

## Partial FCC Test Report

**Report No.:** RF180921C06-2

**FCC ID:** HFSQTA-9560NGW

**Test Model:** D11

**Received Date:** Sep. 21, 2018

**Test Date:** Oct. 30, 2018 ~ Dec. 27, 2018

**Issued Date:** Dec. 28, 2018

**Applicant:** Quanta Computer Inc.

**Address:** No.188, Wenhua 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan  
(R.O.C.)

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan  
( R.O.C )

**Test Location:** B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City, Taiwan

**FCC Registration /**  
**Designation Number:** 427177 / TW0011



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## Table of Contents

|                                                                  |           |
|------------------------------------------------------------------|-----------|
| <b>Release Control Record .....</b>                              | <b>3</b>  |
| <b>1 Certificate of Conformity .....</b>                         | <b>4</b>  |
| <b>2 Summary of Test Results.....</b>                            | <b>5</b>  |
| 2.1 Measurement Uncertainty.....                                 | 5         |
| 2.2 Modification Record .....                                    | 5         |
| <b>3 General Information .....</b>                               | <b>6</b>  |
| 3.1 General Description of EUT .....                             | 6         |
| 3.2 Description of Test Modes.....                               | 7         |
| 3.2.1 Test Mode Applicability and Tested Channel Detail.....     | 8         |
| 3.3 Description of Support Units .....                           | 10        |
| 3.3.1 Configuration of System under Test .....                   | 10        |
| 3.4 General Description of Applied Standards.....                | 10        |
| <b>4 Test Types and Results .....</b>                            | <b>11</b> |
| 4.1 Radiated Emission and Bandedge Measurement .....             | 11        |
| 4.1.1 Limits of Radiated Emission and Bandedge Measurement ..... | 11        |
| 4.1.2 Test Instruments .....                                     | 12        |
| 4.1.3 Test Procedures.....                                       | 13        |
| 4.1.4 Deviation from Test Standard .....                         | 14        |
| 4.1.5 Test Set Up .....                                          | 14        |
| 4.1.6 EUT Operating Conditions.....                              | 15        |
| 4.1.7 Test Results .....                                         | 16        |
| 4.2 Conducted Emission Measurement.....                          | 37        |
| 4.2.1 Limits of Conducted Emission Measurement .....             | 37        |
| 4.2.2 Test Instruments .....                                     | 37        |
| 4.2.3 Test Procedures.....                                       | 38        |
| 4.2.4 Deviation from Test Standard .....                         | 38        |
| 4.2.5 Test Setup.....                                            | 38        |
| 4.2.6 EUT Operating Conditions.....                              | 38        |
| 4.2.7 Test Results .....                                         | 39        |
| 4.3 Conducted Output Power Measurement .....                     | 41        |
| 4.3.1 Limits of Conducted Output Power Measurement.....          | 41        |
| 4.3.2 Test Setup.....                                            | 41        |
| 4.3.3 Test Instruments .....                                     | 41        |
| 4.3.4 Test Procedures.....                                       | 41        |
| 4.3.5 Deviation from Test Standard .....                         | 41        |
| 4.3.6 EUT Operating Conditions.....                              | 41        |
| 4.3.7 Test Results .....                                         | 42        |
| <b>5 Pictures of Test Arrangements.....</b>                      | <b>43</b> |
| <b>Appendix – Information on the Testing Laboratories .....</b>  | <b>44</b> |

### Release Control Record

| Issue No.     | Description      | Date Issued   |
|---------------|------------------|---------------|
| RF180921C06-2 | Original Release | Dec. 28, 2018 |

## 1 Certificate of Conformity

**Product:** Notebook Computer

**Brand:** Quanta

**Test Model:** D11

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Quanta Computer Inc.

**Test Date:** Oct. 30, 2018 ~ Dec. 27, 2018

**Standards:** 47 CFR FCC Part 15, Subpart C (Section 15.247)  
ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

**Prepared by :** Gina Liu, **Date:** Dec. 28, 2018  
Gina Liu / Specialist

**Approved by :** Dylan Chiou, **Date:** Dec. 28, 2018  
Dylan Chiou / Project Engineer

## 2 Summary of Test Results

| 47 CFR FCC Part 15, Subpart C (Section 15.247) |                                              |        |                                                                                      |
|------------------------------------------------|----------------------------------------------|--------|--------------------------------------------------------------------------------------|
| FCC Clause                                     | Test Item                                    | Result | Remarks                                                                              |
| 15.207                                         | AC Power Conducted Emission                  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -6.40 dB at 0.17734 MHz. |
| 15.205 /<br>15.209 /<br>15.247(d)              | Radiated Emissions and Band Edge Measurement | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -1.02 dB at 2484.52 MHz. |
| 15.247(d)                                      | Antenna Port Emission                        | N/A    | Refer to Note                                                                        |
| 15.247(a)(2)                                   | 6 dB Bandwidth                               | N/A    | Refer to Note                                                                        |
| ---                                            | Occupied Bandwidth Measurement               | N/A    | Refer to Note                                                                        |
| 15.247(b)                                      | Conducted power                              | Pass   | Meet the requirement of limit.                                                       |
| 15.247(e)                                      | Power Spectral Density                       | N/A    | Refer to Note                                                                        |
| 15.203                                         | Antenna Requirement                          | N/A    | Refer to Note                                                                        |

**Note:** This report is a partial report, only test item of Radiated Emissions, Conducted Emission tests and Conducted Power were performed for this report. Other testing data please refer to Intel report no.: 170524-02.TR04 for module (Brand: Intel, Model: 9560NGW).

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement                        | Frequency          | Expanded Uncertainty (k=2) ( $\pm$ ) |
|------------------------------------|--------------------|--------------------------------------|
| Conducted Emissions at mains ports | 150 kHz ~ 30 MHz   | 2.44 dB                              |
| Radiated Emissions up to 1 GHz     | 30 MHz ~ 200 MHz   | 2.0153 dB                            |
|                                    | 200 MHz ~ 1000 MHz | 2.0224 dB                            |
| Radiated Emissions above 1 GHz     | 1 GHz ~ 18 GHz     | 1.0121 dB                            |
|                                    | 18 GHz ~ 40 GHz    | 1.1508 dB                            |

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

|                              |                                                                                                                                        |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product</b>               | Notebook Computer                                                                                                                      |
| <b>Brand</b>                 | Quanta                                                                                                                                 |
| <b>Test Model</b>            | D11                                                                                                                                    |
| <b>Status of EUT</b>         | ENGINEERING SAMPLE                                                                                                                     |
| <b>Power Supply Rating</b>   | 5 or 9 or 15 or 20 Vdc (adapter)<br>11.55 Vdc (battery)                                                                                |
| <b>Modulation Type</b>       | CCK, DQPSK, DBPSK for DSSS<br>64QAM, 16QAM, QPSK, BPSK for OFDM                                                                        |
| <b>Modulation Technology</b> | DSSS, OFDM                                                                                                                             |
| <b>Transfer Rate</b>         | 802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps<br>802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps<br>802.11n: up to 300.0 Mbps |
| <b>Operating Frequency</b>   | 2412 ~ 2472 MHz                                                                                                                        |
| <b>Number of Channel</b>     | 13 for 802.11b, 802.11g, 802.11n (HT20)<br>9 for 802.11n (HT40)                                                                        |
| <b>Output Power</b>          | 214.783 mW                                                                                                                             |
| <b>Antenna Type</b>          | Refer to Note as below                                                                                                                 |
| <b>Antenna Connector</b>     | N/A                                                                                                                                    |
| <b>Accessory Device</b>      | Refer to Note as below                                                                                                                 |
| <b>Data Cable Supplied</b>   | N/A                                                                                                                                    |

Note:

1. The WLAN/BT module (Brand: Intel, Model: 9560NGW) was installed in the EUT.
2. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

| Modulation Mode | Tx Function |
|-----------------|-------------|
| 802.11b         | 1TX         |
| 802.11g         | 1TX         |
| 802.11n (HT20)  | 2TX         |
| 802.11n (HT40)  | 2TX         |

3. The antenna information is listed as below.

| Antenna Type | Manuf. | Mode   | Parts Number                                                                               | Antenna Gain (dBi)         |                           |                           |                           |
|--------------|--------|--------|--------------------------------------------------------------------------------------------|----------------------------|---------------------------|---------------------------|---------------------------|
|              |        |        |                                                                                            | BT/WLAN 2.4GHz             | WLAN 5.15~5.35 GHz        | WLAN 5.47~5.725 GHz       | WLAN 5.725~5.85 GHz       |
| PIFA         | AWAN   | Tablet | Main Antenna:<br>DQ60ANF6Y18 (ANF6Y-100060)<br>Aux. Antenna:<br>DQ60ANF6Y19 (ANF6Y-100061) | Main: -1.68<br>Aux.: -0.73 | Main: 1.58<br>Aux.: -0.78 | Main: 0.93<br>Aux.: -0.15 | Main: 0.67<br>Aux.: -0.17 |
|              |        | NB     |                                                                                            | Main: -2.63<br>Aux.: -2.28 | Main: 1.93<br>Aux.: 1.95  | Main: 0.18<br>Aux.: 0.44  | Main: -0.02<br>Aux.: 0.74 |

4. The EUT contains following accessory devices.

| Product | Brand                  | Model      | Description                                                                                                             |
|---------|------------------------|------------|-------------------------------------------------------------------------------------------------------------------------|
| Adapter | Chicony                | A16-045N1A | I/P: 100-240 Vac, 50-60 Hz, 1.2 A<br>O/P: 5 Vdc, 3 A, 9 Vdc, 3 A, 15 Vdc, 3 A, 20 Vdc, 2.25 A, 45W Max.<br>1.45M/0 core |
| Battery | SIMPLOTECHNOLOGY COLTD | 916QA112H  | 11.5 Vdc, 4940 mAh                                                                                                      |

5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

### 3.2 Description of Test Modes

13 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 1       | 2412            | 8       | 2447            |
| 2       | 2417            | 9       | 2452            |
| 3       | 2422            | 10      | 2457            |
| 4       | 2427            | 11      | 2462            |
| 5       | 2432            | 12      | 2467            |
| 6       | 2437            | 13      | 2472            |
| 7       | 2442            |         |                 |

9 channels are provided for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 3       | 2422            | 8       | 2447            |
| 4       | 2427            | 9       | 2452            |
| 5       | 2432            | 10      | 2457            |
| 6       | 2437            | 11      | 2462            |
| 7       | 2442            |         |                 |

### 3.2.1 Test Mode Applicability and Tested Channel Detail

| EUT Configure Mode | Applicable To |       |     |      | Description |
|--------------------|---------------|-------|-----|------|-------------|
|                    | RE $\geq$ 1G  | RE<1G | PLC | APCM |             |
| -                  | √             | √     | √   | √    | -           |

Where **RE $\geq$ 1G**: Radiated Emission above 1 GHz

**RE<1G**: Radiated Emission below 1 GHz

**PLC**: Power Line Conducted Emission

**APCM**: Antenna Port Conducted Measurement

**NOTE**: The EUT had been pre-tested on the positioned of each 3 axis and NB mode. The worst case was found when positioned on **Z-plane**.

**NOTE**: The worst case was found when positioned on NB mode for Output Power test.

**NOTE**: “-” means no effect.

#### **Radiated Emission Test (Above 1 GHz):**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode           | Available Channel | Tested Channel   | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|--------------------|----------------|-------------------|------------------|-----------------------|-----------------|------------------|
| -                  | 802.11b        | 1 to 13           | 1, 6, 11, 12, 13 | DSSS                  | DBPSK           | 1.0              |
| -                  | 802.11g        | 1 to 13           | 1, 6, 11, 12, 13 | OFDM                  | BPSK            | 6.0              |
| -                  | 802.11n (HT20) | 1 to 13           | 1, 6, 11, 12, 13 | OFDM                  | BPSK            | 6.5              |
| -                  | 802.11n (HT40) | 3 to 9            | 3, 6, 9, 10, 11  | OFDM                  | BPSK            | 13.5             |

#### **Radiated Emission Test (Below 1 GHz):**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode    | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|--------------------|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| -                  | 802.11b | 1 to 13           | 12             | DSSS                  | DBPSK           | 1.0              |

#### **Power Line Conducted Emission Test:**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode    | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|--------------------|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| -                  | 802.11b | 1 to 13           | 12             | DSSS                  | DBPSK           | 1.0              |

### **Antenna Port Conducted Measurement:**

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode           | Available Channel | Tested Channel   | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|--------------------|----------------|-------------------|------------------|-----------------------|-----------------|------------------|
| -                  | 802.11b        | 1 to 13           | 1, 6, 11, 12, 13 | DSSS                  | DBPSK           | 1.0              |
| -                  | 802.11g        | 1 to 13           | 1, 6, 11, 12, 13 | OFDM                  | BPSK            | 6.0              |
| -                  | 802.11n (HT20) | 1 to 13           | 1, 6, 11, 12, 13 | OFDM                  | BPSK            | 6.5              |
| -                  | 802.11n (HT40) | 3 to 9            | 3, 6, 9          | OFDM                  | BPSK            | 13.5             |

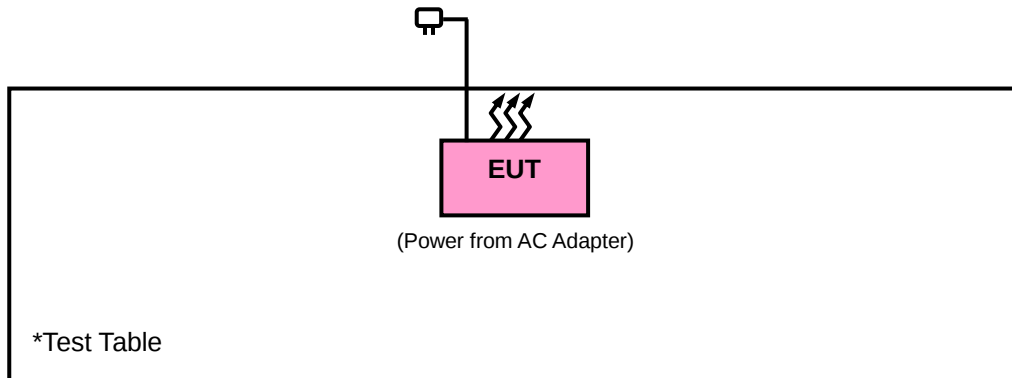
### **Test Condition:**

| Applicable To | Environmental Conditions | Input Power    | Tested by     |
|---------------|--------------------------|----------------|---------------|
| RE $\geq$ 1G  | 25 deg. C, 65 % RH       | 120 Vac, 60 Hz | Charles Hsiao |
| RE<1G         | 25 deg. C, 65 % RH       | 120 Vac, 60 Hz | Charles Hsiao |
| PLC           | 25 deg. C, 65 % RH       | 120 Vac, 60 Hz | Thomas Wei    |
| APCM          | 25 deg. C, 65 % RH       | 120 Vac, 60 Hz | Frank Chiu    |

### 3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

#### 3.3.1 Configuration of System under Test



### 3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C (15.247)**

**KDB 558074 D01 15.247 Meas Guidance v05**

**KDB 662911 D01 Multiple Transmitter Output v02r01**

**ANSI C63.10-2013**

All test items have been performed and recorded as per the above standards.

## 4 Test Types and Results

### 4.1 Radiated Emission and Bandedge Measurement

#### 4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

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

#### NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

#### 4.1.2 Test Instruments

| Description & Manufacturer                     | Model No.       | Serial No.                                            | Date of Calibration | Due Date of Calibration |
|------------------------------------------------|-----------------|-------------------------------------------------------|---------------------|-------------------------|
| Test Receiver<br>Agilent Technologies          | N9038A          | MY51210203                                            | Mar. 16, 2018       | Mar. 15, 2019           |
| Spectrum Analyzer<br>ROHDE & SCHWARZ           | FSU43           | 101261                                                | Jan. 11, 2018       | Jan. 10, 2019           |
| BILOG Antenna<br>SCHWARZBECK                   | VULB9168        | 9168-616                                              | Dec. 14, 2017       | Dec. 13, 2018           |
| HORN Antenna<br>ETS-Lindgren                   | 3117            | 00143293                                              | Dec. 13, 2017       | Dec. 12, 2018           |
| HORN Antenna<br>SCHWARZBECK                    | BBHA 9170       | 9170-480                                              | Dec. 01, 2017       | Nov. 30, 2018           |
| Fixed Attenuator<br>Mini-Circuits              | MDCS18N-10      | MDCS18N-10-01                                         | Apr. 16, 2018       | Apr. 15, 2019           |
| Loop Antenna                                   | EM-6879         | 269                                                   | Sep. 07, 2018       | Sep. 06, 2019           |
| Preamplifier<br>Agilent                        | 310N            | 187226                                                | Jun. 19, 2018       | Jun. 18, 2019           |
| Preamplifier<br>Agilent                        | 83017A          | MY39501357                                            | Jun. 19, 2018       | Jun. 18, 2019           |
| Power Meter<br>Anritsu                         | ML2495A         | 1012010                                               | Sep. 05, 2018       | Sep. 04, 2019           |
| Power Sensor<br>Anritsu                        | MA2411B         | 1315050                                               | Sep. 04, 2018       | Sep. 03, 2019           |
| RF signal cable<br>ETS-LINDGREN                | 5D-FB           | Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400) | Jun. 19, 2018       | Jun. 18, 2019           |
| RF signal cable<br>ETS-LINDGREN                | 8D-FB           | Cable-CH1-02(RFC-SMS-100-SMS-24)                      | Jun. 19, 2018       | Jun. 18, 2019           |
| Software                                       | E3<br>8.130425b | NA                                                    | NA                  | NA                      |
| Antenna Tower<br>MF                            | NA              | NA                                                    | NA                  | NA                      |
| Turn Table<br>MF                               | NA              | NA                                                    | NA                  | NA                      |
| Antenna Tower & Turn<br>Table Controller<br>MF | MF-7802         | NA                                                    | NA                  | NA                      |

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is IC7450I-1.

#### 4.1.3 Test Procedures

##### **For Radiated Emission below 30 MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

##### **Note:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

##### **For Radiated Emission above 30 MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

##### **Note:**

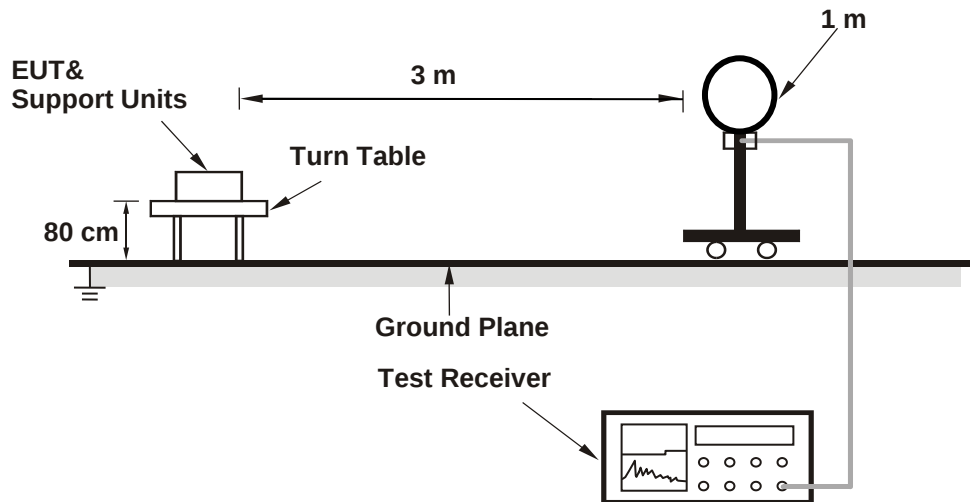
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle  $< 98\%$ ) or 10 Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1 GHz.  
(11b: RBW = 1 MHz, VBW = 3 kHz ; 11g: RBW = 1 MHz, VBW = 3 kHz ;  
11n (HT20): RBW = 1 MHz, VBW = 3 kHz ; 11n (HT40): RBW = 1 MHz, VBW = 3 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 Deviation from Test Standard

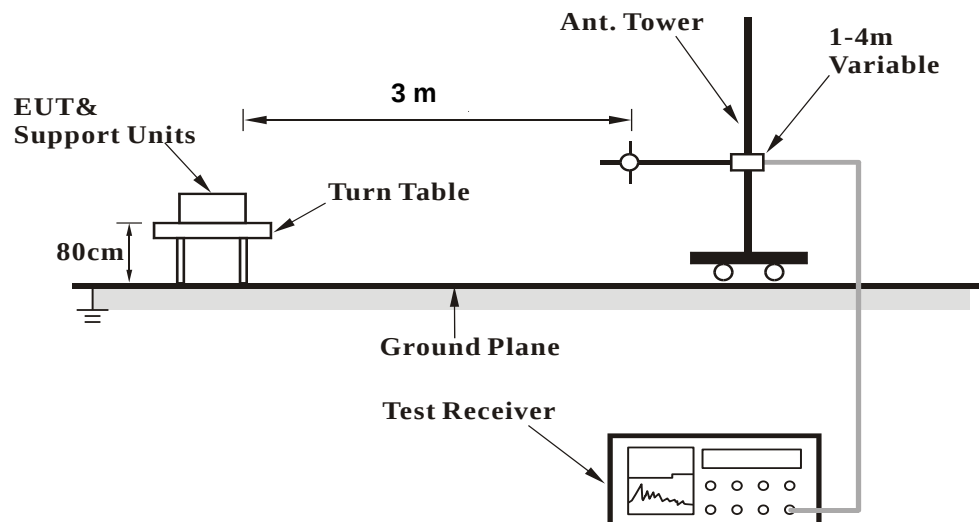
No deviation.

#### 4.1.5 Test Set Up

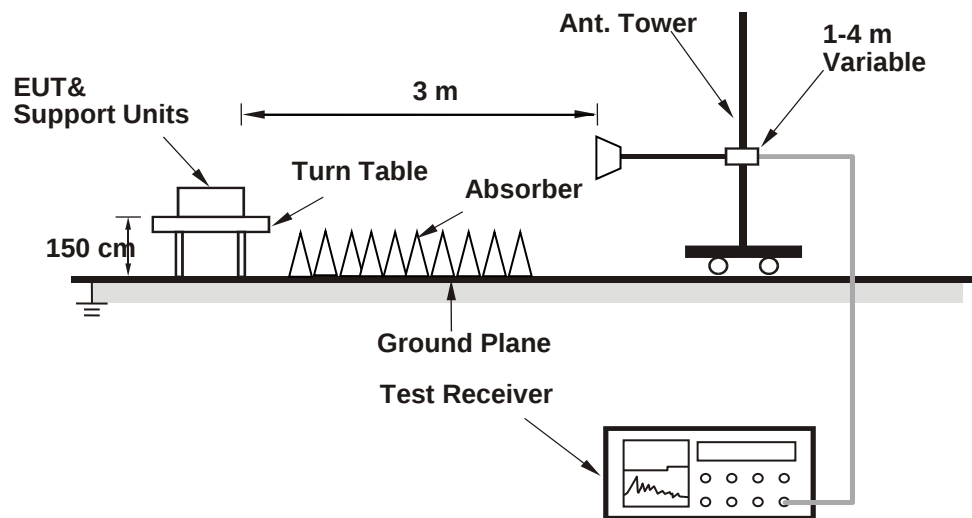
##### <Radiated Emission below 30 MHz>



##### <Radiated Emission 30 MHz to 1 GHz>



### <Radiated Emission above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.6 EUT Operating Conditions

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.

#### 4.1.7 Test Results

Above 1 GHz Data :  
802.11b

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 1          | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.56                                              | 52.96                   | 51.25             | 54             | -1.04       | 31.8                  | 5.4             | 35.49              | 283                 | 358                  | Average |
| 2389.56                                              | 65.36                   | 63.65             | 74             | -8.64       | 31.8                  | 5.4             | 35.49              | 283                 | 358                  | Peak    |
| 2412                                                 | 102.1                   | 100.33            |                |             | 31.81                 | 5.43            | 35.47              | 283                 | 358                  | Average |
| 2412                                                 | 105.96                  | 104.19            |                |             | 31.81                 | 5.43            | 35.47              | 283                 | 358                  | Peak    |
| 4824                                                 | 39.26                   | 31.13             | 54             | -14.74      | 33.97                 | 8.26            | 34.1               | 185                 | 0                    | Average |
| 4824                                                 | 48.84                   | 40.71             | 74             | -25.16      | 33.97                 | 8.26            | 34.1               | 185                 | 0                    | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.2                                               | 50.9                    | 49.19             | 54             | -3.1        | 31.8                  | 5.4             | 35.49              | 217                 | 105                  | Average |
| 2389.2                                               | 62.69                   | 60.98             | 74             | -11.31      | 31.8                  | 5.4             | 35.49              | 217                 | 105                  | Peak    |
| 2412                                                 | 101.64                  | 99.87             |                |             | 31.81                 | 5.43            | 35.47              | 217                 | 105                  | Average |
| 2412                                                 | 104.44                  | 102.67            |                |             | 31.81                 | 5.43            | 35.47              | 217                 | 105                  | Peak    |
| 4824                                                 | 38.82                   | 30.69             | 54             | -15.18      | 33.97                 | 8.26            | 34.1               | 133                 | 326                  | Average |
| 4824                                                 | 48.29                   | 40.16             | 74             | -25.71      | 33.97                 | 8.26            | 34.1               | 133                 | 326                  | Peak    |

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 6          | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2386.68                                              | 50.75                   | 49.04             | 54             | -3.25       | 31.8                  | 5.4             | 35.49              | 283                 | 351                  | Average |
| 2386.68                                              | 56.42                   | 54.71             | 74             | -17.58      | 31.8                  | 5.4             | 35.49              | 283                 | 351                  | Peak    |
| 2437                                                 | 106.55                  | 104.7             |                |             | 31.85                 | 5.46            | 35.46              | 283                 | 351                  | Average |
| 2437                                                 | 109.08                  | 107.23            |                |             | 31.85                 | 5.46            | 35.46              | 283                 | 351                  | Peak    |
| 2487.4                                               | 47.34                   | 45.35             | 54             | -6.66       | 31.88                 | 5.53            | 35.42              | 283                 | 351                  | Average |
| 2487.4                                               | 55.44                   | 53.45             | 74             | -18.56      | 31.88                 | 5.53            | 35.42              | 283                 | 351                  | Peak    |
| 4874                                                 | 39.09                   | 30.9              | 54             | -14.91      | 33.98                 | 8.27            | 34.06              | 124                 | 44                   | Average |
| 4874                                                 | 48.8                    | 40.61             | 74             | -25.2       | 33.98                 | 8.27            | 34.06              | 124                 | 44                   | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2386.77                                              | 49.04                   | 47.33             | 54             | -4.96       | 31.8                  | 5.4             | 35.49              | 217                 | 105                  | Average |
| 2386.77                                              | 55.71                   | 54                | 74             | -18.29      | 31.8                  | 5.4             | 35.49              | 217                 | 105                  | Peak    |
| 2437                                                 | 105.65                  | 103.8             |                |             | 31.85                 | 5.46            | 35.46              | 217                 | 105                  | Average |
| 2437                                                 | 108.23                  | 106.38            |                |             | 31.85                 | 5.46            | 35.46              | 217                 | 105                  | Peak    |
| 2487.36                                              | 46.59                   | 44.6              | 54             | -7.41       | 31.88                 | 5.53            | 35.42              | 217                 | 105                  | Average |
| 2487.36                                              | 54.59                   | 52.6              | 74             | -19.41      | 31.88                 | 5.53            | 35.42              | 217                 | 105                  | Peak    |
| 4874                                                 | 39.04                   | 30.85             | 54             | -14.96      | 33.98                 | 8.27            | 34.06              | 124                 | 216                  | Average |
| 4874                                                 | 48.56                   | 40.37             | 74             | -25.44      | 33.98                 | 8.27            | 34.06              | 124                 | 216                  | Peak    |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 11         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2462                                                 | 102.22                  | 100.29            |                |             | 31.87                 | 5.5             | 35.44              | 262                 | 5                    | Average |
| 2462                                                 | 105.75                  | 103.82            |                |             | 31.87                 | 5.5             | 35.44              | 262                 | 5                    | Peak    |
| 2487.96                                              | 51.69                   | 49.68             | 54             | -2.31       | 31.9                  | 5.53            | 35.42              | 262                 | 5                    | Average |
| 2487.96                                              | 65.69                   | 63.68             | 74             | -8.31       | 31.9                  | 5.53            | 35.42              | 262                 | 5                    | Peak    |
| 4924                                                 | 39.26                   | 31.01             | 54             | -14.74      | 33.99                 | 8.28            | 34.02              | 170                 | 346                  | Average |
| 4924                                                 | 47.62                   | 39.37             | 74             | -26.38      | 33.99                 | 8.28            | 34.02              | 170                 | 346                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2462                                                 | 101.37                  | 99.44             |                |             | 31.87                 | 5.5             | 35.44              | 217                 | 86                   | Average |
| 2462                                                 | 104.75                  | 102.82            |                |             | 31.87                 | 5.5             | 35.44              | 217                 | 86                   | Peak    |
| 2488                                                 | 49.43                   | 47.42             | 54             | -4.57       | 31.9                  | 5.53            | 35.42              | 217                 | 86                   | Average |
| 2488                                                 | 63.34                   | 61.33             | 74             | -10.66      | 31.9                  | 5.53            | 35.42              | 217                 | 86                   | Peak    |
| 4924                                                 | 39.02                   | 30.77             | 54             | -14.98      | 33.99                 | 8.28            | 34.02              | 114                 | 111                  | Average |
| 4924                                                 | 49.23                   | 40.98             | 74             | -24.77      | 33.99                 | 8.28            | 34.02              | 114                 | 111                  | Peak    |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 12         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2467                                                 | 100.25                  | 98.3              |                |             | 31.87                 | 5.5             | 35.42              | 262                 | 4                    | Average |
| 2467                                                 | 103.37                  | 101.42            |                |             | 31.87                 | 5.5             | 35.42              | 262                 | 4                    | Peak    |
| 2484.52                                              | 52.98                   | 50.99             | 54             | -1.02       | 31.88                 | 5.53            | 35.42              | 262                 | 4                    | Average |
| 2484.52                                              | 68.34                   | 66.35             | 74             | -5.66       | 31.88                 | 5.53            | 35.42              | 262                 | 4                    | Peak    |
| 4834                                                 | 39.12                   | 30.99             | 54             | -14.88      | 33.97                 | 8.26            | 34.1               | 111                 | 326                  | Average |
| 4834                                                 | 48.03                   | 39.9              | 74             | -25.97      | 33.97                 | 8.26            | 34.1               | 111                 | 326                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2467                                                 | 99.64                   | 97.69             |                |             | 31.87                 | 5.5             | 35.42              | 217                 | 86                   | Average |
| 2467                                                 | 102.02                  | 100.07            |                |             | 31.87                 | 5.5             | 35.42              | 217                 | 86                   | Peak    |
| 2484.32                                              | 50.91                   | 48.92             | 54             | -3.09       | 31.88                 | 5.53            | 35.42              | 217                 | 86                   | Average |
| 2484.32                                              | 66.26                   | 64.27             | 74             | -7.74       | 31.88                 | 5.53            | 35.42              | 217                 | 86                   | Peak    |
| 4834                                                 | 38.99                   | 30.86             | 54             | -15.01      | 33.97                 | 8.26            | 34.1               | 145                 | 155                  | Average |
| 4834                                                 | 48.55                   | 40.42             | 74             | -25.45      | 33.97                 | 8.26            | 34.1               | 145                 | 155                  | Peak    |

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2467 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 13         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2472                                                 | 98.88                   | 96.92             |                |             | 31.88                 | 5.5             | 35.42              | 233                 | 4                    | Average |
| 2472                                                 | 101.93                  | 99.97             |                |             | 31.88                 | 5.5             | 35.42              | 233                 | 4                    | Peak    |
| 2487.84                                              | 52.84                   | 50.83             | 54             | -1.16       | 31.9                  | 5.53            | 35.42              | 233                 | 4                    | Average |
| 2487.84                                              | 71.53                   | 69.52             | 74             | -2.47       | 31.9                  | 5.53            | 35.42              | 233                 | 4                    | Peak    |
| 4944                                                 | 39.4                    | 31.13             | 54             | -14.6       | 33.99                 | 8.29            | 34.01              | 109                 | 107                  | Average |
| 4944                                                 | 48.38                   | 40.11             | 74             | -25.62      | 33.99                 | 8.29            | 34.01              | 109                 | 107                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2472                                                 | 97.33                   | 95.37             |                |             | 31.88                 | 5.5             | 35.42              | 217                 | 86                   | Average |
| 2472                                                 | 100.32                  | 98.36             |                |             | 31.88                 | 5.5             | 35.42              | 217                 | 86                   | Peak    |
| 2487.76                                              | 50.53                   | 48.52             | 54             | -3.47       | 31.9                  | 5.53            | 35.42              | 217                 | 86                   | Average |
| 2487.76                                              | 68.28                   | 66.27             | 74             | -5.72       | 31.9                  | 5.53            | 35.42              | 217                 | 86                   | Peak    |
| 4944                                                 | 39.32                   | 31.05             | 54             | -14.68      | 33.99                 | 8.29            | 34.01              | 111                 | 316                  | Average |
| 4944                                                 | 48.59                   | 40.32             | 74             | -25.41      | 33.99                 | 8.29            | 34.01              | 111                 | 316                  | Peak    |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
2. 2472 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

# 802.11g

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 1          | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.92                                              | 49.17                   | 47.44             | 54             | -4.83       | 31.8                  | 5.4             | 35.47              | 262                 | 350                  | Average |
| 2389.92                                              | 65.55                   | 63.82             | 74             | -8.45       | 31.8                  | 5.4             | 35.47              | 262                 | 350                  | Peak    |
| 2412                                                 | 97.49                   | 95.72             |                |             | 31.81                 | 5.43            | 35.47              | 262                 | 350                  | Average |
| 2412                                                 | 104.34                  | 102.57            |                |             | 31.81                 | 5.43            | 35.47              | 262                 | 350                  | Peak    |
| 4824                                                 | 39.45                   | 31.32             | 54             | -14.55      | 33.97                 | 8.26            | 34.1               | 118                 | 216                  | Average |
| 4824                                                 | 47.44                   | 39.31             | 74             | -26.56      | 33.97                 | 8.26            | 34.1               | 118                 | 216                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.92                                              | 51.04                   | 49.31             | 54             | -2.96       | 31.8                  | 5.4             | 35.47              | 217                 | 90                   | Average |
| 2389.92                                              | 67.07                   | 65.34             | 74             | -6.93       | 31.8                  | 5.4             | 35.47              | 217                 | 90                   | Peak    |
| 2412                                                 | 96.57                   | 94.8              |                |             | 31.81                 | 5.43            | 35.47              | 217                 | 90                   | Average |
| 2412                                                 | 103.44                  | 101.67            |                |             | 31.81                 | 5.43            | 35.47              | 217                 | 90                   | Peak    |
| 4824                                                 | 39.27                   | 31.14             | 54             | -14.73      | 33.97                 | 8.26            | 34.1               | 155                 | 189                  | Average |
| 4824                                                 | 47.42                   | 39.29             | 74             | -26.58      | 33.97                 | 8.26            | 34.1               | 155                 | 189                  | Peak    |

## Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 6          | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.56                                              | 52.78                   | 51.07             | 54             | -1.22       | 31.8                  | 5.4             | 35.49              | 283                 | 351                  | Average |
| 2389.56                                              | 68.18                   | 66.47             | 74             | -5.82       | 31.8                  | 5.4             | 35.49              | 283                 | 351                  | Peak    |
| 2437                                                 | 101.59                  | 99.74             |                |             | 31.85                 | 5.46            | 35.46              | 283                 | 351                  | Average |
| 2437                                                 | 108.57                  | 106.72            |                |             | 31.85                 | 5.46            | 35.46              | 283                 | 351                  | Peak    |
| 2483.72                                              | 52.67                   | 50.71             | 54             | -1.33       | 31.88                 | 5.5             | 35.42              | 283                 | 351                  | Average |
| 2483.72                                              | 69.42                   | 67.46             | 74             | -4.58       | 31.88                 | 5.5             | 35.42              | 283                 | 351                  | Peak    |
| 4874                                                 | 39.59                   | 31.4              | 54             | -14.41      | 33.98                 | 8.27            | 34.06              | 175                 | 105                  | Average |
| 4874                                                 | 47.64                   | 39.45             | 74             | -26.36      | 33.98                 | 8.27            | 34.06              | 175                 | 105                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.29                                              | 52                      | 50.29             | 54             | -2          | 31.8                  | 5.4             | 35.49              | 217                 | 90                   | Average |
| 2389.29                                              | 66.98                   | 65.27             | 74             | -7.02       | 31.8                  | 5.4             | 35.49              | 217                 | 90                   | Peak    |
| 2437                                                 | 100.66                  | 98.81             |                |             | 31.85                 | 5.46            | 35.46              | 217                 | 90                   | Average |
| 2437                                                 | 107.37                  | 105.52            |                |             | 31.85                 | 5.46            | 35.46              | 217                 | 90                   | Peak    |
| 2483.64                                              | 51.06                   | 49.1              | 54             | -2.94       | 31.88                 | 5.5             | 35.42              | 217                 | 90                   | Average |
| 2483.64                                              | 66.95                   | 64.99             | 74             | -7.05       | 31.88                 | 5.5             | 35.42              | 217                 | 90                   | Peak    |
| 4874                                                 | 39.46                   | 31.27             | 54             | -14.54      | 33.98                 | 8.27            | 34.06              | 112                 | 285                  | Average |
| 4874                                                 | 47.59                   | 39.4              | 74             | -26.41      | 33.98                 | 8.27            | 34.06              | 112                 | 285                  | Peak    |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 11         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2462                                                 | 99.74                   | 97.81             |                |             | 31.87                 | 5.5             | 35.44              | 262                 | 5                    | Average |
| 2462                                                 | 106.6                   | 104.67            |                |             | 31.87                 | 5.5             | 35.44              | 262                 | 5                    | Peak    |
| 2483.52                                              | 46.01                   | 44.05             | 54             | -7.99       | 31.88                 | 5.5             | 35.42              | 262                 | 5                    | Average |
| 2483.52                                              | 61.27                   | 59.31             | 74             | -12.73      | 31.88                 | 5.5             | 35.42              | 262                 | 5                    | Peak    |
| 4924                                                 | 39.54                   | 31.29             | 54             | -14.46      | 33.99                 | 8.28            | 34.02              | 118                 | 214                  | Average |
| 4924                                                 | 49.12                   | 40.87             | 74             | -24.88      | 33.99                 | 8.28            | 34.02              | 118                 | 214                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2462                                                 | 98.29                   | 96.36             |                |             | 31.87                 | 5.5             | 35.44              | 217                 | 86                   | Average |
| 2462                                                 | 105.43                  | 103.5             |                |             | 31.87                 | 5.5             | 35.44              | 217                 | 86                   | Peak    |
| 2483.52                                              | 44.03                   | 42.07             | 54             | -9.97       | 31.88                 | 5.5             | 35.42              | 217                 | 86                   | Average |
| 2483.52                                              | 58.72                   | 56.76             | 74             | -15.28      | 31.88                 | 5.5             | 35.42              | 217                 | 86                   | Peak    |
| 4924                                                 | 39.7                    | 31.45             | 54             | -14.3       | 33.99                 | 8.28            | 34.02              | 134                 | 159                  | Average |
| 4924                                                 | 48.11                   | 39.86             | 74             | -25.89      | 33.99                 | 8.28            | 34.02              | 134                 | 159                  | Peak    |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 12         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2467                                                 | 96.64                   | 94.69             |                |             | 31.87                 | 5.5             | 35.42              | 262                 | 4                    | Average |
| 2467                                                 | 103.41                  | 101.46            |                |             | 31.87                 | 5.5             | 35.42              | 262                 | 4                    | Peak    |
| 2483.52                                              | 47.04                   | 45.08             | 54             | -6.96       | 31.88                 | 5.5             | 35.42              | 262                 | 4                    | Average |
| 2483.52                                              | 59.72                   | 57.76             | 74             | -14.28      | 31.88                 | 5.5             | 35.42              | 262                 | 4                    | Peak    |
| 4934                                                 | 39.79                   | 31.53             | 54             | -14.21      | 33.99                 | 8.29            | 34.02              | 175                 | 111                  | Average |
| 4934                                                 | 47.17                   | 38.91             | 74             | -26.83      | 33.99                 | 8.29            | 34.02              | 175                 | 111                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2467                                                 | 95.11                   | 93.16             |                |             | 31.87                 | 5.5             | 35.42              | 217                 | 86                   | Average |
| 2467                                                 | 102.1                   | 100.15            |                |             | 31.87                 | 5.5             | 35.42              | 217                 | 86                   | Peak    |
| 2483.6                                               | 45.12                   | 43.16             | 54             | -8.88       | 31.88                 | 5.5             | 35.42              | 217                 | 86                   | Average |
| 2483.6                                               | 56.49                   | 54.53             | 74             | -17.51      | 31.88                 | 5.5             | 35.42              | 217                 | 86                   | Peak    |
| 4934                                                 | 39.75                   | 31.49             | 54             | -14.25      | 33.99                 | 8.29            | 34.02              | 194                 | 314                  | Average |
| 4934                                                 | 48.44                   | 40.18             | 74             | -25.56      | 33.99                 | 8.29            | 34.02              | 194                 | 314                  | Peak    |

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2467 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 13         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2472                                                 | 77.55                   | 75.59             |                |             | 31.88                 | 5.5             | 35.42              | 233                 | 4                    | Average |
| 2472                                                 | 84.79                   | 82.83             |                |             | 31.88                 | 5.5             | 35.42              | 233                 | 4                    | Peak    |
| 2483.52                                              | 48.51                   | 46.55             | 54             | -5.49       | 31.88                 | 5.5             | 35.42              | 233                 | 4                    | Average |
| 2483.52                                              | 60.3                    | 58.34             | 74             | -13.7       | 31.88                 | 5.5             | 35.42              | 233                 | 4                    | Peak    |
| 4944                                                 | 39.81                   | 31.54             | 54             | -14.19      | 33.99                 | 8.29            | 34.01              | 124                 | 7                    | Average |
| 4944                                                 | 48.26                   | 39.99             | 74             | -25.74      | 33.99                 | 8.29            | 34.01              | 124                 | 7                    | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2472                                                 | 76.57                   | 74.61             |                |             | 31.88                 | 5.5             | 35.42              | 217                 | 86                   | Average |
| 2472                                                 | 83.57                   | 81.61             |                |             | 31.88                 | 5.5             | 35.42              | 217                 | 86                   | Peak    |
| 2483.52                                              | 45.84                   | 43.88             | 54             | -8.16       | 31.88                 | 5.5             | 35.42              | 217                 | 86                   | Average |
| 2483.52                                              | 57.56                   | 55.6              | 74             | -16.44      | 31.88                 | 5.5             | 35.42              | 217                 | 86                   | Peak    |
| 4944                                                 | 40.14                   | 31.87             | 54             | -13.86      | 33.99                 | 8.29            | 34.01              | 134                 | 300                  | Average |
| 4944                                                 | 47.98                   | 39.71             | 74             | -26.02      | 33.99                 | 8.29            | 34.01              | 134                 | 300                  | Peak    |

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2472 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

# 802.11n (HT20)

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 1          | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.83                                              | 47.57                   | 45.84             | 54             | -6.43       | 31.8                  | 5.4             | 35.47              | 300                 | 0                    | Average |
| 2389.83                                              | 60.82                   | 59.09             | 74             | -13.18      | 31.8                  | 5.4             | 35.47              | 300                 | 0                    | Peak    |
| 2412                                                 | 102.48                  | 100.71            |                |             | 31.81                 | 5.43            | 35.47              | 292                 | 0                    | Average |
| 2412                                                 | 109.76                  | 107.99            |                |             | 31.81                 | 5.43            | 35.47              | 292                 | 0                    | Peak    |
| 4824                                                 | 37.85                   | 29.72             | 54             | -16.15      | 33.97                 | 8.26            | 34.1               | 156                 | 211                  | Average |
| 4824                                                 | 47.71                   | 39.58             | 74             | -26.29      | 33.97                 | 8.26            | 34.1               | 156                 | 211                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.83                                              | 44.81                   | 43.08             | 54             | -9.19       | 31.8                  | 5.4             | 35.47              | 200                 | 92                   | Average |
| 2389.83                                              | 56.29                   | 54.56             | 74             | -17.71      | 31.8                  | 5.4             | 35.47              | 200                 | 92                   | Peak    |
| 2412                                                 | 100.37                  | 98.6              |                |             | 31.81                 | 5.43            | 35.47              | 200                 | 92                   | Average |
| 2412                                                 | 107.46                  | 105.69            |                |             | 31.81                 | 5.43            | 35.47              | 200                 | 92                   | Peak    |
| 4824                                                 | 38.13                   | 30                | 54             | -15.87      | 33.97                 | 8.26            | 34.1               | 149                 | 137                  | Average |
| 4824                                                 | 47.94                   | 39.81             | 74             | -26.06      | 33.97                 | 8.26            | 34.1               | 149                 | 137                  | Peak    |

## Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 6          | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.47                                              | 41.51                   | 39.8              | 54             | -12.49      | 31.8                  | 5.4             | 35.49              | 292                 | 0                    | Average |
| 2389.47                                              | 52.08                   | 50.37             | 74             | -21.92      | 31.8                  | 5.4             | 35.49              | 292                 | 0                    | Peak    |
| 2437                                                 | 103.37                  | 101.52            |                |             | 31.85                 | 5.46            | 35.46              | 292                 | 0                    | Average |
| 2437                                                 | 110.31                  | 108.46            |                |             | 31.85                 | 5.46            | 35.46              | 292                 | 0                    | Peak    |
| 2484.68                                              | 42.08                   | 40.09             | 54             | -11.92      | 31.88                 | 5.53            | 35.42              | 292                 | 0                    | Average |
| 2484.68                                              | 52.98                   | 50.99             | 74             | -21.02      | 31.88                 | 5.53            | 35.42              | 292                 | 0                    | Peak    |
| 4874                                                 | 37.91                   | 29.72             | 54             | -16.09      | 33.98                 | 8.27            | 34.06              | 112                 | 196                  | Average |
| 4874                                                 | 47.82                   | 39.63             | 74             | -26.18      | 33.98                 | 8.27            | 34.06              | 112                 | 196                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2388.3                                               | 41.06                   | 39.35             | 54             | -12.94      | 31.8                  | 5.4             | 35.49              | 200                 | 92                   | Average |
| 2388.3                                               | 52.37                   | 50.66             | 74             | -21.63      | 31.8                  | 5.4             | 35.49              | 200                 | 92                   | Peak    |
| 2437                                                 | 101.47                  | 99.62             |                |             | 31.85                 | 5.46            | 35.46              | 200                 | 92                   | Average |
| 2437                                                 | 108.29                  | 106.44            |                |             | 31.85                 | 5.46            | 35.46              | 200                 | 92                   | Peak    |
| 2483.88                                              | 41.85                   | 39.89             | 54             | -12.15      | 31.88                 | 5.5             | 35.42              | 200                 | 92                   | Average |
| 2483.88                                              | 54.01                   | 52.05             | 74             | -19.99      | 31.88                 | 5.5             | 35.42              | 200                 | 92                   | Peak    |
| 4874                                                 | 37.54                   | 29.35             | 54             | -16.46      | 33.98                 | 8.27            | 34.06              | 106                 | 232                  | Average |
| 4874                                                 | 47.26                   | 39.07             | 74             | -26.74      | 33.98                 | 8.27            | 34.06              | 106                 | 232                  | Peak    |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 11         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2462                                                 | 101.36                  | 99.43             |                |             | 31.87                 | 5.5             | 35.44              | 300                 | 12                   | Average |
| 2462                                                 | 108.84                  | 106.91            |                |             | 31.87                 | 5.5             | 35.44              | 300                 | 12                   | Peak    |
| 2483.52                                              | 45.78                   | 43.82             | 54             | -8.22       | 31.88                 | 5.5             | 35.42              | 300                 | 12                   | Average |
| 2483.52                                              | 56.21                   | 54.25             | 74             | -17.79      | 31.88                 | 5.5             | 35.42              | 300                 | 12                   | Peak    |
| 4924                                                 | 38.07                   | 29.82             | 54             | -15.93      | 33.99                 | 8.28            | 34.02              | 129                 | 47                   | Average |
| 4924                                                 | 47.98                   | 39.73             | 74             | -26.02      | 33.99                 | 8.28            | 34.02              | 129                 | 47                   | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2462                                                 | 99.44                   | 97.51             |                |             | 31.87                 | 5.5             | 35.44              | 200                 | 92                   | Average |
| 2462                                                 | 106.17                  | 104.24            |                |             | 31.87                 | 5.5             | 35.44              | 200                 | 92                   | Peak    |
| 2483.56                                              | 49.06                   | 47.1              | 54             | -4.94       | 31.88                 | 5.5             | 35.42              | 222                 | 110                  | Average |
| 2483.56                                              | 60.96                   | 59                | 74             | -13.04      | 31.88                 | 5.5             | 35.42              | 222                 | 110                  | Peak    |
| 4924                                                 | 37.45                   | 29.2              | 54             | -16.55      | 33.99                 | 8.28            | 34.02              | 112                 | 175                  | Average |
| 4924                                                 | 47.22                   | 38.97             | 74             | -26.78      | 33.99                 | 8.28            | 34.02              | 112                 | 175                  | Peak    |

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 12         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2467                                                 | 99.87                   | 97.92             |                |             | 31.87                 | 5.5             | 35.42              | 288                 | 358                  | Average |
| 2467                                                 | 106.92                  | 104.97            |                |             | 31.87                 | 5.5             | 35.42              | 288                 | 358                  | Peak    |
| 2483.56                                              | 49.38                   | 47.42             | 54             | -4.62       | 31.88                 | 5.5             | 35.42              | 289                 | 192                  | Average |
| 2483.56                                              | 61.92                   | 59.96             | 74             | -12.08      | 31.88                 | 5.5             | 35.42              | 289                 | 192                  | Peak    |
| 4934                                                 | 38.52                   | 30.26             | 54             | -15.48      | 33.99                 | 8.29            | 34.02              | 176                 | 39                   | Average |
| 4934                                                 | 48.1                    | 39.84             | 74             | -25.9       | 33.99                 | 8.29            | 34.02              | 176                 | 39                   | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2467                                                 | 97.58                   | 95.63             |                |             | 31.87                 | 5.5             | 35.42              | 200                 | 92                   | Average |
| 2467                                                 | 104.13                  | 102.18            |                |             | 31.87                 | 5.5             | 35.42              | 200                 | 92                   | Peak    |
| 2483.52                                              | 49.34                   | 47.38             | 54             | -4.66       | 31.88                 | 5.5             | 35.42              | 222                 | 110                  | Average |
| 2483.52                                              | 61.99                   | 60.03             | 74             | -12.01      | 31.88                 | 5.5             | 35.42              | 222                 | 110                  | Peak    |
| 4934                                                 | 38.06                   | 29.8              | 54             | -15.94      | 33.99                 | 8.29            | 34.02              | 138                 | 105                  | Average |
| 4934                                                 | 47.82                   | 39.56             | 74             | -26.18      | 33.99                 | 8.29            | 34.02              | 138                 | 105                  | Peak    |

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2467 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 13         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2472                                                 | 79.43                   | 77.47             |                |             | 31.88                 | 5.5             | 35.42              | 288                 | 358                  | Average |
| 2472                                                 | 86.67                   | 84.71             |                |             | 31.88                 | 5.5             | 35.42              | 288                 | 358                  | Peak    |
| 2483.56                                              | 52.4                    | 50.44             | 54             | -1.6        | 31.88                 | 5.5             | 35.42              | 288                 | 192                  | Average |
| 2483.56                                              | 64.41                   | 62.45             | 74             | -9.59       | 31.88                 | 5.5             | 35.42              | 288                 | 192                  | Peak    |
| 4944                                                 | 37.41                   | 29.14             | 54             | -16.59      | 33.99                 | 8.29            | 34.01              | 158                 | 206                  | Average |
| 4944                                                 | 47.34                   | 39.07             | 74             | -26.66      | 33.99                 | 8.29            | 34.01              | 158                 | 206                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2472                                                 | 77.27                   | 75.31             |                |             | 31.88                 | 5.5             | 35.42              | 200                 | 92                   | Average |
| 2472                                                 | 84.93                   | 82.97             |                |             | 31.88                 | 5.5             | 35.42              | 200                 | 92                   | Peak    |
| 2483.52                                              | 49.49                   | 47.53             | 54             | -4.51       | 31.88                 | 5.5             | 35.42              | 200                 | 92                   | Average |
| 2483.52                                              | 62.79                   | 60.83             | 74             | -11.21      | 31.88                 | 5.5             | 35.42              | 200                 | 92                   | Peak    |
| 4944                                                 | 37.34                   | 29.07             | 54             | -16.66      | 33.99                 | 8.29            | 34.01              | 116                 | 187                  | Average |
| 4944                                                 | 47.3                    | 39.03             | 74             | -26.7       | 33.99                 | 8.29            | 34.01              | 116                 | 187                  | Peak    |

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2472 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

# 802.11n (HT40)

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 3          | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.74                                              | 45.7                    | 43.99             | 54             | -8.3        | 31.8                  | 5.4             | 35.49              | 292                 | 0                    | Average |
| 2389.74                                              | 56.7                    | 54.99             | 74             | -17.3       | 31.8                  | 5.4             | 35.49              | 292                 | 0                    | Peak    |
| 2422                                                 | 98.49                   | 96.69             |                |             | 31.83                 | 5.43            | 35.46              | 292                 | 0                    | Average |
| 2422                                                 | 105.57                  | 103.77            |                |             | 31.83                 | 5.43            | 35.46              | 292                 | 0                    | Peak    |
| 2483.56                                              | 42.13                   | 40.17             | 54             | -11.87      | 31.88                 | 5.5             | 35.42              | 292                 | 0                    | Average |
| 2483.56                                              | 52.99                   | 51.03             | 74             | -21.01      | 31.88                 | 5.5             | 35.42              | 292                 | 0                    | Peak    |
| 4844                                                 | 37.43                   | 29.28             | 54             | -16.57      | 33.97                 | 8.26            | 34.08              | 109                 | 346                  | Average |
| 4844                                                 | 46.94                   | 38.79             | 74             | -27.06      | 33.97                 | 8.26            | 34.08              | 109                 | 346                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2388.48                                              | 43.8                    | 42.09             | 54             | -10.2       | 31.8                  | 5.4             | 35.49              | 200                 | 92                   | Average |
| 2388.48                                              | 54.42                   | 52.71             | 74             | -19.58      | 31.8                  | 5.4             | 35.49              | 200                 | 92                   | Peak    |
| 2422                                                 | 96.64                   | 94.84             |                |             | 31.83                 | 5.43            | 35.46              | 200                 | 92                   | Average |
| 2422                                                 | 103.26                  | 101.46            |                |             | 31.83                 | 5.43            | 35.46              | 200                 | 92                   | Peak    |
| 2493.68                                              | 41.77                   | 39.75             | 54             | -12.23      | 31.9                  | 5.53            | 35.41              | 200                 | 92                   | Average |
| 2493.68                                              | 52.43                   | 50.41             | 74             | -21.57      | 31.9                  | 5.53            | 35.41              | 200                 | 92                   | Peak    |
| 4844                                                 | 38.57                   | 30.42             | 54             | -15.43      | 33.97                 | 8.26            | 34.08              | 138                 | 107                  | Average |
| 4844                                                 | 48.37                   | 40.22             | 74             | -25.63      | 33.97                 | 8.26            | 34.08              | 138                 | 107                  | Peak    |

## Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2422 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 6          | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.65                                              | 45.27                   | 43.56             | 54             | -8.73       | 31.8                  | 5.4             | 35.49              | 292                 | 0                    | Average |
| 2389.65                                              | 56.46                   | 54.75             | 74             | -17.54      | 31.8                  | 5.4             | 35.49              | 292                 | 0                    | Peak    |
| 2437                                                 | 99.61                   | 97.76             |                |             | 31.85                 | 5.46            | 35.46              | 292                 | 0                    | Average |
| 2437                                                 | 106.18                  | 104.33            |                |             | 31.85                 | 5.46            | 35.46              | 292                 | 0                    | Peak    |
| 2483.52                                              | 45.58                   | 43.62             | 54             | -8.42       | 31.88                 | 5.5             | 35.42              | 292                 | 0                    | Average |
| 2483.52                                              | 57.12                   | 55.16             | 74             | -16.88      | 31.88                 | 5.5             | 35.42              | 292                 | 0                    | Peak    |
| 4874                                                 | 38.15                   | 29.96             | 54             | -15.85      | 33.98                 | 8.27            | 34.06              | 191                 | 148                  | Average |
| 4874                                                 | 47.94                   | 39.75             | 74             | -26.06      | 33.98                 | 8.27            | 34.06              | 191                 | 148                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2389.92                                              | 44.34                   | 42.61             | 54             | -9.66       | 31.8                  | 5.4             | 35.47              | 200                 | 92                   | Average |
| 2389.92                                              | 56.47                   | 54.74             | 74             | -17.53      | 31.8                  | 5.4             | 35.47              | 200                 | 92                   | Peak    |
| 2437                                                 | 97.65                   | 95.8              |                |             | 31.85                 | 5.46            | 35.46              | 200                 | 92                   | Average |
| 2437                                                 | 104.28                  | 102.43            |                |             | 31.85                 | 5.46            | 35.46              | 200                 | 92                   | Peak    |
| 2483.96                                              | 44.93                   | 42.97             | 54             | -9.07       | 31.88                 | 5.5             | 35.42              | 200                 | 92                   | Average |
| 2483.96                                              | 55.39                   | 53.43             | 74             | -18.61      | 31.88                 | 5.5             | 35.42              | 200                 | 92                   | Peak    |
| 4874                                                 | 37.29                   | 29.1              | 54             | -16.71      | 33.98                 | 8.27            | 34.06              | 179                 | 246                  | Average |
| 4874                                                 | 47.13                   | 38.94             | 74             | -26.87      | 33.98                 | 8.27            | 34.06              | 179                 | 246                  | Peak    |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 9          | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                          |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamplifier Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2388.39                                              | 42.05                   | 40.34             | 54             | -11.95      | 31.8                  | 5.4             | 35.49                    | 300                 | 12                   | Average |
| 2388.39                                              | 53.42                   | 51.71             | 74             | -20.58      | 31.8                  | 5.4             | 35.49                    | 300                 | 12                   | Peak    |
| 2452                                                 | 98.44                   | 96.57             |                |             | 31.85                 | 5.46            | 35.44                    | 300                 | 12                   | Average |
| 2452                                                 | 105.06                  | 103.19            |                |             | 31.85                 | 5.46            | 35.44                    | 300                 | 12                   | Peak    |
| 2484.56                                              | 50.97                   | 48.98             | 54             | -3.03       | 31.88                 | 5.53            | 35.42                    | 300                 | 28                   | Average |
| 2484.56                                              | 65.24                   | 63.25             | 74             | -8.76       | 31.88                 | 5.53            | 35.42                    | 300                 | 28                   | Peak    |
| 4904                                                 | 37.61                   | 29.39             | 54             | -16.39      | 33.98                 | 8.28            | 34.04                    | 135                 | 146                  | Average |
| 4904                                                 | 47.47                   | 39.25             | 74             | -26.53      | 33.98                 | 8.28            | 34.04                    | 135                 | 146                  | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                          |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamplifier Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2388.66                                              | 41.74                   | 40.03             | 54             | -12.26      | 31.8                  | 5.4             | 35.49                    | 200                 | 92                   | Average |
| 2388.66                                              | 52.2                    | 50.49             | 74             | -21.8       | 31.8                  | 5.4             | 35.49                    | 200                 | 92                   | Peak    |
| 2452                                                 | 96.19                   | 94.32             |                |             | 31.85                 | 5.46            | 35.44                    | 200                 | 92                   | Average |
| 2452                                                 | 103.05                  | 101.18            |                |             | 31.85                 | 5.46            | 35.44                    | 200                 | 92                   | Peak    |
| 2484.48                                              | 49.02                   | 47.03             | 54             | -4.98       | 31.88                 | 5.53            | 35.42                    | 200                 | 92                   | Average |
| 2484.48                                              | 63.44                   | 61.45             | 74             | -10.56      | 31.88                 | 5.53            | 35.42                    | 200                 | 92                   | Peak    |
| 4904                                                 | 37.11                   | 28.89             | 54             | -16.89      | 33.98                 | 8.28            | 34.04                    | 103                 | 74                   | Average |
| 4904                                                 | 47.03                   | 38.81             | 74             | -26.97      | 33.98                 | 8.28            | 34.04                    | 103                 | 74                   | Peak    |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamplifier Factor  
Margin value = Emission level – Limit value
2. 2452 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 10         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                          |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamplifier Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2387.4                                               | 41.6                    | 39.89             | 54             | -12.4       | 31.8                  | 5.4             | 35.49                    | 300                 | 12                   | Average |
| 2387.4                                               | 51.86                   | 50.15             | 74             | -22.14      | 31.8                  | 5.4             | 35.49                    | 300                 | 12                   | Peak    |
| 2457                                                 | 93.6                    | 91.71             |                |             | 31.87                 | 5.46            | 35.44                    | 300                 | 12                   | Average |
| 2457                                                 | 100.19                  | 98.3              |                |             | 31.87                 | 5.46            | 35.44                    | 300                 | 12                   | Peak    |
| 2483.68                                              | 49.31                   | 47.35             | 54             | -4.69       | 31.88                 | 5.5             | 35.42                    | 300                 | 12                   | Average |
| 2483.68                                              | 65.48                   | 63.52             | 74             | -8.52       | 31.88                 | 5.5             | 35.42                    | 300                 | 12                   | Peak    |
| 4914                                                 | 37.63                   | 29.41             | 54             | -16.37      | 33.98                 | 8.28            | 34.04                    | 123                 | 99                   | Average |
| 4914                                                 | 47.57                   | 39.35             | 74             | -26.43      | 33.98                 | 8.28            | 34.04                    | 123                 | 99                   | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                          |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamplifier Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2386.32                                              | 41.36                   | 39.65             | 54             | -12.64      | 31.8                  | 5.4             | 35.49                    | 200                 | 92                   | Average |
| 2386.32                                              | 52.04                   | 50.33             | 74             | -21.96      | 31.8                  | 5.4             | 35.49                    | 200                 | 92                   | Peak    |
| 2457                                                 | 92.29                   | 90.4              |                |             | 31.87                 | 5.46            | 35.44                    | 200                 | 92                   | Average |
| 2457                                                 | 99.37                   | 97.48             |                |             | 31.87                 | 5.46            | 35.44                    | 200                 | 92                   | Peak    |
| 2483.52                                              | 51.65                   | 49.69             | 54             | -2.35       | 31.88                 | 5.5             | 35.42                    | 220                 | 100                  | Average |
| 2483.52                                              | 62.92                   | 60.96             | 74             | -11.08      | 31.88                 | 5.5             | 35.42                    | 220                 | 100                  | Peak    |
| 4914                                                 | 38.57                   | 30.35             | 54             | -15.43      | 33.98                 | 8.28            | 34.04                    | 158                 | 190                  | Average |
| 4914                                                 | 49.08                   | 40.86             | 74             | -24.92      | 33.98                 | 8.28            | 34.04                    | 158                 | 190                  | Peak    |

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamplifier Factor  
Margin value = Emission level – Limit value
- 2457 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel                  | Channel 11         | Frequency Range    | 1 GHz ~ 25 GHz            |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Charles Hsiao             |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |         |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|---------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2383.26                                              | 40.98                   | 39.29             | 54             | -13.02      | 31.78                 | 5.4             | 35.49              | 268                 | 344                  | Average |
| 2383.26                                              | 51.78                   | 50.09             | 74             | -22.22      | 31.78                 | 5.4             | 35.49              | 268                 | 344                  | Peak    |
| 2462                                                 | 85.51                   | 83.58             |                |             | 31.87                 | 5.5             | 35.44              | 268                 | 344                  | Average |
| 2462                                                 | 93.54                   | 91.61             |                |             | 31.87                 | 5.5             | 35.44              | 268                 | 344                  | Peak    |
| 2483.52                                              | 49.65                   | 47.69             | 54             | -4.35       | 31.88                 | 5.5             | 35.42              | 268                 | 344                  | Average |
| 2483.52                                              | 66.12                   | 64.16             | 74             | -7.88       | 31.88                 | 5.5             | 35.42              | 268                 | 344                  | Peak    |
| 4924                                                 | 37.26                   | 29.01             | 54             | -16.74      | 33.99                 | 8.28            | 34.02              | 117                 | 38                   | Average |
| 4924                                                 | 47.2                    | 38.95             | 74             | -26.8       | 33.99                 | 8.28            | 34.02              | 117                 | 38                   | Peak    |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |         |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 2388.3                                               | 40.83                   | 39.12             | 54             | -13.17      | 31.8                  | 5.4             | 35.49              | 200                 | 92                   | Average |
| 2388.3                                               | 52.13                   | 50.42             | 74             | -21.87      | 31.8                  | 5.4             | 35.49              | 200                 | 92                   | Peak    |
| 2462                                                 | 84.83                   | 82.9              |                |             | 31.87                 | 5.5             | 35.44              | 200                 | 92                   | Average |
| 2462                                                 | 93.66                   | 91.73             |                |             | 31.87                 | 5.5             | 35.44              | 200                 | 92                   | Peak    |
| 2483.56                                              | 50.3                    | 48.34             | 54             | -3.7        | 31.88                 | 5.5             | 35.42              | 190                 | 81                   | Average |
| 2483.56                                              | 64.73                   | 62.77             | 74             | -9.27       | 31.88                 | 5.5             | 35.42              | 190                 | 81                   | Peak    |
| 4924                                                 | 37.71                   | 29.46             | 54             | -16.29      | 33.99                 | 8.28            | 34.02              | 186                 | 240                  | Average |
| 4924                                                 | 47.69                   | 39.44             | 74             | -26.31      | 33.99                 | 8.28            | 34.02              | 186                 | 240                  | Peak    |

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

### 9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

### 30 MHz ~ 1 GHz Worst-Case Data:

#### 802.11b

| EUT Test Condition       |                    | Measurement Detail |                              |
|--------------------------|--------------------|--------------------|------------------------------|
| Channel                  | Channel 12         | Frequency Range    | 30 MHz ~ 1 GHz               |
| Input Power              | 120 Vac, 60 Hz     | Detector Function  | Peak (PK)<br>Quasi-peak (QP) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By          | Harry Hsueh                  |

| Antennal Polarity & Test Distance: Horizontal at 3 m |                         |                   |                |             |                       |                 |                    |                     |                      |        |
|------------------------------------------------------|-------------------------|-------------------|----------------|-------------|-----------------------|-----------------|--------------------|---------------------|----------------------|--------|
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 101.28                                               | 22.9                    | 41.57             | 43.5           | -20.6       | 12.31                 | 1.28            | 32.26              | 124                 | 308                  | Peak   |
| 203.34                                               | 14.53                   | 34.05             | 43.5           | -28.97      | 11.11                 | 1.65            | 32.28              | 180                 | 203                  | Peak   |
| 237.36                                               | 18.62                   | 36.9              | 46             | -27.38      | 12.02                 | 1.85            | 32.15              | 124                 | 133                  | Peak   |
| 407.8                                                | 20.81                   | 35.53             | 46             | -25.19      | 15.08                 | 2.41            | 32.21              | 145                 | 55                   | Peak   |
| 654.9                                                | 17.67                   | 28.3              | 46             | -28.33      | 18.52                 | 2.99            | 32.14              | 190                 | 198                  | Peak   |
| 801.2                                                | 20.02                   | 28.4              | 46             | -25.98      | 20.35                 | 3.32            | 32.05              | 187                 | 132                  | Peak   |
| Antennal Polarity & Test Distance: Vertical at 3 m   |                         |                   |                |             |                       |                 |                    |                     |                      |        |
| Frequency (MHz)                                      | Emission Level (dBuV/m) | Read Level (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 49.44                                                | 16.47                   | 33.24             | 40             | -23.53      | 14.55                 | 0.9             | 32.22              | 165                 | 190                  | Peak   |
| 97.23                                                | 16.34                   | 35.28             | 43.5           | -27.16      | 11.88                 | 1.28            | 32.1               | 118                 | 147                  | Peak   |
| 216.03                                               | 19                      | 38.31             | 46             | -27         | 11.27                 | 1.65            | 32.23              | 189                 | 310                  | Peak   |
| 333.6                                                | 23.03                   | 39.04             | 46             | -22.97      | 13.89                 | 2.19            | 32.09              | 124                 | 230                  | Peak   |
| 479.9                                                | 25.51                   | 39                | 46             | -20.49      | 16.07                 | 2.56            | 32.12              | 160                 | 33                   | Peak   |
| 821.5                                                | 22.6                    | 30.56             | 46             | -23.4       | 20.66                 | 3.32            | 31.94              | 187                 | 77                   | Peak   |

#### Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value.
- The emission levels of other frequencies were very low against the limit.

## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

| Frequency (MHz) | Conducted Limit (dBuV) |         |
|-----------------|------------------------|---------|
|                 | Quasi-Peak             | Average |
| 0.15 - 0.5      | 66 - 56                | 56 - 46 |
| 0.50 - 5.0      | 56                     | 46      |
| 5.0 - 30.0      | 60                     | 50      |

- Note: 1. The lower limit shall apply at the transition frequencies.  
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

### 4.2.2 Test Instruments

| Description & Manufacturer                  | Model No.                | Serial No.     | Date of Calibration | Due Date of Calibration |
|---------------------------------------------|--------------------------|----------------|---------------------|-------------------------|
| Test Receiver<br>ROHDE & SCHWARZ            | ESCI                     | 100613         | Dec. 10, 2018       | Dec. 09, 2019           |
| RF signal cable (with 10dB PAD)<br>Woken    | 5D-FB                    | Cable-cond1-01 | Sep. 05, 2018       | Sep. 04, 2019           |
| LISN/AMN<br>ROHDE & SCHWARZ<br>(EUT)        | ESH3-Z5                  | 835239/001     | Mar. 06, 2018       | Mar. 05, 2019           |
| LISN/AMN<br>ROHDE & SCHWARZ<br>(Peripheral) | ESH3-Z5                  | 100311         | Aug. 19, 2018       | Aug. 18, 2019           |
| Software<br>ADT                             | BV ADT_Cond_<br>V7.3.7.4 | NA             | NA                  | NA                      |

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
 2. The test was performed in HwaYa Shielded Room 1.  
 3. The VCCI Site Registration No. is C-2040.

#### 4.2.3 Test Procedures

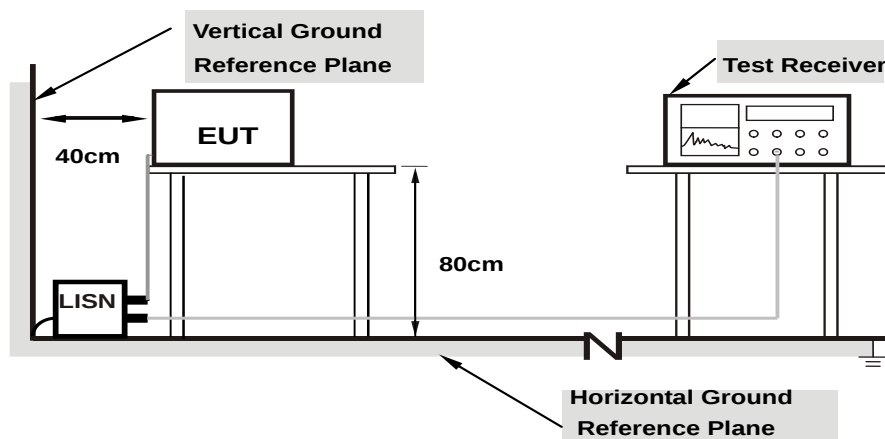
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

**Note:** The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

#### 4.2.4 Deviation from Test Standard

No deviation.

#### 4.2.5 Test Setup



**Note:** 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.2.6 EUT Operating Conditions

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.

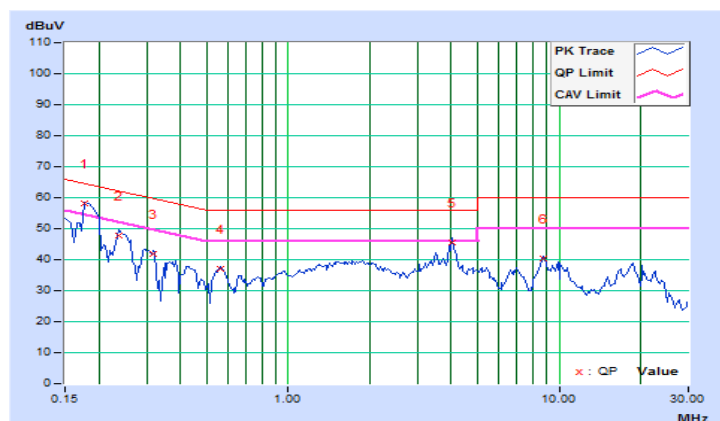
#### 4.2.7 Test Results

|                 |                |                                          |                                      |
|-----------------|----------------|------------------------------------------|--------------------------------------|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
| Input Power     | 120Vac, 60Hz   | Environmental Conditions                 | 25°C, 65%RH                          |
| Tested by       | Thomas Wei     | Test Date                                | 2018/12/27                           |

| Phase Of Power : Line (L) |                 |                        |                      |       |                       |       |              |       |             |        |
|---------------------------|-----------------|------------------------|----------------------|-------|-----------------------|-------|--------------|-------|-------------|--------|
| No                        | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) |       | Emission Level (dBuV) |       | Limit (dBuV) |       | Margin (dB) |        |
|                           |                 |                        | Q.P.                 | AV.   | Q.P.                  | AV.   | Q.P.         | AV.   | Q.P.        | AV.    |
| 1                         | 0.17734         | 9.67                   | 48.54                | 29.29 | 58.21                 | 38.96 | 64.61        | 54.61 | -6.40       | -15.65 |
| 2                         | 0.23594         | 9.67                   | 38.24                | 23.19 | 47.91                 | 32.86 | 62.24        | 52.24 | -14.33      | -19.38 |
| 3                         | 0.31797         | 9.66                   | 32.08                | 14.73 | 41.74                 | 24.39 | 59.76        | 49.76 | -18.02      | -25.37 |
| 4                         | 0.56016         | 9.66                   | 27.40                | 11.77 | 37.06                 | 21.43 | 56.00        | 46.00 | -18.94      | -24.57 |
| 5                         | 4.00781         | 9.73                   | 35.77                | 20.51 | 45.50                 | 30.24 | 56.00        | 46.00 | -10.50      | -15.76 |
| 6                         | 8.75391         | 9.83                   | 30.58                | 17.66 | 40.41                 | 27.49 | 60.00        | 50.00 | -19.59      | -22.51 |

#### Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

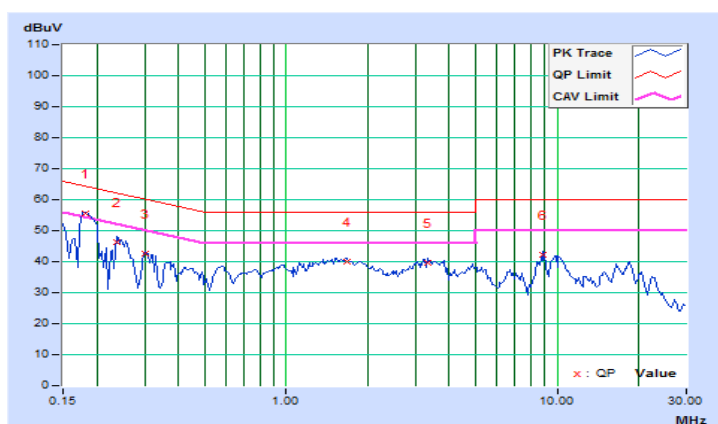


|                 |                |                                          |                                      |
|-----------------|----------------|------------------------------------------|--------------------------------------|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
| Input Power     | 120Vac, 60Hz   | Environmental Conditions                 | 25°C, 65%RH                          |
| Tested by       | Thomas Wei     | Test Date                                | 2018/12/27                           |

| Phase Of Power : Neutral (N) |                 |                        |                      |       |                       |       |              |       |             |        |
|------------------------------|-----------------|------------------------|----------------------|-------|-----------------------|-------|--------------|-------|-------------|--------|
| No                           | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) |       | Emission Level (dBuV) |       | Limit (dBuV) |       | Margin (dB) |        |
|                              |                 |                        | Q.P.                 | AV.   | Q.P.                  | AV.   | Q.P.         | AV.   | Q.P.        | AV.    |
| 1                            | 0.18125         | 9.67                   | 45.84                | 29.54 | 55.51                 | 39.21 | 64.43        | 54.43 | -8.92       | -15.22 |
| 2                            | 0.23594         | 9.67                   | 36.47                | 15.56 | 46.14                 | 25.23 | 62.24        | 52.24 | -16.10      | -27.01 |
| 3                            | 0.30234         | 9.67                   | 32.75                | 17.22 | 42.42                 | 26.89 | 60.18        | 50.18 | -17.76      | -23.29 |
| 4                            | 1.66797         | 9.67                   | 30.50                | 17.30 | 40.17                 | 26.97 | 56.00        | 46.00 | -15.83      | -19.03 |
| 5                            | 3.33594         | 9.71                   | 29.90                | 16.61 | 39.61                 | 26.32 | 56.00        | 46.00 | -16.39      | -19.68 |
| 6                            | 8.87500         | 9.84                   | 32.44                | 17.53 | 42.28                 | 27.37 | 60.00        | 50.00 | -17.72      | -22.63 |

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



### 4.3 Conducted Output Power Measurement

#### 4.3.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

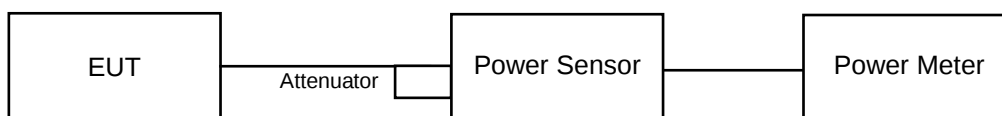
Array Gain = 0 dB (i.e., no array gain) for  $NANT \leq 4$ ;

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any NANT;

Array Gain =  $5 \log(NANT/NSS)$  dB or 3 dB, whichever is less for 20 MHz channel widths with  $NANT \geq 5$ .

For power measurements on all other devices: Array Gain =  $10 \log(NANT/NSS)$  dB.

#### 4.3.2 Test Setup



#### 4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

#### 4.3.4 Test Procedures

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

#### 4.3.5 Deviation from Test Standard

No deviation.

#### 4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

#### 4.3.7 Test Results

##### 802.11b

| Channel | Frequency (MHz) | Peak Power (mW) | Peak Power (dBm) | Limit (dBm) | Pass / Fail |
|---------|-----------------|-----------------|------------------|-------------|-------------|
| 1       | 2412            | 56.885          | 17.55            | 30          | Pass        |
| 6       | 2437            | 124.451         | 20.95            | 30          | Pass        |
| 11      | 2462            | 61.094          | 17.86            | 30          | Pass        |
| 12      | 2467            | 34.995          | 15.44            | 30          | Pass        |
| 13      | 2472            | 27.669          | 14.42            | 30          | Pass        |

##### 802.11g

| Channel | Frequency (MHz) | Peak Power (mW) | Peak Power (dBm) | Limit (dBm) | Pass / Fail |
|---------|-----------------|-----------------|------------------|-------------|-------------|
| 1       | 2412            | 48.865          | 16.89            | 30          | Pass        |
| 6       | 2437            | 110.917         | 20.45            | 30          | Pass        |
| 11      | 2462            | 47.643          | 16.78            | 30          | Pass        |
| 12      | 2467            | 23.605          | 13.73            | 30          | Pass        |
| 13      | 2472            | 0.255           | -5.93            | 30          | Pass        |

##### 802.11n (HT20)

| Channel | Frequency (MHz) | Peak Power (dBm) |         | Total Power (mW) | Total Power (dBm) | Limit (dBm) | Pass / Fail |
|---------|-----------------|------------------|---------|------------------|-------------------|-------------|-------------|
|         |                 | Chain 0          | Chain 1 |                  |                   |             |             |
| 1       | 2412            | 16.34            | 16.28   | 69.343           | 18.41             | 30          | Pass        |
| 6       | 2437            | 20.79            | 20.77   | 102.094          | 20.09             | 30          | Pass        |
| 11      | 2462            | 16.47            | 16.39   | 71.121           | 18.52             | 30          | Pass        |
| 12      | 2467            | 13.72            | 12.96   | 35.727           | 15.53             | 30          | Pass        |
| 13      | 2472            | -6.12            | -6.38   | 0.265            | -5.77             | 30          | Pass        |

##### 802.11n (HT40)

| Channel | Frequency (MHz) | Peak Power (dBm) |         | Total Power (mW) | Total Power (dBm) | Limit (dBm) | Pass / Fail |
|---------|-----------------|------------------|---------|------------------|-------------------|-------------|-------------|
|         |                 | Chain 0          | Chain 1 |                  |                   |             |             |
| 3       | 2422            | 15.10            | 14.80   | 188.365          | 22.75             | 30          | Pass        |
| 6       | 2437            | 15.63            | 15.62   | 214.783          | 23.32             | 30          | Pass        |
| 9       | 2452            | 14.24            | 14.24   | 191.426          | 22.82             | 30          | Pass        |
| 10      | 2457            | 10.83            | 11.04   | 92.470           | 19.66             | 30          | Pass        |
| 11      | 2462            | 3.71             | 3.55    | 23.067           | 13.63             | 30          | Pass        |

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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The address and road map of all our labs can be found in our web site also.

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