# FCC RADIO TEST REPORT

| | | |
|---|---|---|
| **FCC ID** | **:** | **2ABVH-INARI8B2** |
| **Equipment** | **:** | **Tablet** |
| **Brand Name** | **:** | **AAVA** |
| **Model Name** | **:** | **INARI8B-LTG-1** |
| **Applicant** | **:** | **Aava Mobile Oy**<br>**NAHKATEHTAANKATU 2 90130 OULU FINLAND** |
| **Manufacturer** | **:** | **Aava Mobile Oy**<br>**NAHKATEHTAANKATU 2 90130 OULU FINLAND** |
| **Standard** | **:** | **FCC Part 15 Subpart C §15.247** |

**The product was received on Sep. 06, 2018 and testing was started from Sep. 29, 2018 and completed on Oct. 09, 2018. 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.**

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

**Approved by: Jones Tsai**

***SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory***
*No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)*

# Table of Contents

# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR890633C | 01 | Initial issue of report | Jan. 08, 2019 |
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# Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---|---|---|---|---|
| - | 15.247(a)(2) | 6dB Bandwidth | Not Required | - |
| - | 2.1049 | 99% Occupied Bandwidth | Not Required | - |
| 3.1 | 15.247(b) | Power Output Measurement | Pass | - |
| - | 15.247(e) | Power Spectral Density | Not Required | - |
| - | 15.247(d) | Conducted Band Edges | Not Required | - |
| | | Conducted Spurious Emission | Not Required | - |
| 3.2 | 15.247(d) | Radiated Band Edges and Radiated Spurious Emission | Pass | Under limit 8.24 dB at 2390.000 MHz |
| - | 15.207 | AC Conducted Emission | Not Required | - |
| 3.3 | 15.203 & 15.247(b) | Antenna Requirement | Pass | - |

**Remark:**

1. Not required means after assessing, test items are not necessary to carry out.
2. This is a variant report by adding WWAN module. All the test cases were performed on original report which can be referred to Sporton Report Number FR860615C as appendix E. Based on the original report, the test cases were verified.

**Reviewed by: Wii Chang**

**Report Producer: Maggie Chiang**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature | |
|---|---|
| **Equipment** | Tablet |
| **Brand Name** | AAVA |
| **Model Name** | INARI8B-LTG-1 |
| **FCC ID** | 2ABVH-INARI8B2 |
| **EUT supports Radios application** | WCDMA/HSPA/LTE/NFC/GNSS<br>WLAN 11a/b/g/n HT20/HT40<br>WLAN 11ac VHT20/VHT40/VHT80<br>Bluetooth BR/EDR/LE |
| **HW Version** | DV1 |
| **SW Version** | Windows 10 |
| **EUT Stage** | Identical Prototype |

**Remark:** The above EUT's information was declared by manufacturer.

| Specification of Accessories | | | | |
|---|---|---|---|---|
| **AC Adapter** | **Brand Name** | PHIHONG | **Model Name** | AQ18A-59CFA |
| **Battery** | **Brand Name** | Aava | **Model Name** | AMME3735 |
| **USB Cable** | **Brand Name** | PHIHONG | **Model Name** | UES-1001A160-R |

## 1.2 Product Specification of Equipment Under Test

<table>
<tr><th colspan="2">Standards-related Product Specification</th></tr>
<tr><td>Tx/Rx Channel Frequency Range</td><td>802.11b/g/n : 2412 MHz ~ 2462 MHz</td></tr>
<tr><td>Maximum Output Power to antenna</td><td><Ant 1><br>802.11b : 15.80 dBm (0.0380 W)<br>802.11g : 18.76 dBm (0.0752 W)<br>802.11n HT20 : 18.74 dBm (0.0748 W)<br>802.11n HT40 : 17.30 dBm (0.0537 W)<br><Ant 2><br>802.11b : 15.52 dBm (0.0356 W)<br>802.11g : 18.11 dBm (0.0647 W)<br>802.11n HT20 : 18.18 dBm (0.0658 W)<br>802.11n HT40 : 16.25 dBm (0.0422 W)<br>MIMO <Ant. 1 + 2><br>802.11b : 18.20 dBm (0.0661 W)<br>802.11g : 20.98 dBm (0.1253 W)<br>802.11n HT20 : 20.88 dBm (0.1225 W)<br>802.11n HT40 : 19.26 dBm (0.0843 W)</td></tr>
<tr><td>Antenna Type / Gain</td><td><Ant. 1>: Ceramic Antenna with gain 2.70 dBi<br><Ant. 2>: Ceramic Antenna with gain 0.90 dBi</td></tr>
<tr><td>Type of Modulation</td><td>802.11b : DSSS (DBPSK / DQPSK / CCK)<br>802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)</td></tr>
<tr><td>Antenna Function for Transmitter</td><td>
<table>
<tr><td></td><td>Ant. 1</td><td>Ant. 2</td></tr>
<tr><td>802.11 b/g/n</td><td>V</td><td>V</td></tr>
<tr><td>802.11 b/g/n MIMO</td><td>V</td><td>V</td></tr>
</table>
</td></tr>
</table>

**Note:** MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.

## 1.3 Modification of EUT

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

## 1.4 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

| | |
|---|---|
| **Test Site** | SPORTON INTERNATIONAL INC. |
| **Test Site Location** | No.52, Huaya 1st Rd., Guishan Dist.,<br>Taoyuan City, Taiwan (R.O.C.)<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |
| **Test Site No.** | **Sporton Site No.** |
| | TH05-HY |

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

| | |
|---|---|
| **Test Site** | SPORTON INTERNATIONAL INC. |
| **Test Site Location** | 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 |
| **Test Site No.** | **Sporton Site No.** |
| | 03CH12-HY |

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

## 1.5 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 v05
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- 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: radiation 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 modes are considering the modulation and worse data rates as below table.**

**MIMO Mode**

| Modulation | Data Rate |
|---|---|
| **802.11g** | **6 Mbps** |

**<Ant. 1>**

| 802.11b mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 1M |
| Duty Cycle (%) | | 100.00 |
| CH 01 | 2412 | 13.14 |

| 802.11b mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 1M |
| CH 01 | 2412 | 15.80 |

| 802.11g mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| Duty Cycle (%) | | 96.24 |
| CH 01 | 2412 | 13.34 |

| 802.11g mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| CH 01 | 2412 | 18.76 |

| 802.11n HT20 mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| Duty Cycle (%) | | 95.97 |
| CH 01 | 2412 | 13.18 |

| 802.11n HT20 mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| CH 01 | 2412 | 18.74 |

| 802.11n HT40 mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| Duty Cycle (%) | | 94.31 |
| CH 03 | 2422 | 13.21 |

| 802.11n HT40 mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| CH 03 | 2422 | 17.30 |

**<Ant. 2>**

| 802.11b mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 1M |
| Duty Cycle (%) | | 100.00 |
| CH 01 | 2412 | 12.70 |

| 802.11b mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 1M |
| CH 01 | 2412 | 15.52 |

| 802.11g mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| Duty Cycle (%) | | 96.24 |
| CH 01 | 2412 | 12.82 |

| 802.11g mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| CH 01 | 2412 | 18.11 |

| 802.11n HT20 mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| Duty Cycle (%) | | 96.75 |
| CH 01 | 2412 | 12.64 |

| 802.11n HT20 mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| CH 01 | 2412 | 18.18 |

| 802.11n HT40 mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| Duty Cycle (%) | | 94.35 |
| CH 03 | 2422 | 12.35 |

| 802.11n HT40 mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| CH 03 | 2422 | 16.25 |

**MIMO<Ant. 1 + 2>**

| 802.11b mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 1M |
| CH 01 | 2412 | 15.43 |

| 802.11b mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 1M |
| CH 01 | 2412 | 18.20 |

| 802.11g mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| CH 01 | 2412 | 15.66 |

| 802.11g mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| CH 01 | 2412 | 20.98 |

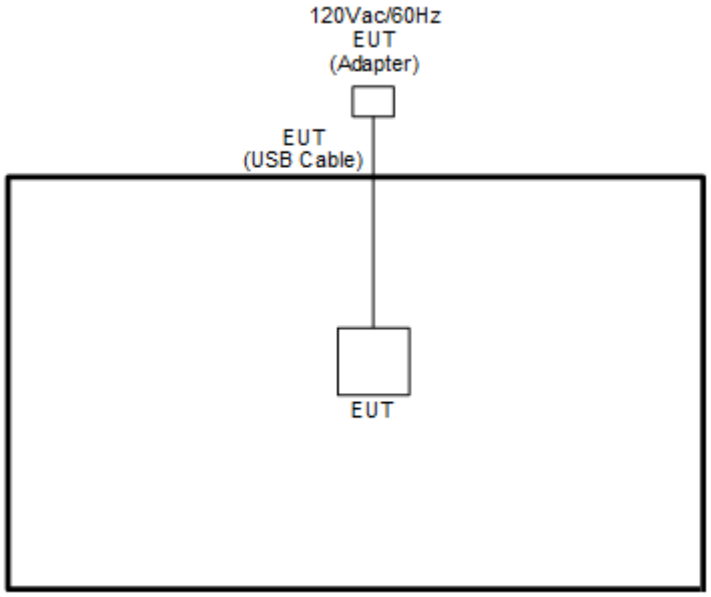
| 802.11n HT20 mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| CH 01 | 2412 | 15.35 |

| 802.11n HT20 mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| CH 01 | 2412 | 20.88 |

| 802.11n HT40 mode | | |
|---|---|---|
| Average Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| CH 03 | 2422 | 15.19 |

| 802.11n HT40 mode | | |
|---|---|---|
| Peak Power vs. Channel | | |
| Channel | Frequency (MHz) | MCS Index |
| | | MCS0 |
| CH 03 | 2422 | 19.26 |

## 2.3 Connection Diagram of Test System




## 2.4 EUT Operation Test Setup

The RF test items, utility “DRTU” was installed in EUT which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting 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 with directional gain greater than 6dBi is 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.

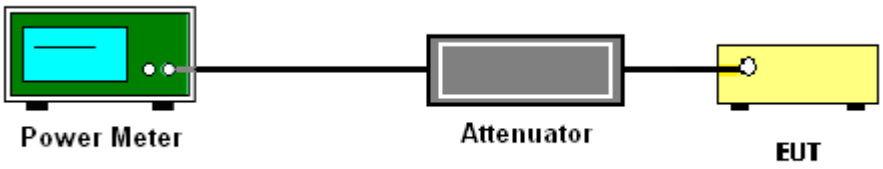
### 3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.1.3 Test Procedures

1. For Peak Power, the testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v05 section 9.1.3 PKPM1 Peak power meter method.
2. For Average Power, the testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v05 section 9.2.3.1 Method AVGPM.
3. 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.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Measure the conducted output power and record the results in the test report.
6. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

### 3.1.4 Test Setup



### 3.1.5 Test Result of Peak Output Power

| Test Engineer : | Shiming Liu | Temperature : | 21~25℃ |
|---|---|---|---|
| | | Relative Humidity : | 51~54% |

| 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 |
| | | | | | Ant 1 | Ant 2 | SUM | Ant 1 | Ant 2 | Ant 1 | Ant 2 | Ant 1 | Ant 2 | Ant 1 | Ant 2 | |
| 11b | 1Mbps | 1 | 1 | 2412 | 15.80 | 15.52 | - | 30.00 | 30.00 | 2.70 | 0.90 | 18.50 | 16.42 | 36.00 | 36.00 | Pass |
| 11g | 6Mbps | 1 | 1 | 2412 | 18.76 | 18.11 | - | 30.00 | 30.00 | 2.70 | 0.90 | 21.46 | 19.01 | 36.00 | 36.00 | Pass |
| HT20 | MCS0 | 1 | 1 | 2412 | 18.74 | 18.18 | - | 30.00 | 30.00 | 2.70 | 0.90 | 21.44 | 19.08 | 36.00 | 36.00 | Pass |
| HT40 | MCS0 | 1 | 3 | 2422 | 17.30 | 16.25 | - | 30.00 | 30.00 | 2.70 | 0.90 | 20.00 | 17.15 | 36.00 | 36.00 | Pass |
| 11b | 1Mbps | 2 | 1 | 2412 | 14.92 | 15.44 | 18.20 | 30.00 | | 2.70 | | 20.90 | | 36.00 | | Pass |
| 11g | 6Mbps | 2 | 1 | 2412 | 17.83 | 18.10 | 20.98 | 30.00 | | 2.70 | | 23.68 | | 36.00 | | Pass |
| HT20 | MCS0 | 2 | 1 | 2412 | 17.65 | 18.07 | 20.88 | 30.00 | | 2.70 | | 23.58 | | 36.00 | | Pass |
| HT40 | MCS0 | 2 | 3 | 2422 | 16.20 | 16.30 | 19.26 | 30.00 | | 2.70 | | 21.96 | | 36.00 | | Pass |

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

| Test Engineer : | Shiming Liu | Temperature : | 21~25℃ |
|---|---|---|---|
| | | Relative Humidity : | 51~54% |

| 2.4GHz Band | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Duty Factor (dB) | | Average Conducted Power (dBm) | | |
| | | | | | Ant 1 | Ant 2 | Ant 1 | Ant 2 | SUM |
| 11b | 1Mbps | 1 | 1 | 2412 | 0.00 | 0.00 | 13.14 | 12.70 | - |
| 11g | 6Mbps | 1 | 1 | 2412 | 0.17 | 0.17 | 13.34 | 12.82 | |
| HT20 | MCS0 | 1 | 1 | 2412 | 0.18 | 0.14 | 13.18 | 12.64 | |
| HT40 | MCS0 | 1 | 3 | 2422 | 0.25 | 0.25 | 13.21 | 12.35 | |
| 11b | 1Mbps | 2 | 1 | 2412 | 0.00 | 0.00 | 12.00 | 12.80 | 15.43 |
| 11g | 6Mbps | 2 | 1 | 2412 | 0.13 | 0.10 | 12.45 | 12.85 | 15.66 |
| HT20 | MCS0 | 2 | 1 | 2412 | 0.14 | 0.13 | 12.11 | 12.56 | 15.35 |
| HT40 | MCS0 | 2 | 3 | 2422 | 0.18 | 0.18 | 11.98 | 12.38 | 15.19 |

# 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 limits as below.

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

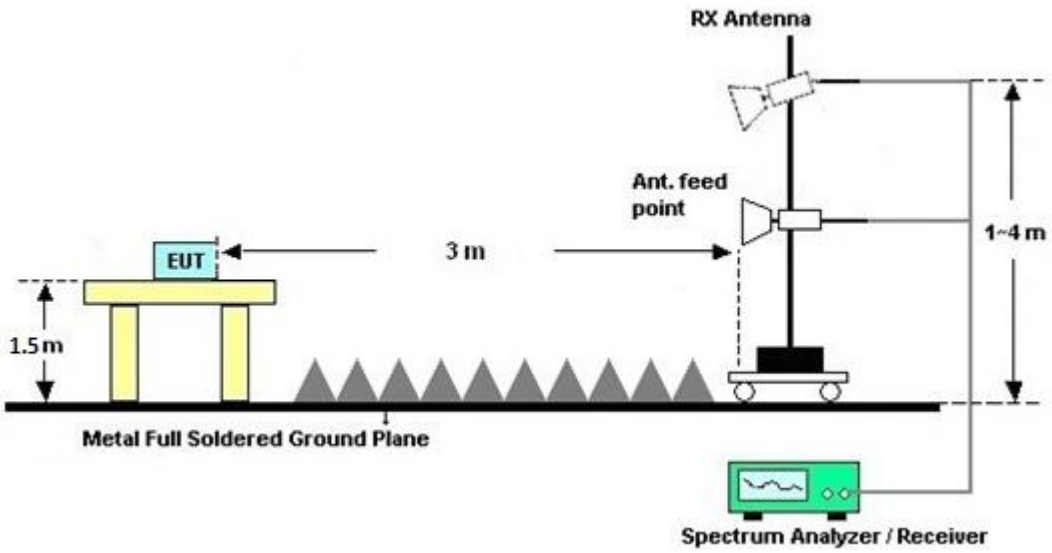
## 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.2.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05.
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 testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. 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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 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




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

Please refer to Appendix A and B.

### 3.2.6 Duty Cycle

Please refer to Appendix C.

### 3.2.7 Test Result of Radiated Spurious Emission

Please refer to Appendix A and B.

# 3.3 Antenna Requirements

## 3.3.1 Standard Applicable

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

## 3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

## 3.3.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = $G_{ANT}$ + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log($N_{ANT}/N_{SS}$=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with $G_{ANT}$ set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain $G_{ANT}$ is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.

**<CDD Modes>**

| | Ant. 1 (dBi) | Ant. 2 (dBi) | DG for Power (dBi) | Power Limit Reduction (dB) |
|---|---|---|---|---|
| **2.4 GHz** | 2.70 | 0.90 | 2.70 | 0.00 |

*Power Limit Reduction = DG(Power) – 6dBi, ( min = 0 )*

*PSD Limit Reduction = DG(PSD) – 6dBi, ( min = 0 )*

# 4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Power Meter | Anritsu | ML2495A | 1132003 | N/A | Aug. 16, 2018 | Sep. 29, 2018 | Aug. 15, 2019 | Conducted (TH05-HY) |
| Power Sensor | Anritsu | MA2411B | 1126017 | 300MHz~ 40GHz | Aug. 16, 2018 | Sep. 29, 2018 | Aug. 15, 2019 | Conducted (TH05-HY) |
| Spectrum Analyzer | Rohde & Schwarz | FSP40 | 100057 | 9kHz-40GHz | Nov. 21, 2017 | Sep. 29, 2018 | Nov. 20, 2018 | Conducted (TH05-HY) |
| Switch Box & RF Cable | Burgeon | ETF-058 | EC1300484 | N/A | Mar. 01, 2018 | Sep. 29, 2018 | Feb. 28, 2019 | Conducted (TH05-HY) |
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100488 | 9 kHz~30 MHz | Nov. 23, 2017 | Oct. 08, 2018~ Oct. 09, 2018 | Nov. 22, 2018 | Radiation (03CH12-HY) |
| Bilog Antenna | TESEQ | CBL 6111D&00800 N1D01N-06 | 37059&01 | 30MHz~1GHz | Oct. 14, 2017 | Oct. 08, 2018~ Oct. 09, 2018 | Oct. 13, 2018 | Radiation (03CH12-HY) |
| Horn Antenna | SCHWARZBECK | BBHA 9120D | 9120D-1328 | 1GHz ~ 18GHz | Oct. 20, 2017 | Oct. 08, 2018~ Oct. 09, 2018 | Oct. 19, 2018 | Radiation (03CH12-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170584 | 18GHz ~ 40GHz | Nov. 27, 2017 | Oct. 08, 2018~ Oct. 09, 2018 | Nov. 26, 2018 | Radiation (03CH12-HY) |
| Preamplifier | COM-POWER | PA-103 | 161075 | 10MHz~1GHz | Mar. 26, 2018 | Oct. 08, 2018~ Oct. 09, 2018 | Mar. 25, 2019 | Radiation (03CH12-HY) |
| Preamplifier | Keysight | 83017A | MY53270148 | 1GHz~26.5GHz | Jan. 15, 2018 | Oct. 08, 2018~ Oct. 09, 2018 | Jan. 14, 2019 | Radiation (03CH12-HY) |
| Preamplifier | MITEQ | AMF-7D-00101 800-30-10P | 1590074 | 1GHz~18GHz | May 21, 2018 | Oct. 08, 2018~ Oct. 09, 2018 | May 20, 2019 | Radiation (03CH12-HY) |
| Preamplifier | EMEC | EM18G40G | 060715 | 18GHz ~ 40GHz | Dec. 05, 2017 | Oct. 08, 2018~ Oct. 09, 2018 | Dec. 04, 2018 | Radiation (03CH12-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESU26 | 100390 | 20Hz~26.5GHz | Dec. 25, 2017 | Oct. 08, 2018~ Oct. 09, 2018 | Dec. 24, 2018 | Radiation (03CH12-HY) |
| Filter | Wainwright | WHKX12-2700 -3000-18000-6 0ST | SN2 | 3 GHz Highpass | Mar. 21, 2018 | Oct. 08, 2018~ Oct. 09, 2018 | Mar. 20, 2019 | Radiation (03CH12-HY) |
| Filter | Wainwright | WLJ4-1000-15 30-6000-40ST | SN3 | 1.53 GHz Lowpass | Mar. 21, 2018 | Oct. 08, 2018~ Oct. 09, 2018 | Mar. 20, 2019 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY15539/4 | 30M-18G | Mar. 14, 2018 | Oct. 08, 2018~ Oct. 09, 2018 | Mar. 13, 2019 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 505134/2 | 30M~40GHz | Oct. 17, 2017 | Oct. 08, 2018~ Oct. 09, 2018 | Oct. 16, 2018 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 800740/2 | 30M~40GHz | Oct. 17, 2017 | Oct. 08, 2018~ Oct. 09, 2018 | Oct. 16, 2018 | Radiation (03CH12-HY) |
| Antenna Mast | EMEC | AM-BS-4500-B | N/A | 1m~4m | N/A | Oct. 08, 2018~ Oct. 09, 2018 | N/A | Radiation (03CH12-HY) |
| Turn Table | EMEC | TT2000 | N/A | 0~360 Degree | N/A | Oct. 08, 2018~ Oct. 09, 2018 | N/A | Radiation (03CH12-HY) |
| Software | Audix | E3 6.2009-8-24 | RK-000989 | N/A | N/A | Oct. 08, 2018~ Oct. 09, 2018 | N/A | Radiation (03CH12-HY) |

# 5 Uncertainty of Evaluation

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

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

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **4.7** |

# Appendix A. Radiated Spurious Emission

| Test Engineer : | Jack Cheng, Lance Chiang, and Peter Liao | Temperature : | 21~25°C |
|---|---|---|---|
| | | Relative Humidity : | 56~62% |

**2.4GHz 2400~2483.5MHz**

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

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Path | Preamp | Ant | Table | Peak | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 2 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11g CH 01 2412MHz | | 2362.29 | 57.43 | -16.57 | 74 | 45.3 | 27.07 | 16.64 | 31.58 | 221 | 344 | P | H |
| | | 2390 | 45.42 | -8.58 | 54 | 33.15 | 27.15 | 16.69 | 31.57 | 221 | 344 | A | H |
| | * | 2412 | 104.01 | - | - | 91.67 | 27.19 | 16.72 | 31.57 | 221 | 344 | P | H |
| | * | 2412 | 94.12 | - | - | 81.78 | 27.19 | 16.72 | 31.57 | 221 | 344 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 2389.695 | 58.77 | -15.23 | 74 | 46.52 | 27.15 | 16.68 | 31.58 | 250 | 286 | P | V |
| | | 2390 | 45.76 | -8.24 | 54 | 33.49 | 27.15 | 16.69 | 31.57 | 250 | 286 | A | V |
| | * | 2412 | 105.09 | - | - | 92.75 | 27.19 | 16.72 | 31.57 | 250 | 286 | P | V |
| | * | 2412 | 95.1 | - | - | 82.76 | 27.19 | 16.72 | 31.57 | 250 | 286 | 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 802.11g (Harmonic @ 3m)

| WIFI Ant. 2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 01 2412MHz | | 4824 | 40.77 | -33.23 | 74 | 56.53 | 31.36 | 10.43 | 57.55 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4824 | 40.77 | -33.23 | 74 | 56.53 | 31.36 | 10.43 | 57.55 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## Note symbol

| | |
|---|---|
| * | **Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. |
| ! | Test result is **over limit** line. |
| P/A | **P**eak or **A**verage |
| H/V | **H**orizontal or **V**ertical |

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

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Path | Preamp | Ant | Table | Peak | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 2 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11b CH 01 2412MHz | | 2390 | 55.45 | -18.55 | 74 | 54.51 | 32.22 | 4.58 | 35.86 | 103 | 308 | P | H |
| | | 2390 | 43.54 | -10.46 | 54 | 42.6 | 32.22 | 4.58 | 35.86 | 103 | 308 | A | H |

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =

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

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

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path 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) + Path 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)

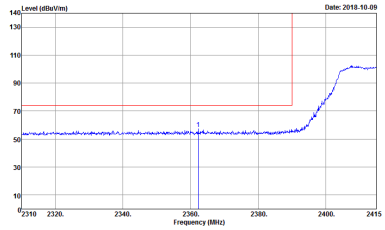
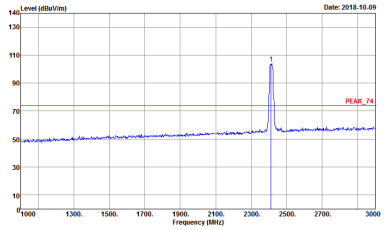
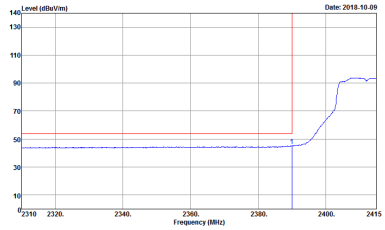
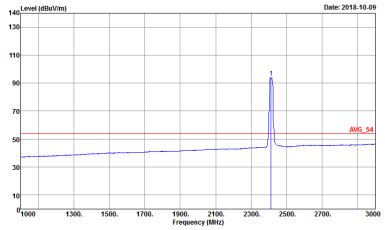
**Both peak and average measured complies with the limit line, so test result is "PASS".**

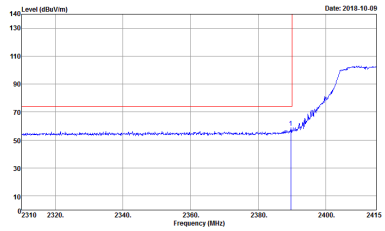
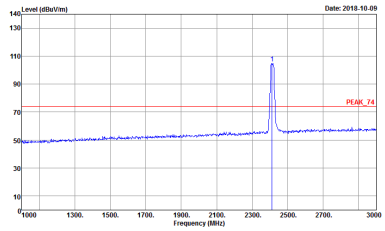
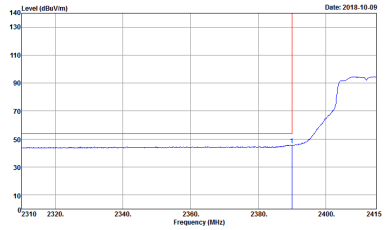
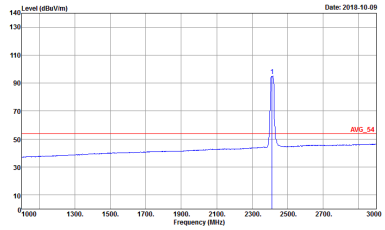
# Appendix B. Radiated Spurious Emission Plots

| | | | |
|---|---|---|---|
| **Test Engineer :** | Jack Cheng, Lance Chiang, and Peter Liao | **Temperature :** | 21~25°C |
| | | **Relative Humidity :** | 56~62% |

## 2.4GHz 2400~2483.5MHz

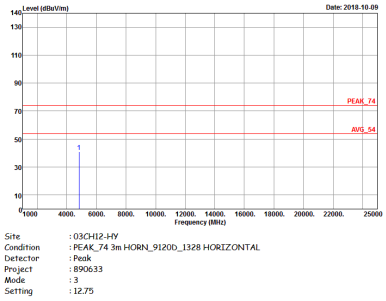
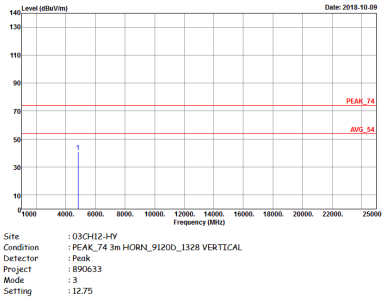
## WIFI 802.11g (Band Edge @ 3m)

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| Ant. | 802.11g CH01 2412MHz | |
| 2 | Horizontal | Fundamental |
| Peak |  <br>Site : 03CH12-HY<br>Condition : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 890633<br>Mode : 3<br>Setting : 12.75 |  <br>Site : 03CH12-HY<br>Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 890633<br>Mode : 3<br>Setting : 12.75 |
| Avg. |  <br>Site : 03CH12-HY<br>Condition : AVG_BE_54 3m HORN_9120D_1328 HORIZONTAL<br>: RBW:1000.000KHz VBW:1000KHz SWT:Auto<br>Detector : Peak<br>Project : 890633<br>Mode : 3<br>Setting : 12.75 |  <br>Site : 03CH12-HY<br>Condition : AVG_54 3m HORN_9120D_1328 HORIZONTAL<br>: RBW:1000.000KHz VBW:1000KHz SWT:Auto<br>Detector : Peak<br>Project : 890633<br>Mode : 3<br>Setting : 12.75 |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| Ant. | 802.11g CH01 2412MHz | |
| 2 | Vertical | Fundamental |
| Peak |  <br>Site : 03CH12-HY<br>Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 890633<br>Mode : 3<br>Setting : 12.75 |  <br>Site : 03CH12-HY<br>Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 890633<br>Mode : 3<br>Setting : 12.75 |
| Avg. |  <br>Site : 03CH12-HY<br>Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL<br>: RBW:1000.000KHz VBW:1.000KHz SWT:Auto<br>Detector : Peak<br>Project : 890633<br>Mode : 3<br>Setting : 12.75 |  <br>Site : 03CH12-HY<br>Condition : AVG_54 3m HORN_9120D_1328 VERTICAL<br>: RBW:1000.000KHz VBW:1.000KHz SWT:Auto<br>Detector : Peak<br>Project : 890633<br>Mode : 3<br>Setting : 12.75 |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11g (Harmonic @ 3m)

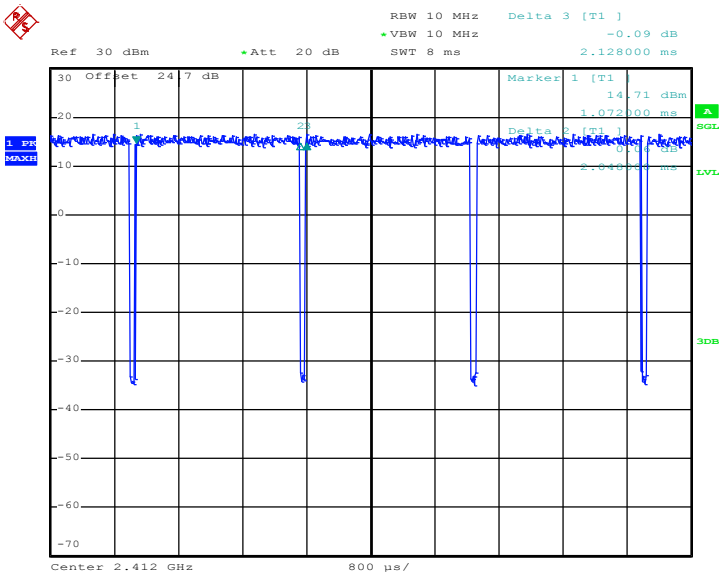
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| Ant. | 802.11g CH01 2412MHz | |
| 2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

# Appendix C. Duty Cycle Plots

| Antenna | Band | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting | Duty Factor(dB) |
|---|---|---|---|---|---|---|
| 2 | 802.11g | 96.24 | 2048.000 | 0.49 | 1kHz | 0.17 |

**<Ant. 2>**

**802.11g**




Date: 29.SEP.2018 06:47:06

# Appendix E. Original Report

Please refer to Sporton report number FR860615C as below.

# FCC RADIO TEST REPORT

| | | |
|---|---|---|
| **FCC ID** | **:** | **2ABVH-INARI8B1** |
| **Equipment** | **:** | **Tablet** |
| **Brand Name** | **:** | **AAVA** |
| **Model Name** | **:** | **INARI8B-WIG-1** |
| **Applicant** | **:** | **Aava Mobile Oy**<br>**NAHKATEHTAANKATU 2 90130 OULU FINLAND** |
| **Manufacturer** | **:** | **Aava Mobile Oy**<br>**NAHKATEHTAANKATU 2 90130 OULU FINLAND** |
| **Standard** | **:** | **FCC Part 15 Subpart C §15.247** |

**The product was received on Jun. 06, 2018 and testing was started from Jun. 13, 2018 and completed on Aug. 24, 2018. 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.**

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

**Approved by: Joseph Lin**

***SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory***
*No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)*

# Table of Contents

# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR860615C | 01 | Initial issue of report | Sep. 11, 2018 |
| | | | |
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# Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---|---|---|---|---|
| 3.1 | 15.247(a)(2) | 6dB Bandwidth | Pass | - |
| 3.1 | 2.1049 | 99% Occupied Bandwidth | Reporting only | - |
| 3.2 | 15.247(b) | Power Output Measurement | Pass | - |
| 3.3 | 15.247(e) | Power Spectral Density | Pass | - |
| 3.4 | 15.247(d) | Conducted Band Edges | Pass | - |
| | | Conducted Spurious Emission | Pass | - |
| 3.5 | 15.247(d) | Radiated Band Edges and Radiated Spurious Emission | Pass | Under limit 1.03 dB at 2390.000 MHz |
| 3.6 | 15.207 | AC Conducted Emission | Pass | Under limit 8.81 dB at 0.688 MHz |
| 3.7 | 15.203 & 15.247(b) | Antenna Requirement | Pass | - |

**Reviewed by: Wii Chang**

**Report Producer: Nancy Yang**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature | |
|---|---|
| **Equipment** | Tablet |
| **Brand Name** | AAVA |
| **Model Name** | INARI8B-WIG-1 |
| **FCC ID** | 2ABVH-INARI8B1 |
| **EUT supports Radios application** | NFC/GNSS<br>WLAN 11a/b/g/n HT20/HT40<br>WLAN 11ac VHT20/VHT40/VHT80<br>Bluetooth BR/EDR/LE |
| **HW Version** | RU |
| **SW Version** | Windows 10 |
| **MFD** | 2018-04-26 |
| **EUT Stage** | Identical Prototype |

**Remark:** The above EUT's information was declared by manufacturer.

| Specification of Accessories | | | | |
|---|---|---|---|---|
| **AC Adapter** | **Brand Name** | PHIHONG | **Model Name** | AQ18A-59CFA |
| **Battery** | **Brand Name** | Aava | **Model Name** | AMME3735 |
| **USB Cable** | **Brand Name** | PHIHONG | **Model Name** | UES-1001A160-R |

## 1.2 Product Specification of Equipment Under Test

<table>
<tr><th colspan="2">Standards-related Product Specification</th></tr>
<tr><td>Tx/Rx Channel Frequency Range</td><td>802.11b/g/n : 2412 MHz ~ 2462 MHz</td></tr>
<tr><td>Maximum Output Power to antenna</td><td><Ant 1><br>802.11b : 15.97 dBm (0.0395 W)<br>802.11g : 18.79 dBm (0.0757 W)<br>802.11n HT20 : 18.62 dBm (0.0728 W)<br>802.11n HT40 : 16.91 dBm (0.0491 W)<br><Ant 2><br>802.11b : 15.15 dBm (0.0327 W)<br>802.11g : 17.88 dBm (0.0614 W)<br>802.11n HT20 : 17.86 dBm (0.0611 W)<br>802.11n HT40 : 16.19 dBm (0.0416 W)<br>MIMO <Ant. 1 + 2><br>802.11b : 18.04 dBm (0.0637 W)<br>802.11g : 20.64 dBm (0.1159 W)<br>802.11n HT20 : 20.69 dBm (0.1172 W)<br>802.11n HT40 : 19.22 dBm (0.0836 W)</td></tr>
<tr><td>99% Occupied Bandwidth</td><td><Ant 1><br>802.11b : 14.80MHz<br>802.11g : 16.70MHz<br>802.11n HT20 : 17.85MHz<br>802.11n HT40 : 36.40MHz<br><Ant 2><br>802.11b : 14.10MHz<br>802.11g : 16.70MHz<br>802.11n HT20 : 17.85MHz<br>802.11n HT40 : 36.60MHz<br>MIMO <Ant 1><br>802.11b : 13.75MHz<br>802.11g : 16.65MHz<br>802.11n HT20 : 17.85MHz<br>802.11n HT40 : 36.40MHz<br>MIMO <Ant 2><br>802.11b : 13.65MHz<br>802.11g : 16.70MHz<br>802.11n HT20 : 17.80MHz<br>802.11n HT40 : 36.30MHz</td></tr>
<tr><td>Antenna Type / Gain</td><td><Ant. 1>: Ceramic Antenna with gain 2.70 dBi<br><Ant. 2>: Ceramic Antenna with gain 0.90 dBi</td></tr>
<tr><td>Type of Modulation</td><td>802.11b : DSSS (DBPSK / DQPSK / CCK)<br>802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)</td></tr>
<tr><td>Antenna Function for Transmitter</td><td>
<table>
<tr><td></td><td>Ant. 1</td><td>Ant. 2</td></tr>
<tr><td>802.11 b/g/n</td><td>V</td><td>V</td></tr>
<tr><td>802.11 b/g/n MIMO</td><td>V</td><td>V</td></tr>
</table>
</td></tr>
</table>

**Note:** MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.

## 1.3 Modification of EUT

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

## 1.4 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

| | | | |
|---|---|---|---|
| **Test Site** | SPORTON INTERNATIONAL INC. | | |
| **Test Site Location** | No.52, Huaya 1st Rd., Guishan Dist.,<br>Taoyuan City, Taiwan (R.O.C.)<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 | | |
| **Test Site No.** | **Sporton Site No.** | | |
| | TH05-HY | CO05-HY | 03CH07-HY |

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

## 1.5 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 v04
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- 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

a. 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: conduction emission (150 kHz to 30 MHz), radiation 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 for Ant. 1, X Plane for Ant. 2 and Ant. 1+2 ) were recorded in this report.

b. AC power line Conducted Emission was tested under maximum output power.

## 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 modes are considering the modulation and worse data rates as below table.**

**Single Antenna**

| Modulation | Data Rate |
|---|---|
| 802.11b | 1 Mbps |
| 802.11g | 6 Mbps |
| 802.11n HT20 | MCS0 |
| 802.11n HT40 | MCS0 |

**MIMO Antenna**

| Modulation | Data Rate |
|---|---|
| 802.11b | 1 Mbps |
| 802.11g | 6 Mbps |
| 802.11n HT20 | MCS0 |
| 802.11n HT40 | MCS0 |

| Test Cases | |
|---|---|
| AC Conducted Emission | Mode 1: WLAN (2.4GHz) Link + Bluetooth Link + USB Cable (Type C) + Adapter + GPS Rx + NFC On |

**<Ant. 1>**

| 802.11b mode | | | | | | |
|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 1M | Channel | Data Rate (bps) 2M | 5.5M | 11M |
| Duty Cycle (%) | | 98.56 | | 98.73 | 98.36 | 97.01 |
| CH 01 | 2412 | 13.21 | CH 06 | 13.10 | 13.17 | 13.23 |
| CH 06 | 2437 | **13.24** | | | | |
| CH 11 | 2462 | 13.20 | | | | |

| 802.11b mode | | | | | | |
|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 1M | Channel | Data Rate (bps) 2M | 5.5M | 11M |
| CH 01 | 2412 | 15.86 | CH 06 | 15.86 | 15.95 | 15.96 |
| CH 06 | 2437 | **15.97** | | | | |
| CH 11 | 2462 | 15.85 | | | | |

| 802.11g mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 6M | Channel | Data Rate (bps) 9M | 12M | 18M | 24M | 36M | 48M | 54M |
| Duty Cycle (%) | | 97.14 | | 97.16 | 97.20 | 95.05 | 94.29 | 92.78 | 89.47 | 81.33 |
| CH 01 | 2412 | **13.23** | CH 01 | 13.18 | 13.20 | 13.22 | 11.91 | 11.98 | 11.54 | 11.16 |
| CH 06 | 2437 | 13.14 | | | | | | | | |
| CH 11 | 2462 | 13.22 | | | | | | | | |

| 802.11g mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 6M | Channel | Data Rate (bps) 9M | 12M | 18M | 24M | 36M | 48M | 54M |
| CH 01 | 2412 | **18.79** | CH 01 | 18.65 | 18.61 | 18.60 | 18.68 | 18.75 | 18.71 | 18.74 |
| CH 06 | 2437 | 18.54 | | | | | | | | |
| CH 11 | 2462 | 18.52 | | | | | | | | |

| 802.11n HT20 mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| Duty Cycle (%) | | 97.94 | | 97.03 | 94.29 | 93.98 | 91.58 | 90.67 | 89.71 | 87.30 |
| CH 01 | 2412 | **13.14** | CH 01 | 13.09 | 13.13 | 11.95 | 11.91 | 11.45 | 10.71 | 7.49 |
| CH 06 | 2437 | 13.02 | | | | | | | | |
| CH 11 | 2462 | 13.07 | | | | | | | | |

| 802.11n HT20 mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH 01 | 2412 | **18.62** | CH 01 | 18.50 | 18.61 | 18.61 | 18.61 | 18.61 | 18.60 | 18.61 |
| CH 06 | 2437 | 18.45 | | | | | | | | |
| CH 11 | 2462 | 18.54 | | | | | | | | |

| 802.11n HT40 mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| Duty Cycle (%) | | 96.91 | | 94.57 | 91.21 | 89.04 | 86.79 | 84.27 | 80.95 | 80.00 |
| CH 03 | 2422 | **13.17** | CH 03 | 11.44 | 11.60 | 10.47 | 10.38 | 9.88 | 8.98 | 6.83 |
| CH 06 | 2437 | 13.05 | | | | | | | | |
| CH 09 | 2452 | 13.12 | | | | | | | | |

| 802.11n HT40 mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH 03 | 2422 | **16.91** | CH 03 | 16.68 | 16.81 | 16.75 | 16.90 | 16.75 | 16.70 | 16.70 |
| CH 06 | 2437 | 16.78 | | | | | | | | |
| CH 09 | 2452 | 14.58 | | | | | | | | |

**<Ant. 2>**

| 802.11b mode | | | | | | |
|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 1M | Channel | Data Rate (bps) 2M | 5.5M | 11M |
| Duty Cycle (%) | | 98.56 | | 98.73 | 98.36 | 96.99 |
| CH 01 | 2412 | **12.40** | CH 01 | 12.28 | 12.37 | 12.38 |
| CH 06 | 2437 | 12.34 | | | | |
| CH 11 | 2462 | 12.37 | | | | |

| 802.11b mode | | | | | | |
|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 1M | Channel | Data Rate (bps) 2M | 5.5M | 11M |
| CH 01 | 2412 | **15.15** | CH 01 | 15.14 | 15.14 | 15.14 |
| CH 06 | 2437 | 15.02 | | | | |
| CH 11 | 2462 | 15.14 | | | | |

| 802.11g mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 6M | Channel | Data Rate (bps) 9M | 12M | 18M | 24M | 36M | 48M | 54M |
| Duty Cycle (%) | | 97.14 | | 97.16 | 97.20 | 95.89 | 94.29 | 91.84 | 90.67 | 88.41 |
| CH 01 | 2412 | **12.38** | CH 01 | 12.24 | 12.17 | 12.23 | 11.01 | 10.92 | 10.51 | 9.78 |
| CH 06 | 2437 | 12.27 | | | | | | | | |
| CH 11 | 2462 | 12.30 | | | | | | | | |

| 802.11g mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 6M | Channel | Data Rate (bps) 9M | 12M | 18M | 24M | 36M | 48M | 54M |
| CH 01 | 2412 | **17.88** | CH 01 | 17.70 | 17.74 | 17.70 | 17.70 | 17.75 | 17.75 | 17.74 |
| CH 06 | 2437 | 17.33 | | | | | | | | |
| CH 11 | 2462 | 17.55 | | | | | | | | |

| 802.11n HT20 mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| Duty Cycle (%) | | 97.94 | | 97.00 | 95.65 | 94.03 | 92.47 | 89.33 | 88.24 | 88.19 |
| CH 01 | 2412 | **12.33** | CH 01 | 12.11 | 12.09 | 10.88 | 10.90 | 10.97 | 9.75 | 7.00 |
| CH 06 | 2437 | 12.15 | | | | | | | | |
| CH 11 | 2462 | 12.20 | | | | | | | | |

| 802.11n HT20 mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH 01 | 2412 | **17.86** | CH 01 | 17.80 | 17.76 | 17.74 | 17.81 | 17.81 | 17.74 | 17.85 |
| CH 06 | 2437 | 17.33 | | | | | | | | |
| CH 11 | 2462 | 17.66 | | | | | | | | |

| 802.11n HT40 mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| Duty Cycle (%) | | 95.92 | | 93.80 | 91.21 | 90.41 | 87.04 | 83.33 | 82.93 | 80.77 |
| CH 03 | 2422 | **12.27** | CH 03 | 10.64 | 10.81 | 9.49 | 9.15 | 8.97 | 8.14 | 6.45 |
| CH 06 | 2437 | 12.03 | | | | | | | | |
| CH 09 | 2452 | 12.10 | | | | | | | | |

| 802.11n HT40 mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH 03 | 2422 | **16.19** | CH 03 | 16.07 | 16.18 | 16.15 | 16.07 | 16.05 | 16.10 | 16.16 |
| CH 06 | 2437 | 15.74 | | | | | | | | |
| CH 09 | 2452 | 16.11 | | | | | | | | |

**MIMO<Ant. 1 + 2>**

| 802.11b mode | | | | | | |
|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 1M | Channel | Data Rate (bps) 2M | 5.5M | 11M |
| CH 01 | 2412 | **15.27** | CH 01 | 15.22 | 15.26 | 15.26 |
| CH 06 | 2437 | 15.16 | | | | |
| CH 11 | 2462 | 15.21 | | | | |

| 802.11b mode | | | | | | |
|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 1M | Channel | Data Rate (bps) 2M | 5.5M | 11M |
| CH 01 | 2412 | **18.04** | CH 01 | 17.96 | 18.00 | 18.00 |
| CH 06 | 2437 | 17.81 | | | | |
| CH 11 | 2462 | 17.90 | | | | |

| 802.11g mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 6M | Channel | Data Rate (bps) 9M | 12M | 18M | 24M | 36M | 48M | 54M |
| CH 01 | 2412 | **15.35** | CH 01 | 15.25 | 14.68 | 14.69 | 13.64 | 13.72 | 13.24 | 12.64 |
| CH 06 | 2437 | 15.26 | | | | | | | | |
| CH 11 | 2462 | 15.33 | | | | | | | | |

| 802.11g mode | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | | | | |
| Channel | Frequency (MHz) | Data Rate (bps) 6M | Channel | Data Rate (bps) 9M | 12M | 18M | 24M | 36M | 48M | 54M |
| CH 01 | 2412 | **20.64** | CH 01 | 20.55 | 20.22 | 20.20 | 20.49 | 20.55 | 20.50 | 20.47 |
| CH 06 | 2437 | 20.31 | | | | | | | | |
| CH 11 | 2462 | 20.59 | | | | | | | | |

| 802.11n HT20 mode | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH 01 | 2412 | **15.27** | CH 10 | 14.63 | 14.62 | 13.89 | 13.67 | 13.38 | 12.73 | 9.51 |
| CH 06 | 2437 | 15.07 | | | | | | | | |
| CH 11 | 2462 | 15.15 | | | | | | | | |

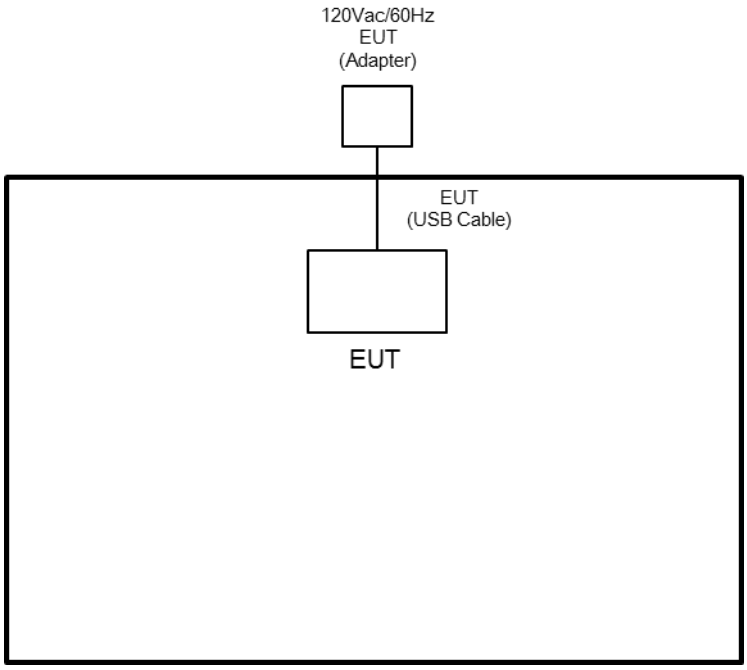
| 802.11n HT20 mode | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH 01 | 2412 | **20.69** | CH 10 | 20.15 | 20.16 | 20.67 | 20.66 | 20.65 | 20.63 | 20.68 |
| CH 06 | 2437 | 20.48 | | | | | | | | |
| CH 11 | 2462 | 20.60 | | | | | | | | |

| 802.11n HT40 mode | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Average Power vs. Data Rate | | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH 03 | 2422 | 15.08 | CH 09 | 13.35 | 13.50 | 12.56 | 12.50 | 12.19 | 11.26 | 8.80 |
| CH 06 | 2437 | 15.13 | | | | | | | | |
| CH 09 | 2452 | **15.19** | | | | | | | | |

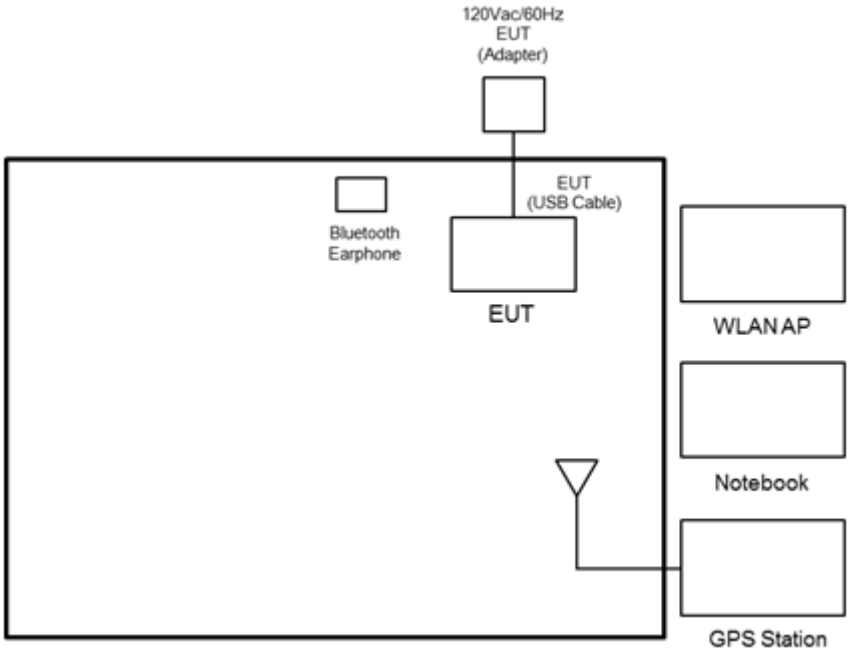
| 802.11n HT40 mode | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Peak Power vs. Data Rate | | | | | | | |
| Channel | Frequency (MHz) | MCS Index | Channel | MCS Index | | | | | | |
| | | MCS0 | | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH 03 | 2422 | 18.91 | CH 09 | 18.98 | 19.06 | 19.20 | 19.14 | 19.18 | 19.18 | 19.10 |
| CH 06 | 2437 | 18.84 | | | | | | | | |
| CH 09 | 2452 | **19.22** | | | | | | | | |

## 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. | GPS Station | Pendulum | GSG-54 | 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, 1.8 m |
| 4. | Notebook | DELL | Latitude E6320 | FCC DoC/ Contains FCC ID: QDS-BRCM1054 | N/A | AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m |
| 5. | SD Card | SanDisk | MicroSD HC | FCC DoC | N/A | N/A |

## 2.5 EUT Operation Test Setup

The RF test items, utility “DRTU” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting 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.

*Offset(dB) = RF cable loss(dB) + attenuator factor(dB).*

= 4.2 + 10 = 14.2 (dB)

# 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

See list of measuring equipment of this test report.

### 3.1.3 Test Procedures

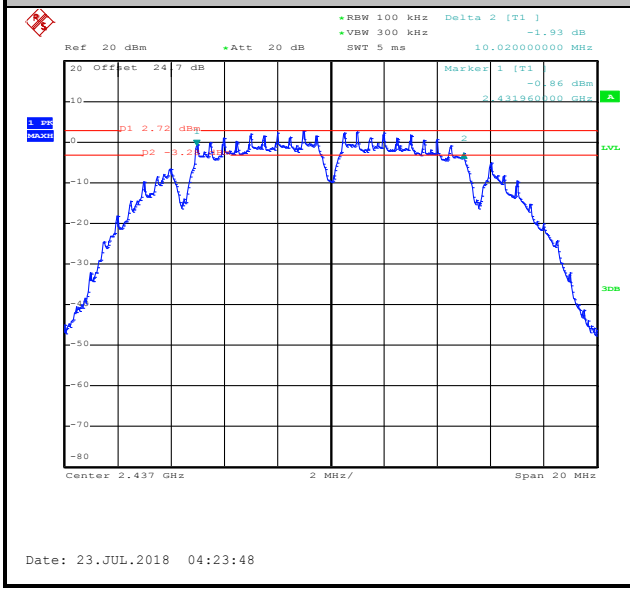
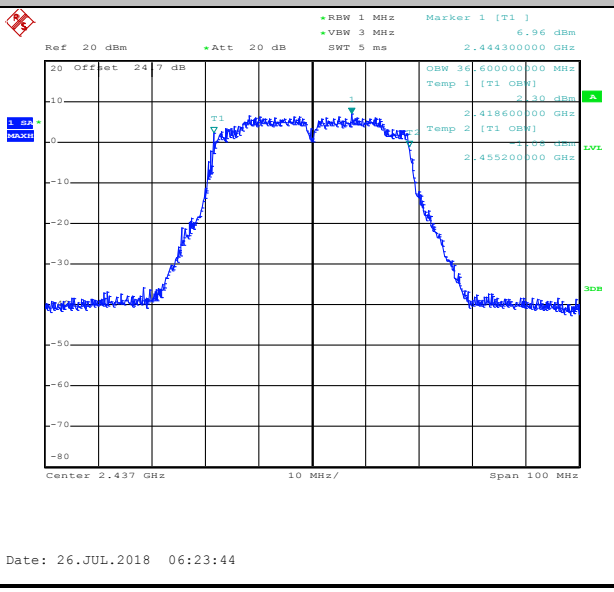
1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v04.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit 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) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
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

| Test Engineer : | Rebecca Li, Luffy Lin, and Derek Hsu | Temperature : | 21~25℃ |
|---|---|---|---|
| | | Relative Humidity : | 51~54% |

| 2.4GHz Band | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | | 6dB BW (MHz) | | 6dB BW Limit (MHz) | Pass/Fail |
| | | | | | Ant 1 | Ant 2 | Ant 1 | Ant 2 | | |
| 11b | 1Mbps | 1 | 1 | 2412 | 13.65 | 13.60 | 10.08 | 10.08 | 0.50 | Pass |
| 11b | 1Mbps | 1 | 6 | 2437 | 13.85 | 14.10 | 10.08 | 10.08 | 0.50 | Pass |
| 11b | 1Mbps | 1 | 11 | 2462 | 14.80 | 13.55 | 10.04 | 10.08 | 0.50 | Pass |
| 11g | 6Mbps | 1 | 1 | 2412 | 16.60 | 16.65 | 15.24 | 15.11 | 0.50 | Pass |
| 11g | 6Mbps | 1 | 6 | 2437 | 16.70 | 16.70 | 15.28 | 15.08 | 0.50 | Pass |
| 11g | 6Mbps | 1 | 11 | 2462 | 16.60 | 16.50 | 15.04 | 15.42 | 0.50 | Pass |
| HT20 | MCS0 | 1 | 1 | 2412 | 17.85 | 17.80 | 15.12 | 15.92 | 0.50 | Pass |
| HT20 | MCS0 | 1 | 6 | 2437 | 17.80 | 17.85 | 15.28 | 15.04 | 0.50 | Pass |
| HT20 | MCS0 | 1 | 11 | 2462 | 17.70 | 17.70 | 15.06 | 15.28 | 0.50 | Pass |
| HT40 | MCS0 | 1 | 3 | 2422 | 36.30 | 36.20 | 33.84 | 32.59 | 0.50 | Pass |
| HT40 | MCS0 | 1 | 6 | 2437 | 36.40 | 36.60 | 35.00 | 35.12 | 0.50 | Pass |
| HT40 | MCS0 | 1 | 9 | 2452 | 36.20 | 36.20 | 35.10 | 33.90 | 0.50 | Pass |
| 11b | 1Mbps | 2 | 1 | 2412 | 13.60 | 13.60 | 11.04 | 10.08 | 0.50 | Pass |
| 11b | 1Mbps | 2 | 6 | 2437 | 13.75 | 13.65 | 10.02 | 10.04 | 0.50 | Pass |
| 11b | 1Mbps | 2 | 11 | 2462 | 13.50 | 13.55 | 10.08 | 10.08 | 0.50 | Pass |
| 11g | 6Mbps | 2 | 1 | 2412 | 16.65 | 16.65 | 15.32 | 15.04 | 0.50 | Pass |
| 11g | 6Mbps | 2 | 6 | 2437 | 16.65 | 16.70 | 15.12 | 15.12 | 0.50 | Pass |
| 11g | 6Mbps | 2 | 11 | 2462 | 16.55 | 16.60 | 15.31 | 15.13 | 0.50 | Pass |
| HT20 | MCS0 | 2 | 1 | 2412 | 17.80 | 17.75 | 15.88 | 15.08 | 0.50 | Pass |
| HT20 | MCS0 | 2 | 6 | 2437 | 17.85 | 17.80 | 15.08 | 15.52 | 0.50 | Pass |
| HT20 | MCS0 | 2 | 11 | 2462 | 17.70 | 17.75 | 15.13 | 13.88 | 0.50 | Pass |
| HT40 | MCS0 | 2 | 3 | 2422 | 36.30 | 36.20 | 33.84 | 32.56 | 0.50 | Pass |
| HT40 | MCS0 | 2 | 6 | 2437 | 36.40 | 36.30 | 35.04 | 35.08 | 0.50 | Pass |
| HT40 | MCS0 | 2 | 9 | 2452 | 36.20 | 36.30 | 33.78 | 33.80 | 0.50 | Pass |

| Minimum 6dB Bandwidth | Maximum 99% Occupied Bandwidth |
|---|---|
|  |  |





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 with directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

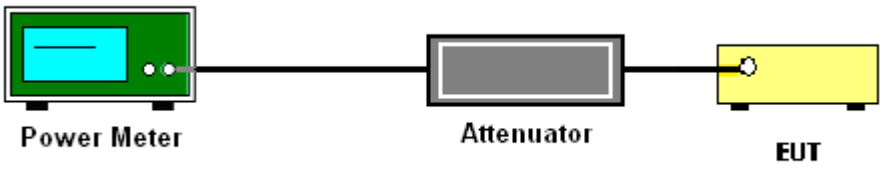
### 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.2.3 Test Procedures

1. For Peak Power, the testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v04 section 9.1.3 PKPM1 Peak power meter method.
2. For Average Power, the testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v04 section 9.2.3.1 Method AVGPM.
3. 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.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Measure the conducted output power and record the results in the test report.
6. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

### 3.2.4 Test Setup



## 3.2.5 Test Result of Peak Output Power (Reporting Only)

| Test Engineer : | Rebecca Li, Luffy Lin, and Derek Hsu | Temperature : | 21~25℃ |
|---|---|---|---|
| | | Relative Humidity : | 51~54% |

| 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) | |
| | | | | | Ant 1 | Ant 2 | SUM | Ant 1 | Ant 2 | Ant 1 | Ant 2 | Ant 1 | Ant 2 | Ant 1 | Ant 2 |
| 11b | 1Mbps | 1 | 1 | 2412 | 15.86 | 15.15 | - | 30.00 | 30.00 | 2.70 | 0.90 | 18.56 | 16.05 | 36.00 | 36.00 |
| 11b | 1Mbps | 1 | 6 | 2437 | 15.97 | 15.02 | - | 30.00 | 30.00 | 2.70 | 0.90 | 18.67 | 15.92 | 36.00 | 36.00 |
| 11b | 1Mbps | 1 | 11 | 2462 | 15.85 | 15.14 | - | 30.00 | 30.00 | 2.70 | 0.90 | 18.55 | 16.04 | 36.00 | 36.00 |
| 11g | 6Mbps | 1 | 1 | 2412 | 18.79 | 17.88 | - | 30.00 | 30.00 | 2.70 | 0.90 | 21.49 | 18.78 | 36.00 | 36.00 |
| 11g | 6Mbps | 1 | 6 | 2437 | 18.54 | 17.33 | - | 30.00 | 30.00 | 2.70 | 0.90 | 21.24 | 18.23 | 36.00 | 36.00 |
| 11g | 6Mbps | 1 | 11 | 2462 | 18.52 | 17.55 | - | 30.00 | 30.00 | 2.70 | 0.90 | 21.22 | 18.45 | 36.00 | 36.00 |
| HT20 | MCS0 | 1 | 1 | 2412 | 18.62 | 17.86 | - | 30.00 | 30.00 | 2.70 | 0.90 | 21.32 | 18.76 | 36.00 | 36.00 |
| HT20 | MCS0 | 1 | 6 | 2437 | 18.45 | 17.33 | - | 30.00 | 30.00 | 2.70 | 0.90 | 21.15 | 18.23 | 36.00 | 36.00 |
| HT20 | MCS0 | 1 | 11 | 2462 | 18.54 | 17.66 | - | 30.00 | 30.00 | 2.70 | 0.90 | 21.24 | 18.56 | 36.00 | 36.00 |
| HT40 | MCS0 | 1 | 3 | 2422 | 16.91 | 16.19 | - | 30.00 | 30.00 | 2.70 | 0.90 | 19.61 | 17.09 | 36.00 | 36.00 |
| HT40 | MCS0 | 1 | 6 | 2437 | 16.78 | 15.74 | - | 30.00 | 30.00 | 2.70 | 0.90 | 19.48 | 16.64 | 36.00 | 36.00 |
| HT40 | MCS0 | 1 | 9 | 2452 | 14.58 | 16.11 | - | 30.00 | 30.00 | 2.70 | 0.90 | 17.28 | 17.01 | 36.00 | 36.00 |
| 11b | 1Mbps | 2 | 1 | 2412 | 15.06 | 14.94 | 18.01 | 30.00 | | 2.70 | | 20.71 | | 36.00 | |
| 11b | 1Mbps | 2 | 6 | 2437 | 14.72 | 14.88 | 17.81 | 30.00 | | 2.70 | | 20.51 | | 36.00 | |
| 11b | 1Mbps | 2 | 11 | 2462 | 14.83 | 15.00 | 17.93 | 30.00 | | 2.70 | | 20.63 | | 36.00 | |
| 11g | 6Mbps | 2 | 1 | 2412 | 17.54 | 17.72 | 20.64 | 30.00 | | 2.70 | | 23.34 | | 36.00 | |
| 11g | 6Mbps | 2 | 6 | 2437 | 17.33 | 17.26 | 20.31 | 30.00 | | 2.70 | | 23.01 | | 36.00 | |
| 11g | 6Mbps | 2 | 11 | 2462 | 17.51 | 17.64 | 20.59 | 30.00 | | 2.70 | | 23.29 | | 36.00 | |
| HT20 | MCS0 | 2 | 1 | 2412 | 17.50 | 17.85 | 20.69 | 30.00 | | 2.70 | | 23.39 | | 36.00 | |
| HT20 | MCS0 | 2 | 6 | 2437 | 17.39 | 17.54 | 20.48 | 30.00 | | 2.70 | | 23.18 | | 36.00 | |
| HT20 | MCS0 | 2 | 11 | 2462 | 17.58 | 17.60 | 20.60 | 30.00 | | 2.70 | | 23.30 | | 36.00 | |
| HT40 | MCS0 | 2 | 3 | 2422 | 15.75 | 16.04 | 18.91 | 30.00 | | 2.70 | | 21.61 | | 36.00 | |
| HT40 | MCS0 | 2 | 6 | 2437 | 15.66 | 16.00 | 18.84 | 30.00 | | 2.70 | | 21.54 | | 36.00 | |
| HT40 | MCS0 | 2 | 9 | 2452 | 16.06 | 16.36 | 19.22 | 30.00 | | 2.70 | | 21.92 | | 36.00 | |

## 3.2.6 Test Result of Average output Power

| Test Engineer : | Rebecca Li, Luffy Lin, and Derek Hsu | Temperature : | 21~25℃ |
|---|---|---|---|
| | | Relative Humidity : | 51~54% |

| 2.4GHz Band | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Duty Factor (dB) | | Average Conducted Power (dBm) | | |
| | | | | | Ant 1 | Ant 2 | Ant 1 | Ant 2 | SUM |
| 11b | 1Mbps | 1 | 1 | 2412 | 0.06 | 0.06 | 13.21 | 12.40 | - |
| 11b | 1Mbps | 1 | 6 | 2437 | 0.06 | 0.06 | 13.24 | 12.34 | |
| 11b | 1Mbps | 1 | 11 | 2462 | 0.06 | 0.06 | 13.20 | 12.37 | |
| 11g | 6Mbps | 1 | 1 | 2412 | 0.13 | 0.13 | 13.23 | 12.38 | |
| 11g | 6Mbps | 1 | 6 | 2437 | 0.13 | 0.13 | 13.14 | 12.27 | |
| 11g | 6Mbps | 1 | 11 | 2462 | 0.13 | 0.13 | 13.22 | 12.30 | |
| HT20 | MCS0 | 1 | 1 | 2412 | 0.09 | 0.09 | 13.14 | 12.33 | |
| HT20 | MCS0 | 1 | 6 | 2437 | 0.09 | 0.09 | 13.02 | 12.15 | |
| HT20 | MCS0 | 1 | 11 | 2462 | 0.09 | 0.09 | 13.07 | 12.20 | |
| HT40 | MCS0 | 1 | 3 | 2422 | 0.14 | 0.18 | 13.17 | 12.27 | |
| HT40 | MCS0 | 1 | 6 | 2437 | 0.14 | 0.18 | 13.05 | 12.03 | |
| HT40 | MCS0 | 1 | 9 | 2452 | 0.14 | 0.18 | 13.12 | 12.10 | |
| 11b | 1Mbps | 2 | 1 | 2412 | 0.04 | 0.06 | 12.18 | 12.34 | 15.27 |
| 11b | 1Mbps | 2 | 6 | 2437 | 0.04 | 0.06 | 12.02 | 12.27 | 15.16 |
| 11b | 1Mbps | 2 | 11 | 2462 | 0.04 | 0.06 | 12.10 | 12.30 | 15.21 |
| 11g | 6Mbps | 2 | 1 | 2412 | 0.13 | 0.13 | 12.32 | 12.36 | 15.33 |
| 11g | 6Mbps | 2 | 6 | 2437 | 0.13 | 0.13 | 12.24 | 12.26 | 15.26 |
| 11g | 6Mbps | 2 | 11 | 2462 | 0.13 | 0.13 | 12.29 | 12.34 | 15.35 |
| HT20 | MCS0 | 2 | 1 | 2412 | 0.09 | 0.14 | 12.12 | 12.39 | 15.27 |
| HT20 | MCS0 | 2 | 6 | 2437 | 0.09 | 0.14 | 12.02 | 12.09 | 15.07 |
| HT20 | MCS0 | 2 | 11 | 2462 | 0.09 | 0.14 | 12.10 | 12.18 | 15.15 |
| HT40 | MCS0 | 2 | 3 | 2422 | 0.18 | 0.18 | 11.92 | 12.21 | 15.08 |
| HT40 | MCS0 | 2 | 6 | 2437 | 0.18 | 0.18 | 11.98 | 12.25 | 15.13 |
| HT40 | MCS0 | 2 | 9 | 2452 | 0.18 | 0.18 | 12.03 | 12.33 | 15.19 |

# 3.3 Power Spectral Density Measurement

## 3.3.1 Limit of Power Spectral Density

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

## 3.3.2 Measuring Instruments

See list of measuring equipment 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 v04
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.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

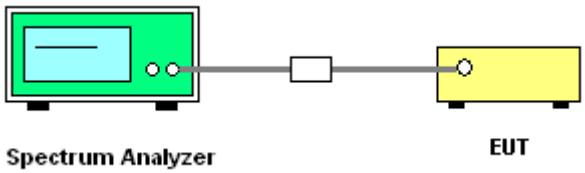
   If measurements performed using method (2) plus 10 log (N) exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

   Method (1): Measure and sum the spectra across the outputs.

   The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

   Method (2): Measure and add 10 log (N) dB, where N is the number of outputs. (N=2)

### 3.3.4 Test Setup

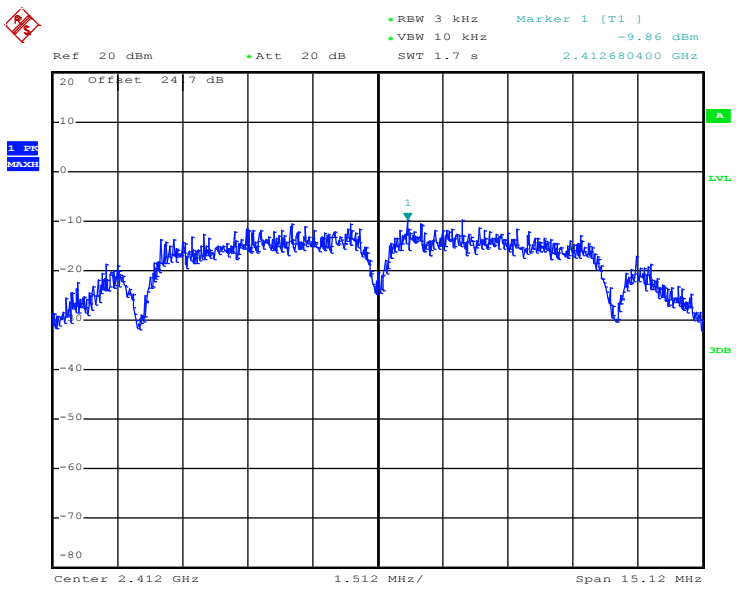


### 3.3.5 Test Result of Power Spectral Density

| Test Engineer : | Rebecca Li, Luffy Lin, and Derek Hsu | Temperature : | 21~25℃ |
|---|---|---|---|
| | | Relative Humidity : | 51~54% |

| 2.4GHz Band | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm/3kHz) | | | DG (dBi) | | Peak PSD Limit (dBm/3kHz) | | Pass/Fail |
| | | | | | Ant 1 | Ant 2 | Worse + 3.01 | Ant 1 | Ant 2 | Ant 1 | Ant 2 | |
| 11b | 1Mbps | 1 | 1 | 2412 | -9.86 | -10.64 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| 11b | 1Mbps | 1 | 6 | 2437 | -10.07 | -10.54 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| 11b | 1Mbps | 1 | 11 | 2462 | -10.28 | -11.21 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| 11g | 6Mbps | 1 | 1 | 2412 | -11.76 | -13.00 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| 11g | 6Mbps | 1 | 6 | 2437 | -12.24 | -13.11 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| 11g | 6Mbps | 1 | 11 | 2462 | -10.99 | -12.13 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| HT20 | MCS0 | 1 | 1 | 2412 | -12.38 | -13.23 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| HT20 | MCS0 | 1 | 6 | 2437 | -12.77 | -13.08 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| HT20 | MCS0 | 1 | 11 | 2462 | -12.07 | -13.00 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| HT40 | MCS0 | 1 | 3 | 2422 | -14.46 | -16.17 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| HT40 | MCS0 | 1 | 6 | 2437 | -16.24 | -16.42 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| HT40 | MCS0 | 1 | 9 | 2452 | -15.74 | -16.08 | - | 2.70 | 0.90 | 8.00 | 8.00 | Pass |
| 11b | 1Mbps | 2 | 1 | 2412 | -11.87 | -10.43 | -7.42 | 4.86 | | 8.00 | | Pass |
| 11b | 1Mbps | 2 | 6 | 2437 | -11.26 | -10.40 | -7.39 | 4.86 | | 8.00 | | Pass |
| 11b | 1Mbps | 2 | 11 | 2462 | -11.84 | -10.33 | -7.32 | 4.86 | | 8.00 | | Pass |
| 11g | 6Mbps | 2 | 1 | 2412 | -12.81 | -12.84 | -9.80 | 4.86 | | 8.00 | | Pass |
| 11g | 6Mbps | 2 | 6 | 2437 | -13.21 | -12.07 | -9.06 | 4.86 | | 8.00 | | Pass |
| 11g | 6Mbps | 2 | 11 | 2462 | -12.33 | -13.49 | -9.32 | 4.86 | | 8.00 | | Pass |
| HT20 | MCS0 | 2 | 1 | 2412 | -13.07 | -12.31 | -9.30 | 4.86 | | 8.00 | | Pass |
| HT20 | MCS0 | 2 | 6 | 2437 | -12.87 | -13.01 | -9.86 | 4.86 | | 8.00 | | Pass |
| HT20 | MCS0 | 2 | 11 | 2462 | -13.33 | -13.35 | -10.32 | 4.86 | | 8.00 | | Pass |
| HT40 | MCS0 | 2 | 3 | 2422 | -16.06 | -15.76 | -12.75 | 4.86 | | 8.00 | | Pass |
| HT40 | MCS0 | 2 | 6 | 2437 | -16.97 | -16.90 | -13.89 | 4.86 | | 8.00 | | Pass |
| HT40 | MCS0 | 2 | 9 | 2452 | -15.08 | -16.15 | -12.07 | 4.86 | | 8.00 | | Pass |

## Worst Case Power Density (dBm/3kHz)




Date: 19.JUL.2018 07:00:18

# 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.

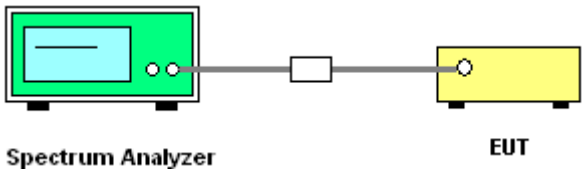
## 3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

## 3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
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

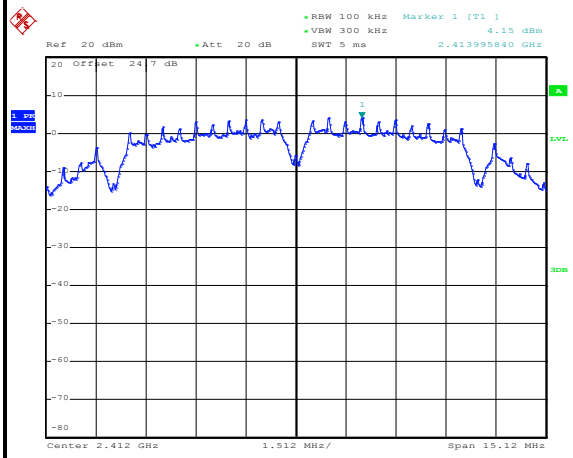


## 3.4.5 Test Result of Conducted Band Edges and Spurious Emission

**Number of TX = 1, Ant. 1 (Measured)**

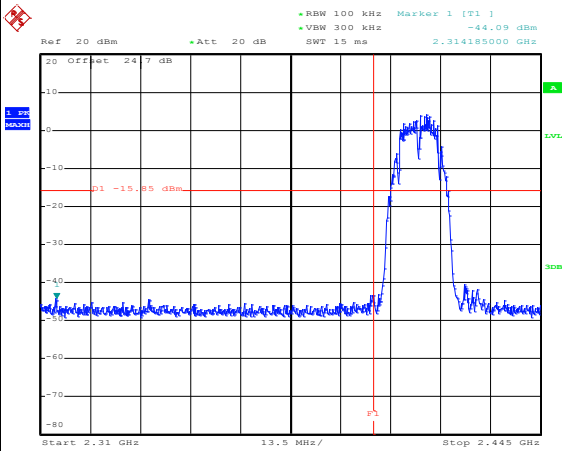
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



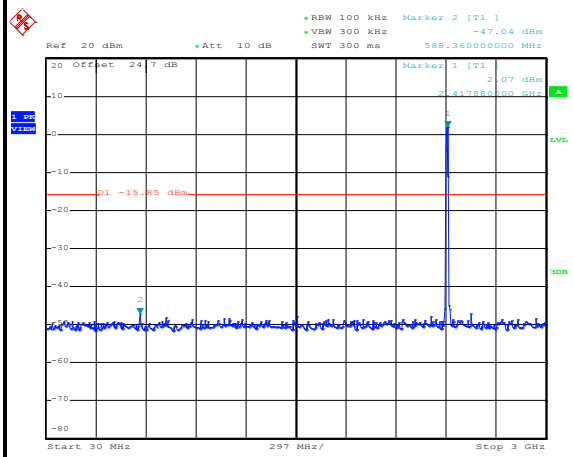

Date: 19.JUL.2018 07:00:36

**Channel Plot**



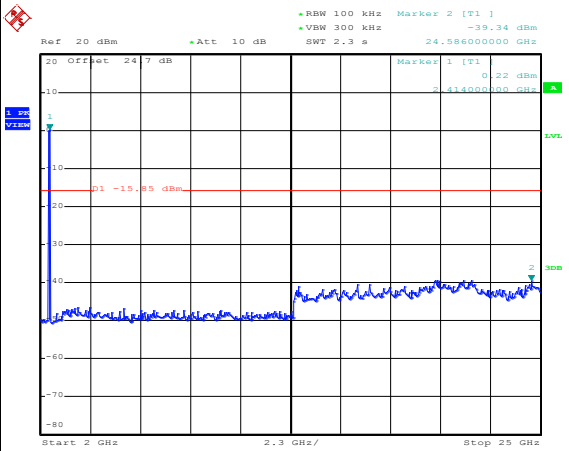

Date: 19.JUL.2018 07:00:52

**Spurious Emission 30MHz~3GHz**




Date: 19.JUL.2018 07:01:18

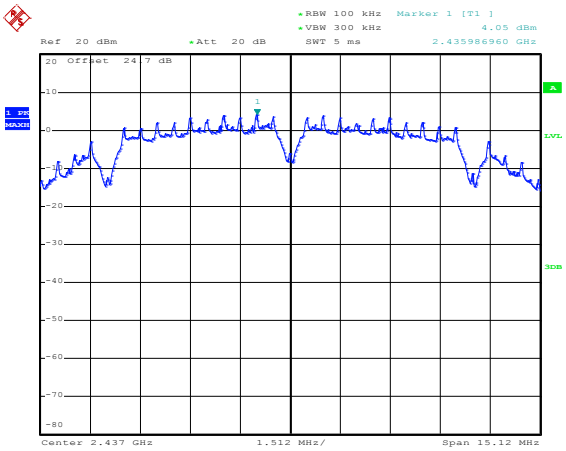
**Spurious Emission 2GHz~25GHz**




Date: 19.JUL.2018 07:01:31

| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level

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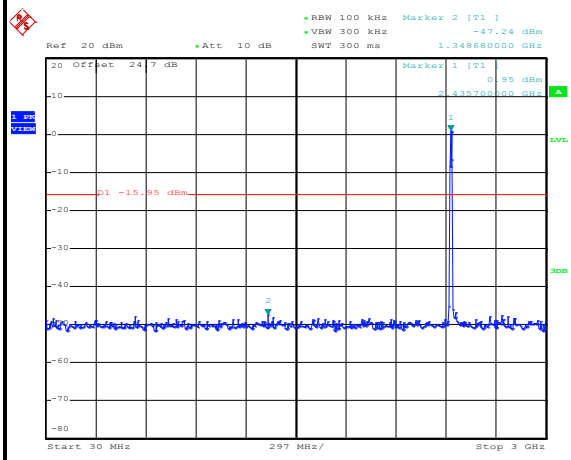
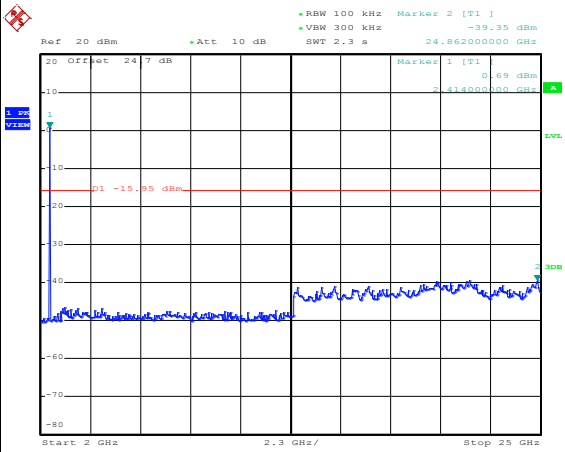
## Spurious Emission 30MHz~3GHz




Date: 19.JUL.2018 07:07:28

## Spurious Emission 2GHz~25GHz

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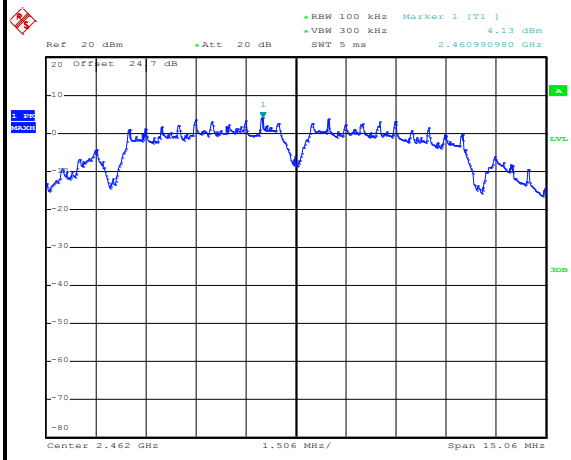
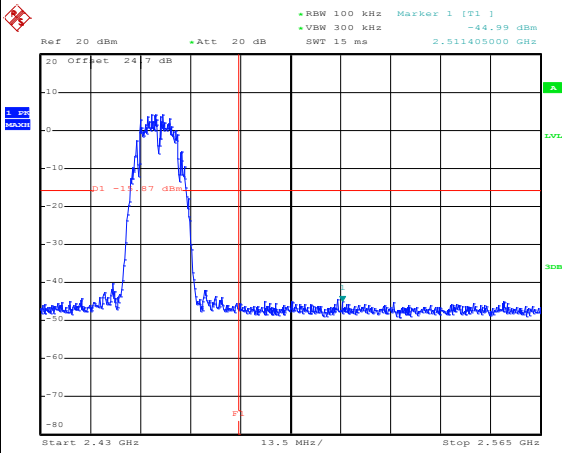
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



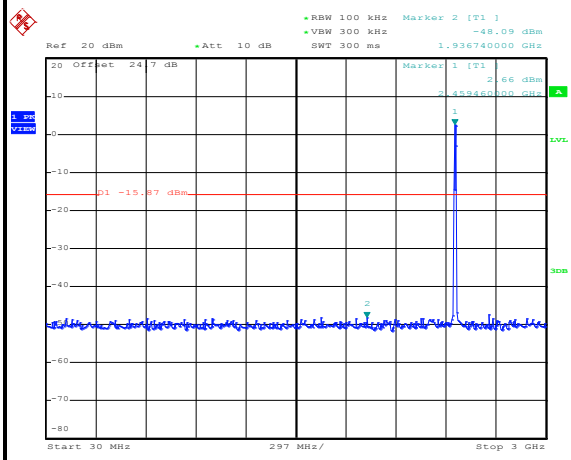

Date: 19.JUL.2018 07:12:35

**Channel Plot**



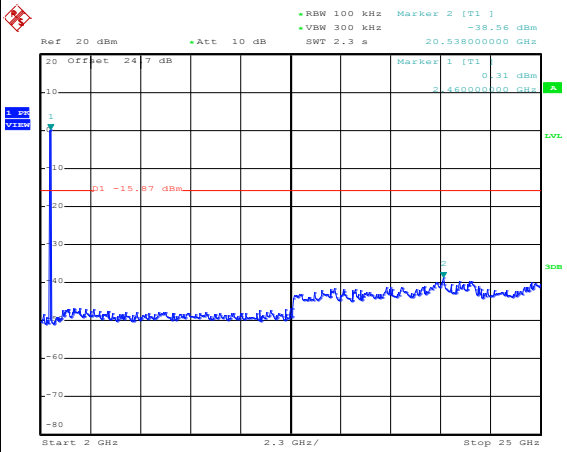

Date: 19.JUL.2018 07:12:57

**Spurious Emission 30MHz~3GHz**




Date: 19.JUL.2018 07:13:55

**Spurious Emission 2GHz~25GHz**

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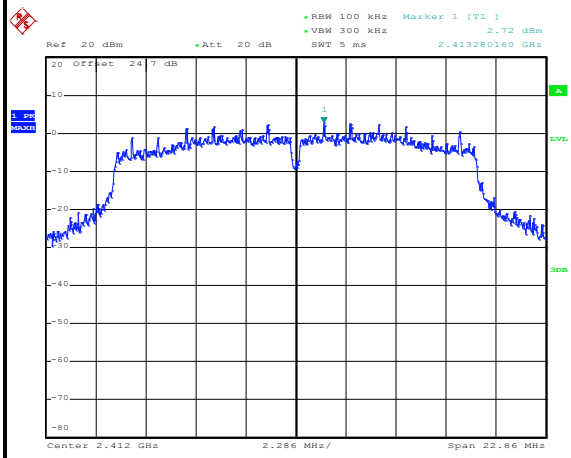
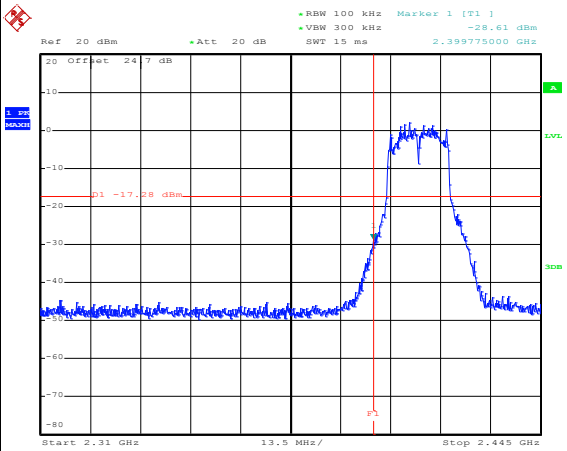
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



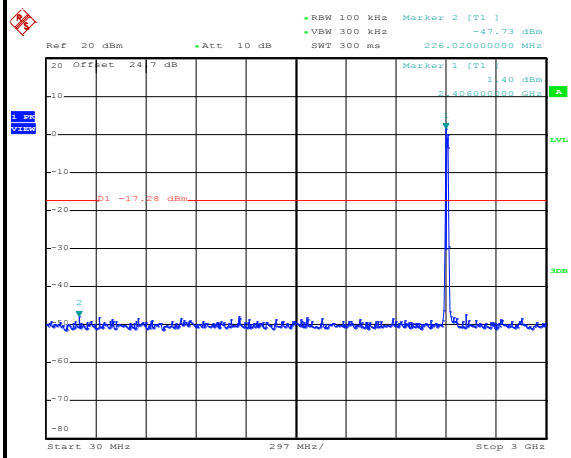

Date: 23.JUL.2018 04:52:35

**Channel Plot**



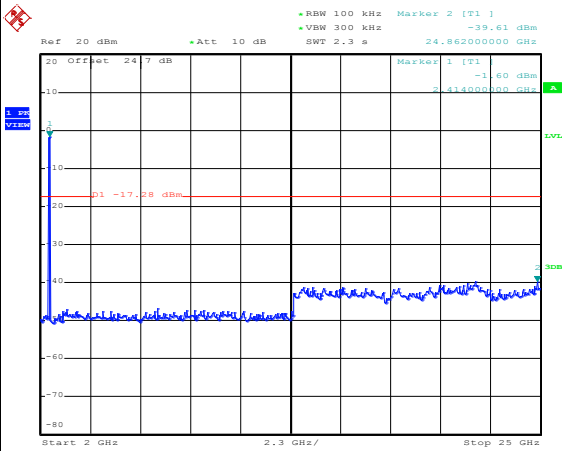

Date: 23.JUL.2018 04:52:56

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 04:53:19

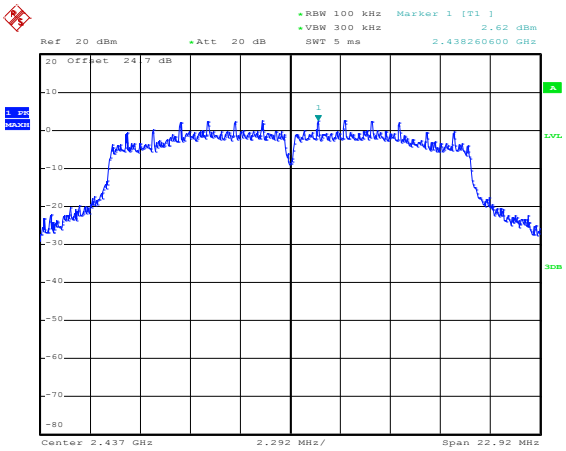
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 04:53:34

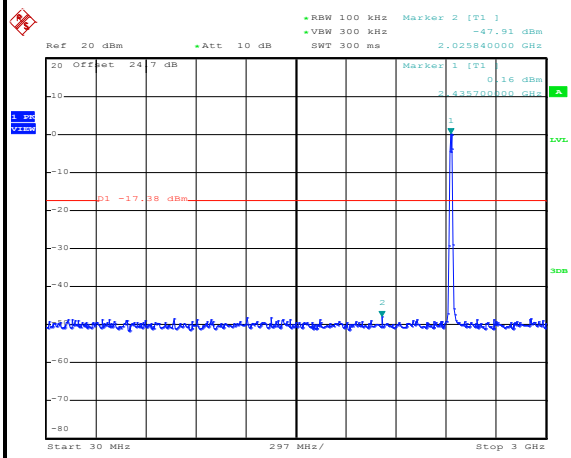
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



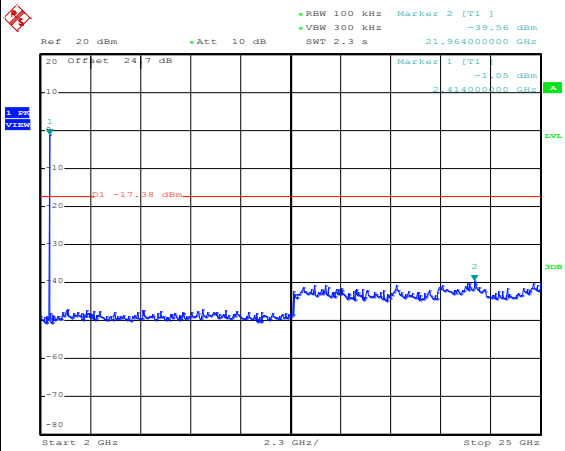

Date: 23.JUL.2018 04:57:39

## Spurious Emission 30MHz~3GHz




Date: 23.JUL.2018 04:57:59

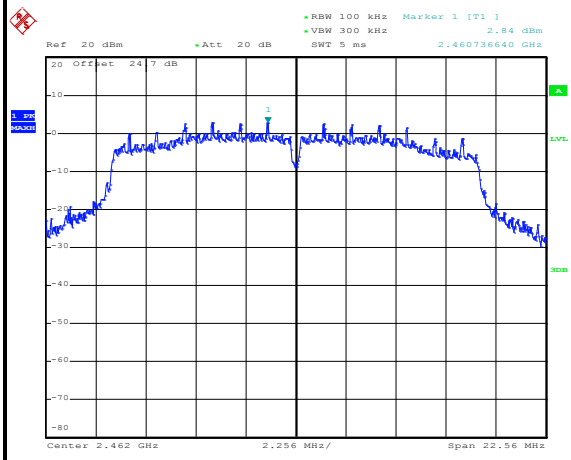
## Spurious Emission 2GHz~25GHz




Date: 23.JUL.2018 04:58:14

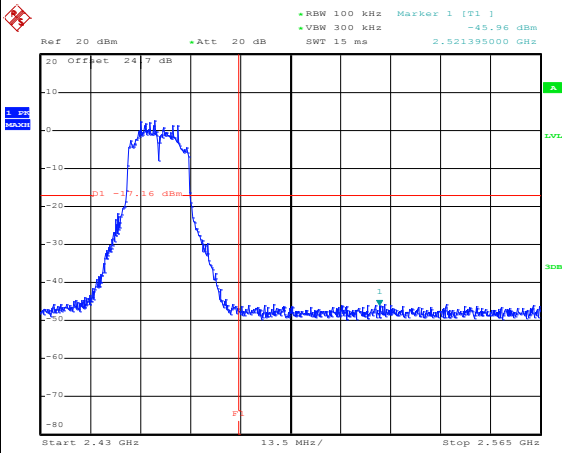
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



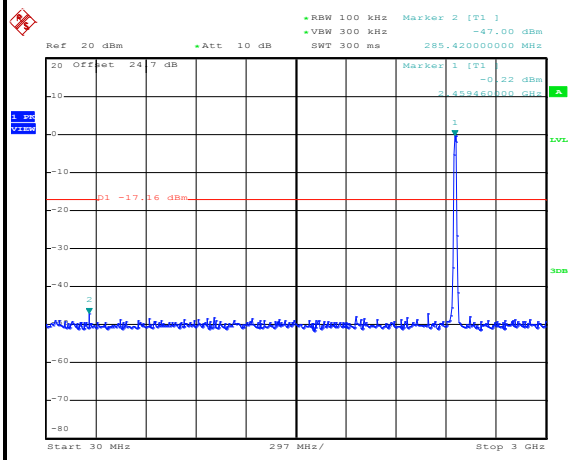

Date: 23.JUL.2018 05:01:10

**Channel Plot**



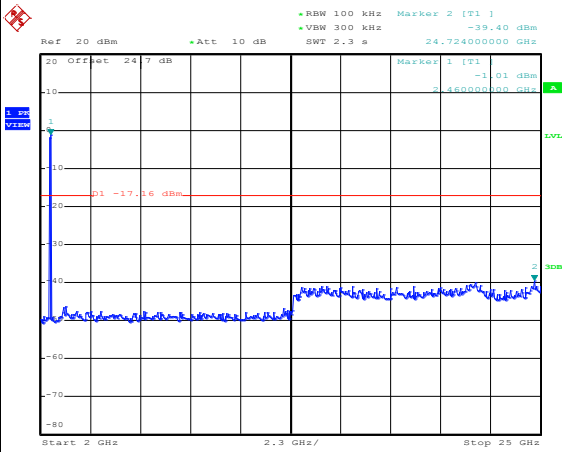

Date: 23.JUL.2018 05:01:25

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 05:01:45

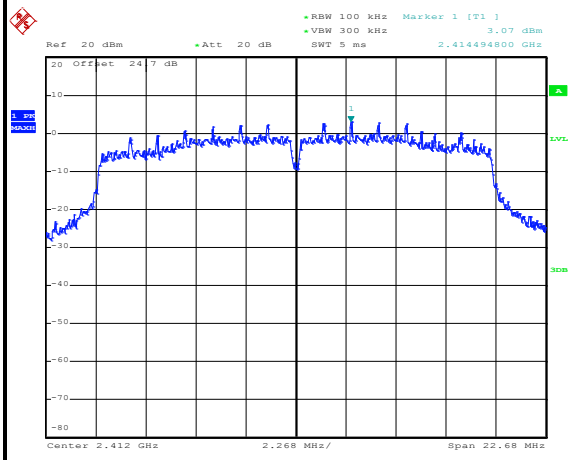
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 05:02:03

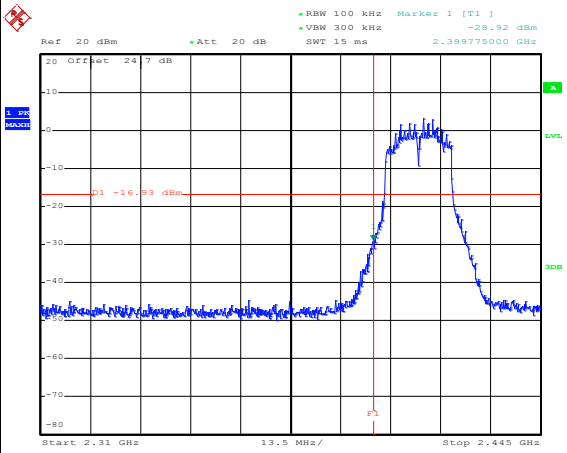
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



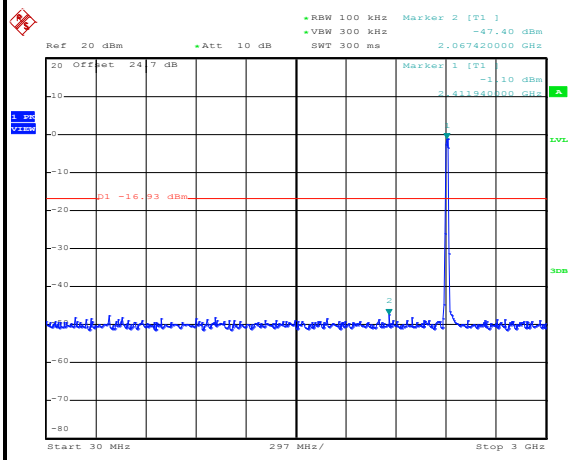

Date: 23.JUL.2018 06:08:08

**Channel Plot**



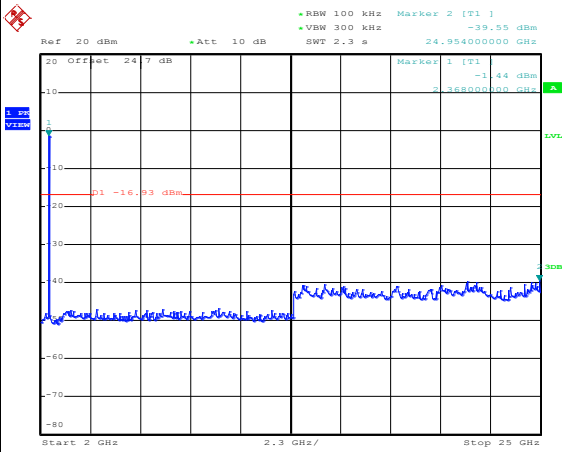

Date: 23.JUL.2018 06:14:43

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 06:17:21

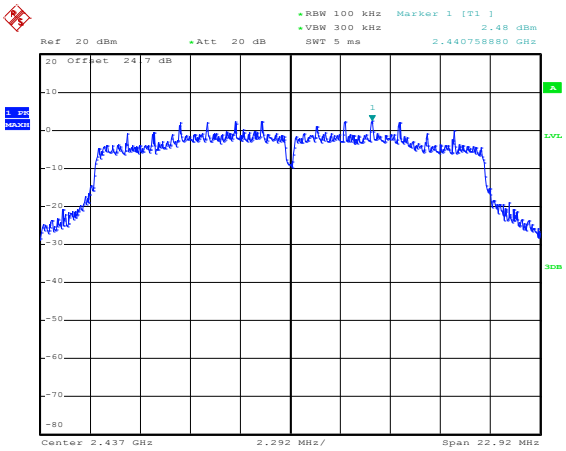
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 06:17:38

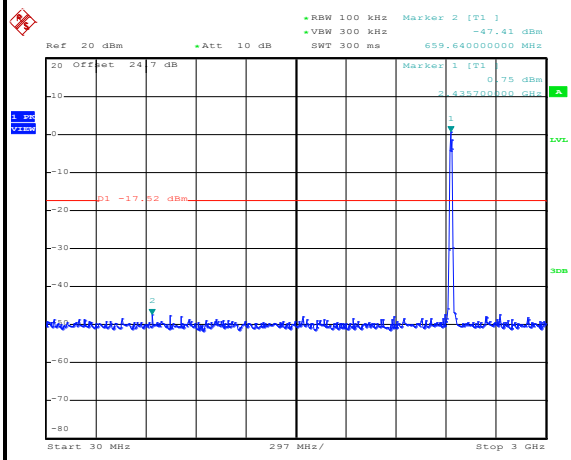
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



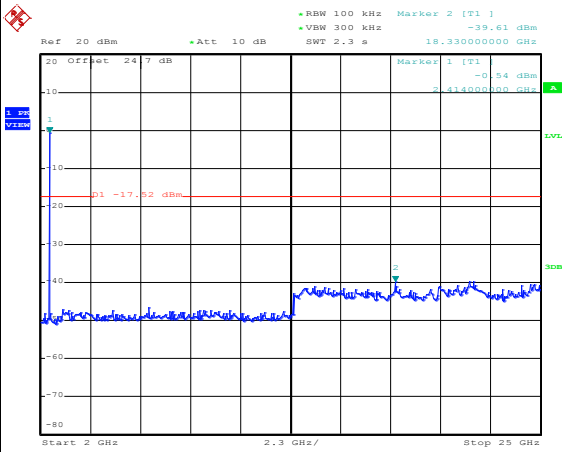

Date: 23.JUL.2018 06:20:12

## Spurious Emission 30MHz~3GHz




Date: 23.JUL.2018 06:20:39

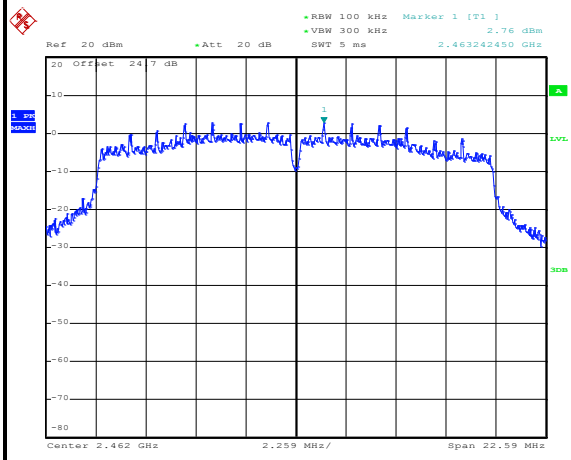
## Spurious Emission 2GHz~25GHz




Date: 23.JUL.2018 06:20:55

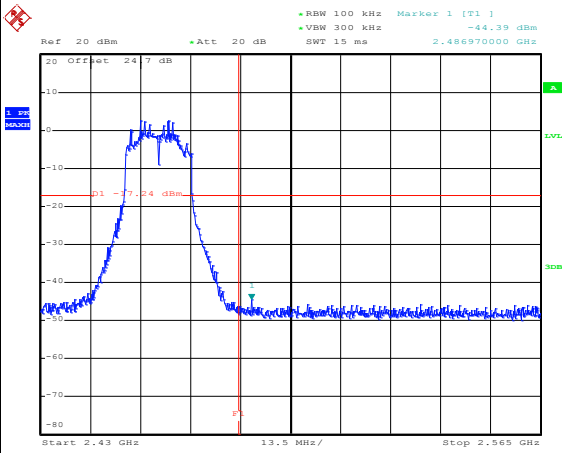
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



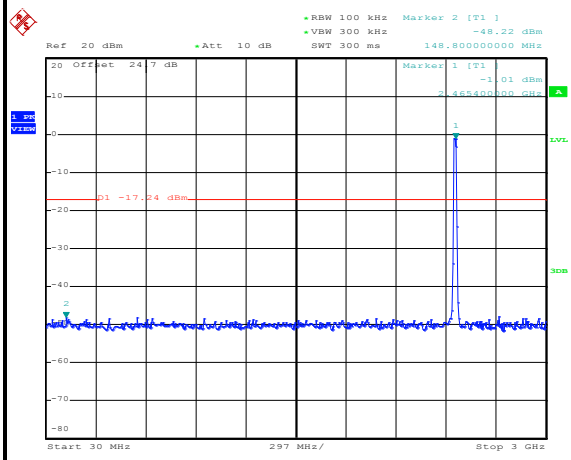

Date: 23.JUL.2018 06:23:03

**Channel Plot**



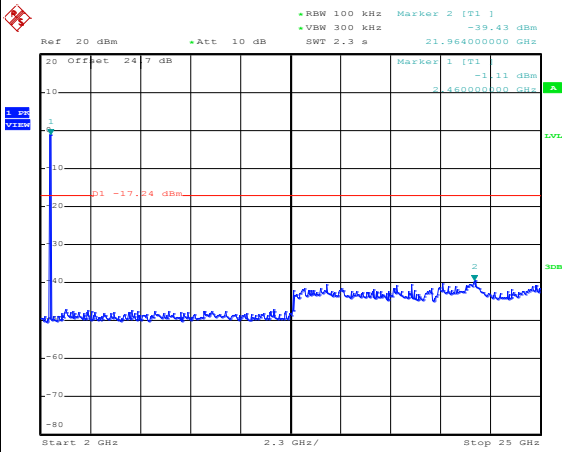

Date: 23.JUL.2018 06:23:40

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 06:23:58

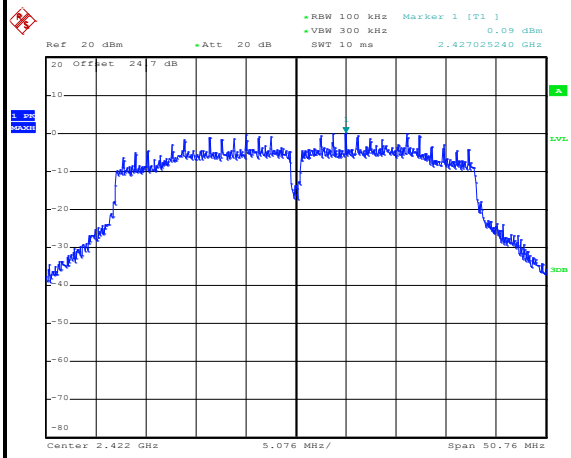
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 06:24:13

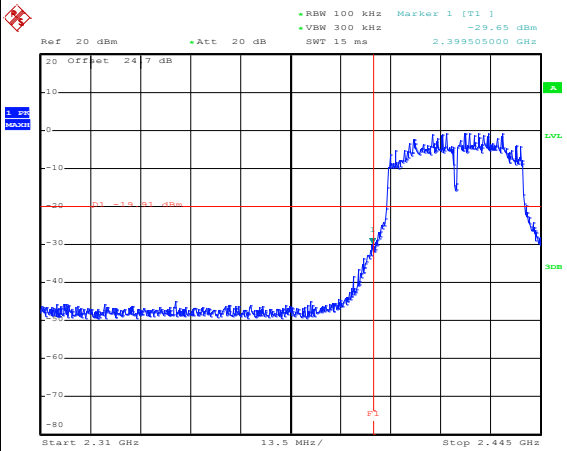
| | | | |
|---|---|---|---|
| **Number of TX :** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 03 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



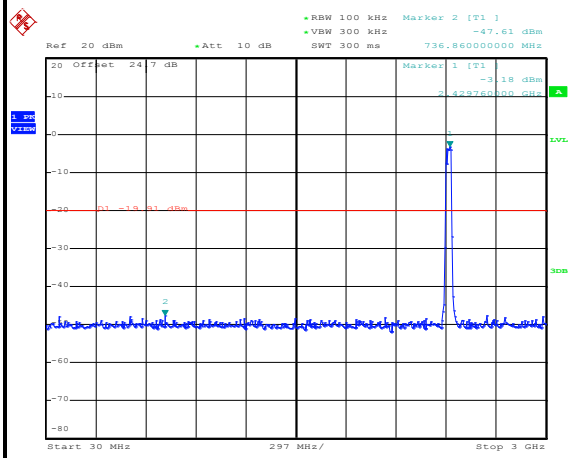

Date: 23.JUL.2018 07:39:58

**Channel Plot**



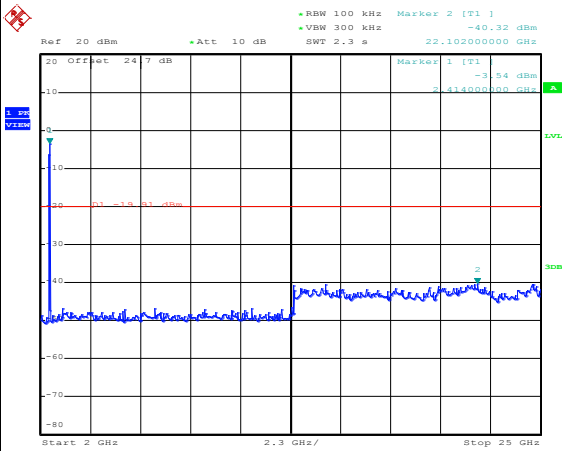

Date: 23.JUL.2018 07:40:16

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 07:40:39

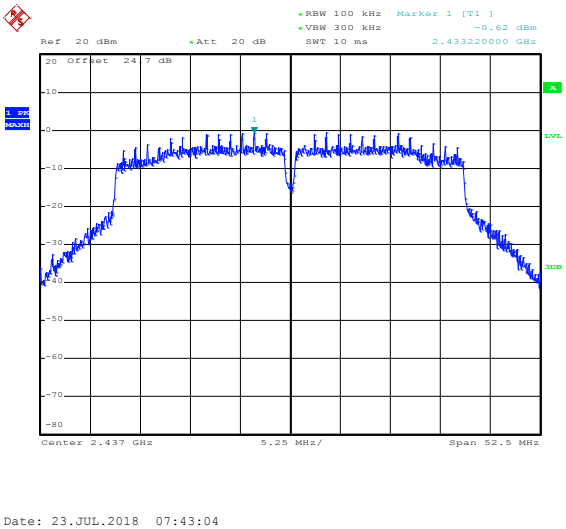
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 07:40:56

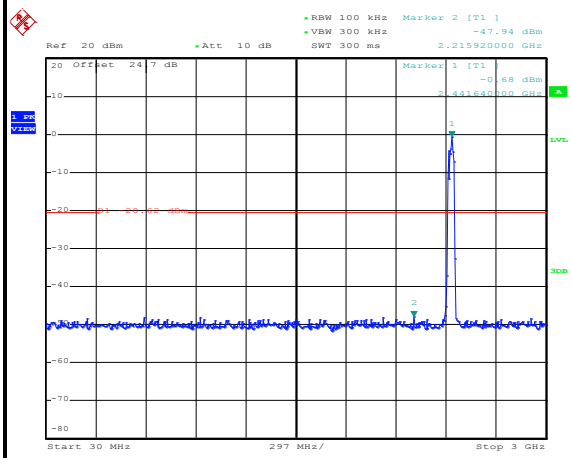
| | | | |
|---|---|---|---|
| **Number of TX :** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



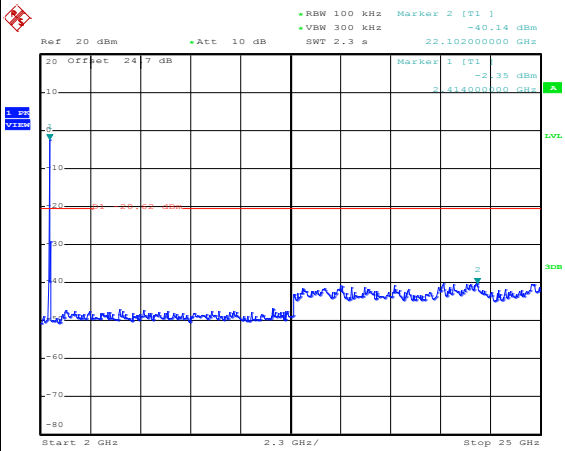

Date: 23.JUL.2018 07:43:04

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 07:43:39

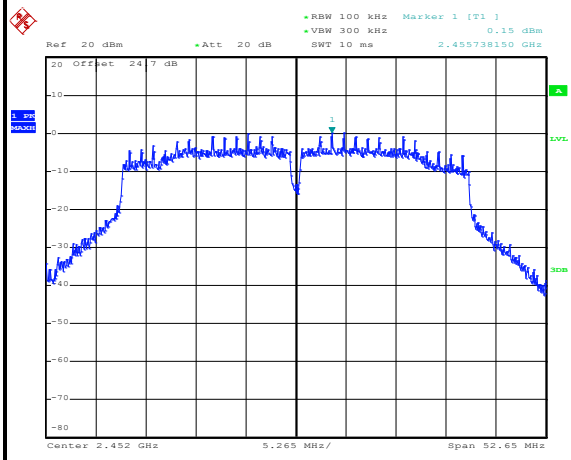
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 07:43:55

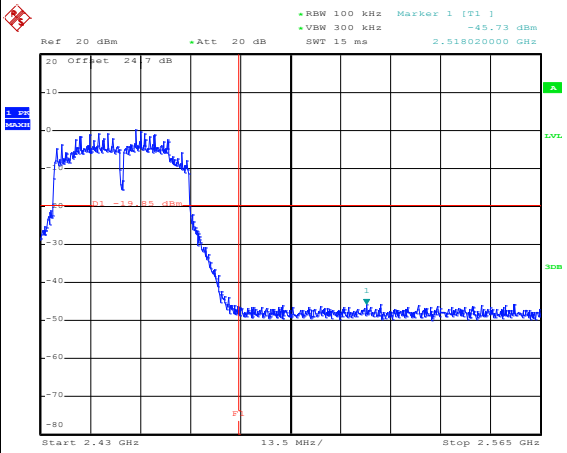
| | | | |
|---|---|---|---|
| **Number of TX :** | 1 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 09 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



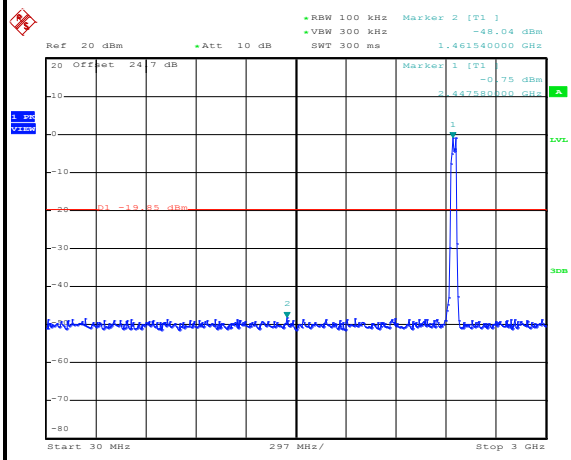

Date: 23.JUL.2018 07:47:04

**Channel Plot**



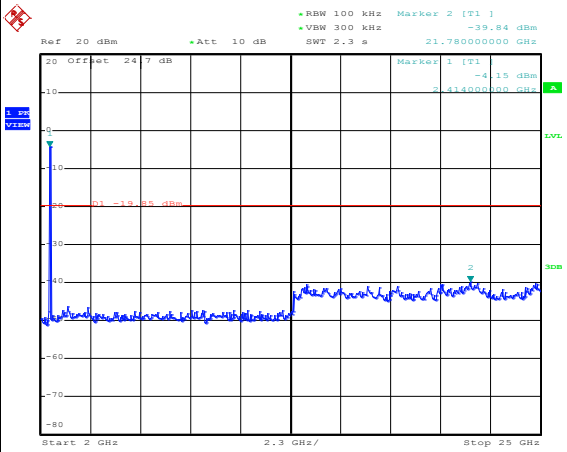

Date: 23.JUL.2018 07:47:20

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 07:49:55

**Spurious Emission 2GHz~25GHz**

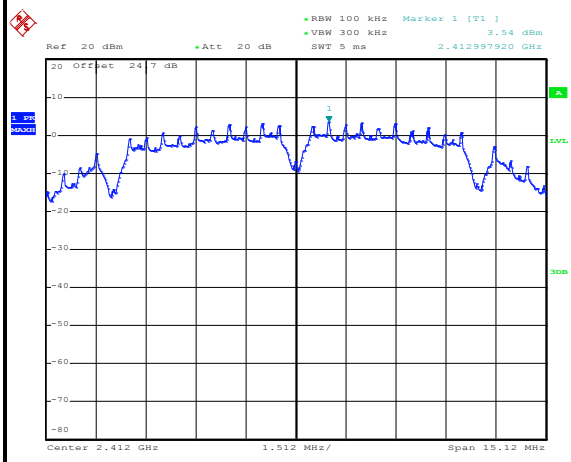



Date: 23.JUL.2018 07:50:43

**Number of TX = 1, Ant. 2 (Measured)**

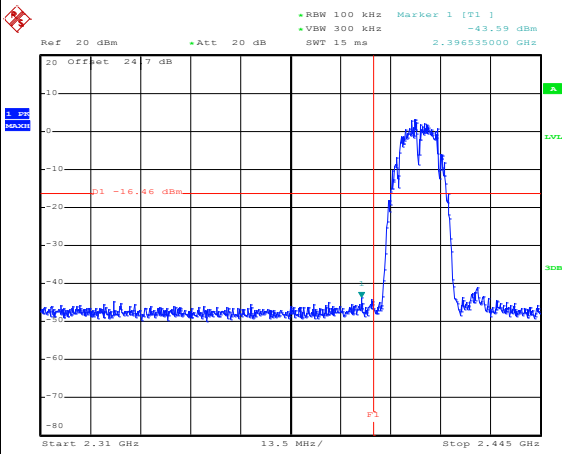
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



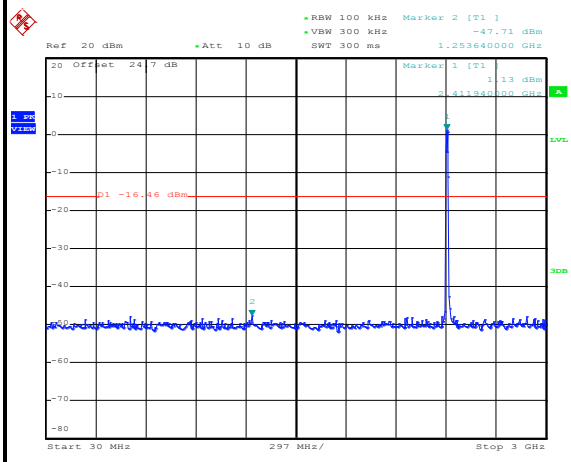

Date: 19.JUL.2018 07:22:02

**Channel Plot**



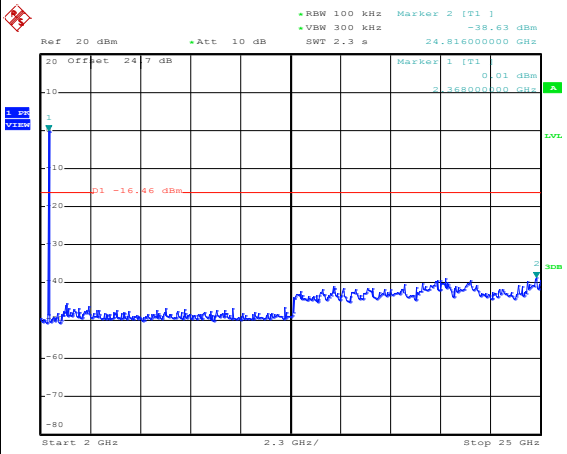

Date: 19.JUL.2018 07:22:36

**Spurious Emission 30MHz~3GHz**




Date: 19.JUL.2018 07:23:09

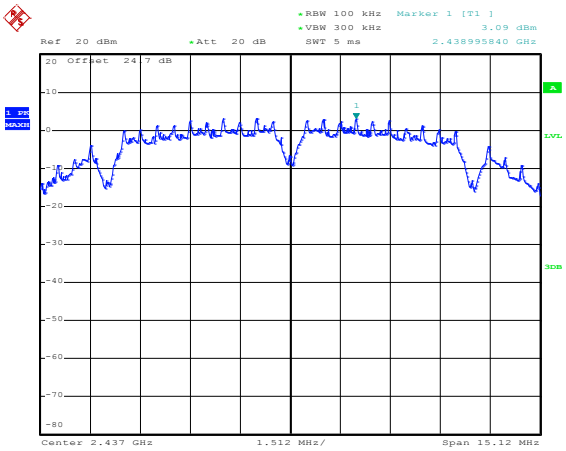
**Spurious Emission 2GHz~25GHz**




Date: 19.JUL.2018 07:23:30

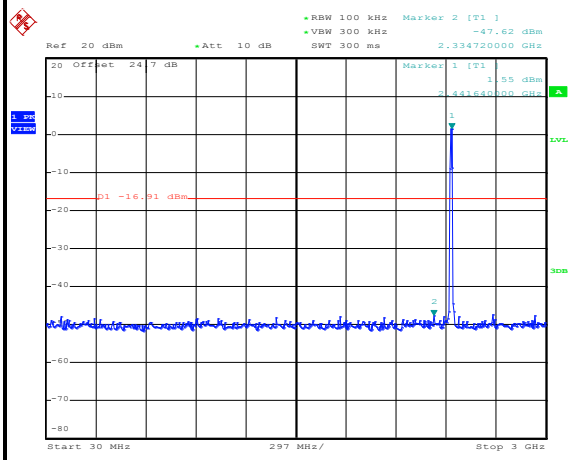
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



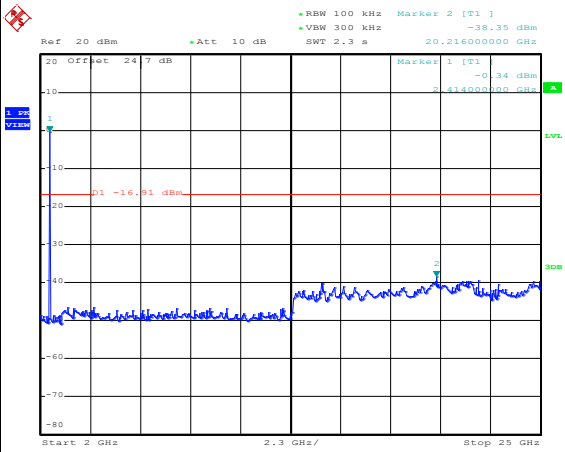

Date: 19.JUL.2018 07:27:57

## Spurious Emission 30MHz~3GHz




Date: 19.JUL.2018 07:29:12

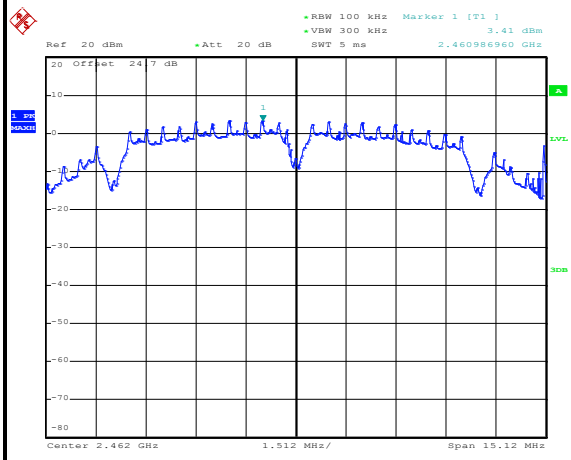
## Spurious Emission 2GHz~25GHz




Date: 19.JUL.2018 07:29:40

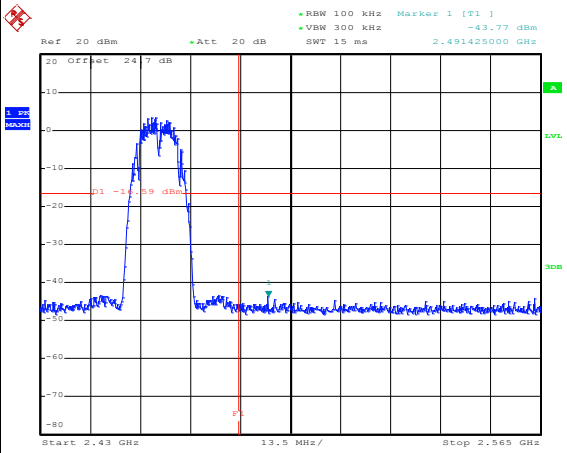
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



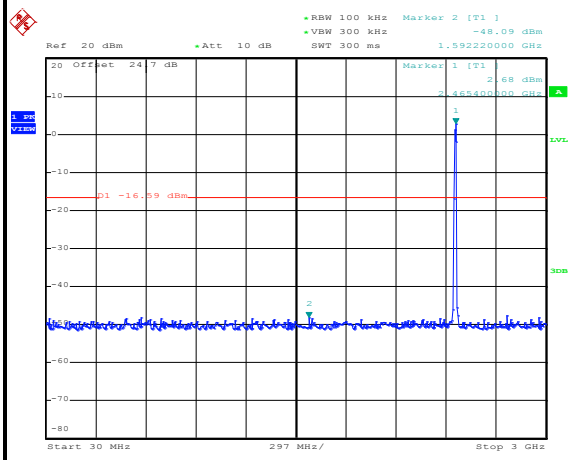

Date: 19.JUL.2018 07:35:17

**Channel Plot**



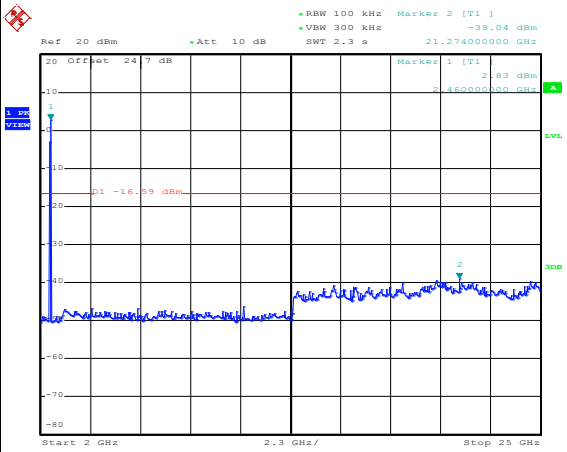

Date: 19.JUL.2018 07:36:24

**Spurious Emission 30MHz~3GHz**




Date: 19.JUL.2018 07:37:58

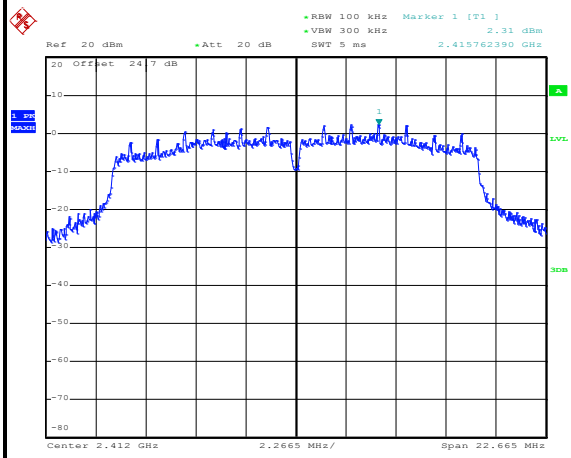
**Spurious Emission 2GHz~25GHz**




Date: 19.JUL.2018 07:39:05

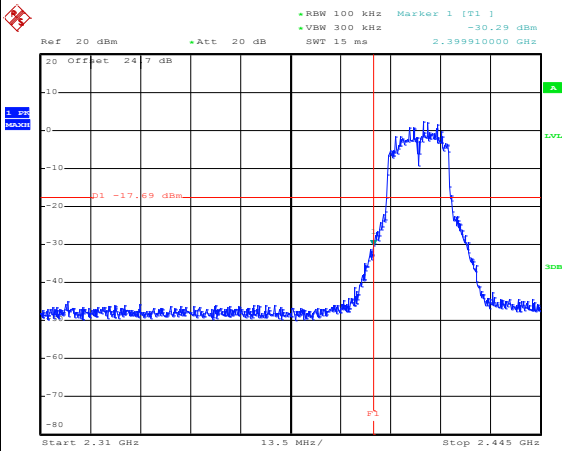
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



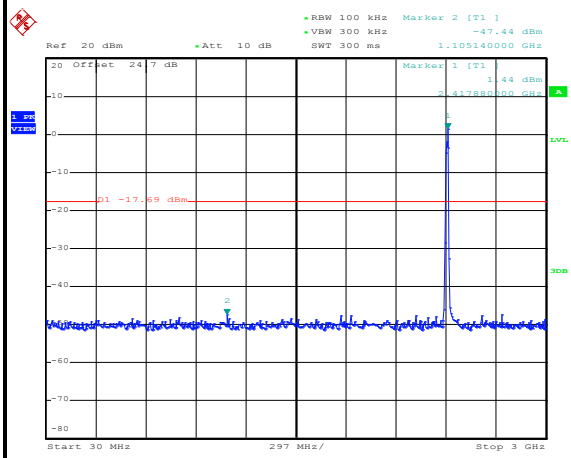

Date: 23.JUL.2018 05:10:04

**Channel Plot**



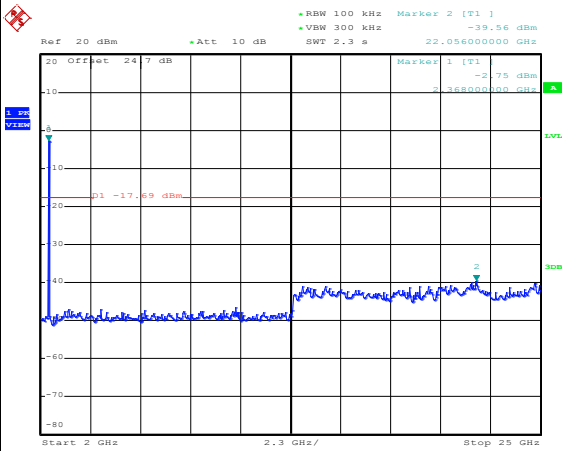

Date: 23.JUL.2018 05:10:30

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 05:11:02

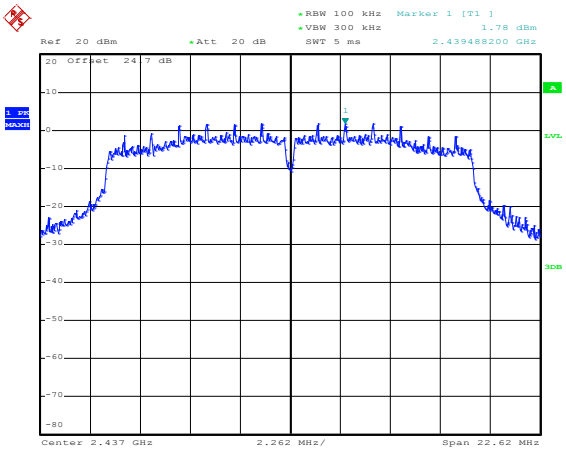
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 05:11:16

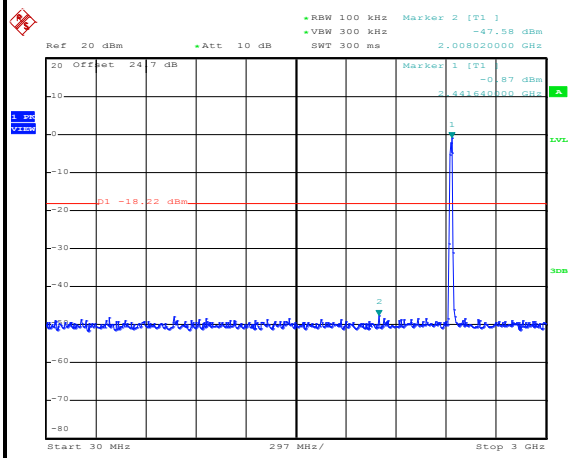
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



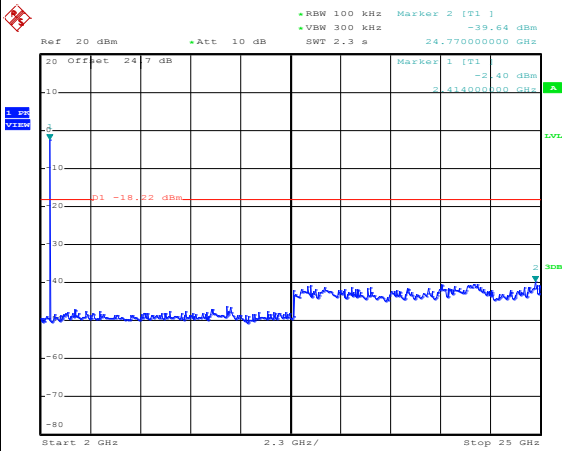

Date: 23.JUL.2018 05:14:14

## Spurious Emission 30MHz~3GHz




Date: 23.JUL.2018 05:14:49

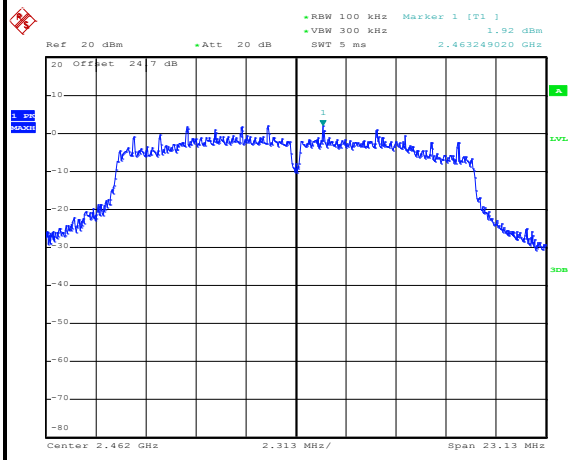
## Spurious Emission 2GHz~25GHz




Date: 23.JUL.2018 05:15:04

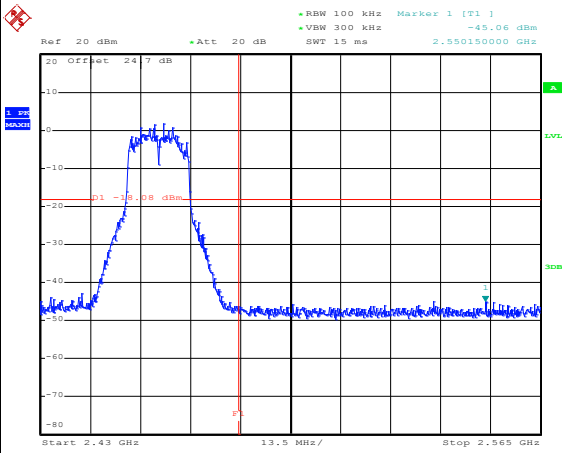
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



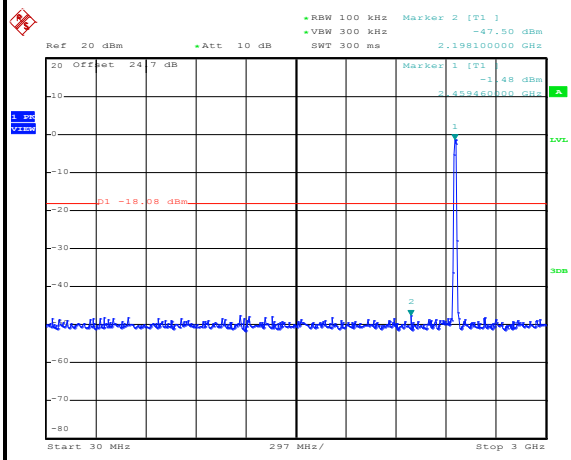

Date: 23.JUL.2018 05:24:02

**Channel Plot**



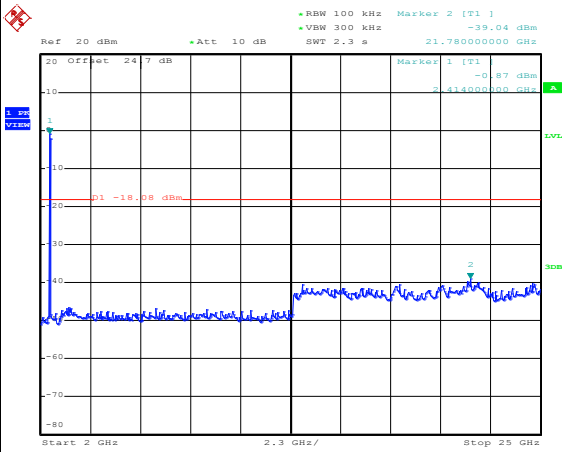

Date: 23.JUL.2018 05:24:20

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 05:24:41

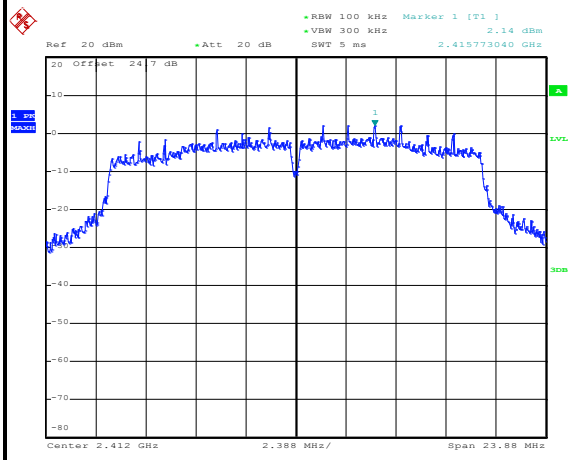
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 05:24:57

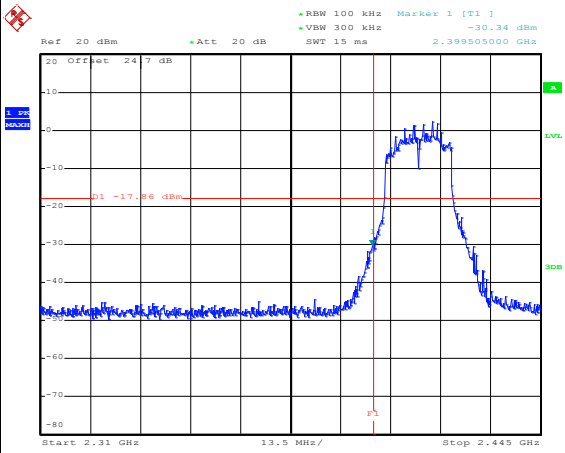
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



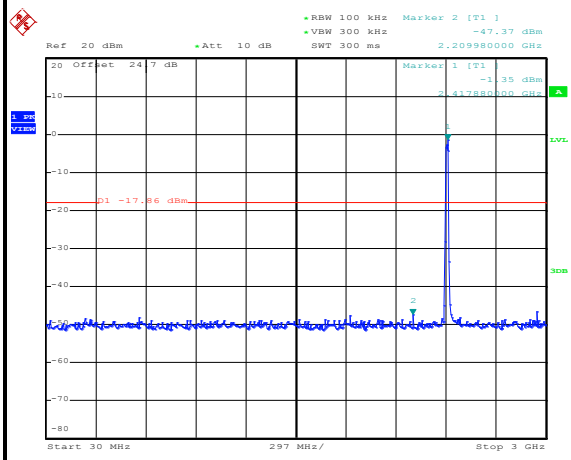

Date: 23.JUL.2018 06:27:31

**Channel Plot**



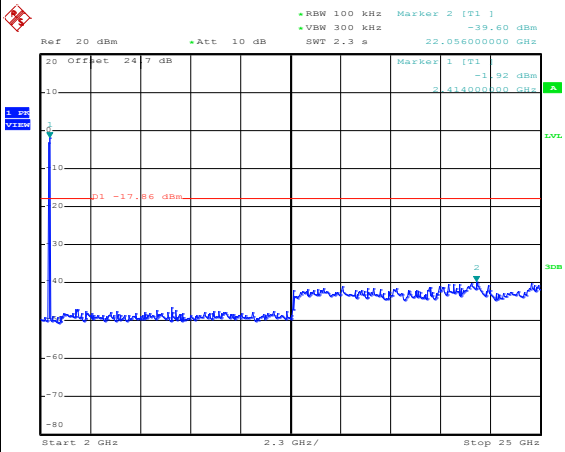

Date: 23.JUL.2018 06:27:48

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 06:28:09

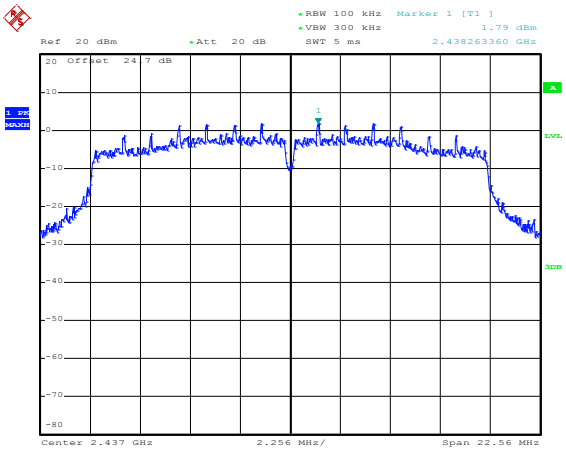
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 06:28:28

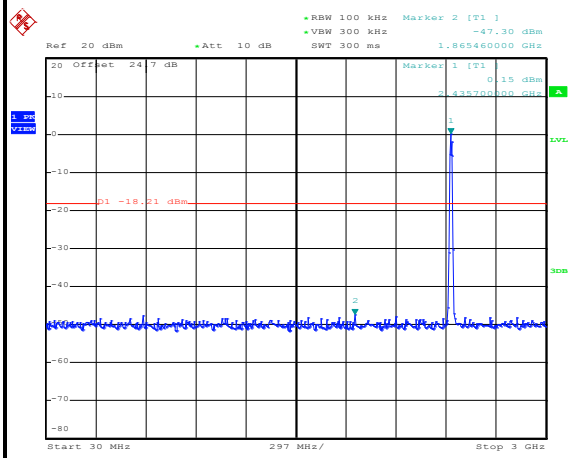
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



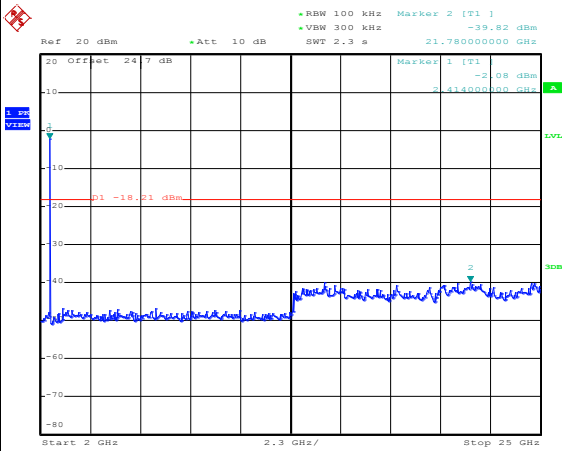

Date: 23.JUL.2018 06:30:38

## Spurious Emission 30MHz~3GHz




Date: 23.JUL.2018 06:31:13

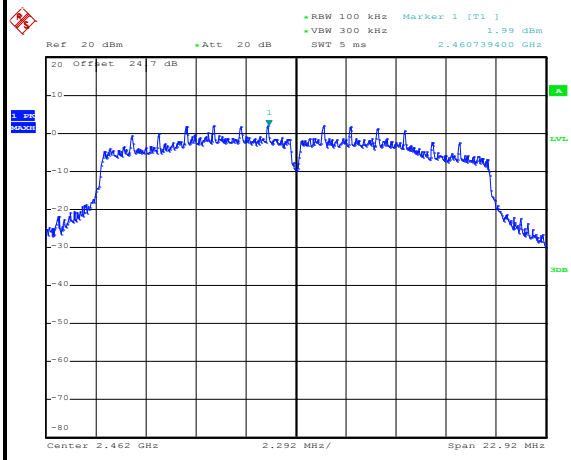
## Spurious Emission 2GHz~25GHz




Date: 23.JUL.2018 06:31:33

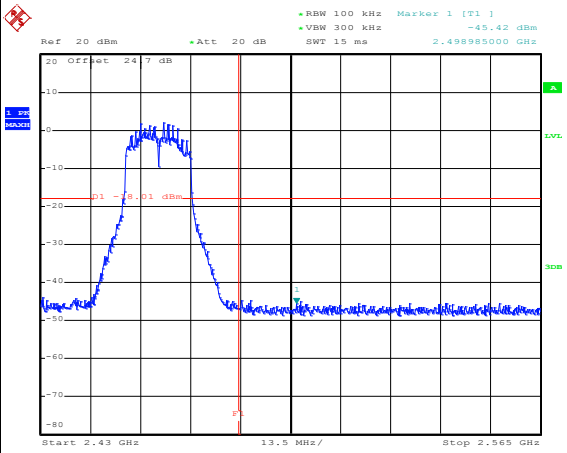
| | | | |
|---|---|---|---|
| **Number of TX** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



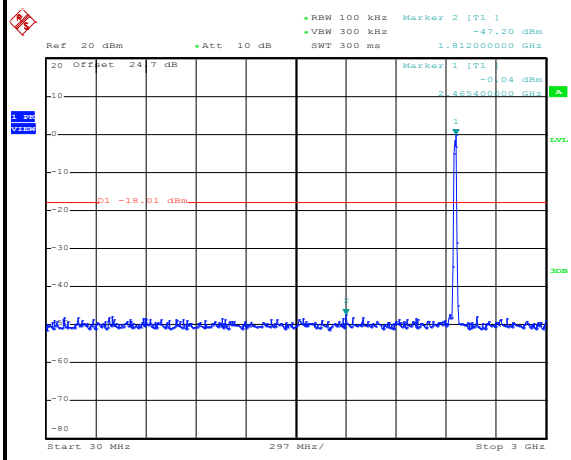

Date: 23.JUL.2018 06:36:22

**Channel Plot**



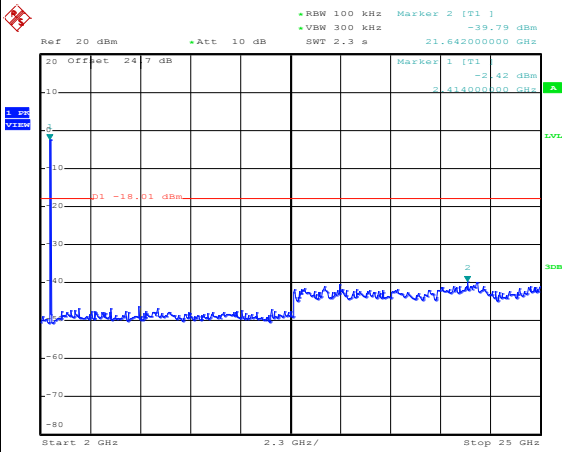

Date: 23.JUL.2018 06:36:54

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 06:40:06

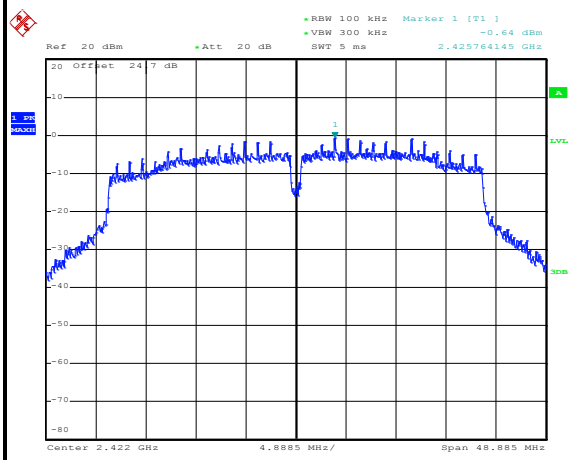
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 06:40:21

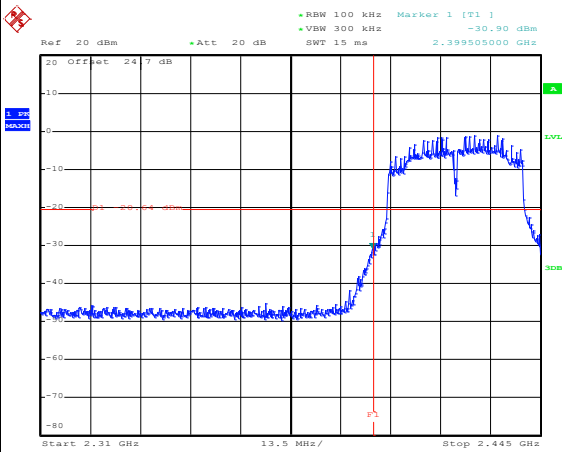
| | | | |
|---|---|---|---|
| **Number of TX :** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 03 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



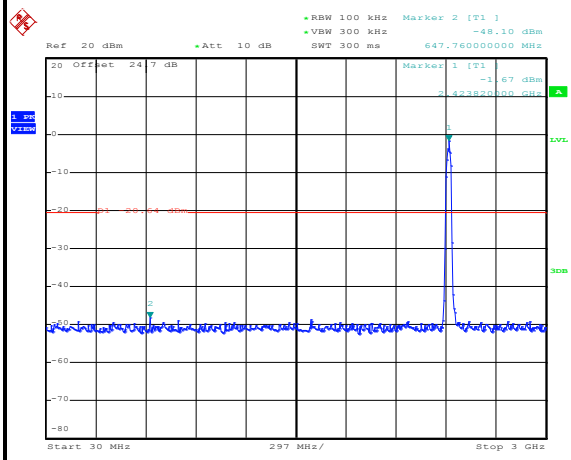

Date: 26.JUL.2018 06:15:17

**Channel Plot**



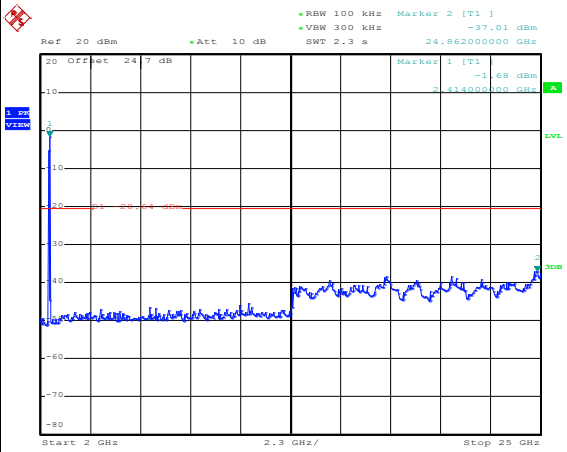

Date: 26.JUL.2018 06:15:58

**Spurious Emission 30MHz~3GHz**




Date: 26.JUL.2018 06:16:25

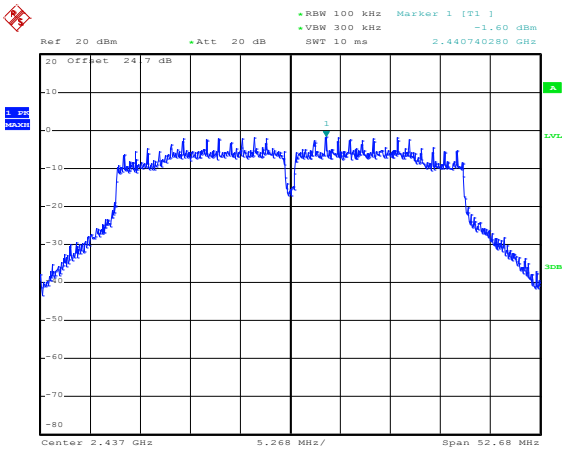
**Spurious Emission 2GHz~25GHz**




Date: 26.JUL.2018 06:16:41

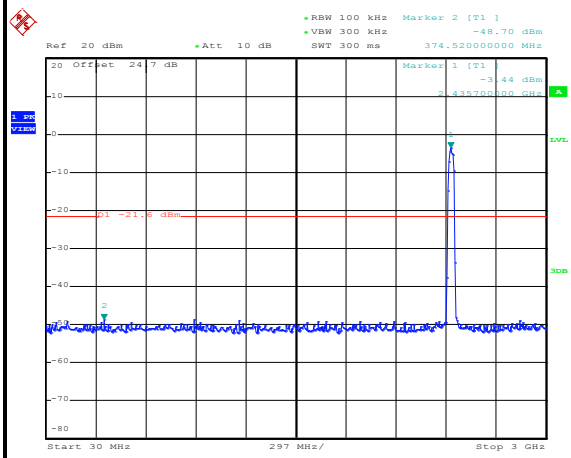
| | | | |
|---|---|---|---|
| **Number of TX :** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



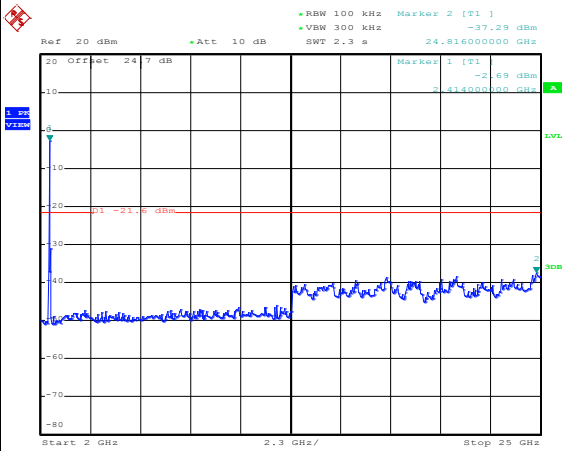

Date: 26.JUL.2018 06:21:30

## Spurious Emission 30MHz~3GHz




Date: 26.JUL.2018 06:22:32

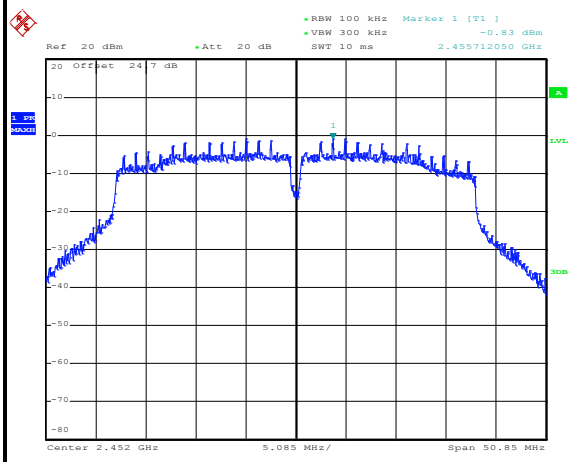
## Spurious Emission 2GHz~25GHz




Date: 26.JUL.2018 06:22:50

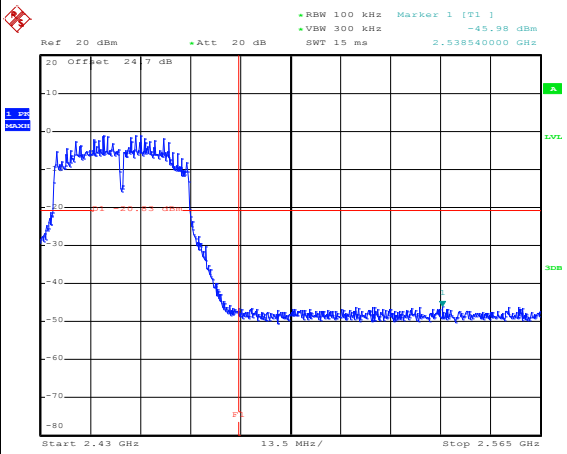
| | | | |
|---|---|---|---|
| **Number of TX :** | 1 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 09 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



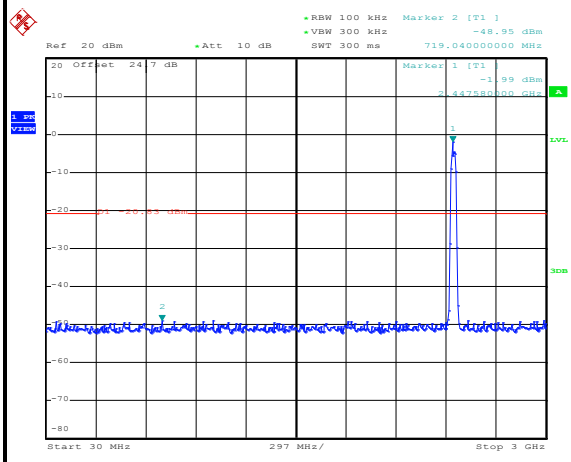

Date: 26.JUL.2018 06:26:45

**Channel Plot**



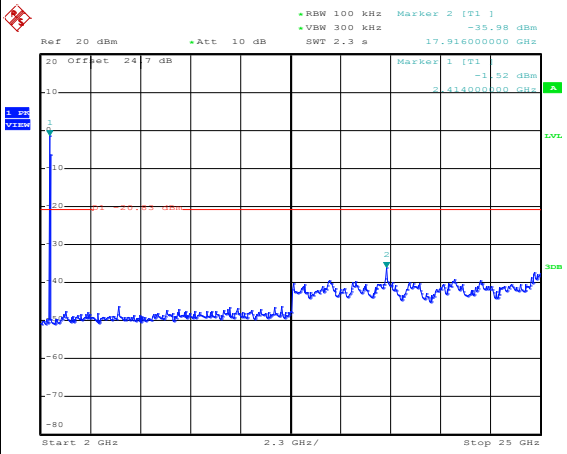

Date: 26.JUL.2018 06:27:03

**Spurious Emission 30MHz~3GHz**




Date: 26.JUL.2018 06:27:27

**Spurious Emission 2GHz~25GHz**

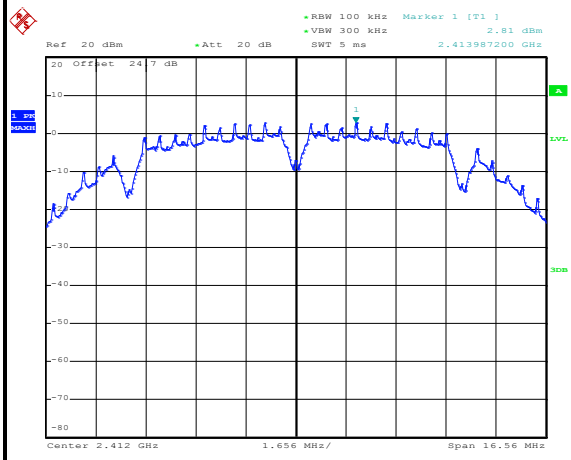



Date: 26.JUL.2018 06:27:46

**Number of TX = 2, Ant. 1 (Measured)**

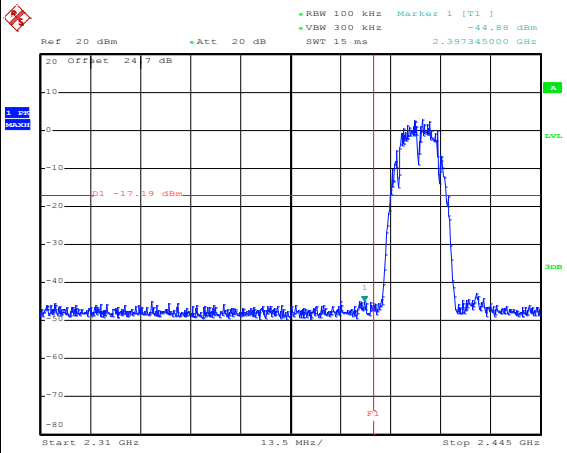
| | | | |
|---|---|---|---|
| **Number of TX** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



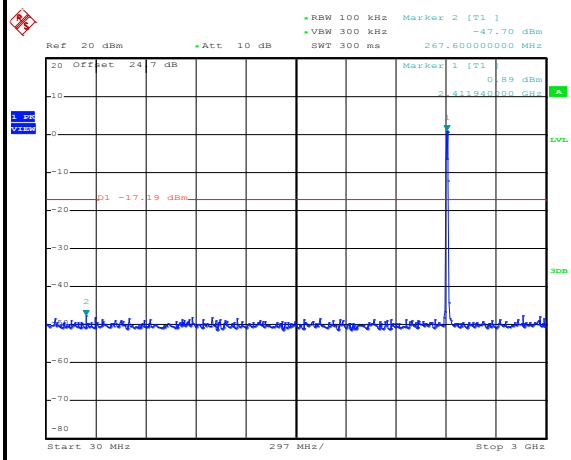

Date: 23.JUL.2018 04:13:03

**Channel Plot**



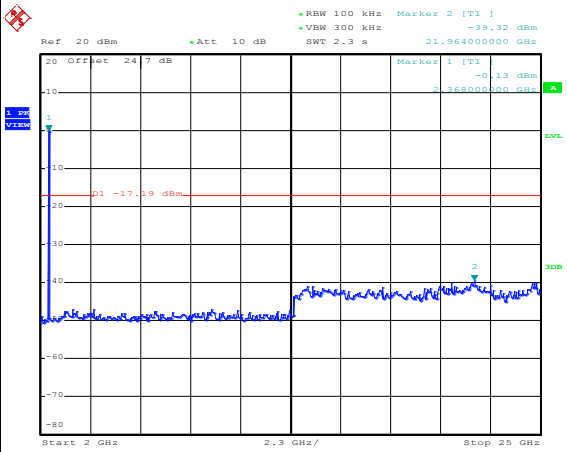

Date: 23.JUL.2018 04:13:19

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 04:14:55

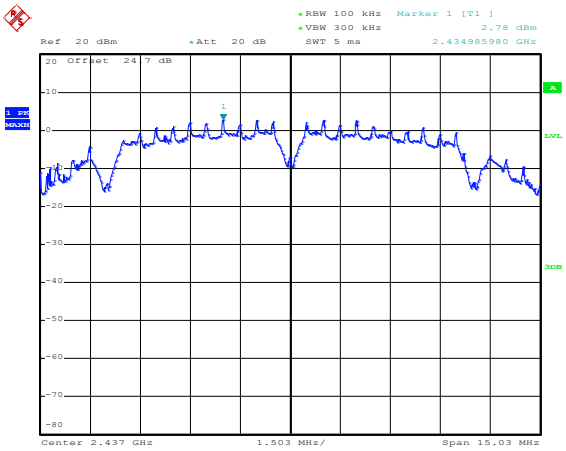
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 04:15:11

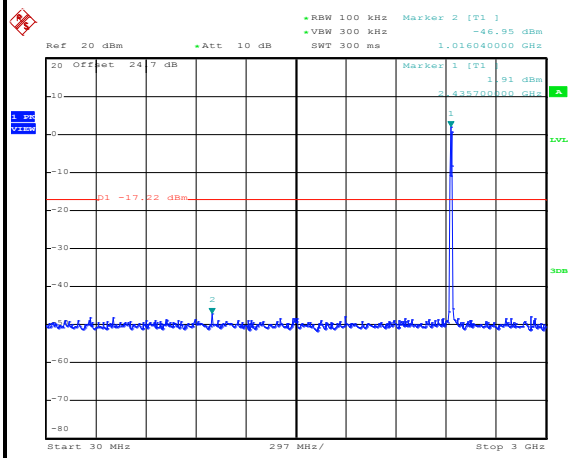
| | | | |
|---|---|---|---|
| **Number of TX** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



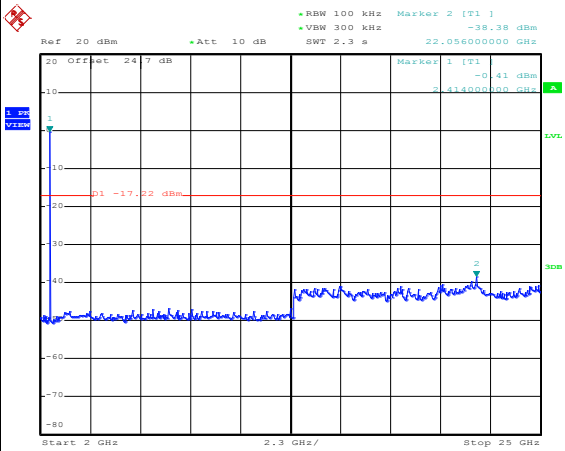

Date: 23.JUL.2018 04:24:18

## Spurious Emission 30MHz~3GHz




Date: 23.JUL.2018 04:24:52

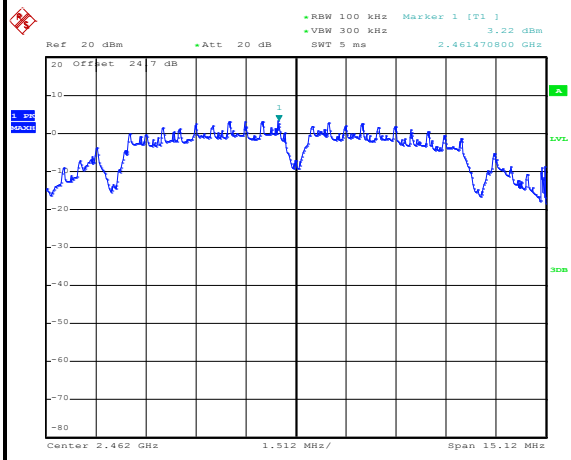
## Spurious Emission 2GHz~25GHz




Date: 23.JUL.2018 04:25:10

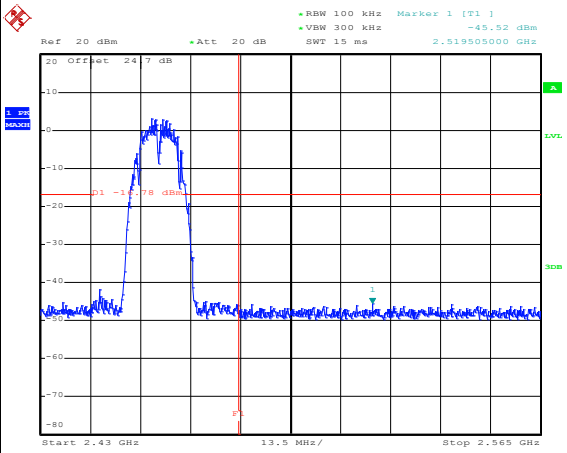
| | | | |
|---|---|---|---|
| **Number of TX** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



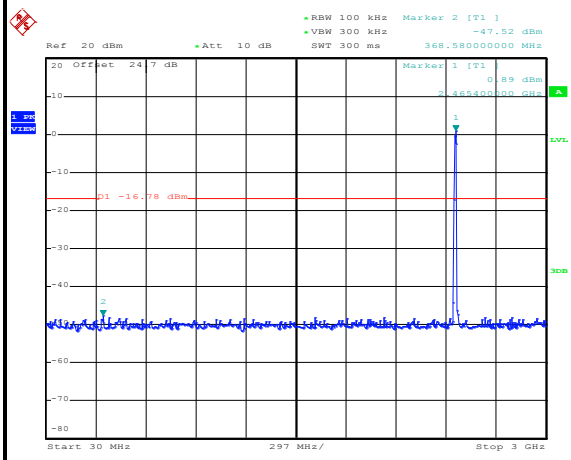

Date: 23.JUL.2018 04:35:54

**Channel Plot**



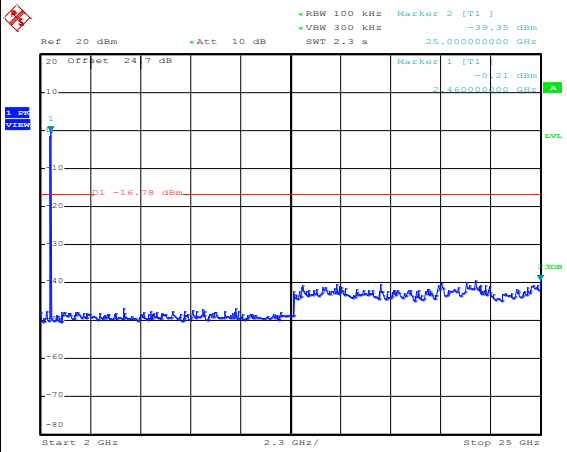

Date: 23.JUL.2018 04:36:08

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 04:36:30

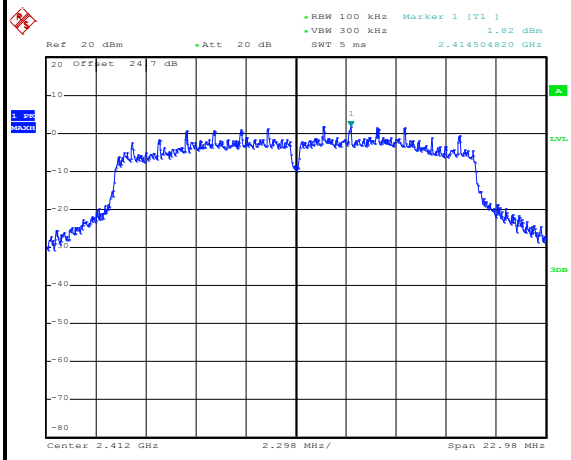
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 04:36:45

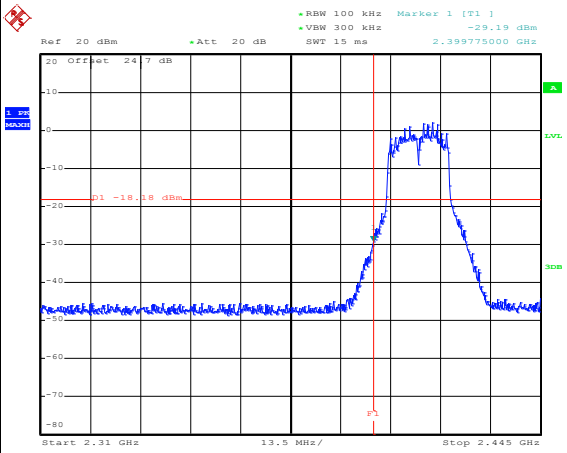
| | | | |
|---|---|---|---|
| **Number of TX** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



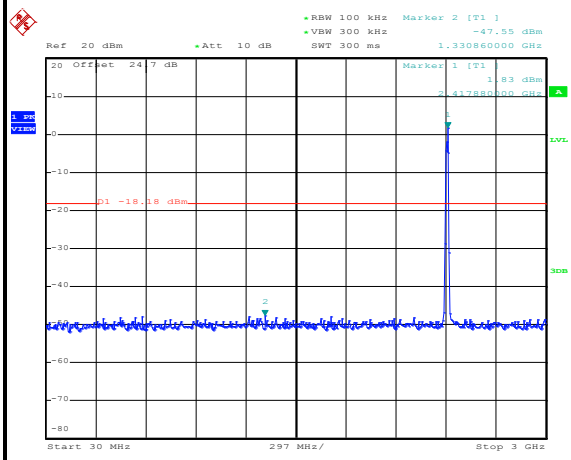

Date: 23.JUL.2018 05:29:03

**Channel Plot**



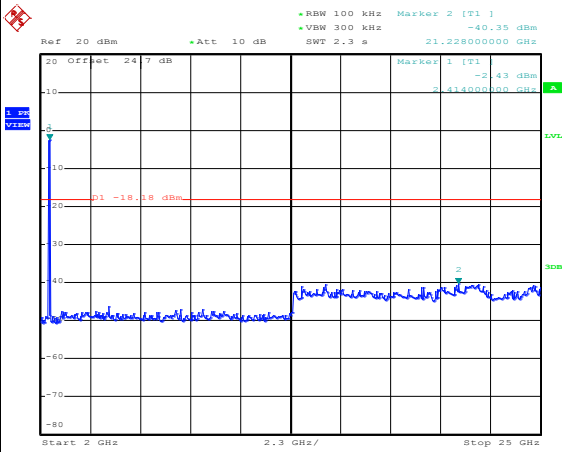

Date: 23.JUL.2018 05:29:30

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 05:29:51

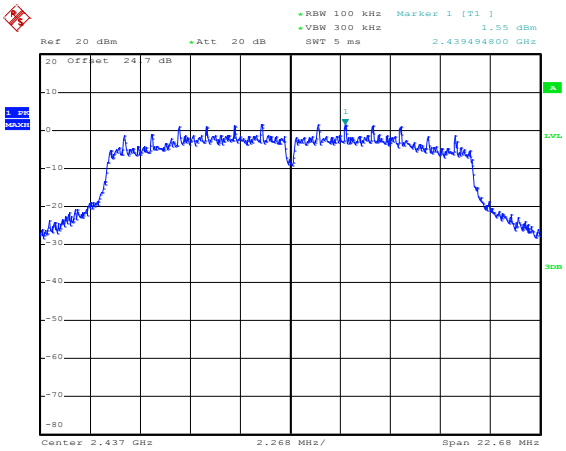
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 05:30:12

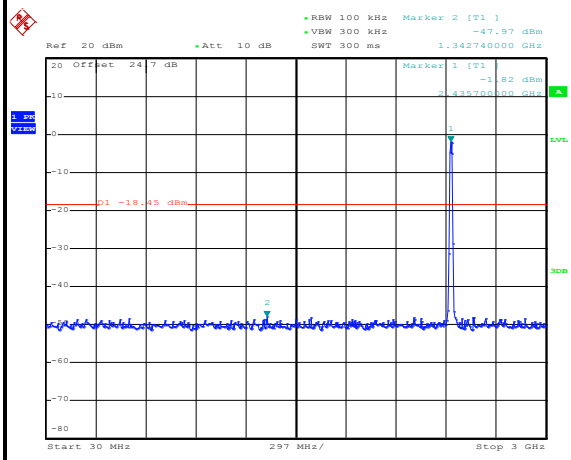
| | | | |
|---|---|---|---|
| **Number of TX** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



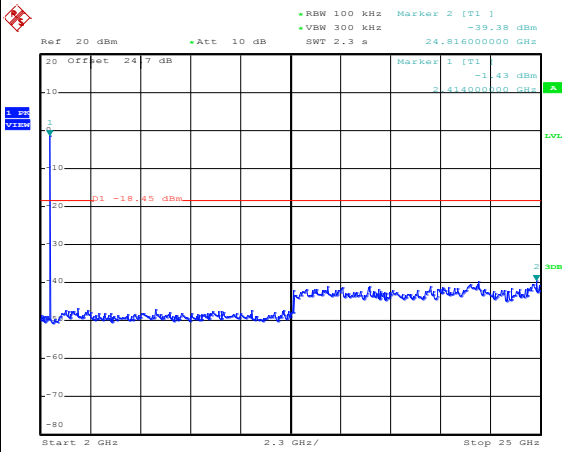

Date: 23.JUL.2018 05:38:27

## Spurious Emission 30MHz~3GHz




Date: 23.JUL.2018 05:38:56

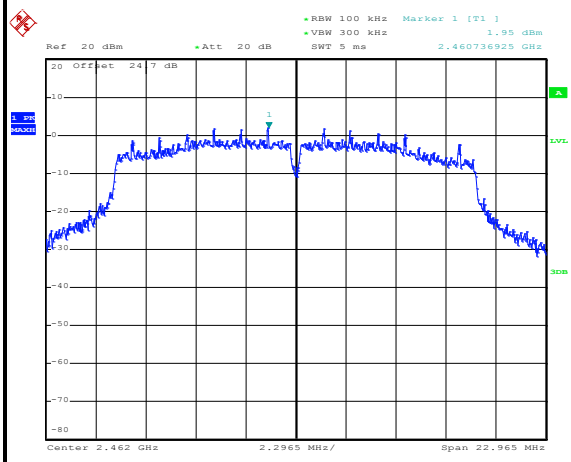
## Spurious Emission 2GHz~25GHz




Date: 23.JUL.2018 05:39:27

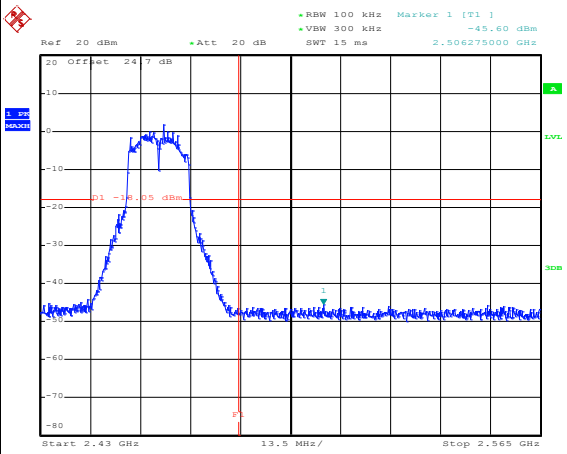
| | | | |
|---|---|---|---|
| **Number of TX** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



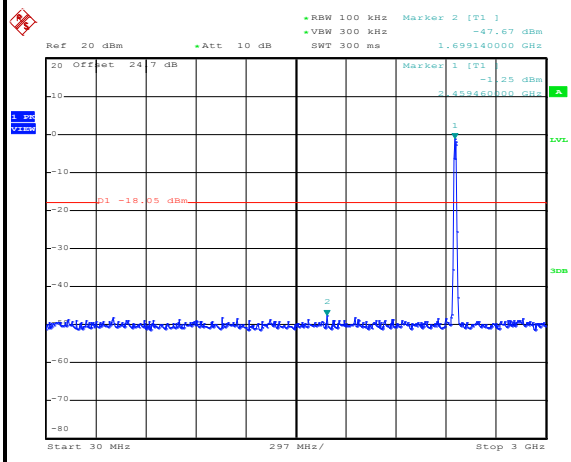

Date: 23.JUL.2018 05:48:18

**Channel Plot**



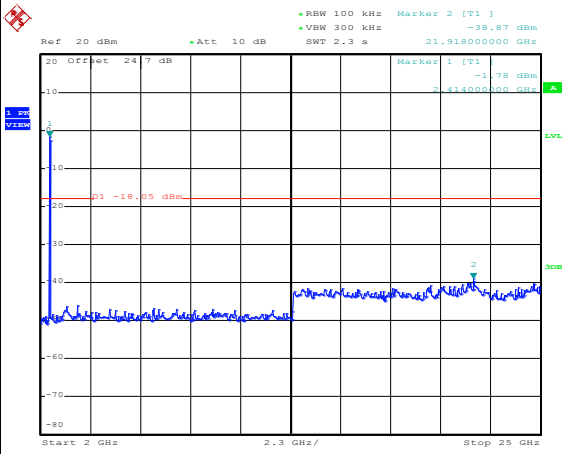

Date: 23.JUL.2018 05:48:32

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 05:48:51

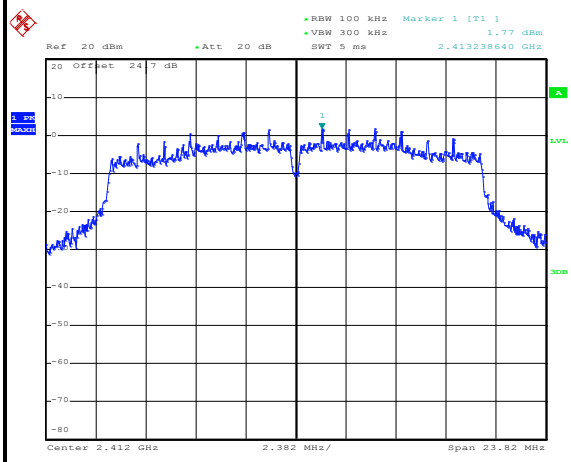
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 05:49:23

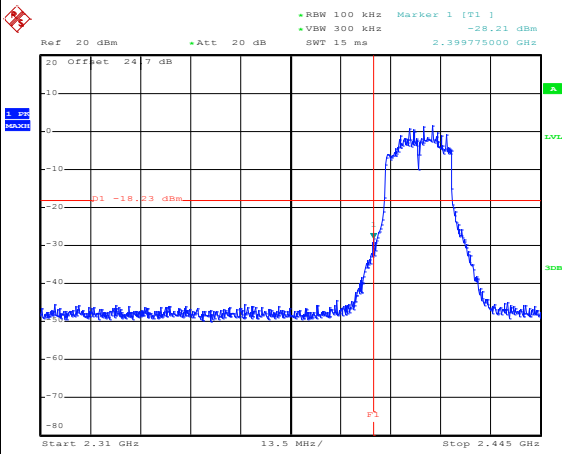
| | | | |
|---|---|---|---|
| **Number of TX** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



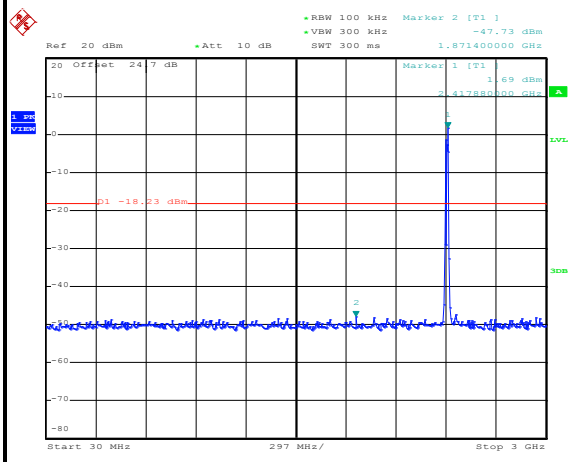

Date: 23.JUL.2018 06:51:22

**Channel Plot**



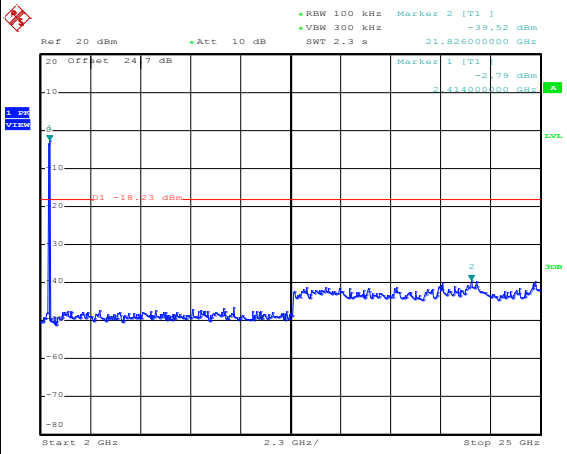

Date: 23.JUL.2018 06:51:35

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 06:51:59

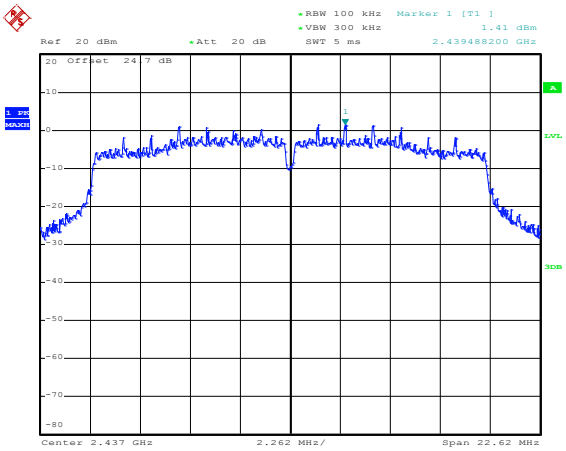
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 06:52:16

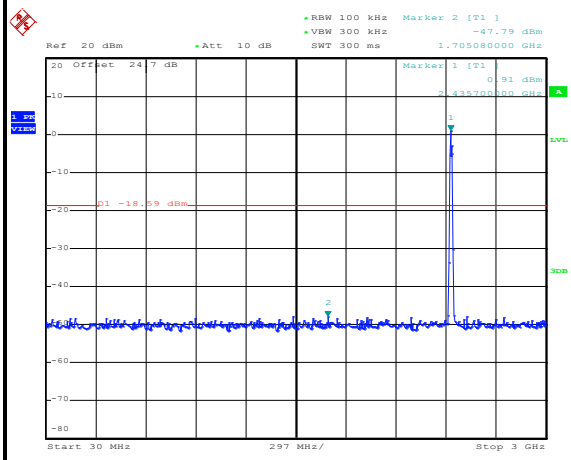
| | | | |
|---|---|---|---|
| **Number of TX** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



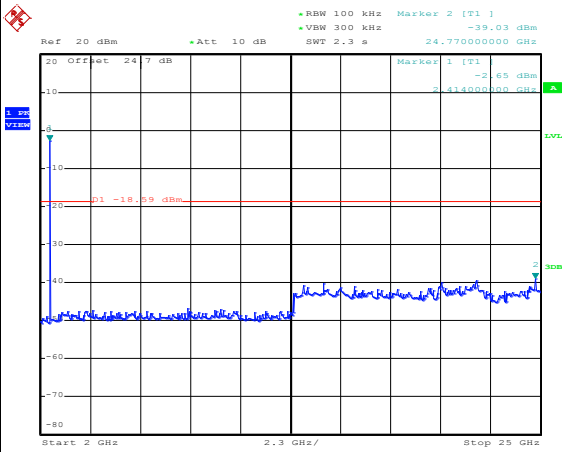

Date: 23.JUL.2018 07:00:57

## Spurious Emission 30MHz~3GHz




Date: 23.JUL.2018 07:01:16

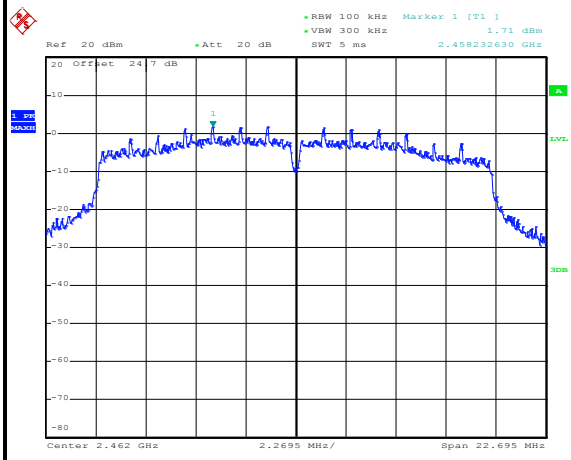
## Spurious Emission 2GHz~25GHz




Date: 23.JUL.2018 07:01:31

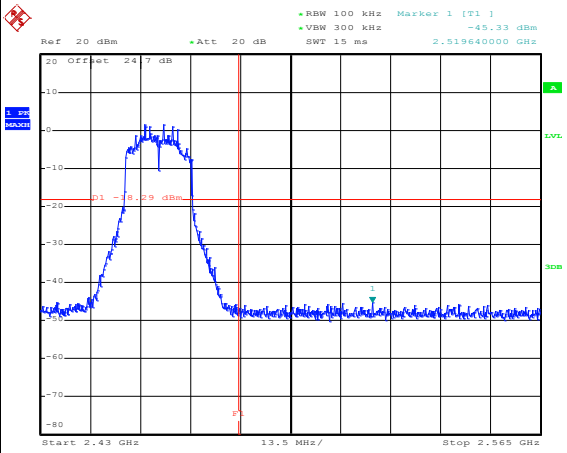
| | | | |
|---|---|---|---|
| **Number of TX** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



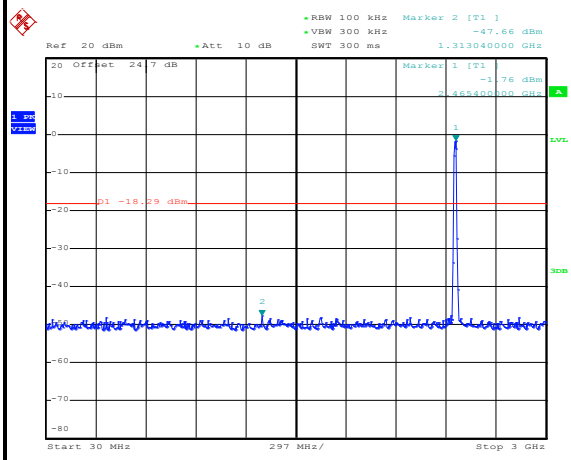

Date: 23.JUL.2018 07:07:45

**Channel Plot**



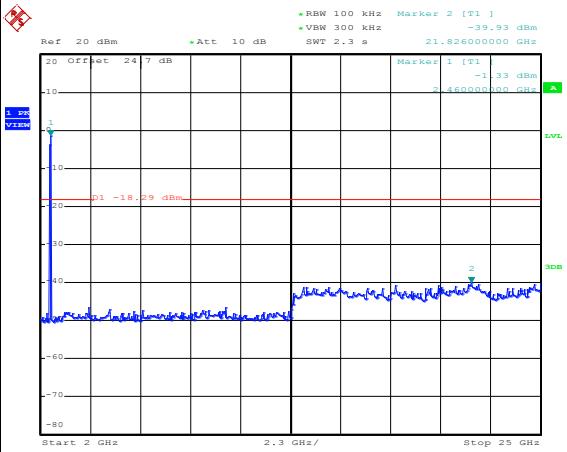

Date: 23.JUL.2018 07:08:24

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 07:08:57

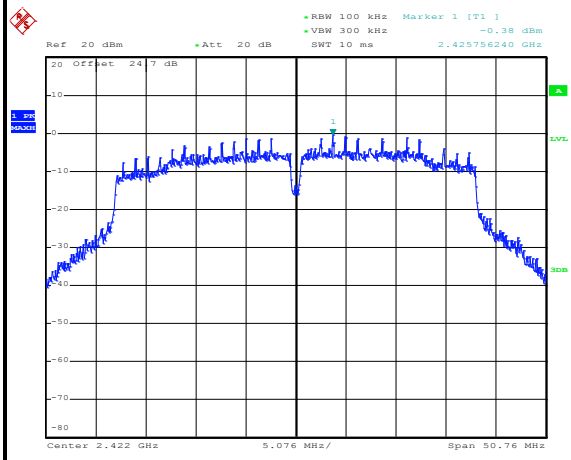
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 07:09:11

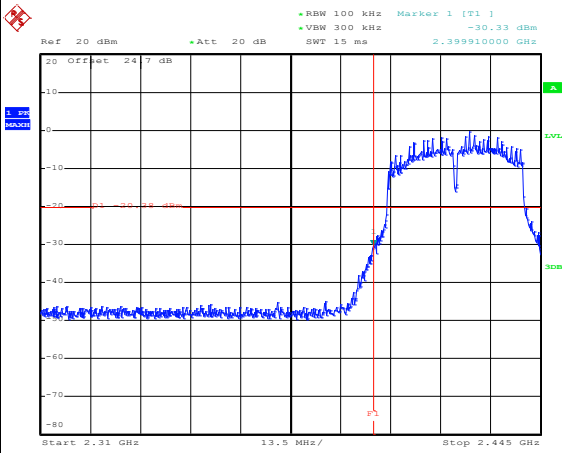
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 03 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



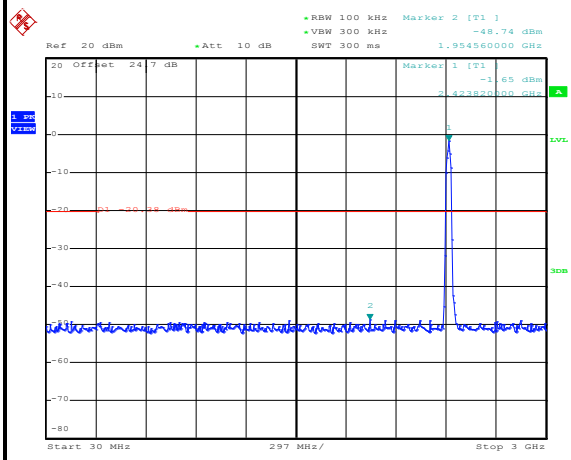

Date: 26.JUL.2018 06:33:47

**Channel Plot**



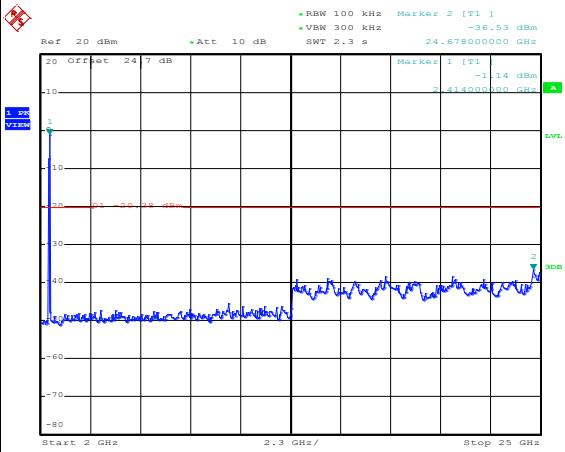

Date: 26.JUL.2018 06:34:03

**Spurious Emission 30MHz~3GHz**




Date: 26.JUL.2018 06:34:40

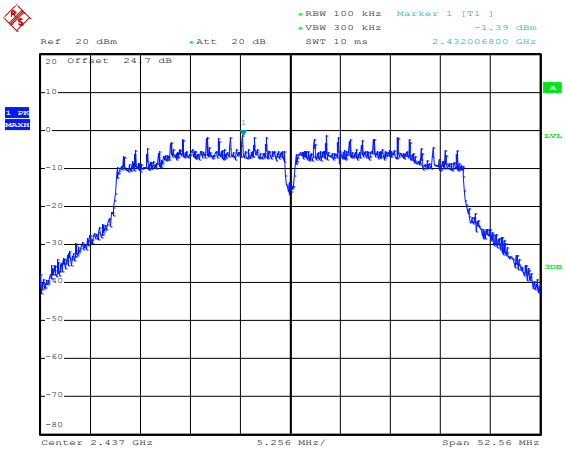
**Spurious Emission 2GHz~25GHz**




Date: 26.JUL.2018 06:34:58

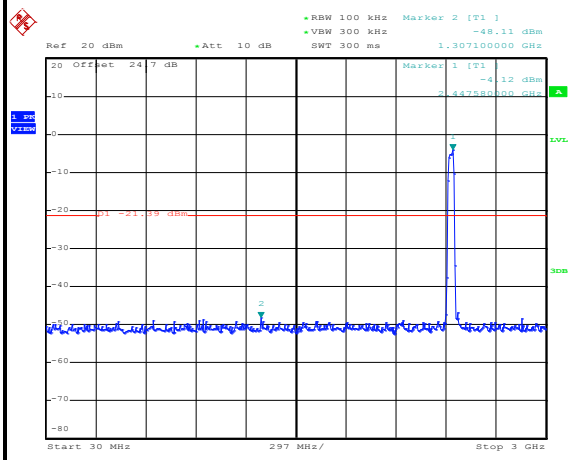
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



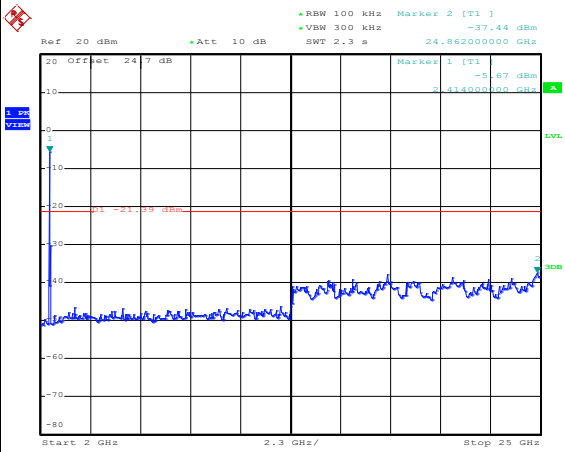

Date: 26.JUL.2018 06:41:33

## Spurious Emission 30MHz~3GHz




Date: 26.JUL.2018 06:42:06

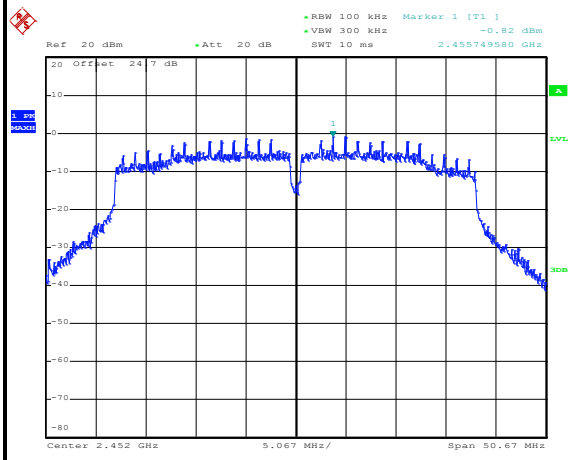
## Spurious Emission 2GHz~25GHz




Date: 26.JUL.2018 06:42:26

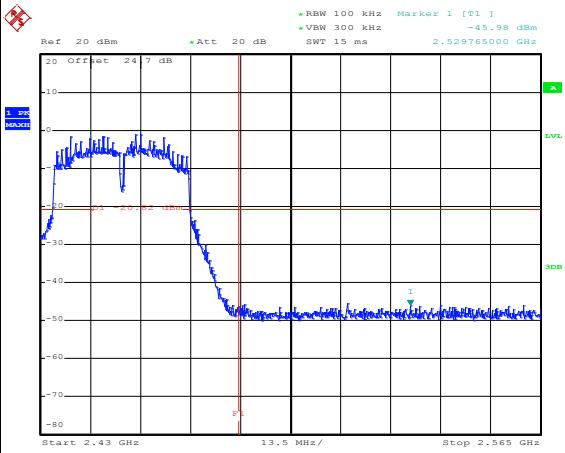
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 1 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 09 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



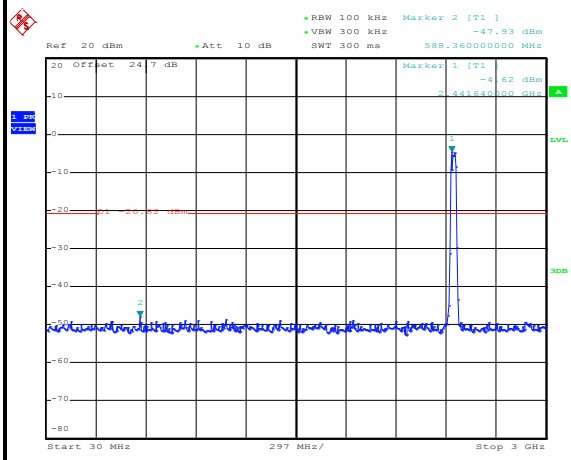

Date: 26.JUL.2018 07:06:21

**Channel Plot**



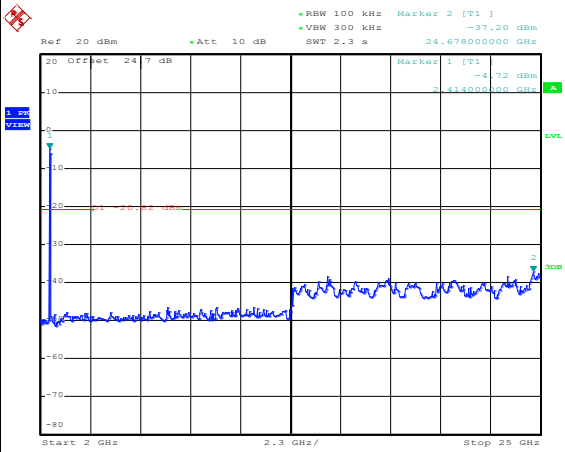

Date: 26.JUL.2018 07:06:41

**Spurious Emission 30MHz~3GHz**




Date: 26.JUL.2018 07:07:01

**Spurious Emission 2GHz~25GHz**

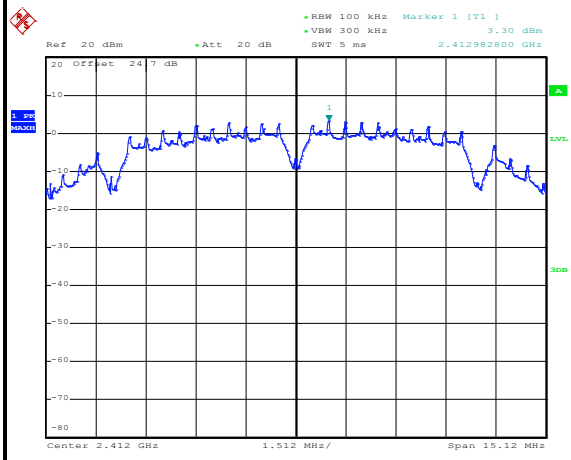



Date: 26.JUL.2018 07:07:19

**Number of TX = 2, Ant. 2 (Measured)**

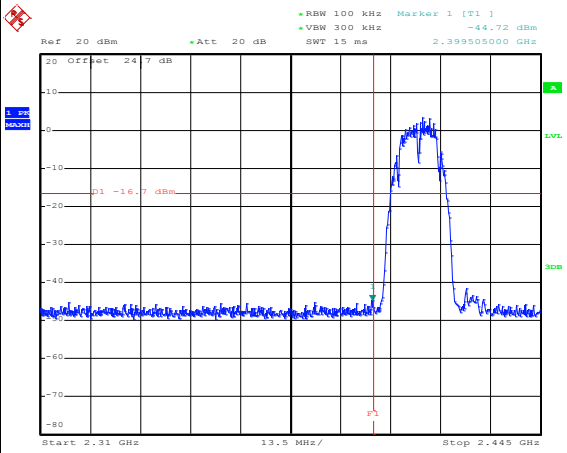
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



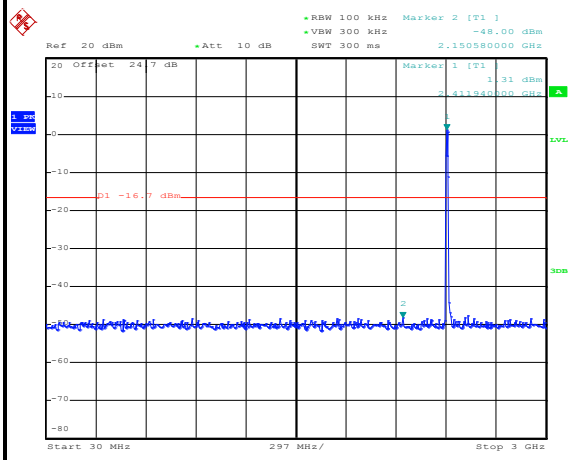

Date: 23.JUL.2018 04:18:55

**Channel Plot**



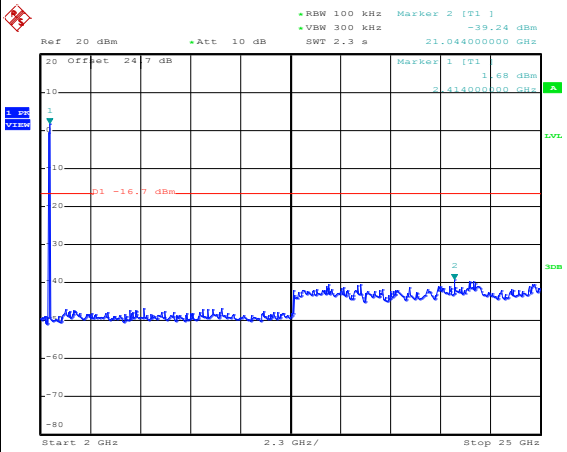

Date: 23.JUL.2018 04:19:17

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 04:19:33

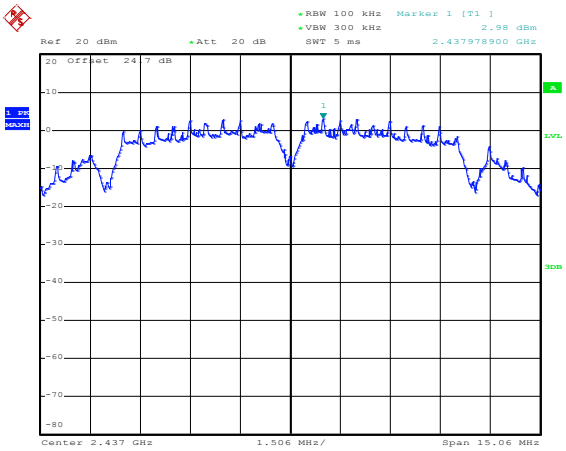
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 04:19:47

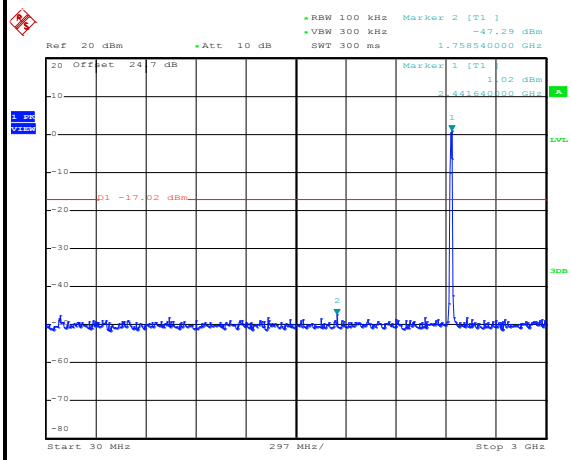
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



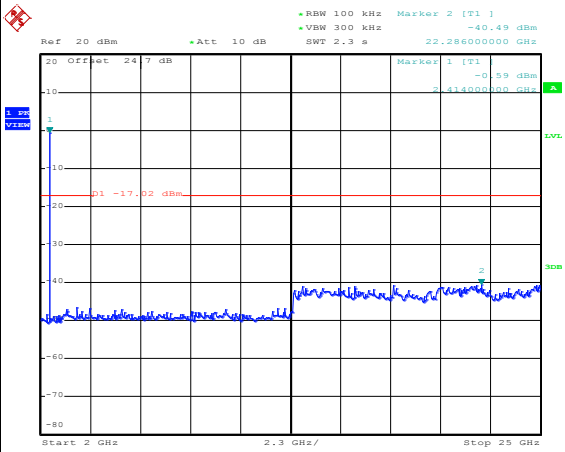

Date: 23.JUL.2018 04:27:21

## Spurious Emission 30MHz~3GHz




Date: 23.JUL.2018 04:27:40

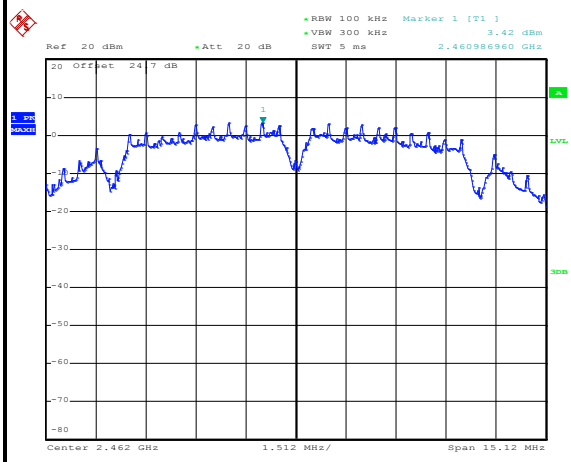
## Spurious Emission 2GHz~25GHz




Date: 23.JUL.2018 04:27:59

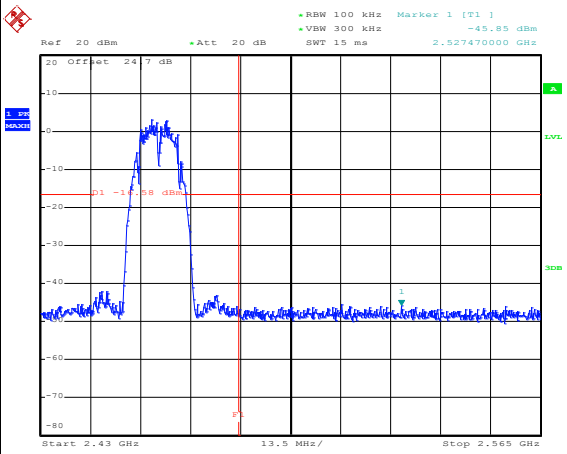
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11b | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



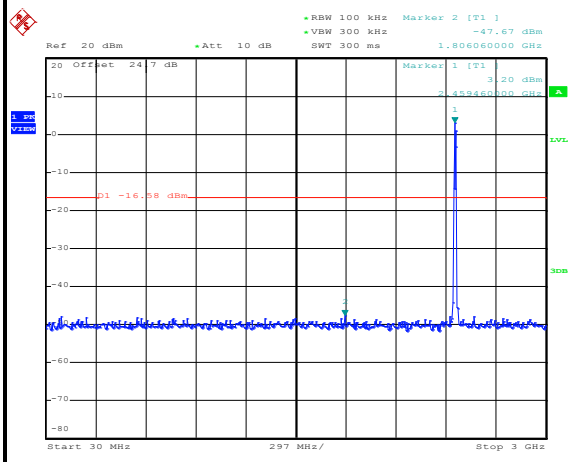

Date: 23.JUL.2018 04:41:09

**Channel Plot**



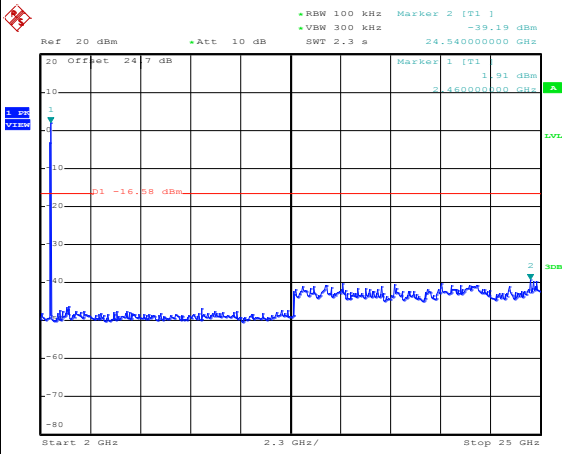

Date: 23.JUL.2018 04:41:23

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 04:41:42

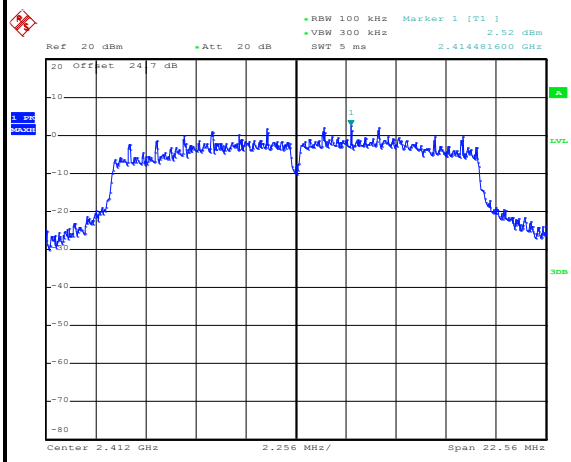
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 04:41:57

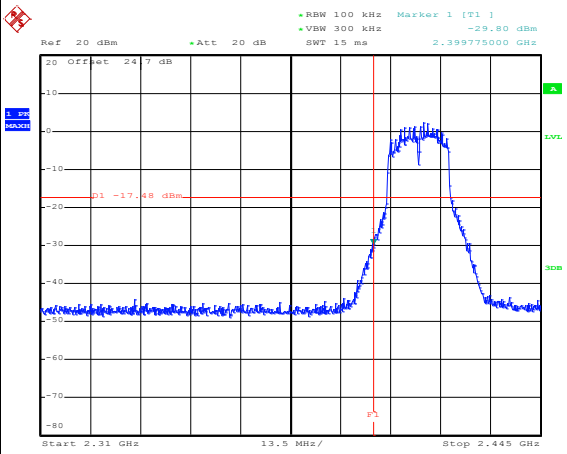
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



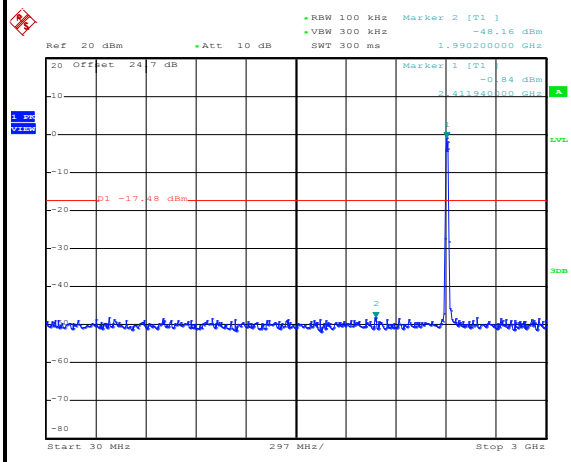

Date: 23.JUL.2018 05:32:59

**Channel Plot**



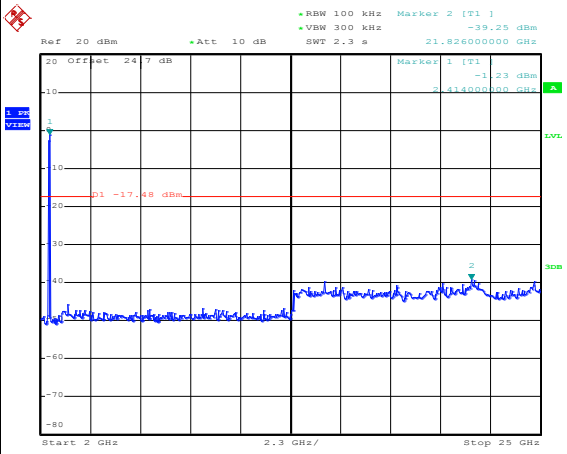

Date: 23.JUL.2018 05:33:55

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 05:34:51

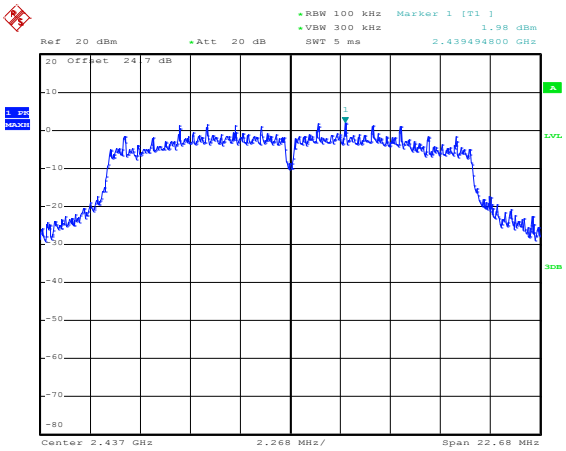
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 05:35:19

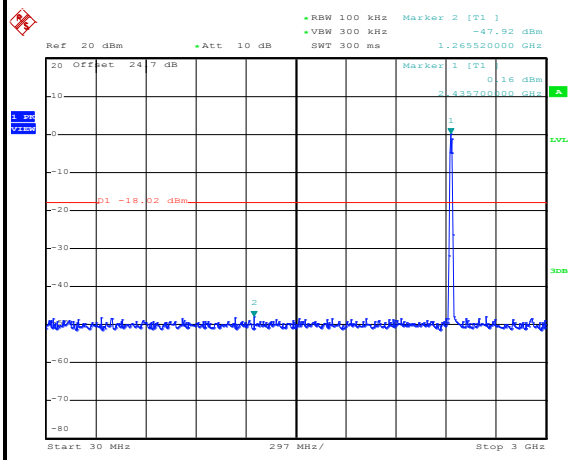
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



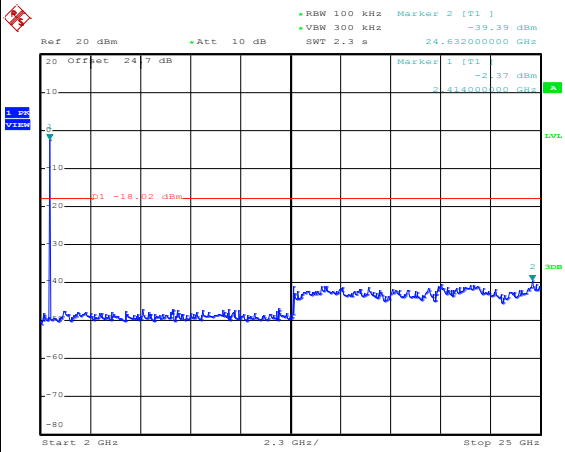

Date: 23.JUL.2018 05:41:43

## Spurious Emission 30MHz~3GHz




Date: 23.JUL.2018 05:42:01

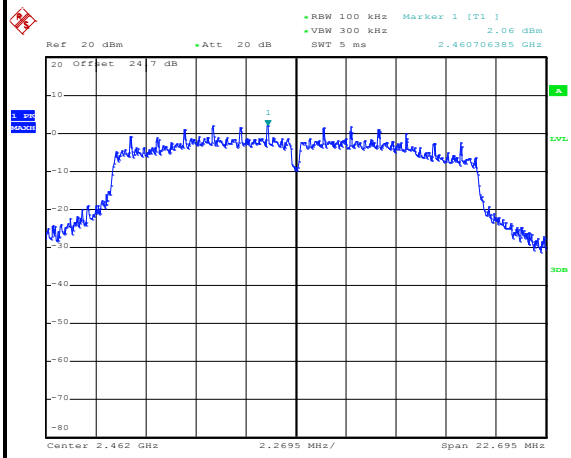
## Spurious Emission 2GHz~25GHz




Date: 23.JUL.2018 05:42:32

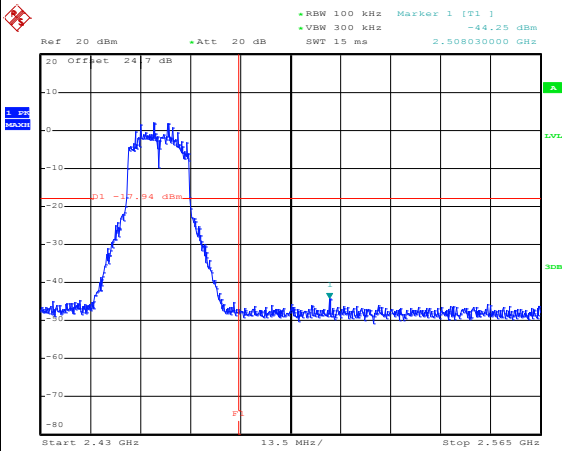
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11g | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



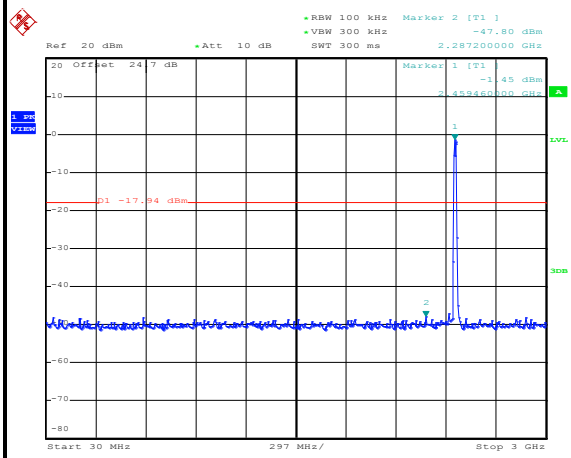

Date: 23.JUL.2018 05:52:56

**Channel Plot**



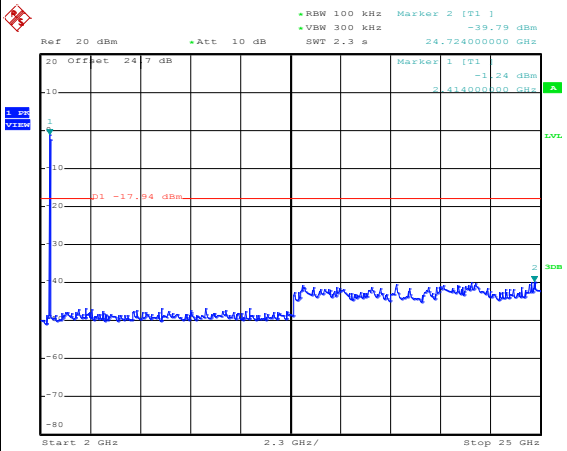

Date: 23.JUL.2018 05:53:09

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 05:53:39

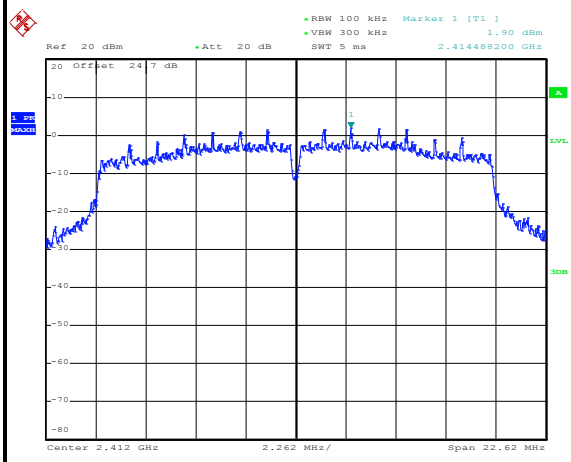
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 05:53:57

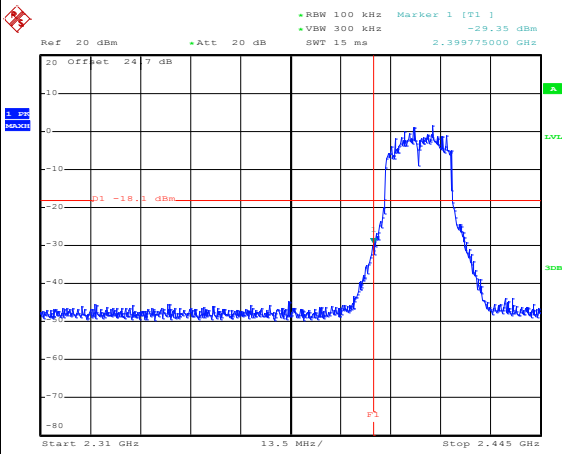
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 01 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



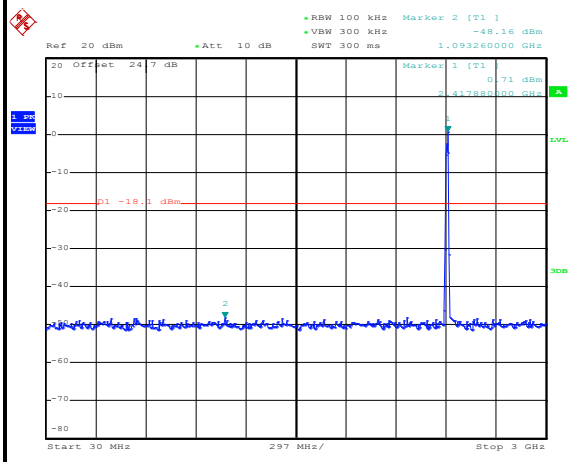

Date: 23.JUL.2018 06:55:29

**Channel Plot**



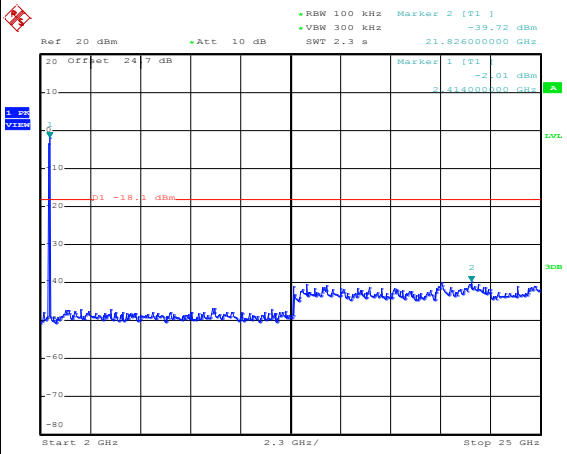

Date: 23.JUL.2018 06:55:53

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 06:56:15

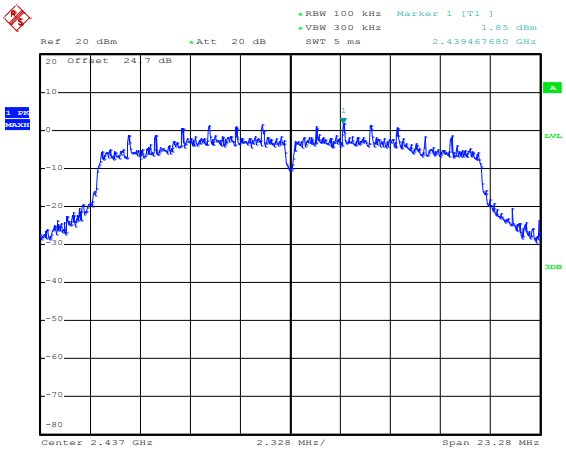
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 06:56:34

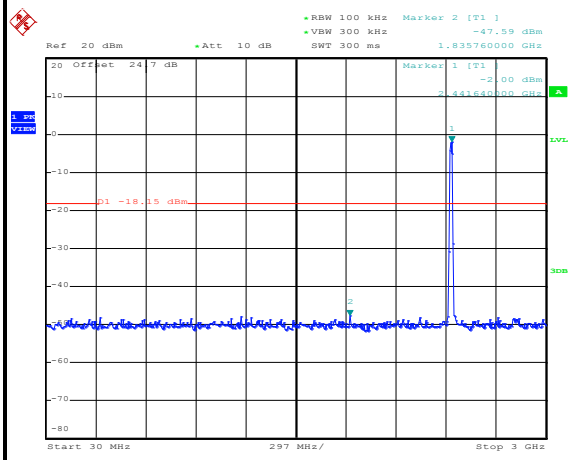
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Mid | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



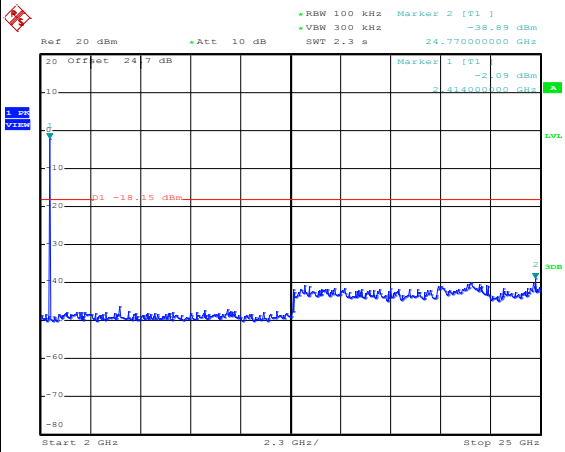

Date: 23.JUL.2018 07:03:51

## Spurious Emission 30MHz~3GHz




Date: 23.JUL.2018 07:04:12

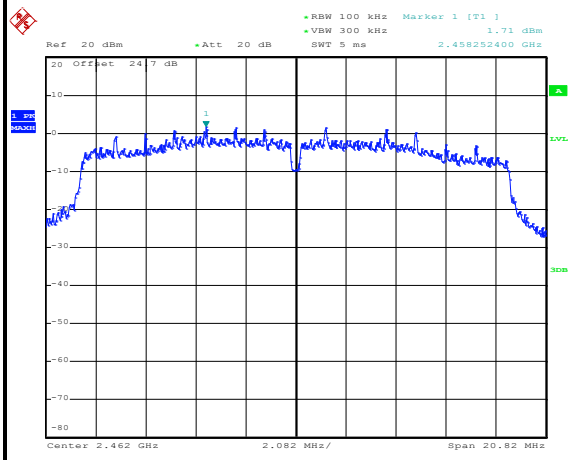
## Spurious Emission 2GHz~25GHz




Date: 23.JUL.2018 07:04:28

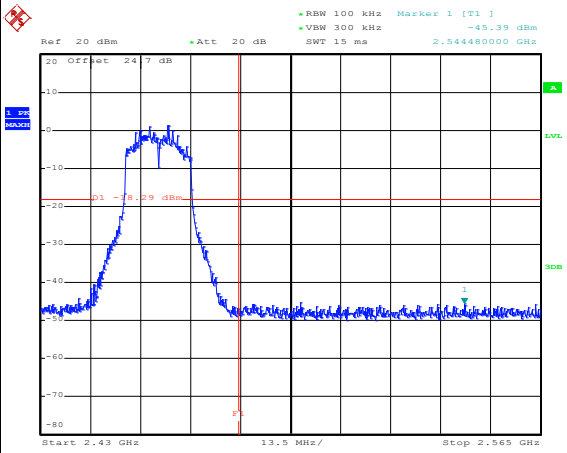
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT20 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 11 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



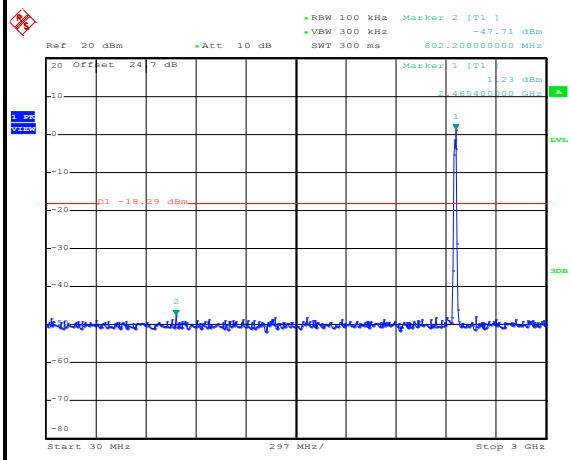

Date: 23.JUL.2018 07:11:20

**Channel Plot**



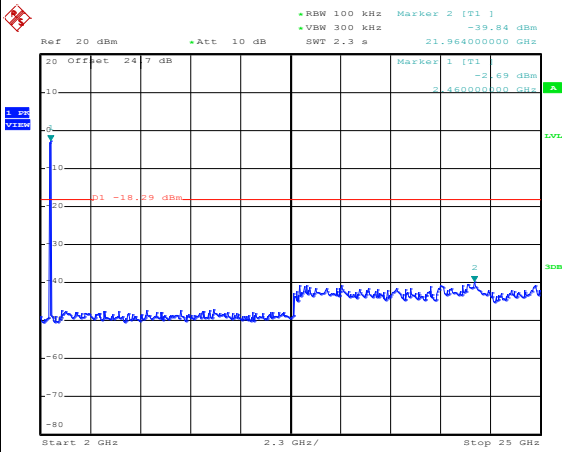

Date: 23.JUL.2018 07:11:34

**Spurious Emission 30MHz~3GHz**




Date: 23.JUL.2018 07:14:15

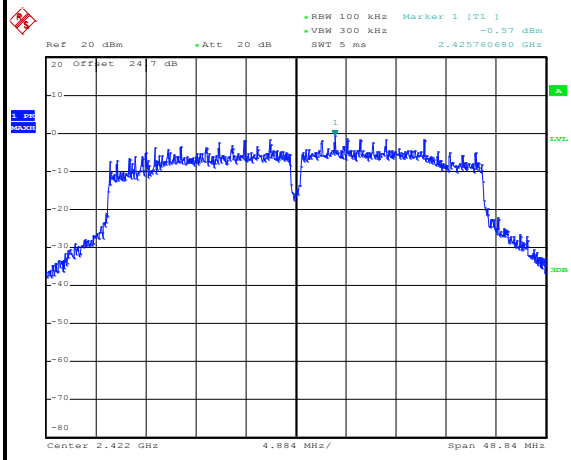
**Spurious Emission 2GHz~25GHz**




Date: 23.JUL.2018 07:14:38

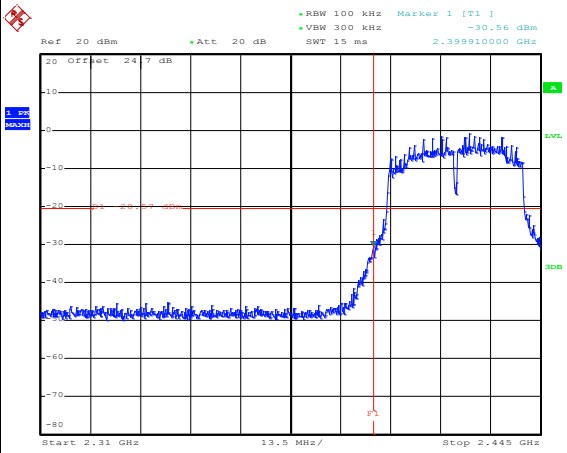
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 03 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



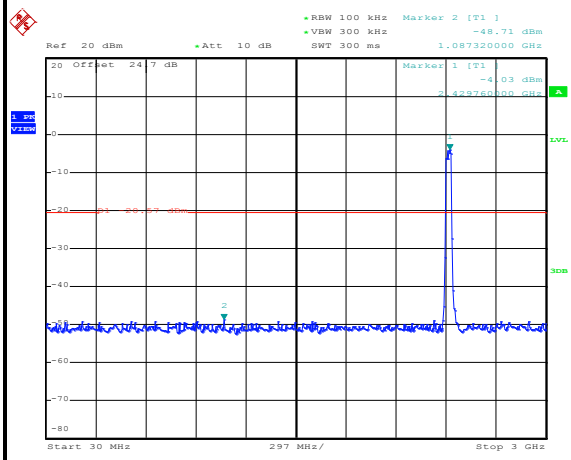

Date: 26.JUL.2018 06:37:11

**Channel Plot**



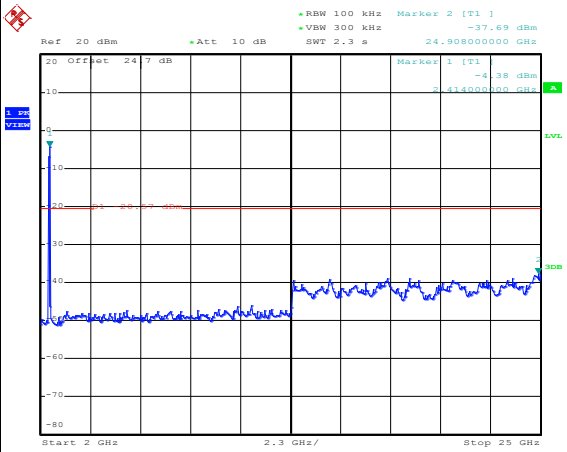

Date: 26.JUL.2018 06:37:28

**Spurious Emission 30MHz~3GHz**




Date: 26.JUL.2018 06:37:52

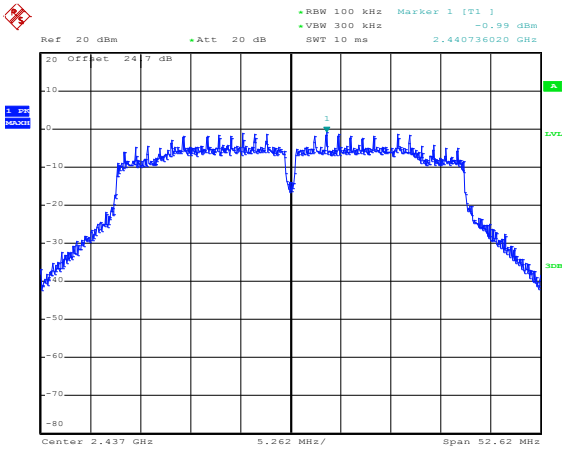
**Spurious Emission 2GHz~25GHz**




Date: 26.JUL.2018 06:38:11

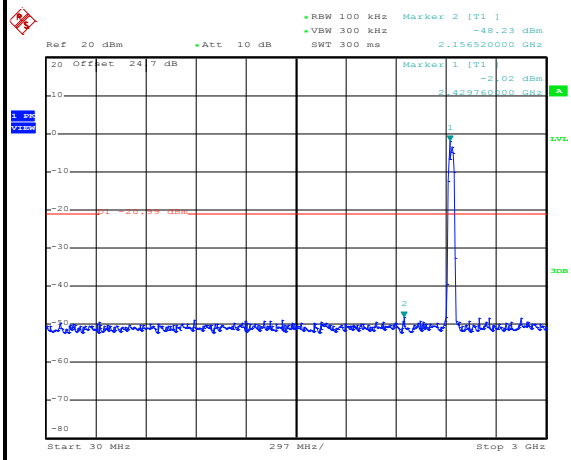
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz Low | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 06 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

## 100kHz PSD reference Level



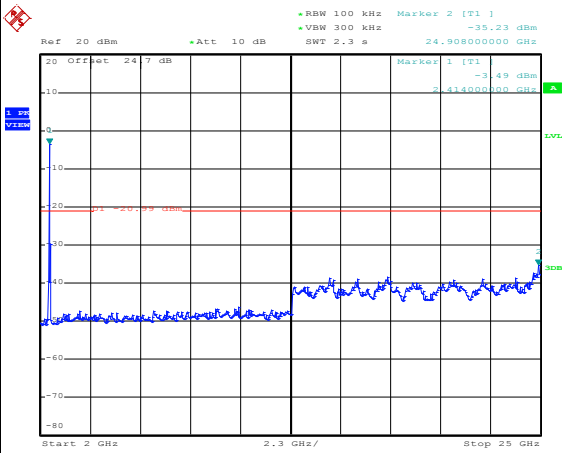

Date: 26.JUL.2018 06:51:28

## Spurious Emission 30MHz~3GHz




Date: 26.JUL.2018 06:54:55

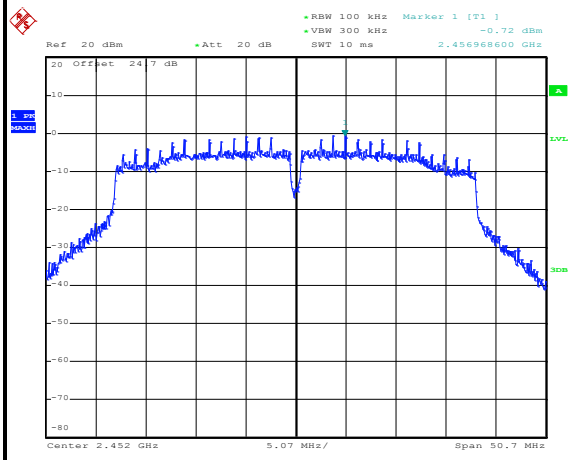
## Spurious Emission 2GHz~25GHz




Date: 26.JUL.2018 06:57:09

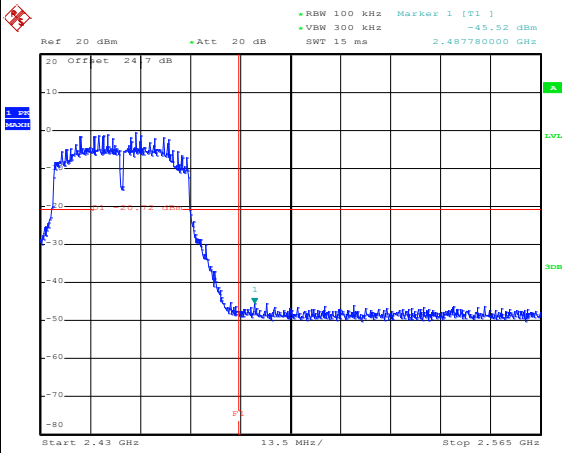
| | | | |
|---|---|---|---|
| **Number of TX :** | 2 | **Ant. :** | 2 |
| **Test Mode :** | 802.11n HT40 | **Temperature :** | 21~25℃ |
| **Test Band :** | 2.4GHz High | **Relative Humidity :** | 51~54% |
| **Test Channel :** | 09 | **Test Engineer :** | Rebecca Li, Luffy Lin, and Derek Hsu |

**100kHz PSD reference Level**



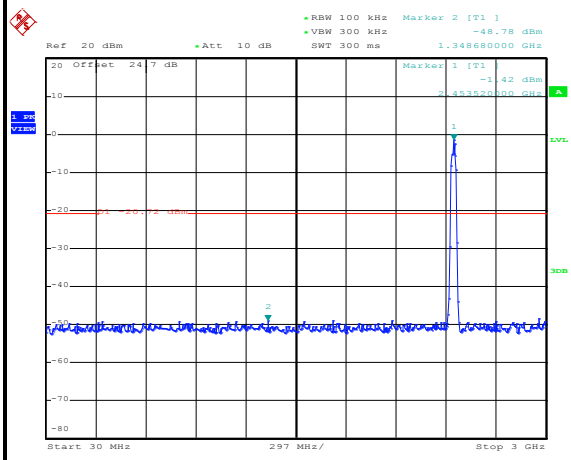

Date: 26.JUL.2018 07:10:03

**Channel Plot**



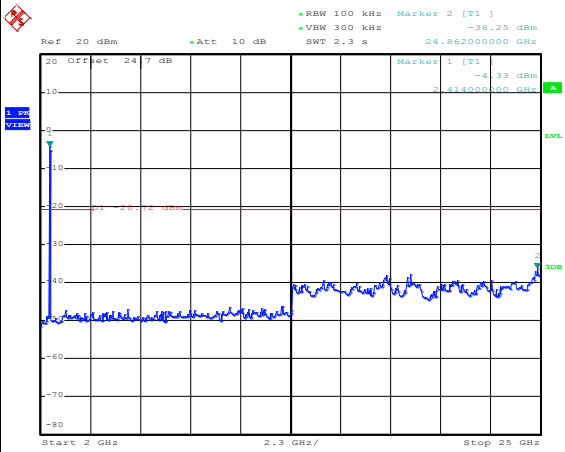

Date: 26.JUL.2018 07:10:20

**Spurious Emission 30MHz~3GHz**




Date: 26.JUL.2018 07:10:49

**Spurious Emission 2GHz~25GHz**




Date: 26.JUL.2018 07:11:05

# 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 limits as below.

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

## 3.5.2 Measuring Instruments

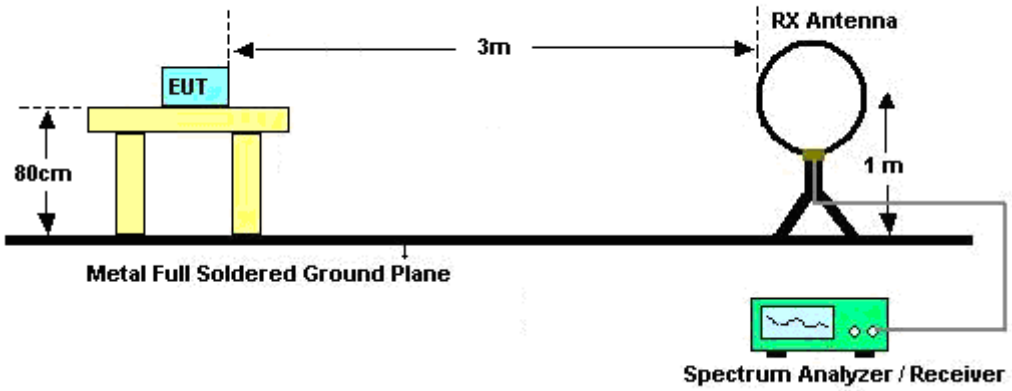
See list of measuring equipment of this test report.

### 3.5.3 Test Procedures

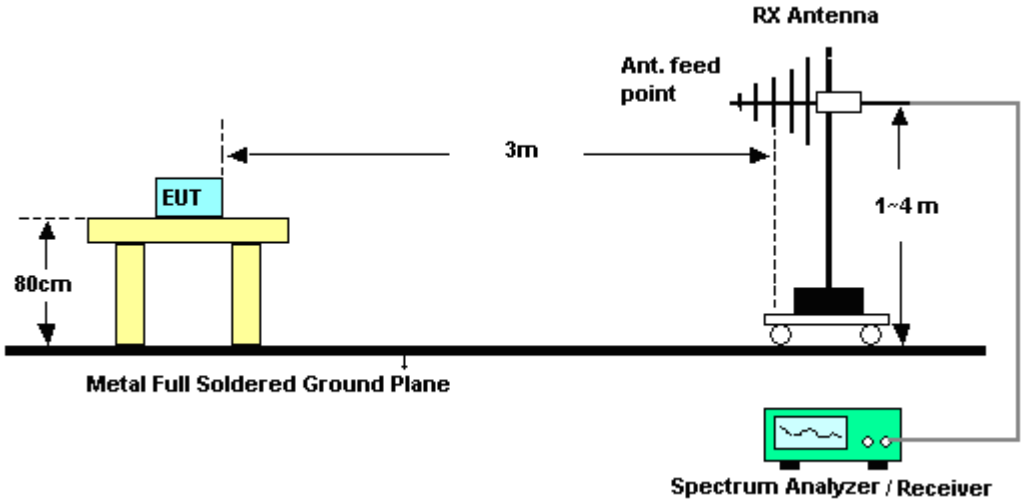
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test 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 testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. 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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 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

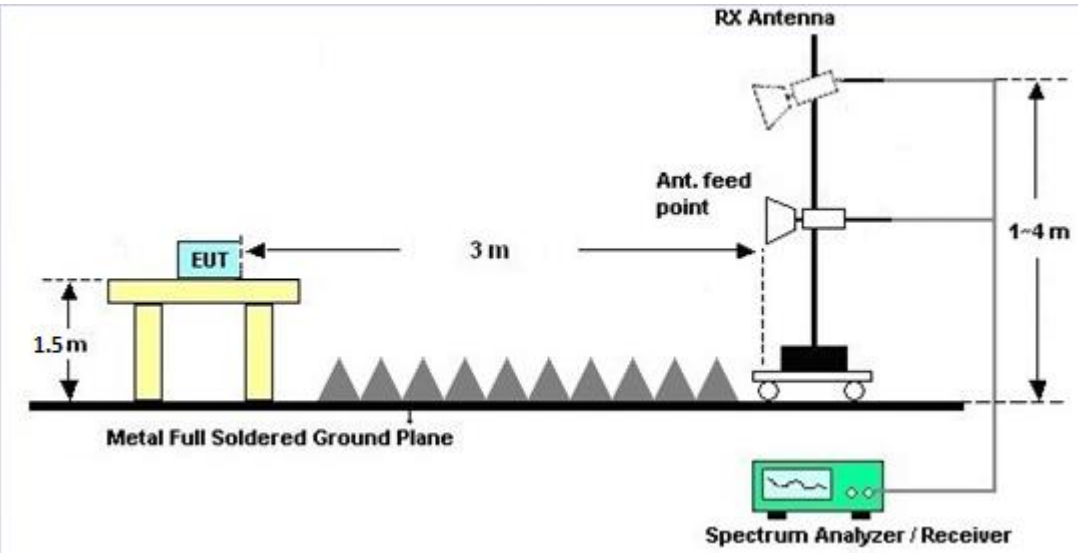
**For radiated emissions below 30MHz**




**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 was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

### 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$^{th}$ 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 (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

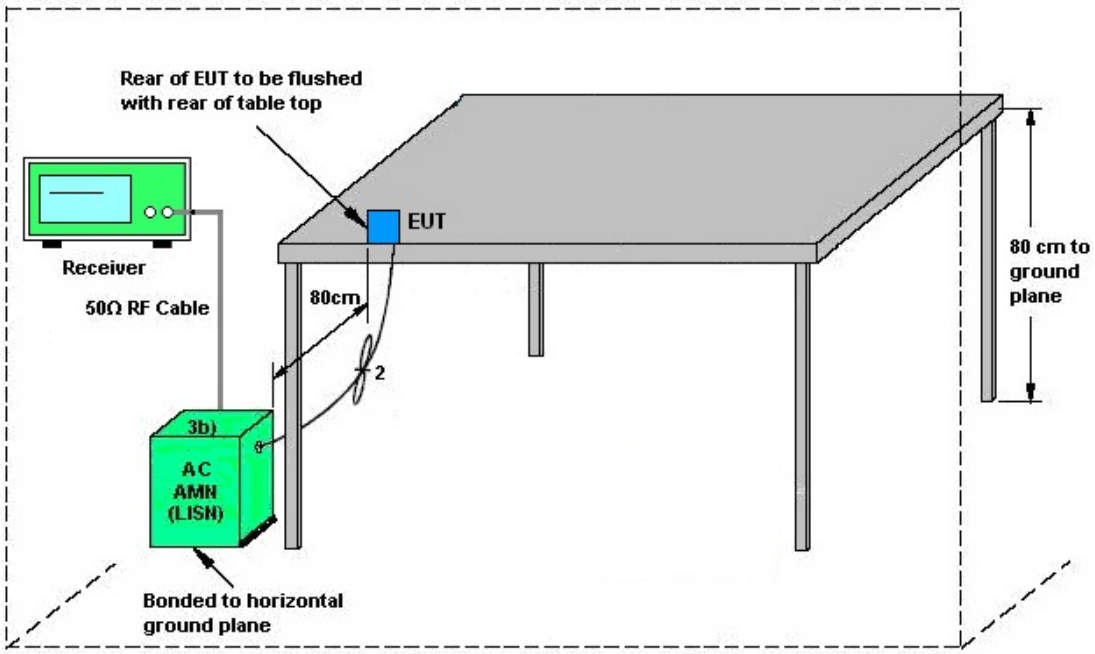
## 3.6.2 Measuring Instruments

See list of measuring equipment 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




AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

### 3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

# 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. 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 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.

FCC KDB 662911 D01 Multiple Transmitter Output **v02r01**

For CDD transmissions, directional gain is calculated as

Directional gain = $G_{ANT}$ + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log($N_{ANT}/N_{SS}$=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with $G_{ANT}$ set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain $G_{ANT}$ is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 **v02r01**.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.

**<CDD Modes>**

| | Ant. 1 (dBi) | Ant. 2 (dBi) | DG for Power (dBi) | DG for PSD (dBi) | Power Limit Reduction (dB) | PSD Limit Reduction (dB) |
|---|---|---|---|---|---|---|
| **2.4 GHz** | 2.70 | 0.90 | 2.70 | 4.86 | 0.00 | 0.00 |

*Power Limit Reduction = DG(Power) – 6dBi, ( min = 0 )*

*PSD Limit Reduction = DG(PSD) – 6dBi, ( min = 0 )*

# 4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Power Meter | Anritsu | ML2495A | 1240001 | N/A | Sep. 07, 2017 | Jun. 13, 2018~ Aug. 24, 2018 | Sep. 06, 2018 | Conducted (TH05-HY) |
| Power Sensor | Anritsu | MA2411B | 1207349 | 300MHz~40GHz | Sep. 07, 2017 | Jun. 13, 2018~ Jul. 26, 2018 | Sep. 06, 2018 | Conducted (TH05-HY) |
| Spectrum Analyzer | Rohde & Schwarz | FSP40 | 100057 | 9kHz-40GHz | Nov. 21, 2017 | Jun. 13, 2018~ Aug. 24, 2018 | Nov. 20, 2018 | Conducted (TH05-HY) |
| Switch Box & RF Cable | Burgeon | ETF-058 | EC1300484 | N/A | Mar. 01, 2018 | Jun. 13, 2018~ Aug. 24, 2018 | Feb. 28, 2019 | Conducted (TH05-HY) |
| AC Power Source | ChainTek | APC-1000W | N/A | N/A | N/A | Jun. 20, 2018 | N/A | Conduction (CO05-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESR3 | 102388 | 3.6GHz | Dec. 08, 2017 | Jun. 20, 2018 | Dec. 07, 2018 | Conduction (CO05-HY) |
| LISN | Rohde & Schwarz | ENV216 | 100080 | 9kHz~30MHz | Nov. 30, 2017 | Jun. 20, 2018 | Nov. 29, 2018 | Conduction (CO05-HY) |
| Software | Rohde & Schwarz | EMC32 V10.30 | N/A | N/A | N/A | Jun. 20, 2018 | N/A | Conduction (CO05-HY) |
| LF Cable | HUBER + SUHNER | RG-214/U | LF01 | N/A | Jan. 03, 2018 | Jun. 20, 2018 | Jan. 02, 2019 | Conduction (CO05-HY) |
| Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | 100851 | N/A | Jan. 03, 2018 | Jun. 20, 2018 | Jan. 02, 2019 | Conduction (CO05-HY) |
| Bilog Antenna | TESEQ | CBL 6111D&00800 N1D01N-06 | 35419&03 | 30MHz to 1GHz | Dec. 18, 2017 | Jun. 25, 2018~ Jul. 03, 2018 | Dec. 17, 2018 | Radiation (03CH07-HY) |
| Double Ridge Horn Antenna | ESCO | 3117 | 00075962 | 1GHz ~ 18GHz | Aug. 23, 2017 | Jun. 25, 2018~ Jul. 03, 2018 | Aug. 22, 2018 | Radiation (03CH07-HY) |
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100315 | 9 kHz~30 MHz | Nov. 10, 2017 | Jun. 25, 2018~ Jul. 03, 2018 | Nov. 09, 2018 | Radiation (03CH07-HY) |
| Preamplifier | MITEQ | AMF-7D-00101800-30-10P | 1590075 | 1GHz ~ 18GHz | Apr. 25, 2018 | Jun. 25, 2018~ Jul. 03, 2018 | Apr. 24, 2019 | Radiation (03CH07-HY) |
| Preamplifier | COM-POWER | PA-103A | 161241 | 10MHz-1GHz | May 21, 2018 | Jun. 25, 2018~ Jul. 03, 2018 | May 20, 2019 | Radiation (03CH07-HY) |
| Preamplifier | Agilent | 8449B | 3008A02362 | 1GHz~ 26.5GHz | Oct. 30, 2017 | Jun. 25, 2018~ Jul. 03, 2018 | Oct. 29, 2018 | Radiation (03CH07-HY) |
| Spectrum Analyzer | Agilent | N9010A | MY53470118 | 10Hz~44GHz | Apr. 17, 2018 | Jun. 25, 2018~ Jul. 03, 2018 | Apr. 16, 2019 | Radiation (03CH07-HY) |
| Antenna Mast | Max-Full | MFA520BS | N/A | 1m~4m | N/A | Jun. 25, 2018~ Jul. 03, 2018 | N/A | Radiation (03CH07-HY) |
| Turn Table | ChainTek | Chaintek 3000 | N/A | 0~360 Degree | N/A | Jun. 25, 2018~ Jul. 03, 2018 | N/A | Radiation (03CH07-HY) |
| Amplifier | MITEQ | TTA1840-35-HG | 1871923 | 18GHz~40GHz, VSWR : 2.5:1 max | Jul. 18, 2017 | Jun. 25, 2018~ Jul. 03, 2018 | Jul. 17, 2018 | Radiation (03CH07-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170251 | 18GHz- 40GHz | Nov. 10, 2017 | Jun. 25, 2018~ Jul. 03, 2018 | Nov. 09, 2018 | Radiation (03CH07-HY) |
| EMI Test Receiver | Agilent | N9038A (MXE) | MY53290053 | 20Hz to 26.5GHz | Jan. 16, 2018 | Jun. 25, 2018~ Jul. 03, 2018 | Jan. 15, 2019 | Radiation (03CH07-HY) |
| Software | Audix | E3 6.2009-8-24 | 80504004656H | N/A | N/A | Jun. 25, 2018~ Jul. 03, 2018 | N/A | Radiation (03CH07-HY) |

# 5 Uncertainty of Evaluation

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **2.70** |

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **5.70** |

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

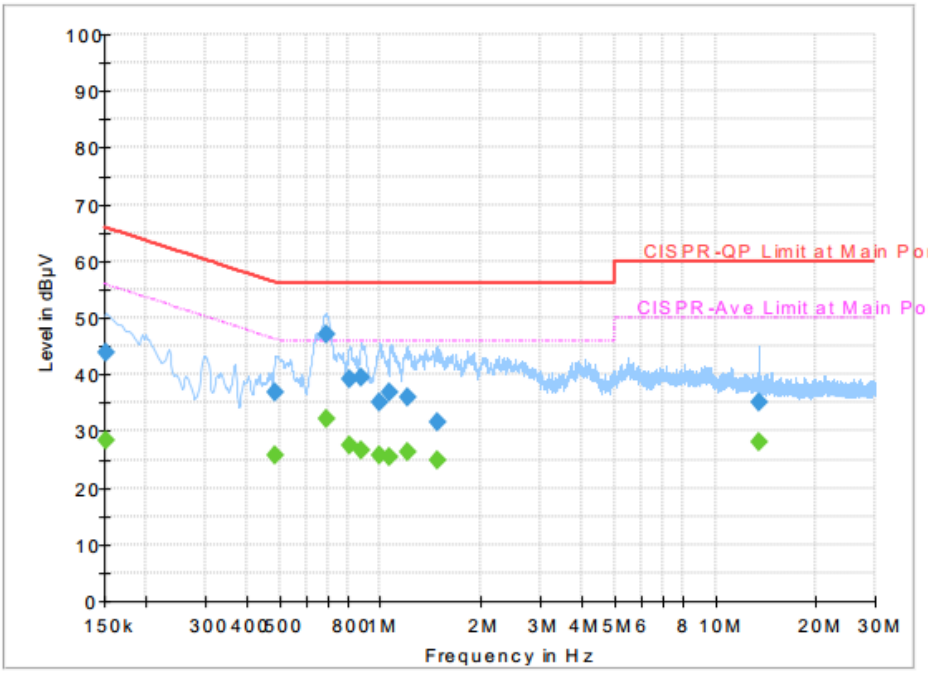
| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **5.50** |

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **5.20** |

# Appendix A. AC Conducted Emission Test Results

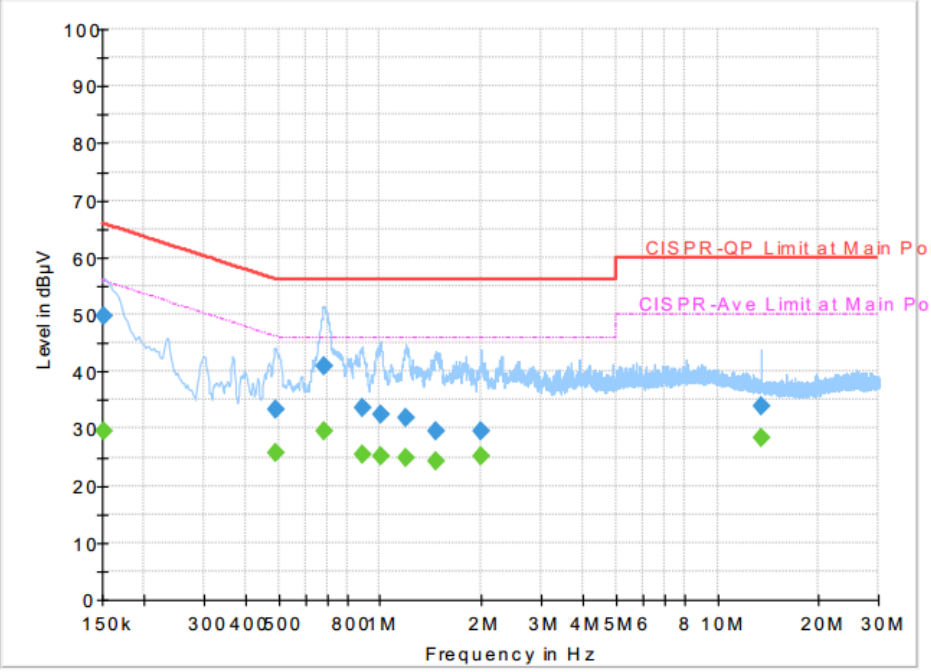
| Test Engineer : | Kai-Chun Chu | Temperature : | 21~25℃ |
|---|---|---|---|
| | | Relative Humidity : | 51~55% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Line |




**Final Result**

| Frequency (MHz) | QuasiPeak (dBµV) | CAverage (dBµV) | Limit (dBµV) | Margin (dB) | Line | Filter | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 0.152250 | --- | 28.44 | 55.88 | 27.44 | L1 | OFF | 19.5 |
| 0.152250 | 43.82 | --- | 65.88 | 22.06 | L1 | OFF | 19.5 |
| 0.485250 | --- | 25.74 | 46.25 | 20.51 | L1 | OFF | 19.5 |
| 0.485250 | 36.82 | --- | 56.25 | 19.43 | L1 | OFF | 19.5 |
| 0.687750 | --- | 32.18 | 46.00 | 13.82 | L1 | OFF | 19.6 |
| 0.687750 | 47.19 | --- | 56.00 | 8.81 | L1 | OFF | 19.6 |
| 0.811500 | --- | 27.54 | 46.00 | 18.46 | L1 | OFF | 19.6 |
| 0.811500 | 39.28 | --- | 56.00 | 16.72 | L1 | OFF | 19.6 |
| 0.874500 | --- | 26.61 | 46.00 | 19.39 | L1 | OFF | 19.6 |
| 0.874500 | 39.57 | --- | 56.00 | 16.43 | L1 | OFF | 19.6 |
| 0.998250 | --- | 25.88 | 46.00 | 20.12 | L1 | OFF | 19.6 |
| 0.998250 | 35.11 | --- | 56.00 | 20.89 | L1 | OFF | 19.6 |
| 1.070250 | --- | 25.44 | 46.00 | 20.56 | L1 | OFF | 19.6 |
| 1.070250 | 36.91 | --- | 56.00 | 19.09 | L1 | OFF | 19.6 |
| 1.200750 | --- | 26.17 | 46.00 | 19.83 | L1 | OFF | 19.6 |
| 1.200750 | 35.98 | --- | 56.00 | 20.02 | L1 | OFF | 19.6 |
| 1.475250 | --- | 24.91 | 46.00 | 21.09 | L1 | OFF | 19.6 |
| 1.475250 | 31.48 | --- | 56.00 | 24.52 | L1 | OFF | 19.6 |
| 13.560000 | --- | 28.07 | 50.00 | 21.93 | L1 | OFF | 20.0 |
| 13.560000 | 34.95 | --- | 60.00 | 25.05 | L1 | OFF | 20.0 |

| Test Engineer : | Kai-Chun Chu | Temperature : | 21~25℃ |
|---|---|---|---|
| | | Relative Humidity : | 51~55% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Neutral |




**Final Result**

| Frequency (MHz) | QuasiPeak (dBµV) | CAverage (dBµV) | Limit (dBµV) | Margin (dB) | Line | Filter | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 0.152250 | --- | 29.61 | 55.88 | 26.27 | N | OFF | 19.5 |
| 0.152250 | 49.66 | --- | 65.88 | 16.22 | N | OFF | 19.5 |
| 0.489750 | --- | 25.60 | 46.17 | 20.57 | N | OFF | 19.5 |
| 0.489750 | 33.34 | --- | 56.17 | 22.83 | N | OFF | 19.5 |
| 0.683250 | --- | 29.54 | 46.00 | 16.46 | N | OFF | 19.6 |
| 0.683250 | 40.93 | --- | 56.00 | 15.07 | N | OFF | 19.6 |
| 0.883500 | --- | 25.55 | 46.00 | 20.45 | N | OFF | 19.6 |
| 0.883500 | 33.57 | --- | 56.00 | 22.43 | N | OFF | 19.6 |
| 1.000500 | --- | 25.03 | 46.00 | 20.97 | N | OFF | 19.6 |
| 1.000500 | 32.44 | --- | 56.00 | 23.56 | N | OFF | 19.6 |
| 1.189500 | --- | 24.76 | 46.00 | 21.24 | N | OFF | 19.6 |
| 1.189500 | 31.79 | --- | 56.00 | 24.21 | N | OFF | 19.6 |
| 1.459500 | --- | 24.16 | 46.00 | 21.84 | N | OFF | 19.6 |
| 1.459500 | 29.45 | --- | 56.00 | 26.55 | N | OFF | 19.6 |
| 1.995000 | --- | 25.20 | 46.00 | 20.80 | N | OFF | 19.6 |
| 1.995000 | 29.66 | --- | 56.00 | 26.34 | N | OFF | 19.6 |
| 13.560000 | --- | 28.30 | 50.00 | 21.70 | N | OFF | 20.1 |
| 13.560000 | 33.97 | --- | 60.00 | 26.03 | N | OFF | 20.1 |

# Appendix B. Radiated Spurious Emission

| Test Engineer : | Jesse Wang, Stan Hsieh, and Nick Yu | Temperature : | 24~26°C |
|---|---|---|---|
| | | Relative Humidity : | 51~53% |

**2.4GHz 2400~2483.5MHz**

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

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Path | 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 CH 01 2412MHz | | 2388.855 | 55.28 | -18.72 | 74 | 40.94 | 31.95 | 17.43 | 35.04 | 296 | 36 | P | H |
| | | 2390 | 47.51 | -6.49 | 54 | 33.18 | 31.95 | 17.43 | 35.05 | 296 | 36 | A | H |
| | * | 2412 | 106.06 | - | - | 91.69 | 31.99 | 17.43 | 35.05 | 296 | 36 | P | H |
| | * | 2412 | 102.64 | - | - | 88.27 | 31.99 | 17.43 | 35.05 | 296 | 36 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 2386.44 | 56.75 | -17.25 | 74 | 42.41 | 31.95 | 17.43 | 35.04 | 220 | 301 | P | V |
| | | 2387.385 | 51.24 | -2.76 | 54 | 36.9 | 31.95 | 17.43 | 35.04 | 220 | 301 | P | V |
| | * | 2412 | 110.28 | - | - | 95.91 | 31.99 | 17.43 | 35.05 | 220 | 301 | P | V |
| | * | 2412 | 106.89 | - | - | 92.52 | 31.99 | 17.43 | 35.05 | 220 | 301 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11b CH 06 2437MHz | | 2389.1 | 54.33 | -19.67 | 74 | 39.99 | 31.95 | 17.43 | 35.04 | 361 | 23 | P | H |
| | | 2388.4 | 44.65 | -9.35 | 54 | 30.31 | 31.95 | 17.43 | 35.04 | 361 | 23 | A | H |
| | * | 2437 | 110.89 | - | - | 96.38 | 32.08 | 17.49 | 35.06 | 361 | 23 | P | H |
| | * | 2437 | 107.46 | - | - | 92.95 | 32.08 | 17.49 | 35.06 | 361 | 23 | A | H |
| | | 2500 | 55.05 | -18.95 | 74 | 40.38 | 32.2 | 17.55 | 35.08 | 361 | 23 | P | H |
| | | 2485.44 | 45.05 | -8.95 | 54 | 30.41 | 32.16 | 17.55 | 35.07 | 361 | 23 | A | H |
| | | 2329.04 | 55.23 | -18.77 | 74 | 41.15 | 31.79 | 17.31 | 35.02 | 328 | 268 | P | V |
| | | 2388.68 | 44.46 | -9.54 | 54 | 30.12 | 31.95 | 17.43 | 35.04 | 328 | 268 | A | V |
| | * | 2437 | 112.65 | - | - | 98.14 | 32.08 | 17.49 | 35.06 | 328 | 268 | P | V |
| | * | 2437 | 109.49 | - | - | 94.98 | 32.08 | 17.49 | 35.06 | 328 | 268 | A | V |
| | | 2484.25 | 55.29 | -18.71 | 74 | 40.65 | 32.16 | 17.55 | 35.07 | 328 | 268 | P | V |
| | | 2483.62 | 45.83 | -8.17 | 54 | 31.19 | 32.16 | 17.55 | 35.07 | 328 | 268 | A | V |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **802.11b CH 11 2462MHz** | * | 2462 | 103.51 | - | - | 88.9 | 32.12 | 17.55 | 35.06 | 306 | 26 | P | H |
| | * | 2462 | 100.33 | - | - | 85.72 | 32.12 | 17.55 | 35.06 | 306 | 26 | A | H |
| | | 2484.24 | 54.63 | -19.37 | 74 | 39.99 | 32.16 | 17.55 | 35.07 | 306 | 26 | P | H |
| | | 2484.56 | 44.46 | -9.54 | 54 | 29.82 | 32.16 | 17.55 | 35.07 | 306 | 26 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | * | 2462 | 107 | - | - | 92.39 | 32.12 | 17.55 | 35.06 | 234 | 282 | P | V |
| | * | 2462 | 103.98 | - | - | 89.37 | 32.12 | 17.55 | 35.06 | 234 | 282 | A | V |
| | | 2496.32 | 54.66 | -19.34 | 74 | 39.99 | 32.2 | 17.55 | 35.08 | 234 | 282 | P | V |
| | | 2484.44 | 46.34 | -7.66 | 54 | 31.7 | 32.16 | 17.55 | 35.07 | 234 | 282 | 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 Ant. 1 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 01 2412MHz | | 4824 | 46.97 | -27.03 | 74 | 60.96 | 34.23 | 11.12 | 59.34 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4824 | 53.09 | -20.91 | 74 | 67.08 | 34.23 | 11.12 | 59.34 | 186 | 266 | P | V |
| | | 4824 | 50.87 | -3.13 | 54 | 64.86 | 34.23 | 11.12 | 59.34 | 186 | 266 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11b CH 06 2437MHz | | 4874 | 43.68 | -30.32 | 74 | 57.54 | 34.22 | 11.16 | 59.24 | 100 | 0 | P | H |
| | | 7311 | 47.12 | -26.88 | 74 | 55.93 | 35.71 | 13.61 | 58.13 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4874 | 46.48 | -27.52 | 74 | 60.34 | 34.22 | 11.16 | 59.24 | 100 | 0 | P | V |
| | | 7311 | 47.84 | -26.16 | 74 | 56.65 | 35.71 | 13.61 | 58.13 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11b CH 11 2462MHz | | 4924 | 45.87 | -28.13 | 74 | 59.58 | 34.21 | 11.22 | 59.14 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4924 | 52.96 | -21.04 | 74 | 66.67 | 34.21 | 11.22 | 59.14 | 267 | 176 | P | V |
| | | 4924 | 50.83 | -3.17 | 54 | 64.54 | 34.21 | 11.22 | 59.14 | 267 | 176 | 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 802.11g (Band Edge @ 3m)

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 01 2412MHz | | 2389.8 | 66.31 | -7.69 | 74 | 51.98 | 31.95 | 17.43 | 35.05 | 295 | 24 | P | H |
| | | 2390 | 51.2 | -2.8 | 54 | 36.87 | 31.95 | 17.43 | 35.05 | 295 | 24 | A | H |
| | * | 2412 | 110.29 | - | - | 95.92 | 31.99 | 17.43 | 35.05 | 295 | 24 | P | H |
| | * | 2412 | 102.73 | - | - | 88.36 | 31.99 | 17.43 | 35.05 | 295 | 24 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 2389.905 | 66.3 | -7.7 | 74 | 51.97 | 31.95 | 17.43 | 35.05 | 219 | 296 | P | V |
| | | 2390 | 50.55 | -3.45 | 54 | 36.22 | 31.95 | 17.43 | 35.05 | 219 | 296 | A | V |
| | * | 2412 | 111.93 | - | - | 97.56 | 31.99 | 17.43 | 35.05 | 219 | 296 | P | V |
| | * | 2412 | 103.93 | - | - | 89.56 | 31.99 | 17.43 | 35.05 | 219 | 296 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11g CH 06 2437MHz | | 2389.24 | 57.62 | -16.38 | 74 | 43.28 | 31.95 | 17.43 | 35.04 | 363 | 23 | P | H |
| | | 2389.94 | 48.55 | -5.45 | 54 | 34.22 | 31.95 | 17.43 | 35.05 | 363 | 23 | A | H |
| | * | 2437 | 113.18 | - | - | 98.67 | 32.08 | 17.49 | 35.06 | 363 | 23 | P | H |
| | * | 2437 | 105.61 | - | - | 91.1 | 32.08 | 17.49 | 35.06 | 363 | 23 | A | H |
| | | 2483.69 | 59.4 | -14.6 | 74 | 44.76 | 32.16 | 17.55 | 35.07 | 363 | 23 | P | H |
| | | 2483.5 | 47.56 | -6.44 | 54 | 32.92 | 32.16 | 17.55 | 35.07 | 363 | 23 | A | H |
| | | 2387 | 56.62 | -17.38 | 74 | 42.28 | 31.95 | 17.43 | 35.04 | 327 | 268 | P | V |
| | | 2387 | 46.88 | -7.12 | 54 | 32.54 | 31.95 | 17.43 | 35.04 | 327 | 268 | A | V |
| | * | 2437 | 115.35 | - | - | 100.89 | 32.03 | 17.49 | 35.06 | 327 | 268 | P | V |
| | * | 2437 | 107.4 | - | - | 92.94 | 32.03 | 17.49 | 35.06 | 327 | 268 | A | V |
| | | 2484.81 | 61.26 | -12.74 | 74 | 46.62 | 32.16 | 17.55 | 35.07 | 327 | 268 | P | V |
| | | 2483.62 | 49.68 | -4.32 | 54 | 35.04 | 32.16 | 17.55 | 35.07 | 327 | 268 | A | V |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **802.11g CH 11 2462MHz** | * | 2462 | 109.37 | - | - | 94.76 | 32.12 | 17.55 | 35.06 | 316 | 23 | P | H |
| | * | 2462 | 101.52 | - | - | 86.91 | 32.12 | 17.55 | 35.06 | 316 | 23 | A | H |
| | | 2483.6 | 56.65 | -17.35 | 74 | 42.01 | 32.16 | 17.55 | 35.07 | 316 | 23 | P | H |
| | | 2483.68 | 47.6 | -6.4 | 54 | 32.96 | 32.16 | 17.55 | 35.07 | 316 | 23 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | * | 2462 | 112.49 | - | - | 97.88 | 32.12 | 17.55 | 35.06 | 181 | 292 | P | V |
| | * | 2462 | 104.37 | - | - | 89.76 | 32.12 | 17.55 | 35.06 | 181 | 292 | A | V |
| | | 2484.36 | 60.72 | -13.28 | 74 | 46.08 | 32.16 | 17.55 | 35.07 | 181 | 292 | P | V |
| | | 2483.52 | 51.12 | -2.88 | 54 | 36.48 | 32.16 | 17.55 | 35.07 | 181 | 292 | 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 802.11g (Harmonic @ 3m)

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 01 2412MHz | | 4824 | 42.68 | -31.32 | 74 | 56.67 | 34.23 | 11.12 | 59.34 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4824 | 45.67 | -28.33 | 74 | 59.66 | 34.23 | 11.12 | 59.34 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11g CH 06 2437MHz | | 4874 | 41.15 | -32.85 | 74 | 55.01 | 34.22 | 11.16 | 59.24 | 100 | 0 | P | H |
| | | 7311 | 45.5 | -28.5 | 74 | 54.31 | 35.71 | 13.61 | 58.13 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4874 | 42.31 | -31.69 | 74 | 56.17 | 34.22 | 11.16 | 59.24 | 100 | 0 | P | V |
| | | 7311 | 45.56 | -28.44 | 74 | 54.37 | 35.71 | 13.61 | 58.13 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11g CH 11 2462MHz | | 4924 | 43.06 | -30.94 | 74 | 56.77 | 34.21 | 11.22 | 59.14 | 100 | 0 | P | H |
| | | 7386 | 42.95 | -31.05 | 74 | 51.86 | 35.66 | 13.69 | 58.26 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4924 | 48.27 | -25.73 | 74 | 61.98 | 34.21 | 11.22 | 59.14 | 100 | 0 | P | V |
| | | 7386 | 47.76 | -26.24 | 74 | 56.67 | 35.66 | 13.69 | 58.26 | 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 Ant. 1 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2389.8 | 61.9 | -12.1 | 74 | 47.57 | 31.95 | 17.43 | 35.05 | 353 | 34 | P | H |
| | | 2389.905 | 48.17 | -5.83 | 54 | 33.84 | 31.95 | 17.43 | 35.05 | 353 | 34 | A | H |
| | * | 2412 | 108.1 | - | - | 93.73 | 31.99 | 17.43 | 35.05 | 353 | 34 | P | H |
| | * | 2412 | 100.35 | - | - | 85.98 | 31.99 | 17.43 | 35.05 | 353 | 34 | A | H |
| 802.11n | | | | | | | | | | | | | H |
| HT20 | | | | | | | | | | | | | H |
| CH 01 | | 2389.905 | 66.95 | -7.05 | 74 | 52.62 | 31.95 | 17.43 | 35.05 | 206 | 359 | P | V |
| 2412MHz | | 2390 | 52.72 | -1.28 | 54 | 38.39 | 31.95 | 17.43 | 35.05 | 206 | 359 | P | V |
| | * | 2412 | 110.05 | - | - | 95.68 | 31.99 | 17.43 | 35.05 | 206 | 359 | P | V |
| | * | 2412 | 102.6 | - | - | 88.23 | 31.99 | 17.43 | 35.05 | 206 | 359 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | 2389.8 | 55.95 | -18.05 | 74 | 41.62 | 31.95 | 17.43 | 35.05 | 390 | 27 | P | H |
| | | 2389.66 | 45.86 | -8.14 | 54 | 31.52 | 31.95 | 17.43 | 35.04 | 390 | 27 | A | H |
| | * | 2437 | 111.05 | - | - | 96.54 | 32.08 | 17.49 | 35.06 | 390 | 27 | P | H |
| | * | 2437 | 103.65 | - | - | 89.14 | 32.08 | 17.49 | 35.06 | 390 | 27 | A | H |
| 802.11n | | 2485.37 | 56.72 | -17.28 | 74 | 42.08 | 32.16 | 17.55 | 35.07 | 390 | 27 | P | H |
| HT20 | | 2483.55 | 46.69 | -7.31 | 54 | 32.05 | 32.16 | 17.55 | 35.07 | 390 | 27 | A | H |
| CH 06 | | 2389.94 | 57.64 | -16.36 | 74 | 43.31 | 31.95 | 17.43 | 35.05 | 228 | 294 | P | V |
| 2437MHz | | 2389.94 | 47.62 | -6.38 | 54 | 33.29 | 31.95 | 17.43 | 35.05 | 228 | 294 | A | V |
| | * | 2437 | 114.3 | - | - | 99.79 | 32.08 | 17.49 | 35.06 | 228 | 294 | P | V |
| | * | 2437 | 106.73 | - | - | 92.22 | 32.08 | 17.49 | 35.06 | 228 | 294 | A | V |
| | | 2483.52 | 63.57 | -10.43 | 74 | 48.93 | 32.16 | 17.55 | 35.07 | 228 | 294 | P | V |
| | | 2483.55 | 50.9 | -3.1 | 54 | 36.26 | 32.16 | 17.55 | 35.07 | 228 | 294 | A | V |