



# FCC RF Test Report

APPLICANT : Honeywell International Inc.  
EQUIPMENT : CN75LAN mobile computer  
BRAND NAME : Honeywell  
MODEL NAME : CN75LAN  
MARKETING NAME : CN75  
FCC ID : HD5-CN75LAN  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Dec. 28, 2016 and testing was completed on Jan. 26, 2017. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

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Reviewed by: Joseph Lin / Supervisor

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Approved by: Jones Tsai / Manager



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FCC ID : HD5-CN75LAN

Page Number : 1 of 30

Report Issued Date : Mar. 08, 2017

Report Version : Rev. 01

Report Template No.: BU5-FR15CWL Version 1.3



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## REVISION HISTORY

| REPORT NO.   | VERSION | DESCRIPTION             | ISSUED DATE   |
|--------------|---------|-------------------------|---------------|
| FR6D2819-01C | Rev. 01 | Initial issue of report | Mar. 08, 2017 |
|              |         |                         |               |
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|              |         |                         |               |



## SUMMARY OF TEST RESULT

| Report Section | FCC Rule           | Description                                        | Limit                 | Result | Remark                                    |
|----------------|--------------------|----------------------------------------------------|-----------------------|--------|-------------------------------------------|
| 3.1            | 15.247(b)          | Power Output Measurement                           | $\leq 30\text{dBm}$   | Pass   | -                                         |
| 3.2            | 15.247(d)          | Radiated Band Edges and Radiated Spurious Emission | 15.209(a) & 15.247(d) | Pass   | Under limit<br>6.02 dB at<br>2483.520 MHz |
| 3.3            | 15.207             | AC Conducted Emission                              | 15.207(a)             | Pass   | Under limit<br>7.50 dB at<br>0.702 MHz    |
| 3.4            | 15.203 & 15.247(b) | Antenna Requirement                                | N/A                   | Pass   | -                                         |



# 1 General Description

## 1.1 Applicant

**Honeywell International Inc.**

9680 Old Bailes Road, Fort Mill, SC 29707 USA

## 1.2 Manufacturer

**Honeywell International Inc.**

9680 Old Bailes Road, Fort Mill, SC 29707 USA

## 1.3 Product Feature of Equipment Under Test

| Product Feature                        |                                            |
|----------------------------------------|--------------------------------------------|
| <b>Equipment</b>                       | CN75LAN mobile computer                    |
| <b>Brand Name</b>                      | Honeywell                                  |
| <b>Model Name</b>                      | CN75LAN                                    |
| <b>Marketing Name</b>                  | CN75                                       |
| <b>FCC ID</b>                          | HD5-CN75LAN                                |
| <b>Sample 1</b>                        | CN75 non-WWAN-Q5 non-WWAN_Q5 keypad        |
| <b>Sample 2</b>                        | CN75 non-WWAN-N5 non-WWAN_N5 keypad        |
| <b>Sample 3</b>                        | CN75E non-WWAN-N7 non-WWAN_N7 keypad       |
| <b>Sample 4</b>                        | CN75E non-WWAN-Q6 non-WWAN_Q6 keypad       |
| <b>EUT supports Radios application</b> | WLAN 11a/b/g/n HT20<br>Bluetooth BR/EDR/LE |
| <b>HW Version</b>                      | v1.1                                       |
| <b>SW Version</b>                      | 3.00.05.0075                               |
| <b>EUT Stage</b>                       | Identical Prototype                        |

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



## 1.4 Re-use of Measured Data

### 1.4.1 Introduction Section

The original model (FCC ID: HD5-CN75WAN) and the variant model (FCC ID: HD5-CN75LAN) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/GPS. Based on their similarity, the FCC Part 15C & 15E (equipment class: DTS, DSS, NII) test data issued for original model also apply for the variant model.

The applicant takes full responsibility that the test data as referenced in section 4 below represent compliance for this FCC ID (FCC ID: HD5-CN75LAN).

### 1.4.2 Difference Section

The original model (FCC ID: HD5-CN75WAN) and the variant model (FCC ID: HD5-CN75LAN) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/GPS. The details of similarity and difference can be found in the Operating Description.

The product specification is outlined in the following table:

| FCC ID        |                                         |                     | HD5-CN75WAN                                                                               | HD5-CN75LAN |
|---------------|-----------------------------------------|---------------------|-------------------------------------------------------------------------------------------|-------------|
| Wireless Tech | Mode                                    |                     | Frequency (MHz)                                                                           |             |
| GSM           | GSM Voice                               | Multi-Slot Class 12 | 850/1900                                                                                  | NA          |
|               | GPRS (GMSK)                             | DTM: No             |                                                                                           |             |
|               | EDGE (8PSK)                             |                     |                                                                                           |             |
| UMTS          | AMR/RCM12.2Kbps<br>HSDPA/HSUPA/DC-HSDPA |                     | B5/B4/B2                                                                                  | NA          |
| CDMA2000      | 1xRTT/1xEV-DO                           |                     | BC0/BC1/BC10                                                                              | NA          |
| Wi-Fi         | 11b/11g/11n(HT20)                       |                     | 2412-2462 MHz/                                                                            |             |
|               | 11a/11n(HT20)                           |                     | 5180-5240 MHz<br>5260-5320 MHz<br>5500-5700 MHz<br>5745-5825 MHz<br>*5600-5650MHz notched |             |
| Bluetooth     | BR/EDR/LE                               |                     | 2402-2480 MHz                                                                             |             |



### 1.4.3 Spot Check Verification Data Section

Summary of the spot check:

| Test Item                                                                  | Mode               | HD5-CN75WAN<br>Worst Result | HD5-CN75LAN<br>Worst Result | Difference (dB) |
|----------------------------------------------------------------------------|--------------------|-----------------------------|-----------------------------|-----------------|
| <b>Average<br/>Conducted Power<br/>(dBm)</b>                               | 802.11b            | 17.27                       | 17.18                       | 0.09            |
|                                                                            | 802.11g            | 13.50                       | 13.33                       | 0.17            |
|                                                                            | 11n HT20           | 13.50                       | 13.33                       | 0.17            |
|                                                                            | 5150-5250MHz       | 13.43                       | 13.10                       | 0.33            |
|                                                                            | 5250-5350MHz       | 13.40                       | 13.06                       | 0.34            |
|                                                                            | 5470-5725MHz       | 13.19                       | 13.12                       | 0.07            |
|                                                                            | 5725-5850MHz       | 13.48                       | 13.12                       | 0.36            |
|                                                                            | BT (1Mbps)         | 7.11                        | 6.50                        | 0.61            |
|                                                                            | BT (2Mbps)         | 5.86                        | 5.35                        | 0.51            |
|                                                                            | BT (3Mbps)         | 5.84                        | 5.30                        | 0.54            |
|                                                                            | BT-LE              | 6.74                        | 6.73                        | 0.01            |
|                                                                            | S/N of test sample |                             |                             |                 |
|                                                                            | Test date          | 2016/12/28 – 2017/02/02     | 2016/12/28 – 2017/02/14     |                 |
| <b>Peak Radiated<br/>Spurious Emission<br/>(Band Edge)<br/>(dBuV/m)</b>    | 802.11b            | 55.65                       | 55.77                       | -0.74           |
|                                                                            | 11n HT20           | 57.82                       | 60.17                       | -2.35           |
|                                                                            | 5150-5250MHz       | 62.25                       | 59.61                       | 2.64            |
|                                                                            | 5250-5350MHz       | 62.65                       | 60.05                       | 2.6             |
|                                                                            | 5470-5725MHz       | 63.72                       | 62.24                       | 1.48            |
|                                                                            | 5725-5850MHz       | 74.27                       | 71.82                       | 2.45            |
|                                                                            | S/N of test sample |                             |                             |                 |
|                                                                            | Test date          | 2016/12/28 – 2017/02/02     | 2016/12/28 – 2017/02/14     |                 |
| <b>Average Radiated<br/>Spurious Emission<br/>(Band Edge)<br/>(dBuV/m)</b> | 802.11b            | 46.82                       | 45.94                       | -0.35           |
|                                                                            | 11n HT20           | 46.38                       | 47.98                       | -1.6            |
|                                                                            | 5150-5250MHz       | 50.99                       | 48.90                       | 2.09            |
|                                                                            | 5250-5350MHz       | 50.65                       | 47.91                       | 2.74            |
|                                                                            | 5470-5725MHz       | NA                          | NA                          | NA              |
|                                                                            | 5725-5850MHz       | NA                          | NA                          | NA              |
|                                                                            | S/N of test sample |                             |                             |                 |
|                                                                            | Test date          | 2016/12/28 – 2017/02/02     | 2016/12/28 – 2017/02/14     |                 |
| <b>Peak Radiated<br/>Spurious Emission<br/>(Harmonic)<br/>(dBuV/m)</b>     | 802.11b            | 36.66                       | 37.70                       | -0.54           |
|                                                                            | 11n HT20           | 37.80                       | 36.58                       | 1.22            |
|                                                                            | 5150-5250MHz       | 40.81                       | 41.66                       | -0.85           |
|                                                                            | 5250-5350MHz       | 39.27                       | 41.17                       | -1.9            |
|                                                                            | 5470-5725MHz       | 44.50                       | 46.36                       | -1.86           |
|                                                                            | 5725-5850MHz       | 45.34                       | 46.65                       | -1.31           |
|                                                                            | S/N of test sample |                             |                             |                 |
|                                                                            | Test date          | 2016/12/28 – 2017/02/02     | 2016/12/28 – 2017/02/14     |                 |

#### Conclusion:

WLAN Radiated spurious emission test against the variant model for non-cellular part based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result (power levels measured are within 1dB, and the worst case of RSE spot check verification based on the worst condition from the original model is within 3dB, and are compliance with the limits), the test data from the original model is representative for the variant model.



The unwanted, harmonics, radiated spurious emission is reported peak measurement only due to spurious lower than 20dB than the limit.

The detail test results can be found in this document, Appendix A, hereafter.

#### 1.4.4 Reference detail Section:

| Equipment Class | Reference FCC ID | Type Grant/Permissive Change | Reference Application  | Folder Test/RF Exposure | Report Title                  |
|-----------------|------------------|------------------------------|------------------------|-------------------------|-------------------------------|
| DTS             | HD5-CN75WAN      | Original Grant               | FR6D2819B              | Part 15C                | Conducted sections applicable |
|                 |                  |                              | FR6D2819C              | Part 15C                | All sections applicable       |
|                 |                  |                              | FA6D2819               | RF Exposure             | All sections applicable       |
| DSS             | HD5-CN75WAN      | Original Grant               | FR6O1802A              | Part 15C                | Conducted sections applicable |
|                 |                  |                              | FA6D2819               | RF Exposure             | All sections applicable       |
| NII             | HD5-CN75WAN      | Original Grant               | FR6D2819D<br>FR6D2819E | Part 15E                | All sections applicable       |
|                 |                  |                              | FA6D2819               | RF Exposure             | All sections applicable       |

## 1.5 Modification of EUT

No modifications are made to the EUT during all test items.

## 1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

|                           |                                                                                                                                                                  |         |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC.                                                                                                                                       |         |
| <b>Test Site Location</b> | No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park,<br>Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |         |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                          |         |
|                           | TH05-HY                                                                                                                                                          | CO05-HY |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

|                           |                                                                                                                                        |  |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC.                                                                                                             |  |
| <b>Test Site Location</b> | No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist,<br>Taoyuan City, Taiwan (R.O.C.)<br>TEL: +886-3-327-0868<br>FAX: +886-3-327-0855 |  |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                |  |
|                           | 03CH11-HY                                                                                                                              |  |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

## 1.7 Applicable Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05
- ♦ ANSI C63.10-2013

### Remark:

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

## 2 Test Configuration of Equipment Under Test

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

### 2.1 Carrier Frequency and Channel

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

### 2.2 Test Mode

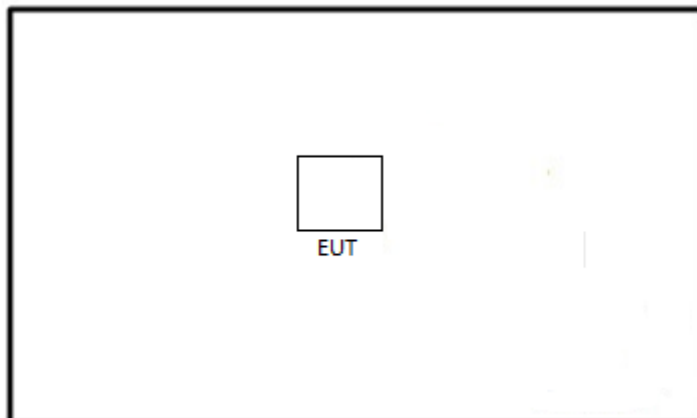
Final test mode of radiated spurious emissions are considering the modulation and worse data rates as below table.

| Modulation   | Data Rate |
|--------------|-----------|
| 802.11b      | 1 Mbps    |
| 802.11n HT20 | MCS0      |

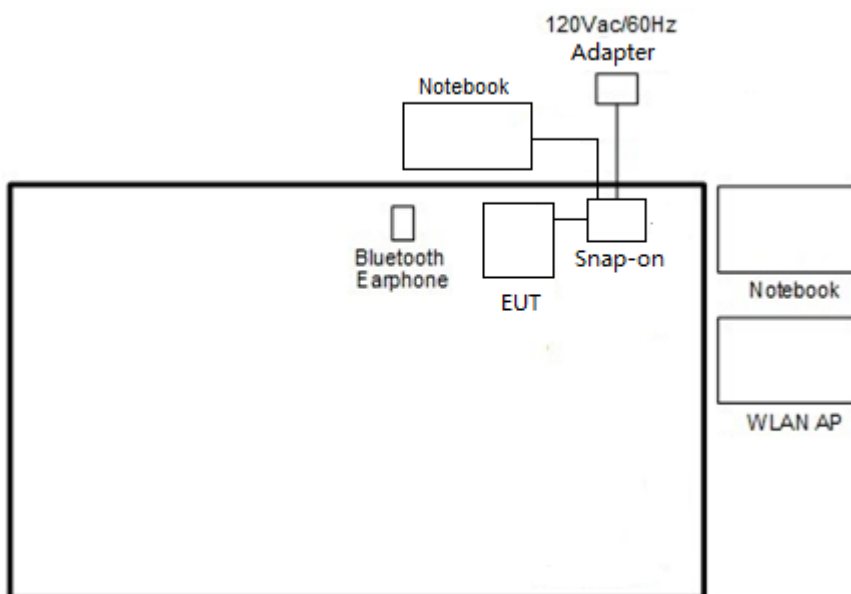
| Test Cases                                                                                                                                                 |                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| AC Conducted Emission                                                                                                                                      | Mode 1: Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2 |
| <b>Remark:</b><br>1. Snap-on 1: Ethernet Snap-On 1000AA01<br>2. Adapter :Level V (for Snap-on)<br>3. All the radiation tests were performed with sample 2. |                                                                                                                                             |

## 2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





## 2.4 Support Unit used in test configuration and system

| Item | Equipment                | Trade Name                 | Model Name      | FCC ID                                       | Data Cable                | Power Cord                                                 |
|------|--------------------------|----------------------------|-----------------|----------------------------------------------|---------------------------|------------------------------------------------------------|
| 1.   | WLAN AP                  | ASUS                       | RT-AC66U        | MSQ-RTAC66U                                  | N/A                       | Unshielded,1.8m                                            |
| 2.   | Notebook                 | DELL                       | Latitude E6320  | FCC DoC/<br>Contains FCC ID:<br>QDS-BRCM1054 | N/A                       | AC I/P:<br>Unshielded, 1.2 m<br>DC O/P:<br>Shielded, 1.8 m |
| 3.   | Bluetooth Earphone       | Sony Ericsson              | MW600           | PY7DDA-2029                                  | N/A                       | N/A                                                        |
| 4.   | SD Card                  | SanDisk                    | MicroSD HC      | FCC DoC                                      | N/A                       | N/A                                                        |
| 5.   | CN75A/CN75E Vehicle dock | intermec technologies corp | 1000AV01        | FCC DoC                                      | NA                        | NA                                                         |
| 6.   | CK75 Vehicle dock        | intermec technologies corp | 1001AV01        | FCC DoC                                      | NA                        | NA                                                         |
| 7.   | car charger              | intermec technologies corp | 852-057-005     | Verification                                 | NA                        | Unshielded, 1.2m                                           |
| 8.   | Snap-on(LAN)             | intermec technologies corp | 1000AA01        | FCC DoC                                      | NA                        | NA                                                         |
| 9.   | Snap-on(RS232)           | intermec technologies corp | 1000AA03        | FCC DoC                                      | NA                        | NA                                                         |
| 10.  | Snap-On (VoCollect)      | intermec technologies corp | 1000AA05        | FCC DoC                                      | NA                        | NA                                                         |
| 11.  | Snap-on (USB)            | intermec technologies corp | 1000AA07        | FCC DoC                                      | NA                        | NA                                                         |
| 12.  | Snap-on adapter          | intermec technologies corp | 9001AE01        | FCC DoC                                      | NA                        | AC IP:<br>Unshielded, 1.8m<br>DC OP:<br>Shielded, 1.8m     |
| 13.  | Earphone                 | Honeywell                  | Vocollect SR-20 | FCC DoC                                      | 1.1 meter, shielded cable | NA                                                         |
| 14.  | USB Cable                | intermec technologies corp | VE011-2018      | FCC DoC                                      | NA                        | 1.4 meter, shielded cable, w/t ferrite core                |
| 15.  | Battery                  | intermec technologies corp | 1000AB02        | NA                                           | NA                        | NA                                                         |

## 2.5 EUT Operation Test Setup

For WLAN function, the RF utility, "rtt-adv-usr v21" was installed in EUT which was programmed in order to make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

### 3 Test Result

#### 3.1 Output Power Measurement

##### 3.1.1 Limit of Output Power

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

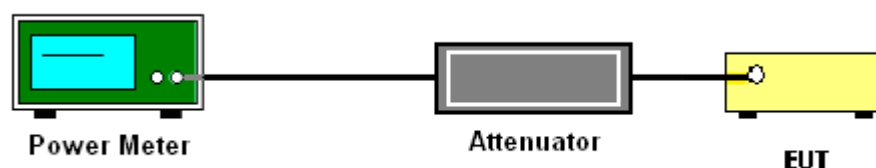
##### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

##### 3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r05 section 9.1.2 PKPM1 Peak power meter method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

##### 3.1.4 Test Setup



##### 3.1.5 Test Result of Peak Output Power

Please refer to Appendix A.

##### 3.1.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A.



## **3.2 Radiated Band Edges and Spurious Emission Measurement**

### **3.2.1 Limit of Radiated band edge and Spurious Emission Measurement**

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

### **3.2.2 Measuring Instruments**

The measuring equipment is listed in the section 4 of this test report.



### 3.2.3 Test Procedures

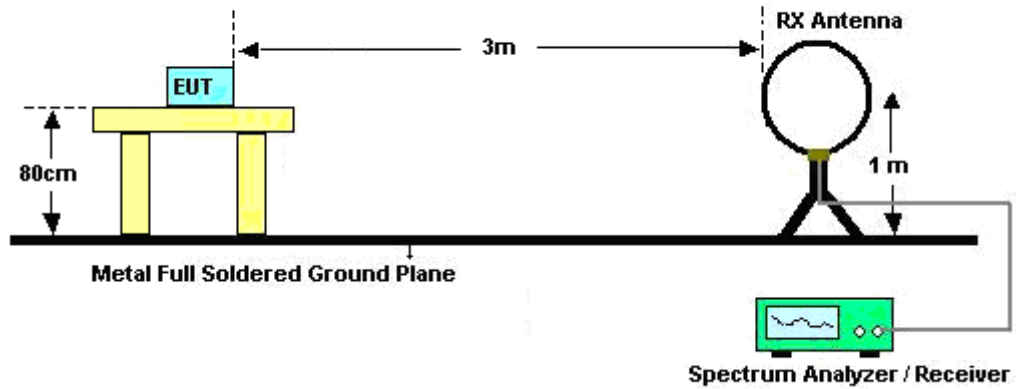
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.

For average measurement:

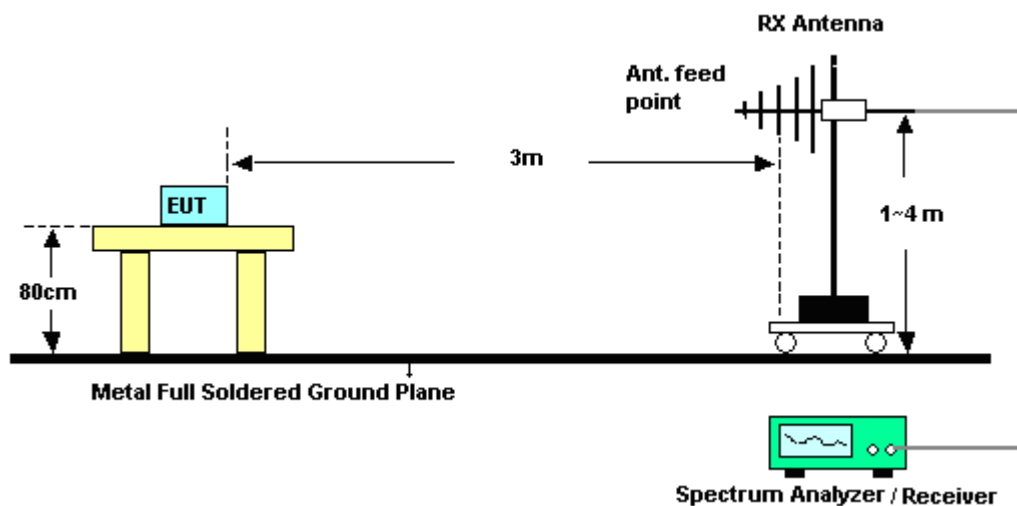
    - VBW = 10 Hz, when duty cycle is no less than 98 percent.
    - VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

### 3.2.4 Test Setup

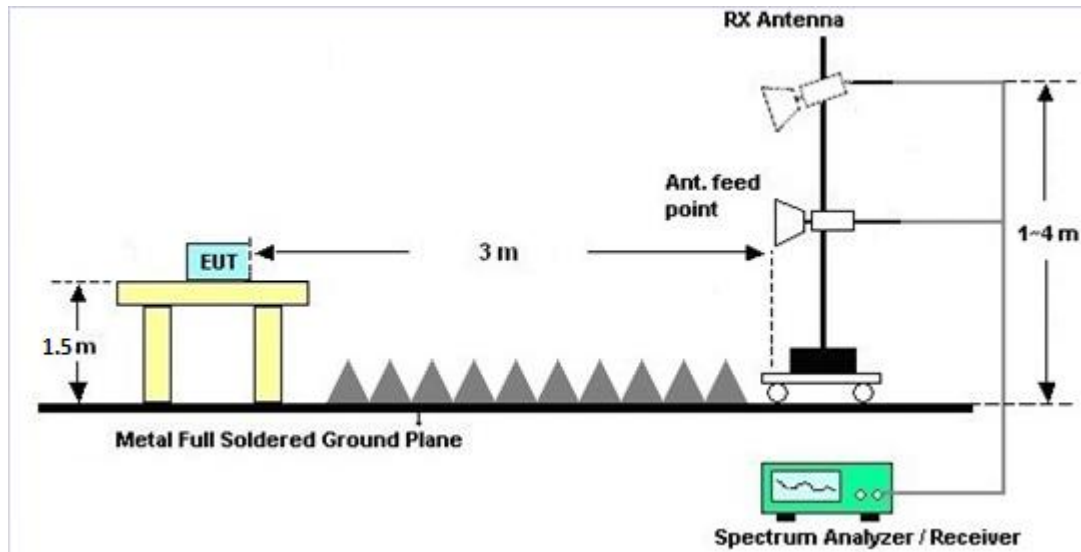
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

### 3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

### 3.2.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

### 3.3 AC Conducted Emission Measurement

#### 3.3.1 Limit of AC Conducted Emission

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

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

\*Decreases with the logarithm of the frequency.

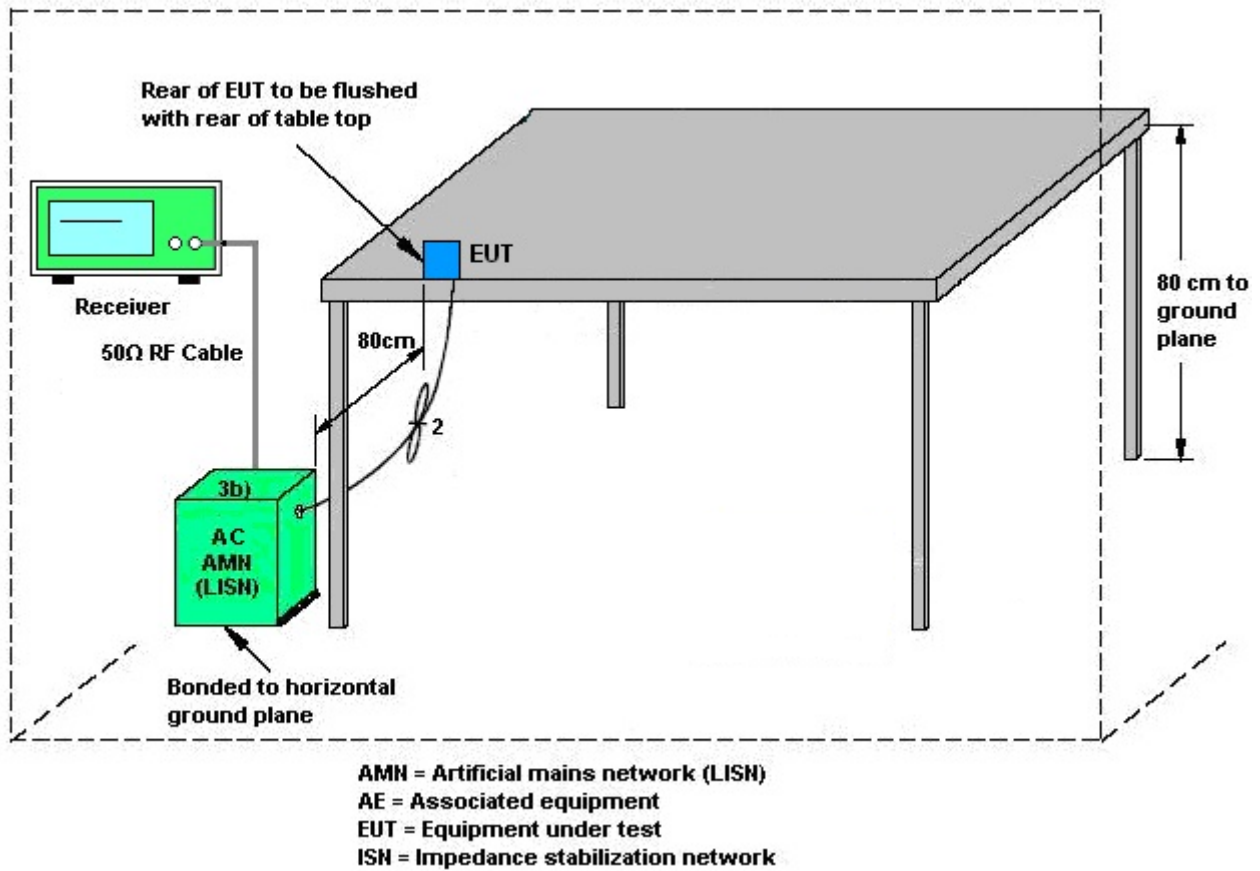
#### 3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.3.3 Test Procedures

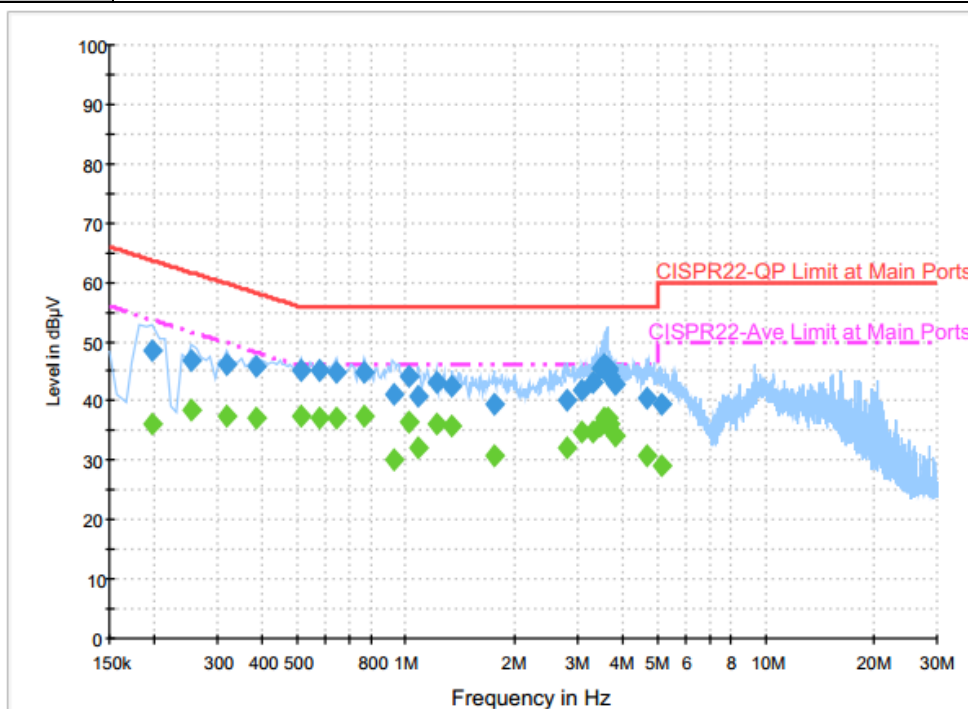
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

### 3.3.4 Test Setup



### 3.3.5 Test Result of AC Conducted Emission

|                        |                                                                                                                                     |                            |        |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                              | <b>Temperature :</b>       | 21~23℃ |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                        | <b>Relative Humidity :</b> | 50~52% |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                       | <b>Phase :</b>             | Line   |
| <b>Function Type :</b> | Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2 |                            |        |

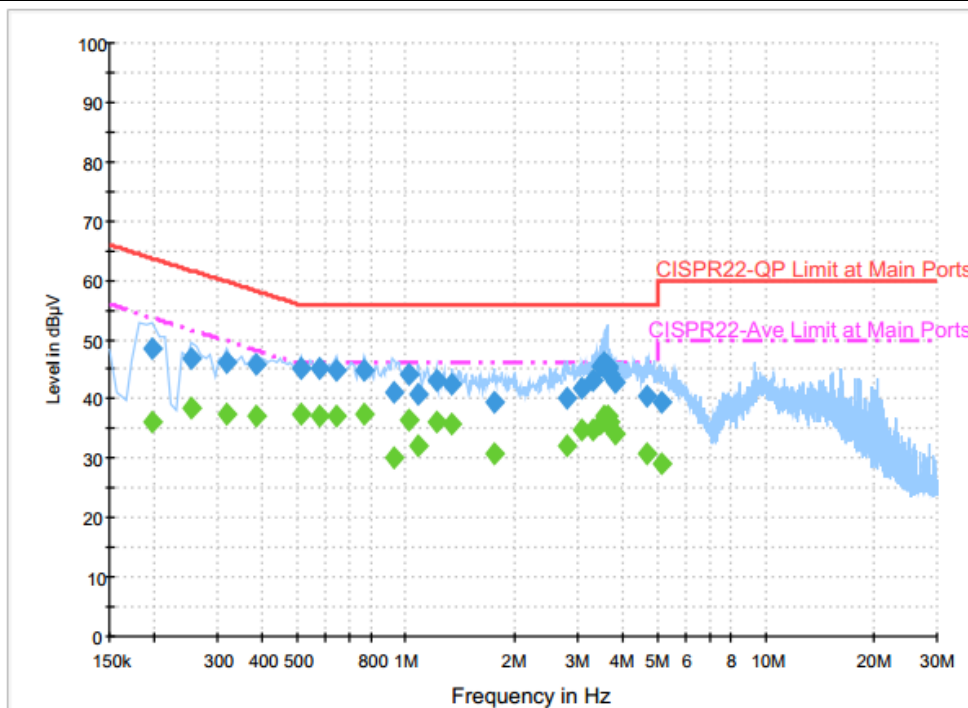


#### Final Result : Quasi-Peak

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.198000        | 48.6              | Off    | L1   | 19.6       | 15.1        | 63.7         |
| 0.254000        | 47.0              | Off    | L1   | 19.6       | 14.6        | 61.6         |
| 0.318000        | 46.1              | Off    | L1   | 19.6       | 13.7        | 59.8         |
| 0.382000        | 45.9              | Off    | L1   | 19.6       | 12.3        | 58.2         |
| 0.510000        | 45.1              | Off    | L1   | 19.6       | 10.9        | 56.0         |
| 0.574000        | 45.0              | Off    | L1   | 19.6       | 11.0        | 56.0         |
| 0.638000        | 44.8              | Off    | L1   | 19.6       | 11.2        | 56.0         |
| 0.766000        | 44.7              | Off    | L1   | 19.6       | 11.3        | 56.0         |
| 0.926000        | 41.1              | Off    | L1   | 19.6       | 14.9        | 56.0         |
| 1.022000        | 44.0              | Off    | L1   | 19.6       | 12.0        | 56.0         |
| 1.078000        | 40.8              | Off    | L1   | 19.6       | 15.2        | 56.0         |
| 1.214000        | 43.2              | Off    | L1   | 19.6       | 12.8        | 56.0         |
| 1.342000        | 42.6              | Off    | L1   | 19.6       | 13.4        | 56.0         |
| 1.766000        | 39.4              | Off    | L1   | 19.6       | 16.6        | 56.0         |

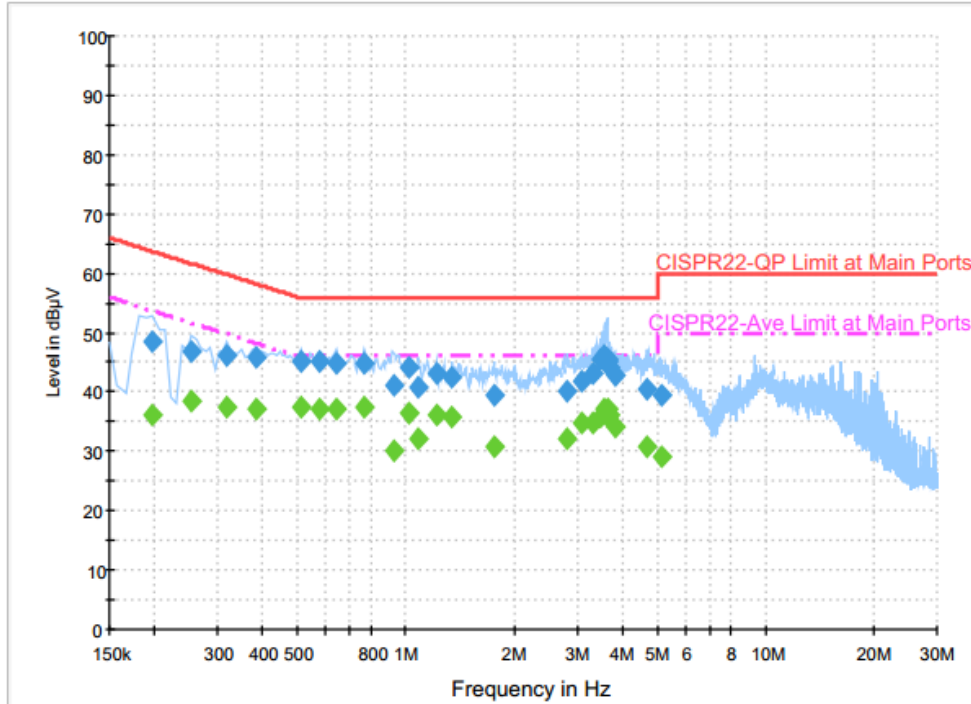


|                 |                                                                                                                                     |                     |         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------|
| Test Mode :     | Mode 1                                                                                                                              | Temperature :       | 21~23°C |
| Test Engineer : | Arthur Hsieh                                                                                                                        | Relative Humidity : | 50~52%  |
| Test Voltage :  | 120Vac / 60Hz                                                                                                                       | Phase :             | Line    |
| Function Type : | Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2 |                     |         |

**Final Result : Quasi-Peak**

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 2.814000        | 40.3              | Off    | L1   | 19.4       | 15.7        | 56.0         |
| 3.102000        | 41.8              | Off    | L1   | 19.5       | 14.2        | 56.0         |
| 3.318000        | 43.3              | Off    | L1   | 19.5       | 12.7        | 56.0         |
| 3.462000        | 45.6              | Off    | L1   | 19.5       | 10.4        | 56.0         |
| 3.574000        | 46.0              | Off    | L1   | 19.5       | 10.0        | 56.0         |
| 3.630000        | 45.3              | Off    | L1   | 19.6       | 10.7        | 56.0         |
| 3.646000        | 45.4              | Off    | L1   | 19.6       | 10.6        | 56.0         |
| 3.710000        | 44.3              | Off    | L1   | 19.6       | 11.7        | 56.0         |
| 3.806000        | 42.9              | Off    | L1   | 19.6       | 13.1        | 56.0         |
| 4.694000        | 40.6              | Off    | L1   | 19.6       | 15.4        | 56.0         |
| 5.126000        | 39.6              | Off    | L1   | 19.6       | 20.4        | 60.0         |

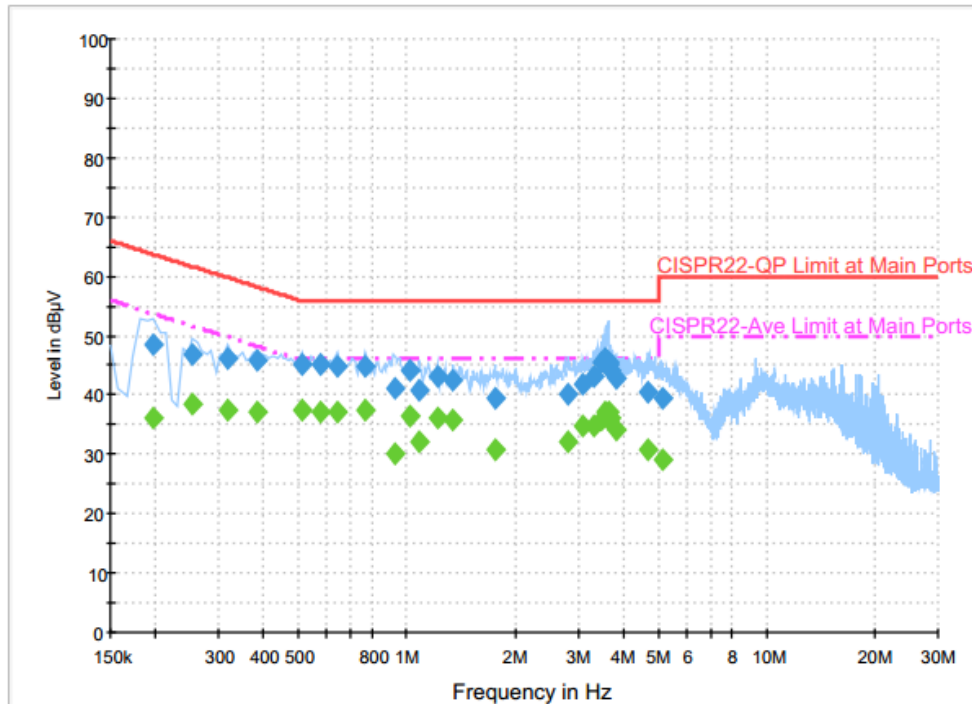
|                        |                                                                                                                                     |                            |         |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                              | <b>Temperature :</b>       | 21~23°C |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                        | <b>Relative Humidity :</b> | 50~52%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                       | <b>Phase :</b>             | Line    |
| <b>Function Type :</b> | Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2 |                            |         |


**Final Result : Average**

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.198000        | 36.2           | Off    | L1   | 19.6       | 17.5        | 53.7         |
| 0.254000        | 38.3           | Off    | L1   | 19.6       | 13.3        | 51.6         |
| 0.318000        | 37.4           | Off    | L1   | 19.6       | 12.4        | 49.8         |
| 0.382000        | 37.3           | Off    | L1   | 19.6       | 10.9        | 48.2         |
| 0.510000        | 37.5           | Off    | L1   | 19.6       | 8.5         | 46.0         |
| 0.574000        | 37.0           | Off    | L1   | 19.6       | 9.0         | 46.0         |
| 0.638000        | 37.1           | Off    | L1   | 19.6       | 8.9         | 46.0         |
| 0.766000        | 37.5           | Off    | L1   | 19.6       | 8.5         | 46.0         |
| 0.926000        | 30.2           | Off    | L1   | 19.6       | 15.8        | 46.0         |
| 1.022000        | 36.6           | Off    | L1   | 19.6       | 9.4         | 46.0         |
| 1.078000        | 32.2           | Off    | L1   | 19.6       | 13.8        | 46.0         |
| 1.214000        | 36.1           | Off    | L1   | 19.6       | 9.9         | 46.0         |
| 1.342000        | 35.9           | Off    | L1   | 19.6       | 10.1        | 46.0         |
| 1.766000        | 30.8           | Off    | L1   | 19.6       | 15.2        | 46.0         |



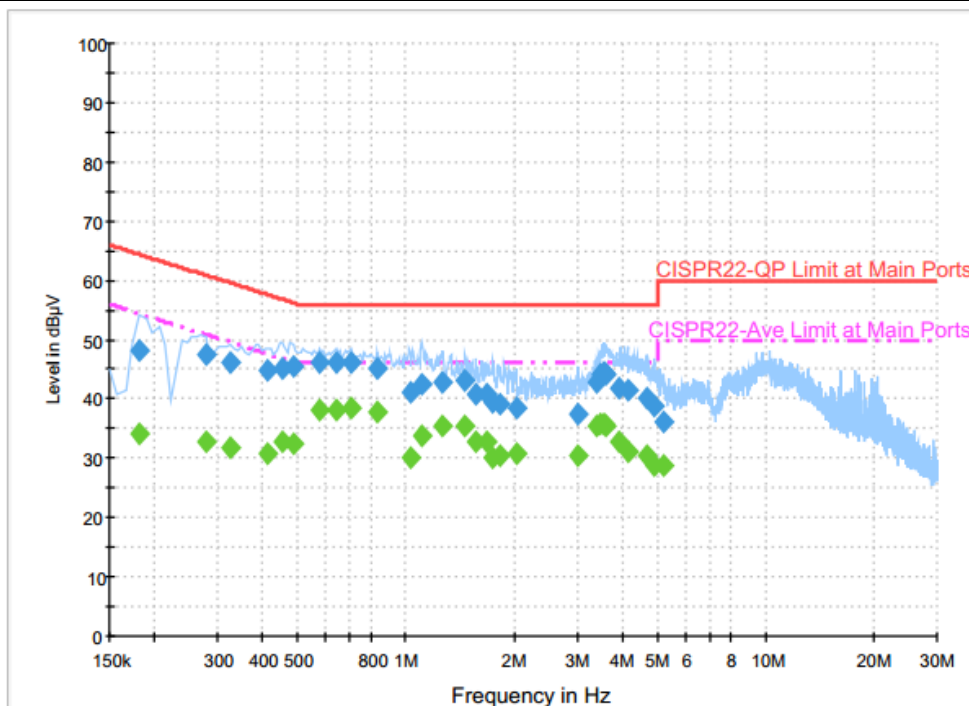
|                 |                                                                                                                                     |                     |         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------|
| Test Mode :     | Mode 1                                                                                                                              | Temperature :       | 21~23°C |
| Test Engineer : | Arthur Hsieh                                                                                                                        | Relative Humidity : | 50~52%  |
| Test Voltage :  | 120Vac / 60Hz                                                                                                                       | Phase :             | Line    |
| Function Type : | Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2 |                     |         |

**Final Result : Average**

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 2.814000        | 32.1           | Off    | L1   | 19.4       | 13.9        | 46.0         |
| 3.102000        | 34.7           | Off    | L1   | 19.5       | 11.3        | 46.0         |
| 3.318000        | 34.7           | Off    | L1   | 19.5       | 11.3        | 46.0         |
| 3.462000        | 35.8           | Off    | L1   | 19.5       | 10.2        | 46.0         |
| 3.574000        | 37.1           | Off    | L1   | 19.5       | 8.9         | 46.0         |
| 3.630000        | 35.6           | Off    | L1   | 19.6       | 10.4        | 46.0         |
| 3.646000        | 37.1           | Off    | L1   | 19.6       | 8.9         | 46.0         |
| 3.710000        | 36.1           | Off    | L1   | 19.6       | 9.9         | 46.0         |
| 3.806000        | 34.1           | Off    | L1   | 19.6       | 11.9        | 46.0         |
| 4.694000        | 30.8           | Off    | L1   | 19.6       | 15.2        | 46.0         |
| 5.126000        | 29.1           | Off    | L1   | 19.6       | 20.9        | 50.0         |



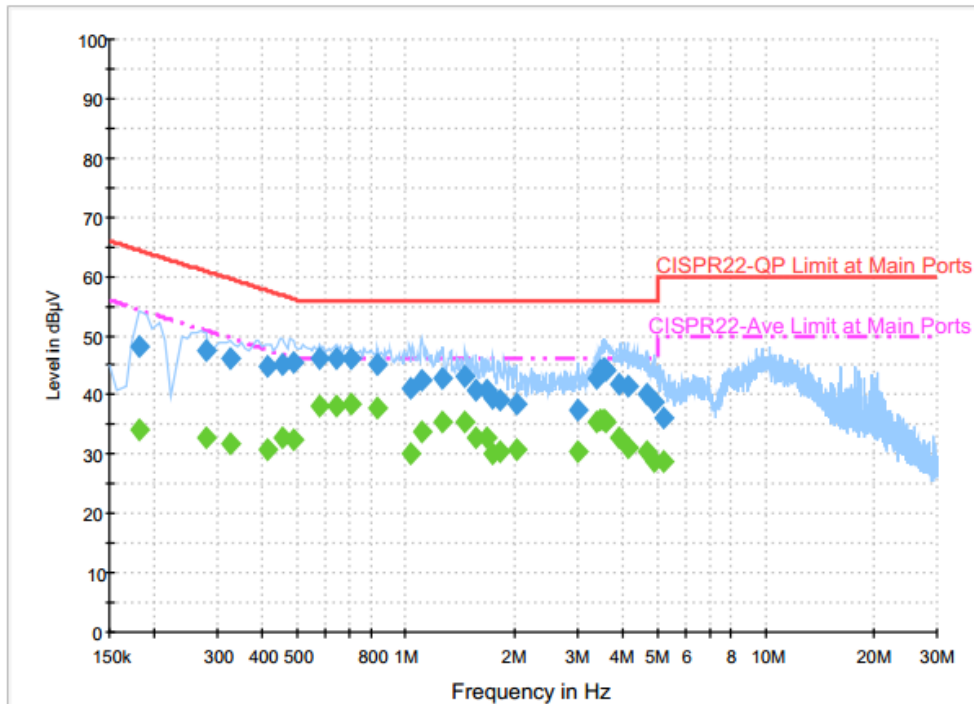
|                 |                                                                                                                                     |                     |         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------|
| Test Mode :     | Mode 1                                                                                                                              | Temperature :       | 21~23°C |
| Test Engineer : | Arthur Hsieh                                                                                                                        | Relative Humidity : | 50~52%  |
| Test Voltage :  | 120Vac / 60Hz                                                                                                                       | Phase :             | Neutral |
| Function Type : | Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2 |                     |         |



## Final Result : Quasi-Peak

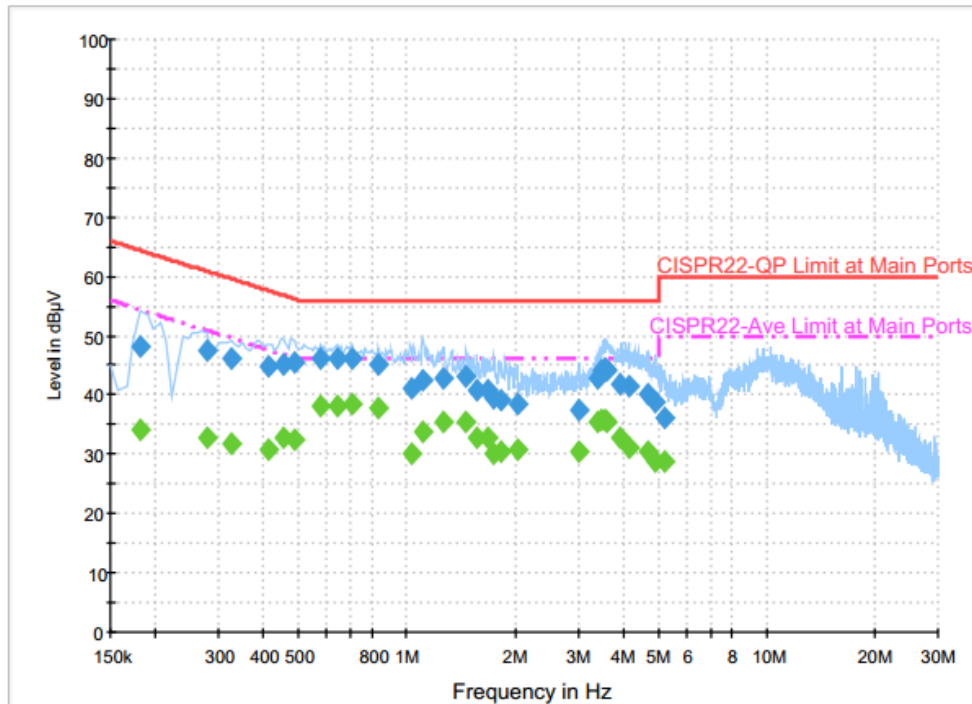
| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.182000        | 48.3              | Off    | N    | 19.5       | 16.1        | 64.4         |
| 0.278000        | 47.5              | Off    | N    | 19.5       | 13.4        | 60.9         |
| 0.326000        | 46.1              | Off    | N    | 19.5       | 13.5        | 59.6         |
| 0.414000        | 44.7              | Off    | N    | 19.5       | 12.9        | 57.6         |
| 0.454000        | 45.1              | Off    | N    | 19.5       | 11.7        | 56.8         |
| 0.486000        | 45.6              | Off    | N    | 19.6       | 10.6        | 56.2         |
| 0.574000        | 46.3              | Off    | N    | 19.5       | 9.7         | 56.0         |
| 0.638000        | 46.1              | Off    | N    | 19.5       | 9.9         | 56.0         |
| 0.702000        | 46.1              | Off    | N    | 19.5       | 9.9         | 56.0         |
| 0.830000        | 45.3              | Off    | N    | 19.5       | 10.7        | 56.0         |
| 1.030000        | 41.2              | Off    | N    | 19.5       | 14.8        | 56.0         |
| 1.110000        | 42.4              | Off    | N    | 19.6       | 13.6        | 56.0         |
| 1.270000        | 42.9              | Off    | N    | 19.6       | 13.1        | 56.0         |
| 1.462000        | 43.2              | Off    | N    | 19.6       | 12.8        | 56.0         |
| 1.566000        | 40.8              | Off    | N    | 19.6       | 15.2        | 56.0         |
| 1.686000        | 40.9              | Off    | N    | 19.6       | 15.1        | 56.0         |
| 1.742000        | 39.6              | Off    | N    | 19.6       | 16.4        | 56.0         |
| 1.838000        | 39.1              | Off    | N    | 19.6       | 16.9        | 56.0         |

|                        |                                                                                                                                     |                            |         |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                              | <b>Temperature :</b>       | 21~23°C |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                        | <b>Relative Humidity :</b> | 50~52%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                       | <b>Phase :</b>             | Neutral |
| <b>Function Type :</b> | Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2 |                            |         |


**Final Result : Quasi-Peak**

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 2.038000        | 38.3              | Off    | N    | 19.1       | 17.7        | 56.0         |
| 3.022000        | 37.6              | Off    | N    | 19.4       | 18.4        | 56.0         |
| 3.414000        | 42.7              | Off    | N    | 19.5       | 13.3        | 56.0         |
| 3.486000        | 44.1              | Off    | N    | 19.5       | 11.9        | 56.0         |
| 3.542000        | 44.3              | Off    | N    | 19.5       | 11.7        | 56.0         |
| 3.614000        | 44.2              | Off    | N    | 19.5       | 11.8        | 56.0         |
| 3.910000        | 41.7              | Off    | N    | 19.6       | 14.3        | 56.0         |
| 4.134000        | 41.4              | Off    | N    | 19.6       | 14.6        | 56.0         |
| 4.662000        | 40.3              | Off    | N    | 19.6       | 15.7        | 56.0         |
| 4.886000        | 38.9              | Off    | N    | 19.6       | 17.1        | 56.0         |
| 5.198000        | 36.2              | Off    | N    | 19.6       | 23.8        | 60.0         |

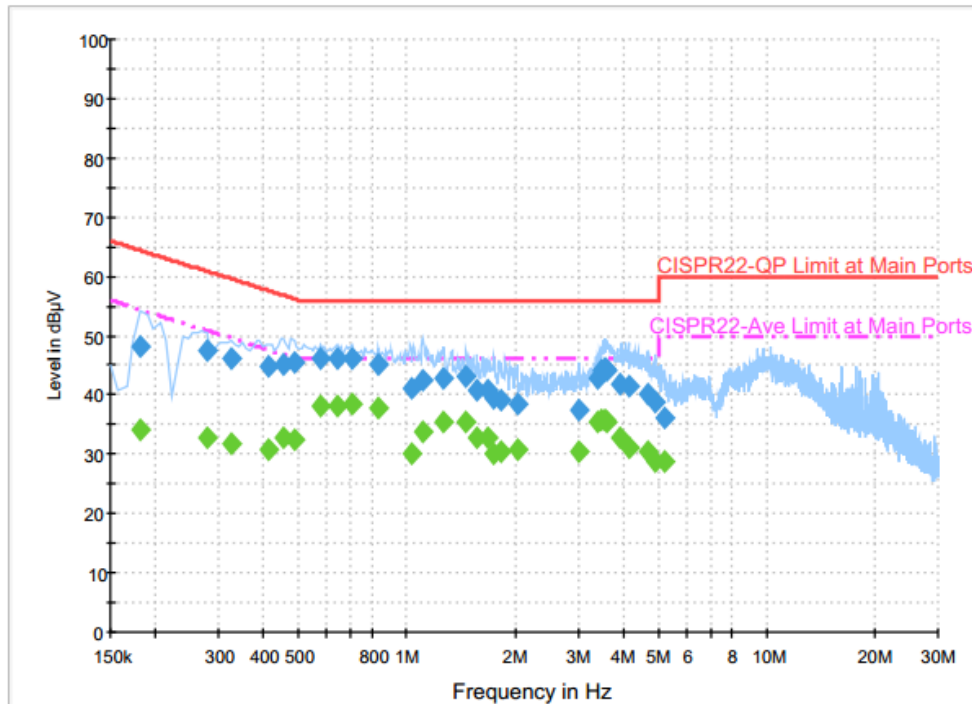
|                        |                                                                                                                                     |                            |         |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                              | <b>Temperature :</b>       | 21~23°C |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                        | <b>Relative Humidity :</b> | 50~52%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                       | <b>Phase :</b>             | Neutral |
| <b>Function Type :</b> | Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2 |                            |         |


**Final Result : Average**

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.182000        | 34.0           | Off    | N    | 19.5       | 20.4        | 54.4         |
| 0.278000        | 32.6           | Off    | N    | 19.5       | 18.3        | 50.9         |
| 0.326000        | 31.7           | Off    | N    | 19.5       | 17.9        | 49.6         |
| 0.414000        | 30.7           | Off    | N    | 19.5       | 16.9        | 47.6         |
| 0.454000        | 32.9           | Off    | N    | 19.5       | 13.9        | 46.8         |
| 0.486000        | 32.5           | Off    | N    | 19.6       | 13.7        | 46.2         |
| 0.574000        | 38.1           | Off    | N    | 19.5       | 7.9         | 46.0         |
| 0.638000        | 38.1           | Off    | N    | 19.5       | 7.9         | 46.0         |
| 0.702000        | 38.5           | Off    | N    | 19.5       | 7.5         | 46.0         |
| 0.830000        | 37.9           | Off    | N    | 19.5       | 8.1         | 46.0         |
| 1.030000        | 29.9           | Off    | N    | 19.5       | 16.1        | 46.0         |
| 1.110000        | 33.6           | Off    | N    | 19.6       | 12.4        | 46.0         |
| 1.270000        | 35.3           | Off    | N    | 19.6       | 10.7        | 46.0         |
| 1.462000        | 35.5           | Off    | N    | 19.6       | 10.5        | 46.0         |
| 1.566000        | 32.7           | Off    | N    | 19.6       | 13.3        | 46.0         |
| 1.686000        | 32.8           | Off    | N    | 19.6       | 13.2        | 46.0         |
| 1.742000        | 30.2           | Off    | N    | 19.6       | 15.8        | 46.0         |
| 1.838000        | 30.5           | Off    | N    | 19.6       | 15.5        | 46.0         |



|                 |                                                                                                                                     |                     |         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------|
| Test Mode :     | Mode 1                                                                                                                              | Temperature :       | 21~23°C |
| Test Engineer : | Arthur Hsieh                                                                                                                        | Relative Humidity : | 50~52%  |
| Test Voltage :  | 120Vac / 60Hz                                                                                                                       | Phase :             | Neutral |
| Function Type : | Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2 |                     |         |

**Final Result : Average**

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 2.038000        | 30.8           | Off    | N    | 19.1       | 15.2        | 46.0         |
| 3.022000        | 30.6           | Off    | N    | 19.4       | 15.4        | 46.0         |
| 3.414000        | 35.3           | Off    | N    | 19.5       | 10.7        | 46.0         |
| 3.486000        | 35.9           | Off    | N    | 19.5       | 10.1        | 46.0         |
| 3.542000        | 35.8           | Off    | N    | 19.5       | 10.2        | 46.0         |
| 3.614000        | 35.5           | Off    | N    | 19.5       | 10.5        | 46.0         |
| 3.910000        | 32.6           | Off    | N    | 19.6       | 13.4        | 46.0         |
| 4.134000        | 31.0           | Off    | N    | 19.6       | 15.0        | 46.0         |
| 4.662000        | 30.3           | Off    | N    | 19.6       | 15.7        | 46.0         |
| 4.886000        | 28.7           | Off    | N    | 19.6       | 17.3        | 46.0         |
| 5.198000        | 28.9           | Off    | N    | 19.6       | 21.1        | 50.0         |



## **3.4 Antenna Requirements**

### **3.4.1 Standard Applicable**

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the Antenna exceeds 6 dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

### **3.4.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

### **3.4.3 Antenna Gain**

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



## 4 List of Measuring Equipment

| Instrument           | Manufacturer    | Model No.    | Serial No.  | Characteristics | Calibration Date | Test Date                     | Due Date      | Remark                |
|----------------------|-----------------|--------------|-------------|-----------------|------------------|-------------------------------|---------------|-----------------------|
| Power Meter          | Anritsu         | ML2495A      | 0932001     | 300MHz~40GHz    | Sep. 29, 2016    | Jan. 05, 2017 ~ Jan. 12, 2017 | Sep. 28, 2017 | Conducted (TH05-HY)   |
| Power Sensor         | Anritsu         | MA2411B      | 0846202     | 300MHz~40GHz    | Sep. 29, 2016    | Jan. 05, 2017 ~ Jan. 12, 2017 | Sep. 28, 2017 | Conducted (TH05-HY)   |
| Spectrum Analyzer    | Rohde & Schwarz | FSP40        | 100055      | 9kHz-40GHz      | Jul. 17, 2016    | Jan. 05, 2017 ~ Jan. 12, 2017 | Jul. 16, 2017 | Conducted (TH05-HY)   |
| AC Power Source      | ChainTek        | APC-1000W    | N/A         | N/A             | N/A              | Jan. 17, 2017                 | N/A           | Conduction (CO05-HY)  |
| EMI Test Receiver    | Rohde & Schwarz | ESCI 7       | 100724      | 9kHz~7GHz       | Aug. 30, 2016    | Jan. 17, 2017                 | Aug. 29, 2017 | Conduction (CO05-HY)  |
| LISN                 | Rohde & Schwarz | ENV216       | 100080      | 9kHz~30MHz      | Nov. 29, 2016    | Jan. 17, 2017                 | Nov. 28, 2017 | Conduction (CO05-HY)  |
| Amplifier            | SONOMA          | 310N         | 187312      | 9kHz~1GHz       | Nov. 10, 2016    | Jan. 22, 2017 ~ Jan. 26, 2017 | Nov. 09, 2017 | Radiation (03CH11-HY) |
| Loop Antenna         | Rohde & Schwarz | HFH2-Z2      | 100315      | 9 kHz~30 MHz    | Sep. 02, 2015    | Jan. 22, 2017 ~ Jan. 26, 2017 | Sep. 01, 2017 | Radiation (03CH11-HY) |
| Bilog Antenna        | TESEQ           | CBL 6111D    | 35414       | 30MHz~1GHz      | Oct. 15, 2016    | Jan. 22, 2017 ~ Jan. 26, 2017 | Oct. 14, 2017 | Radiation (03CH11-HY) |
| Horn Antenna         | SCHWARZBECK     | BBHA 9120 D  | 9120D-1522  | 1GHz ~ 18GHz    | Mar. 30, 2016    | Jan. 22, 2017 ~ Jan. 26, 2017 | Mar. 31, 2017 | Radiation (03CH11-HY) |
| Preamplifier         | Keysight        | 83017A       | MY53270080  | 1GHz~26.5GHz    | Nov. 10, 2016    | Jan. 22, 2017 ~ Jan. 26, 2017 | Nov. 09, 2017 | Radiation (03CH11-HY) |
| Spectrum Analyzer    | Keysight        | N9010A       | MY52350276  | 10Hz ~ 44GHZ    | Mar. 21, 2016    | Jan. 22, 2017 ~ Jan. 26, 2017 | Mar. 20, 2017 | Radiation (03CH11-HY) |
| Antenna Mast         | EMEC            | AM-BS-4500-B | N/A         | 1~4m            | N/A              | Jan. 22, 2017 ~ Jan. 26, 2017 | N/A           | Radiation (03CH11-HY) |
| Turn Table           | EMEC            | TT 2000      | N/A         | 0~360 Degree    | N/A              | Jan. 22, 2017 ~ Jan. 26, 2017 | N/A           | Radiation (03CH11-HY) |
| Preamplifier         | MITEQ           | TTA0204      | 1872107     | 2GHz~40GHz      | Feb. 15, 2016    | Jan. 22, 2017 ~ Jan. 26, 2017 | Feb. 14, 2017 | Radiation (03CH11-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK     | BBHA 9170    | BBHA9170584 | 18GHz- 40GHz    | Nov. 08, 2016    | Jan. 22, 2017 ~ Jan. 26, 2017 | Nov. 07, 2017 | Radiation (03CH11-HY) |

## 5 Uncertainty of Evaluation

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

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.7 |
|-------------------------------------------------------------------------|-----|

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

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.2 |
|-------------------------------------------------------------------------|-----|

### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.5 |
|-------------------------------------------------------------------------|-----|

### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.2 |
|-------------------------------------------------------------------------|-----|



## **Appendix A. Conducted Test Results**

Report Number : FR6D2819-01C

|                |                       |                    |       |    |
|----------------|-----------------------|--------------------|-------|----|
| Test Engineer: | Aking Chang           | Temperature:       | 21~25 | °C |
| Test Date:     | 2017/01/05~2017/01/12 | Relative Humidity: | 51~54 | %  |

**TEST RESULTS DATA**  
**Peak Power Table**

| 2.4GHz Band |           |     |     |             |                            |                             |          |                  |                        |            |
|-------------|-----------|-----|-----|-------------|----------------------------|-----------------------------|----------|------------------|------------------------|------------|
| Mod.        | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
| 11b         | 1Mbps     | 1   | 1   | 2412        | 19.30                      | 30.00                       | 2.29     | 21.59            | 36.00                  | Pass       |
| 11b         | 1Mbps     | 1   | 6   | 2437        | 19.29                      | 30.00                       | 2.29     | 21.58            | 36.00                  | Pass       |
| 11b         | 1Mbps     | 1   | 11  | 2462        | 19.27                      | 30.00                       | 2.29     | 21.56            | 36.00                  | Pass       |
| 11g         | 6Mbps     | 1   | 1   | 2412        | 23.40                      | 30.00                       | 2.29     | 25.69            | 36.00                  | Pass       |
| 11g         | 6Mbps     | 1   | 6   | 2437        | 23.44                      | 30.00                       | 2.29     | 25.73            | 36.00                  | Pass       |
| 11g         | 6Mbps     | 1   | 11  | 2462        | 23.60                      | 30.00                       | 2.29     | 25.89            | 36.00                  | Pass       |
| HT20        | MCS0      | 1   | 1   | 2412        | 23.64                      | 30.00                       | 2.29     | 25.93            | 36.00                  | Pass       |
| HT20        | MCS0      | 1   | 6   | 2437        | 23.62                      | 30.00                       | 2.29     | 25.91            | 36.00                  | Pass       |
| HT20        | MCS0      | 1   | 11  | 2462        | 23.65                      | 30.00                       | 2.29     | 25.94            | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Average Power Table**  
**(Reporting Only)**

| 2.4GHz Band |           |     |     |             |                  |                               |
|-------------|-----------|-----|-----|-------------|------------------|-------------------------------|
| Mod.        | Data Rate | NTx | CH. | Freq. (MHz) | Duty Factor (dB) | Average Conducted Power (dBm) |
| 11b         | 1Mbps     | 1   | 1   | 2412        | 0.00             | 17.03                         |
| 11b         | 1Mbps     | 1   | 6   | 2437        | 0.00             | 17.18                         |
| 11b         | 1Mbps     | 1   | 11  | 2462        | 0.00             | 17.11                         |
| 11g         | 6Mbps     | 1   | 1   | 2412        | 0.00             | 13.30                         |
| 11g         | 6Mbps     | 1   | 6   | 2437        | 0.00             | 13.29                         |
| 11g         | 6Mbps     | 1   | 11  | 2462        | 0.00             | 13.33                         |
| HT20        | MCS0      | 1   | 1   | 2412        | 0.00             | 13.30                         |
| HT20        | MCS0      | 1   | 6   | 2437        | 0.00             | 13.32                         |
| HT20        | MCS0      | 1   | 11  | 2462        | 0.00             | 13.33                         |



## Appendix B. Radiated Spurious Emission

|                 |                       |                     |         |
|-----------------|-----------------------|---------------------|---------|
| Test Engineer : | Jacky Hung and Ken Wu | Temperature :       | 20~24°C |
|                 |                       | Relative Humidity : | 50~54%  |

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

| WIFI                        | Note                                                                                        | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|-----------------------------|---------------------------------------------------------------------------------------------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.                        |                                                                                             |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1                           |                                                                                             | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11b<br>CH 11<br>2462MHz | *                                                                                           | 2462      | 106.19     | -      | -          | 103.39   | 27.4     | 8.98   | 33.58  | 102    | 297     | P       | H       |
|                             | *                                                                                           | 2462      | 102.78     | -      | -          | 99.98    | 27.4     | 8.98   | 33.58  | 102    | 297     | A       | H       |
|                             |                                                                                             | 2485.72   | 55.77      | -18.23 | 74         | 52.92    | 27.45    | 8.98   | 33.58  | 102    | 297     | P       | H       |
|                             |                                                                                             | 2487.96   | 45.94      | -8.06  | 54         | 43.04    | 27.5     | 8.98   | 33.58  | 102    | 297     | A       | H       |
|                             |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | H       |
|                             |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | H       |
|                             | *                                                                                           | 2462      | 103.22     | -      | -          | 100.42   | 27.4     | 8.98   | 33.58  | 108    | 110     | P       | V       |
|                             | *                                                                                           | 2462      | 99.85      | -      | -          | 97.05    | 27.4     | 8.98   | 33.58  | 108    | 110     | A       | V       |
|                             |                                                                                             | 2498.84   | 54.67      | -19.33 | 74         | 51.76    | 27.5     | 8.98   | 33.57  | 108    | 110     | P       | V       |
|                             |                                                                                             | 2487.92   | 44.37      | -9.63  | 54         | 41.47    | 27.5     | 8.98   | 33.58  | 108    | 110     | A       | V       |
|                             |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | V       |
|                             |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | V       |
| Remark                      | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |           |            |        |            |          |          |        |        |        |         |         |         |

**2.4GHz 2400~2483.5MHz****WIFI 802.11b (Harmonic @ 3m)**

| WIFI<br>Ant.<br>1                    | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|--------------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| <b>802.11b<br/>CH 11<br/>2462MHz</b> |                                                                                             | 4924                 | 35.32               | -38.68                  | 74                          | 43.48                     | 31.88                         | 11                      | 51.04                      | 100                  | 0                       | P                       | H               |
|                                      |                                                                                             | 7386                 | 36.73               | -37.27                  | 74                          | 36.98                     | 37.38                         | 12.88                   | 50.51                      | 100                  | 0                       | P                       | H               |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                      |                                                                                             | 4924                 | 33.22               | -40.78                  | 74                          | 41.38                     | 31.88                         | 11                      | 51.04                      | 100                  | 0                       | P                       | V               |
|                                      |                                                                                             | 7386                 | 37.7                | -36.3                   | 74                          | 37.95                     | 37.38                         | 12.88                   | 50.51                      | 100                  | 0                       | P                       | V               |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| <b>Remark</b>                        | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         |                 |



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11n HT20 (Band Edge @ 3m)

| WIFI<br>Ant.<br>1                   | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|-------------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11n<br>HT20<br>CH 11<br>2462MHz | *                                                                                           | 2462                 | 103.22              | -                       | -                           | 100.42                    | 27.4                          | 8.98                    | 33.58                      | 108                  | 295                     | P                       | H               |
|                                     | *                                                                                           | 2462                 | 94.17               | -                       | -                           | 91.37                     | 27.4                          | 8.98                    | 33.58                      | 108                  | 295                     | A                       | H               |
|                                     |                                                                                             | 2484.56              | 60.17               | -13.83                  | 74                          | 57.32                     | 27.45                         | 8.98                    | 33.58                      | 108                  | 295                     | P                       | H               |
|                                     |                                                                                             | 2483.52              | 47.98               | -6.02                   | 54                          | 45.13                     | 27.45                         | 8.98                    | 33.58                      | 108                  | 295                     | A                       | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     | *                                                                                           | 2462                 | 99.88               | -                       | -                           | 97.08                     | 27.4                          | 8.98                    | 33.58                      | 109                  | 117                     | P                       | V               |
|                                     | *                                                                                           | 2462                 | 91.55               | -                       | -                           | 88.75                     | 27.4                          | 8.98                    | 33.58                      | 109                  | 117                     | A                       | V               |
|                                     |                                                                                             | 2483.68              | 57.14               | -16.86                  | 74                          | 54.29                     | 27.45                         | 8.98                    | 33.58                      | 109                  | 117                     | P                       | V               |
|                                     |                                                                                             | 2483.52              | 45.51               | -8.49                   | 54                          | 42.66                     | 27.45                         | 8.98                    | 33.58                      | 109                  | 117                     | A                       | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| Remark                              | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         |                 |



**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11n HT20 (Harmonic @ 3m)**

| WIFI<br>Ant.<br>1                   | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|-------------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11n<br>HT20<br>CH 11<br>2462MHz |                                                                                             | 4924                 | 31.29               | -42.71                  | 74                          | 39.45                     | 31.88                         | 11                      | 51.04                      | 100                  | 0                       | P                       | H               |
|                                     |                                                                                             | 7386                 | 36.58               | -37.42                  | 74                          | 36.83                     | 37.38                         | 12.88                   | 50.51                      | 100                  | 0                       | P                       | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |                                                                                             | 4924                 | 30.82               | -43.18                  | 74                          | 38.98                     | 31.88                         | 11                      | 51.04                      | 100                  | 0                       | P                       | V               |
|                                     |                                                                                             | 7386                 | 36.01               | -37.99                  | 74                          | 36.26                     | 37.38                         | 12.88                   | 50.51                      | 100                  | 0                       | P                       | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| Remark                              | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         |                 |



## Emission below 1GHz

## 2.4GHz WIFI 802.11n HT20 (LF)

| WIFI                            | Note                                                                       | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|---------------------------------|----------------------------------------------------------------------------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.                            |                                                                            |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1                               |                                                                            | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 2.4GHz<br>802.11n<br>HT20<br>LF |                                                                            | 30.54     | 23.53      | -16.47 | 40         | 29.56    | 25.18    | 1.29   | 32.5   | -      | -       | P       | H       |
|                                 |                                                                            | 48.63     | 22.87      | -17.13 | 40         | 38.3     | 15.77    | 1.29   | 32.49  | -      | -       | P       | H       |
|                                 |                                                                            | 260.58    | 19.89      | -26.11 | 46         | 30.22    | 19.66    | 2.58   | 32.57  | -      | -       | P       | H       |
|                                 |                                                                            | 812.4     | 30.99      | -15.01 | 46         | 30.4     | 28.45    | 4.26   | 32.12  | -      | -       | P       | H       |
|                                 |                                                                            | 876.8     | 31.71      | -14.29 | 46         | 29.86    | 29.06    | 4.57   | 31.78  | -      | -       | P       | H       |
|                                 |                                                                            | 953.8     | 33.88      | -12.12 | 46         | 29.76    | 30.59    | 4.69   | 31.16  | 161    | 152     | P       | H       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                 |                                                                            | 32.43     | 29.97      | -10.03 | 40         | 37.03    | 24.14    | 1.29   | 32.49  | 164    | 258     | P       | V       |
|                                 |                                                                            | 36.75     | 27.96      | -12.04 | 40         | 37.18    | 21.98    | 1.29   | 32.49  | -      | -       | P       | V       |
|                                 |                                                                            | 47.01     | 25.17      | -14.83 | 40         | 40.17    | 16.2     | 1.29   | 32.49  | -      | -       | P       | V       |
|                                 |                                                                            | 741.7     | 29.64      | -16.36 | 46         | 30.36    | 27.54    | 4.09   | 32.35  | -      | -       | P       | V       |
|                                 |                                                                            | 927.9     | 33.32      | -12.68 | 46         | 30.09    | 30       | 4.63   | 31.4   | -      | -       | P       | V       |
|                                 |                                                                            | 955.9     | 34.01      | -11.99 | 46         | 29.87    | 30.59    | 4.69   | 31.14  | -      | -       | P       | V       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                 |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
| Remark                          | 1. No other spurious found.<br>2. All results are PASS against limit line. |           |            |        |            |          |          |        |        |        |         |         |         |



**Note symbol**

|     |                                                                                                                                                          |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| *   | <b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. |
| !   | Test result is <b>over limit</b> line.                                                                                                                   |
| P/A | <b>Peak</b> or <b>Average</b>                                                                                                                            |
| H/V | <b>Horizontal</b> or <b>Vertical</b>                                                                                                                     |



A calculation example for radiated spurious emission is shown as below:

| WIFI    | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|---------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.    |      |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1       |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11b |      | 2390      | 55.45      | -18.55 | 74         | 54.51    | 32.22    | 4.58   | 35.86  | 103    | 308     | P       | H       |
| CH 01   |      |           |            |        |            |          |          |        |        |        |         |         |         |
| 2412MHz |      | 2390      | 43.54      | -10.46 | 54         | 42.6     | 32.22    | 4.58   | 35.86  | 103    | 308     | A       | H       |

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**



## Appendix C. Radiated Spurious Emission Plots

|                        |                       |                            |         |
|------------------------|-----------------------|----------------------------|---------|
| <b>Test Engineer :</b> | Jacky Hung and Ken Wu | <b>Temperature :</b>       | 20~24°C |
|                        |                       | <b>Relative Humidity :</b> | 50~54%  |

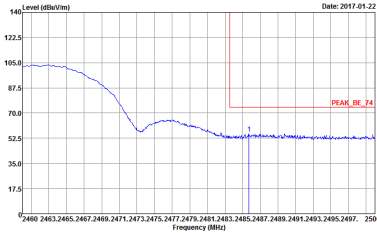
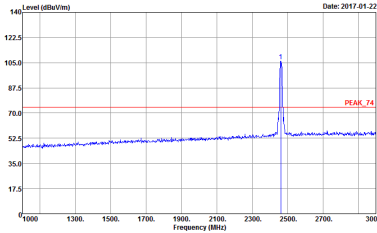
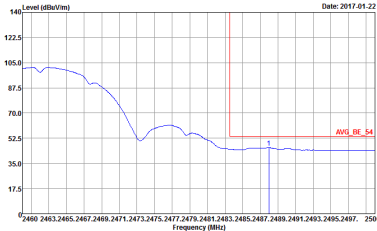
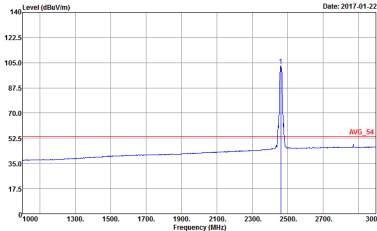
### Note symbol

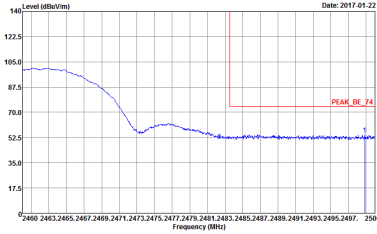
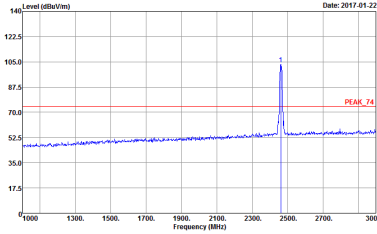
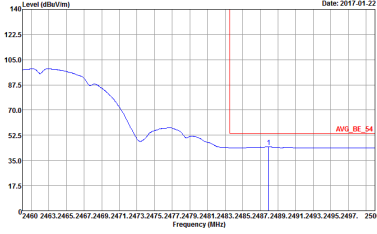
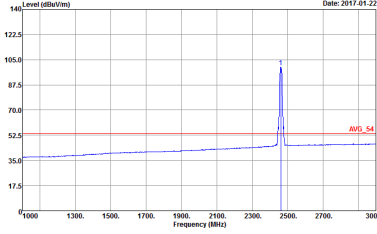
|    |                       |
|----|-----------------------|
| -L | Low channel location  |
| -R | High channel location |



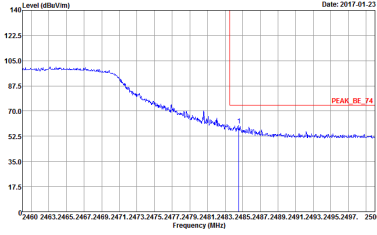
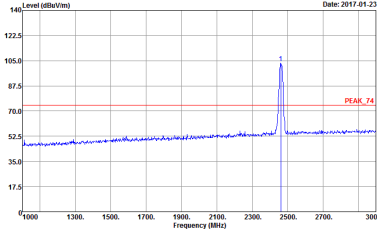
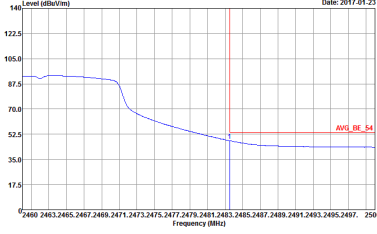
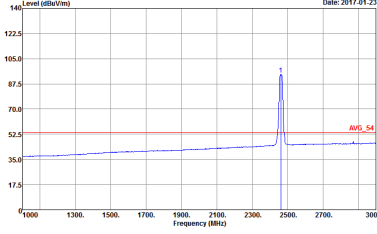
## 2.4GHz 2400~2483.5MHz

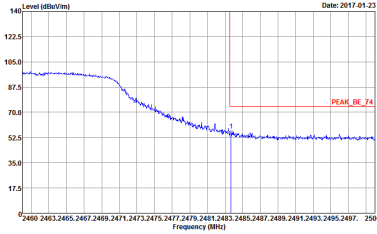
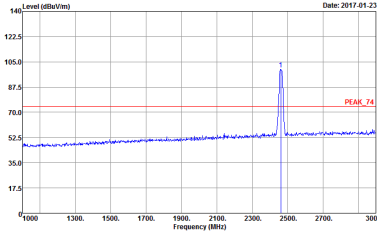
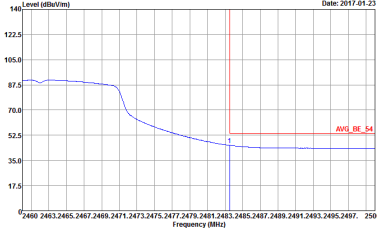
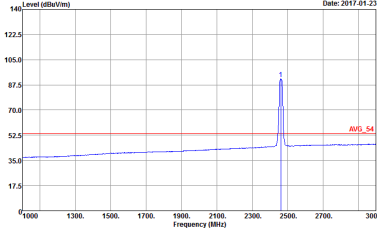
## WIFI 802.11b (Band Edge @ 3m)

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                              |                                                                                                                                                                                                                                                 |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH11 2462MHz                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                 |
| 1    | Horizontal                                                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                                                     |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL<br/>Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Project : 6D2819-01</p>  |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL<br/>Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Project : 6D2819-01</p>  |
| Avg. |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 9120D-HF HORIZONTAL<br/>Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Project : 6D2819-01</p> |  <p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 9120D-HF HORIZONTAL<br/>Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Project : 6D2819-01</p> |

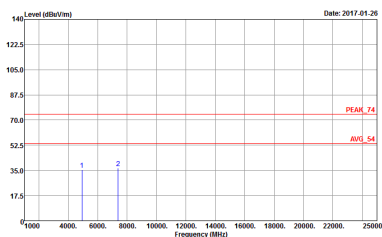
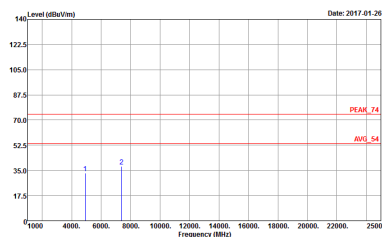
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                       |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH11 2462MHz                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                       |
| 1    | Vertical                                                                                                                                                                                                                                                | Fundamental                                                                                                                                                                                                                                           |
| Peak |  <p>Site : 03CH11-HV<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819-01</p> |  <p>Site : 03CH11-HV<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819-01</p> |
| Avg. |  <p>Site : 03CH11-HV<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819-01</p>   |  <p>Site : 03CH11-HV<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819-01</p>   |

**2.4GHz 2400~2483.5MHz**
**WIFI 802.11n HT20 (Band Edge @ 3m)**

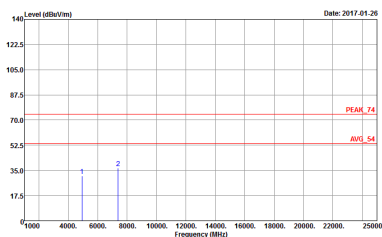
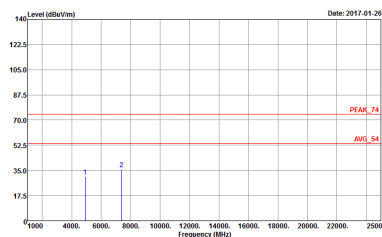
| WIFI        | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                          |                                                                                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT         | 802.11n HT20 CH11 2462MHz                                                                                                                                                                                     |                                                                                                                                                                                                             |
| 1           | Horizontal                                                                                                                                                                                                    | Fundamental                                                                                                                                                                                                 |
| <b>Peak</b> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819-01</p>  |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819-01</p>  |
|             |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819-01</p> |  <p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819-01</p> |

| WIFI | 2.4GHz 2400~2483.5MHz Fundamental @ 3m                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                       |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11n HT20 CH11 2462MHz                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                       |
| 1    | Vertical                                                                                                                                                                                                                                                | Fundamental                                                                                                                                                                                                                                           |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819-01</p> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819-01</p> |
| Avg. |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819-01</p>   |  <p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819-01</p>   |

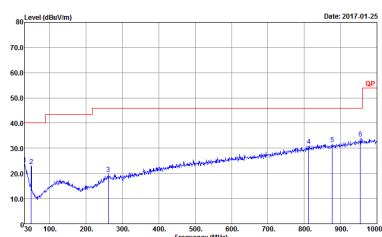
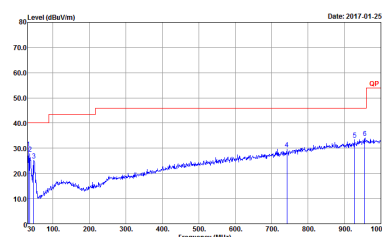
**2.4GHz 2400~2483.5MHz**
**WIFI 802.11b (Harmonic @ 3m)**

| WIFI                           | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                                                                               |                                                                                                                                                                                                                  |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT                            | 802.11b CH11 2462MHz                                                                                                                                                                                              |                                                                                                                                                                                                                  |
| 1                              | Horizontal                                                                                                                                                                                                        | Vertical                                                                                                                                                                                                         |
| <b>Peak</b><br><br><b>Avg.</b> |  <p>Site : 03CH11-4FY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/>Detector : Peak<br/>Project : 602819-01</p> |  <p>Site : 03CH11-4FY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/>Detector : Peak<br/>Project : 602819-01</p> |
|                                |                                                                                                                                                                                                                   |                                                                                                                                                                                                                  |

**2.4GHz 2400~2483.5MHz**
**WIFI 802.11n HT20 (Harmonic @ 3m)**

| WIFI                           | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                       |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT                            | 802.11n HT20 CH11 2462MHz                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                       |
| 1                              | Horizontal                                                                                                                                                                                                                                                             | Vertical                                                                                                                                                                                                                                                              |
| <b>Peak</b><br><br><b>Avg.</b> |  <p>           Site : 03CH11-4FY<br/>           Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/>           Detector : Peak<br/>           Project : 602819-01         </p> |  <p>           Site : 03CH11-4FY<br/>           Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/>           Detector : Peak<br/>           Project : 602819-01         </p> |
|                                |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |

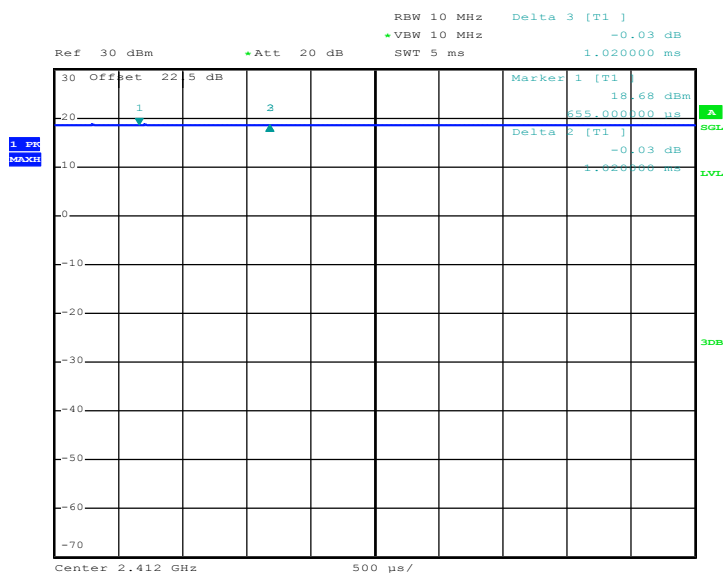
**Emission below 1GHz**  
**2.4GHz WIFI 802.11n HT20 (LF)**

| WIFI                 | 2.4GHz 2400~2483.5MHz                                                                                                                                                                                            |                                                                                                                                                                                                                 |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT                  | 802.11n HT20 LF                                                                                                                                                                                                  |                                                                                                                                                                                                                 |
| 1                    | Horizontal                                                                                                                                                                                                       | Vertical                                                                                                                                                                                                        |
| <b>QP /<br/>Peak</b> |  <p> Site : 03CH11-4FY<br/> Condition : QP 3m BT-LOG 6111D-LF_ETC HORIZONTAL<br/> Detector : Peak<br/> Project : 602819-01 </p> |  <p> Site : 03CH11-4FY<br/> Condition : QP 3m BT-LOG 6111D-LF_ETC VERTICAL<br/> Detector : Peak<br/> Project : 602819-01 </p> |
|                      |                                                                                                                                                                                                                  |                                                                                                                                                                                                                 |

## Appendix D. Duty Cycle Plots

| Band                | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting |
|---------------------|---------------|-------|----------|-------------|
| 802.11b             | 100           | -     | -        | 10Hz        |
| 2.4GHz 802.11n HT20 | 98.82         | -     | -        | 10Hz        |

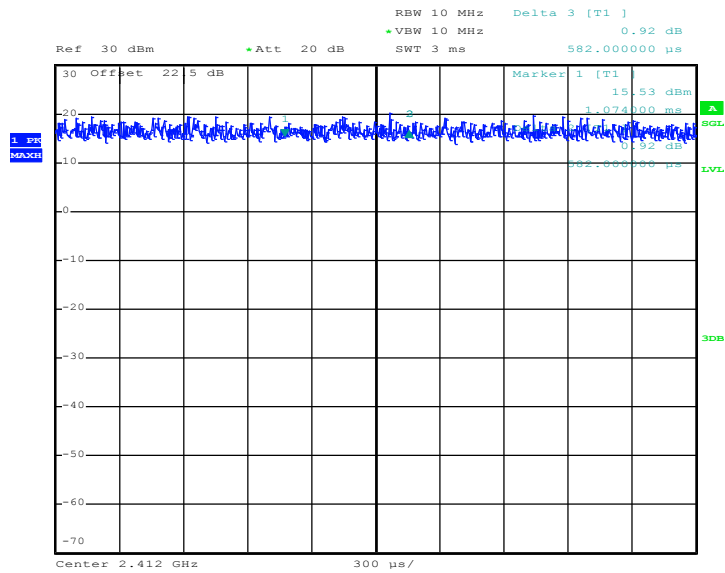
### 802.11b



Date: 5.JAN.2017 15:13:01



802.11n HT20



Date: 5.JAN.2017 12:17:16



## **Appendix F. Original Report**

Please refer to Sporton report number FR6D2819C as below.

# FCC RF Test Report

APPLICANT : Honeywell International Inc.  
EQUIPMENT : CN75WAN mobile computer  
BRAND NAME : Honeywell  
MODEL NAME : CN75WAN  
MARKETING NAME : CN75  
FCC ID : HD5-CN75WAN  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Dec. 28, 2016 and testing was completed on Feb. 02, 2017. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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



---

Reviewed by: Joseph Lin / Supervisor



---

Approved by: Jones Tsai / Manager



## **SPORTON INTERNATIONAL INC.**

**No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.**



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## REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FR6D2819C  | Rev. 01 | Initial issue of report | Mar. 08, 2017 |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
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|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |

## SUMMARY OF TEST RESULT

| Report Section | FCC Rule           | Description                                        | Limit                          | Result | Remark                                  |
|----------------|--------------------|----------------------------------------------------|--------------------------------|--------|-----------------------------------------|
| 3.1            | 15.247(a)(2)       | 6dB Bandwidth                                      | $\geq 0.5\text{MHz}$           | Pass   | -                                       |
| 3.1            | -                  | 99% Bandwidth                                      | -                              | Pass   | -                                       |
| 3.2            | 15.247(b)          | Power Output Measurement                           | $\leq 30\text{dBm}$            | Pass   | -                                       |
| 3.3            | 15.247(e)          | Power Spectral Density                             | $\leq 8\text{dBm}/3\text{kHz}$ | Pass   | -                                       |
| 3.4            | 15.247(d)          | Conducted Band Edges                               | $\leq 20\text{dBc}$            | Pass   | -                                       |
|                |                    | Conducted Spurious Emission                        |                                | Pass   | -                                       |
| 3.5            | 15.247(d)          | Radiated Band Edges and Radiated Spurious Emission | 15.209(a) & 15.247(d)          | Pass   | Under limit<br>3.04 dB at<br>32.700 MHz |
| 3.6            | 15.207             | AC Conducted Emission                              | 15.207(a)                      | Pass   | Under limit<br>7.40 dB at<br>3.526 MHz  |
| 3.7            | 15.203 & 15.247(b) | Antenna Requirement                                | N/A                            | Pass   | -                                       |



# 1 General Description

## 1.1 Applicant

**Honeywell International Inc.**

9680 Old Bailes Road, Fort Mill, SC 29707 USA

## 1.2 Manufacturer

**Honeywell International Inc.**

9680 Old Bailes Road, Fort Mill, SC 29707 USA

## 1.3 Product Feature of Equipment Under Test

| Product Feature                        |                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------|
| <b>Equipment</b>                       | CN75WAN mobile computer                                                       |
| <b>Brand Name</b>                      | Honeywell                                                                     |
| <b>Model Name</b>                      | CN75WAN                                                                       |
| <b>Marketing Name</b>                  | CN75                                                                          |
| <b>FCC ID</b>                          | HD5-CN75WAN                                                                   |
| <b>Sample 1</b>                        | CN75 WWAN-Q5 WWAN_Q5 keypad                                                   |
| <b>Sample 2</b>                        | CN75 WWAN-N5 WWAN_N5 keypad                                                   |
| <b>Sample 3</b>                        | CN75E WWAN-N7 WWAN_N7 keypad                                                  |
| <b>Sample 4</b>                        | CN75E WWAN-Q6 WWAN_Q6 keypad                                                  |
| <b>EUT supports Radios application</b> | CDMA/EV-DO/GSM/EGPRS/WCDMA/HSPA<br>WLAN 11a/b/g/n HT20<br>Bluetooth BR/EDR/LE |
| <b>HW Version</b>                      | v1.1                                                                          |
| <b>SW Version</b>                      | W03.320                                                                       |
| <b>EUT Stage</b>                       | Identical Prototype                                                           |

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

## 1.4 Product Specification of Equipment Under Test

| Standards-related Product Specification       |                                                                                                         |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Tx/Rx Channel Frequency Range</b>          | 2412 MHz ~ 2462 MHz                                                                                     |
| <b>Maximum (Peak) Output Power to antenna</b> | 802.11b : 19.42 dBm (0.0875 W)<br>802.11g : 23.61 dBm (0.2296 W)<br>802.11n HT20 : 23.68 dBm (0.2333 W) |
| <b>99% Occupied Bandwidth</b>                 | 802.11b : 14.15MHz<br>802.11g : 18.10MHz<br>802.11n HT20 : 19.00MHz                                     |
| <b>Antenna Type / Gain</b>                    | PIFA Antenna type with gain 2.29 dBi                                                                    |
| <b>Type of Modulation</b>                     | 802.11b : DSSS (DBPSK / DQPSK / CCK)<br>802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)                  |

## 1.5 Modification of EUT

No modifications are made to the EUT during all test items.

## 1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

|                           |                                                                                                                                                                  |         |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC.                                                                                                                                       |         |
| <b>Test Site Location</b> | No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park,<br>Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |         |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                          |         |
|                           | TH05-HY                                                                                                                                                          | CO05-HY |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

|                           |                                                                                                                                        |  |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC.                                                                                                             |  |
| <b>Test Site Location</b> | No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist,<br>Taoyuan City, Taiwan (R.O.C.)<br>TEL: +886-3-327-0868<br>FAX: +886-3-327-0855 |  |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                |  |
|                           | 03CH11-HY                                                                                                                              |  |

**Note:** The test site complies with ANSI C63.4 2014 requirement.



## **1.7 Applicable Standards**

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05
- ♦ ANSI C63.10-2013

**Remark:**

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

## 2 Test Configuration of Equipment Under Test

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

### 2.1 Carrier Frequency and Channel

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

### 2.2 Test Mode

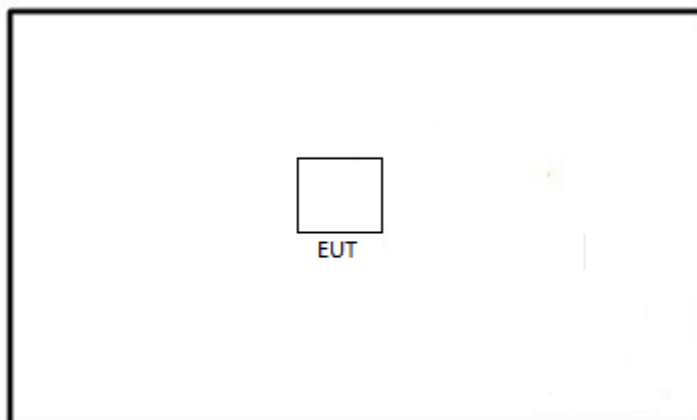
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

| Modulation   | Data Rate |
|--------------|-----------|
| 802.11b      | 1 Mbps    |
| 802.11g      | 6 Mbps    |
| 802.11n HT20 | MCS0      |

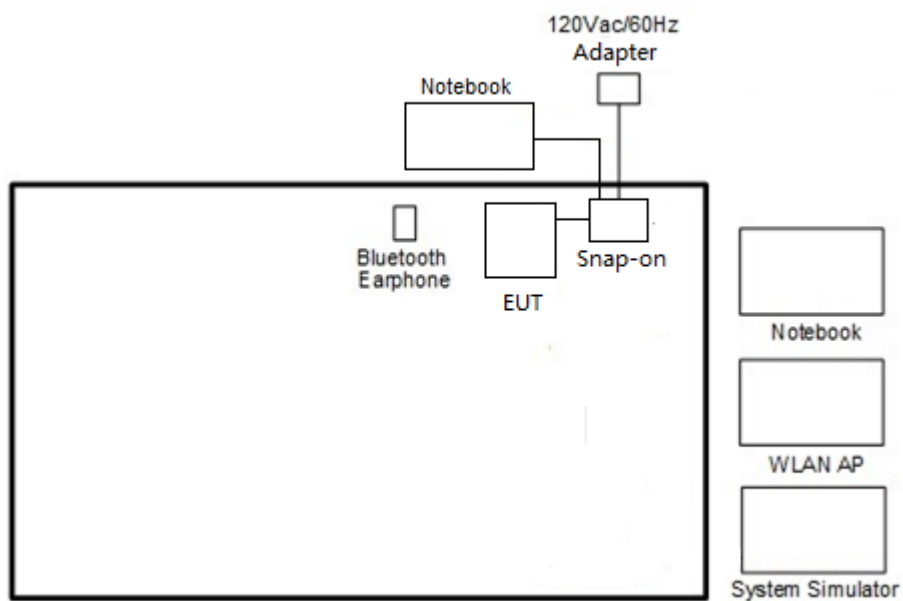
| Test Cases                                                                                                                                                     |                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AC Conducted Emission</b>                                                                                                                                   | Mode 1: WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3 |
| <b>Remark:</b><br>1. Snap-on 1: Ethernet Snap-On 1000AA01<br>2. Adapter: Level V (for Snap-on)<br>3. All the radiated test cases were performed with sample 1. |                                                                                                                                                                 |

## 2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





## 2.4 Support Unit used in test configuration and system

| Item | Equipment                   | Trade Name                    | Model Name         | FCC ID                                       | Data Cable                      | Power Cord                                                 |
|------|-----------------------------|-------------------------------|--------------------|----------------------------------------------|---------------------------------|------------------------------------------------------------|
| 1.   | System Simulator            | Anritsu                       | MT8820C            | N/A                                          | N/A                             | Unshielded, 1.8 m                                          |
| 2.   | Bluetooth Earphone          | Sony Ericsson                 | MW600              | PY7DDA-2029                                  | N/A                             | N/A                                                        |
| 3.   | WLAN AP                     | ASUS                          | RT-AC66U           | MSQ-RTAC66U                                  | N/A                             | Unshielded,1.8m                                            |
| 4.   | Notebook                    | DELL                          | Latitude E6320     | FCC DoC/<br>Contains FCC ID:<br>QDS-BRCM1054 | N/A                             | AC I/P:<br>Unshielded, 1.2 m<br>DC O/P:<br>Shielded, 1.8 m |
| 5.   | SD Card                     | SanDisk                       | MicroSD HC         | FCC DoC                                      | N/A                             | N/A                                                        |
| 6.   | CN75A/CN75E<br>Vehicle dock | intermec technologies<br>corp | 1000AV01           | FCC DoC                                      | NA                              | NA                                                         |
| 7.   | CK75 Vehicle dock           | intermec technologies<br>corp | 1001AV01           | FCC DoC                                      | NA                              | NA                                                         |
| 8.   | car charger                 | intermec technologies<br>corp | 852-057-005        | Verification                                 | NA                              | Unshielded, 1.2m                                           |
| 9.   | Snap-on(LAN)                | intermec technologies<br>corp | 1000AA01           | FCC DoC                                      | NA                              | NA                                                         |
| 10.  | Snap-on(RS232)              | intermec technologies<br>corp | 1000AA03           | FCC DoC                                      | NA                              | NA                                                         |
| 11.  | Snap-On (VoCollect)         | intermec technologies<br>corp | 1000AA05           | FCC DoC                                      | NA                              | NA                                                         |
| 12.  | Snap-on (USB)               | intermec technologies<br>corp | 1000AA07           | FCC DoC                                      | NA                              | NA                                                         |
| 13.  | Snap-on adapter             | intermec technologies<br>corp | 9001AE01           | FCC DoC                                      | NA                              | AC IP:<br>Unshielded, 1.8m<br>DC OP:<br>Shielded, 1.8m     |
| 14.  | Earphone                    | Honeywell                     | Vocollect<br>SR-20 | FCC DoC                                      | 1.1 meter,<br>shielded<br>cable | NA                                                         |
| 15.  | USB Cable                   | intermec technologies<br>corp | VE011-2018         | FCC DoC                                      | NA                              | 1.4 meter, shielded<br>cable, w/t ferrite core             |
| 16.  | Battery                     | intermec technologies<br>corp | 1000AB02           | NA                                           | NA                              | NA                                                         |



## 2.5 EUT Operation Test Setup

For WLAN function, the RF utility, "rtt-adv-usr v21" was installed in EUT which was programmed in order to make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.2 + 10 = 14.2 \text{ (dB)}\end{aligned}$$

### 3 Test Result

#### 3.1 6dB and 99% Bandwidth Measurement

##### 3.1.1 Limit of 6dB and 99% Bandwidth

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

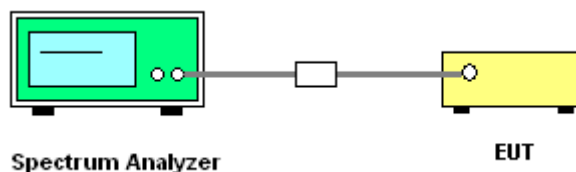
##### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

##### 3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

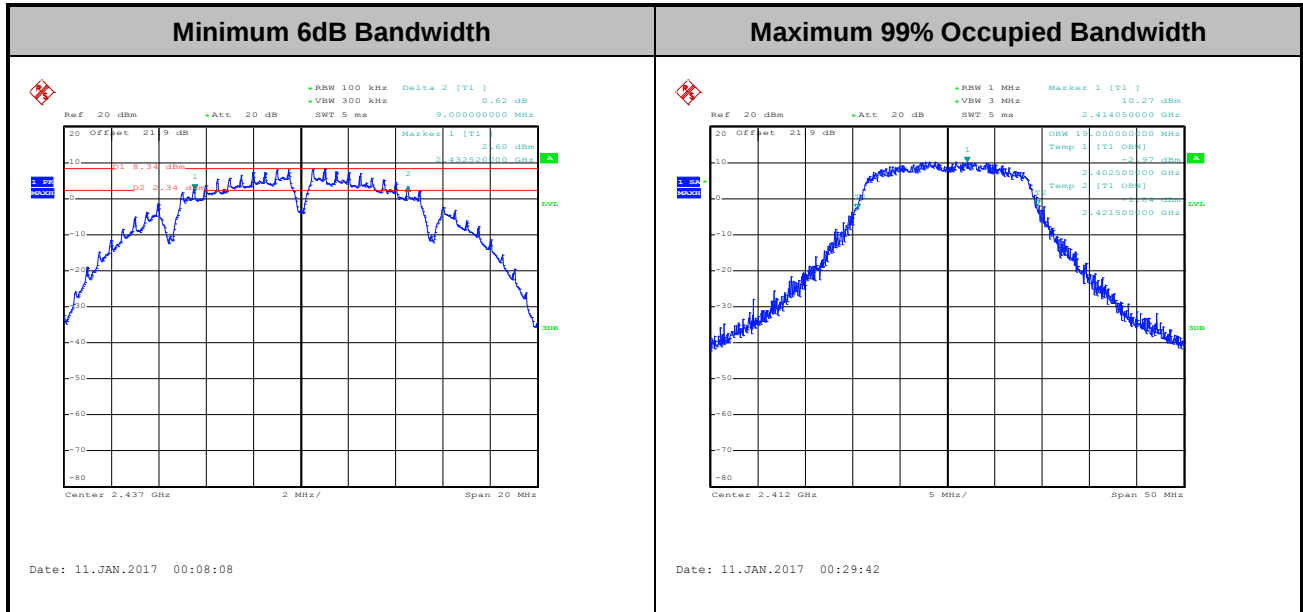
##### 3.1.4 Test Setup





### 3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A.



Note : The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

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

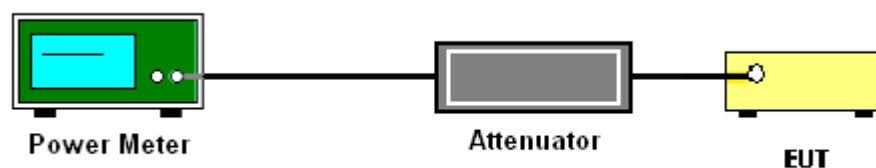
### 3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r05 section 9.1.2 PKPM1 Peak power meter method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Peak Output Power

Please refer to Appendix A.

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

Please refer to Appendix A.

### 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

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

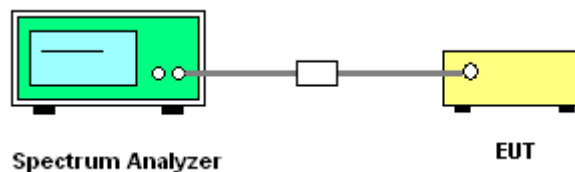
#### 3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

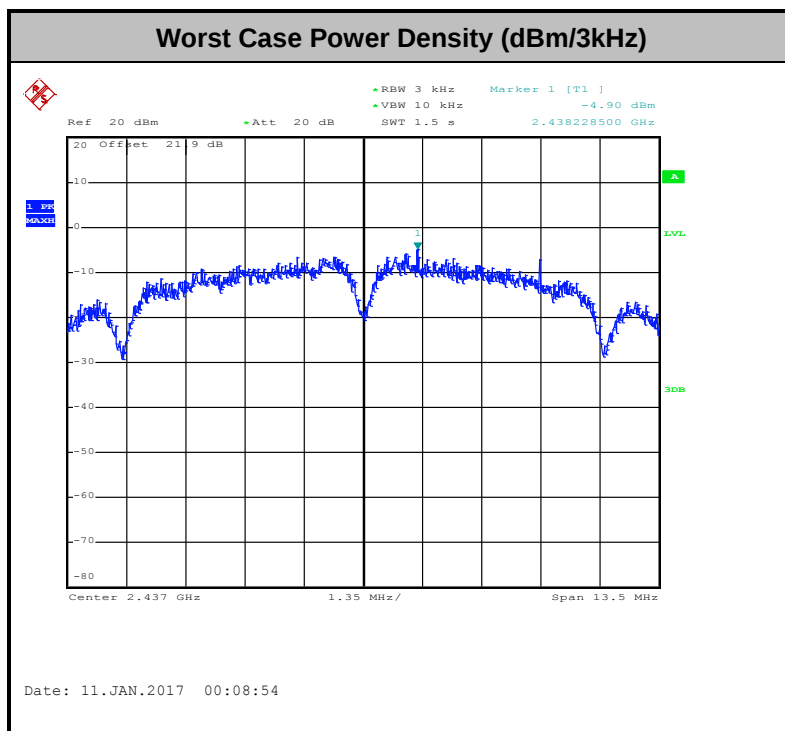
#### 3.3.4 Test Setup





### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



### 3.4 Conducted Band Edges and Spurious Emission Measurement

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

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

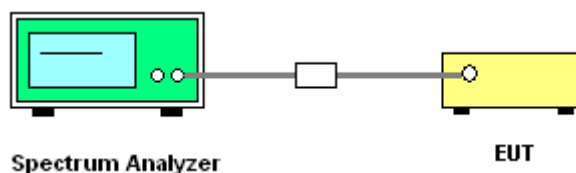
#### 3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

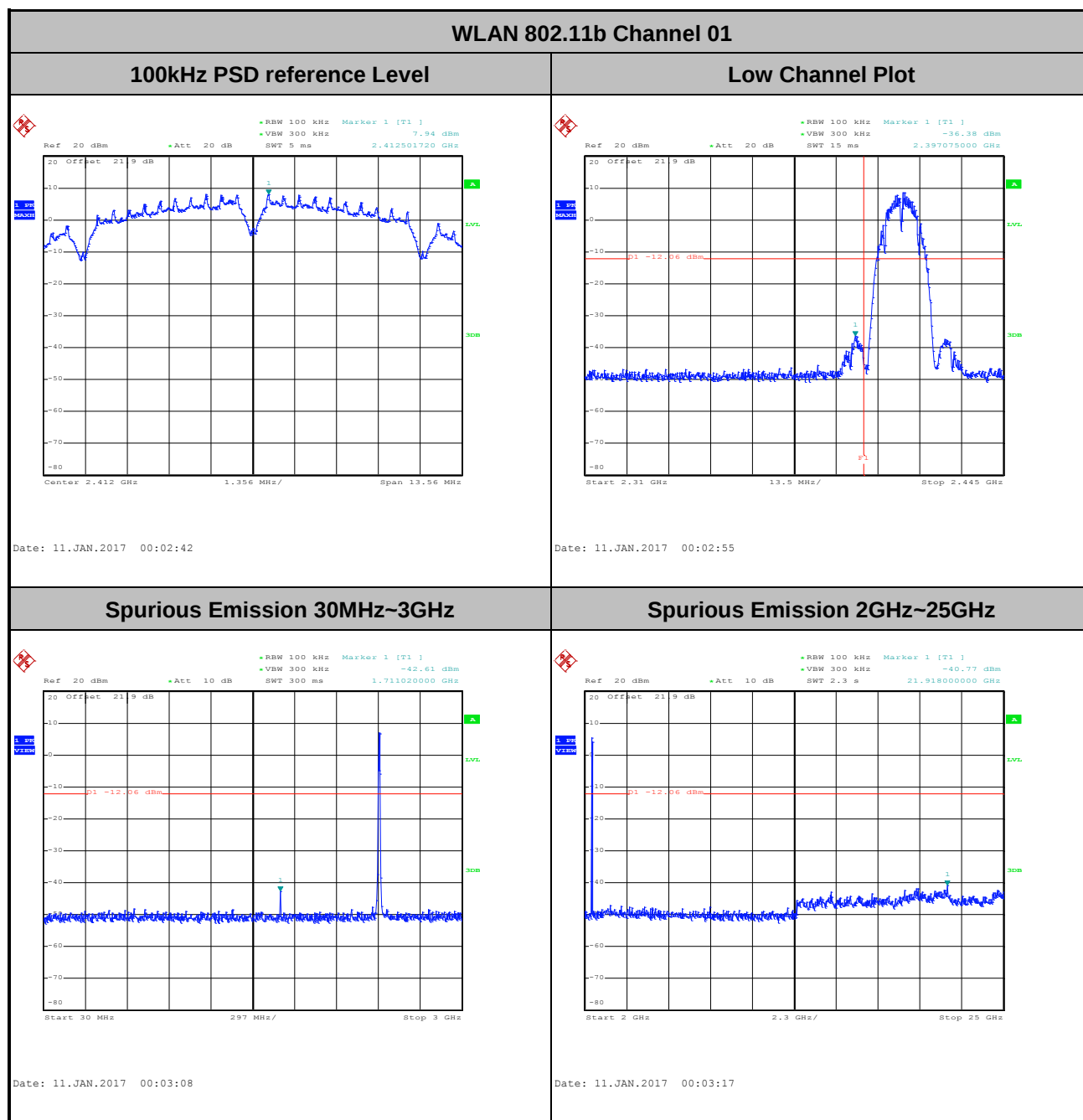
#### 3.4.4 Test Setup





## 3.4.5 Test Result of Conducted Band Edges and Spurious Emission

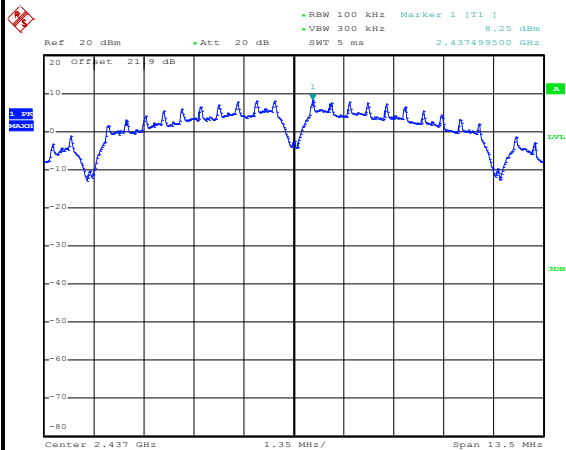
|                |            |                     |             |
|----------------|------------|---------------------|-------------|
| Test Mode :    | 802.11b    | Temperature :       | 21~25°C     |
| Test Band :    | 2.4GHz Low | Relative Humidity : | 51~54%      |
| Test Channel : | 01         | Test Engineer :     | Shiming Liu |



|                       |            |                            |             |
|-----------------------|------------|----------------------------|-------------|
| <b>Test Mode :</b>    | 802.11b    | <b>Temperature :</b>       | 21~25°C     |
| <b>Test Band :</b>    | 2.4GHz Mid | <b>Relative Humidity :</b> | 51~54%      |
| <b>Test Channel :</b> | 06         | <b>Test Engineer :</b>     | Shiming Liu |

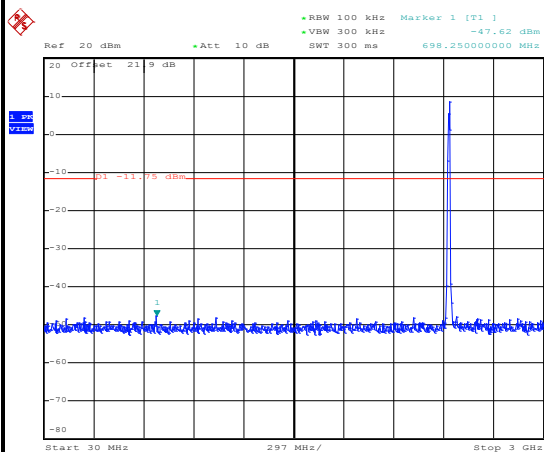
## WLAN 802.11b Channel 06

### 100kHz PSD reference Level



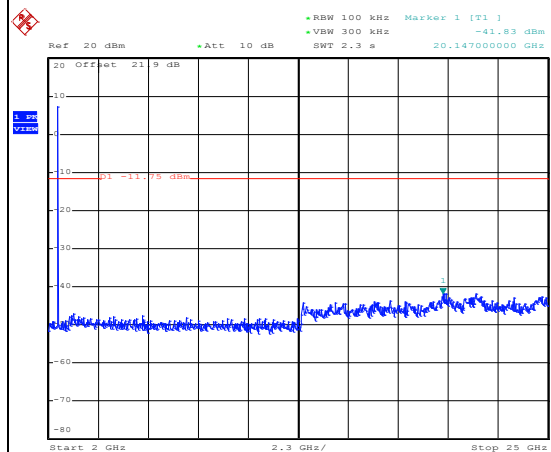
Date: 11.JAN.2017 00:09:14

## Spurious Emission 30MHz~3GHz



Date: 11.JAN.2017 00:09:26

## Spurious Emission 2GHz~25GHz



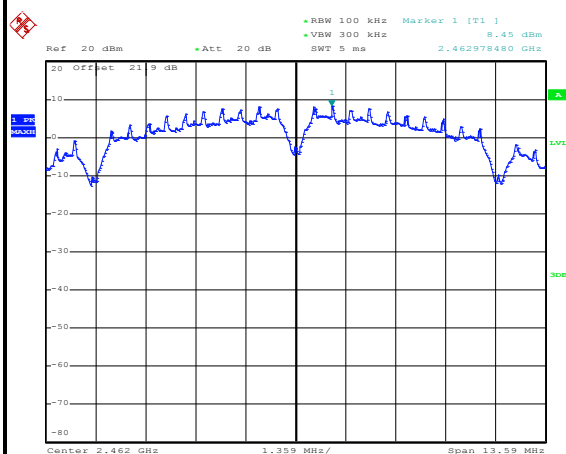
Date: 11.JAN.2017 00:09:34



|                |             |                     |             |
|----------------|-------------|---------------------|-------------|
| Test Mode :    | 802.11b     | Temperature :       | 21~25°C     |
| Test Band :    | 2.4GHz High | Relative Humidity : | 51~54%      |
| Test Channel : | 11          | Test Engineer :     | Shiming Liu |

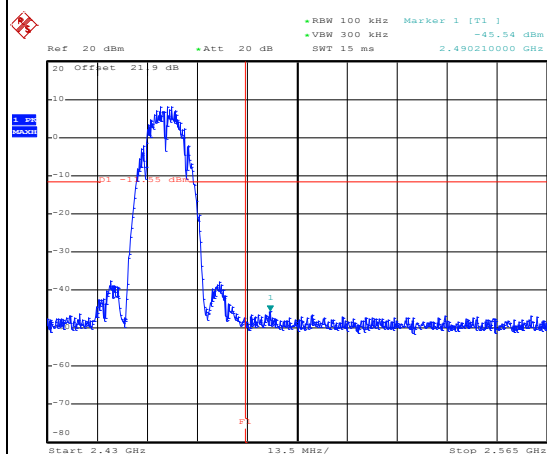
## WLAN 802.11b Channel 11

## 100kHz PSD reference Level



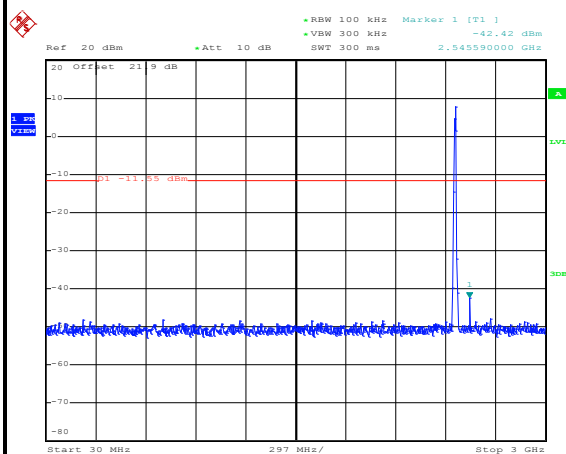
Date: 11.JAN.2017 00:13:55

## High Channel Plot



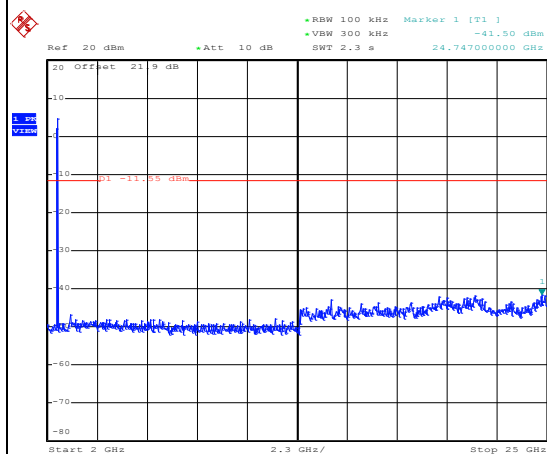
Date: 11.JAN.2017 00:14:05

## Spurious Emission 30MHz~3GHz



Date: 11.JAN.2017 00:14:26

## Spurious Emission 2GHz~25GHz



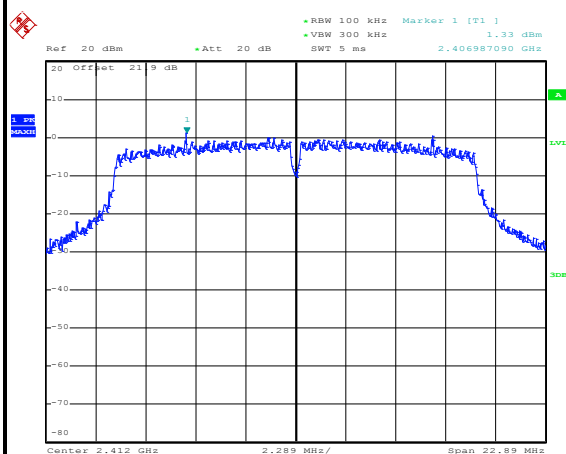
Date: 11.JAN.2017 00:14:35



|                |            |                     |             |
|----------------|------------|---------------------|-------------|
| Test Mode :    | 802.11g    | Temperature :       | 21~25°C     |
| Test Band :    | 2.4GHz Low | Relative Humidity : | 51~54%      |
| Test Channel : | 01         | Test Engineer :     | Shiming Liu |

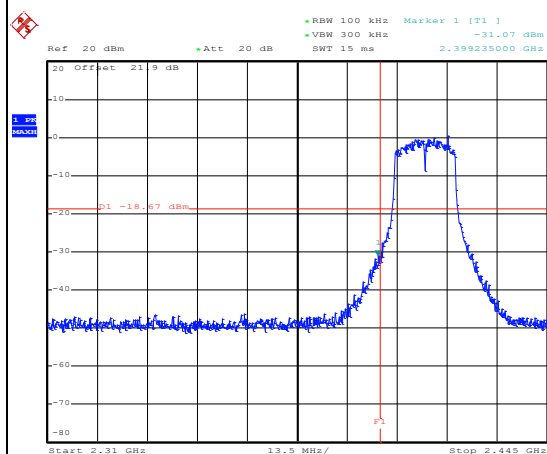
## WLAN 802.11g Channel 01

## 100kHz PSD reference Level



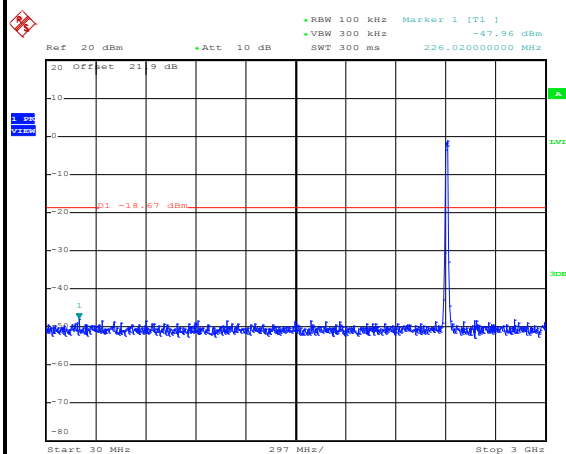
Date: 11.JAN.2017 00:18:14

## Low Channel Plot



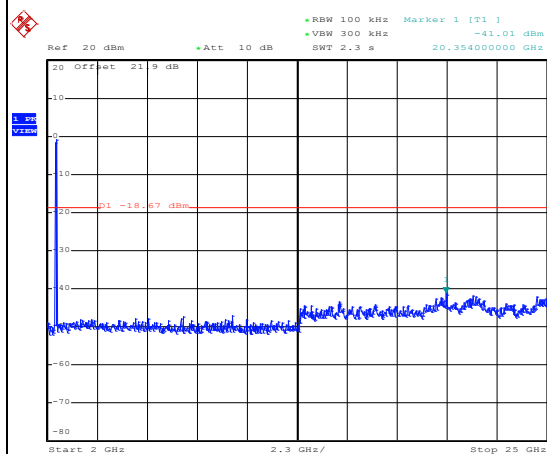
Date: 11.JAN.2017 00:18:24

## Spurious Emission 30MHz~3GHz



Date: 11.JAN.2017 00:18:36

## Spurious Emission 2GHz~25GHz



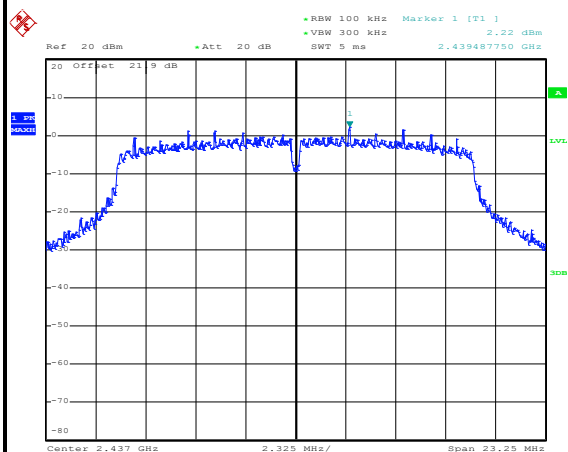
Date: 11.JAN.2017 00:18:44



|                |            |                     |             |
|----------------|------------|---------------------|-------------|
| Test Mode :    | 802.11g    | Temperature :       | 21~25°C     |
| Test Band :    | 2.4GHz Mid | Relative Humidity : | 51~54%      |
| Test Channel : | 06         | Test Engineer :     | Shiming Liu |

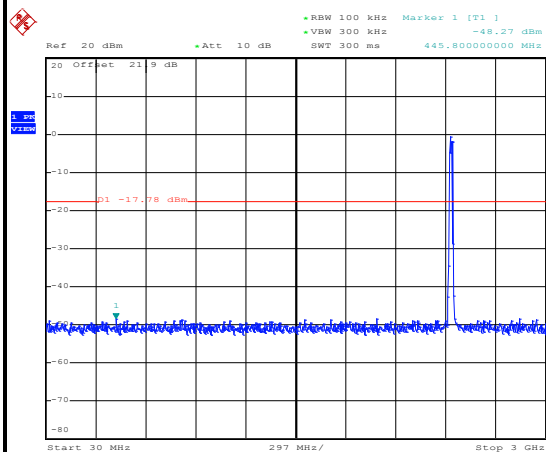
## WLAN 802.11g Channel 06

## 100kHz PSD reference Level



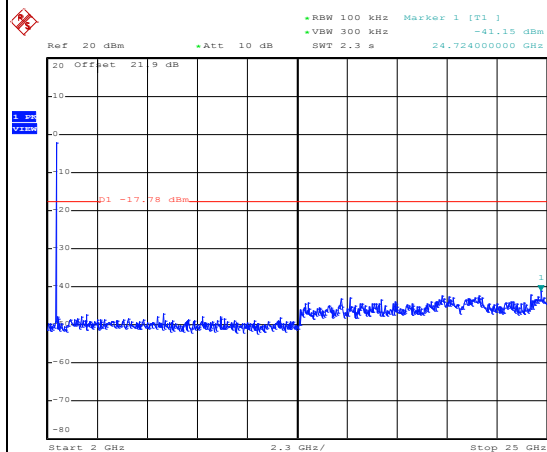
Date: 11.JAN.2017 00:20:59

## Spurious Emission 30MHz~3GHz



Date: 11.JAN.2017 00:21:11

## Spurious Emission 2GHz~25GHz



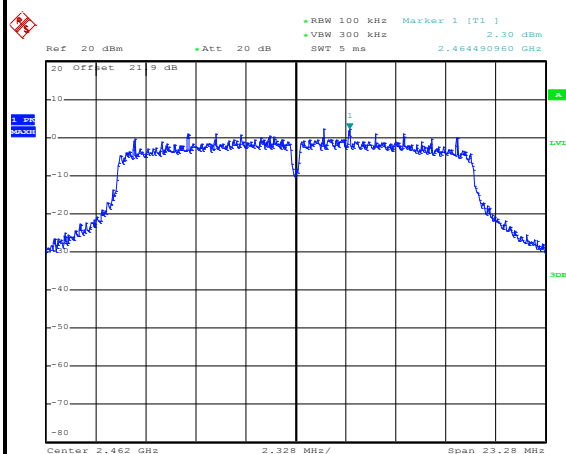
Date: 11.JAN.2017 00:21:20



|                |             |                     |             |
|----------------|-------------|---------------------|-------------|
| Test Mode :    | 802.11g     | Temperature :       | 21~25°C     |
| Test Band :    | 2.4GHz High | Relative Humidity : | 51~54%      |
| Test Channel : | 11          | Test Engineer :     | Shiming Liu |

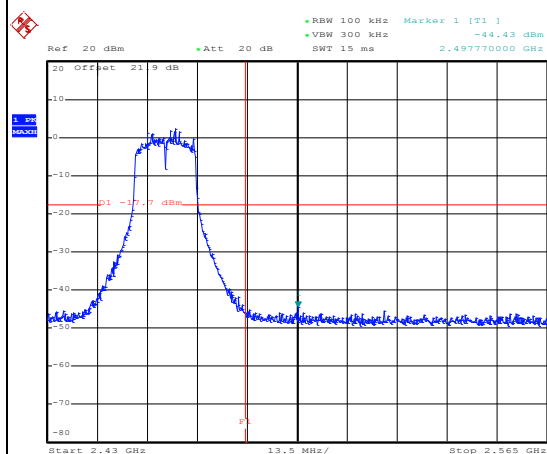
## WLAN 802.11g Channel 11

## 100kHz PSD reference Level



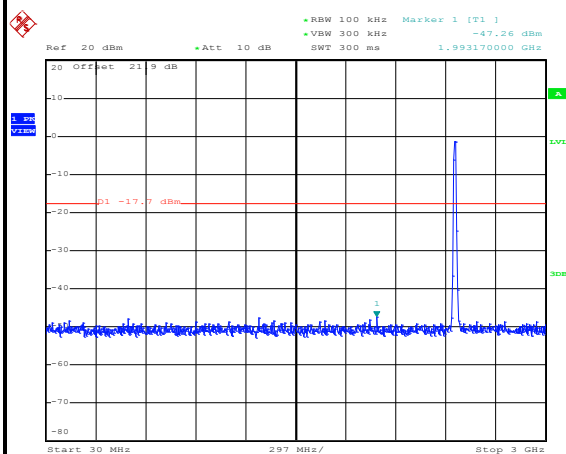
Date: 11.JAN.2017 00:25:06

## High Channel Plot



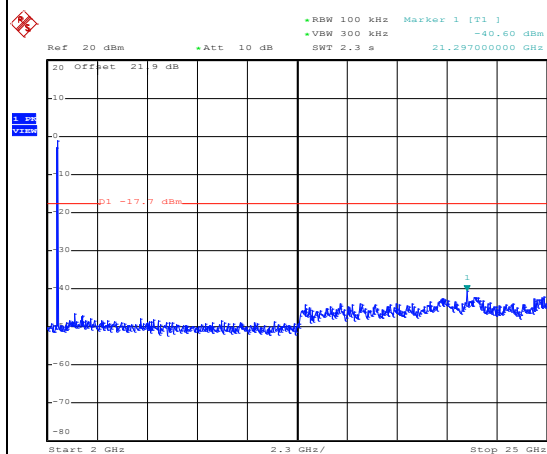
Date: 11.JAN.2017 00:25:43

## Spurious Emission 30MHz~3GHz



Date: 11.JAN.2017 00:25:57

## Spurious Emission 2GHz~25GHz



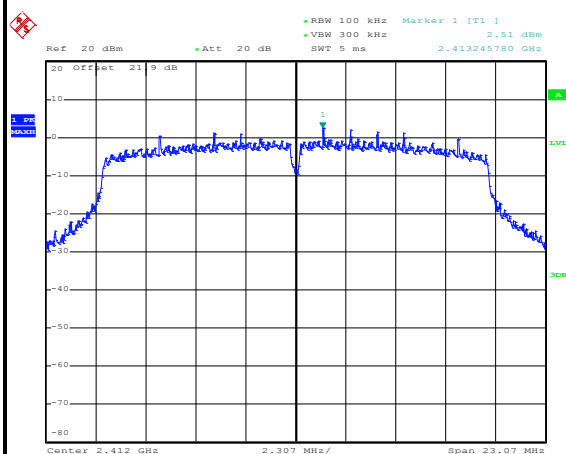
Date: 11.JAN.2017 00:26:05



|                |              |                     |             |
|----------------|--------------|---------------------|-------------|
| Test Mode :    | 802.11n HT20 | Temperature :       | 21~25°C     |
| Test Band :    | 2.4GHz Low   | Relative Humidity : | 51~54%      |
| Test Channel : | 01           | Test Engineer :     | Shiming Liu |

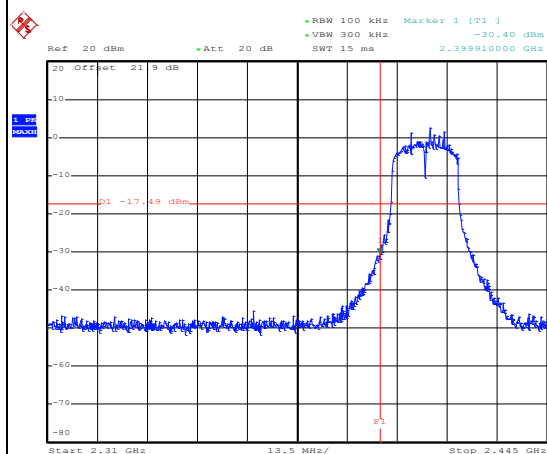
## WLAN 802.11n HT20 Channel 01

## 100kHz PSD reference Level



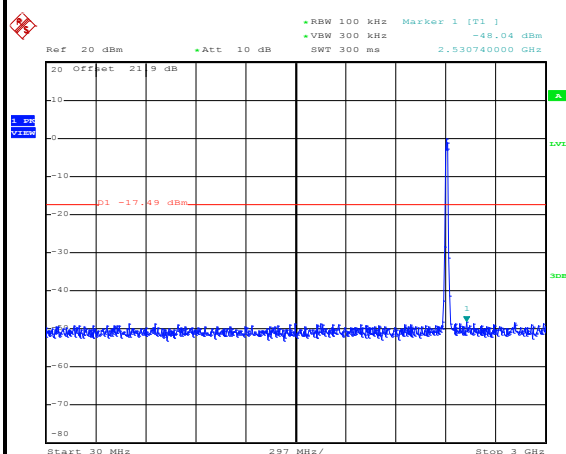
Date: 11.JAN.2017 00:28:42

## Low Channel Plot



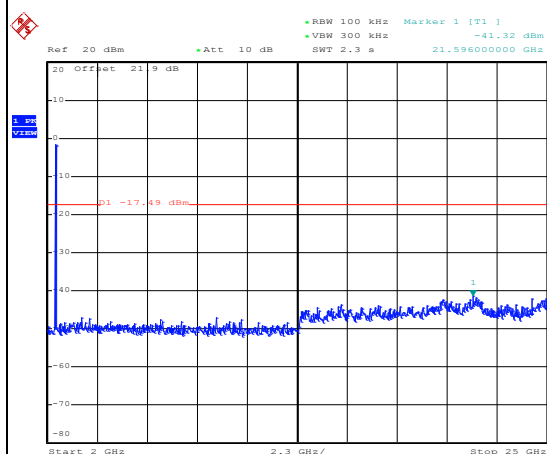
Date: 11.JAN.2017 00:28:53

## Spurious Emission 30MHz~3GHz



Date: 11.JAN.2017 00:29:09

## Spurious Emission 2GHz~25GHz



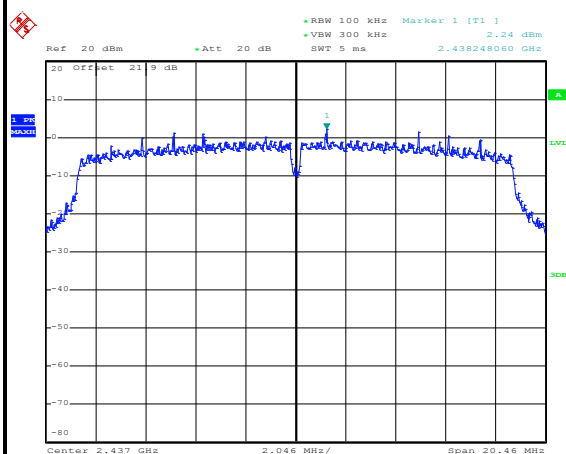
Date: 11.JAN.2017 00:29:17



|                |              |                     |             |
|----------------|--------------|---------------------|-------------|
| Test Mode :    | 802.11n HT20 | Temperature :       | 21~25°C     |
| Test Band :    | 2.4GHz Mid   | Relative Humidity : | 51~54%      |
| Test Channel : | 06           | Test Engineer :     | Shiming Liu |

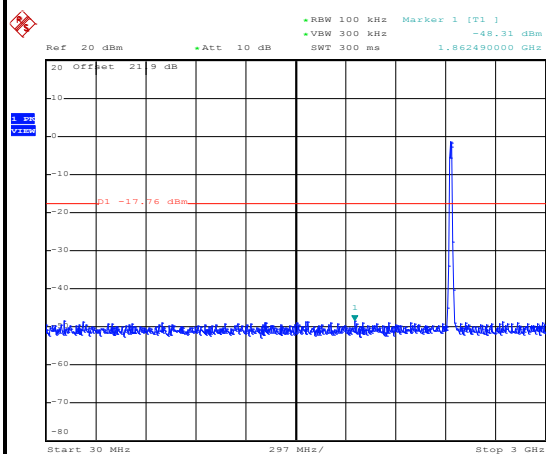
## WLAN 802.11n HT20 Channel 06

## 100kHz PSD reference Level



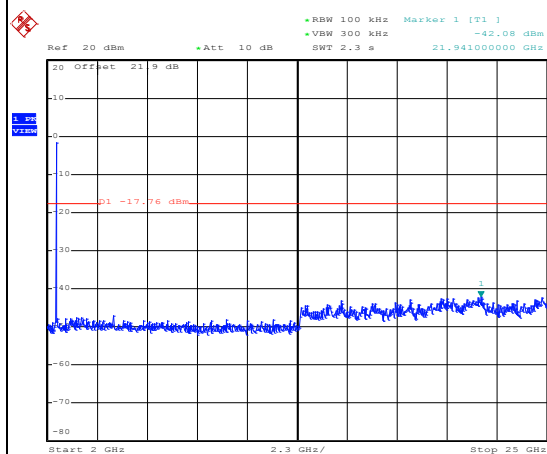
Date: 11.JAN.2017 00:37:21

## Spurious Emission 30MHz~3GHz



Date: 11.JAN.2017 00:37:35

## Spurious Emission 2GHz~25GHz



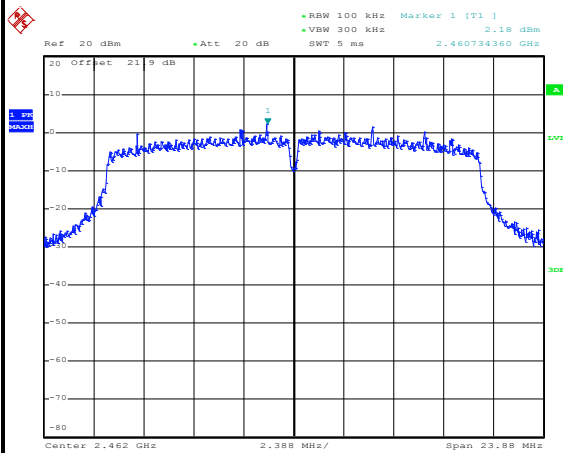
Date: 11.JAN.2017 00:37:43



|                |              |                     |             |
|----------------|--------------|---------------------|-------------|
| Test Mode :    | 802.11n HT20 | Temperature :       | 21~25°C     |
| Test Band :    | 2.4GHz High  | Relative Humidity : | 51~54%      |
| Test Channel : | 11           | Test Engineer :     | Shiming Liu |

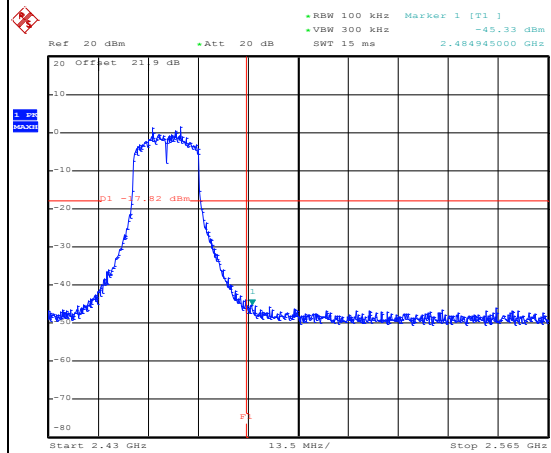
## WLAN 802.11n HT20 Channel 11

## 100kHz PSD reference Level



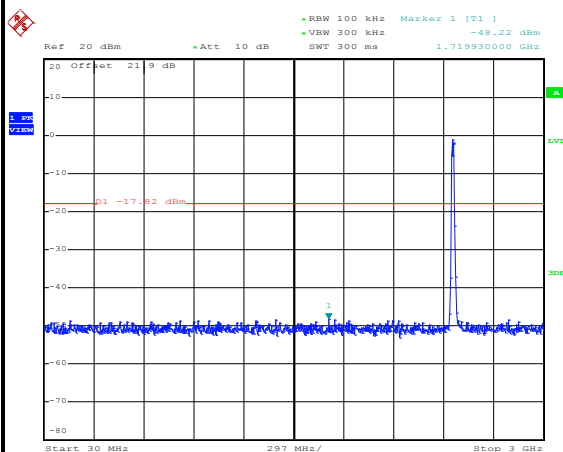
Date: 11.JAN.2017 00:40:54

## High Channel Plot



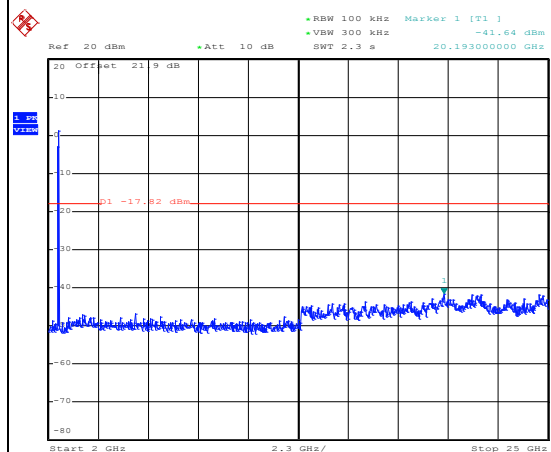
Date: 11.JAN.2017 00:41:09

## Spurious Emission 30MHz~3GHz



Date: 11.JAN.2017 00:41:33

## Spurious Emission 2GHz~25GHz



Date: 11.JAN.2017 00:41:41



### 3.5 Radiated Band Edges and Spurious Emission Measurement

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

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

#### 3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.5.3 Test Procedures

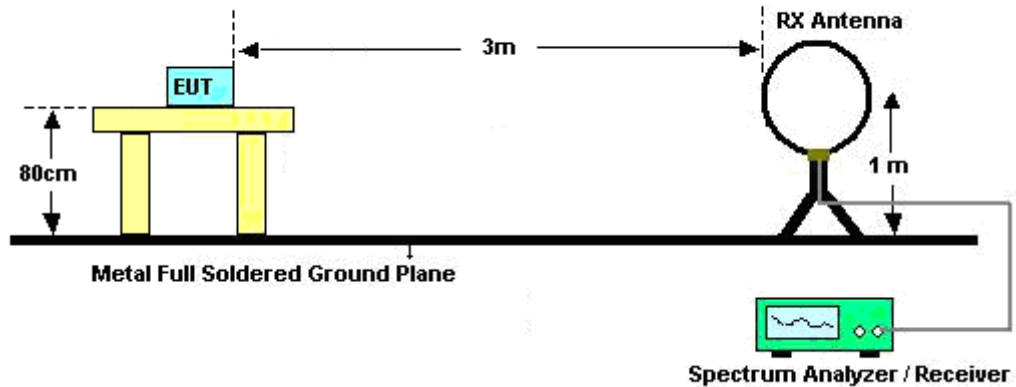
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.

For average measurement:

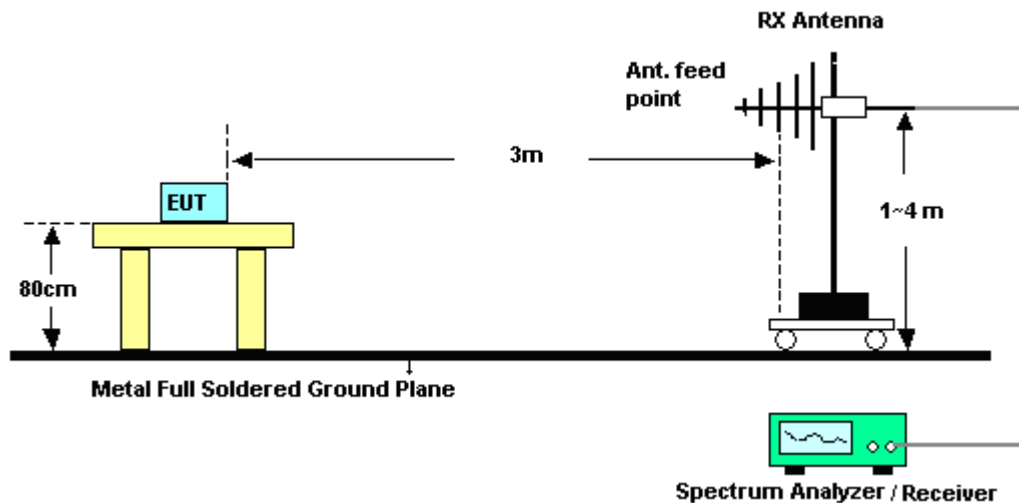
    - VBW = 10 Hz, when duty cycle is no less than 98 percent.
    - VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

### 3.5.4 Test Setup

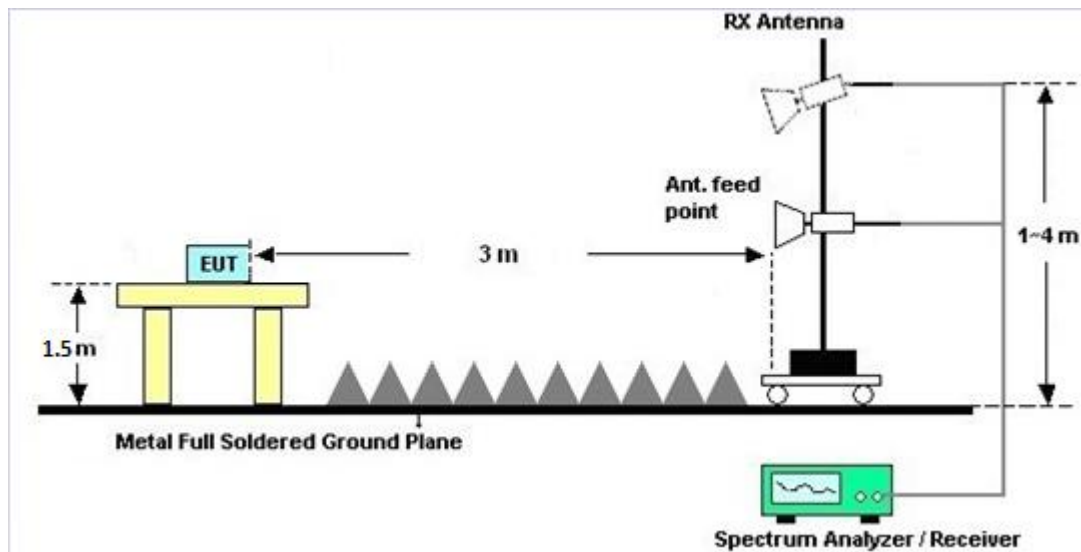
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

### 3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

### 3.5.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

## 3.6 AC Conducted Emission Measurement

### 3.6.1 Limit of AC Conducted Emission

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

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

\*Decreases with the logarithm of the frequency.

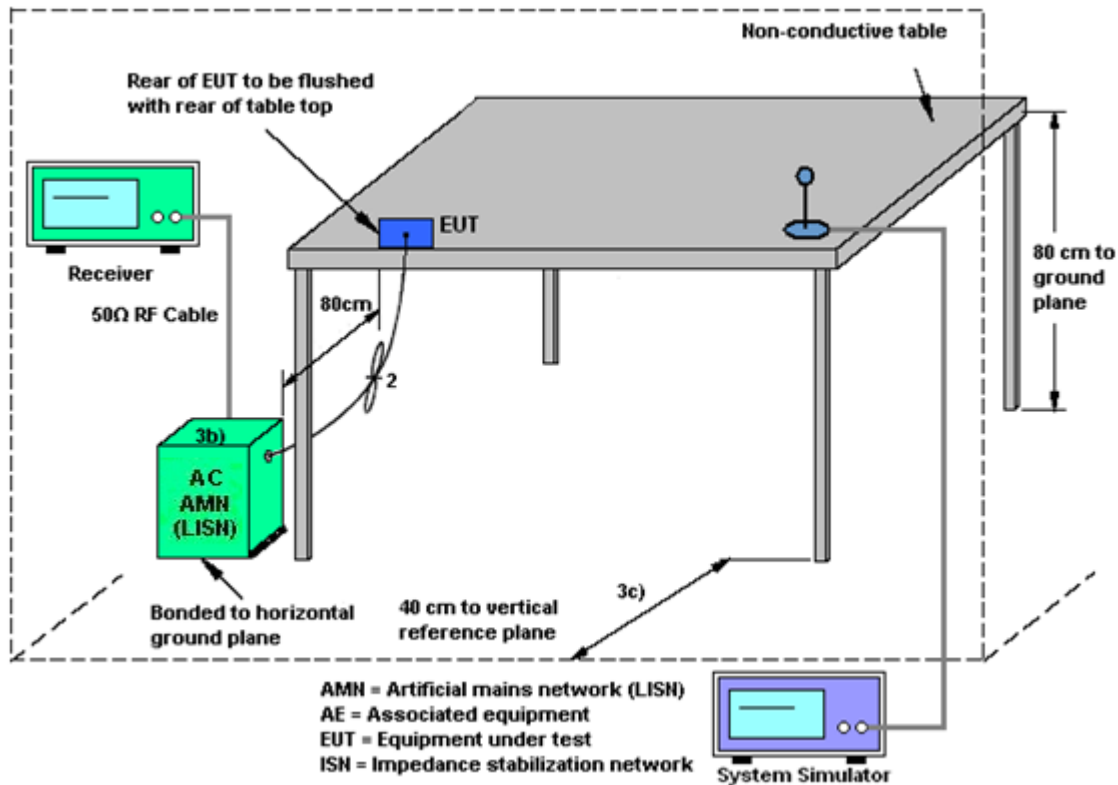
### 3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.6.3 Test Procedures

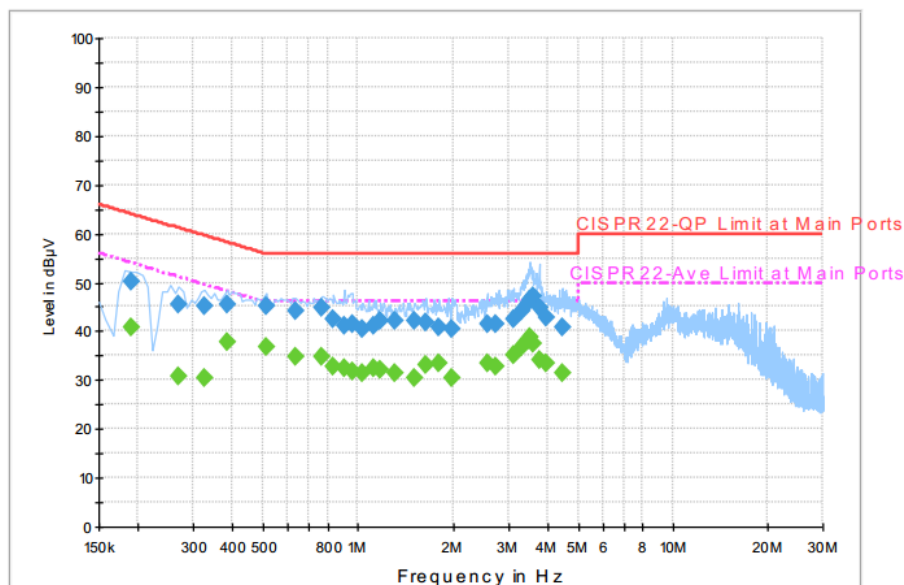
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

### 3.6.4 Test Setup



### 3.6.5 Test Result of AC Conducted Emission

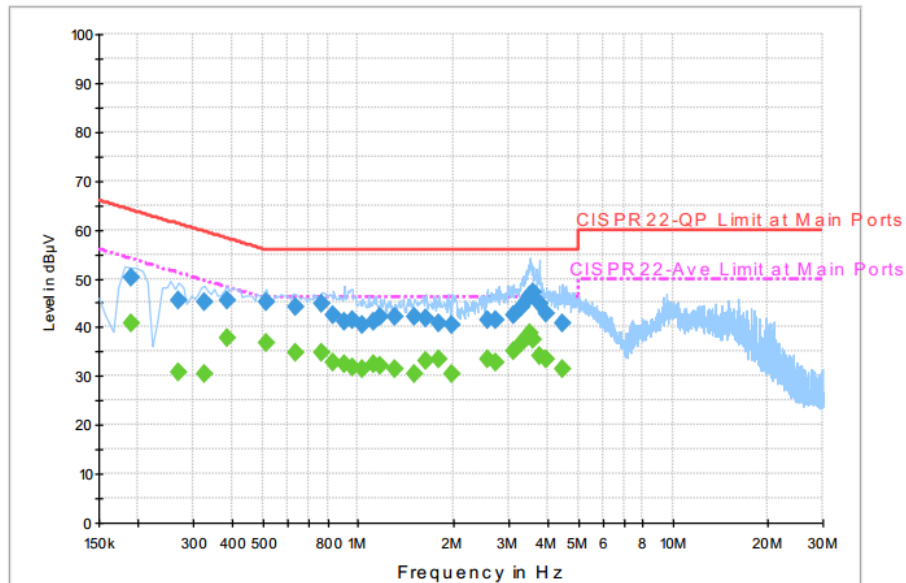
|                        |                                                                                                                                                         |                            |        |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                                                  | <b>Temperature :</b>       | 21~23℃ |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                                            | <b>Relative Humidity :</b> | 51~53% |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                                           | <b>Phase :</b>             | Line   |
| <b>Function Type :</b> | WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3 |                            |        |



#### Final Result : Quasi-Peak

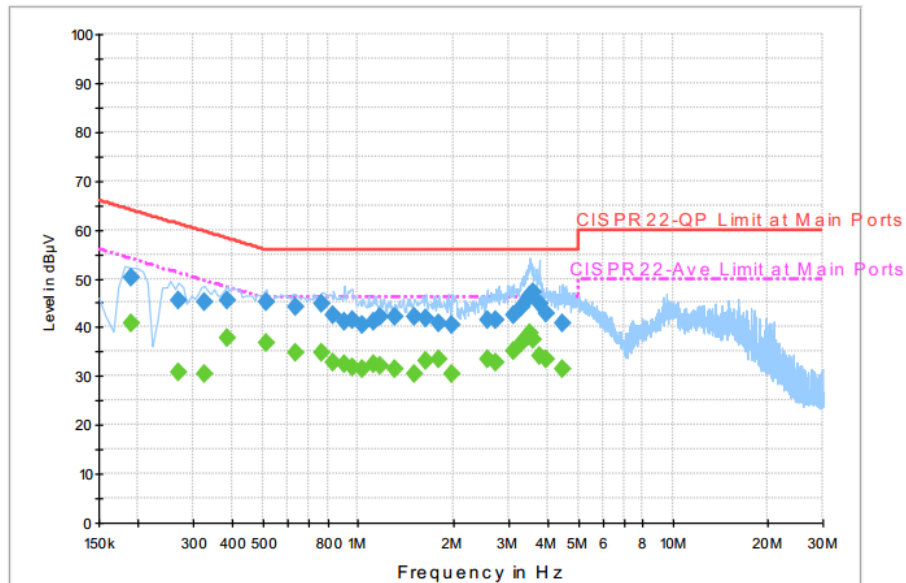
| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.190000        | 50.0              | Off    | L1   | 19.6       | 14.0        | 64.0         |
| 0.270000        | 45.5              | Off    | L1   | 19.6       | 15.6        | 61.1         |
| 0.326000        | 45.0              | Off    | L1   | 19.6       | 14.6        | 59.6         |
| 0.382000        | 45.5              | Off    | L1   | 19.6       | 12.7        | 58.2         |
| 0.510000        | 45.0              | Off    | L1   | 19.6       | 11.0        | 56.0         |
| 0.630000        | 44.1              | Off    | L1   | 19.5       | 11.9        | 56.0         |
| 0.766000        | 44.8              | Off    | L1   | 19.6       | 11.2        | 56.0         |
| 0.838000        | 42.6              | Off    | L1   | 19.6       | 13.4        | 56.0         |
| 0.902000        | 41.2              | Off    | L1   | 19.6       | 14.8        | 56.0         |
| 0.958000        | 41.5              | Off    | L1   | 19.6       | 14.5        | 56.0         |
| 1.038000        | 40.4              | Off    | L1   | 19.6       | 15.6        | 56.0         |
| 1.118000        | 41.0              | Off    | L1   | 19.6       | 15.0        | 56.0         |
| 1.182000        | 42.1              | Off    | L1   | 19.6       | 13.9        | 56.0         |
| 1.310000        | 42.1              | Off    | L1   | 19.6       | 13.9        | 56.0         |
| 1.502000        | 42.2              | Off    | L1   | 19.6       | 13.8        | 56.0         |
| 1.646000        | 41.7              | Off    | L1   | 19.6       | 14.3        | 56.0         |

|                        |                                                                                                                                                         |                            |         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                                                  | <b>Temperature :</b>       | 21~23°C |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                                            | <b>Relative Humidity :</b> | 51~53%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                                           | <b>Phase :</b>             | Line    |
| <b>Function Type :</b> | WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3 |                            |         |


**Final Result : Quasi-Peak**

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 1.814000        | 40.6              | Off    | L1   | 19.6       | 15.4        | 56.0         |
| 1.990000        | 40.5              | Off    | L1   | 19.6       | 15.5        | 56.0         |
| 2.574000        | 41.4              | Off    | L1   | 19.2       | 14.6        | 56.0         |
| 2.734000        | 41.4              | Off    | L1   | 19.3       | 14.6        | 56.0         |
| 3.134000        | 42.6              | Off    | L1   | 19.5       | 13.4        | 56.0         |
| 3.318000        | 44.2              | Off    | L1   | 19.5       | 11.8        | 56.0         |
| 3.478000        | 45.9              | Off    | L1   | 19.5       | 10.1        | 56.0         |
| 3.526000        | 46.5              | Off    | L1   | 19.5       | 9.5         | 56.0         |
| 3.614000        | 47.2              | Off    | L1   | 19.5       | 8.8         | 56.0         |
| 3.758000        | 44.7              | Off    | L1   | 19.6       | 11.3        | 56.0         |
| 3.974000        | 42.8              | Off    | L1   | 19.6       | 13.2        | 56.0         |
| 4.462000        | 40.9              | Off    | L1   | 19.6       | 15.1        | 56.0         |

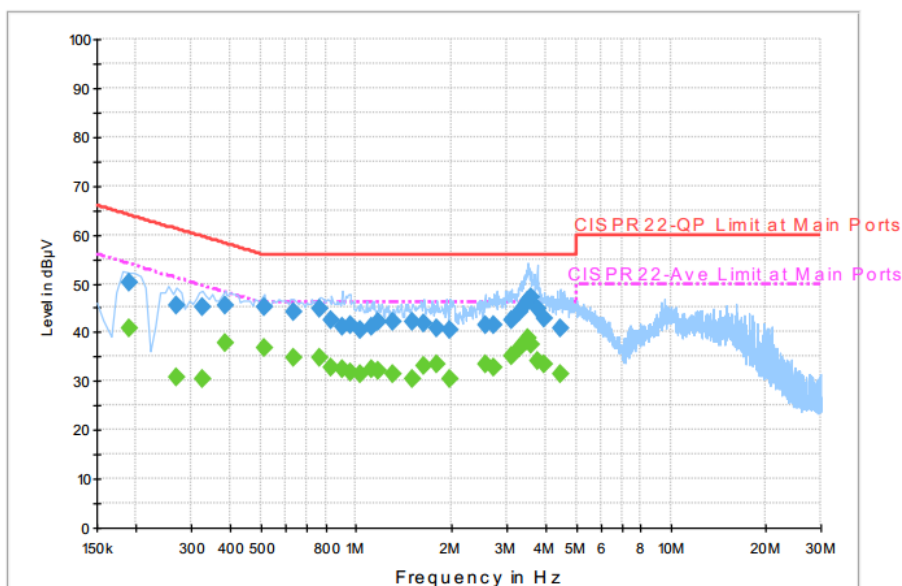
|                        |                                                                                                                                                         |                            |         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                                                  | <b>Temperature :</b>       | 21~23°C |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                                            | <b>Relative Humidity :</b> | 51~53%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                                           | <b>Phase :</b>             | Line    |
| <b>Function Type :</b> | WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3 |                            |         |


**Final Result : Average**

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.190000        | 40.7           | Off    | L1   | 19.6       | 13.3        | 54.0         |
| 0.270000        | 30.8           | Off    | L1   | 19.6       | 20.3        | 51.1         |
| 0.326000        | 30.5           | Off    | L1   | 19.6       | 19.1        | 49.6         |
| 0.382000        | 37.7           | Off    | L1   | 19.6       | 10.5        | 48.2         |
| 0.510000        | 36.7           | Off    | L1   | 19.6       | 9.3         | 46.0         |
| 0.630000        | 34.7           | Off    | L1   | 19.5       | 11.3        | 46.0         |
| 0.766000        | 34.9           | Off    | L1   | 19.6       | 11.1        | 46.0         |
| 0.838000        | 32.7           | Off    | L1   | 19.6       | 13.3        | 46.0         |
| 0.902000        | 32.4           | Off    | L1   | 19.6       | 13.6        | 46.0         |
| 0.958000        | 31.9           | Off    | L1   | 19.6       | 14.1        | 46.0         |
| 1.038000        | 31.3           | Off    | L1   | 19.6       | 14.7        | 46.0         |
| 1.118000        | 32.4           | Off    | L1   | 19.6       | 13.6        | 46.0         |
| 1.182000        | 32.0           | Off    | L1   | 19.6       | 14.0        | 46.0         |
| 1.310000        | 31.5           | Off    | L1   | 19.6       | 14.5        | 46.0         |
| 1.502000        | 30.4           | Off    | L1   | 19.6       | 15.6        | 46.0         |
| 1.646000        | 33.2           | Off    | L1   | 19.6       | 12.8        | 46.0         |

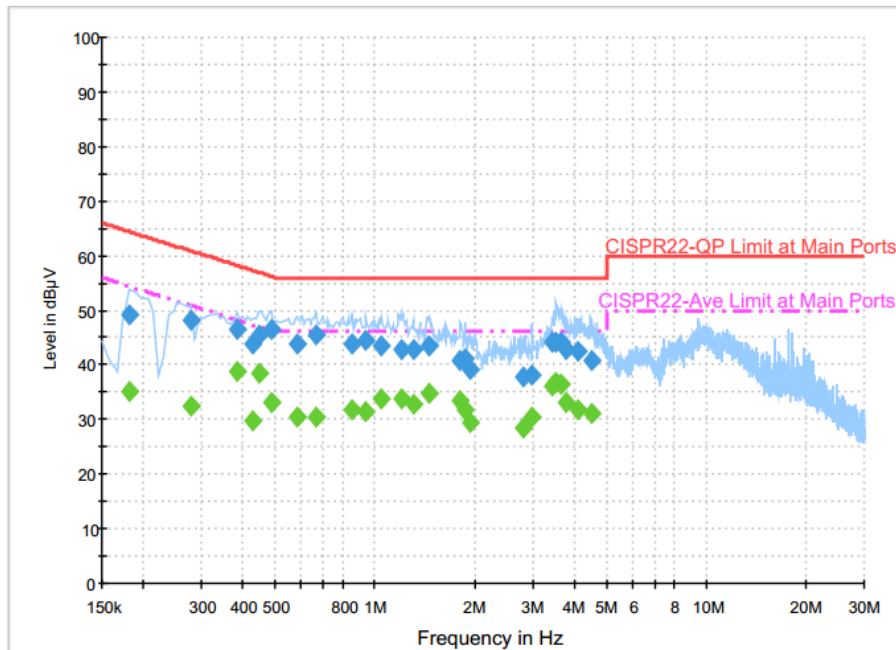


|                        |                                                                                                                                                         |                            |         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                                                  | <b>Temperature :</b>       | 21~23°C |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                                            | <b>Relative Humidity :</b> | 51~53%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                                           | <b>Phase :</b>             | Line    |
| <b>Function Type :</b> | WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3 |                            |         |

**Final Result : Average**

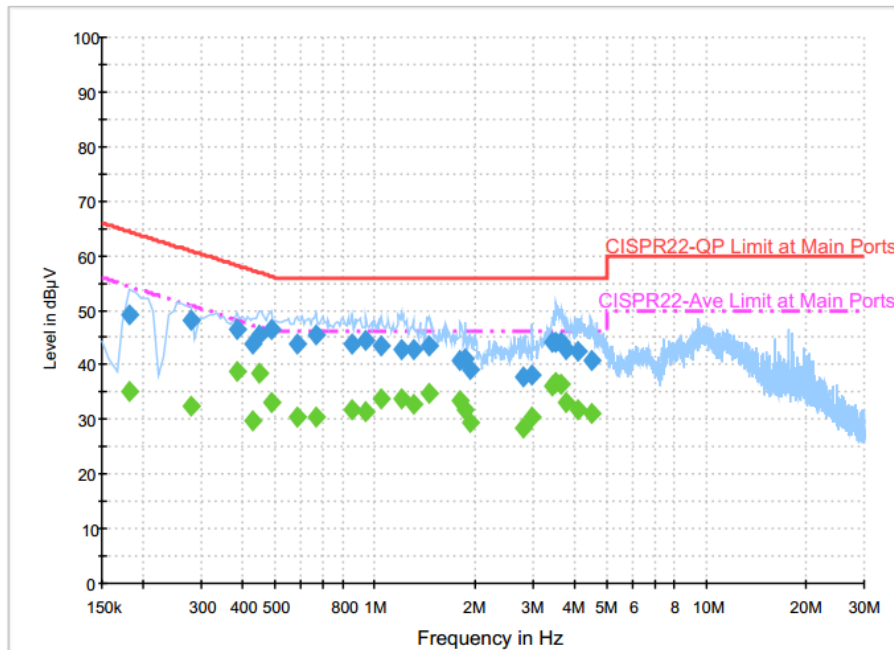
| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 1.814000        | 33.6           | Off    | L1   | 19.6       | 12.4        | 46.0         |
| 1.990000        | 30.6           | Off    | L1   | 19.6       | 15.4        | 46.0         |
| 2.574000        | 33.4           | Off    | L1   | 19.2       | 12.6        | 46.0         |
| 2.734000        | 32.8           | Off    | L1   | 19.3       | 13.2        | 46.0         |
| 3.134000        | 35.0           | Off    | L1   | 19.5       | 11.0        | 46.0         |
| 3.318000        | 36.7           | Off    | L1   | 19.5       | 9.3         | 46.0         |
| 3.478000        | 38.1           | Off    | L1   | 19.5       | 7.9         | 46.0         |
| 3.526000        | 38.6           | Off    | L1   | 19.5       | 7.4         | 46.0         |
| 3.614000        | 37.5           | Off    | L1   | 19.5       | 8.5         | 46.0         |
| 3.758000        | 34.1           | Off    | L1   | 19.6       | 11.9        | 46.0         |
| 3.974000        | 33.4           | Off    | L1   | 19.6       | 12.6        | 46.0         |
| 4.462000        | 31.5           | Off    | L1   | 19.6       | 14.5        | 46.0         |

|                        |                                                                                                                                                         |                            |         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                                                  | <b>Temperature :</b>       | 21~23°C |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                                            | <b>Relative Humidity :</b> | 51~53%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                                           | <b>Phase :</b>             | Neutral |
| <b>Function Type :</b> | WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3 |                            |         |


**Final Result : Quasi-Peak**

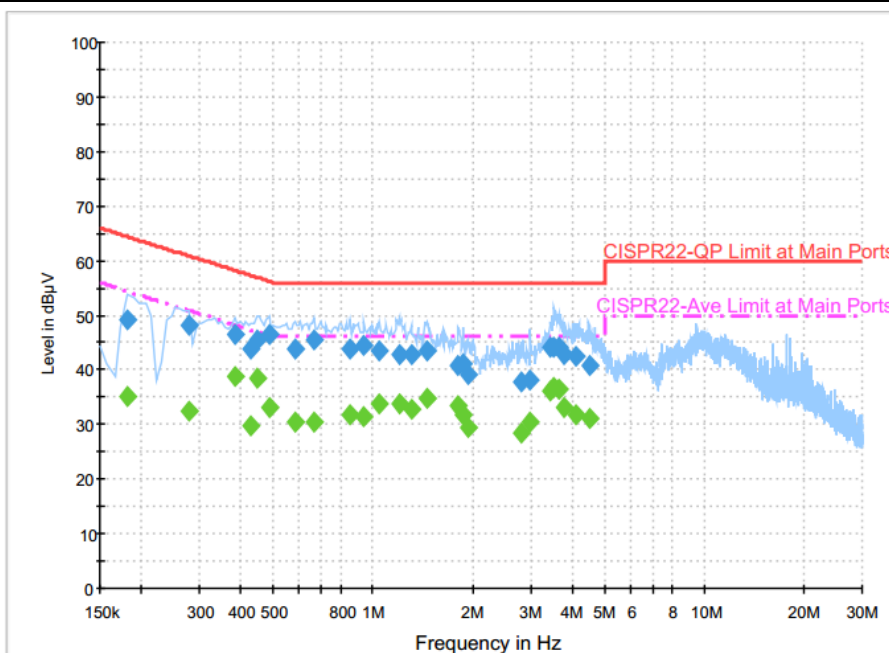
| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.182000        | 49.0              | Off    | N    | 19.5       | 15.4        | 64.4         |
| 0.278000        | 48.2              | Off    | N    | 19.5       | 12.7        | 60.9         |
| 0.382000        | 46.4              | Off    | N    | 19.5       | 11.8        | 58.2         |
| 0.430000        | 43.8              | Off    | N    | 19.5       | 13.5        | 57.3         |
| 0.446000        | 45.6              | Off    | N    | 19.5       | 11.3        | 56.9         |
| 0.486000        | 46.4              | Off    | N    | 19.6       | 9.8         | 56.2         |
| 0.582000        | 43.8              | Off    | N    | 19.5       | 12.2        | 56.0         |
| 0.662000        | 45.4              | Off    | N    | 19.5       | 10.6        | 56.0         |
| 0.854000        | 43.9              | Off    | N    | 19.5       | 12.1        | 56.0         |
| 0.942000        | 44.4              | Off    | N    | 19.5       | 11.6        | 56.0         |

|                        |                                                                                                                                                         |                            |         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                                                  | <b>Temperature :</b>       | 21~23°C |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                                            | <b>Relative Humidity :</b> | 51~53%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                                           | <b>Phase :</b>             | Neutral |
| <b>Function Type :</b> | WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3 |                            |         |


**Final Result : Quasi-Peak**

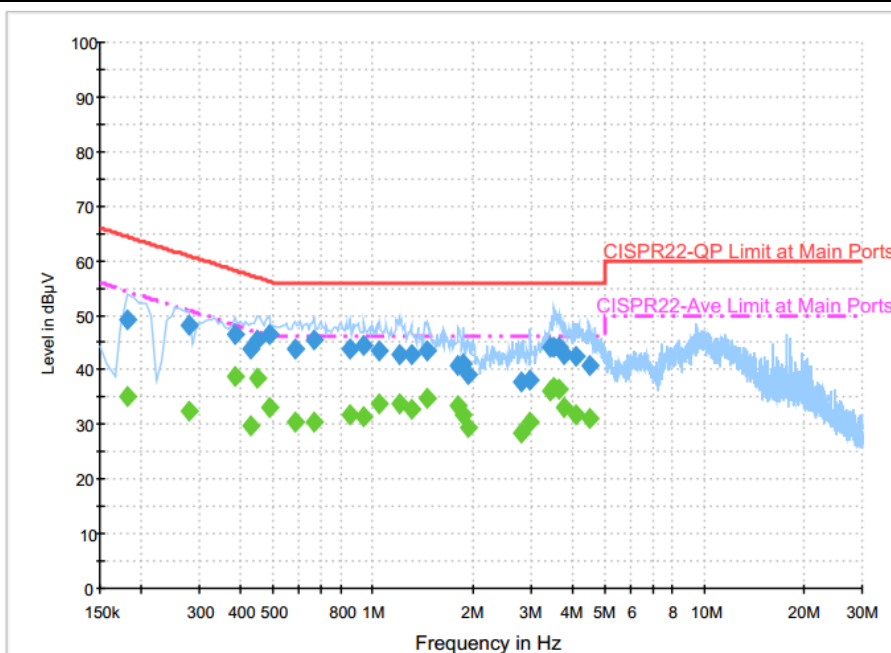
| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 1.046000        | 43.3              | Off    | N    | 19.6       | 12.7        | 56.0         |
| 1.198000        | 42.9              | Off    | N    | 19.6       | 13.1        | 56.0         |
| 1.302000        | 42.8              | Off    | N    | 19.6       | 13.2        | 56.0         |
| 1.454000        | 43.4              | Off    | N    | 19.6       | 12.6        | 56.0         |
| 1.814000        | 40.9              | Off    | N    | 19.6       | 15.1        | 56.0         |
| 1.870000        | 41.1              | Off    | N    | 19.6       | 14.9        | 56.0         |
| 1.950000        | 39.2              | Off    | N    | 19.6       | 16.8        | 56.0         |
| 2.814000        | 37.9              | Off    | N    | 19.4       | 18.1        | 56.0         |
| 2.990000        | 38.2              | Off    | N    | 19.4       | 17.8        | 56.0         |
| 3.454000        | 44.1              | Off    | N    | 19.5       | 11.9        | 56.0         |
| 3.534000        | 44.0              | Off    | N    | 19.5       | 12.0        | 56.0         |
| 3.630000        | 44.2              | Off    | N    | 19.5       | 11.8        | 56.0         |
| 3.782000        | 42.7              | Off    | N    | 19.6       | 13.3        | 56.0         |
| 4.102000        | 42.6              | Off    | N    | 19.6       | 13.4        | 56.0         |
| 4.518000        | 40.9              | Off    | N    | 19.6       | 15.1        | 56.0         |

|                        |                                                                                                                                                         |                            |         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                                                  | <b>Temperature :</b>       | 21~23℃  |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                                            | <b>Relative Humidity :</b> | 51~53%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                                           | <b>Phase :</b>             | Neutral |
| <b>Function Type :</b> | WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3 |                            |         |


**Final Result : Average**

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.182000        | 35.0           | Off    | N    | 19.5       | 19.4        | 54.4         |
| 0.278000        | 32.6           | Off    | N    | 19.5       | 18.3        | 50.9         |
| 0.382000        | 38.9           | Off    | N    | 19.5       | 9.3         | 48.2         |
| 0.430000        | 29.7           | Off    | N    | 19.5       | 17.6        | 47.3         |
| 0.446000        | 38.4           | Off    | N    | 19.5       | 8.5         | 46.9         |
| 0.486000        | 33.2           | Off    | N    | 19.6       | 13.0        | 46.2         |
| 0.582000        | 30.5           | Off    | N    | 19.5       | 15.5        | 46.0         |
| 0.662000        | 30.6           | Off    | N    | 19.5       | 15.4        | 46.0         |
| 0.854000        | 31.8           | Off    | N    | 19.5       | 14.2        | 46.0         |
| 0.942000        | 31.3           | Off    | N    | 19.5       | 14.7        | 46.0         |

|                        |                                                                                                                                                         |                            |         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                                                  | <b>Temperature :</b>       | 21~23℃  |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                                            | <b>Relative Humidity :</b> | 51~53%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                                           | <b>Phase :</b>             | Neutral |
| <b>Function Type :</b> | WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3 |                            |         |


**Final Result : Average**

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 1.046000        | 33.9           | Off    | N    | 19.6       | 12.1        | 46.0         |
| 1.198000        | 33.6           | Off    | N    | 19.6       | 12.4        | 46.0         |
| 1.302000        | 32.7           | Off    | N    | 19.6       | 13.3        | 46.0         |
| 1.454000        | 34.9           | Off    | N    | 19.6       | 11.1        | 46.0         |
| 1.814000        | 33.3           | Off    | N    | 19.6       | 12.7        | 46.0         |
| 1.870000        | 31.9           | Off    | N    | 19.6       | 14.1        | 46.0         |
| 1.950000        | 29.3           | Off    | N    | 19.6       | 16.7        | 46.0         |
| 2.814000        | 28.4           | Off    | N    | 19.4       | 17.6        | 46.0         |
| 2.990000        | 30.4           | Off    | N    | 19.4       | 15.6        | 46.0         |
| 3.454000        | 36.0           | Off    | N    | 19.5       | 10.0        | 46.0         |
| 3.534000        | 36.9           | Off    | N    | 19.5       | 9.1         | 46.0         |
| 3.630000        | 36.5           | Off    | N    | 19.5       | 9.5         | 46.0         |
| 3.782000        | 33.2           | Off    | N    | 19.6       | 12.8        | 46.0         |
| 4.102000        | 31.9           | Off    | N    | 19.6       | 14.1        | 46.0         |
| 4.518000        | 31.0           | Off    | N    | 19.6       | 15.0        | 46.0         |



## **3.7 Antenna Requirements**

### **3.7.1 Standard Applicable**

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the Antenna exceeds 6 dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

### **3.7.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

### **3.7.3 Antenna Gain**

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



## 4 List of Measuring Equipment

| Instrument           | Manufacturer    | Model No.    | Serial No.  | Characteristics | Calibration Date | Test Date                     | Due Date      | Remark                |
|----------------------|-----------------|--------------|-------------|-----------------|------------------|-------------------------------|---------------|-----------------------|
| Power Meter          | Anritsu         | ML2495A      | 0932001     | 300MHz~40GHz    | Sep. 29, 2016    | Jan. 10, 2017 ~ Jan. 11, 2017 | Sep. 28, 2017 | Conducted (TH05-HY)   |
| Power Sensor         | Anritsu         | MA2411B      | 0846202     | 300MHz~40GHz    | Sep. 29, 2016    | Jan. 10, 2017 ~ Jan. 11, 2017 | Sep. 28, 2017 | Conducted (TH05-HY)   |
| Spectrum Analyzer    | Rohde & Schwarz | FSP40        | 100055      | 9kHz-40GHz      | Jul. 17, 2016    | Jan. 10, 2017 ~ Jan. 11, 2017 | Jul. 16, 2017 | Conducted (TH05-HY)   |
| Amplifier            | SONOMA          | 310N         | 187312      | 9kHz~1GHz       | Nov. 10, 2016    | Jan. 17, 2017 ~ Feb. 02, 2017 | Nov. 09, 2017 | Radiation (03CH11-HY) |
| Loop Antenna         | Rohde & Schwarz | HFH2-Z2      | 100315      | 9 kHz~30 MHz    | Sep. 02, 2015    | Jan. 17, 2017 ~ Feb. 02, 2017 | Sep. 01, 2017 | Radiation (03CH11-HY) |
| Bilog Antenna        | TESEQ           | CBL 6111D    | 35414       | 30MHz~1GHz      | Oct. 15, 2016    | Jan. 17, 2017 ~ Feb. 02, 2017 | Oct. 14, 2017 | Radiation (03CH11-HY) |
| Horn Antenna         | SCHWARZBECK     | BBHA 9120 D  | 9120D-1522  | 1GHz ~ 18GHz    | Mar. 30, 2016    | Jan. 17, 2017 ~ Feb. 02, 2017 | Mar. 31, 2017 | Radiation (03CH11-HY) |
| Preamplifier         | Keysight        | 83017A       | MY53270080  | 1GHz~26.5GHz    | Nov. 10, 2016    | Jan. 17, 2017 ~ Feb. 02, 2017 | Nov. 09, 2017 | Radiation (03CH11-HY) |
| Spectrum Analyzer    | Keysight        | N9010A       | MY52350276  | 10Hz ~ 44GHz    | Mar. 21, 2016    | Jan. 17, 2017 ~ Feb. 02, 2017 | Mar. 20, 2017 | Radiation (03CH11-HY) |
| Antenna Mast         | EMEC            | AM-BS-4500-B | N/A         | 1~4m            | N/A              | Jan. 17, 2017 ~ Feb. 02, 2017 | N/A           | Radiation (03CH11-HY) |
| Turn Table           | EMEC            | TT 2000      | N/A         | 0~360 Degree    | N/A              | Jan. 17, 2017 ~ Feb. 02, 2017 | N/A           | Radiation (03CH11-HY) |
| Preamplifier         | MITEQ           | TTA0204      | 1872107     | 2GHz~40GHz      | Feb. 15, 2016    | Jan. 17, 2017 ~ Feb. 02, 2017 | Feb. 14, 2017 | Radiation (03CH11-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK     | BBHA 9170    | BBHA9170584 | 18GHz- 40GHz    | Nov. 08, 2016    | Jan. 17, 2017 ~ Feb. 02, 2017 | Nov. 07, 2017 | Radiation (03CH11-HY) |
| AC Power Source      | ChainTek        | APC-1000W    | N/A         | N/A             | N/A              | Jan. 17, 2017                 | N/A           | Conduction (CO05-HY)  |
| EMI Test Receiver    | Rohde & Schwarz | ESCI 7       | 100724      | 9kHz~7GHz       | Aug. 30, 2016    | Jan. 17, 2017                 | Aug. 29, 2017 | Conduction (CO05-HY)  |
| LISN                 | Rohde & Schwarz | ENV216       | 100080      | 9kHz~30MHz      | Nov. 29, 2016    | Jan. 17, 2017                 | Nov. 28, 2017 | Conduction (CO05-HY)  |

## 5 Uncertainty of Evaluation

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

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.7 |
|-------------------------------------------------------------------------|-----|

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

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.2 |
|-------------------------------------------------------------------------|-----|

### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.5 |
|-------------------------------------------------------------------------|-----|

### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.2 |
|-------------------------------------------------------------------------|-----|



## **Appendix A. Conducted Test Results**

Report Number : FR6D2819C

|                |                       |                    |       |    |
|----------------|-----------------------|--------------------|-------|----|
| Test Engineer: | Shiming Liu           | Temperature:       | 21~25 | °C |
| Test Date:     | 2017/01/10~2017/01/11 | Relative Humidity: | 51~54 | %  |

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| 2.4GHz Band |           |     |     |             |                       |              |                    |           |
|-------------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| Mod.        | Data Rate | NTx | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
| 11b         | 1Mbps     | 1   | 1   | 2412        | 14.05                 | 9.04         | 0.50               | Pass      |
| 11b         | 1Mbps     | 1   | 6   | 2437        | 14.15                 | 9.00         | 0.50               | Pass      |
| 11b         | 1Mbps     | 1   | 11  | 2462        | 14.10                 | 9.06         | 0.50               | Pass      |
| 11g         | 6Mbps     | 1   | 1   | 2412        | 17.95                 | 15.26        | 0.50               | Pass      |
| 11g         | 6Mbps     | 1   | 6   | 2437        | 18.10                 | 15.50        | 0.50               | Pass      |
| 11g         | 6Mbps     | 1   | 11  | 2462        | 18.05                 | 15.52        | 0.50               | Pass      |
| HT20        | MCS0      | 1   | 1   | 2412        | 19.00                 | 15.38        | 0.50               | Pass      |
| HT20        | MCS0      | 1   | 6   | 2437        | 18.75                 | 13.64        | 0.50               | Pass      |
| HT20        | MCS0      | 1   | 11  | 2462        | 18.90                 | 15.92        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Peak Power Table**

| 2.4GHz Band |           |     |     |             |                            |                             |          |                  |                        |            |
|-------------|-----------|-----|-----|-------------|----------------------------|-----------------------------|----------|------------------|------------------------|------------|
| Mod.        | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
| 11b         | 1Mbps     | 1   | 1   | 2412        | 19.32                      | 30.00                       | 2.29     | 21.61            | 36.00                  | Pass       |
| 11b         | 1Mbps     | 1   | 6   | 2437        | 19.30                      | 30.00                       | 2.29     | 21.59            | 36.00                  | Pass       |
| 11b         | 1Mbps     | 1   | 11  | 2462        | 19.42                      | 30.00                       | 2.29     | 21.71            | 36.00                  | Pass       |
| 11g         | 6Mbps     | 1   | 1   | 2412        | 23.41                      | 30.00                       | 2.29     | 25.70            | 36.00                  | Pass       |
| 11g         | 6Mbps     | 1   | 6   | 2437        | 23.45                      | 30.00                       | 2.29     | 25.74            | 36.00                  | Pass       |
| 11g         | 6Mbps     | 1   | 11  | 2462        | 23.61                      | 30.00                       | 2.29     | 25.90            | 36.00                  | Pass       |
| HT20        | MCS0      | 1   | 1   | 2412        | 23.65                      | 30.00                       | 2.29     | 25.94            | 36.00                  | Pass       |
| HT20        | MCS0      | 1   | 6   | 2437        | 23.63                      | 30.00                       | 2.29     | 25.92            | 36.00                  | Pass       |
| HT20        | MCS0      | 1   | 11  | 2462        | 23.68                      | 30.00                       | 2.29     | 25.97            | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Average Power Table**  
***(Reporting Only)***

| 2.4GHz Band |           |                 |     |             |                  |                               |
|-------------|-----------|-----------------|-----|-------------|------------------|-------------------------------|
| Mod.        | Data Rate | N <sub>TX</sub> | CH. | Freq. (MHz) | Duty Factor (dB) | Average Conducted Power (dBm) |
| 11b         | 1Mbps     | 1               | 1   | 2412        | 0.00             | 17.06                         |
| 11b         | 1Mbps     | 1               | 6   | 2437        | 0.00             | 17.20                         |
| 11b         | 1Mbps     | 1               | 11  | 2462        | 0.00             | 17.27                         |
| 11g         | 6Mbps     | 1               | 1   | 2412        | 0.07             | 13.45                         |
| 11g         | 6Mbps     | 1               | 6   | 2437        | 0.07             | 13.42                         |
| 11g         | 6Mbps     | 1               | 11  | 2462        | 0.07             | 13.50                         |
| HT20        | MCS0      | 1               | 1   | 2412        | 0.05             | 13.47                         |
| HT20        | MCS0      | 1               | 6   | 2437        | 0.05             | 13.47                         |
| HT20        | MCS0      | 1               | 11  | 2462        | 0.05             | 13.50                         |

**TEST RESULTS DATA**  
**Peak Power Density**

| 2.4GHz Band |           |     |     |             |                      |          |                            |           |
|-------------|-----------|-----|-----|-------------|----------------------|----------|----------------------------|-----------|
| Mod.        | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
| 11b         | 1Mbps     | 1   | 1   | 2412        | -5.75                | 2.29     | 8.00                       | Pass      |
| 11b         | 1Mbps     | 1   | 6   | 2437        | -4.90                | 2.29     | 8.00                       | Pass      |
| 11b         | 1Mbps     | 1   | 11  | 2462        | -6.45                | 2.29     | 8.00                       | Pass      |
| 11g         | 6Mbps     | 1   | 1   | 2412        | -11.28               | 2.29     | 8.00                       | Pass      |
| 11g         | 6Mbps     | 1   | 6   | 2437        | -12.41               | 2.29     | 8.00                       | Pass      |
| 11g         | 6Mbps     | 1   | 11  | 2462        | -11.63               | 2.29     | 8.00                       | Pass      |
| HT20        | MCS0      | 1   | 1   | 2412        | -11.69               | 2.29     | 8.00                       | Pass      |
| HT20        | MCS0      | 1   | 6   | 2437        | -12.37               | 2.29     | 8.00                       | Pass      |
| HT20        | MCS0      | 1   | 11  | 2462        | -10.93               | 2.29     | 8.00                       | Pass      |



## Appendix B. Radiated Spurious Emission

|                 |                       |                     |         |
|-----------------|-----------------------|---------------------|---------|
| Test Engineer : | Jacky Hung and Ken Wu | Temperature :       | 20~24°C |
|                 |                       | Relative Humidity : | 50~54%  |

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

| WIFI                        | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|-----------------------------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.                        |      |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1                           |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11b<br>CH 01<br>2412MHz |      | 2336.145  | 53.61      | -20.39 | 74         | 51.44    | 27.03    | 8.75   | 33.61  | 337    | 280     | P       | H       |
|                             |      | 2387.07   | 43.9       | -10.1  | 54         | 41.42    | 27.19    | 8.89   | 33.6   | 337    | 280     | A       | H       |
|                             | *    | 2412      | 102.92     | -      | -          | 100.38   | 27.24    | 8.89   | 33.59  | 337    | 280     | P       | H       |
|                             | *    | 2412      | 99.52      | -      | -          | 96.98    | 27.24    | 8.89   | 33.59  | 337    | 280     | A       | H       |
|                             |      |           |            |        |            |          |          |        |        |        |         |         | H       |
|                             |      |           |            |        |            |          |          |        |        |        |         |         | H       |
|                             |      | 2387.175  | 54.24      | -19.76 | 74         | 51.76    | 27.19    | 8.89   | 33.6   | 254    | 341     | P       | V       |
|                             |      | 2386.965  | 44.82      | -9.18  | 54         | 42.34    | 27.19    | 8.89   | 33.6   | 254    | 341     | A       | V       |
|                             | *    | 2412      | 106.98     | -      | -          | 104.44   | 27.24    | 8.89   | 33.59  | 254    | 341     | P       | V       |
|                             | *    | 2412      | 103.48     | -      | -          | 100.94   | 27.24    | 8.89   | 33.59  | 254    | 341     | A       | V       |
|                             |      |           |            |        |            |          |          |        |        |        |         |         | V       |
|                             |      |           |            |        |            |          |          |        |        |        |         |         | V       |
| 802.11b<br>CH 06<br>2437MHz |      | 2385.74   | 54.83      | -19.17 | 74         | 52.35    | 27.19    | 8.89   | 33.6   | 378    | 259     | P       | H       |
|                             |      | 2389.8    | 42.9       | -11.1  | 54         | 40.41    | 27.19    | 8.89   | 33.59  | 378    | 259     | A       | H       |
|                             | *    | 2437      | 102.33     | -      | -          | 99.64    | 27.34    | 8.94   | 33.59  | 378    | 259     | P       | H       |
|                             | *    | 2437      | 98.84      | -      | -          | 96.15    | 27.34    | 8.94   | 33.59  | 378    | 259     | A       | H       |
|                             |      | 2494.12   | 53.41      | -20.59 | 74         | 50.5     | 27.5     | 8.98   | 33.57  | 378    | 259     | P       | H       |
|                             |      | 2485.58   | 43.17      | -10.83 | 54         | 40.32    | 27.45    | 8.98   | 33.58  | 378    | 259     | A       | H       |
|                             |      | 2384.9    | 54.37      | -19.63 | 74         | 51.94    | 27.14    | 8.89   | 33.6   | 261    | 345     | P       | V       |
|                             |      | 2389.24   | 43.3       | -10.7  | 54         | 40.82    | 27.19    | 8.89   | 33.6   | 261    | 345     | A       | V       |
|                             | *    | 2437      | 107.91     | -      | -          | 105.22   | 27.34    | 8.94   | 33.59  | 261    | 345     | P       | V       |
|                             | *    | 2437      | 104.49     | -      | -          | 101.8    | 27.34    | 8.94   | 33.59  | 261    | 345     | A       | V       |
|                             |      | 2489.36   | 53.61      | -20.39 | 74         | 50.71    | 27.5     | 8.98   | 33.58  | 261    | 345     | P       | V       |
|                             |      | 2484.95   | 43.51      | -10.49 | 54         | 40.66    | 27.45    | 8.98   | 33.58  | 261    | 345     | A       | V       |



|                                                  |                                                                                             |         |        |        |    |        |       |      |       |     |     |   |   |
|--------------------------------------------------|---------------------------------------------------------------------------------------------|---------|--------|--------|----|--------|-------|------|-------|-----|-----|---|---|
| <b>802.11b</b><br><b>CH 11</b><br><b>2462MHz</b> | *                                                                                           | 2462    | 102.73 | -      | -  | 99.93  | 27.4  | 8.98 | 33.58 | 398 | 331 | P | H |
|                                                  | *                                                                                           | 2462    | 99.29  | -      | -  | 96.49  | 27.4  | 8.98 | 33.58 | 398 | 331 | A | H |
|                                                  |                                                                                             | 2486.4  | 54.27  | -19.73 | 74 | 51.42  | 27.45 | 8.98 | 33.58 | 398 | 331 | P | H |
|                                                  |                                                                                             | 2487.24 | 44.42  | -9.58  | 54 | 41.57  | 27.45 | 8.98 | 33.58 | 398 | 331 | A | H |
|                                                  |                                                                                             |         |        |        |    |        |       |      |       |     |     |   | H |
|                                                  |                                                                                             |         |        |        |    |        |       |      |       |     |     |   | H |
|                                                  | *                                                                                           | 2462    | 107.85 | -      | -  | 105.05 | 27.4  | 8.98 | 33.58 | 310 | 344 | P | V |
|                                                  | *                                                                                           | 2462    | 104.43 | -      | -  | 101.63 | 27.4  | 8.98 | 33.58 | 310 | 344 | A | V |
|                                                  |                                                                                             | 2493.04 | 55.65  | -18.35 | 74 | 52.74  | 27.5  | 8.98 | 33.57 | 310 | 344 | P | V |
|                                                  |                                                                                             | 2487.16 | 46.82  | -7.18  | 54 | 43.97  | 27.45 | 8.98 | 33.58 | 310 | 344 | A | V |
|                                                  |                                                                                             |         |        |        |    |        |       |      |       |     |     |   | V |
|                                                  |                                                                                             |         |        |        |    |        |       |      |       |     |     |   | V |
| <b>Remark</b>                                    | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |         |        |        |    |        |       |      |       |     |     |   |   |



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11b (Harmonic @ 3m)

| WIFI<br>Ant.<br>1           | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|-----------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11b<br>CH 01<br>2412MHz |                                                                                             | 4824                 | 34.53               | -39.47                  | 74                          | 43.16                     | 31.69                         | 10.77                   | 51.09                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4824                 | 32.29               | -41.71                  | 74                          | 40.92                     | 31.69                         | 10.77                   | 51.09                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| 802.11b<br>CH 06<br>2437MHz |                                                                                             | 4874                 | 34.28               | -39.72                  | 74                          | 42.68                     | 31.78                         | 10.88                   | 51.06                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             | 7311                 | 37.81               | -36.19                  | 74                          | 38.26                     | 37.27                         | 12.79                   | 50.51                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4874                 | 33.73               | -40.27                  | 74                          | 42.13                     | 31.78                         | 10.88                   | 51.06                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             | 7311                 | 35.6                | -38.4                   | 74                          | 36.05                     | 37.27                         | 12.79                   | 50.51                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| 802.11b<br>CH 11<br>2462MHz |                                                                                             | 4924                 | 33.32               | -40.68                  | 74                          | 41.48                     | 31.88                         | 11                      | 51.04                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             | 7386                 | 36                  | -38                     | 74                          | 36.25                     | 37.38                         | 12.88                   | 50.51                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4924                 | 31.74               | -42.26                  | 74                          | 39.9                      | 31.88                         | 11                      | 51.04                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             | 7386                 | 36.66               | -37.34                  | 74                          | 36.91                     | 37.38                         | 12.88                   | 50.51                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| Remark                      | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         |                 |



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11g (Band Edge @ 3m)

| WIFI<br>Ant.<br>1           | Note | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|-----------------------------|------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11g<br>CH 01<br>2412MHz |      | 2379.3               | 53.82               | -20.18                  | 74                          | 51.46                     | 27.14                         | 8.82                    | 33.6                       | 338                  | 278                     | P                       | H               |
|                             |      | 2390                 | 43.7                | -10.3                   | 54                          | 41.21                     | 27.19                         | 8.89                    | 33.59                      | 338                  | 278                     | A                       | H               |
|                             | *    | 2412                 | 101.16              | -                       | -                           | 98.62                     | 27.24                         | 8.89                    | 33.59                      | 338                  | 278                     | P                       | H               |
|                             | *    | 2412                 | 92.7                | -                       | -                           | 90.16                     | 27.24                         | 8.89                    | 33.59                      | 338                  | 278                     | A                       | H               |
|                             |      |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |      |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |      | 2389.38              | 54.34               | -19.66                  | 74                          | 51.86                     | 27.19                         | 8.89                    | 33.6                       | 230                  | 341                     | P                       | V               |
|                             |      | 2390                 | 44.74               | -9.26                   | 54                          | 42.25                     | 27.19                         | 8.89                    | 33.59                      | 230                  | 341                     | A                       | V               |
|                             | *    | 2412                 | 105.24              | -                       | -                           | 102.7                     | 27.24                         | 8.89                    | 33.59                      | 230                  | 341                     | P                       | V               |
|                             | *    | 2412                 | 96.65               | -                       | -                           | 94.11                     | 27.24                         | 8.89                    | 33.59                      | 230                  | 341                     | A                       | V               |
|                             |      |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                             |      |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| 802.11g<br>CH 06<br>2437MHz |      | 2366.28              | 53.81               | -20.19                  | 74                          | 51.5                      | 27.09                         | 8.82                    | 33.6                       | 374                  | 289                     | P                       | H               |
|                             |      | 2389.66              | 42.8                | -11.2                   | 54                          | 40.32                     | 27.19                         | 8.89                    | 33.6                       | 374                  | 289                     | A                       | H               |
|                             | *    | 2437                 | 101.4               | -                       | -                           | 98.71                     | 27.34                         | 8.94                    | 33.59                      | 374                  | 289                     | P                       | H               |
|                             | *    | 2437                 | 92.65               | -                       | -                           | 89.96                     | 27.34                         | 8.94                    | 33.59                      | 374                  | 289                     | A                       | H               |
|                             |      | 2495.03              | 53.59               | -20.41                  | 74                          | 50.68                     | 27.5                          | 8.98                    | 33.57                      | 374                  | 289                     | P                       | H               |
|                             |      | 2485.79              | 43.17               | -10.83                  | 54                          | 40.32                     | 27.45                         | 8.98                    | 33.58                      | 374                  | 289                     | A                       | H               |
|                             |      | 2352.7               | 54.45               | -19.55                  | 74                          | 52.14                     | 27.09                         | 8.82                    | 33.6                       | 258                  | 344                     | P                       | V               |
|                             |      | 2388.4               | 42.92               | -11.08                  | 54                          | 40.44                     | 27.19                         | 8.89                    | 33.6                       | 258                  | 344                     | A                       | V               |
|                             | *    | 2437                 | 105.81              | -                       | -                           | 103.12                    | 27.34                         | 8.94                    | 33.59                      | 258                  | 344                     | P                       | V               |
|                             | *    | 2437                 | 97.24               | -                       | -                           | 94.55                     | 27.34                         | 8.94                    | 33.59                      | 258                  | 344                     | A                       | V               |
|                             |      | 2484.25              | 53.86               | -20.14                  | 74                          | 51.01                     | 27.45                         | 8.98                    | 33.58                      | 258                  | 344                     | P                       | V               |
|                             |      | 2486.98              | 43.27               | -10.73                  | 54                          | 40.42                     | 27.45                         | 8.98                    | 33.58                      | 258                  | 344                     | A                       | V               |



|                                                  |                                                                                             |         |        |        |    |       |       |      |       |     |     |   |   |
|--------------------------------------------------|---------------------------------------------------------------------------------------------|---------|--------|--------|----|-------|-------|------|-------|-----|-----|---|---|
| <b>802.11g</b><br><b>CH 11</b><br><b>2462MHz</b> | *                                                                                           | 2462    | 100.54 | -      | -  | 97.74 | 27.4  | 8.98 | 33.58 | 397 | 355 | P | H |
|                                                  | *                                                                                           | 2462    | 92.23  | -      | -  | 89.43 | 27.4  | 8.98 | 33.58 | 397 | 355 | A | H |
|                                                  |                                                                                             | 2491.12 | 53.88  | -20.12 | 74 | 50.98 | 27.5  | 8.98 | 33.58 | 397 | 355 | P | H |
|                                                  |                                                                                             | 2483.52 | 43.94  | -10.06 | 54 | 41.09 | 27.45 | 8.98 | 33.58 | 397 | 355 | A | H |
|                                                  |                                                                                             |         |        |        |    |       |       |      |       |     |     |   | H |
|                                                  |                                                                                             |         |        |        |    |       |       |      |       |     |     |   | H |
|                                                  | *                                                                                           | 2462    | 106.1  | -      | -  | 103.3 | 27.4  | 8.98 | 33.58 | 310 | 340 | P | V |
|                                                  | *                                                                                           | 2462    | 97.62  | -      | -  | 94.82 | 27.4  | 8.98 | 33.58 | 310 | 340 | A | V |
|                                                  |                                                                                             | 2483.72 | 56.8   | -17.2  | 74 | 53.95 | 27.45 | 8.98 | 33.58 | 310 | 340 | P | V |
|                                                  |                                                                                             | 2483.52 | 46     | -8     | 54 | 43.15 | 27.45 | 8.98 | 33.58 | 310 | 340 | A | V |
|                                                  |                                                                                             |         |        |        |    |       |       |      |       |     |     |   | V |
|                                                  |                                                                                             |         |        |        |    |       |       |      |       |     |     |   | V |
| <b>Remark</b>                                    | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |         |        |        |    |       |       |      |       |     |     |   |   |



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11g (Harmonic @ 3m)

| WIFI<br>Ant.<br>1           | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|-----------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11g<br>CH 01<br>2412MHz |                                                                                             | 4824                 | 30.91               | -43.09                  | 74                          | 39.54                     | 31.69                         | 10.77                   | 51.09                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4824                 | 30.46               | -43.54                  | 74                          | 39.09                     | 31.69                         | 10.77                   | 51.09                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| 802.11g<br>CH 06<br>2437MHz |                                                                                             | 4874                 | 31.72               | -42.28                  | 74                          | 40.12                     | 31.78                         | 10.88                   | 51.06                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             | 7311                 | 37.89               | -36.11                  | 74                          | 38.34                     | 37.27                         | 12.79                   | 50.51                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4874                 | 30.6                | -43.4                   | 74                          | 39                        | 31.78                         | 10.88                   | 51.06                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             | 7311                 | 37.09               | -36.91                  | 74                          | 37.54                     | 37.27                         | 12.79                   | 50.51                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| 802.11g<br>CH 11<br>2462MHz |                                                                                             | 4924                 | 31.99               | -42.01                  | 74                          | 40.15                     | 31.88                         | 11                      | 51.04                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             | 7386                 | 36.76               | -37.24                  | 74                          | 37.01                     | 37.38                         | 12.88                   | 50.51                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4924                 | 31.37               | -42.63                  | 74                          | 39.53                     | 31.88                         | 11                      | 51.04                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             | 7386                 | 36.9                | -37.1                   | 74                          | 37.15                     | 37.38                         | 12.88                   | 50.51                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| Remark                      | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         |                 |



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11n HT20 (Band Edge @ 3m)

| WIFI<br>Ant.<br>1                   | Note | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|-------------------------------------|------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11n<br>HT20<br>CH 01<br>2412MHz |      | 2389.695             | 54.26               | -19.74                  | 74                          | 51.78                     | 27.19                         | 8.89                    | 33.6                       | 338                  | 278                     | P                       | H               |
|                                     |      | 2390                 | 43.94               | -10.06                  | 54                          | 41.45                     | 27.19                         | 8.89                    | 33.59                      | 338                  | 278                     | A                       | H               |
|                                     | *    | 2412                 | 100.84              | -                       | -                           | 98.3                      | 27.24                         | 8.89                    | 33.59                      | 338                  | 278                     | P                       | H               |
|                                     | *    | 2412                 | 92.32               | -                       | -                           | 89.78                     | 27.24                         | 8.89                    | 33.59                      | 338                  | 278                     | A                       | H               |
|                                     |      |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |      |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |      | 2389.905             | 54.48               | -19.52                  | 74                          | 51.99                     | 27.19                         | 8.89                    | 33.59                      | 228                  | 351                     | P                       | V               |
|                                     |      | 2390                 | 45.12               | -8.88                   | 54                          | 42.63                     | 27.19                         | 8.89                    | 33.59                      | 228                  | 351                     | A                       | V               |
|                                     | *    | 2412                 | 104.48              | -                       | -                           | 101.94                    | 27.24                         | 8.89                    | 33.59                      | 228                  | 351                     | P                       | V               |
|                                     | *    | 2412                 | 96.3                | -                       | -                           | 93.76                     | 27.24                         | 8.89                    | 33.59                      | 228                  | 351                     | A                       | V               |
|                                     |      |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                                     |      |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| 802.11n<br>HT20<br>CH 06<br>2437MHz |      | 2387.28              | 54.19               | -19.81                  | 74                          | 51.71                     | 27.19                         | 8.89                    | 33.6                       | 365                  | 285                     | P                       | H               |
|                                     |      | 2387.56              | 42.79               | -11.21                  | 54                          | 40.31                     | 27.19                         | 8.89                    | 33.6                       | 365                  | 285                     | A                       | H               |
|                                     | *    | 2437                 | 101.18              | -                       | -                           | 98.49                     | 27.34                         | 8.94                    | 33.59                      | 365                  | 285                     | P                       | H               |
|                                     | *    | 2437                 | 92.42               | -                       | -                           | 89.73                     | 27.34                         | 8.94                    | 33.59                      | 365                  | 285                     | A                       | H               |
|                                     |      | 2495.87              | 54.27               | -19.73                  | 74                          | 51.36                     | 27.5                          | 8.98                    | 33.57                      | 365                  | 285                     | P                       | H               |
|                                     |      | 2498.46              | 43.16               | -10.84                  | 54                          | 40.25                     | 27.5                          | 8.98                    | 33.57                      | 365                  | 285                     | A                       | H               |
|                                     |      | 2349.62              | 54.25               | -19.75                  | 74                          | 52                        | 27.03                         | 8.82                    | 33.6                       | 259                  | 346                     | P                       | V               |
|                                     |      | 2389.66              | 42.95               | -11.05                  | 54                          | 40.47                     | 27.19                         | 8.89                    | 33.6                       | 259                  | 346                     | A                       | V               |
|                                     | *    | 2437                 | 105.32              | -                       | -                           | 102.63                    | 27.34                         | 8.94                    | 33.59                      | 259                  | 346                     | P                       | V               |
|                                     | *    | 2437                 | 96.77               | -                       | -                           | 94.08                     | 27.34                         | 8.94                    | 33.59                      | 259                  | 346                     | A                       | V               |
|                                     |      | 2488.31              | 53.81               | -20.19                  | 74                          | 50.91                     | 27.5                          | 8.98                    | 33.58                      | 259                  | 346                     | P                       | V               |
|                                     |      | 2488.45              | 43.26               | -10.74                  | 54                          | 40.36                     | 27.5                          | 8.98                    | 33.58                      | 259                  | 346                     | A                       | V               |



|                                                                 |                                                                                             |         |        |        |    |        |       |      |       |     |     |   |   |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------|--------|--------|----|--------|-------|------|-------|-----|-----|---|---|
| <b>802.11n</b><br><b>HT20</b><br><b>CH 11</b><br><b>2462MHz</b> | *                                                                                           | 2462    | 100.84 | -      | -  | 98.04  | 27.4  | 8.98 | 33.58 | 396 | 332 | P | H |
|                                                                 | *                                                                                           | 2462    | 92.43  | -      | -  | 89.63  | 27.4  | 8.98 | 33.58 | 396 | 332 | A | H |
|                                                                 |                                                                                             | 2483.68 | 54.36  | -19.64 | 74 | 51.51  | 27.45 | 8.98 | 33.58 | 396 | 332 | P | H |
|                                                                 |                                                                                             | 2483.64 | 44.55  | -9.45  | 54 | 41.7   | 27.45 | 8.98 | 33.58 | 396 | 332 | A | H |
|                                                                 |                                                                                             |         |        |        |    |        |       |      |       |     |     |   | H |
|                                                                 |                                                                                             |         |        |        |    |        |       |      |       |     |     |   | H |
|                                                                 | *                                                                                           | 2462    | 105.61 | -      | -  | 102.81 | 27.4  | 8.98 | 33.58 | 309 | 339 | P | V |
|                                                                 | *                                                                                           | 2462    | 97.16  | -      | -  | 94.36  | 27.4  | 8.98 | 33.58 | 309 | 339 | A | V |
|                                                                 |                                                                                             | 2484.04 | 57.82  | -16.18 | 74 | 54.97  | 27.45 | 8.98 | 33.58 | 309 | 339 | P | V |
|                                                                 |                                                                                             | 2483.52 | 46.38  | -7.62  | 54 | 43.53  | 27.45 | 8.98 | 33.58 | 309 | 339 | A | V |
|                                                                 |                                                                                             |         |        |        |    |        |       |      |       |     |     |   | V |
|                                                                 |                                                                                             |         |        |        |    |        |       |      |       |     |     |   | V |
| <b>Remark</b>                                                   | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |         |        |        |    |        |       |      |       |     |     |   |   |



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11n HT20 (Harmonic @ 3m)

| WIFI<br>Ant.<br>1                   | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|-------------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11n<br>HT20<br>CH 01<br>2412MHz |                                                                                             | 4824                 | 30.46               | -43.54                  | 74                          | 39.09                     | 31.69                         | 10.77                   | 51.09                      | 100                  | 0                       | P                       | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |                                                                                             | 4824                 | 30.7                | -43.3                   | 74                          | 39.33                     | 31.69                         | 10.77                   | 51.09                      | 100                  | 0                       | P                       | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| 802.11n<br>HT20<br>CH 06<br>2437MHz |                                                                                             | 4874                 | 31.71               | -42.29                  | 74                          | 40.11                     | 31.78                         | 10.88                   | 51.06                      | 100                  | 0                       | P                       | H               |
|                                     |                                                                                             | 7311                 | 36.69               | -37.31                  | 74                          | 37.14                     | 37.27                         | 12.79                   | 50.51                      | 100                  | 0                       | P                       | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |                                                                                             | 4874                 | 31.85               | -42.15                  | 74                          | 40.25                     | 31.78                         | 10.88                   | 51.06                      | 100                  | 0                       | P                       | V               |
|                                     |                                                                                             | 7311                 | 37.33               | -36.67                  | 74                          | 37.78                     | 37.27                         | 12.79                   | 50.51                      | 100                  | 0                       | P                       | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| 802.11n<br>HT20<br>CH 11<br>2462MHz |                                                                                             | 4924                 | 31.74               | -42.26                  | 74                          | 39.9                      | 31.88                         | 11                      | 51.04                      | 100                  | 0                       | P                       | H               |
|                                     |                                                                                             | 7386                 | 37.8                | -36.2                   | 74                          | 38.05                     | 37.38                         | 12.88                   | 50.51                      | 100                  | 0                       | P                       | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                                     |                                                                                             | 4924                 | 32.53               | -41.47                  | 74                          | 40.69                     | 31.88                         | 11                      | 51.04                      | 100                  | 0                       | P                       | V               |
|                                     |                                                                                             | 7386                 | 35.89               | -38.11                  | 74                          | 36.14                     | 37.38                         | 12.88                   | 50.51                      | 100                  | 0                       | P                       | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| Remark                              | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         |                 |



## 2.4GHz 2400~2483.5MHz

## Emission below 1GHz

## 2.4GHz WIFI 802.11b (LF)

| WIFI Ant.               | Note                                                                       | Frequency | Level      | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol.    |
|-------------------------|----------------------------------------------------------------------------|-----------|------------|------------|------------|------------|----------------|------------|---------------|---------|-----------|-----------|---------|
| 1                       |                                                                            | ( MHz )   | ( dBμV/m ) | ( dB )     | ( dBμV/m ) | ( dBμV )   | ( dB/m )       | ( dB )     | ( dB )        | ( cm )  | ( deg )   | ( P/A )   | ( H/V ) |
| 2.4GHz<br>802.11b<br>LF |                                                                            | 32.43     | 23.03      | -16.97     | 40         | 30.09      | 24.14          | 1.29       | 32.49         | -       | -         | P         | H       |
|                         |                                                                            | 38.64     | 20.05      | -19.95     | 40         | 30.39      | 20.86          | 1.29       | 32.49         | -       | -         | P         | H       |
|                         |                                                                            | 259.77    | 20.4       | -25.6      | 46         | 30.94      | 19.7           | 2.34       | 32.58         | -       | -         | P         | H       |
|                         |                                                                            | 767.6     | 30.8       | -15.2      | 46         | 31.07      | 27.91          | 4.09       | 32.27         | -       | -         | P         | H       |
|                         |                                                                            | 915.3     | 32.75      | -13.25     | 46         | 30         | 29.64          | 4.63       | 31.52         | -       | -         | P         | H       |
|                         |                                                                            | 953.1     | 33.78      | -12.22     | 46         | 29.67      | 30.59          | 4.69       | 31.17         | 166     | 254       | P         | H       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | H       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | H       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | H       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | H       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | H       |
|                         |                                                                            | 32.7      | 36.96      | -3.04      | 40         | 44.02      | 24.14          | 1.29       | 32.49         | 214     | 105       | P         | V       |
|                         |                                                                            | 38.1      | 29.87      | -10.13     | 40         | 39.65      | 21.42          | 1.29       | 32.49         | -       | -         | P         | V       |
|                         |                                                                            | 50.52     | 25.11      | -14.89     | 40         | 41.41      | 14.9           | 1.29       | 32.49         | -       | -         | P         | V       |
|                         |                                                                            | 727       | 29.41      | -16.59     | 46         | 30.53      | 27.25          | 4.02       | 32.39         | -       | -         | P         | V       |
|                         |                                                                            | 876.8     | 31.83      | -14.17     | 46         | 29.98      | 29.06          | 4.57       | 31.78         | -       | -         | P         | V       |
|                         |                                                                            | 930.7     | 33.44      | -12.56     | 46         | 30.1       | 30.08          | 4.63       | 31.37         | -       | -         | P         | V       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | V       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | V       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | V       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | V       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | V       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | V       |
|                         |                                                                            |           |            |            |            |            |                |            |               |         |           |           | V       |
| Remark                  | 1. No other spurious found.<br>2. All results are PASS against limit line. |           |            |            |            |            |                |            |               |         |           |           |         |



**Emission below 1GHz**

**Note symbol**

|     |                                                                                                                                                          |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| *   | <b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. |
| !   | Test result is <b>over limit</b> line.                                                                                                                   |
| P/A | <b>Peak</b> or <b>Average</b>                                                                                                                            |
| H/V | <b>Horizontal</b> or <b>Vertical</b>                                                                                                                     |



A calculation example for radiated spurious emission is shown as below:

| WIFI    | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|---------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.    |      |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1       |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11b |      | 2390      | 55.45      | -18.55 | 74         | 54.51    | 32.22    | 4.58   | 35.86  | 103    | 308     | P       | H       |
| CH 01   |      |           |            |        |            |          |          |        |        |        |         |         |         |
| 2412MHz |      | 2390      | 43.54      | -10.46 | 54         | 42.6     | 32.22    | 4.58   | 35.86  | 103    | 308     | A       | H       |

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**



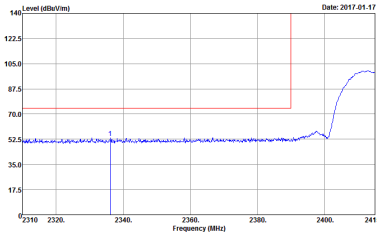
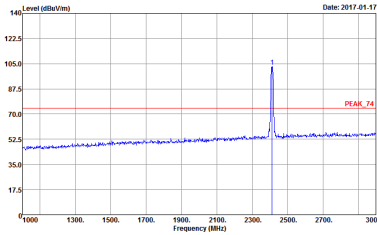
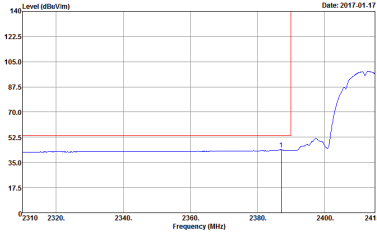
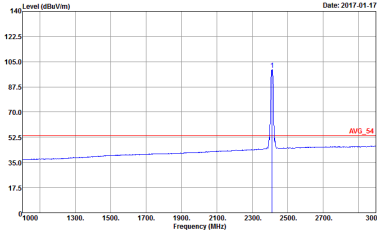
## Appendix C. Radiated Spurious Emission Plots

|                        |                       |                            |         |
|------------------------|-----------------------|----------------------------|---------|
| <b>Test Engineer :</b> | Jacky Hung and Ken Wu | <b>Temperature :</b>       | 20~24°C |
|                        |                       | <b>Relative Humidity :</b> | 50~54%  |

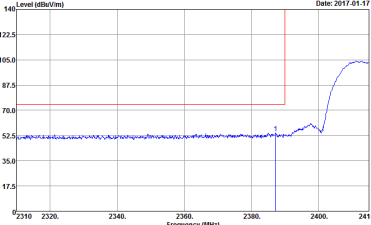
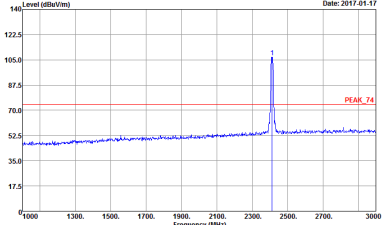
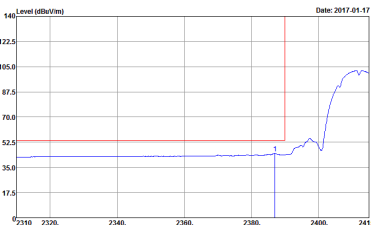
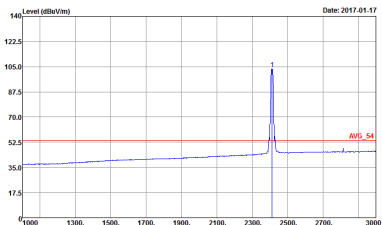
### Note symbol

|    |                       |
|----|-----------------------|
| -L | Low channel location  |
| -R | High channel location |

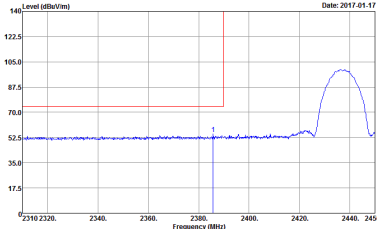
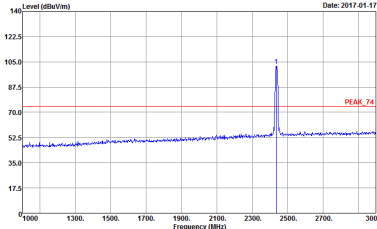
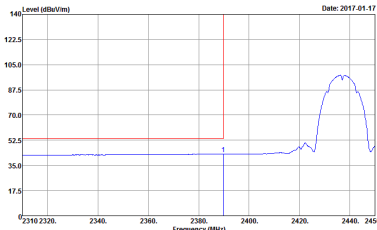
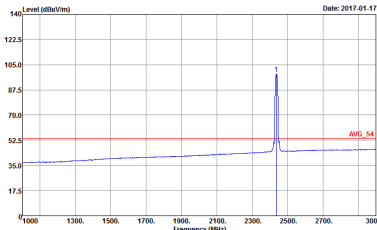
**2.4GHz 2400~2483.5MHz**
**WIFI 802.11b (Band Edge @ 3m)**

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                          |                                                                                                                                                                                                                             |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH01 2412MHz                                                                                                                                                                                                          |                                                                                                                                                                                                                             |
| 1    | Horizontal                                                                                                                                                                                                                    | Fundamental                                                                                                                                                                                                                 |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p>  |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p>  |
| Avg. |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p> |

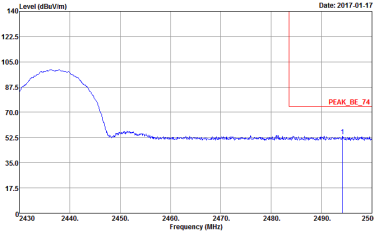
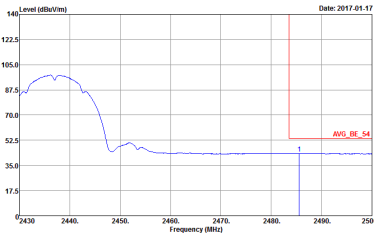


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                 |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH01 2412MHz                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                 |
| 1    | Vertical                                                                                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                                                                                     |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p></div> | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p></div> |
| Avg. | <div><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p></div>   | <div><p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p></div>   |

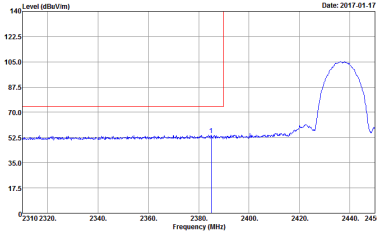
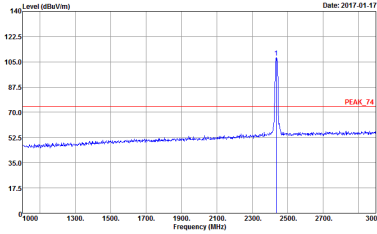
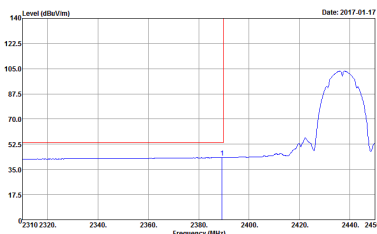
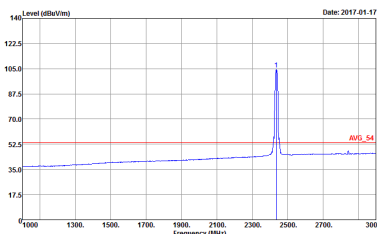


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                   |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH06 2437MHz - L                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                   |
| 1    | Horizontal                                                                                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                                                                                       |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> |
| Avg. | <div><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   | <div><p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   |

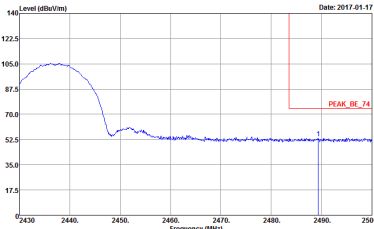
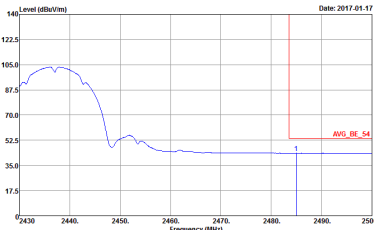


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                                 |             |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11b CH06 2437MHz - R                                                                                                                                                                                                                                                             |             |
| 1    | Horizontal                                                                                                                                                                                                                                                                           | Fundamental |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>  | Left blank  |
| Avg. | <div><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> | Left blank  |

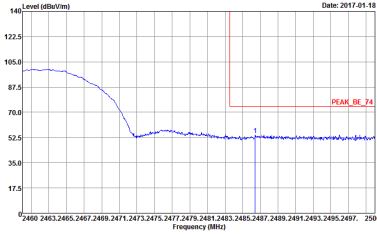
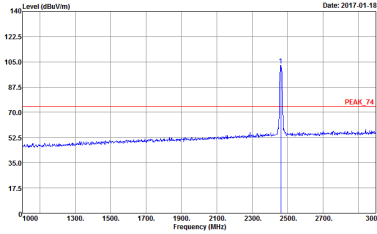
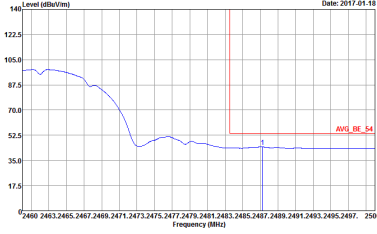
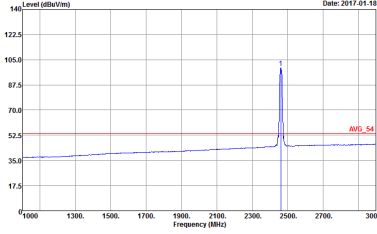


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                       |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH06 2437MHz - L                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                       |
| 1    | Vertical                                                                                                                                                                                                                                                                | Fundamental                                                                                                                                                                                                                                                           |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
| Avg. |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>   |  <p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>   |

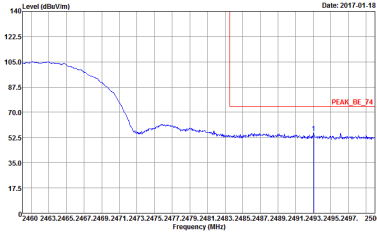
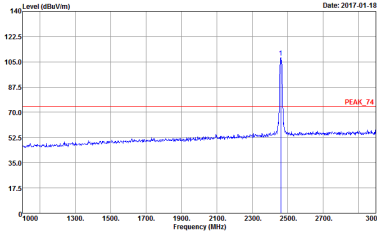
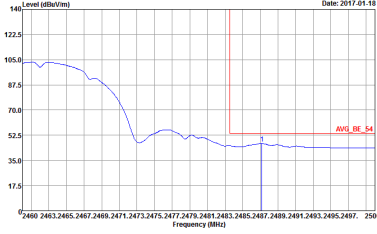
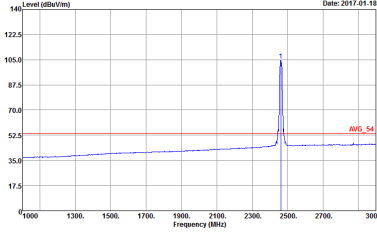


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                                        |             |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11b CH06 2437MHz - R                                                                                                                                                                                                                                                                    |             |
| 1    | Vertical                                                                                                                                                                                                                                                                                    | Fundamental |
| Peak |  <p>           Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>           Detector : Peak<br/>           Project : 602819<br/>           EUT : Sample 1         </p>  | Left blank  |
| Avg. |  <p>           Site : 03CH11-HY<br/>           Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>           Detector : Peak<br/>           Project : 602819<br/>           EUT : Sample 1         </p> | Left blank  |



| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                         |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH11 2462MHz                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                         |
| 1    | Horizontal                                                                                                                                                                                                                                                                | Fundamental                                                                                                                                                                                                                                                             |
| Peak |  <p>Site : 03CH11-HV<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-HV<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
| Avg. |  <p>Site : 03CH11-HV<br/>Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>   |  <p>Site : 03CH11-HV<br/>Condition : AVG_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>   |

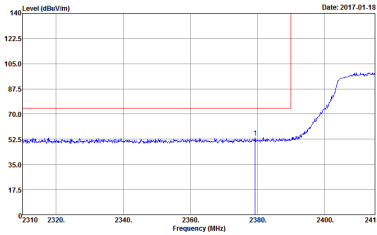
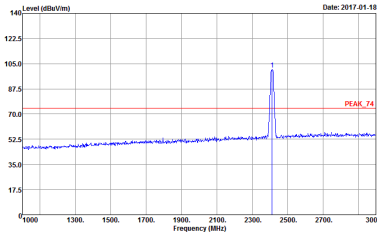
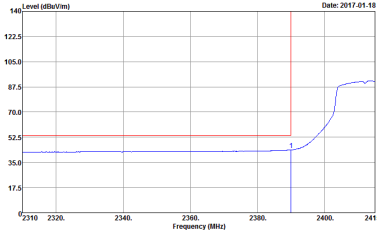
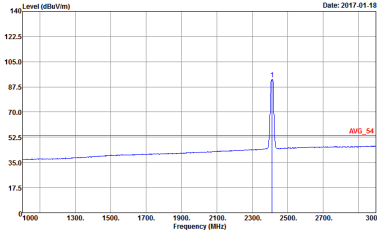


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                 |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH11 2462MHz                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                 |
| 1    | Vertical                                                                                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                                                                                     |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> |
| Avg. | <div><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   | <div><p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   |

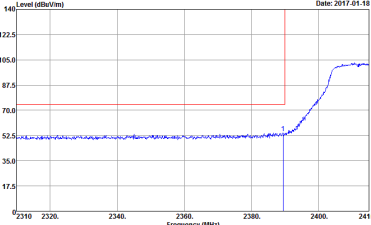
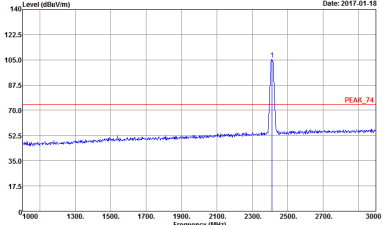
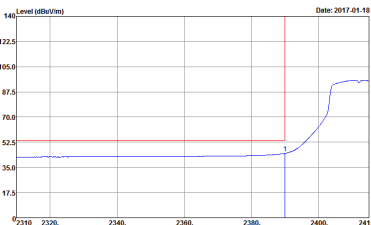
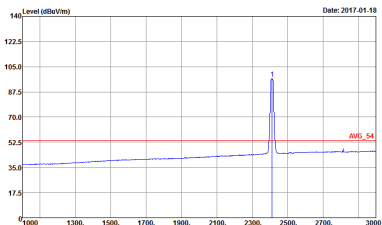


## 2.4GHz 2400~2483.5MHz

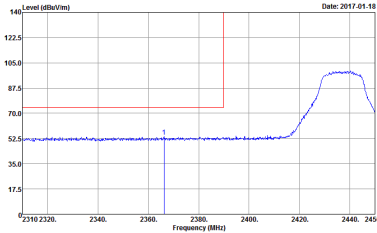
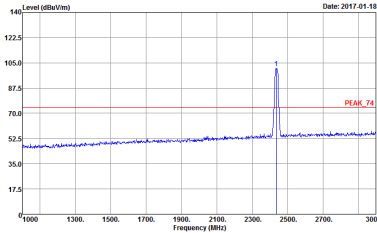
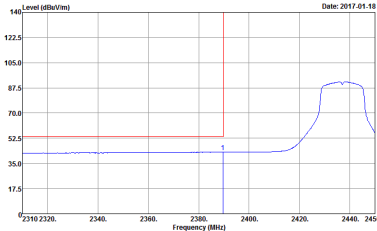
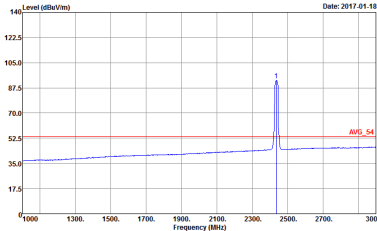
## WIFI 802.11g (Band Edge @ 3m)

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                          |                                                                                                                                                                                                                             |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH01 2412MHz                                                                                                                                                                                                          |                                                                                                                                                                                                                             |
| 1    | Horizontal                                                                                                                                                                                                                    | Fundamental                                                                                                                                                                                                                 |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p>  |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p>  |
| Avg. |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p> |

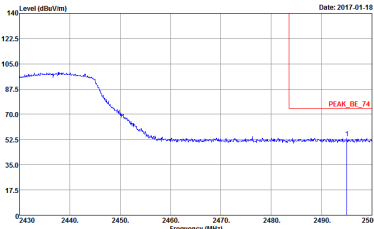
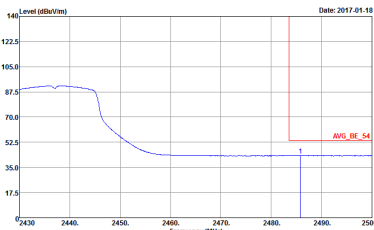


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                            |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH01 2412MHz                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                            |
| 1    | Vertical                                                                                                                                                                                                                                                                                                                     | Fundamental                                                                                                                                                                                                                                                                                                                |
| Peak | <div><p>Level (dBuV/m)</p><p>Frequency (MHz)</p><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> | <div><p>Level (dBuV/m)</p><p>Frequency (MHz)</p><p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> |
| Avg. | <div><p>Level (dBuV/m)</p><p>Frequency (MHz)</p><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   | <div><p>Level (dBuV/m)</p><p>Frequency (MHz)</p><p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   |

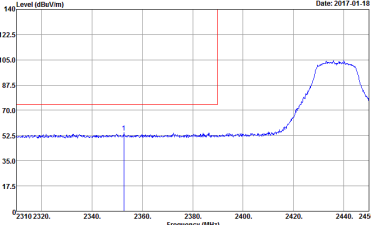
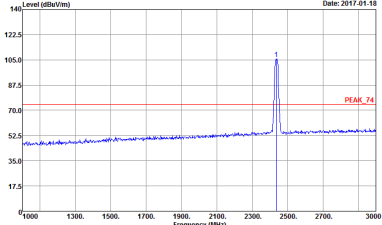
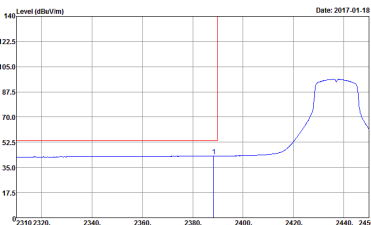
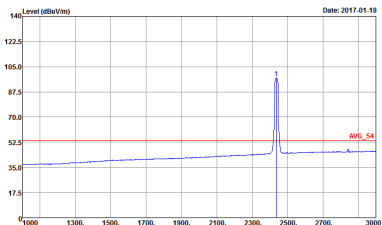


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                   |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH06 2437MHz - L                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                   |
| 1    | Horizontal                                                                                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                                                                                       |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> |
| Avg. | <div><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   | <div><p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   |

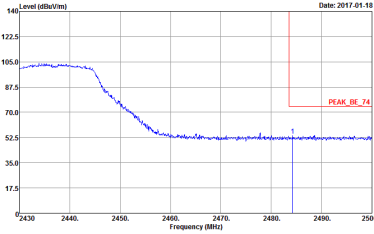
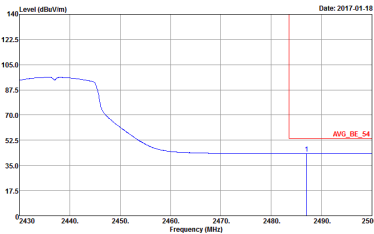


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                          |             |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11g CH06 2437MHz - R                                                                                                                                                                                                      |             |
| 1    | Horizontal                                                                                                                                                                                                                    | Fundamental |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>  | Left blank  |
| Avg. |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> | Left blank  |

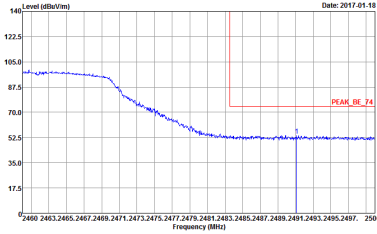
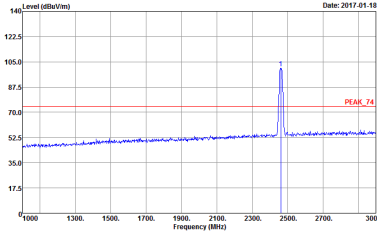
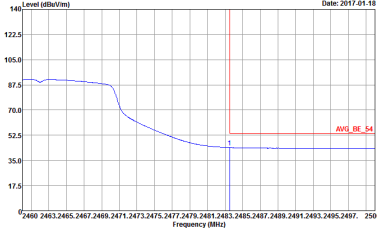
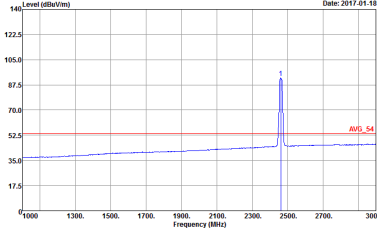


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                 |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH06 2437MHz - L                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                 |
| 1    | Vertical                                                                                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                                                                                     |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> |
| Avg. | <div><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   | <div><p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   |

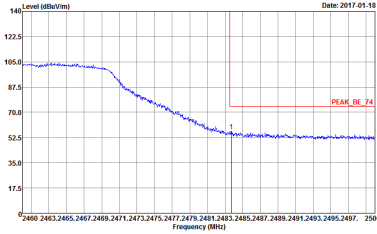
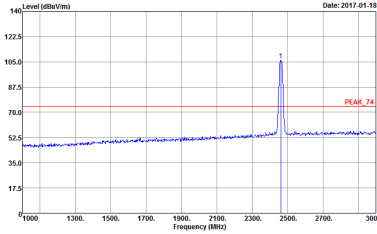
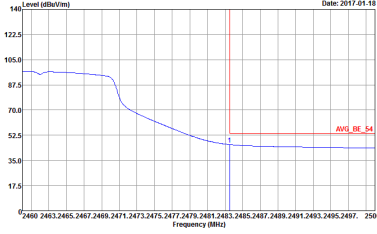
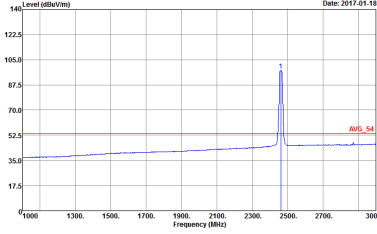


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                               |             |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11g CH06 2437MHz - R                                                                                                                                                                                                                                                           |             |
| 1    | Vertical                                                                                                                                                                                                                                                                           | Fundamental |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p></div>  | Left Blank  |
| Avg. | <div><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p></div> | Left Blank  |

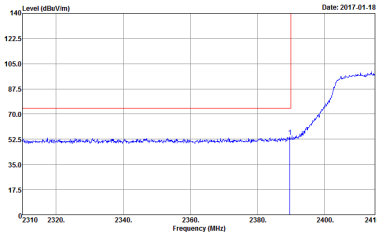
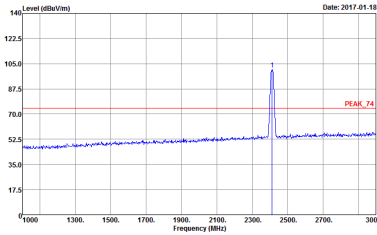
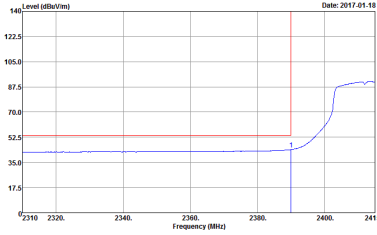
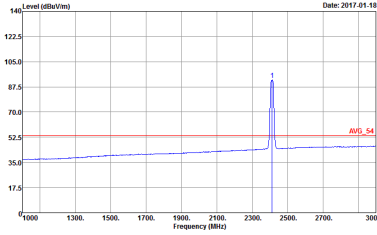


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                   |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH11 2462MHz                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                   |
| 1    | Horizontal                                                                                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                                                                                       |
| Peak | <div><p>Site : 03CH11-HV<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> | <div><p>Site : 03CH11-HV<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> |
| Avg. | <div><p>Site : 03CH11-HV<br/>Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   | <div><p>Site : 03CH11-HV<br/>Condition : AVG_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   |

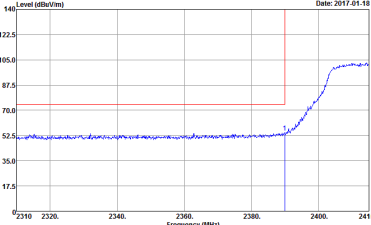
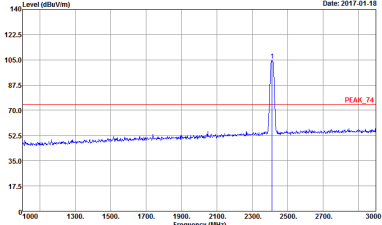
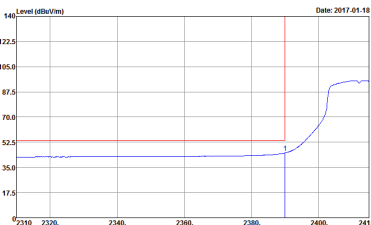
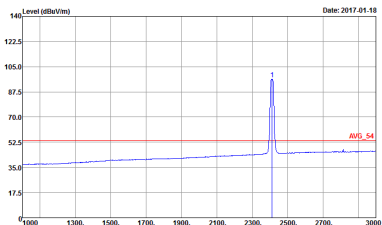


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                       |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH11 2462MHz                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                       |
| 1    | Vertical                                                                                                                                                                                                                                                                | Fundamental                                                                                                                                                                                                                                                           |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
| Avg. |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>   |  <p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>   |

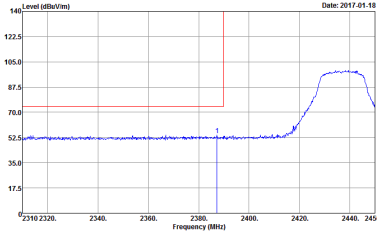
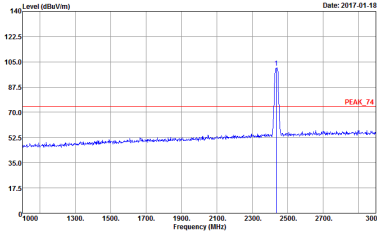
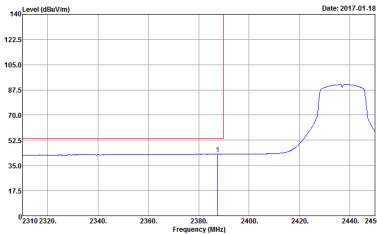
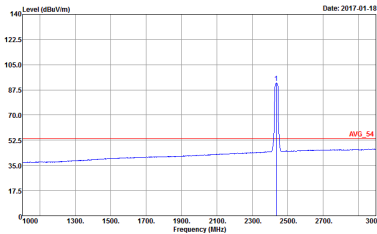
**2.4GHz 2400~2483.5MHz**
**WIFI 802.11n HT20 (Band Edge @ 3m)**

| WIFI        | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                          |                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT         | 802.11n HT20 CH01 2412MHz                                                                                                                                                                                                     |                                                                                                                                                                                                                             |
| 1           | Horizontal                                                                                                                                                                                                                    | Fundamental                                                                                                                                                                                                                 |
| <b>Peak</b> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p>  |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p>  |
|             |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p> |

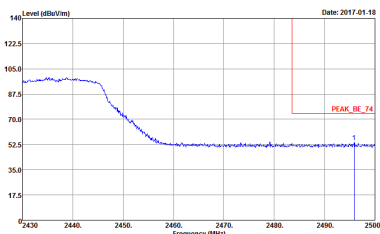
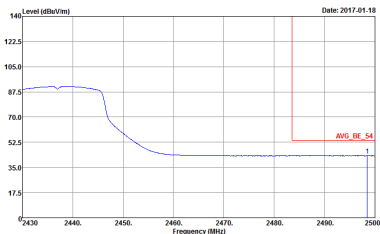


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                       |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11n HT20 CH01 2412MHz                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                       |
| 1    | Vertical                                                                                                                                                                                                                                                                | Fundamental                                                                                                                                                                                                                                                           |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
|      |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>   |  <p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>   |
| Avg. |                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                       |

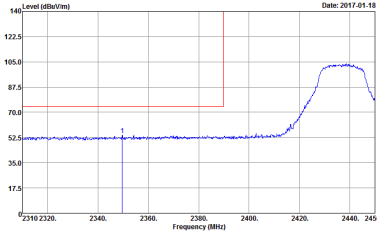
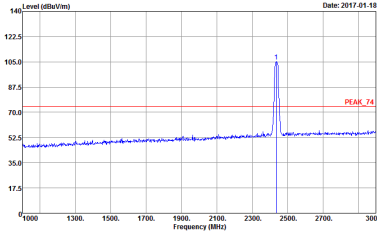
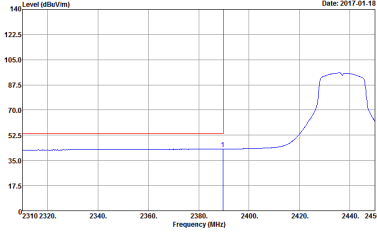
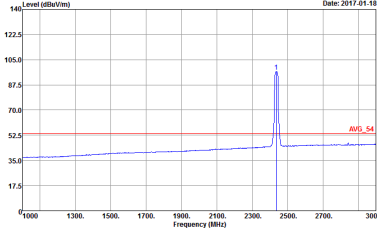


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                         |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11n HT20 CH06 2437MHz - L                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                         |
| 1    | Horizontal                                                                                                                                                                                                                                                                | Fundamental                                                                                                                                                                                                                                                             |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
| Avg. |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>   |  <p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>   |

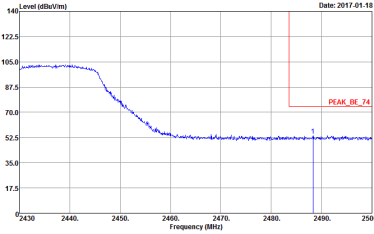
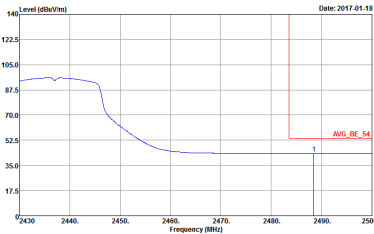


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                          |             |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11n HT20 CH06 2437MHz - R                                                                                                                                                                                                 |             |
| 1    | Horizontal                                                                                                                                                                                                                    | Fundamental |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p>  | Left blank  |
| Avg. |  <p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> | Left blank  |

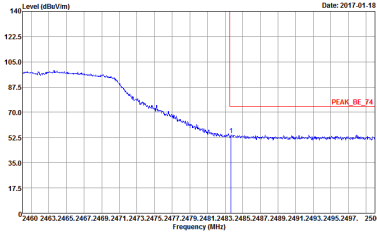
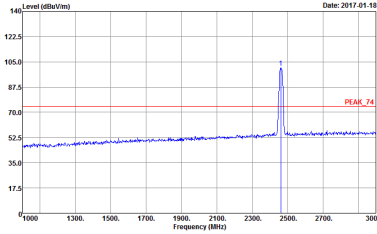
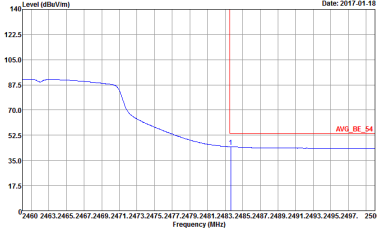
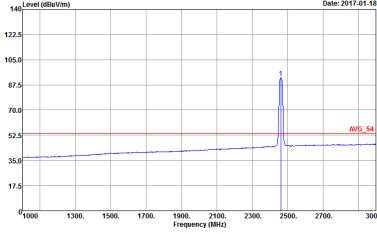


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                 |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11n HT20 CH06 2437MHz - L                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                 |
| 1    | Vertical                                                                                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                                                                                     |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> |
| Avg. | <div><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   | <div><p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   |

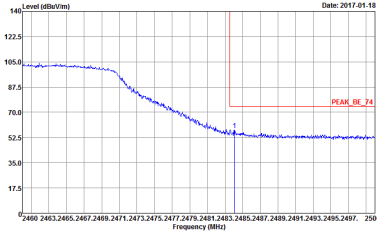
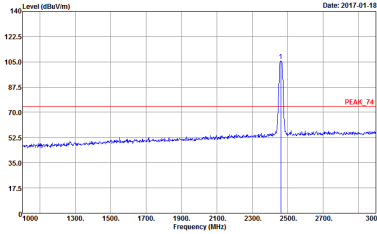
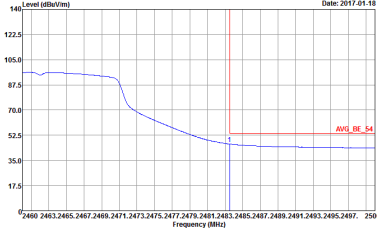
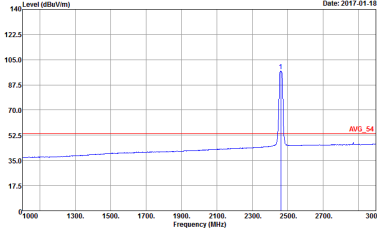


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                               |             |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11n HT20 CH06 2437MHz - R                                                                                                                                                                                                                                                      |             |
| 1    | Vertical                                                                                                                                                                                                                                                                           | Fundamental |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p></div>  | Left Blank  |
| Avg. | <div><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 6D2819<br/>EUT : Sample 1</p></div> | Left Blank  |

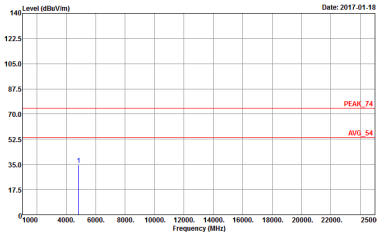
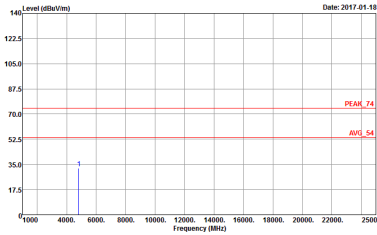


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                   |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11n HT20 CH11 2462MHz                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                   |
| 1    | Horizontal                                                                                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                                                                                       |
| Peak | <div><p>Site : 03CH11-HV<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> | <div><p>Site : 03CH11-HV<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> |
| Avg. | <div><p>Site : 03CH11-HV<br/>Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   | <div><p>Site : 03CH11-HV<br/>Condition : AVG_54 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   |



| WIFI | 2.4GHz 2400~2483.5MHz Fundamental @ 3m                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                 |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11n HT20 CH11 2462MHz                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |
| 1    | Vertical                                                                                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                                                                                     |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div> |
| Avg. | <div><p>Site : 03CH11-HY<br/>Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   | <div><p>Site : 03CH11-HY<br/>Condition : AVG_54 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p></div>   |

**2.4GHz 2400~2483.5MHz**
**WIFI 802.11b (Harmonic @ 3m)**

| WIFI                           | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                                                                                                   |                                                                                                                                                                                                                                      |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT                            | 802.11b CH01 2412MHz                                                                                                                                                                                                                  |                                                                                                                                                                                                                                      |
| 1                              | Horizontal                                                                                                                                                                                                                            | Vertical                                                                                                                                                                                                                             |
| <b>Peak</b><br><br><b>Avg.</b> |  <p>Site : 03CH11-4FY<br/> Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/> Detector : Peak<br/> Project : 602819<br/> EUT : Sample 1</p> |  <p>Site : 03CH11-4FY<br/> Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/> Detector : Peak<br/> Project : 602819<br/> EUT : Sample 1</p> |



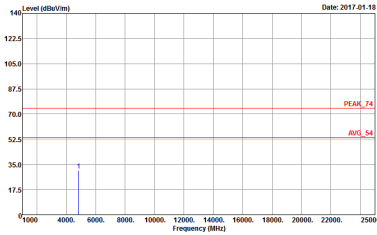
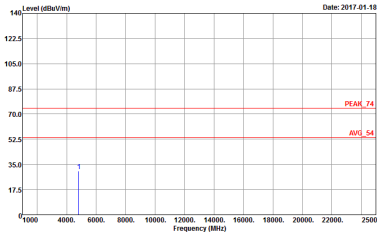
| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                            |                                                                                                                                              |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11b CH06 2437MHz                                                                                                                           |                                                                                                                                              |
| 1            | Horizontal                                                                                                                                     | Vertical                                                                                                                                     |
| Peak<br>Avg. | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
|              |                                                                                                                                                |                                                                                                                                              |



| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                            |                                                                                                                                              |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11b CH11 2462MHz                                                                                                                           |                                                                                                                                              |
| 1            | Horizontal                                                                                                                                     | Vertical                                                                                                                                     |
| Peak<br>Avg. | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
|              |                                                                                                                                                |                                                                                                                                              |



2.4GHz 2400~2483.5MHz  
WIFI 802.11g (Harmonic @ 3m)

| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                                                                                               |                                                                                                                                                                                                                                  |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11g CH01 2412MHz                                                                                                                                                                                                              |                                                                                                                                                                                                                                  |
| 1            | Horizontal                                                                                                                                                                                                                        | Vertical                                                                                                                                                                                                                         |
| Peak<br>Avg. |  <p>Site : 03CH11-4FY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-4FY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
|              |                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                  |



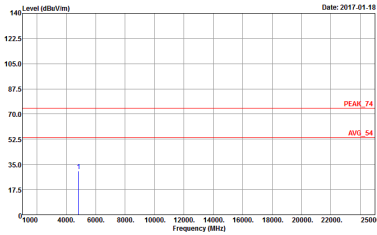
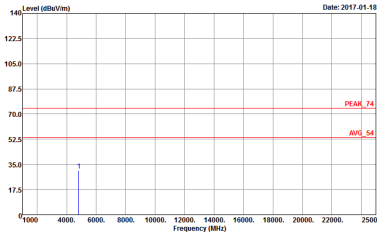
| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                            |                                                                                                                                              |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11g CH06 2437MHz                                                                                                                           |                                                                                                                                              |
| 1            | Horizontal                                                                                                                                     | Vertical                                                                                                                                     |
| Peak<br>Avg. | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
|              |                                                                                                                                                |                                                                                                                                              |



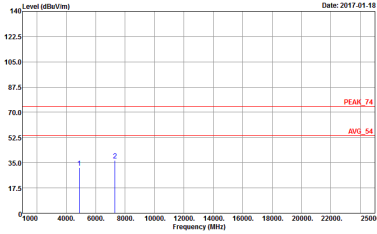
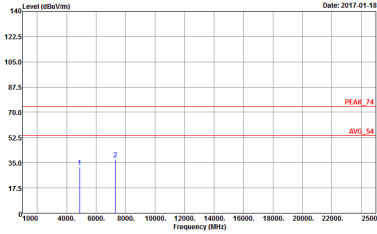
| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                            |                                                                                                                                              |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11g CH11 2462MHz                                                                                                                           |                                                                                                                                              |
| 1            | Horizontal                                                                                                                                     | Vertical                                                                                                                                     |
| Peak<br>Avg. | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
|              |                                                                                                                                                |                                                                                                                                              |



2.4GHz 2400~2483.5MHz  
WIFI 802.11n HT20 (Harmonic @ 3m)

| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                                                                                               |                                                                                                                                                                                                                                  |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11n HT20 CH01 2412MHz                                                                                                                                                                                                         |                                                                                                                                                                                                                                  |
| 1            | Horizontal                                                                                                                                                                                                                        | Vertical                                                                                                                                                                                                                         |
| Peak<br>Avg. |  <p>Site : 03CH11-4FY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-4FY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |

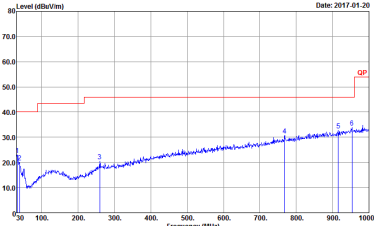
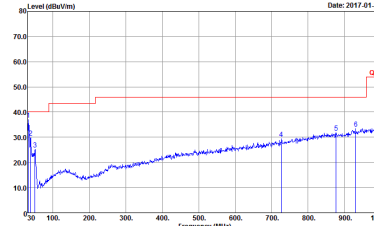


| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                                                                                              |                                                                                                                                                                                                                                 |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11n HT20 CH06 2437MHz                                                                                                                                                                                                        |                                                                                                                                                                                                                                 |
| 1            | Horizontal                                                                                                                                                                                                                       | Vertical                                                                                                                                                                                                                        |
| Peak<br>Avg. |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
|              |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                 |



| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                            |                                                                                                                                              |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11n HT20 CH11 2462MHz                                                                                                                      |                                                                                                                                              |
| 1            | Horizontal                                                                                                                                     | Vertical                                                                                                                                     |
| Peak<br>Avg. | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL<br/>Detector : Peak<br/>Project : 602819<br/>EUT : Sample 1</p> |
|              |                                                                                                                                                |                                                                                                                                              |

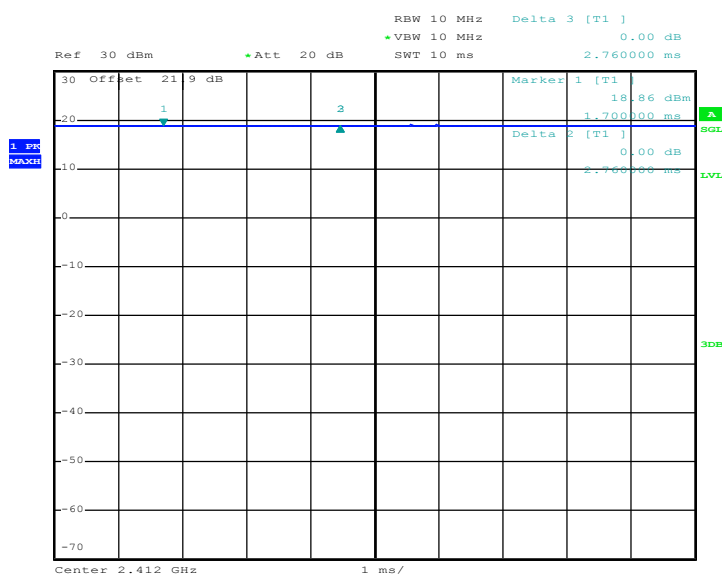
**Emission below 1GHz**  
**2.4GHz WIFI 802.11b (LF)**

| WIFI                 | 2.4GHz 2400~2483.5MHz                                                                                                                                                                                     |                                                                                                                                                                                                          |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT                  | 802.11b LF                                                                                                                                                                                                |                                                                                                                                                                                                          |
| 1                    | Horizontal                                                                                                                                                                                                | Vertical                                                                                                                                                                                                 |
| <b>QP /<br/>Peak</b> |  <p>Site : 03CH11-HY<br/>Condition : QP 3m BT-LOG 6111D-LF_ETC HORIZONTAL<br/>Project : 6D2819<br/>Sample : Sample 1</p> |  <p>Site : 03CH11-HY<br/>Condition : QP 3m BT-LOG 6111D-LF_ETC VERTICAL<br/>Project : 6D2819<br/>Sample : Sample 1</p> |
|                      |                                                                                                                                                                                                           |                                                                                                                                                                                                          |

## Appendix D. Duty Cycle Plots

| Band                | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting |
|---------------------|---------------|-------|----------|-------------|
| 802.11b             | 100.00        | -     | -        | 10Hz        |
| 802.11g             | 98.35         | -     | -        | 10Hz        |
| 2.4GHz 802.11n HT20 | 98.81         | -     | -        | 10Hz        |

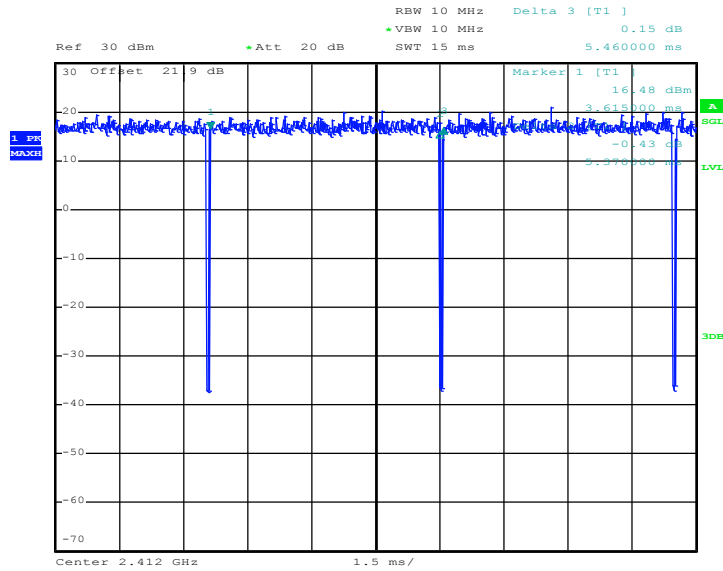
### 802.11b



Date: 10.JAN.2017 11:13:10

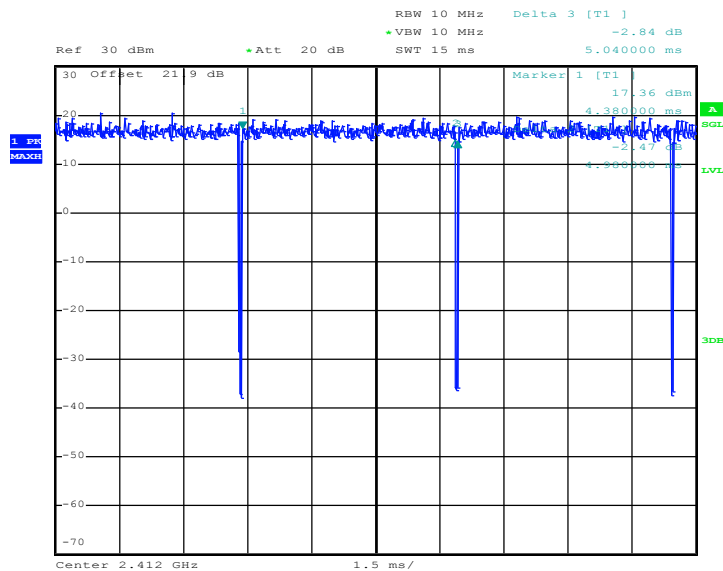


802.11g



Date: 10.JAN.2017 11:19:13

2.4GHz 802.11n HT20



Date: 10.JAN.2017 11:27:27