <b>Test Engineer :</b>     | David Yang |

| 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  |
| 2381.91                       | 68.96               | -5.04                   | 74                          | 68.1                      | 32.16                       | 4.58                    | 35.88                      | 107                  | 322                     | Peak    |
| 2390                          | 50.87               | -3.13                   | 54                          | 49.97                     | 32.18                       | 4.58                    | 35.86                      | 107                  | 322                     | 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  |
| 2389.56                     | 64.24               | -9.76                   | 74                          | 63.36                     | 32.18                       | 4.58                    | 35.88                      | 100                  | 78                      | Peak    |
| 2389.92                     | 46.18               | -7.82                   | 54                          | 45.28                     | 32.18                       | 4.58                    | 35.86                      | 100                  | 78                      | Average |

|                       |         |                            |            |
|-----------------------|---------|----------------------------|------------|
| <b>Test Mode :</b>    | 802.11g | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Band :</b>    | High    | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Channel :</b> | 11      | <b>Test Engineer :</b>     | David Yang |

| 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  |
| 2483.62                       | 69.81               | -4.19                   | 74                          | 68.7                      | 32.28                       | 4.64                    | 35.81                      | 104                  | 323                     | Peak    |
| 2483.52                       | 44.35               | -9.65                   | 54                          | 43.24                     | 32.28                       | 4.64                    | 35.81                      | 104                  | 323                     | 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  |
| 2483.68                     | 64.42               | -9.58                   | 74                          | 63.31                     | 32.28                       | 4.64                    | 35.81                      | 101                  | 74                      | Peak    |
| 2483.5                      | 40.38               | -13.62                  | 54                          | 39.27                     | 32.28                       | 4.64                    | 35.81                      | 101                  | 74                      | Average |



|                       |              |                            |            |
|-----------------------|--------------|----------------------------|------------|
| <b>Test Mode :</b>    | 802.11n HT20 | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Band :</b>    | Low          | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Channel :</b> | 01           | <b>Test Engineer :</b>     | David Yang |

| 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  |
| 2389.83                       | 66                  | -8                      | 74                          | 65.1                      | 32.18                       | 4.58                    | 35.86                      | 106                  | 308                     | Peak    |
| 2389.92                       | 46.84               | -7.16                   | 54                          | 45.94                     | 32.18                       | 4.58                    | 35.86                      | 106                  | 308                     | 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  |
| 2389.38                     | 61.16               | -12.84                  | 74                          | 60.28                     | 32.18                       | 4.58                    | 35.88                      | 103                  | 76                      | Peak    |
| 2389.92                     | 42.93               | -11.07                  | 54                          | 42.03                     | 32.18                       | 4.58                    | 35.86                      | 103                  | 76                      | Average |

|                       |              |                            |            |
|-----------------------|--------------|----------------------------|------------|
| <b>Test Mode :</b>    | 802.11n HT20 | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Band :</b>    | High         | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Channel :</b> | 11           | <b>Test Engineer :</b>     | David Yang |

| 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  |
| 2483.76                       | 62.97               | -11.03                  | 74                          | 61.86                     | 32.28                       | 4.64                    | 35.81                      | 129                  | 310                     | Peak    |
| 2483.7                        | 40.2                | -13.8                   | 54                          | 39.09                     | 32.28                       | 4.64                    | 35.81                      | 129                  | 310                     | 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  |
| 2483.58                     | 61.93               | -12.07                  | 74                          | 60.82                     | 32.28                       | 4.64                    | 35.81                      | 100                  | 79                      | Peak    |
| 2483.5                      | 38.19               | -15.81                  | 54                          | 37.08                     | 32.28                       | 4.64                    | 35.81                      | 100                  | 79                      | Average |



|                       |         |                            |            |
|-----------------------|---------|----------------------------|------------|
| <b>Test Mode :</b>    | 802.11a | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Band :</b>    | Low     | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Channel :</b> | 149     | <b>Test Engineer :</b>     | David Yang |

| 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 |
| 5725                          | 62.37               | -18.89                  | 81.26                       | 54.98                     | 35.07                       | 7.17                    | 34.85                      | 101                  | 63                      | Peak   |

| 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 |
| 5725                        | 70.36               | -16.92                  | 87.28                       | 62.97                     | 35.07                       | 7.17                    | 34.85                      | 106                  | 359                     | Peak   |

|                       |         |                            |            |
|-----------------------|---------|----------------------------|------------|
| <b>Test Mode :</b>    | 802.11a | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Band :</b>    | High    | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Channel :</b> | 165     | <b>Test Engineer :</b>     | David Yang |

| 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 |
| 5850                          | 55.86               | -25.66                  | 81.52                       | 48.23                     | 35.21                       | 7.29                    | 34.87                      | 100                  | 61                      | Peak   |

| 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 |
| 5850                        | 66.77               | -21.1                   | 87.87                       | 59.14                     | 35.21                       | 7.29                    | 34.87                      | 105                  | 0                       | Peak   |



|                       |              |                            |            |
|-----------------------|--------------|----------------------------|------------|
| <b>Test Mode :</b>    | 802.11n HT20 | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Band :</b>    | Low          | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Channel :</b> | 149          | <b>Test Engineer :</b>     | David Yang |

| 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 |
| 5725                          | 60.64               | -19                     | 79.64                       | 53.25                     | 35.07                       | 7.17                    | 34.85                      | 107                  | 311                     | Peak   |

| 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 |
| 5725                        | 65.28               | -20.19                  | 85.47                       | 57.89                     | 35.07                       | 7.17                    | 34.85                      | 106                  | 358                     | Peak   |

|                       |              |                            |            |
|-----------------------|--------------|----------------------------|------------|
| <b>Test Mode :</b>    | 802.11n HT20 | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Band :</b>    | High         | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Channel :</b> | 165          | <b>Test Engineer :</b>     | David Yang |

| 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 |
| 5850                          | 54.95               | -25.25                  | 80.2                        | 47.32                     | 35.21                       | 7.29                    | 34.87                      | 106                  | 308                     | Peak   |

| 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 |
| 5850                        | 60.51               | -25.39                  | 85.9                        | 52.88                     | 35.21                       | 7.29                    | 34.87                      | 104                  | 358                     | Peak   |

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

|                        |                                                                                                                                                                                                                                                                                                                                                  |                            |            |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 802.11b                                                                                                                                                                                                                                                                                                                                          | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 01                                                                                                                                                                                                                                                                                                                                               | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                                                                                                                                                                                                                       | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 2412 MHz is fundamental signal which can be ignored.<br>2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 107.79 dBuV/m - 20dB = 87.79 dBuV/m.<br>3. 7236 MHz and 9648MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 30.27                | 22.79               | -17.21                  | 40                          | 33.93                     | 19.8                        | 0.7                     | 31.64                      | -                    | -                       | Peak    |
| 213.06               | 32.42               | -11.08                  | 43.5                        | 52.8                      | 9.23                        | 1.51                    | 31.12                      | -                    | -                       | Peak    |
| 224.94               | 35.85               | -10.15                  | 46                          | 55.48                     | 9.75                        | 1.56                    | 30.94                      | 100                  | 162                     | Peak    |
| 312.6                | 33.85               | -12.15                  | 46                          | 49.62                     | 13.34                       | 1.81                    | 30.92                      | -                    | -                       | Peak    |
| 433.7                | 27.09               | -18.91                  | 46                          | 39.22                     | 16.77                       | 2.1                     | 31                         | -                    | -                       | Peak    |
| 740.3                | 24.93               | -21.07                  | 46                          | 30.09                     | 22.3                        | 2.73                    | 30.19                      | -                    | -                       | Peak    |
| 2412                 | 102.63              | -                       | -                           | 101.7                     | 32.2                        | 4.59                    | 35.86                      | 133                  | 316                     | Average |
| 2412                 | 107.79              | -                       | -                           | 106.86                    | 32.2                        | 4.59                    | 35.86                      | 133                  | 316                     | Peak    |
| 4824                 | 50.14               | -3.86                   | 54                          | 68.38                     | 34.27                       | 6.51                    | 59.02                      | 100                  | 76                      | Average |
| 4824                 | 51.83               | -22.17                  | 74                          | 70.07                     | 34.27                       | 6.51                    | 59.02                      | 100                  | 76                      | Peak    |
| 7236                 | 45.81               | -41.98                  | 87.79                       | 59.34                     | 36.05                       | 8.29                    | 57.87                      | 100                  | 0                       | Peak    |
| 9648                 | 49.3                | -38.49                  | 87.79                       | 58.67                     | 37.09                       | 9.48                    | 55.94                      | 100                  | 0                       | Peak    |
| 12060                | 47.86               | -6.14                   | 54                          | 54.26                     | 38.96                       | 10.6                    | 55.96                      | 115                  | 357                     | Average |
| 12060                | 52.62               | -21.38                  | 74                          | 59.02                     | 38.96                       | 10.6                    | 55.96                      | 115                  | 357                     | Peak    |

|                        |                                                                                                                                                                                   |                            |          |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 802.11b                                                                                                                                                                           | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 01                                                                                                                                                                                | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                                                                                                                                                        | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2412 MHz is fundamental signal which can be ignored.<br>2. 7236 MHz and 9648MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. |                            |          |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 32.97                | 32.93               | -7.07                   | 40                          | 46.08                   | 17.76                       | 0.72                    | 31.63                      | 100                  | 93                      | Peak    |
| 209.01               | 29.17               | -14.33                  | 43.5                        | 49.66                   | 9.19                        | 1.5                     | 31.18                      | -                    | -                       | Peak    |
| 224.94               | 33.82               | -12.18                  | 46                          | 53.45                   | 9.75                        | 1.56                    | 30.94                      | -                    | -                       | Peak    |
| 316.8                | 29.63               | -16.37                  | 46                          | 45.28                   | 13.44                       | 1.82                    | 30.91                      | -                    | -                       | Peak    |
| 433.7                | 23.37               | -22.63                  | 46                          | 35.5                    | 16.77                       | 2.1                     | 31                         | -                    | -                       | Peak    |
| 801.9                | 25                  | -21                     | 46                          | 29.86                   | 22.12                       | 2.83                    | 29.81                      | -                    | -                       | Peak    |
| 2412                 | 99.57               | -                       | -                           | 98.64                   | 32.2                        | 4.59                    | 35.86                      | 101                  | 99                      | Average |
| 2412                 | 104.55              | -                       | -                           | 103.62                  | 32.2                        | 4.59                    | 35.86                      | 101                  | 99                      | Peak    |
| 4824                 | 53.84               | -0.16                   | 54                          | 72.08                   | 34.27                       | 6.51                    | 59.02                      | 200                  | 14                      | Average |
| 4824                 | 55.94               | -18.06                  | 74                          | 74.18                   | 34.27                       | 6.51                    | 59.02                      | 200                  | 14                      | Peak    |
| 7236                 | 45.86               | -38.69                  | 84.55                       | 59.39                   | 36.05                       | 8.29                    | 57.87                      | 100                  | 0                       | Peak    |
| 9648                 | 49.75               | -34.8                   | 84.55                       | 59.12                   | 37.09                       | 9.48                    | 55.94                      | 100                  | 0                       | Peak    |
| 12060                | 46.97               | -7.03                   | 54                          | 53.37                   | 38.96                       | 10.6                    | 55.96                      | 104                  | 336                     | Average |
| 12060                | 51.21               | -22.79                  | 74                          | 57.61                   | 38.96                       | 10.6                    | 55.96                      | 104                  | 336                     | Peak    |

|                        |                                                                                                                                                                                                                                                                   |                            |            |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 802.11b                                                                                                                                                                                                                                                           | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 06                                                                                                                                                                                                                                                                | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                                                                                                                                        | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 2437 MHz is fundamental signal which can be ignored.<br>2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.<br>3. Average measurement was not performed if peak level went lower than the average limit. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2437                 | 102.35              | -                       | -                           | 101.34                  | 32.24                       | 4.61                    | 35.84                      | 132                  | 318                     | Average |
| 2437                 | 107.01              | -                       | -                           | 106                     | 32.24                       | 4.61                    | 35.84                      | 132                  | 318                     | Peak    |
| 4875                 | 51.82               | -2.18                   | 54                          | 69.89                   | 34.28                       | 6.53                    | 58.88                      | 100                  | 83                      | Average |
| 4875                 | 53.42               | -20.58                  | 74                          | 71.49                   | 34.28                       | 6.53                    | 58.88                      | 100                  | 83                      | Peak    |
| 7311                 | 47.2                | -26.8                   | 74                          | 60.73                   | 36.04                       | 8.42                    | 57.99                      | 100                  | 0                       | Peak    |
| 9747                 | 49.62               | -37.39                  | 87.01                       | 58.81                   | 37.21                       | 9.49                    | 55.89                      | 100                  | 0                       | Peak    |
| 12186                | 48.95               | -5.05                   | 54                          | 55.37                   | 39.05                       | 10.6                    | 56.07                      | 113                  | 357                     | Average |
| 12186                | 54.08               | -19.92                  | 74                          | 60.5                    | 39.05                       | 10.6                    | 56.07                      | 113                  | 357                     | Peak    |

|                        |                                                                                                                                                                                                                                                                   |                            |          |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 802.11b                                                                                                                                                                                                                                                           | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 06                                                                                                                                                                                                                                                                | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                                                                                                                                                                                                                                        | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2437 MHz is fundamental signal which can be ignored.<br>2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.<br>3. Average measurement was not performed if peak level went lower than the average limit. |                            |          |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2437                 | 100.27              | -                       | -                           | 99.26                   | 32.24                       | 4.61                    | 35.84                      | 102                  | 79                      | Average |
| 2437                 | 105.11              | -                       | -                           | 104.12                  | 32.22                       | 4.61                    | 35.84                      | 102                  | 79                      | Peak    |
| 4875                 | 53.51               | -0.49                   | 54                          | 71.58                   | 34.28                       | 6.53                    | 58.88                      | 102                  | 4                       | Average |
| 4875                 | 55.71               | -18.29                  | 74                          | 73.78                   | 34.28                       | 6.53                    | 58.88                      | 102                  | 4                       | Peak    |
| 7314                 | 49.06               | -24.94                  | 74                          | 62.59                   | 36.04                       | 8.42                    | 57.99                      | 100                  | 0                       | Peak    |
| 9747                 | 50.84               | -34.27                  | 85.11                       | 60.03                   | 37.21                       | 9.49                    | 55.89                      | 100                  | 0                       | Peak    |
| 12186                | 48.26               | -5.74                   | 54                          | 54.68                   | 39.05                       | 10.6                    | 56.07                      | 103                  | 354                     | Average |
| 12186                | 52.8                | -21.2                   | 74                          | 59.22                   | 39.05                       | 10.6                    | 56.07                      | 103                  | 354                     | Peak    |

|                        |                                                                                                                                                                                                                                                                   |                            |            |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 802.11b                                                                                                                                                                                                                                                           | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 11                                                                                                                                                                                                                                                                | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                                                                                                                                        | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 2462 MHz is fundamental signal which can be ignored.<br>2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.<br>3. Average measurement was not performed if peak level went lower than the average limit. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2462                 | 102.95              | -                       | -                           | 101.9                   | 32.26                       | 4.62                    | 35.83                      | 130                  | 313                     | Average |
| 2462                 | 107.97              | -                       | -                           | 106.92                  | 32.26                       | 4.62                    | 35.83                      | 130                  | 313                     | Peak    |
| 4926                 | 51.82               | -2.18                   | 54                          | 69.71                   | 34.29                       | 6.56                    | 58.74                      | 100                  | 48                      | Average |
| 4926                 | 53.49               | -20.51                  | 74                          | 71.38                   | 34.29                       | 6.56                    | 58.74                      | 100                  | 48                      | Peak    |
| 7386                 | 46.47               | -27.53                  | 74                          | 60.03                   | 36.02                       | 8.55                    | 58.13                      | 100                  | 0                       | Peak    |
| 9849                 | 51.33               | -36.64                  | 87.97                       | 60.32                   | 37.33                       | 9.51                    | 55.83                      | 100                  | 0                       | Peak    |
| 12309                | 50.89               | -23.11                  | 74                          | 57.32                   | 39.15                       | 10.61                   | 56.19                      | 100                  | 0                       | Peak    |

|                        |                                                                                                                                                                                                                                                                   |                            |          |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 802.11b                                                                                                                                                                                                                                                           | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 11                                                                                                                                                                                                                                                                | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                                                                                                                                                                                                                                        | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2462 MHz is fundamental signal which can be ignored.<br>2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.<br>3. Average measurement was not performed if peak level went lower than the average limit. |                            |          |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2462                 | 100.19              | -                       | -                           | 99.14                   | 32.26                       | 4.62                    | 35.83                      | 103                  | 95                      | Average |
| 2462                 | 105.1               | -                       | -                           | 104.05                  | 32.26                       | 4.62                    | 35.83                      | 103                  | 95                      | Peak    |
| 4926                 | 53.18               | -0.82                   | 54                          | 71.07                   | 34.29                       | 6.56                    | 58.74                      | 103                  | 4                       | Average |
| 4926                 | 55.14               | -18.86                  | 74                          | 73.03                   | 34.29                       | 6.56                    | 58.74                      | 103                  | 4                       | Peak    |
| 7386                 | 46.39               | -27.61                  | 74                          | 59.95                   | 36.02                       | 8.55                    | 58.13                      | 100                  | 0                       | Peak    |
| 9849                 | 51.15               | -33.95                  | 85.1                        | 60.14                   | 37.33                       | 9.51                    | 55.83                      | 100                  | 0                       | Peak    |
| 12309                | 45.96               | -8.04                   | 54                          | 52.39                   | 39.15                       | 10.61                   | 56.19                      | 101                  | 331                     | Average |
| 12309                | 51.79               | -22.21                  | 74                          | 58.22                   | 39.15                       | 10.61                   | 56.19                      | 101                  | 331                     | Peak    |

|                        |                                                                                                                                                      |                            |            |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 802.11g                                                                                                                                              | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 01                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 2412 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2412                 | 97.29               | -                       | -                           | 96.36                   | 32.2                        | 4.59                    | 35.86                      | 107                  | 322                     | Average |
| 2412                 | 108.02              | -                       | -                           | 107.09                  | 32.2                        | 4.59                    | 35.86                      | 107                  | 322                     | Peak    |
| 4824                 | 45.9                | -28.1                   | 74                          | 64.14                   | 34.27                       | 6.51                    | 59.02                      | 100                  | 0                       | Peak    |
| 12066                | 40.36               | -13.64                  | 54                          | 46.76                   | 38.96                       | 10.6                    | 55.96                      | 115                  | 356                     | Average |
| 12066                | 53.63               | -20.37                  | 74                          | 60.03                   | 38.96                       | 10.6                    | 55.96                      | 115                  | 356                     | Peak    |

|                        |                                                                                                                                                      |                            |          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 802.11g                                                                                                                                              | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 01                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2412 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |          |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2412                 | 92.01               | -                       | -                           | 91.08                   | 32.2                        | 4.59                    | 35.86                      | 100                  | 78                      | Average |
| 2412                 | 102.73              | -                       | -                           | 101.8                   | 32.2                        | 4.59                    | 35.86                      | 100                  | 78                      | Peak    |
| 4833                 | 47.61               | -26.39                  | 74                          | 65.84                   | 34.27                       | 6.52                    | 59.02                      | 100                  | 0                       | Peak    |
| 12060                | 40.24               | -13.76                  | 54                          | 46.64                   | 38.96                       | 10.6                    | 55.96                      | 110                  | 353                     | Average |
| 12060                | 52.05               | -21.95                  | 74                          | 58.45                   | 38.96                       | 10.6                    | 55.96                      | 110                  | 353                     | Peak    |

|                        |                                                                                                                                                      |                            |            |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 802.11g                                                                                                                                              | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 06                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 2437 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2437                 | 98.33               | -                       | -                           | 97.32                   | 32.24                       | 4.61                    | 35.84                      | 131                  | 325                     | Average |
| 2437                 | 108.97              | -                       | -                           | 107.96                  | 32.24                       | 4.61                    | 35.84                      | 131                  | 325                     | Peak    |
| 4875                 | 47.09               | -26.91                  | 74                          | 65.16                   | 34.28                       | 6.53                    | 58.88                      | 100                  | 0                       | Peak    |
| 12177                | 40.89               | -13.11                  | 54                          | 47.31                   | 39.04                       | 10.6                    | 56.06                      | 114                  | 5                       | Average |
| 12177                | 53.55               | -20.45                  | 74                          | 59.97                   | 39.04                       | 10.6                    | 56.06                      | 114                  | 5                       | Peak    |

|                        |                                                                                                                                                      |                            |          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 802.11g                                                                                                                                              | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 06                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2437 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |          |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2437                 | 93.55               | -                       | -                           | 92.54                   | 32.24                       | 4.61                    | 35.84                      | 101                  | 76                      | Average |
| 2437                 | 103.73              | -                       | -                           | 102.72                  | 32.24                       | 4.61                    | 35.84                      | 101                  | 76                      | Peak    |
| 4872                 | 47.76               | -26.24                  | 74                          | 65.83                   | 34.28                       | 6.53                    | 58.88                      | 100                  | 0                       | Peak    |
| 12186                | 40.44               | -13.56                  | 54                          | 46.86                   | 39.05                       | 10.6                    | 56.07                      | 104                  | 332                     | Average |
| 12186                | 52.35               | -21.65                  | 74                          | 58.77                   | 39.05                       | 10.6                    | 56.07                      | 104                  | 332                     | Peak    |

|                        |                                                                                                                                                      |                            |            |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 802.11g                                                                                                                                              | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 11                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 2462 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2462                 | 97.06               | -                       | -                           | 96.01                   | 32.26                       | 4.62                    | 35.83                      | 104                  | 323                     | Average |
| 2462                 | 107.79              | -                       | -                           | 106.74                  | 32.26                       | 4.62                    | 35.83                      | 104                  | 323                     | Peak    |
| 4914                 | 48.24               | -25.76                  | 74                          | 66.2                    | 34.28                       | 6.55                    | 58.79                      | 100                  | 0                       | Peak    |
| 12300                | 37.75               | -16.25                  | 54                          | 44.18                   | 39.15                       | 10.61                   | 56.19                      | 114                  | 6                       | Average |
| 12300                | 51.77               | -22.23                  | 74                          | 58.2                    | 39.15                       | 10.61                   | 56.19                      | 114                  | 6                       | Peak    |

|                        |                                                                                                                                                      |                            |          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 802.11g                                                                                                                                              | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 11                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2462 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |          |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2462                 | 93.29               | -                       | -                           | 92.24                   | 32.26                       | 4.62                    | 35.83                      | 101                  | 74                      | Average |
| 2462                 | 104.24              | -                       | -                           | 103.19                  | 32.26                       | 4.62                    | 35.83                      | 101                  | 74                      | Peak    |
| 4926                 | 50.8                | -23.2                   | 74                          | 68.69                   | 34.29                       | 6.56                    | 58.74                      | 100                  | 0                       | Peak    |
| 12291                | 49.35               | -24.65                  | 74                          | 55.78                   | 39.13                       | 10.61                   | 56.17                      | 100                  | 0                       | Peak    |

|                        |                                                                                                                                                      |                            |            |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 2.4GHz 802.11n-HT20                                                                                                                                  | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 01                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 2412 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 30.27                | 21.91               | -18.09                  | 40                          | 33.05                   | 19.8                        | 0.7                     | 31.64                      | -                    | -                       | Peak    |
| 212.79               | 32.17               | -11.33                  | 43.5                        | 52.56                   | 9.22                        | 1.51                    | 31.12                      | -                    | -                       | Peak    |
| 224.94               | 35.76               | -10.24                  | 46                          | 55.39                   | 9.75                        | 1.56                    | 30.94                      | 100                  | 41                      | Peak    |
| 312.6                | 34.11               | -11.89                  | 46                          | 49.88                   | 13.34                       | 1.81                    | 30.92                      | -                    | -                       | Peak    |
| 433.7                | 27.95               | -18.05                  | 46                          | 40.08                   | 16.77                       | 2.1                     | 31                         | -                    | -                       | Peak    |
| 769                  | 24.5                | -21.5                   | 46                          | 29.56                   | 22.21                       | 2.78                    | 30.05                      | -                    | -                       | Peak    |
| 2412                 | 93.51               | -                       | -                           | 92.58                   | 32.2                        | 4.59                    | 35.86                      | 106                  | 308                     | Average |
| 2412                 | 104.12              | -                       | -                           | 103.19                  | 32.2                        | 4.59                    | 35.86                      | 106                  | 308                     | Peak    |
| 4824                 | 45.68               | -28.32                  | 74                          | 63.92                   | 34.27                       | 6.51                    | 59.02                      | 100                  | 0                       | Peak    |
| 12060                | 50.74               | -23.26                  | 74                          | 57.14                   | 38.96                       | 10.6                    | 55.96                      | 100                  | 0                       | Peak    |

|                        |                                                                                                                                                      |                            |          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 2.4GHz 802.11n-HT20                                                                                                                                  | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 01                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2412 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |          |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 32.97                | 32.63               | -7.37                   | 40                          | 45.78                   | 17.76                       | 0.72                    | 31.63                      | 134                  | 62                      | Peak    |
| 213.06               | 28.94               | -14.56                  | 43.5                        | 49.32                   | 9.23                        | 1.51                    | 31.12                      | -                    | -                       | Peak    |
| 224.94               | 33.63               | -12.37                  | 46                          | 53.26                   | 9.75                        | 1.56                    | 30.94                      | -                    | -                       | Peak    |
| 313.3                | 29.39               | -16.61                  | 46                          | 45.13                   | 13.36                       | 1.81                    | 30.91                      | -                    | -                       | Peak    |
| 433.7                | 23.64               | -22.36                  | 46                          | 35.77                   | 16.77                       | 2.1                     | 31                         | -                    | -                       | Peak    |
| 749.4                | 24.65               | -21.35                  | 46                          | 29.69                   | 22.4                        | 2.75                    | 30.19                      | -                    | -                       | Peak    |
| 2412                 | 89.29               | -                       | -                           | 88.36                   | 32.2                        | 4.59                    | 35.86                      | 103                  | 76                      | Average |
| 2412                 | 100.26              | -                       | -                           | 99.33                   | 32.2                        | 4.59                    | 35.86                      | 103                  | 76                      | Peak    |
| 4824                 | 48.66               | -25.34                  | 74                          | 66.9                    | 34.27                       | 6.51                    | 59.02                      | 100                  | 0                       | Peak    |
| 12057                | 49.06               | -24.94                  | 74                          | 55.46                   | 38.94                       | 10.6                    | 55.94                      | 100                  | 0                       | Peak    |

|                        |                                                                                                                                                      |                            |            |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 2.4GHz 802.11n-HT20                                                                                                                                  | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 06                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 2437 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2437                 | 95.45               | -                       | -                           | 94.44                   | 32.24                       | 4.61                    | 35.84                      | 131                  | 309                     | Average |
| 2437                 | 105.65              | -                       | -                           | 104.66                  | 32.22                       | 4.61                    | 35.84                      | 131                  | 309                     | Peak    |
| 4875                 | 47.36               | -26.64                  | 74                          | 65.43                   | 34.28                       | 6.53                    | 58.88                      | 100                  | 0                       | Peak    |
| 12180                | 50.19               | -23.81                  | 74                          | 56.61                   | 39.05                       | 10.6                    | 56.07                      | 100                  | 0                       | Peak    |

|                        |                                                                                                                                                      |                            |          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 2.4GHz 802.11n-HT20                                                                                                                                  | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 06                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2437 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |          |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2437                 | 90.25               | -                       | -                           | 89.24                   | 32.24                       | 4.61                    | 35.84                      | 104                  | 97                      | Average |
| 2437                 | 101.82              | -                       | -                           | 100.81                  | 32.24                       | 4.61                    | 35.84                      | 104                  | 97                      | Peak    |
| 4875                 | 48.98               | -25.02                  | 74                          | 67.05                   | 34.28                       | 6.53                    | 58.88                      | 100                  | 0                       | Peak    |
| 12183                | 48.18               | -25.82                  | 74                          | 54.6                    | 39.05                       | 10.6                    | 56.07                      | 100                  | 0                       | Peak    |

|                        |                                                                                                                                                      |                            |            |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 2.4GHz 802.11n-HT20                                                                                                                                  | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 11                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 2462 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2462                 | 94.7                | -                       | -                           | 93.65                   | 32.26                       | 4.62                    | 35.83                      | 129                  | 310                     | Average |
| 2462                 | 105.18              | -                       | -                           | 104.13                  | 32.26                       | 4.62                    | 35.83                      | 129                  | 310                     | Peak    |
| 4923                 | 45.23               | -28.77                  | 74                          | 63.13                   | 34.29                       | 6.55                    | 58.74                      | 100                  | 0                       | Peak    |

|                        |                                                                                                                                                      |                            |          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 2.4GHz 802.11n-HT20                                                                                                                                  | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 11                                                                                                                                                   | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 1. 2462 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |          |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2462                 | 90.08               | -                       | -                           | 89.03                   | 32.26                       | 4.62                    | 35.83                      | 100                  | 79                      | Average |
| 2462                 | 101.05              | -                       | -                           | 100                     | 32.26                       | 4.62                    | 35.83                      | 100                  | 79                      | Peak    |
| 4929                 | 47.27               | -26.73                  | 74                          | 65.16                   | 34.29                       | 6.56                    | 58.74                      | 100                  | 0                       | Peak    |

|                        |                                                      |                            |            |
|------------------------|------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 802.11a                                              | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 149                                                  | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 5745 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                   | 22.35               | -17.65                  | 40                          | 33.49                   | 19.8                        | 0.7                     | 31.64                      | -                    | -                       | Peak    |
| 212.79               | 32.82               | -10.68                  | 43.5                        | 53.21                   | 9.22                        | 1.51                    | 31.12                      | -                    | -                       | Peak    |
| 220.89               | 35.79               | -10.21                  | 46                          | 55.81                   | 9.39                        | 1.54                    | 30.95                      | 112                  | 162                     | Peak    |
| 316.8                | 34.25               | -11.75                  | 46                          | 49.9                    | 13.44                       | 1.82                    | 30.91                      | -                    | -                       | Peak    |
| 437.9                | 27.31               | -18.69                  | 46                          | 39.32                   | 16.86                       | 2.11                    | 30.98                      | -                    | -                       | Peak    |
| 780.2                | 24.63               | -21.37                  | 46                          | 29.69                   | 22.1                        | 2.8                     | 29.96                      | -                    | -                       | Peak    |
| 5745                 | 91.09               | -                       | -                           | 83.66                   | 35.09                       | 7.19                    | 34.85                      | 101                  | 63                      | Average |
| 5745                 | 101.26              | -                       | -                           | 93.85                   | 35.09                       | 7.17                    | 34.85                      | 101                  | 63                      | Peak    |
| 11496                | 46.83               | -7.17                   | 54                          | 53.3                    | 38.48                       | 10.26                   | 55.21                      | 100                  | 15                      | Average |
| 11496                | 57.41               | -16.59                  | 74                          | 63.88                   | 38.48                       | 10.26                   | 55.21                      | 100                  | 15                      | Peak    |

|                        |                                                      |                            |          |
|------------------------|------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 802.11a                                              | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 149                                                  | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 5745 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 32.97                | 32.24               | -7.76                   | 40                          | 45.39                   | 17.76                       | 0.72                    | 31.63                      | 100                  | 177                     | Peak    |
| 213.06               | 29.91               | -13.59                  | 43.5                        | 50.29                   | 9.23                        | 1.51                    | 31.12                      | -                    | -                       | Peak    |
| 224.94               | 33.4                | -12.6                   | 46                          | 53.03                   | 9.75                        | 1.56                    | 30.94                      | -                    | -                       | Peak    |
| 312.6                | 29.3                | -16.7                   | 46                          | 45.07                   | 13.34                       | 1.81                    | 30.92                      | -                    | -                       | Peak    |
| 437.9                | 23.61               | -22.39                  | 46                          | 35.62                   | 16.86                       | 2.11                    | 30.98                      | -                    | -                       | Peak    |
| 762.7                | 24.78               | -21.22                  | 46                          | 29.82                   | 22.28                       | 2.77                    | 30.09                      | -                    | -                       | Peak    |
| 5745                 | 96.75               | -                       | -                           | 89.32                   | 35.09                       | 7.19                    | 34.85                      | 106                  | 359                     | Average |
| 5745                 | 107.28              | -                       | -                           | 99.85                   | 35.09                       | 7.19                    | 34.85                      | 106                  | 359                     | Peak    |
| 11496                | 52.12               | -1.88                   | 54                          | 58.59                   | 38.48                       | 10.26                   | 55.21                      | 100                  | 14                      | Average |
| 11496                | 62.93               | -11.07                  | 74                          | 69.4                    | 38.48                       | 10.26                   | 55.21                      | 100                  | 14                      | Peak    |

|                        |                                                      |                            |            |
|------------------------|------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 802.11a                                              | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 157                                                  | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 5785 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 5785                 | 90.72               | -                       | -                           | 83.23                   | 35.13                       | 7.22                    | 34.86                      | 100                  | 61                      | Average |
| 5785                 | 101.3               | -                       | -                           | 93.81                   | 35.13                       | 7.22                    | 34.86                      | 100                  | 61                      | Peak    |
| 11571                | 46.2                | -7.8                    | 54                          | 52.64                   | 38.56                       | 10.3                    | 55.3                       | 103                  | 17                      | Average |
| 11571                | 57.14               | -16.86                  | 74                          | 63.58                   | 38.56                       | 10.3                    | 55.3                       | 103                  | 17                      | Peak    |

|                        |                                                      |                            |          |
|------------------------|------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 802.11a                                              | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 157                                                  | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 5785 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 5785                 | 96.91               | -                       | -                           | 89.42                   | 35.13                       | 7.22                    | 34.86                      | 106                  | 0                       | Average |
| 5785                 | 107.96              | -                       | -                           | 100.47                  | 35.13                       | 7.22                    | 34.86                      | 106                  | 0                       | Peak    |
| 11574                | 50.14               | -3.86                   | 54                          | 56.56                   | 38.56                       | 10.32                   | 55.3                       | 105                  | 16                      | Average |
| 11574                | 62.56               | -11.44                  | 74                          | 68.98                   | 38.56                       | 10.32                   | 55.3                       | 105                  | 16                      | Peak    |

|                        |                                                      |                            |            |
|------------------------|------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 802.11a                                              | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 165                                                  | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 5825 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 5825                 | 91.48               | -                       | -                           | 83.89                   | 35.19                       | 7.27                    | 34.87                      | 100                  | 61                      | Average |
| 5825                 | 101.52              | -                       | -                           | 93.95                   | 35.17                       | 7.27                    | 34.87                      | 100                  | 61                      | Peak    |
| 11655                | 41.39               | -12.61                  | 54                          | 47.81                   | 38.62                       | 10.37                   | 55.41                      | 100                  | 11                      | Average |
| 11655                | 51.47               | -22.53                  | 74                          | 57.89                   | 38.62                       | 10.37                   | 55.41                      | 100                  | 11                      | Peak    |

|                        |                                                      |                            |          |
|------------------------|------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 802.11a                                              | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 165                                                  | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 5825 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 5825                 | 97.66               | -                       | -                           | 90.07                   | 35.19                       | 7.27                    | 34.87                      | 105                  | 0                       | Average |
| 5825                 | 107.87              | -                       | -                           | 100.3                   | 35.17                       | 7.27                    | 34.87                      | 105                  | 0                       | Peak    |
| 11652                | 44.72               | -9.28                   | 54                          | 51.14                   | 38.62                       | 10.37                   | 55.41                      | 101                  | 10                      | Average |
| 11652                | 54.56               | -19.44                  | 74                          | 60.98                   | 38.62                       | 10.37                   | 55.41                      | 101                  | 10                      | Peak    |

|                        |                                                      |                            |            |
|------------------------|------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 5GHz 802.11n-HT20                                    | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 149                                                  | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 5745 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                   | 21.84               | -18.16                  | 40                          | 32.98                   | 19.8                        | 0.7                     | 31.64                      | -                    | -                       | Peak    |
| 172.56               | 29.8                | -13.7                   | 43.5                        | 50.24                   | 9.26                        | 1.37                    | 31.07                      | -                    | -                       | Peak    |
| 224.94               | 37.05               | -8.95                   | 46                          | 56.68                   | 9.75                        | 1.56                    | 30.94                      | 110                  | 127                     | Peak    |
| 321                  | 34.29               | -11.71                  | 46                          | 49.84                   | 13.53                       | 1.83                    | 30.91                      | -                    | -                       | Peak    |
| 433.7                | 26.77               | -19.23                  | 46                          | 38.9                    | 16.77                       | 2.1                     | 31                         | -                    | -                       | Peak    |
| 777.4                | 25.21               | -20.79                  | 46                          | 30.28                   | 22.12                       | 2.79                    | 29.98                      | -                    | -                       | Peak    |
| 5745                 | 89.46               | -                       | -                           | 82.03                   | 35.09                       | 7.19                    | 34.85                      | 107                  | 311                     | Average |
| 5745                 | 99.64               | -                       | -                           | 92.23                   | 35.09                       | 7.17                    | 34.85                      | 107                  | 311                     | Peak    |
| 11493                | 41.79               | -12.21                  | 54                          | 48.26                   | 38.48                       | 10.26                   | 55.21                      | 100                  | 11                      | Average |
| 11493                | 51.96               | -22.04                  | 74                          | 58.43                   | 38.48                       | 10.26                   | 55.21                      | 100                  | 11                      | Peak    |

|                        |                                                      |                            |          |
|------------------------|------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 5GHz 802.11n-HT20                                    | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 149                                                  | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 5745 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 32.97                | 31.01               | -8.99                   | 40                          | 44.16                   | 17.76                       | 0.72                    | 31.63                      | 100                  | 59                      | Peak    |
| 212.79               | 29.17               | -14.33                  | 43.5                        | 49.56                   | 9.22                        | 1.51                    | 31.12                      | -                    | -                       | Peak    |
| 224.94               | 34.11               | -11.89                  | 46                          | 53.74                   | 9.75                        | 1.56                    | 30.94                      | -                    | -                       | Peak    |
| 312.6                | 29.47               | -16.53                  | 46                          | 45.24                   | 13.34                       | 1.81                    | 30.92                      | -                    | -                       | Peak    |
| 433.7                | 23.05               | -22.95                  | 46                          | 35.18                   | 16.77                       | 2.1                     | 31                         | -                    | -                       | Peak    |
| 776                  | 24.7                | -21.3                   | 46                          | 29.77                   | 22.14                       | 2.79                    | 30                         | -                    | -                       | Peak    |
| 5745                 | 94.98               | -                       | -                           | 87.55                   | 35.09                       | 7.19                    | 34.85                      | 106                  | 358                     | Average |
| 5745                 | 105.47              | -                       | -                           | 98.02                   | 35.11                       | 7.19                    | 34.85                      | 106                  | 358                     | Peak    |
| 11496                | 45.65               | -8.35                   | 54                          | 52.12                   | 38.48                       | 10.26                   | 55.21                      | 101                  | 10                      | Average |
| 11496                | 58.57               | -15.43                  | 74                          | 65.04                   | 38.48                       | 10.26                   | 55.21                      | 101                  | 10                      | Peak    |

|                        |                                                                                                                                                      |                            |            |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 5GHz 802.11n-HT20                                                                                                                                    | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 157                                                                                                                                                  | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 5785 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 5785                 | 89.55               | -                       | -                           | 82.06                   | 35.13                       | 7.22                    | 34.86                      | 106                  | 304                     | Average |
| 5785                 | 99.81               | -                       | -                           | 92.31                   | 35.13                       | 7.22                    | 34.85                      | 106                  | 304                     | Peak    |
| 11565                | 50.99               | -23.01                  | 74                          | 57.42                   | 38.54                       | 10.3                    | 55.27                      | 100                  | 0                       | Peak    |

|                        |                                                      |                            |          |
|------------------------|------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 5GHz 802.11n-HT20                                    | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 157                                                  | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 5785 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 5785                 | 95.41               | -                       | -                           | 87.92                   | 35.13                       | 7.22                    | 34.86                      | 106                  | 357                     | Average |
| 5785                 | 105.43              | -                       | -                           | 97.93                   | 35.13                       | 7.22                    | 34.85                      | 106                  | 357                     | Peak    |
| 11568                | 44.14               | -9.86                   | 54                          | 50.58                   | 38.56                       | 10.3                    | 55.3                       | 102                  | 10                      | Average |
| 11568                | 54.67               | -19.33                  | 74                          | 61.11                   | 38.56                       | 10.3                    | 55.3                       | 102                  | 10                      | Peak    |

|                        |                                                                                                                                                      |                            |            |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | 5GHz 802.11n-HT20                                                                                                                                    | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Channel :</b>  | 165                                                                                                                                                  | <b>Relative Humidity :</b> | 50~52%     |
| <b>Test Engineer :</b> | David Yang                                                                                                                                           | <b>Polarization :</b>      | Horizontal |
| <b>Remark :</b>        | 1. 5825 MHz is fundamental signal which can be ignored.<br>2. Average measurement was not performed if peak level went lower than the average limit. |                            |            |

| 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 5825                 | 89.84               | -                       | -                           | 82.25                   | 35.19                       | 7.27                    | 34.87                      | 106                  | 308                     | Average |
| 5825                 | 100.2               | -                       | -                           | 92.61                   | 35.19                       | 7.27                    | 34.87                      | 106                  | 308                     | Peak    |
| 11652                | 49.24               | -24.76                  | 74                          | 55.66                   | 38.62                       | 10.37                   | 55.41                      | 100                  | 0                       | Peak    |

|                        |                                                      |                            |          |
|------------------------|------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | 5GHz 802.11n-HT20                                    | <b>Temperature :</b>       | 23~25°C  |
| <b>Test Channel :</b>  | 165                                                  | <b>Relative Humidity :</b> | 50~52%   |
| <b>Test Engineer :</b> | David Yang                                           | <b>Polarization :</b>      | Vertical |
| <b>Remark :</b>        | 5825 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  |
|----------------------|---------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 5825                 | 95.66               | -                       | -                           | 88.07                   | 35.19                       | 7.27                    | 34.87                      | 104                  | 358                     | Average |
| 5825                 | 105.9               | -                       | -                           | 98.33                   | 35.17                       | 7.27                    | 34.87                      | 104                  | 358                     | Peak    |
| 11655                | 42.61               | -11.39                  | 54                          | 49.03                   | 38.62                       | 10.37                   | 55.41                      | 106                  | 13                      | Average |
| 11655                | 52.98               | -21.02                  | 74                          | 59.4                    | 38.62                       | 10.37                   | 55.41                      | 106                  | 13                      | Peak    |

### 3.6 AC Conducted Emission Measurement

#### 3.6.1 Limit of AC Conducted Emission

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

| Frequency of Emission<br>(MHz) | Conducted Limit (dBuV) |           |
|--------------------------------|------------------------|-----------|
|                                | Quasi-Peak             | Average   |
| 0.15-0.5                       | 66 to 56*              | 56 to 46* |
| 0.5-5                          | 56                     | 46        |
| 5-30                           | 60                     | 50        |

\*Decreases with the logarithm of the frequency.

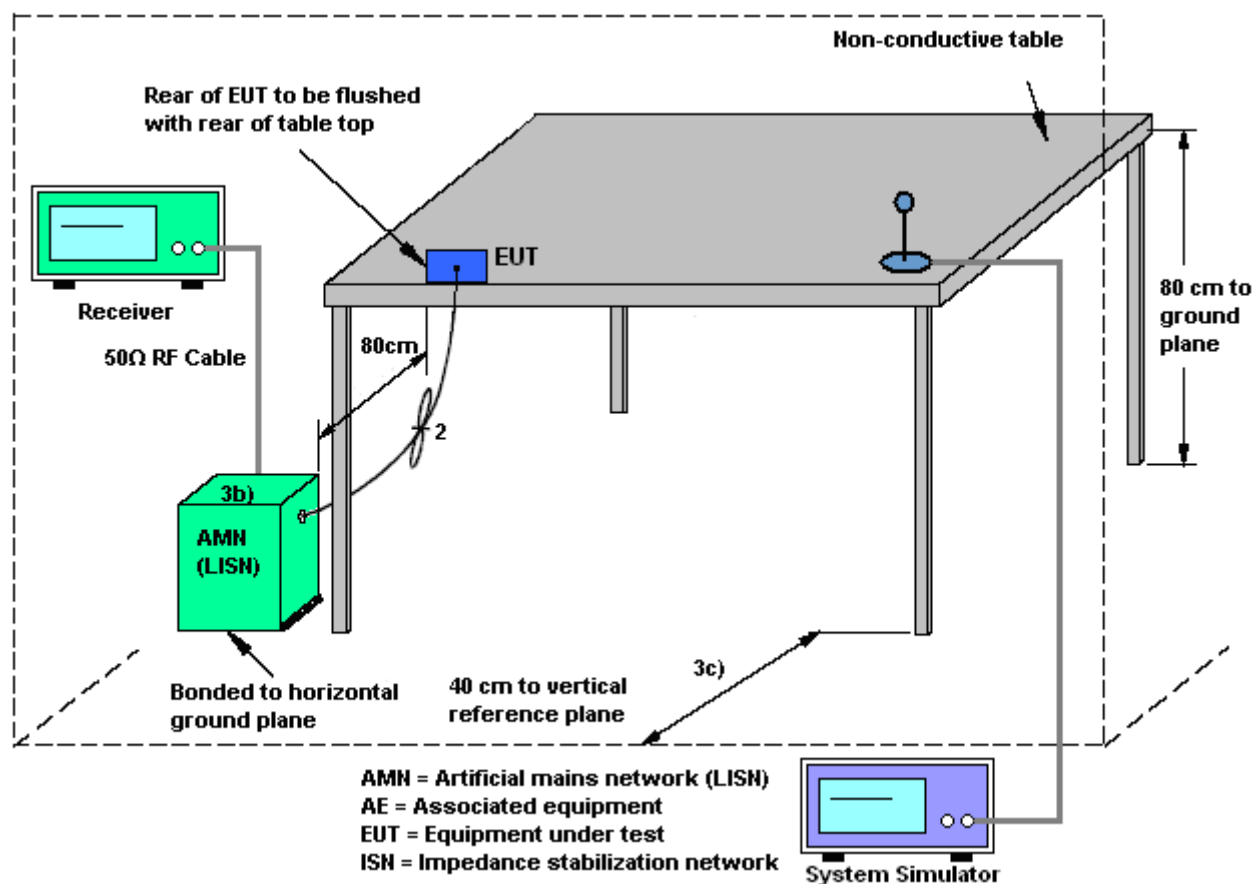
#### 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.6.3 Test Procedures

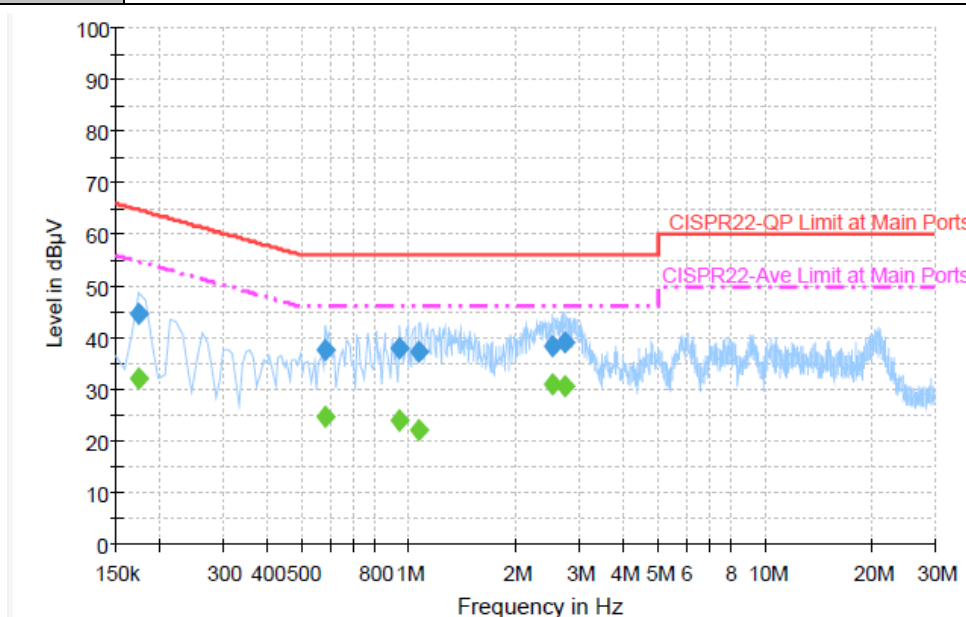
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance 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.

### 3.6.4 Test Setup



### 3.6.5 Test Result of AC Conducted Emission

|                        |                                                                                           |                            |        |
|------------------------|-------------------------------------------------------------------------------------------|----------------------------|--------|
| <b>Test Mode :</b>     | Mode 1                                                                                    | <b>Temperature :</b>       | 20~22℃ |
| <b>Test Engineer :</b> | Slash Huang                                                                               | <b>Relative Humidity :</b> | 45~47% |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                             | <b>Phase :</b>             | Line   |
| <b>Function Type :</b> | GSM900 Idle + Bluetooth Link + WLAN (2.4G) Link + MP3 + USB Cable (Charging from Adapter) |                            |        |
| <b>Remark :</b>        | All emissions not reported here are more than 10 dB below the prescribed limit.           |                            |        |



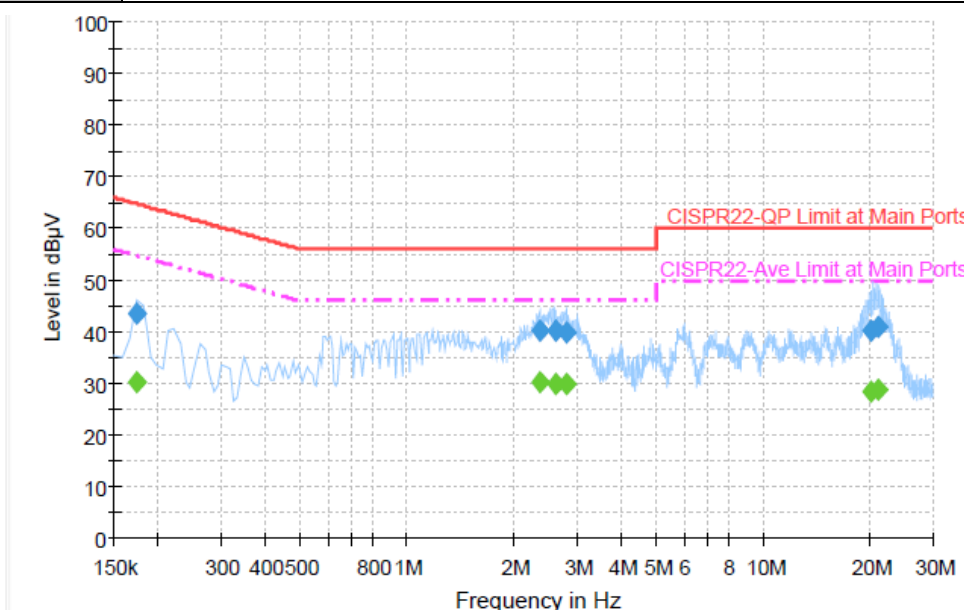
#### Final Result : Quasi-Peak

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.174000        | 44.8              | Off    | L1   | 19.4       | 20.0        | 64.8         |
| 0.582000        | 37.6              | Off    | L1   | 19.4       | 18.4        | 56.0         |
| 0.942000        | 37.8              | Off    | L1   | 19.4       | 18.2        | 56.0         |
| 1.070000        | 37.3              | Off    | L1   | 19.4       | 18.7        | 56.0         |
| 2.526000        | 38.5              | Off    | L1   | 19.6       | 17.5        | 56.0         |
| 2.742000        | 39.1              | Off    | L1   | 19.6       | 16.9        | 56.0         |

#### Final Result : Average

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.174000        | 32.1           | Off    | L1   | 19.4       | 22.7        | 54.8         |
| 0.582000        | 24.7           | Off    | L1   | 19.4       | 21.3        | 46.0         |
| 0.942000        | 24.0           | Off    | L1   | 19.4       | 22.0        | 46.0         |
| 1.070000        | 22.2           | Off    | L1   | 19.4       | 23.8        | 46.0         |
| 2.526000        | 31.1           | Off    | L1   | 19.6       | 14.9        | 46.0         |
| 2.742000        | 30.6           | Off    | L1   | 19.6       | 15.4        | 46.0         |

|                        |                                                                                           |                            |         |
|------------------------|-------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                    | <b>Temperature :</b>       | 20~22°C |
| <b>Test Engineer :</b> | Slash Huang                                                                               | <b>Relative Humidity :</b> | 45~47%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                             | <b>Phase :</b>             | Neutral |
| <b>Function Type :</b> | GSM900 Idle + Bluetooth Link + WLAN (2.4G) Link + MP3 + USB Cable (Charging from Adapter) |                            |         |
| <b>Remark :</b>        | All emissions not reported here are more than 10 dB below the prescribed limit.           |                            |         |


**Final Result : Quasi-Peak**

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.174000        | 43.7              | Off    | N    | 19.4       | 21.1        | 64.8         |
| 2.358000        | 40.3              | Off    | N    | 19.6       | 15.7        | 56.0         |
| 2.622000        | 40.4              | Off    | N    | 19.6       | 15.6        | 56.0         |
| 2.798000        | 39.9              | Off    | N    | 19.7       | 16.1        | 56.0         |
| 20.166000       | 40.3              | Off    | N    | 20.0       | 19.7        | 60.0         |
| 21.046000       | 41.0              | Off    | N    | 19.9       | 19.0        | 60.0         |

**Final Result : Average**

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.174000        | 30.3           | Off    | N    | 19.4       | 24.5        | 54.8         |
| 2.358000        | 30.1           | Off    | N    | 19.6       | 15.9        | 46.0         |
| 2.622000        | 29.7           | Off    | N    | 19.6       | 16.3        | 46.0         |
| 2.798000        | 29.8           | Off    | N    | 19.7       | 16.2        | 46.0         |
| 20.166000       | 28.5           | Off    | N    | 20.0       | 21.5        | 50.0         |
| 21.046000       | 28.7           | Off    | N    | 19.9       | 21.3        | 50.0         |

### **3.7 Antenna Requirements**

#### **3.7.1 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. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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.

#### **3.7.2 Antenna Connected Construction**

Non-standard connector used.

#### **3.7.3 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                |
|----------------------|--------------|--------------|--------------|-----------------------|------------------|-------------------------------|---------------|-----------------------|
| System Simulator     | R&S          | CMU200       | 117995       | N/A                   | Jul. 30, 2012    | Sep. 27, 2012 ~ Oct. 15, 2012 | Jul. 29, 2013 | Conducted (TH02-HY)   |
| Spectrum Analyzer    | R&S          | FSP40        | 100055       | 9kHz~40GHz            | Jun. 06, 2012    | Sep. 27, 2012 ~ Oct. 15, 2012 | Jun. 05, 2013 | Conducted (TH02-HY)   |
| Thermal Chamber      | Ten Billion  | TTH-D3SP     | TBN-9307 01  | N/A                   | Jul. 23, 2012    | Sep. 27, 2012 ~ Oct. 15, 2012 | Jul. 22, 2013 | Conducted (TH02-HY)   |
| Spectrum Analyzer    | R&S          | ESU26        | 100390       | 20Hz ~ 26.5GHz        | Dec. 22, 2011    | Oct. 13, 2012 ~ Oct. 17, 2012 | Dec. 21, 2012 | Radiation (03CH05-HY) |
| Bilog Antenna        | SCHAFFNER    | CBL6111C     | 2725         | 30MHz ~ 2GHz          | Oct. 22, 2011    | Oct. 13, 2012 ~ Oct. 17, 2012 | Oct. 21, 2012 | Radiation (03CH05-HY) |
| Turn Table           | HD           | Deis HD 2000 | 420/611      | 0 ~ 360 degree        | N/A              | Oct. 13, 2012 ~ Oct. 17, 2012 | N/A           | Radiation (03CH05-HY) |
| Antenna Mast         | HD           | MA 240       | 240/666      | 1 m ~ 4 m             | N/A              | Oct. 13, 2012 ~ Oct. 17, 2012 | N/A           | Radiation (03CH05-HY) |
| Horn Antenna         | ESCO         | 3117         | 66584        | 1GHz~18GHz            | Aug. 10, 2012    | Oct. 13, 2012 ~ Oct. 17, 2012 | Aug. 09, 2013 | Radiation (03CH05-HY) |
| Pre Amplifier        | Agilent      | 8449B        | 3008A026 65  | 1GHz~26.5GHz          | Aug. 28, 2012    | Oct. 13, 2012 ~ Oct. 17, 2012 | Aug. 27, 2013 | Radiation (03CH05-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK  | BBHA 9170    | BBHA9170 251 | 15GHz ~ 40GHz         | Oct. 21, 2011    | Oct. 13, 2012 ~ Oct. 17, 2012 | Oct. 20, 2012 | Radiation (03CH05-HY) |
| Pre Amplifier        | COM-POWER    | PA-103       | 161075       | 10-1000MHz.32 dB.GAIN | Feb. 27, 2012    | Oct. 13, 2012 ~ Oct. 17, 2012 | Feb. 26, 2013 | Radiation (03CH05-HY) |
| Loop Antenna         | R&S          | HFH2-Z2      | 860004/00 1  | 9KHz ~ 30MHz          | Jul. 03, 2012    | Oct. 13, 2012 ~ Oct. 17, 2012 | Jul. 02, 2014 | Radiation (03CH05-HY) |
| EMI Test Receiver    | R&S          | ESCS 30      | 100356       | 9KHz ~ 2.75GHz        | Oct. 27, 2011    | Oct. 19, 2012                 | Oct. 26, 2012 | Conduction (CO05-HY)  |
| Two-LISN             | R&S          | ENV216       | 11-100081    | 9KHz ~ 30MHz          | Dec. 09, 2011    | Oct. 19, 2012                 | Dec. 08, 2012 | Conduction (CO05-HY)  |
| Two-LISN             | R&S          | ENV216       | 11-100080    | 9KHz ~ 30MHz          | Dec. 06, 2011    | Oct. 19, 2012                 | Dec. 05, 2012 | Conduction (CO05-HY)  |
| AC Power Source      | APC          | APC-1000W    | N/A          | N/A                   | N/A              | Oct. 19, 2012                 | N/A           | Conduction (CO05-HY)  |
| System Simulator     | R&S          | CMU200       | 117997       | N/A                   | Aug. 22, 2011    | Oct. 19, 2012                 | Aug. 21, 2013 | Conduction (CO05-HY)  |

## 5 Uncertainty of Evaluation

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

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

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

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

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

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