



FCC RF Test Report

APPLICANT : Hewlett Packard Enterprise Company
EQUIPMENT : Wireless Access Point
BRAND NAME : aruba
MODEL NAME : APIN0207
FCC ID : Q9DAPIN0207
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Apr. 27, 2016 and testing was completed on Jul. 20, 2016. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



Testing Laboratory
1190

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TABLE OF CONTENTS

REVISION HISTORY 3

SUMMARY OF TEST RESULT 4

1 GENERAL DESCRIPTION 5

 1.1 Applicant 5

 1.2 Manufacturer 5

 1.3 Product Feature of Equipment Under Test 5

 1.4 Product Specification of Equipment Under Test 6

 1.5 Modification of EUT 6

 1.6 Specification of Accessory 7

 1.7 Testing Location 7

 1.8 Applicable Standards 8

 1.9 Test Condition 8

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST 9

 2.1 Carrier Frequency and Channel 9

 2.2 Test Mode 10

 2.3 Connection Diagram of Test System 12

 2.4 Support Unit used in test configuration and system 14

 2.5 EUT Operation Test Setup 14

 2.6 Measurement Results Explanation Example 14

3 TEST RESULT 15

 3.1 26dB & 99% Occupied Bandwidth Measurement 15

 3.2 Maximum Conducted Output Power Measurement 18

 3.3 Power Spectral Density Measurement 20

 3.4 Unwanted Emissions Measurement 24

 3.5 AC Conducted Emission Measurement 30

 3.6 Frequency Stability Measurement 34

 3.7 Automatically Discontinue Transmission 35

 3.8 Antenna Requirements 36

4 LIST OF MEASURING EQUIPMENT 39

5 UNCERTAINTY OF EVALUATION 40

APPENDIX A. CONDUCTED TEST RESULTS

APPENDIX B. RADIATED SPURIOUS EMISSION

APPENDIX C. RADIATED SPURIOUS EMISSION PLOTS

APPENDIX D. DUTY CYCLE PLOTS

APPENDIX E. SETUP PHOTOGRAPHS



SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description | Limit | Result | Remark |
|----------------|-----------------------|--|----------------------------|--------|---|
| 3.1 | 2.1049 15.403(i) | 26dB & 99% Bandwidth | - | Pass | - |
| 3.2 | 15.407(a) | Maximum Conducted Output Power | ≤ 30 dBm | Pass | - |
| 3.3 | 15.407(a) | Power Spectral Density | ≤ 17 dBm | Pass | - |
| 3.4 | 15.407(b) | Unwanted Emissions | ≤ -17, -27 dBm & 15.209(a) | Pass | Under limit 0.17 dB at 5149.850 MHz |
| 3.5 | 15.207 | AC Conducted Emission | 15.207(a) | Pass | Under limit 13.50 dB at 0.166 MHz |
| 3.6 | 15.407(g) | Frequency Stability | Within Operation Band | Pass | - |
| 3.7 | 15.407(c) | Automatically Discontinue Transmission | Discontinue Transmission | Pass | - |
| 3.8 | 15.203 & 15.407(a) | Antenna Requirement | N/A | Pass | - |



1 General Description

1.1 Applicant

Hewlett Packard Enterprise Company
3000 Hanover Street, Palo Alto, CA 94304

1.2 Manufacturer

Hewlett Packard Enterprise Company
3000 Hanover Street, Palo Alto, CA 94304

1.3 Product Feature of Equipment Under Test

| Product Feature | |
|---------------------------------|--|
| Equipment | Wireless Access Point |
| Brand Name | aruba |
| Model Name | APIN0207 |
| FCC ID | Q9DAPIN0207 |
| S/N | DX0000017 (for RF Conducted and Radiation) DX0000061 (for Conduction) |
| EUT supports Radios application | WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth v4.0 LE |
| SW Version | 6.5.1.0 build 55812 |
| EUT Stage | Identical Prototype |

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



1.4 Product Specification of Equipment Under Test

| Standards-related Product Specification | | | | | | | |
|--|---|--------|--------|--------|--------------------|---|---|
| Tx/Rx Channel Frequency Range | 5180 MHz ~ 5240 MHz | | | | | | |
| Maximum Output Power <Non-TXBF Modes> | <5180 MHz ~ 5240 MHz> MIMO <Ant. Port 1+2> 802.11a : 21.00 dBm / 0.1259 W 802.11n HT20 : 21.25 dBm / 0.1334 W 802.11n HT40 : 21.28 dBm / 0.1343 W 802.11ac VHT20: 21.04 dBm / 0.1271 W 802.11ac VHT40: 21.05 dBm / 0.1274 W 802.11ac VHT80: 17.41 dBm / 0.0551 W | | | | | | |
| Maximum Output Power <TXBF Modes> | <5180 MHz ~ 5240 MHz> MIMO <Ant. Port 1+2> 802.11n HT20 : 20.96 dBm / 0.1247 W 802.11n HT40 : 21.11 dBm / 0.1291 W 802.11ac VHT20: 20.93 dBm / 0.1239 W 802.11ac VHT40: 21.02 dBm / 0.1265 W 802.11ac VHT80: 17.31 dBm / 0.0538 W | | | | | | |
| 99% Occupied Bandwidth <Non-TXBF Modes> | 802.11a : 18.50 MHz 802.11n HT20 : 19.45 MHz 802.11n HT40 : 36.90 MHz 802.11ac VHT20 : 19.50 MHz 802.11ac VHT40 : 37.10 MHz 802.11ac VHT80 : 75.96 MHz | | | | | | |
| 99% Occupied Bandwidth <TXBF Modes> | 802.11n HT20 : 18.85 MHz 802.11n HT40 : 36.70 MHz 802.11ac VHT20 : 19.05 MHz 802.11ac VHT40 : 36.70 MHz 802.11ac VHT80 : 75.60 MHz | | | | | | |
| Type of Modulation | 802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) | | | | | | |
| Antenna Type | PIFA Antenna | | | | | | |
| Antenna Gain | Antenna 1: 4.50 dBi Antenna 2: 4.50 dBi | | | | | | |
| Antenna Function Description | <table border="1"> <thead> <tr> <th></th> <th>Ant. 1</th> <th>Ant. 2</th> </tr> </thead> <tbody> <tr> <td>802.11 a/n/ac MIMO</td> <td>V</td> <td>V</td> </tr> </tbody> </table> | | Ant. 1 | Ant. 2 | 802.11 a/n/ac MIMO | V | V |
| | Ant. 1 | Ant. 2 | | | | | |
| 802.11 a/n/ac MIMO | V | V | | | | | |

1.5 Modification of EUT

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



1.6 Specification of Accessory

| Specification of Accessory | | | | |
|---------------------------------------|--------------|---|------------|-------------|
| AC Adapter | Brand Name | CUI INC | Model Name | EMSA120300 |
| | Power Rating | I/P: 100-240Vac, 1A, O/P: 12Vdc, 1.5A | | |
| Power over Ethernet (POE) DC Power | Brand Name | PowerDsine | Model Name | PD-3501G/AC |
| | Power Rating | I/P: 100-240Vac, 0.43A, O/P: 57Vdc, 600mA | | |

1.7 Testing Location

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

| | | | |
|--------------------|--|---------|--|
| Test Site | SPORTON INTERNATIONAL INC. | | |
| Test Site Location | No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978 | | |
| Test Site No. | Sporton Site No. | | |
| | TH05-HY | CO05-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, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855 | | |
| Test Site No. | Sporton Site No. | | |
| | 03CH10-HY | | |

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



1.8 Applicable Standards

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

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ FCC KDB 644545 D03 Guidance for IEEE 802.11ac New Rules v01
- ♦ 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.

1.9 Test Condition

| | |
|----------------------------|--------------------------------------|
| Normal Voltage | DC 12V for Adapter DC 57V for POE |
| Normal Temperature | 25°C |
| Extreme Temperature | 0°C and 50°C |

Note: The test temperature was between 0°C ~ 50°C by manufacturer requested.



2 Test Configuration of Equipment Under Test

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

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.2.

2.1 Carrier Frequency and Channel

| Frequency Band | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|--------------------------------------|-----------|-------------|-----------|-------------|
| 5150-5250 MHz Band 1 (U-NII-1) | 36 | 5180 | 44 | 5220 |
| | 38 | 5190 | 46 | 5230 |
| | 40 | 5200 | 48 | 5240 |
| | 42 | 5210 | | |

Note: The above Frequency and Channel in boldface were 802.11n HT40.



2.2 Test Mode

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

<Non-TXBF Modes>

| Modulation | Data Rate |
|----------------|---------------|
| 802.11a | 6 Mbps |
| 802.11n HT20 | MCS8 |
| 802.11n HT40 | MCS8 |
| 802.11ac VHT20 | MCS0, Nss = 2 |
| 802.11ac VHT40 | MCS0, Nss = 2 |
| 802.11ac VHT80 | MCS0, Nss = 2 |

Note: EUT does not support 802.11ac Nss = 1 for non-TXBF modes.

<TXBF Modes>

| Modulation | Data Rate |
|----------------|---------------|
| 802.11n HT20 | MCS0 |
| 802.11n HT40 | MCS0 |
| 802.11ac VHT20 | MCS0, Nss = 1 |
| 802.11ac VHT40 | MCS0, Nss = 1 |
| 802.11ac VHT80 | MCS0, Nss = 1 |

| Test Cases | |
|---|---|
| AC Conducted | Mode 1 : Bluetooth Link + WLAN (5GHz) Link + LAN Link + AC Adapter |
| Emission | Mode 2 : Bluetooth Link + WLAN (5GHz) Link + LAN Link + PoE Adapter |
| Remark: The worst case of conducted emission is mode 1; only the test data of it was reported. | |

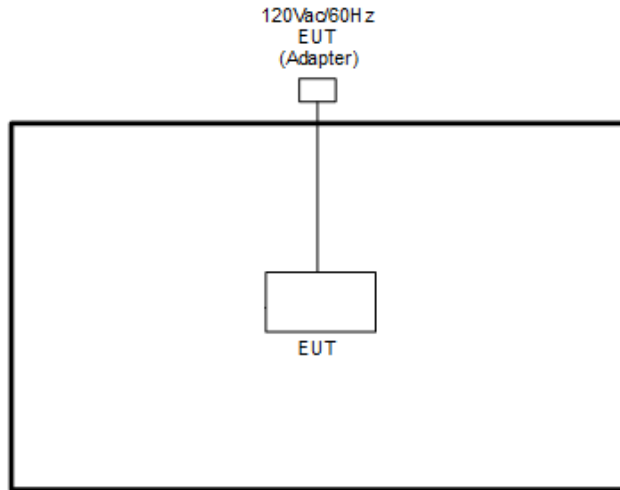


| Ch. # | | Band I : 5150-5250 MHz | Band I : 5150-5250 MHz | Band I : 5150-5250 MHz |
|-------|--------|------------------------|------------------------|------------------------|
| | | 802.11a | 802.11n HT20 | 802.11n HT40 |
| L | Low | 36 | 36 | 38 |
| M | Middle | 44 | 44 | - |
| H | High | 48 | 48 | 46 |

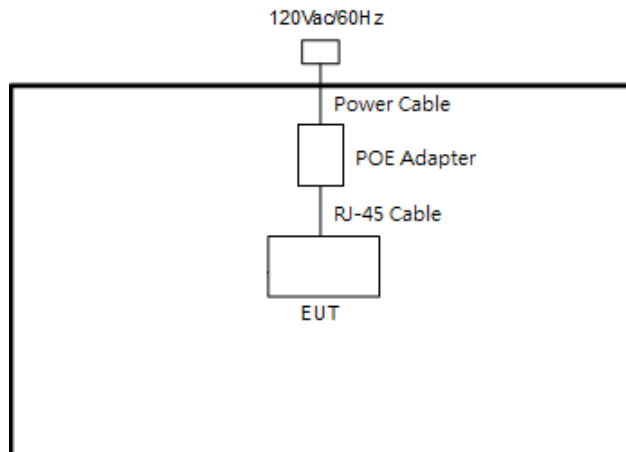
| Ch. # | | Band I : 5150-5250 MHz | Band I : 5150-5250 MHz | Band I : 5150-5250 MHz |
|-------|--------|------------------------|------------------------|------------------------|
| | | 802.11ac VHT20 | 802.11ac VHT40 | 802.11ac VHT80 |
| L | Low | 36 | 38 | - |
| M | Middle | 44 | - | 42 |
| H | High | 48 | 46 | - |

2.3 Connection Diagram of Test System

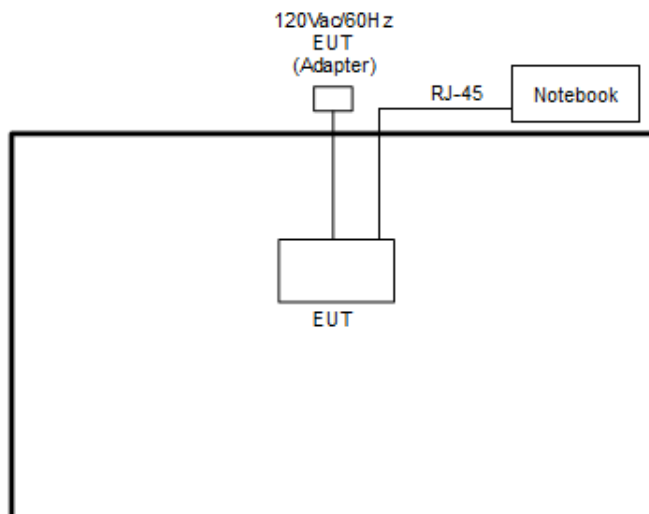
<WLAN Tx Non-TXBF Mode with AC Adapter>



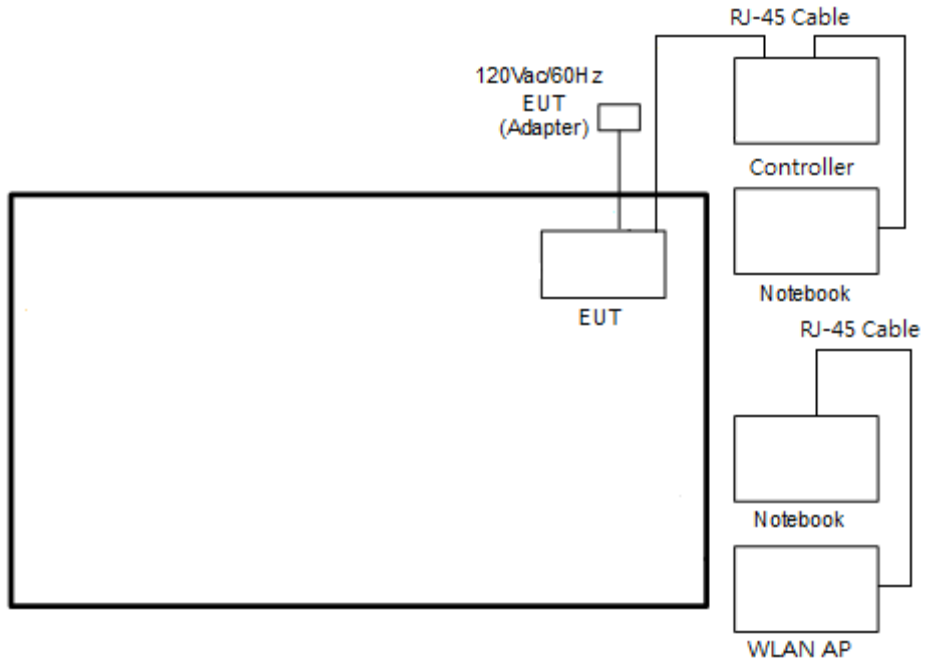
<WLAN Tx Non-TXBF Mode with PoE Adapter>



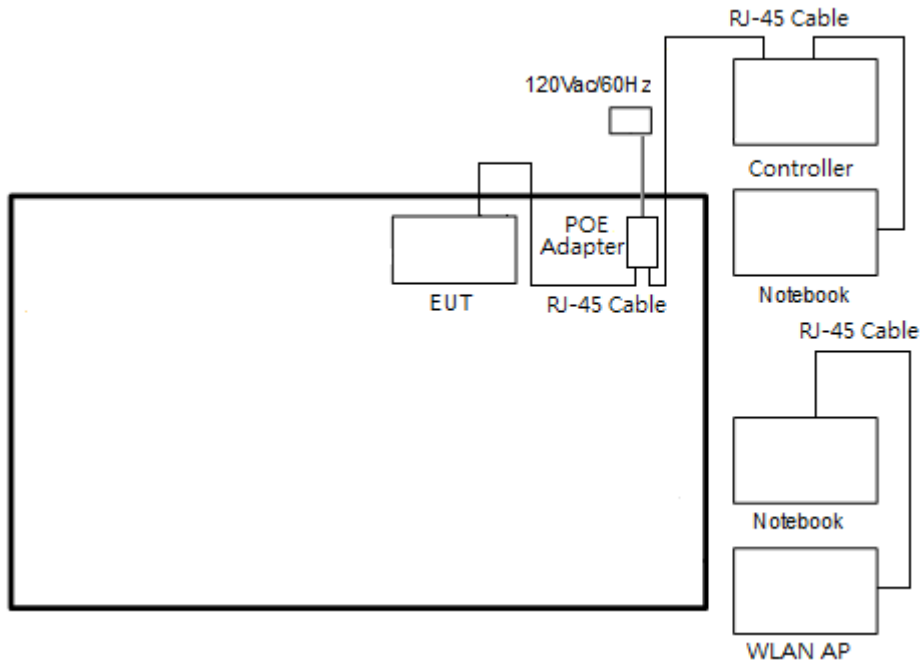
<WLAN Tx TXBF Mode>



<AC Conducted Emission with AC Adapter Mode>



<AC Conducted Emission with PoE Adapter Mode>



2.4 Support Unit used in test configuration and system

| Item | Equipment | Trade Name | Model Name | FCC ID | Data Cable | Power Cord |
|------|------------|------------|-------------------|--|------------|--|
| 1. | Notebook | DELL | P20G | FCC DoC/ Contains FCC ID: QDS-BRCM1051 | N/A | AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m |
| 2. | 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 |
| 3. | Notebook | Lenovo | 80Q7 | PPD-QCNFA435 | N/A | AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m |
| 4. | PoE | Microsemi | PD-3501G | FCC DoC | N/A | Unshielded, 1.2 m |
| 5. | Controller | ARUBA | ARCN7030 | Verification | N/A | Unshielded, 1.2 m |
| 6. | WLAN AP | ARUBA | APIN0207 | N/A | N/A | Unshielded, 1.6 m |

2.5 EUT Operation Test Setup

For Non-TXBF modes, programmed RF utility, “MTool(Version: 2.0.3.2)” installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

For WLAN MIMO TXBF modes, the EUT was tested under normal operation and link to another EUT with power, modulation modes and data rates controlled by engineer mode command lines. The iperf software tool was used to make EUT 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).

$$= 4.2 + 10 = 14.2 \text{ (dB)}$$

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Description of 26dB & 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

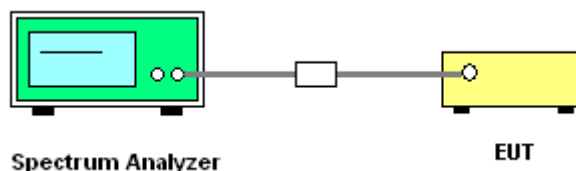
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.
Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.
Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW) $\geq 3 * RBW$.
8. Measure and record the results in the test report.

3.1.4 Test Setup

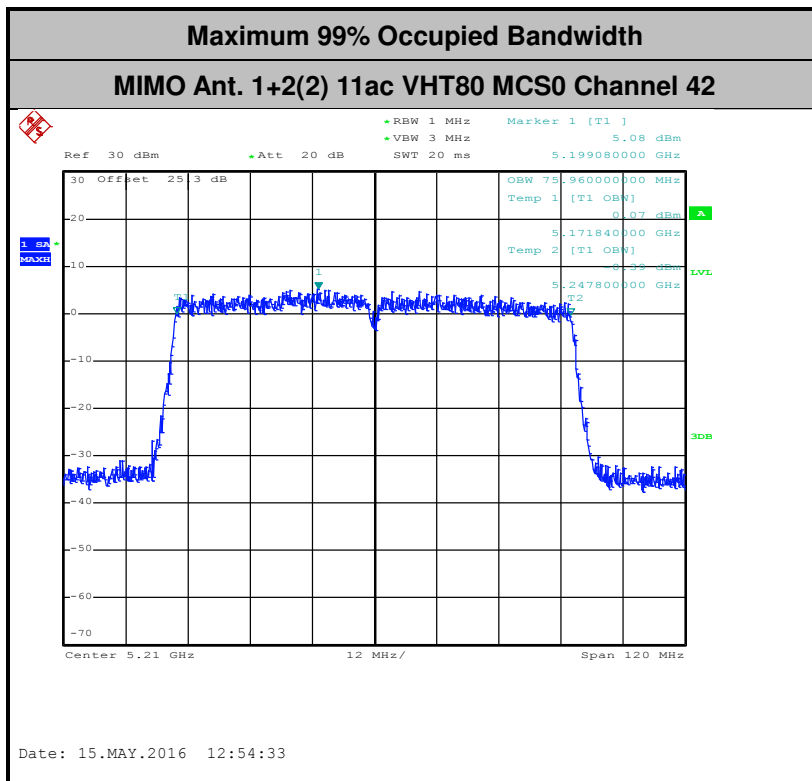
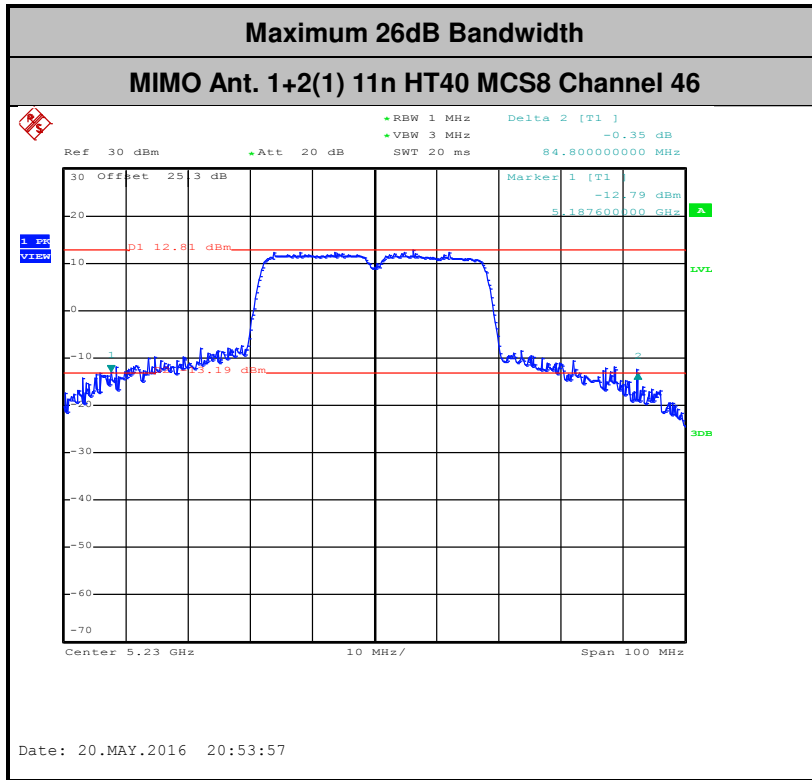


3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

Please refer to Appendix A.



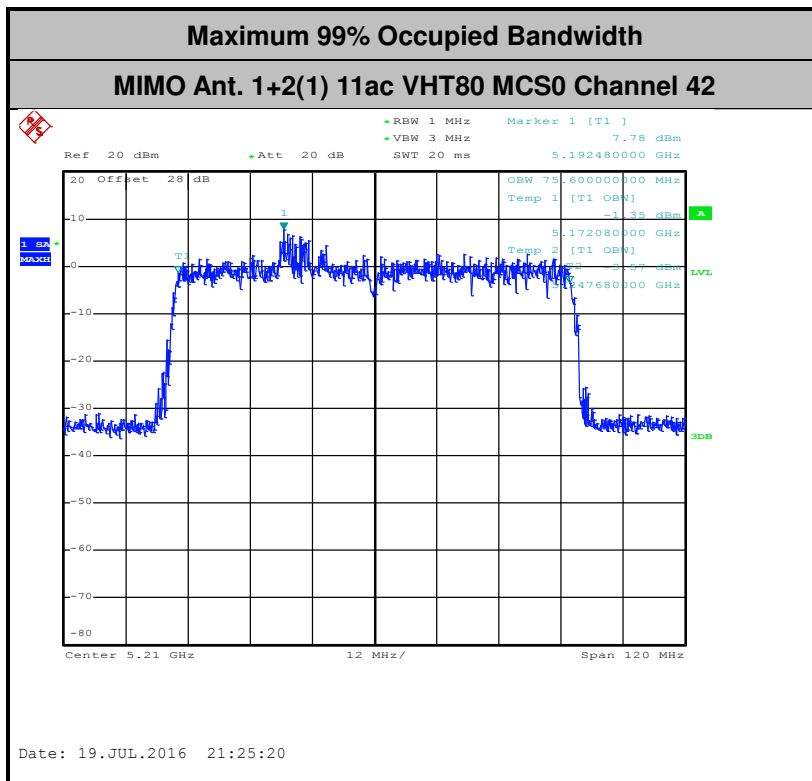
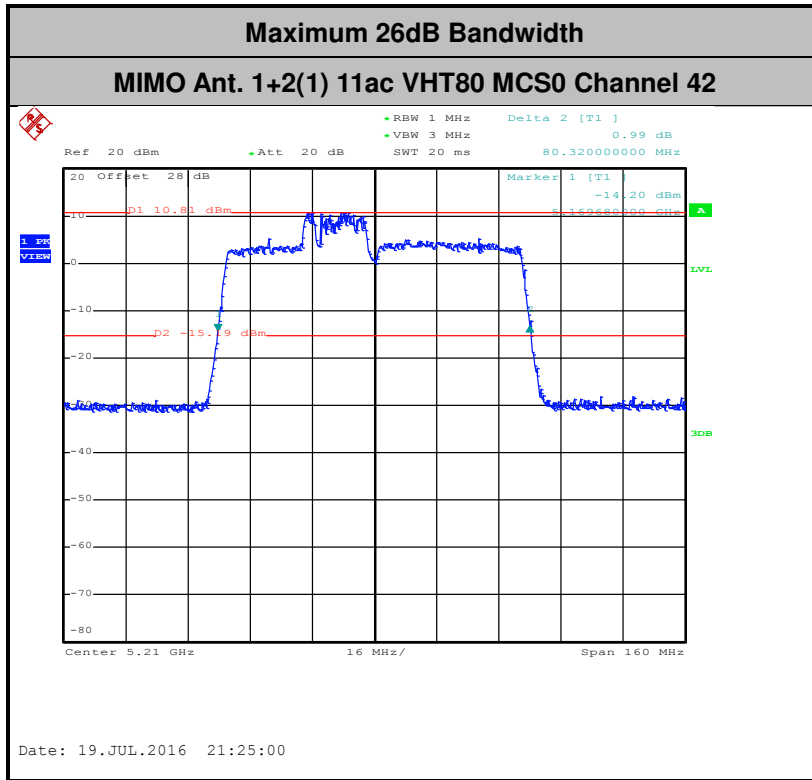
< Non-TXBF Modes >



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



<TXBF Modes>



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



3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Non-TXBF modes

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03 for Non-TXBF modes.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

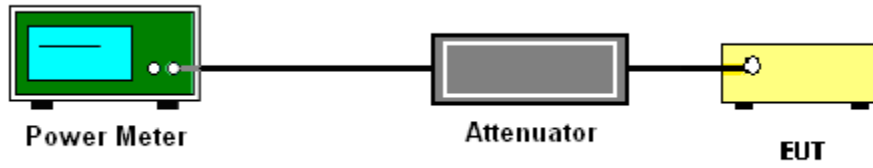
TXBF modes

The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03 for TXBF modes.

Method PM-G (Measurement using a gated RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

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



3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.
Section F) Maximum power spectral density.

Non-TXBF modes

Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW \geq 3 MHz.
- Number of points in sweep \geq 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.

TXBF modes

Method SA-3

(power averaging (rms) detection with max hold):

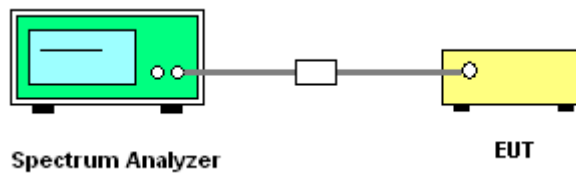
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW \geq 3 MHz
- Number of points in sweep \geq 2 Span / RBW.
- Sweep time \leq (number of points in sweep) \times T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
- Detector = power averaging (rms).
- Trace mode = max hold.
- Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

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

The total final Power Spectral Density is from a device with all 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, output 3 and output 4 to obtain the value for the first frequency bin of the summed spectrum.

3.3.4 Test Setup

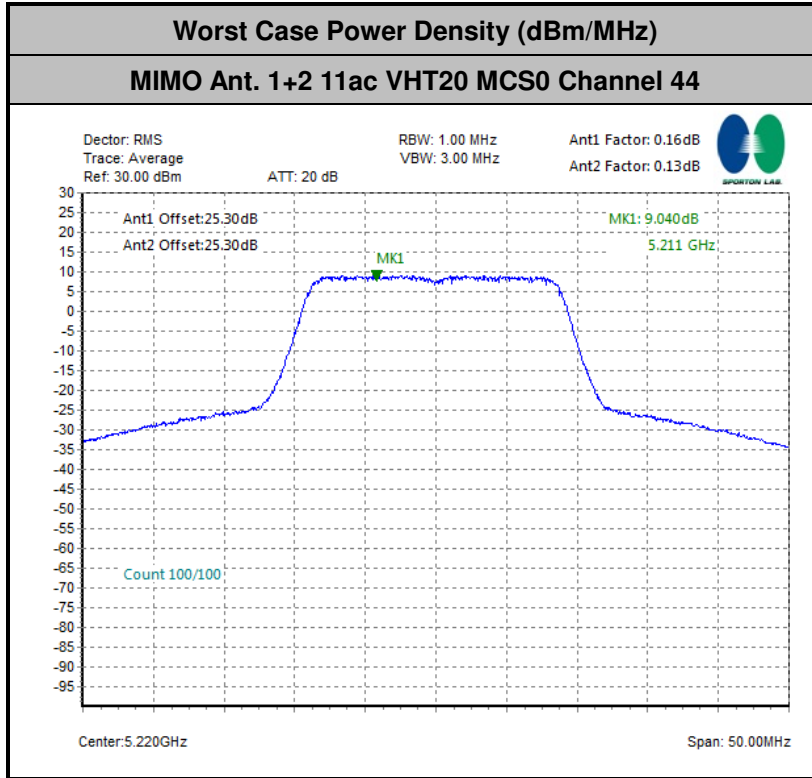


3.3.5 Test Result of Power Spectral Density

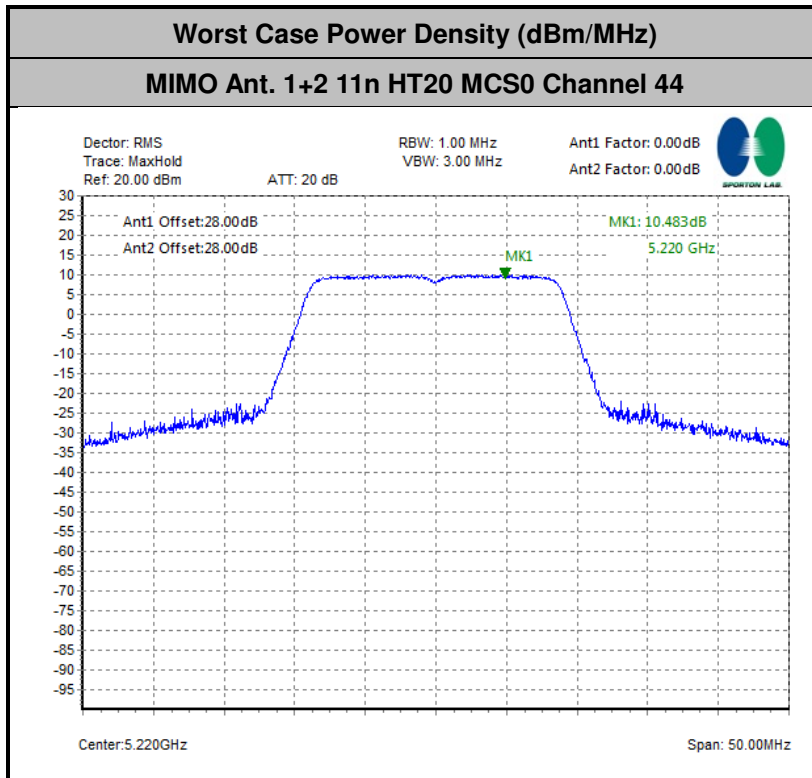
Please refer to Appendix A.



<Non-TXBF Modes>



<TXBF Modes>





3.4 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.
- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

| 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 |

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$

| EIRP (dBm) | Field Strength at 3m (dBμV/m) |
|------------|-------------------------------|
| -17 | 78.3 |
| - 27 | 68.3 |

- (3) KDB789033 D02 v01r03 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.



3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03. Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW \geq 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

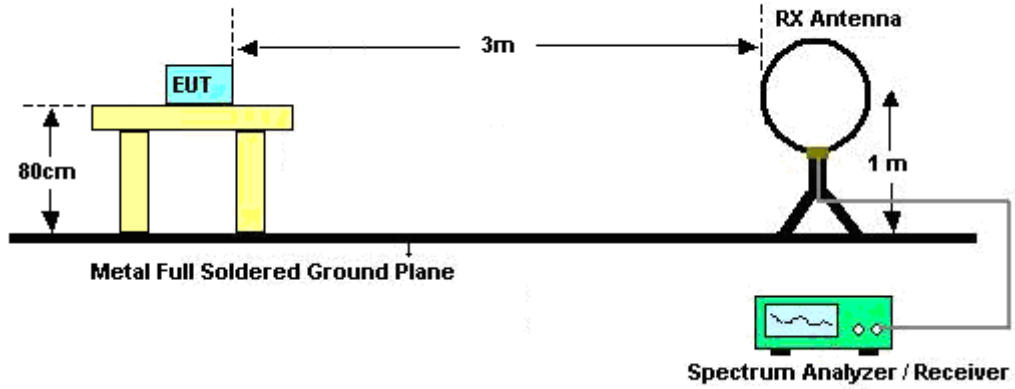
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW \geq 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.



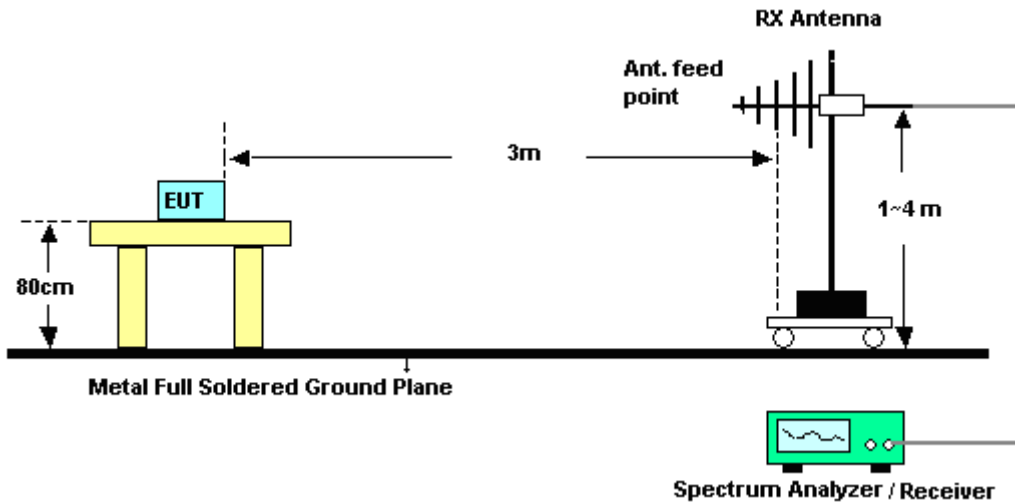
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
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.

3.4.4 Test Setup

For radiated emissions below 30MHz

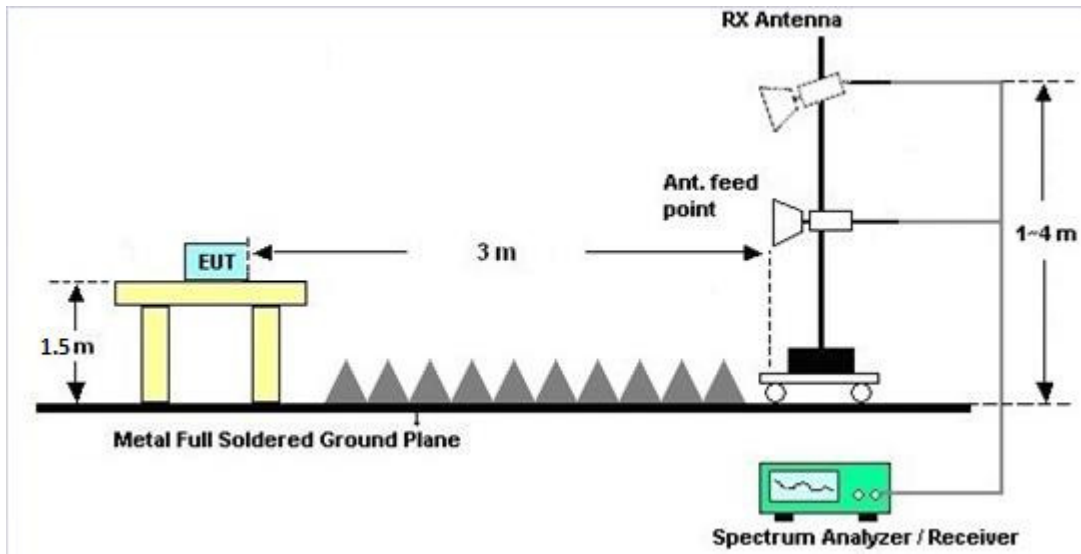


For radiated emissions from 30MHz to 1GHz

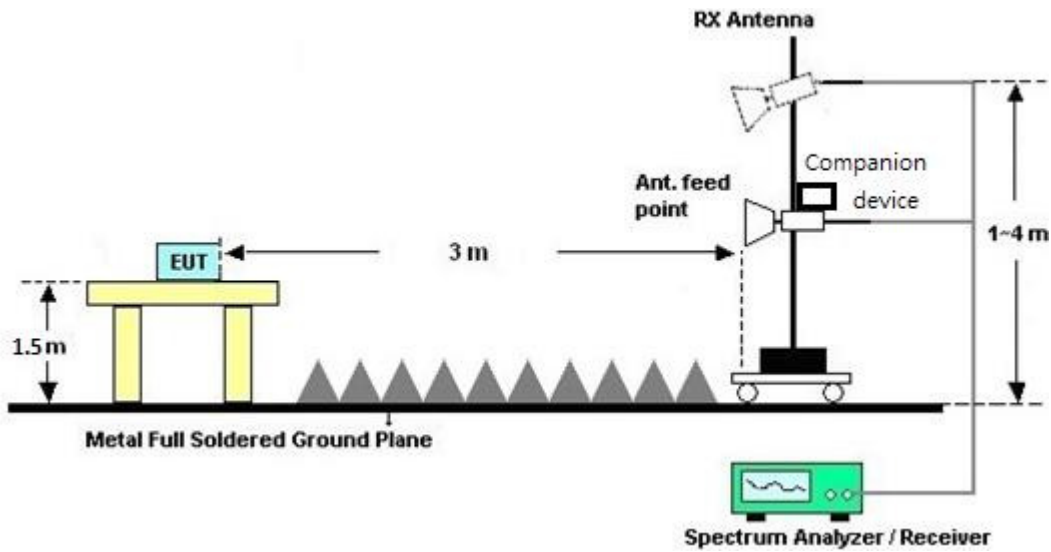


For radiated emissions above 1GHz

Non-TXBF mode



TXBF mode





3.4.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

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

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix B and C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.



3.5 AC Conducted Emission Measurement

3.5.1 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 (dB μ V) | |
|-----------------------------|------------------------------|-----------|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

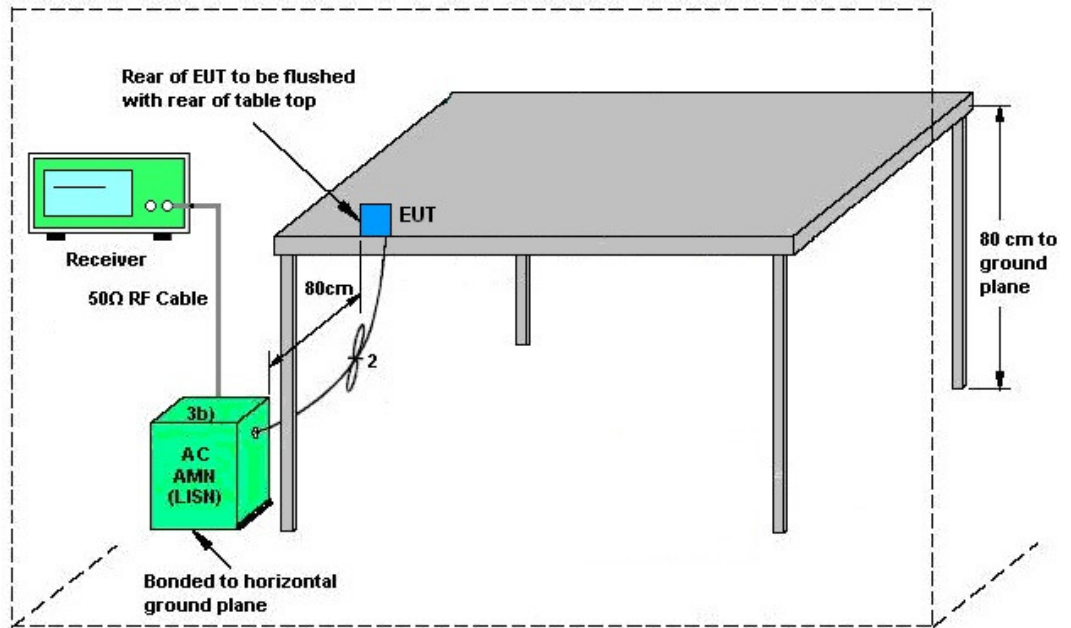
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
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 with Maximum Hold Mode.

3.5.4 Test Setup

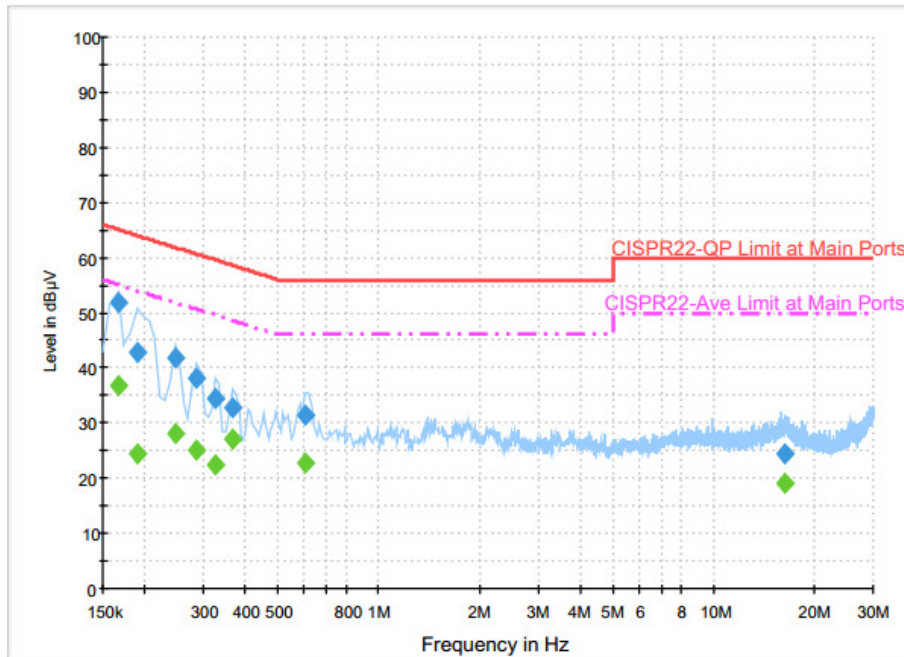


AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network



3.5.5 Test Result of AC Conducted Emission

| | | | |
|-----------------|---|---------------------|---------|
| Test Mode : | Mode 1 | Temperature : | 21~22°C |
| Test Engineer : | Derreck Chen | Relative Humidity : | 51~52% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Line |
| Function Type : | Bluetooth Link + WLAN (5GHz) Link + LAN Link + AC Adapter | | |



Final Result : QuasiPeak

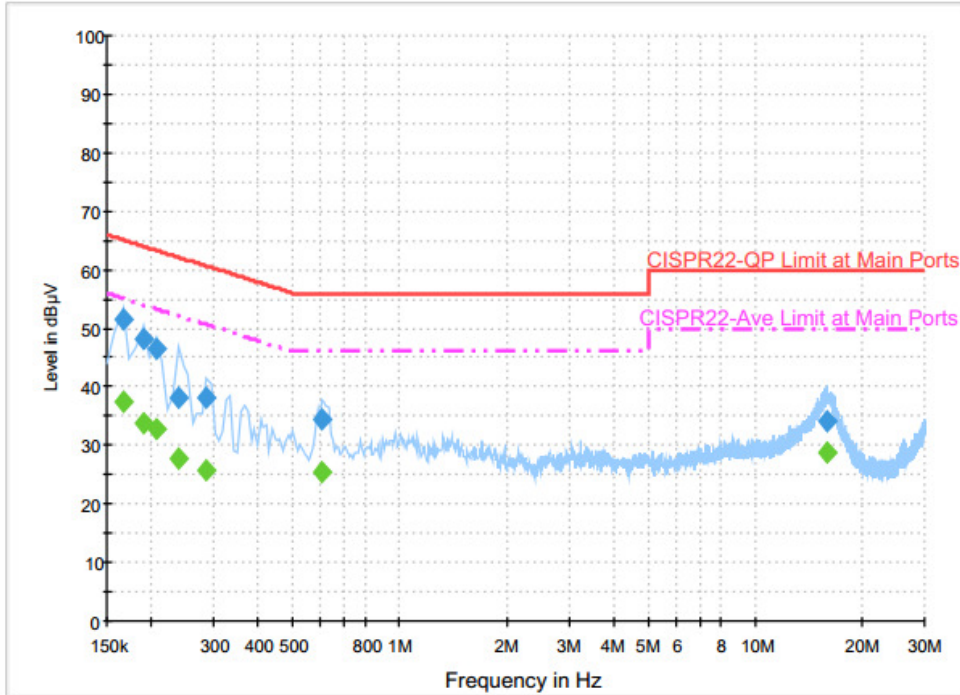
| Frequency (MHz) | QuasiPeak (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|--------|------|------------|-------------|--------------|
| 0.166000 | 51.7 | Off | L1 | 19.6 | 13.5 | 65.2 |
| 0.190000 | 42.7 | Off | L1 | 19.6 | 21.3 | 64.0 |
| 0.246000 | 41.8 | Off | L1 | 19.6 | 20.1 | 61.9 |
| 0.286000 | 38.2 | Off | L1 | 19.6 | 22.4 | 60.6 |
| 0.326000 | 34.4 | Off | L1 | 19.6 | 25.2 | 59.6 |
| 0.366000 | 32.8 | Off | L1 | 19.6 | 25.8 | 58.6 |
| 0.606000 | 31.6 | Off | L1 | 19.6 | 24.4 | 56.0 |
| 16.390000 | 24.4 | Off | L1 | 19.8 | 35.6 | 60.0 |

Final Result : Average

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.166000 | 36.6 | Off | L1 | 19.6 | 18.6 | 55.2 |
| 0.190000 | 24.3 | Off | L1 | 19.6 | 29.7 | 54.0 |
| 0.246000 | 28.1 | Off | L1 | 19.6 | 23.8 | 51.9 |
| 0.286000 | 24.9 | Off | L1 | 19.6 | 25.7 | 50.6 |
| 0.326000 | 22.3 | Off | L1 | 19.6 | 27.3 | 49.6 |
| 0.366000 | 27.0 | Off | L1 | 19.6 | 21.6 | 48.6 |
| 0.606000 | 22.8 | Off | L1 | 19.6 | 23.2 | 46.0 |
| 16.390000 | 18.9 | Off | L1 | 19.8 | 31.1 | 50.0 |



| | | | |
|-----------------|---|---------------------|---------|
| Test Mode : | Mode 1 | Temperature : | 21~22°C |
| Test Engineer : | Derreck Chen | Relative Humidity : | 51~52% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Neutral |
| Function Type : | Bluetooth Link + WLAN (5GHz) Link + LAN Link + AC Adapter | | |



Final Result : QuasiPeak

| Frequency (MHz) | QuasiPeak (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|--------|------|------------|-------------|--------------|
| 0.166000 | 51.6 | Off | N | 19.6 | 13.6 | 65.2 |
| 0.190000 | 48.3 | Off | N | 19.6 | 15.7 | 64.0 |
| 0.206000 | 46.4 | Off | N | 19.6 | 17.0 | 63.4 |
| 0.238000 | 38.0 | Off | N | 19.6 | 24.2 | 62.2 |
| 0.286000 | 38.2 | Off | N | 19.6 | 22.4 | 60.6 |
| 0.606000 | 34.3 | Off | N | 19.6 | 21.7 | 56.0 |
| 15.926000 | 34.0 | Off | N | 19.9 | 26.0 | 60.0 |

Final Result : Average

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.166000 | 37.3 | Off | N | 19.6 | 17.9 | 55.2 |
| 0.190000 | 33.9 | Off | N | 19.6 | 20.1 | 54.0 |
| 0.206000 | 32.8 | Off | N | 19.6 | 20.6 | 53.4 |
| 0.238000 | 27.9 | Off | N | 19.6 | 24.3 | 52.2 |
| 0.286000 | 25.9 | Off | N | 19.6 | 24.7 | 50.6 |
| 0.606000 | 25.3 | Off | N | 19.6 | 20.7 | 46.0 |
| 15.926000 | 28.8 | Off | N | 19.9 | 21.2 | 50.0 |

3.6 Frequency Stability Measurement

3.6.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

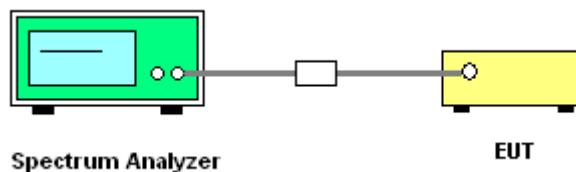
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

3.6.4 Test Setup



3.6.5 Test Result of Frequency Stability

Please refer to Appendix A.



3.7 Automatically Discontinue Transmission

3.7.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.7.2 Measuring Instruments

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

3.7.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.



3.8 Antenna Requirements

3.8.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.8.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.



3.8.3 Antenna Gain

Non-TXBF modes

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = $G_{ANT} + \text{Array Gain}$, 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 802.11a mode supports CDD mode.

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

| | | | DG for Power (dBi) | DG for PSD (dBi) | Power Limit Reduction (dB) | PSD Limit Reduction (dB) |
|-------------------|----------------|----------------|-----------------------------|---------------------------|-------------------------------------|-----------------------------------|
| | Ant 1 (dBi) | Ant 2 (dBi) | | | | |
| Band I (a) | 4.50 | 4.50 | 4.50 | 7.51 | 0.00 | 1.51 |

Power limit reduction = Composite gain – 6dBi, (min = 0)

PSD limit reduction = Composite gain + PSD Array gain – 6dBi, (min = 0)

The EUT 802.11n/ac mode does not support CDD mode.

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

| | | | DG for Power (dBi) | DG for PSD (dBi) | Power Limit Reduction (dB) | PSD Limit Reduction (dB) |
|----------------------|----------------|----------------|-----------------------------|---------------------------|-------------------------------------|-----------------------------------|
| | Ant 1 (dBi) | Ant 2 (dBi) | | | | |
| Band I (n/ac) | 4.50 | 4.50 | 4.50 | 4.50 | 0.00 | 0.00 |

Power limit reduction = Composite gain – 6dBi, (min = 0)

PSD limit reduction = Composite gain + PSD Array gain – 6dBi, (min = 0)

TXBF modes

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For beamforming transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;
 G_k is the gain in dBi of the k th antenna.

The EUT supports beamforming for 802.11 n/ac modes.

The directional gain calculation is following F)2)e)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.

| | | | DG for Power (dBi) | DG for PSD (dBi) | Power Limit Reduction (dB) | PSD Limit Reduction (dB) |
|----------------------|----------------|----------------|-----------------------------|---------------------------|-------------------------------------|-----------------------------------|
| | Ant 1 (dBi) | Ant 2 (dBi) | | | | |
| Band I (n/ac) | 4.50 | 4.50 | 7.51 | 7.51 | 1.51 | 1.51 |

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 | 300MHz~40GHz | Aug. 12, 2015 | Apr. 27, 2016 ~ Jul. 19, 2016 | Aug. 11, 2016 | Conducted (TH05-HY) |
| Power Sensor | Anritsu | MA2411B | 1126017 | 300MHz~40GHz | Aug. 12, 2015 | Apr. 27, 2016 ~ Jul. 19, 2016 | Aug. 11, 2016 | Conducted (TH05-HY) |
| Power Sensor | DARE | RPR3006W | 13I00030SN O31 | 9kHz~6GHz | Sep. 17, 2015 | Apr. 27, 2016 ~ Jul. 19, 2016 | Sep. 16, 2016 | Conducted (TH05-HY) |
| Power Sensor | DARE | RPR3006W | 13I00030SN O32 | 9kHz~6GHz | Sep. 17, 2015 | Apr. 27, 2016 ~ Jul. 19, 2016 | Sep. 16, 2016 | Conducted (TH05-HY) |
| Spectrum Analyzer | Rohde & Schwarz | FSP40 | 100057 | 9kHz-40GHz | Nov. 23, 2015 | Apr. 27, 2016 ~ Jul. 19, 2016 | Nov. 22, 2016 | Conducted (TH05-HY) |
| Temperature Chamber | ESPEC | SU-241 | 92003713 | -30℃ ~95℃ | Jun. 15, 2015 | Apr. 27, 2016 ~ May 23, 2016 | Jun. 14, 2016 | Conducted (TH05-HY) |
| Temperature Chamber | ESPEC | SU-241 | 92003713 | -30℃ ~95℃ | Jun. 06, 2016 | Jun. 06, 2016 ~ Jul. 19, 2016 | Jun. 05, 2017 | Conducted (TH05-HY) |
| Programmable Power Supply | GW Instek | PSS-2005 | GEO821763 | N/A | Nov. 13, 2015 | Apr. 27, 2016 ~ Jul. 19, 2016 | Nov. 12, 2016 | Conducted (TH05-HY) |
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100315 | 9 kHz~30 MHz | Sep. 02, 2015 | May 06, 2016 ~ Jul. 20, 2016 | Sep. 01, 2016 | Radiation (03CH10-HY) |
| Bilog Antenna | TESEQ | CBL 6111D | 35413 | 30MHz~1GHz | Jan. 13, 2016 | May 06, 2016 ~ Jul. 20, 2016 | Jan. 12, 2017 | Radiation (03CH10-HY) |
| Horn Antenna | SCHWARZBECK | BBHA 9120 D | 9120D-1325 | 1GHz ~ 18GHz | Sep. 30, 2015 | May 06, 2016 ~ Jul. 20, 2016 | Sep. 29, 2016 | Radiation (03CH10-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170576 | 18GHz ~ 40GHz | Apr. 15, 2016 | May 06, 2016 ~ Jul. 20, 2016 | Apr. 14, 2017 | Radiation (03CH10-HY) |
| Amplifier | SONOMA | 310N | 187311 | 9kHz~1GHz | Nov. 16, 2015 | May 06, 2016 ~ Jul. 20, 2016 | Nov. 15, 2016 | Radiation (03CH10-HY) |
| Preamplifier | MITEQ | AMF-7D-0010 1800-30-10P | 1902246 | 1GHz~18GHz | Nov. 16, 2015 | May 06, 2016 ~ Jul. 20, 2016 | Nov. 15, 2016 | Radiation (03CH10-HY) |
| Preamplifier | Keysight | 83017A | MY53270078 | 1GHz~26.5GHz | Nov. 13, 2015 | May 06, 2016 ~ Jul. 20, 2016 | Nov. 12, 2016 | Radiation (03CH10-HY) |
| Preamplifier | MITEQ | JS44-1800400 0-33-8P | 1840917 | 18GHz ~ 40GHz | Jun. 02, 2015 | May 06, 2016 ~ May 31, 2016 | Jun. 01, 2016 | Radiation (03CH10-HY) |
| Preamplifier | MITEQ | JS44-1800400 0-33-8P | 1840917 | 18GHz ~ 40GHz | Jun. 14, 2016 | Jun. 14, 2016 ~ Jul. 20, 2016 | Jun. 13, 2017 | Radiation (03CH10-HY) |
| EMI Test Receiver | Keysight | N9038A(MXE) | MY55420170 | N/A | Mar. 10, 2016 | May 06, 2016 ~ Jul. 20, 2016 | Mar. 09, 2017 | Radiation (03CH10-HY) |
| Spectrum Analyzer | Keysight | N9010A | MY54200485 | 10Hz ~ 44GHz | Oct. 15, 2015 | May 06, 2016 ~ Jul. 20, 2016 | Oct. 14, 2016 | Radiation (03CH10-HY) |
| Antenna Mast | EMEC | AM-BS-4500-B | N/A | 1~4m | N/A | May 06, 2016 ~ Jul. 20, 2016 | N/A | Radiation (03CH10-HY) |
| Turn Table | EMEC | TT 2200 | N/A | 0~360 Degree | N/A | May 06, 2016 ~ Jul. 20, 2016 | N/A | Radiation (03CH10-HY) |
| AC Power Source | ChainTek | APC-1000W | N/A | N/A | N/A | Apr. 27, 2016 | N/A | Conduction (CO05-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESCI 7 | 100724 | 9kHz~7GHz | Aug. 26, 2015 | Apr. 27, 2016 | Aug. 25, 2016 | Conduction (CO05-HY) |
| LISN | Rohde & Schwarz | ENV216 | 100080 | 9kHz~30MHz | Dec. 02, 2015 | Apr. 27, 2016 | Dec. 01, 2016 | Conduction (CO05-HY) |



5 Uncertainty of Evaluation

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

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

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

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



Appendix A. Conducted Test Results

<Non-TXBF Modes>

| | | | | |
|----------------|-----------------------|--------------------|-------|----|
| Test Engineer: | Luffy Lin / Bill Kuo | Temperature: | 21~25 | °C |
| Test Date: | 2016/04/27~2016/07/19 | Relative Humidity: | 51~54 | % |

TEST RESULTS DATA
26dB and 99% OBW

| Band I | | | | | | | | | | | | | |
|--------|-----------|-----|-----|-------------|---------------------|-------|-----------------------|-------|------------------------------------|-------|-----------------------------------|-------|------|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Bandwidth (MHz) | | 26 dB Bandwidth (MHz) | | IC 99% Bandwidth Power Limit (dBm) | | IC 99% Bandwidth EIRP Limit (dBm) | | Note |
| | | | | | Ant 1 | Ant 2 | Ant 1 | Ant 2 | Ant 1 | Ant 2 | Ant 1 | Ant 2 | |
| 11a | 6Mbps | 2 | 36 | 5180 | 18.30 | 17.95 | 25.42 | 23.16 | - | - | 22.54 | | |
| 11a | 6Mbps | 2 | 44 | 5220 | 18.30 | 18.20 | 32.40 | 26.76 | - | - | 22.60 | | |
| 11a | 6Mbps | 2 | 48 | 5240 | 18.50 | 18.10 | 30.48 | 25.20 | - | - | 22.58 | | |
| HT20 | MCS8 | 2 | 36 | 5180 | 18.95 | 18.90 | 23.28 | 24.48 | - | - | 22.76 | | |
| HT20 | MCS8 | 2 | 44 | 5220 | 19.45 | 19.20 | 42.72 | 38.40 | - | - | 22.83 | | |
| HT20 | MCS8 | 2 | 48 | 5240 | 19.40 | 19.05 | 42.24 | 38.04 | - | - | 22.80 | | |
| HT40 | MCS8 | 2 | 38 | 5190 | 36.70 | 36.60 | 41.70 | 41.40 | - | - | 23.01 | | |
| HT40 | MCS8 | 2 | 46 | 5230 | 36.90 | 36.70 | 84.80 | 56.20 | - | - | 23.01 | | |
| VHT20 | MCS0 | 2 | 36 | 5180 | 18.95 | 18.85 | 24.30 | 23.20 | - | - | 22.75 | | |
| VHT20 | MCS0 | 2 | 44 | 5220 | 19.50 | 18.95 | 41.52 | 36.96 | - | - | 22.78 | | |
| VHT20 | MCS0 | 2 | 48 | 5240 | 19.45 | 19.00 | 41.04 | 37.44 | - | - | 22.79 | | |
| VHT40 | MCS0 | 2 | 38 | 5190 | 36.50 | 36.70 | 41.60 | 41.40 | - | - | 23.01 | | |
| VHT40 | MCS0 | 2 | 46 | 5230 | 37.10 | 36.80 | 76.00 | 62.60 | - | - | 23.01 | | |
| VHT80 | MCS0 | 2 | 42 | 5210 | 75.84 | 75.96 | 82.24 | 81.92 | - | - | 23.01 | | |

TEST RESULTS DATA
Average Power Table

| FCC Band I | | | | | | | | | | | | | | | |
|------------|-----------|-----------------|-----|-------------|---------|------------------|-------|-------------------------------|-------|-------|---------------------------------|-------|----------|-------|-----------|
| Mod. | Data Rate | N _{Tx} | CH. | Freq. (MHz) | Setting | Duty Factor (dB) | | Average Conducted Power (dBm) | | | FCC Conducted Power Limit (dBm) | | DG (dBi) | | Pass/Fail |
| | | | | | | Ant 1 | Ant 2 | Ant 1 | Ant 2 | SUM | Ant 1 | Ant 2 | Ant 1 | Ant 2 | |
| 11a | 6Mbps | 2 | 36 | 5180 | 65 | 0.24 | 0.24 | 16.56 | 16.51 | 19.55 | 30.00 | | 4.50 | Pass | |
| 11a | 6Mbps | 2 | 44 | 5220 | 74 | 0.24 | 0.24 | 17.86 | 18.10 | 21.00 | 30.00 | | 4.50 | Pass | |
| 11a | 6Mbps | 2 | 48 | 5240 | 74 | 0.24 | 0.24 | 17.66 | 18.12 | 20.91 | 30.00 | | 4.50 | Pass | |
| HT20 | MCS8 | 2 | 36 | 5180 | 63 | 0.45 | 0.43 | 15.98 | 16.07 | 19.04 | 30.00 | | 4.50 | Pass | |
| HT20 | MCS8 | 2 | 44 | 5220 | 75 | 0.45 | 0.43 | 18.11 | 18.36 | 21.25 | 30.00 | | 4.50 | Pass | |
| HT20 | MCS8 | 2 | 48 | 5240 | 75 | 0.45 | 0.43 | 17.88 | 18.17 | 21.04 | 30.00 | | 4.50 | Pass | |
| HT40 | MCS8 | 2 | 38 | 5190 | 59 | 0.80 | 0.80 | 15.14 | 14.75 | 17.96 | 30.00 | | 4.50 | Pass | |
| HT40 | MCS8 | 2 | 46 | 5230 | 75 | 0.80 | 0.80 | 18.21 | 18.33 | 21.28 | 30.00 | | 4.50 | Pass | |
| VHT20 | MCS0 | 2 | 36 | 5180 | 63 | 0.16 | 0.13 | 15.57 | 15.82 | 18.70 | 30.00 | | 4.50 | Pass | |
| VHT20 | MCS0 | 2 | 44 | 5220 | 74 | 0.16 | 0.13 | 17.95 | 18.11 | 21.04 | 30.00 | | 4.50 | Pass | |
| VHT20 | MCS0 | 2 | 48 | 5240 | 74 | 0.16 | 0.13 | 17.77 | 18.06 | 20.92 | 30.00 | | 4.50 | Pass | |
| VHT40 | MCS0 | 2 | 38 | 5190 | 59 | 0.27 | 0.27 | 14.78 | 14.73 | 17.76 | 30.00 | | 4.50 | Pass | |
| VHT40 | MCS0 | 2 | 46 | 5230 | 74 | 0.27 | 0.27 | 18.02 | 18.07 | 21.05 | 30.00 | | 4.50 | Pass | |
| VHT80 | MCS0 | 2 | 42 | 5210 | 60 | 0.51 | 0.48 | 14.40 | 14.40 | 17.41 | 30.00 | | 4.50 | Pass | |

TEST RESULTS DATA
Power Spectral Density

| FCC Band I | | | | | | | | | | | | | | |
|------------|-----------|-----|-----|-------------|------------------|-------|---------------------------------|-------|-------|-----------------------------|-------|----------|-------|------------|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Duty Factor (dB) | | Average Power Density (dBm/MHz) | | | Average PSD Limit (dBm/MHz) | | DG (dBi) | | Pass /Fail |
| | | | | | Ant 1 | Ant 2 | Ant 1 | Ant 2 | SUM | Ant 1 | Ant 2 | Ant 1 | Ant 2 | |
| 11a | 6Mbps | 2 | 36 | 5180 | 0.24 | 0.24 | | | 7.14 | 15.49 | 7.51 | | Pass | |
| 11a | 6Mbps | 2 | 44 | 5220 | 0.24 | 0.24 | | | 8.74 | 15.49 | 7.51 | | Pass | |
| 11a | 6Mbps | 2 | 48 | 5240 | 0.24 | 0.24 | | | 8.72 | 15.49 | 7.51 | | Pass | |
| HT20 | MCS8 | 2 | 36 | 5180 | 0.45 | 0.43 | | | 6.59 | 17.00 | 4.50 | | Pass | |
| HT20 | MCS8 | 2 | 44 | 5220 | 0.45 | 0.43 | | | 8.10 | 17.00 | 4.50 | | Pass | |
| HT20 | MCS8 | 2 | 48 | 5240 | 0.45 | 0.43 | | | 8.65 | 17.00 | 4.50 | | Pass | |
| HT40 | MCS8 | 2 | 38 | 5190 | 0.80 | 0.80 | | | 2.22 | 17.00 | 4.50 | | Pass | |
| HT40 | MCS8 | 2 | 46 | 5230 | 0.80 | 0.80 | | | 5.65 | 17.00 | 4.50 | | Pass | |
| VHT20 | MCS0 | 2 | 36 | 5180 | 0.16 | 0.13 | | | 6.57 | 17.00 | 4.50 | | Pass | |
| VHT20 | MCS0 | 2 | 44 | 5220 | 0.16 | 0.13 | | | 9.04 | 17.00 | 4.50 | | Pass | |
| VHT20 | MCS0 | 2 | 48 | 5240 | 0.16 | 0.13 | | | 8.66 | 17.00 | 4.50 | | Pass | |
| VHT40 | MCS0 | 2 | 38 | 5190 | 0.27 | 0.27 | | | 2.48 | 17.00 | 4.50 | | Pass | |
| VHT40 | MCS0 | 2 | 46 | 5230 | 0.27 | 0.27 | | | 5.86 | 17.00 | 4.50 | | Pass | |
| VHT80 | MCS0 | 2 | 42 | 5210 | 0.51 | 0.48 | | | -1.19 | 17.00 | 4.50 | | Pass | |

TEST RESULTS DATA
Frequency Stability

| Band I | | | | | | | | | | |
|--------|-----------|-----|-----|-------------|------------------------|---------------------------|---------------------------|------------------|-------------|------|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Center Frequency (MHz) | Frequency Deviation (MHz) | Frequency Stability (ppm) | Temperature (°C) | Voltage (V) | Note |
| 11a | 6Mbps | 1 | 36 | 5180 | 5179.900 | -0.100 | -19.31 | 20 | 11.4 | |
| 11a | 6Mbps | 1 | 36 | 5180 | 5179.950 | -0.050 | -9.65 | 20 | 12.6 | |
| 11a | 6Mbps | 1 | 36 | 5180 | 5179.950 | -0.050 | -9.65 | 20 | 12 | |
| 11a | 6Mbps | 1 | 36 | 5180 | 5180.000 | 0.000 | 0.00 | 0 | 12 | |
| 11a | 6Mbps | 1 | 36 | 5180 | 5179.900 | -0.100 | -19.31 | 50 | 12 | |



<TXBF Modes>

| | | | | |
|----------------|-----------------------|--------------------|-------|----|
| Test Engineer: | Derek Hsu / PH Yang | Temperature: | 21~25 | °C |
| Test Date: | 2016/07/13~2016/07/19 | Relative Humidity: | 51~54 | % |

TEST RESULTS DATA
26dB and 99% OBW

| Band I | | | | | | | | | | | | | |
|--------|-----------|-----|-----|-------------|---------------------|-------|-----------------------|-------|------------------------------------|-------|-----------------------------------|-------|------|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Bandwidth (MHz) | | 26 dB Bandwidth (MHz) | | IC 99% Bandwidth Power Limit (dBm) | | IC 99% Bandwidth EIRP Limit (dBm) | | Note |
| | | | | | Ant 1 | Ant 2 | Ant 1 | Ant 2 | Ant 1 | Ant 2 | Ant 1 | Ant 2 | |
| HT20 | MCS0 | 2 | 36 | 5180 | 18.85 | 18.85 | 23.30 | 22.80 | - | - | 22.75 | - | |
| HT20 | MCS0 | 2 | 44 | 5220 | 18.75 | 18.75 | 23.10 | 22.80 | - | - | 22.73 | - | |
| HT20 | MCS0 | 2 | 48 | 5240 | 18.80 | 18.85 | 23.40 | 23.00 | - | - | 22.74 | - | |
| HT40 | MCS0 | 2 | 38 | 5190 | 36.70 | 36.70 | 41.76 | 41.40 | - | - | 23.01 | - | |
| HT40 | MCS0 | 2 | 46 | 5230 | 36.70 | 36.60 | 40.68 | 41.40 | - | - | 23.01 | - | |
| VHT20 | MCS0 | 2 | 36 | 5180 | 19.05 | 18.90 | 23.30 | 23.10 | - | - | 22.76 | - | |
| VHT20 | MCS0 | 2 | 44 | 5220 | 18.80 | 19.00 | 23.30 | 23.10 | - | - | 22.74 | - | |
| VHT20 | MCS0 | 2 | 48 | 5240 | 18.80 | 19.00 | 23.20 | 23.40 | - | - | 22.74 | - | |
| VHT40 | MCS0 | 2 | 38 | 5190 | 36.70 | 36.70 | 40.95 | 40.86 | - | - | 23.01 | - | |
| VHT40 | MCS0 | 2 | 46 | 5230 | 36.60 | 36.70 | 46.80 | 40.50 | - | - | 23.01 | - | |
| VHT80 | MCS0 | 2 | 42 | 5210 | 75.60 | 75.60 | 80.32 | 80.32 | - | - | 23.01 | - | |

TEST RESULTS DATA
Average Power Table

| FCC Band I | | | | | | | | | | | | | |
|------------|-----------|-----|-----|-------------|---------|-------------------------------|-------|-------|---------------------------------|-------|----------|-------|-----------|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Setting | Average Conducted Power (dBm) | | | FCC Conducted Power Limit (dBm) | | DG (dBi) | | Pass/Fail |
| | | | | | | Ant 1 | Ant 2 | SUM | Ant 1 | Ant 2 | Ant 1 | Ant 2 | |
| HT20 | MCS0 | 2 | 36 | 5180 | 63 | 15.50 | 16.20 | 18.87 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |
| HT20 | MCS0 | 2 | 44 | 5220 | 74 | 17.80 | 18.10 | 20.96 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |
| HT20 | MCS0 | 2 | 48 | 5240 | 75 | 17.60 | 18.10 | 20.87 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |
| HT40 | MCS0 | 2 | 38 | 5190 | 59 | 14.60 | 15.10 | 17.87 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |
| HT40 | MCS0 | 2 | 46 | 5230 | 75 | 17.90 | 18.30 | 21.11 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |
| VHT20 | MCS0 | 2 | 36 | 5180 | 61 | 15.20 | 16.30 | 18.80 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |
| VHT20 | MCS0 | 2 | 44 | 5220 | 73 | 17.50 | 18.30 | 20.93 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |
| VHT20 | MCS0 | 2 | 48 | 5240 | 73 | 17.30 | 18.30 | 20.84 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |
| VHT40 | MCS0 | 2 | 38 | 5190 | 57 | 15.00 | 14.60 | 17.81 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |
| VHT40 | MCS0 | 2 | 46 | 5230 | 73 | 17.70 | 18.30 | 21.02 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |
| VHT80 | MCS0 | 2 | 42 | 5210 | 58 | 14.20 | 14.40 | 17.31 | 28.49 | 28.49 | 7.51 | 7.51 | Pass |

TEST RESULTS DATA
Power Spectral Density

| FCC Band I | | | | | | | | | | | | |
|------------|-----------|-----|-----|-------------|---------------------------------|-------|-------|-----------------------------|-------|----------|-------|------------|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Average Power Density (dBm/MHz) | | | Average PSD Limit (dBm/MHz) | | DG (dBi) | | Pass /Fail |
| | | | | | Ant 1 | Ant 2 | SUM | Ant 1 | Ant 2 | Ant 1 | Ant 2 | |
| HT20 | MCS0 | 2 | 36 | 5180 | | | 7.70 | 15.49 | 7.51 | | Pass | |
| HT20 | MCS0 | 2 | 44 | 5220 | | | 10.48 | 15.49 | 7.51 | | Pass | |
| HT20 | MCS0 | 2 | 48 | 5240 | | | 10.15 | 15.49 | 7.51 | | Pass | |
| HT40 | MCS0 | 2 | 38 | 5190 | | | 6.50 | 15.49 | 7.51 | | Pass | |
| HT40 | MCS0 | 2 | 46 | 5230 | | | 9.75 | 15.49 | 7.51 | | Pass | |
| VHT20 | MCS0 | 2 | 36 | 5180 | | | 7.03 | 15.49 | 7.51 | | Pass | |
| VHT20 | MCS0 | 2 | 44 | 5220 | | | 9.77 | 15.49 | 7.51 | | Pass | |
| VHT20 | MCS0 | 2 | 48 | 5240 | | | 9.61 | 15.49 | 7.51 | | Pass | |
| VHT40 | MCS0 | 2 | 38 | 5190 | | | 5.91 | 15.49 | 7.51 | | Pass | |
| VHT40 | MCS0 | 2 | 46 | 5230 | | | 9.72 | 15.49 | 7.51 | | Pass | |
| VHT80 | MCS0 | 2 | 42 | 5210 | | | 6.30 | 15.49 | 7.51 | | Pass | |



Appendix B. Radiated Spurious Emission

| | | | |
|-----------------|---|---------------------|---------|
| Test Engineer : | Tsung Lee/Karl Hou/Wilson Wu/Stan Hsieh | Temperature : | 23~25°C |
| | | Relative Humidity : | 42~47% |

<Non-TXBF Modes with AC Adapter>

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) | |
|-----------------------------|------|-------------------|------------------|-------------------|-----------------------|---------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-------------------|--------------|---|
| 802.11a CH 36 5180MHz | | 5145.65 | 58.02 | -15.98 | 74 | 50.67 | 31.98 | 7.94 | 32.57 | 257 | 179 | P | H | |
| | | 5147.9 | 50.94 | -3.06 | 54 | 43.59 | 31.98 | 7.94 | 32.57 | 257 | 179 | A | H | |
| | * | 5182 | 111.61 | - | - | 104.25 | 32.02 | 7.91 | 32.57 | 257 | 179 | P | H | |
| | * | 5182 | 105.53 | - | - | 98.17 | 32.02 | 7.91 | 32.57 | 257 | 179 | A | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | | H |
| | | | 5136.8 | 61.39 | -12.61 | 74 | 54.06 | 31.96 | 7.94 | 32.57 | 172 | 183 | P | V |
| | | | 5149.85 | 53.83 | -0.17 | 54 | 46.48 | 31.98 | 7.94 | 32.57 | 172 | 183 | A | V |
| | | * | 5178 | 114.87 | - | - | 107.51 | 32.02 | 7.91 | 32.57 | 172 | 183 | P | V |
| | | * | 5178 | 108.41 | - | - | 101.05 | 32.02 | 7.91 | 32.57 | 172 | 183 | A | V |
| | | | | | | | | | | | | | V | |
| 802.11a CH 44 5220MHz | | 5145.65 | 55.93 | -18.07 | 74 | 48.58 | 31.98 | 7.94 | 32.57 | 184 | 178 | P | H | |
| | | 5010.05 | 47.88 | -6.12 | 54 | 40.61 | 31.82 | 8.02 | 32.57 | 184 | 178 | A | H | |
| | | * | 5222 | 113.94 | - | - | 106.44 | 32.06 | 8.01 | 32.57 | 184 | 178 | P | H |
| | | * | 5222 | 105.45 | - | - | 97.95 | 32.06 | 8.01 | 32.57 | 184 | 178 | A | H |
| | | | 5354.4 | 51.99 | -22.01 | 74 | 44.11 | 32.22 | 8.23 | 32.57 | 184 | 178 | P | H |
| | | | 5429.86 | 45.14 | -8.86 | 54 | 37.1 | 32.32 | 8.29 | 32.57 | 184 | 178 | A | H |
| | | | 5144.9 | 55.7 | -18.3 | 74 | 48.35 | 31.98 | 7.94 | 32.57 | 202 | 181 | P | V |
| | | | 5147.6 | 48.63 | -5.37 | 54 | 41.28 | 31.98 | 7.94 | 32.57 | 202 | 181 | A | V |
| | | * | 5222 | 115.56 | - | - | 108.06 | 32.06 | 8.01 | 32.57 | 202 | 181 | P | V |
| | | * | 5222 | 107.25 | - | - | 99.75 | 32.06 | 8.01 | 32.57 | 202 | 181 | A | V |
| | | | 5374.31 | 52.21 | -21.79 | 74 | 44.25 | 32.24 | 8.29 | 32.57 | 202 | 181 | P | V |
| | | | 5429.97 | 46.6 | -7.4 | 54 | 38.56 | 32.32 | 8.29 | 32.57 | 202 | 181 | A | V |



| | | | | | | | | | | | | | |
|--|---|---------|--------|--------|----|--------|-------|------|-------|-----|-----|---|---|
| 802.11a CH 48 5240MHz | | 5147 | 54.07 | -19.93 | 74 | 46.72 | 31.98 | 7.94 | 32.57 | 195 | 178 | P | H |
| | | 5029.25 | 47.42 | -6.58 | 54 | 40.13 | 31.84 | 8.02 | 32.57 | 195 | 178 | A | H |
| | * | 5242 | 113.63 | - | - | 105.98 | 32.1 | 8.12 | 32.57 | 195 | 178 | P | H |
| | * | 5242 | 105.97 | - | - | 98.32 | 32.1 | 8.12 | 32.57 | 195 | 178 | A | H |
| | | 5352.31 | 51.87 | -22.13 | 74 | 43.99 | 32.22 | 8.23 | 32.57 | 195 | 178 | P | H |
| | | 5450.87 | 44.52 | -9.48 | 54 | 36.46 | 32.34 | 8.29 | 32.57 | 195 | 178 | A | H |
| | | 5133.8 | 53.99 | -20.01 | 74 | 46.66 | 31.96 | 7.94 | 32.57 | 215 | 182 | P | V |
| | | 5029.25 | 47.73 | -6.27 | 54 | 40.44 | 31.84 | 8.02 | 32.57 | 215 | 182 | A | V |
| | * | 5239 | 115.26 | - | - | 107.74 | 32.08 | 8.01 | 32.57 | 215 | 182 | P | V |
| | * | 5239 | 106.87 | - | - | 99.35 | 32.08 | 8.01 | 32.57 | 215 | 182 | A | V |
| | | 5350.44 | 52.22 | -21.78 | 74 | 44.34 | 32.22 | 8.23 | 32.57 | 215 | 182 | P | V |
| | | 5450.87 | 46.09 | -7.91 | 54 | 38.03 | 32.34 | 8.29 | 32.57 | 215 | 182 | A | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11a (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|-----------------------------|---|-------------------|------------------|-------------------|-----------------------|---------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-------------------|--------------|
| 802.11a CH 36 5180MHz | | 10360 | 44.67 | -29.33 | 74 | 56.13 | 39.69 | 11.96 | 63.11 | 100 | 0 | P | H |
| | | 15540 | 40.76 | -33.24 | 74 | 48.15 | 38.04 | 14.76 | 60.19 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 10360 | 44.46 | -29.54 | 74 | 55.92 | 39.69 | 11.96 | 63.11 | 100 | 0 | P | V |
| | | 15540 | 41.25 | -32.75 | 74 | 48.64 | 38.04 | 14.76 | 60.19 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11a CH 44 5220MHz | | 10440 | 43.92 | -30.08 | 74 | 55.15 | 39.79 | 12.03 | 63.05 | 100 | 0 | P | H |
| | | 15660 | 41.45 | -32.55 | 74 | 48.98 | 37.85 | 14.79 | 60.17 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 10440 | 43.1 | -30.9 | 74 | 54.33 | 39.79 | 12.03 | 63.05 | 100 | 0 | P | V |
| | | 15660 | 41.13 | -32.87 | 74 | 48.66 | 37.85 | 14.79 | 60.17 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11a CH 48 5240MHz | | 10480 | 46.48 | -27.52 | 74 | 57.56 | 39.87 | 12.06 | 63.01 | 100 | 0 | P | H |
| | | 15720 | 40.46 | -33.54 | 74 | 48.07 | 37.74 | 14.81 | 60.16 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 10480 | 47.09 | -26.91 | 74 | 58.17 | 39.87 | 12.06 | 63.01 | 100 | 0 | P | V |
| | | 15720 | 40.75 | -33.25 | 74 | 48.36 | 37.74 | 14.81 | 60.16 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) | |
|----------------------------|------|-------------------|------------------|-------------------|-----------------------|---------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-------------------|--------------|---|
| 802.11n HT20 CH 36 5180MHz | | 5149.1 | 57.4 | -16.6 | 74 | 50.05 | 31.98 | 7.94 | 32.57 | 180 | 186 | P | H | |
| | | 5150 | 49.46 | -4.54 | 54 | 42.11 | 31.98 | 7.94 | 32.57 | 180 | 186 | A | H | |
| | * | 5178 | 110.07 | - | - | 102.71 | 32.02 | 7.91 | 32.57 | 180 | 186 | P | H | |
| | * | 5178 | 102.23 | - | - | 94.87 | 32.02 | 7.91 | 32.57 | 180 | 186 | A | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | H | |
| | | | 5149.85 | 59.48 | -14.52 | 74 | 52.13 | 31.98 | 7.94 | 32.57 | 182 | 184 | P | V |
| | | | 5149.7 | 53.14 | -0.86 | 54 | 45.79 | 31.98 | 7.94 | 32.57 | 182 | 184 | A | V |
| | | * | 5178 | 112.66 | - | - | 105.3 | 32.02 | 7.91 | 32.57 | 182 | 184 | P | V |
| | | * | 5178 | 105.75 | - | - | 98.39 | 32.02 | 7.91 | 32.57 | 182 | 184 | A | V |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| 802.11n HT20 CH 44 5220MHz | | 5149.4 | 57.09 | -16.91 | 74 | 49.74 | 31.98 | 7.94 | 32.57 | 182 | 177 | P | H | |
| | | 5148.8 | 47.07 | -6.93 | 54 | 39.72 | 31.98 | 7.94 | 32.57 | 182 | 177 | A | H | |
| | * | 5222 | 113.21 | - | - | 105.71 | 32.06 | 8.01 | 32.57 | 182 | 177 | P | H | |
| | * | 5222 | 104.35 | - | - | 96.85 | 32.06 | 8.01 | 32.57 | 182 | 177 | A | H | |
| | | | 5353.74 | 51.17 | -22.83 | 74 | 43.29 | 32.22 | 8.23 | 32.57 | 182 | 177 | P | H |
| | | | 5429.31 | 43.95 | -10.05 | 54 | 35.91 | 32.32 | 8.29 | 32.57 | 182 | 177 | A | H |
| | | | 5144 | 56.59 | -17.41 | 74 | 49.24 | 31.98 | 7.94 | 32.57 | 181 | 187 | P | V |
| | | | 5146.85 | 48.99 | -5.01 | 54 | 41.64 | 31.98 | 7.94 | 32.57 | 181 | 187 | A | V |
| | | * | 5218 | 113.41 | - | - | 105.91 | 32.06 | 8.01 | 32.57 | 181 | 187 | P | V |
| | | * | 5218 | 105.74 | - | - | 98.24 | 32.06 | 8.01 | 32.57 | 181 | 187 | A | V |
| | | 5428.98 | 51.41 | -22.59 | 74 | 43.37 | 32.32 | 8.29 | 32.57 | 181 | 187 | P | V | |
| | | 5428.87 | 44.64 | -9.36 | 54 | 36.6 | 32.32 | 8.29 | 32.57 | 181 | 187 | A | V | |



| | | | | | | | | | | | | | |
|---|---|---------|--------|--------|----|--------|-------|------|-------|-----|-----|---|---|
| 802.11n HT20 CH 48 5240MHz | | 5148.05 | 53.59 | -20.41 | 74 | 46.24 | 31.98 | 7.94 | 32.57 | 197 | 177 | P | H |
| | | 5030 | 45.92 | -8.08 | 54 | 38.63 | 31.84 | 8.02 | 32.57 | 197 | 177 | A | H |
| | * | 5242 | 112.94 | - | - | 105.29 | 32.1 | 8.12 | 32.57 | 197 | 177 | P | H |
| | * | 5242 | 104.25 | - | - | 96.6 | 32.1 | 8.12 | 32.57 | 197 | 177 | A | H |
| | | 5351.43 | 51.13 | -22.87 | 74 | 43.25 | 32.22 | 8.23 | 32.57 | 197 | 177 | P | H |
| | | 5450.1 | 43.9 | -10.1 | 54 | 35.84 | 32.34 | 8.29 | 32.57 | 197 | 177 | A | H |
| | | 5138 | 54.3 | -19.7 | 74 | 46.97 | 31.96 | 7.94 | 32.57 | 187 | 187 | P | V |
| | | 5029.85 | 46.48 | -7.52 | 54 | 39.19 | 31.84 | 8.02 | 32.57 | 187 | 187 | A | V |
| | * | 5238 | 113.47 | - | - | 105.95 | 32.08 | 8.01 | 32.57 | 187 | 187 | P | V |
| | * | 5238 | 104.96 | - | - | 97.44 | 32.08 | 8.01 | 32.57 | 187 | 187 | A | V |
| | | 5353.74 | 51.83 | -22.17 | 74 | 43.95 | 32.22 | 8.23 | 32.57 | 187 | 187 | P | V |
| | | 5450.1 | 44.21 | -9.79 | 54 | 36.15 | 32.34 | 8.29 | 32.57 | 187 | 187 | A | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) | |
|-------------------------------|--|-------------------|------------------|-------------------|-----------------------|-------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-----------------|------------|---|
| 802.11n HT20 CH 36 5180MHz | | 10360 | 45.02 | -28.98 | 74 | 56.48 | 39.69 | 11.96 | 63.11 | 100 | 0 | P | H | |
| | | 15540 | 41.18 | -32.82 | 74 | 48.57 | 38.04 | 14.76 | 60.19 | 100 | 0 | P | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | H | |
| | | | 10360 | 44.49 | -29.51 | 74 | 55.95 | 39.69 | 11.96 | 63.11 | 100 | 0 | P | V |
| | | | 15540 | 40.81 | -33.19 | 74 | 48.2 | 38.04 | 14.76 | 60.19 | 100 | 0 | P | V |
| | | | | | | | | | | | | | | V |
| 802.11n HT20 CH 44 5220MHz | | 10440 | 46.75 | -27.25 | 74 | 57.98 | 39.79 | 12.03 | 63.05 | 100 | 0 | P | H | |
| | | 15660 | 41.96 | -32.04 | 74 | 49.49 | 37.85 | 14.79 | 60.17 | 100 | 0 | P | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | H | |
| | | | 10440 | 47.55 | -26.45 | 74 | 58.78 | 39.79 | 12.03 | 63.05 | 100 | 0 | P | V |
| | | | 15660 | 42.12 | -31.88 | 74 | 49.65 | 37.85 | 14.79 | 60.17 | 100 | 0 | P | V |
| | | | | | | | | | | | | | | V |
| 802.11n HT20 CH 48 5240MHz | | 10480 | 45.74 | -28.26 | 74 | 56.82 | 39.87 | 12.06 | 63.01 | 100 | 0 | P | H | |
| | | 15720 | 40.74 | -33.26 | 74 | 48.35 | 37.74 | 14.81 | 60.16 | 100 | 0 | P | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | H | |
| | | | 10480 | 47.44 | -26.56 | 74 | 58.52 | 39.87 | 12.06 | 63.01 | 100 | 0 | P | V |
| | | | 15720 | 40.78 | -33.22 | 74 | 48.39 | 37.74 | 14.81 | 60.16 | 100 | 0 | P | V |
| | | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. | | | | | | | | | | | | | |
| | 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | | |



**Band 1 5150~5250MHz
WIFI 802.11n HT40 (Band Edge @ 3m)**

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBµV/m) | Over Limit (dB) | Limit Line (dBµV/m) | Read Level (dBµV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|----------------------------|---|-------------------|------------------|-------------------|-----------------------|---------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-------------------|--------------|
| 802.11n HT40 CH 38 5190MHz | | 5149.7 | 57 | -17 | 74 | 49.65 | 31.98 | 7.94 | 32.57 | 228 | 180 | P | H |
| | | 5147.45 | 49.84 | -4.16 | 54 | 42.49 | 31.98 | 7.94 | 32.57 | 228 | 180 | A | H |
| | * | 5188 | 106.15 | - | - | 98.79 | 32.02 | 7.91 | 32.57 | 228 | 180 | P | H |
| | * | 5188 | 98.81 | - | - | 91.45 | 32.02 | 7.91 | 32.57 | 228 | 180 | A | H |
| | | 5370.9 | 50.01 | -23.99 | 74 | 42.05 | 32.24 | 8.29 | 32.57 | 228 | 180 | P | H |
| | | 5352.53 | 42.43 | -11.57 | 54 | 34.55 | 32.22 | 8.23 | 32.57 | 228 | 180 | A | H |
| | | 5149.7 | 64.11 | -9.89 | 74 | 56.76 | 31.98 | 7.94 | 32.57 | 176 | 186 | P | V |
| | | 5145.2 | 52.94 | -1.06 | 54 | 45.59 | 31.98 | 7.94 | 32.57 | 176 | 186 | A | V |
| | * | 5188 | 108.77 | - | - | 101.41 | 32.02 | 7.91 | 32.57 | 176 | 186 | P | V |
| | * | 5188 | 101.81 | - | - | 94.45 | 32.02 | 7.91 | 32.57 | 176 | 186 | A | V |
| | | 5368.26 | 50.08 | -23.92 | 74 | 42.12 | 32.24 | 8.29 | 32.57 | 176 | 186 | P | V |
| | | 5352.09 | 42.77 | -11.23 | 54 | 34.89 | 32.22 | 8.23 | 32.57 | 176 | 186 | A | V |
| 802.11n HT40 CH 46 5230MHz | | 5136.5 | 55.89 | -18.11 | 74 | 48.56 | 31.96 | 7.94 | 32.57 | 175 | 179 | P | H |
| | | 5136.35 | 47.63 | -6.37 | 54 | 40.3 | 31.96 | 7.94 | 32.57 | 175 | 179 | A | H |
| | * | 5228 | 111.34 | - | - | 103.82 | 32.08 | 8.01 | 32.57 | 175 | 179 | P | H |
| | * | 5228 | 103.38 | - | - | 95.86 | 32.08 | 8.01 | 32.57 | 175 | 179 | A | H |
| | | 5351.43 | 53.35 | -20.65 | 74 | 45.47 | 32.22 | 8.23 | 32.57 | 175 | 179 | P | H |
| | | 5350.22 | 44.79 | -9.21 | 54 | 36.91 | 32.22 | 8.23 | 32.57 | 175 | 179 | A | H |
| | | 5144.15 | 57.92 | -16.08 | 74 | 50.57 | 31.98 | 7.94 | 32.57 | 234 | 186 | P | V |
| | | 5148.95 | 49.12 | -4.88 | 54 | 41.77 | 31.98 | 7.94 | 32.57 | 234 | 186 | A | V |
| | * | 5228 | 110.9 | - | - | 103.38 | 32.08 | 8.01 | 32.57 | 234 | 186 | P | V |
| | * | 5228 | 103.17 | - | - | 95.65 | 32.08 | 8.01 | 32.57 | 234 | 186 | A | V |
| | 5359.79 | 53.13 | -20.87 | 74 | 45.25 | 32.22 | 8.23 | 32.57 | 234 | 186 | P | V | |
| | 5351.54 | 45.93 | -8.07 | 54 | 38.05 | 32.22 | 8.23 | 32.57 | 234 | 186 | A | V | |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|----------------------------|---|-------------------|------------------|-------------------|-----------------------|-------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-----------------|------------|
| 802.11n HT40 CH 38 5190MHz | | 10380 | 46.31 | -27.69 | 74 | 57.73 | 39.71 | 11.96 | 63.09 | 100 | 0 | P | H |
| | | 15570 | 41.12 | -32.88 | 74 | 48.55 | 37.99 | 14.77 | 60.19 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 10380 | 45.66 | -28.34 | 74 | 57.08 | 39.71 | 11.96 | 63.09 | 100 | 0 | P | V |
| | | 15570 | 41.14 | -32.86 | 74 | 48.57 | 37.99 | 14.77 | 60.19 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11n HT40 CH 46 5230MHz | | 10460 | 45.87 | -28.13 | 74 | 57.06 | 39.82 | 12.03 | 63.04 | 100 | 0 | P | H |
| | | 15690 | 41.93 | -32.07 | 74 | 49.49 | 37.8 | 14.8 | 60.16 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 10460 | 48.32 | -25.68 | 74 | 59.51 | 39.82 | 12.03 | 63.04 | 100 | 0 | P | V |
| | | 15690 | 41.5 | -32.5 | 74 | 49.06 | 37.8 | 14.8 | 60.16 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|------------------------------|---|-------------------|------------------|-------------------|-----------------------|-------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-----------------|------------|
| 802.11ac VHT80 CH 42 5210MHz | | 5055.95 | 56.11 | -17.89 | 74 | 48.81 | 31.88 | 7.99 | 32.57 | 162 | 178 | P | H |
| | | 5149.85 | 50.84 | -3.16 | 54 | 43.49 | 31.98 | 7.94 | 32.57 | 162 | 178 | A | H |
| | * | 5212 | 102.9 | - | - | 95.4 | 32.06 | 8.01 | 32.57 | 162 | 178 | P | H |
| | * | 5212 | 98.09 | - | - | 90.59 | 32.06 | 8.01 | 32.57 | 162 | 178 | A | H |
| | | 5358.47 | 54.05 | -19.95 | 74 | 46.17 | 32.22 | 8.23 | 32.57 | 162 | 178 | P | H |
| | | 5354.95 | 47.35 | -6.65 | 54 | 39.47 | 32.22 | 8.23 | 32.57 | 162 | 178 | A | H |
| | | 5138.15 | 57.58 | -16.42 | 74 | 50.25 | 31.96 | 7.94 | 32.57 | 174 | 190 | P | V |
| | | 5148.05 | 53.67 | -0.33 | 54 | 46.32 | 31.98 | 7.94 | 32.57 | 174 | 190 | A | V |
| | * | 5208 | 104.48 | - | - | 96.98 | 32.06 | 8.01 | 32.57 | 174 | 190 | P | V |
| | * | 5208 | 100.73 | - | - | 93.23 | 32.06 | 8.01 | 32.57 | 174 | 190 | A | V |
| | | 5351.1 | 54.82 | -19.18 | 74 | 46.94 | 32.22 | 8.23 | 32.57 | 174 | 190 | P | V |
| | 5373.1 | 47.95 | -6.05 | 54 | 39.99 | 32.24 | 8.29 | 32.57 | 174 | 190 | A | V | |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) | |
|------------------------------|---|-------------------|------------------|-------------------|-----------------------|-------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-----------------|------------|---|
| 802.11ac VHT80 CH 42 5210MHz | | 10420 | 45.4 | -28.6 | 74 | 56.7 | 39.77 | 12 | 63.07 | 100 | 0 | P | H | |
| | | 15630 | 42.65 | -31.35 | 74 | 50.16 | 37.88 | 14.78 | 60.17 | 100 | 0 | P | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | H | |
| | | | 10420 | 47.61 | -26.39 | 74 | 58.91 | 39.77 | 12 | 63.07 | 100 | 0 | P | V |
| | | | 15630 | 41.3 | -32.7 | 74 | 48.81 | 37.88 | 14.78 | 60.17 | 100 | 0 | P | V |
| | | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. 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 | Peak or Average |
| H/V | Horizontal or Vertical |



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

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Peak | Pol. |
|---------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 1+2 | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) |
| 802.11b | | 2390 | 55.45 | -18.55 | 74 | 54.51 | 32.22 | 4.58 | 35.86 | 103 | 308 | P | H |
| CH 01 | | | | | | | | | | | | | |
| 2412MHz | | 2390 | 43.54 | -10.46 | 54 | 42.6 | 32.22 | 4.58 | 35.86 | 103 | 308 | A | H |

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

For Peak Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
- 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”.



<TXBF Modes with AC Adapter>

Band 1 5150~5250MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

| WIFI Ant. | Note | Frequency | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol. | |
|-------------------------------------|------|-----------|------------|------------|------------|------------|----------------|------------|---------------|---------|-----------|-----------|---------|---|
| 1+2 | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) | |
| 802.11n HT20 CH 36 5180MHz | | 5150 | 57.92 | -16.08 | 74 | 50.57 | 31.98 | 7.94 | 32.57 | 189 | 178 | P | H | |
| | | 5150 | 46.26 | -7.74 | 54 | 38.91 | 31.98 | 7.94 | 32.57 | 189 | 178 | A | H | |
| | * | 5180 | 109.92 | - | - | 102.56 | 32.02 | 7.91 | 32.57 | 189 | 178 | P | H | |
| | * | 5180 | 101.49 | - | - | 94.13 | 32.02 | 7.91 | 32.57 | 189 | 178 | A | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | H | |
| | | | 5150 | 57.89 | -16.11 | 74 | 50.54 | 31.98 | 7.94 | 32.57 | 217 | 181 | P | V |
| | | | 5150 | 50.85 | -3.15 | 54 | 43.5 | 31.98 | 7.94 | 32.57 | 217 | 181 | A | V |
| | | * | 5180 | 110.62 | - | - | 103.26 | 32.02 | 7.91 | 32.57 | 217 | 181 | P | V |
| | | * | 5180 | 103.19 | - | - | 95.83 | 32.02 | 7.91 | 32.57 | 217 | 181 | A | V |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| 802.11n HT20 CH 44 5220MHz | | 5146.38 | 54.59 | -19.41 | 74 | 47.24 | 31.98 | 7.94 | 32.57 | 221 | 180 | P | H | |
| | | 5143.78 | 46.43 | -7.57 | 54 | 39.08 | 31.98 | 7.94 | 32.57 | 221 | 180 | A | H | |
| | * | 5218 | 112.79 | - | - | 105.29 | 32.06 | 8.01 | 32.57 | 221 | 180 | P | H | |
| | * | 5218 | 105.2 | - | - | 97.7 | 32.06 | 8.01 | 32.57 | 221 | 180 | A | H | |
| | | 5386.8 | 51.82 | -22.18 | 74 | 43.84 | 32.26 | 8.29 | 32.57 | 221 | 180 | P | H | |
| | | 5429.04 | 44.26 | -9.74 | 54 | 36.22 | 32.32 | 8.29 | 32.57 | 221 | 180 | A | H | |
| | | 5146.9 | 57.37 | -16.63 | 74 | 50.02 | 31.98 | 7.94 | 32.57 | 185 | 184 | P | V | |
| | | 5148.2 | 48.82 | -5.18 | 54 | 41.47 | 31.98 | 7.94 | 32.57 | 185 | 184 | A | V | |
| | | * | 5218 | 114.11 | - | - | 106.61 | 32.06 | 8.01 | 32.57 | 185 | 184 | P | V |
| | | * | 5218 | 106.38 | - | - | 98.88 | 32.06 | 8.01 | 32.57 | 185 | 184 | A | V |
| | | 5374.32 | 52.05 | -21.95 | 74 | 44.09 | 32.24 | 8.29 | 32.57 | 185 | 184 | P | V | |
| | | 5429.04 | 44.48 | -9.52 | 54 | 36.44 | 32.32 | 8.29 | 32.57 | 185 | 184 | A | V | |



| | | | | | | | | | | | | | |
|---|---|---------|--------|--------|----|--------|-------|------|-------|-----|-----|---|---|
| 802.11n HT20 CH 48 5240MHz | | 5029.9 | 54.04 | -19.96 | 74 | 46.75 | 31.84 | 8.02 | 32.57 | 211 | 181 | P | H |
| | | 5029.64 | 47.8 | -6.2 | 54 | 40.51 | 31.84 | 8.02 | 32.57 | 211 | 181 | A | H |
| | * | 5240 | 116.11 | - | - | 108.59 | 32.08 | 8.01 | 32.57 | 211 | 181 | P | H |
| | * | 5240 | 109.19 | - | - | 101.67 | 32.08 | 8.01 | 32.57 | 211 | 181 | A | H |
| | | 5450.88 | 52.12 | -21.88 | 74 | 44.06 | 32.34 | 8.29 | 32.57 | 211 | 181 | P | H |
| | | 5450.16 | 46.38 | -7.62 | 54 | 38.32 | 32.34 | 8.29 | 32.57 | 211 | 181 | A | H |
| | | 5029.38 | 55.73 | -18.27 | 74 | 48.44 | 31.84 | 8.02 | 32.57 | 191 | 195 | P | V |
| | | 5029.9 | 49.46 | -4.54 | 54 | 42.17 | 31.84 | 8.02 | 32.57 | 191 | 195 | A | V |
| | * | 5240 | 113.68 | - | - | 106.16 | 32.08 | 8.01 | 32.57 | 191 | 195 | P | V |
| | * | 5240 | 108.09 | - | - | 100.57 | 32.08 | 8.01 | 32.57 | 191 | 195 | A | V |
| | | 5449.44 | 52.09 | -21.91 | 74 | 44.03 | 32.34 | 8.29 | 32.57 | 191 | 195 | P | V |
| | | 5450.4 | 46.43 | -7.57 | 54 | 38.37 | 32.34 | 8.29 | 32.57 | 191 | 195 | A | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|-------------------------------|--|-------------------|------------------|-------------------|-----------------------|---------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-------------------|--------------|
| 802.11n HT20 CH 36 5180MHz | | 10360 | 46.08 | -27.92 | 74 | 51.28 | 39.69 | 11.96 | 56.85 | 100 | 0 | P | H |
| | | 15540 | 42.48 | -31.52 | 74 | 46.06 | 38.04 | 14.76 | 56.38 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 10360 | 45.5 | -28.5 | 74 | 50.7 | 39.69 | 11.96 | 56.85 | 100 | 0 | P | V |
| | | 15540 | 42.25 | -31.75 | 74 | 45.83 | 38.04 | 14.76 | 56.38 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| 802.11n HT20 CH 44 5220MHz | | 10440 | 45.24 | -28.76 | 74 | 50.25 | 39.79 | 12.03 | 56.83 | 100 | 0 | P | H |
| | | 15660 | 42.17 | -31.83 | 74 | 45.84 | 37.85 | 14.79 | 56.31 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 10440 | 47.01 | -26.99 | 74 | 52.02 | 39.79 | 12.03 | 56.83 | 100 | 0 | P | V |
| | | 15660 | 42.15 | -31.85 | 74 | 45.82 | 37.85 | 14.79 | 56.31 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| 802.11n HT20 CH 48 5240MHz | | 10480 | 46.91 | -27.09 | 74 | 51.79 | 39.87 | 12.06 | 56.81 | 100 | 0 | P | H |
| | | 15720 | 40.97 | -33.03 | 74 | 44.69 | 37.74 | 14.81 | 56.27 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 10480 | 48.23 | -25.77 | 74 | 53.11 | 39.87 | 12.06 | 56.81 | 100 | 0 | P | V |
| | | 15720 | 42.07 | -31.93 | 74 | 45.79 | 37.74 | 14.81 | 56.27 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. | | | | | | | | | | | | |
| | 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|----------------------------|---|-------------------|------------------|-------------------|-----------------------|---------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-------------------|--------------|
| 802.11n HT40 CH 38 5190MHz | | 5144.04 | 55.17 | -18.83 | 74 | 47.82 | 31.98 | 7.94 | 32.57 | 218 | 175 | P | H |
| | | 5150 | 45.63 | -8.37 | 54 | 38.28 | 31.98 | 7.94 | 32.57 | 218 | 175 | A | H |
| | * | 5190 | 103.53 | - | - | 96.17 | 32.02 | 7.91 | 32.57 | 218 | 175 | P | H |
| | * | 5190 | 98.03 | - | - | 90.67 | 32.02 | 7.91 | 32.57 | 218 | 175 | A | H |
| | | 5350.56 | 48.84 | -25.16 | 74 | 40.96 | 32.22 | 8.23 | 32.57 | 218 | 175 | P | H |
| | | 5352.72 | 40.68 | -13.32 | 54 | 32.8 | 32.22 | 8.23 | 32.57 | 218 | 175 | A | H |
| | | 5146.12 | 57.69 | -16.31 | 74 | 50.34 | 31.98 | 7.94 | 32.57 | 190 | 171 | P | V |
| | | 5149.5 | 49.34 | -4.66 | 54 | 41.99 | 31.98 | 7.94 | 32.57 | 190 | 171 | A | V |
| | * | 5190 | 106.03 | - | - | 98.67 | 32.02 | 7.91 | 32.57 | 190 | 171 | P | V |
| | * | 5190 | 100.9 | - | - | 93.54 | 32.02 | 7.91 | 32.57 | 190 | 171 | A | V |
| | | 5444.4 | 47.74 | -26.26 | 74 | 39.7 | 32.32 | 8.29 | 32.57 | 190 | 171 | P | V |
| | | 5354.64 | 41.26 | -12.74 | 54 | 33.38 | 32.22 | 8.23 | 32.57 | 190 | 171 | A | V |
| 802.11n HT40 CH 46 5230MHz | | 5149.5 | 54.28 | -19.72 | 74 | 46.93 | 31.98 | 7.94 | 32.57 | 188 | 179 | P | H |
| | | 5148.46 | 45.67 | -8.33 | 54 | 38.32 | 31.98 | 7.94 | 32.57 | 188 | 179 | A | H |
| | * | 5230 | 107.08 | - | - | 99.56 | 32.08 | 8.01 | 32.57 | 188 | 179 | P | H |
| | * | 5230 | 103.92 | - | - | 96.4 | 32.08 | 8.01 | 32.57 | 188 | 179 | A | H |
| | | 5357.76 | 53.01 | -20.99 | 74 | 45.13 | 32.22 | 8.23 | 32.57 | 188 | 179 | P | H |
| | | 5350.56 | 45.1 | -8.9 | 54 | 37.22 | 32.22 | 8.23 | 32.57 | 188 | 179 | A | H |
| | | 5148.72 | 58.03 | -15.97 | 74 | 50.68 | 31.98 | 7.94 | 32.57 | 218 | 185 | P | V |
| | | 5149.24 | 50.04 | -3.96 | 54 | 42.69 | 31.98 | 7.94 | 32.57 | 218 | 185 | A | V |
| | * | 5230 | 111.75 | - | - | 104.23 | 32.08 | 8.01 | 32.57 | 218 | 185 | P | V |
| | * | 5230 | 104.91 | - | - | 97.39 | 32.08 | 8.01 | 32.57 | 218 | 185 | A | V |
| | 5362.08 | 53.13 | -20.87 | 74 | 45.17 | 32.24 | 8.29 | 32.57 | 218 | 185 | P | V | |
| | 5351.28 | 45.87 | -8.13 | 54 | 37.99 | 32.22 | 8.23 | 32.57 | 218 | 185 | A | V | |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|----------------------------|---|-------------------|------------------|-------------------|-----------------------|-------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-----------------|------------|
| 802.11n HT40 CH 38 5190MHz | | 10380 | 45.36 | -28.64 | 74 | 50.54 | 39.71 | 11.96 | 56.85 | 100 | 0 | P | H |
| | | 15570 | 42.05 | -31.95 | 74 | 45.65 | 37.99 | 14.77 | 56.36 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 10380 | 47.38 | -26.62 | 74 | 52.56 | 39.71 | 11.96 | 56.85 | 100 | 0 | P | V |
| | | 15570 | 41.69 | -32.31 | 74 | 45.29 | 37.99 | 14.77 | 56.36 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11n HT40 CH 46 5230MHz | | 10460 | 47.49 | -26.51 | 74 | 52.46 | 39.82 | 12.03 | 56.82 | 100 | 0 | P | H |
| | | 15690 | 41.69 | -32.31 | 74 | 45.38 | 37.8 | 14.8 | 56.29 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 10460 | 46.94 | -27.06 | 74 | 51.91 | 39.82 | 12.03 | 56.82 | 100 | 0 | P | V |
| | | 15690 | 42.35 | -31.65 | 74 | 46.04 | 37.8 | 14.8 | 56.29 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|------------------------------|---|-------------------|------------------|-------------------|-----------------------|-------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-----------------|------------|
| 802.11ac VHT80 CH 42 5210MHz | | 5065.78 | 54.98 | -19.02 | 74 | 47.68 | 31.88 | 7.99 | 32.57 | 225 | 179 | P | H |
| | | 5056.16 | 45.16 | -8.84 | 54 | 37.86 | 31.88 | 7.99 | 32.57 | 225 | 179 | A | H |
| | * | 5210 | 101.13 | - | - | 93.63 | 32.06 | 8.01 | 32.57 | 225 | 179 | P | H |
| | * | 5210 | 96.49 | - | - | 88.99 | 32.06 | 8.01 | 32.57 | 225 | 179 | A | H |
| | | 5353.68 | 51.68 | -22.32 | 74 | 43.8 | 32.22 | 8.23 | 32.57 | 225 | 179 | P | H |
| | | 5351.04 | 44.95 | -9.05 | 54 | 37.07 | 32.22 | 8.23 | 32.57 | 225 | 179 | A | H |
| | | 5150 | 58.31 | -15.69 | 74 | 50.96 | 31.98 | 7.94 | 32.57 | 193 | 180 | P | V |
| | | 5141.7 | 49.27 | -4.73 | 54 | 41.92 | 31.98 | 7.94 | 32.57 | 193 | 180 | A | V |
| | * | 5210 | 99.85 | - | - | 92.35 | 32.06 | 8.01 | 32.57 | 193 | 180 | P | V |
| | * | 5210 | 95.69 | - | - | 88.19 | 32.06 | 8.01 | 32.57 | 193 | 180 | A | V |
| | | 5351.52 | 54 | -20 | 74 | 46.12 | 32.22 | 8.23 | 32.57 | 193 | 180 | P | V |
| | 5356.8 | 45.58 | -8.42 | 54 | 37.7 | 32.22 | 8.23 | 32.57 | 193 | 180 | A | V | |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) | |
|------------------------------|---|-------------------|------------------|-------------------|-----------------------|-------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-----------------|------------|---|
| 802.11ac VHT80 CH 42 5210MHz | | 10420 | 46.18 | -27.82 | 74 | 51.24 | 39.77 | 12 | 56.83 | 100 | 0 | P | H | |
| | | 15630 | 42.09 | -31.91 | 74 | 45.75 | 37.88 | 14.78 | 56.32 | 100 | 0 | P | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | H | |
| | | | 10420 | 45.73 | -28.27 | 74 | 50.79 | 39.77 | 12 | 56.83 | 100 | 0 | P | V |
| | | | 15630 | 42.87 | -31.13 | 74 | 46.53 | 37.88 | 14.78 | 56.32 | 100 | 0 | P | V |
| | | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | | |



Worst case with AC Adapter

Emission below 1GHz

WIFI 802.11a (LF @ 3m)

| WIFI Ant. | Note | Frequency | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol. | |
|---------------|--|-----------|------------|------------|------------|------------|----------------|------------|---------------|---------|-----------|-----------|---------|---|
| 1+2 | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) | |
| 802.11a LF | | 30 | 23.65 | -16.35 | 40 | 29.72 | 26.1 | 0.65 | 32.82 | - | - | P | H | |
| | | 81.84 | 17.62 | -22.38 | 40 | 35.35 | 14.02 | 0.93 | 32.68 | - | - | P | H | |
| | | 125.04 | 20.25 | -23.25 | 43.5 | 33.68 | 17.9 | 1.33 | 32.66 | - | - | P | H | |
| | | 433.7 | 26.93 | -19.07 | 46 | 34.7 | 22.94 | 2.16 | 32.87 | - | - | P | H | |
| | | 615.7 | 26.85 | -19.15 | 46 | 31.59 | 25.66 | 2.62 | 33.02 | - | - | P | H | |
| | | 936.3 | 31.59 | -14.41 | 46 | 30.57 | 29.64 | 3.29 | 31.91 | 100 | 57 | P | H | |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | 31.08 | 25.98 | -14.02 | 40 | 32.61 | 25.54 | 0.65 | 32.82 | - | - | P | V |
| | | | 81.57 | 27.02 | -12.98 | 40 | 44.76 | 14.02 | 0.93 | 32.69 | 100 | 68 | P | V |
| | | | 96.69 | 26.31 | -17.19 | 43.5 | 41.8 | 16.01 | 1.14 | 32.64 | - | - | P | V |
| | | | 433.7 | 25 | -21 | 46 | 32.77 | 22.94 | 2.16 | 32.87 | - | - | P | V |
| | | | 722.1 | 27.35 | -18.65 | 46 | 30.66 | 26.84 | 2.82 | 32.97 | - | - | P | V |
| | | 944 | 31.51 | -14.49 | 46 | 30.2 | 29.85 | 3.29 | 31.83 | - | - | P | V | |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| Remark | 1. No other spurious found. 2. All results are PASS against 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 | Peak or Average |
| H/V | Horizontal or Vertical |



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

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Peak | Pol. |
|---------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 1+2 | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) |
| 802.11b | | 2390 | 55.45 | -18.55 | 74 | 54.51 | 32.22 | 4.58 | 35.86 | 103 | 308 | P | H |
| CH 01 | | | | | | | | | | | | | |
| 2412MHz | | 2390 | 43.54 | -10.46 | 54 | 42.6 | 32.22 | 4.58 | 35.86 | 103 | 308 | A | H |

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

For Peak Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
- 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”.



<Non-TXBF Modes with PoE Adapter>

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m)

| WIFI Ant. | Note | Frequency | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol. | |
|-----------------------------|---|-----------|------------|------------|------------|------------|----------------|------------|---------------|---------|-----------|-----------|---------|---|
| 1+2 | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) | |
| 802.11a CH 36 5180MHz | | 5141.9 | 57.23 | -16.77 | 74 | 49.88 | 31.98 | 7.94 | 32.57 | 255 | 201 | P | H | |
| | | 5149.7 | 50.3 | -3.7 | 54 | 42.95 | 31.98 | 7.94 | 32.57 | 255 | 201 | A | H | |
| | * | 5178 | 110.79 | - | - | 103.43 | 32.02 | 7.91 | 32.57 | 255 | 201 | P | H | |
| | * | 5178 | 104.97 | - | - | 97.61 | 32.02 | 7.91 | 32.57 | 255 | 201 | A | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | H | |
| | | | 5149.85 | 63.03 | -10.97 | 74 | 55.68 | 31.98 | 7.94 | 32.57 | 185 | 172 | P | V |
| | | | 5150 | 53.36 | -0.64 | 54 | 46.01 | 31.98 | 7.94 | 32.57 | 185 | 172 | A | V |
| | * | | 5181 | 114.03 | - | - | 106.67 | 32.02 | 7.91 | 32.57 | 185 | 172 | P | V |
| | * | | 5181 | 107.74 | - | - | 100.38 | 32.02 | 7.91 | 32.57 | 185 | 172 | A | V |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | V | | |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | | |



Band 1 5150~5250MHz

WIFI 802.11a (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) | |
|-----------------------------|---|-------------------|------------------|-------------------|-----------------------|-------------------|-------------------------|-------------------|----------------------|----------------|-------------------|-----------------|------------|---|
| 802.11a CH 36 5180MHz | | 10360 | 43.56 | -30.44 | 74 | 55.02 | 39.69 | 11.96 | 63.11 | 100 | 0 | P | H | |
| | | 15540 | 41.86 | -32.14 | 74 | 49.25 | 38.04 | 14.76 | 60.19 | 100 | 0 | P | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | H | |
| | | | 10360 | 46.24 | -27.76 | 74 | 57.7 | 39.69 | 11.96 | 63.11 | 100 | 0 | P | V |
| | | | 15540 | 42.09 | -31.91 | 74 | 49.48 | 38.04 | 14.76 | 60.19 | 100 | 0 | P | V |
| | | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | | |



Emission below 1GHz

WIFI 802.11a (LF @ 3m)

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Peak | Pol. | |
|---------------|--|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|---|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | | |
| 1+2 | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) | |
| 802.11a LF | | 73.74 | 33.94 | -6.06 | 40 | 52.65 | 13.07 | 0.93 | 32.71 | - | - | P | H | |
| | | 81.57 | 34.15 | -5.85 | 40 | 51.89 | 14.02 | 0.93 | 32.69 | 100 | 0 | P | H | |
| | | 197.94 | 32.22 | -11.28 | 43.5 | 47.55 | 15.92 | 1.48 | 32.73 | - | - | P | H | |
| | | 374.9 | 30.3 | -15.7 | 46 | 39.17 | 21.81 | 2.13 | 32.81 | - | - | P | H | |
| | | 624.8 | 31.01 | -14.99 | 46 | 35.66 | 25.75 | 2.62 | 33.02 | - | - | P | H | |
| | | 943.3 | 31.39 | -14.61 | 46 | 30.09 | 29.85 | 3.29 | 31.84 | - | - | P | H | |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | | H |
| | | | 31.62 | 35.98 | -4.02 | 40 | 43.17 | 24.98 | 0.65 | 32.82 | - | - | P | V |
| | | | 40.8 | 36.76 | -3.24 | 40 | 48.97 | 19.94 | 0.65 | 32.8 | 103 | 124 | P | V |
| | | | 73.74 | 32.18 | -7.82 | 40 | 50.89 | 13.07 | 0.93 | 32.71 | - | - | P | V |
| | | | 374.9 | 28.29 | -17.71 | 46 | 37.16 | 21.81 | 2.13 | 32.81 | - | - | P | V |
| | | | 624.8 | 32.41 | -13.59 | 46 | 37.06 | 25.75 | 2.62 | 33.02 | - | - | P | V |
| | | | 873.3 | 30.76 | -15.24 | 46 | 31.36 | 28.7 | 3.16 | 32.46 | - | - | P | V |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| | | | | | | | | | | | | | V | |
| Remark | 1. No other spurious found. 2. All results are PASS against 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 | Peak or Average |
| H/V | Horizontal or Vertical |



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

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Peak | Pol. |
|---------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 1+2 | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) |
| 802.11b | | 2390 | 55.45 | -18.55 | 74 | 54.51 | 32.22 | 4.58 | 35.86 | 103 | 308 | P | H |
| CH 01 | | | | | | | | | | | | | |
| 2412MHz | | 2390 | 43.54 | -10.46 | 54 | 42.6 | 32.22 | 4.58 | 35.86 | 103 | 308 | A | H |

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

For Peak Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

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



Appendix C. Radiated Spurious Emission

| | | | |
|-----------------|---|---------------------|---------|
| Test Engineer : | Tsung Lee/Karl Hou/Wilson Wu/Stan Hsieh | Temperature : | 23~25°C |
| | | Relative Humidity : | 42~47% |

Note symbol

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

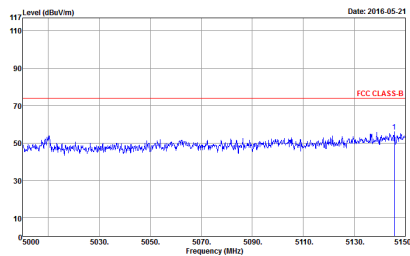
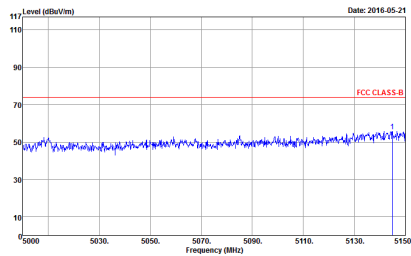
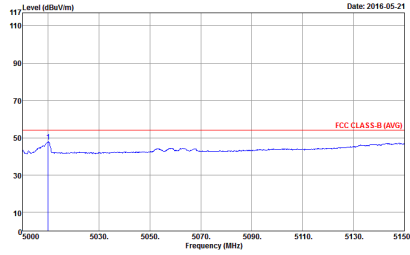
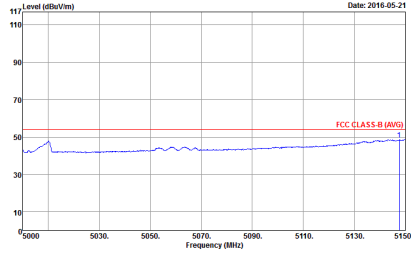


< Non-TXBF Modes with AC Adapter >

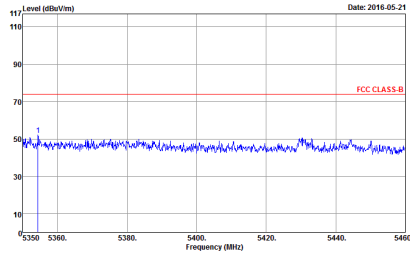
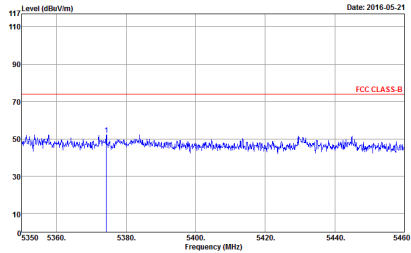
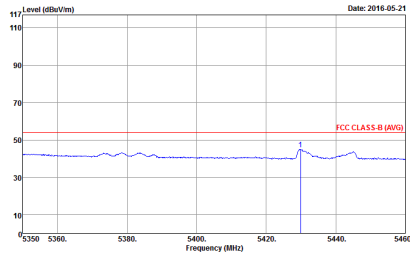
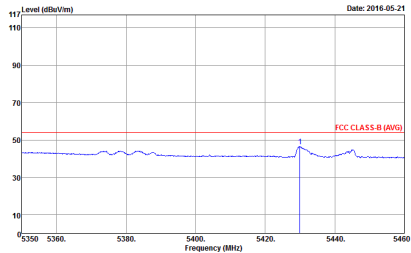
Band 1 - 5150~5250MHz
WIFI 802.11a (Band Edge @ 3m)

| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|-------------|--|--|
| ANT | 802.11a CH36 5180MHz | |
| 1+2 | Horizontal | Vertical |
| Peak | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p> |

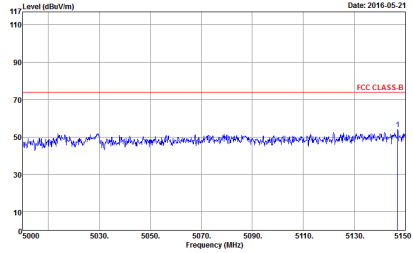
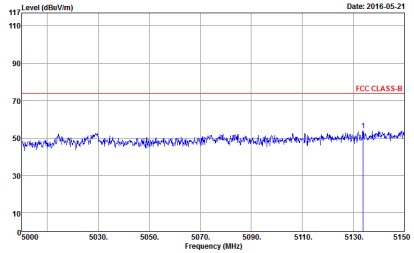
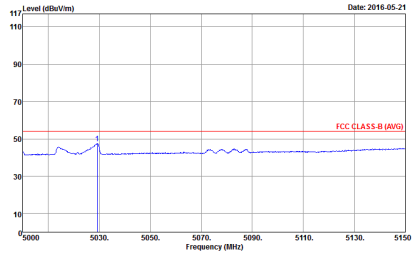
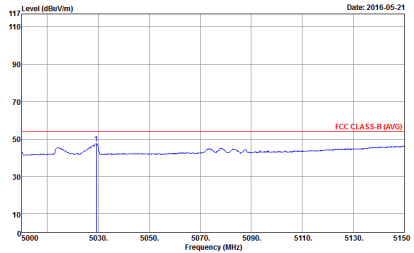


| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|---|
| ANT | 802.11a CH44 5220MHz - L | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Date: 2016-05-21</p> <p>Site : 03CH10-1Y Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Date: 2016-05-21</p> <p>Site : 03CH10-1Y Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Date: 2016-05-21</p> <p>Site : 03CH10-1Y Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p> |  <p>Date: 2016-05-21</p> <p>Site : 03CH10-1Y Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p> |

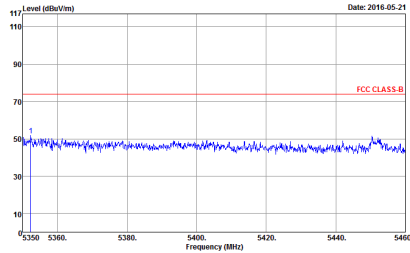
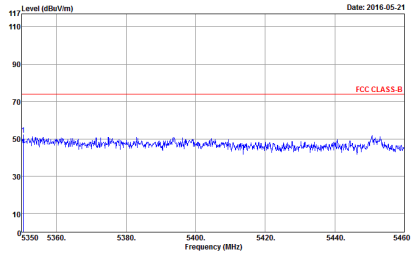
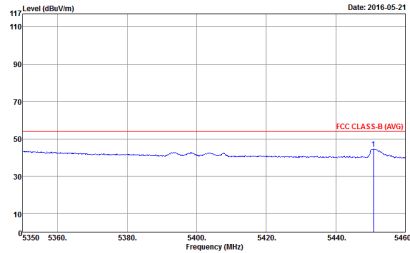
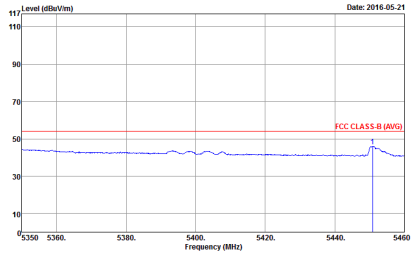


| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11a CH44 5220MHz - R | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Site : 03CH10-1Y Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-1Y Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-1Y Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-1Y Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p> |



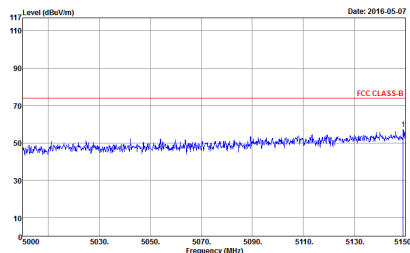
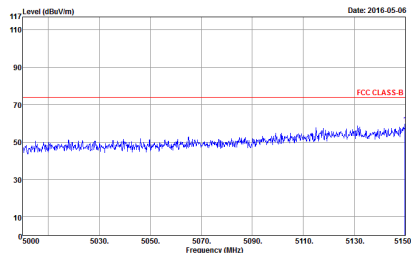
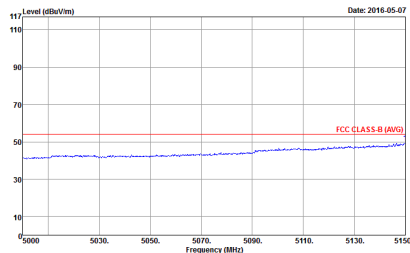
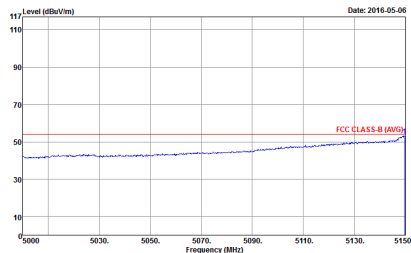
| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11a CH48 5240MHz - L | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p> |



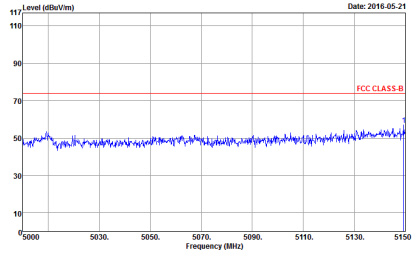
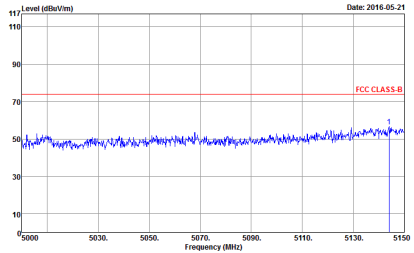
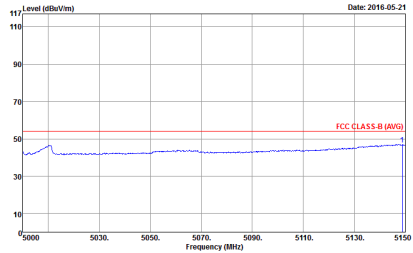
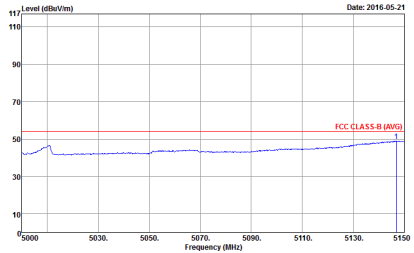
| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11a CH48 5240MHz - R | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p> |



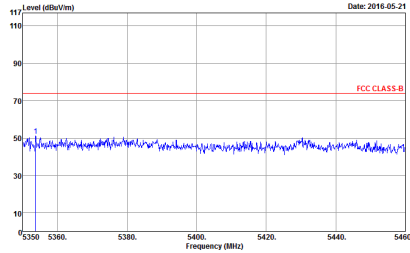
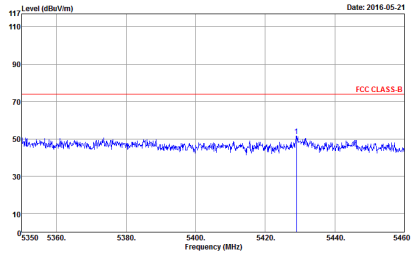
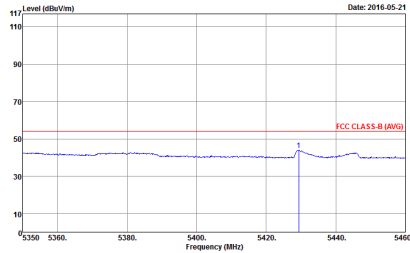
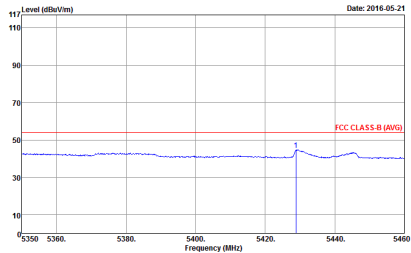
**Band 1 5150~5250MHz
WIFI 802.11n HT20 (Band Edge @ 3m)**

| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|-------------|---|--|
| ANT | 802.11n HT20 CH36 5180MHz | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |

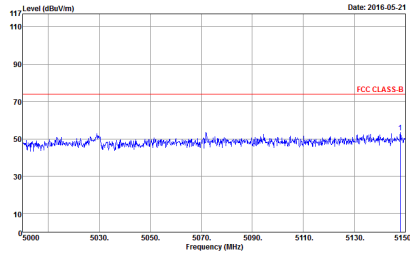
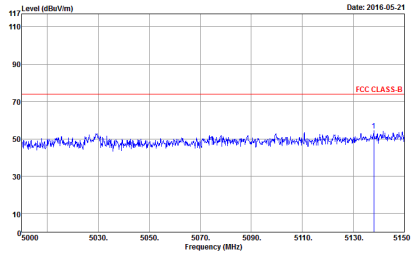
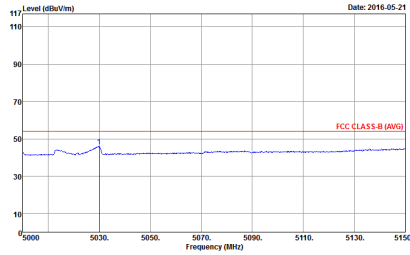
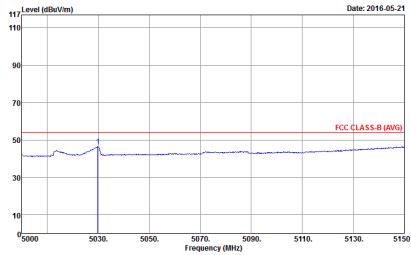


| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11n HT20 CH44 5220MHz - L | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |

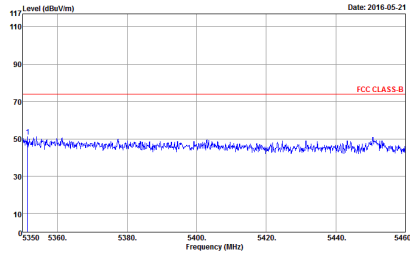
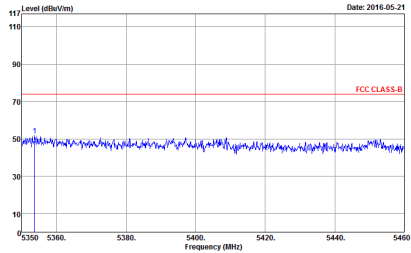
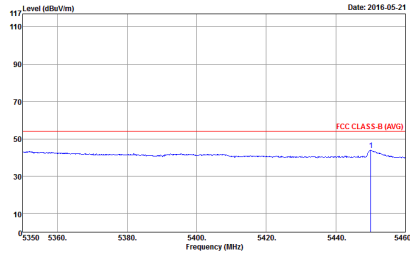
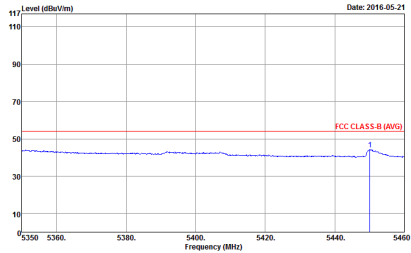


| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11n HT20 CH44 5220MHz - R | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Level (dBuV/m) vs Frequency (MHz) for Horizontal. The plot shows a noisy signal around 50 dBuV/m with a red line at 70 dBuV/m labeled 'FCC CLASS-B'. A small peak is visible at approximately 5420 MHz.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Level (dBuV/m) vs Frequency (MHz) for Vertical. The plot shows a noisy signal around 50 dBuV/m with a red line at 70 dBuV/m labeled 'FCC CLASS-B'. A small peak is visible at approximately 5420 MHz.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Level (dBuV/m) vs Frequency (MHz) for Horizontal (Average). The plot shows a noisy signal around 45 dBuV/m with a red line at 55 dBuV/m labeled 'FCC CLASS-B (AVG)'. A small peak is visible at approximately 5420 MHz.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |  <p>Level (dBuV/m) vs Frequency (MHz) for Vertical (Average). The plot shows a noisy signal around 45 dBuV/m with a red line at 55 dBuV/m labeled 'FCC CLASS-B (AVG)'. A small peak is visible at approximately 5420 MHz.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |



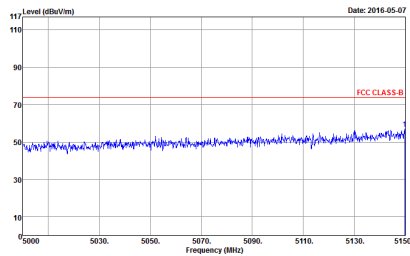
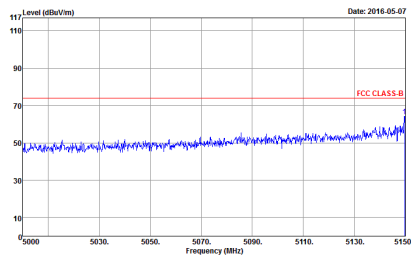
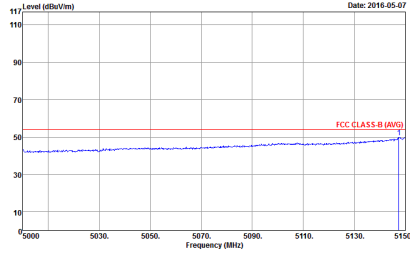
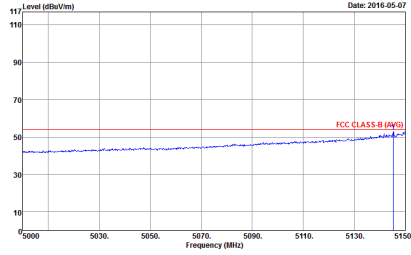
| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11n HT20 CH48 5240MHz - L | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |



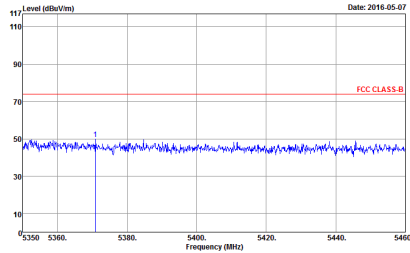
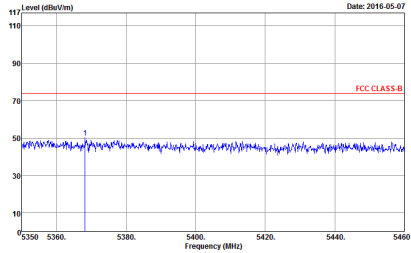
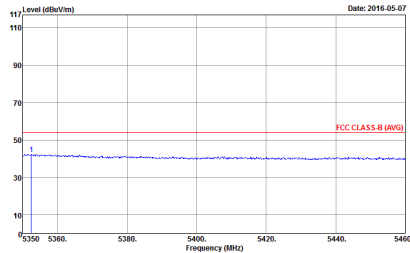
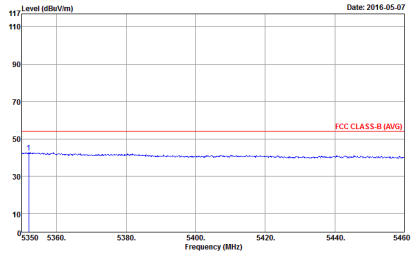
| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|--------------------|--|---|
| ANT | 802.11n HT20 CH48 5240MHz - R | |
| 1+2 | Horizontal | Vertical |
| <p>Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| <p>Avg.</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |



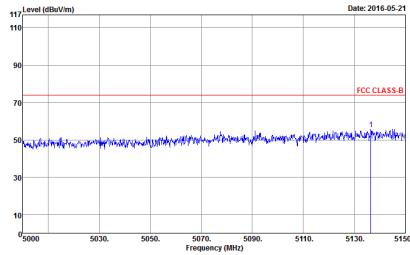
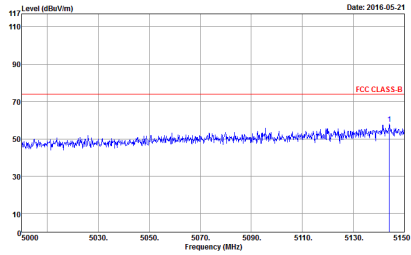
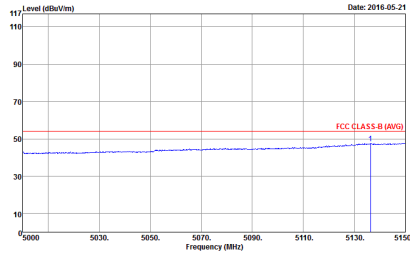
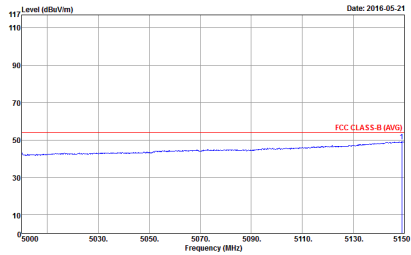
**Band 1 5150~5250MHz
WIFI 802.11n HT40 (Band Edge @ 3m)**

| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|-------------|---|--|
| ANT | 802.11n HT40 CH38 5190MHz - L | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |

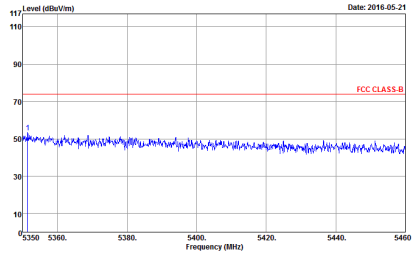
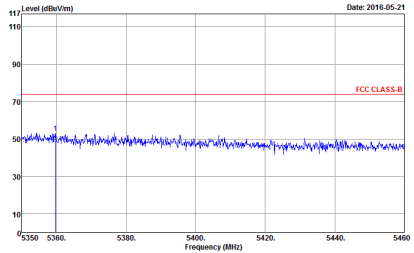
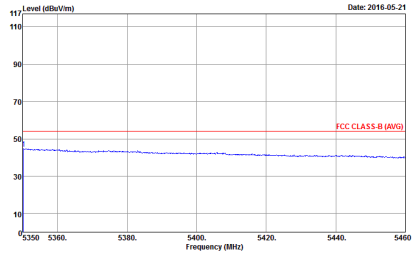
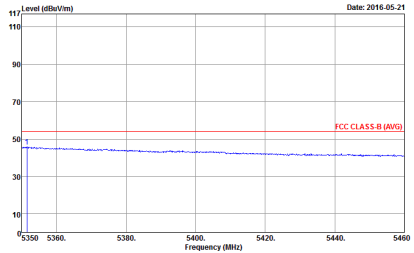


| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11n HT40 CH38 5190MHz - R | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |



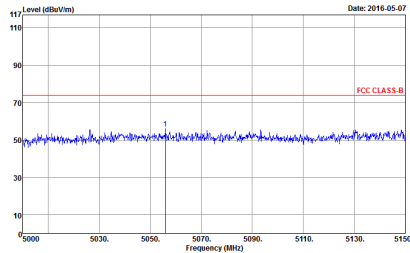
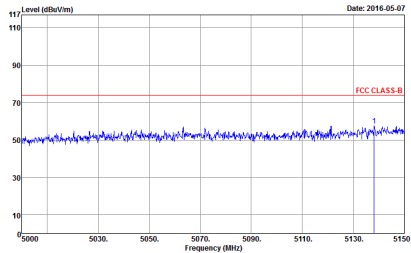
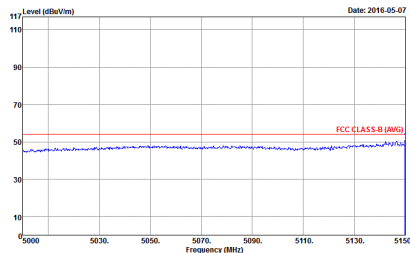
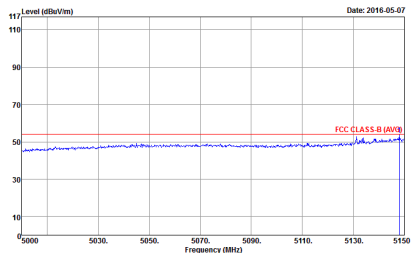
| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11n HT40 CH46 5230MHz - L | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |



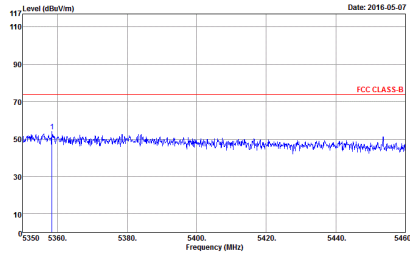
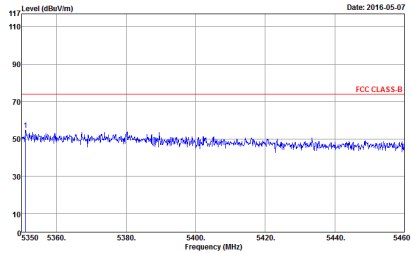
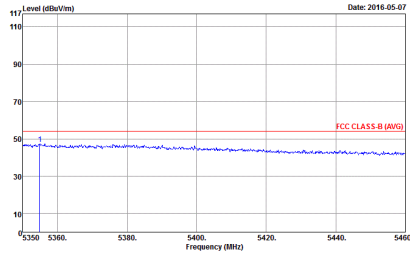
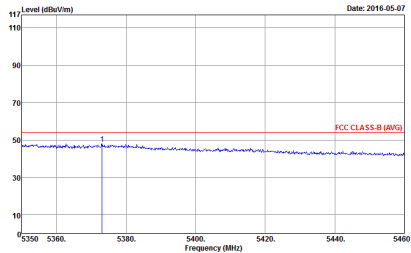
| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11n HT40 CH46 5230MHz - R | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Level (dBuV/m) vs Frequency (MHz) for Horizontal polarization. The plot shows a noisy signal around 50 dBuV/m with a red line indicating the FCC CLASS-B limit at approximately 75 dBuV/m. The x-axis ranges from 5350 to 5460 MHz, and the y-axis ranges from 10 to 117 dBuV/m.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Level (dBuV/m) vs Frequency (MHz) for Vertical polarization. The plot shows a noisy signal around 50 dBuV/m with a red line indicating the FCC CLASS-B limit at approximately 75 dBuV/m. The x-axis ranges from 5350 to 5460 MHz, and the y-axis ranges from 10 to 117 dBuV/m.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Level (dBuV/m) vs Frequency (MHz) for Horizontal polarization (Average). The plot shows a smooth signal around 45 dBuV/m with a red line indicating the FCC CLASS-B (AVG) limit at approximately 55 dBuV/m. The x-axis ranges from 5350 to 5460 MHz, and the y-axis ranges from 10 to 117 dBuV/m.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |  <p>Level (dBuV/m) vs Frequency (MHz) for Vertical polarization (Average). The plot shows a smooth signal around 45 dBuV/m with a red line indicating the FCC CLASS-B (AVG) limit at approximately 55 dBuV/m. The x-axis ranges from 5350 to 5460 MHz, and the y-axis ranges from 10 to 117 dBuV/m.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> |



Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11ac VHT80 CH42 5210MHz - L | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak</p> |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|---|
| ANT | 802.11ac VHT80 CH42 5210MHz - R | |
| 1+2 | Horizontal | Vertical |
| Peak |  <p>Date: 2016-05-07</p> <p>Site : 03CH10-1Y Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Date: 2016-05-07</p> <p>Site : 03CH10-1Y Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Date: 2016-05-07</p> <p>Site : 03CH10-1Y Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak</p> |  <p>Date: 2016-05-07</p> <p>Site : 03CH10-1Y Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak</p> |



Band 1 - 5150~5250MHz
WIFI 802.11a (Harmonic @ 3m)

| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|----------------------------|---|---|
| ANT | 802.11a CH36 5180MHz | |
| 1+2 | Horizontal | Vertical |
| Peak Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|--------------|---|---|
| ANT | 802.11a CH44 5220MHz | |
| 1+2 | Horizontal | Vertical |
| Peak Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



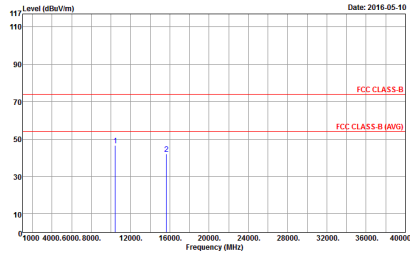
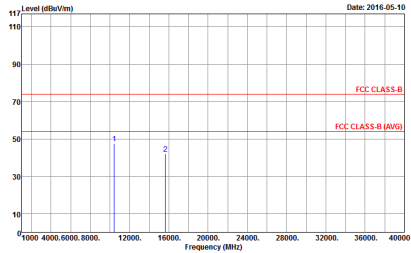
| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|--------------|---|---|
| ANT | 802.11a CH48 5240MHz | |
| 1+2 | Horizontal | Vertical |
| Peak Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



**Band 1 5150~5250MHz
WIFI 802.11n HT20 (Harmonic @ 3m)**

| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|------------------------------------|---|---|
| ANT | 802.11n HT20 CH36 5180MHz | |
| 1+2 | Horizontal | Vertical |
| <p>Peak Avg.</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



| | | |
|----------------------|---|--|
| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
| ANT | 802.11n HT20 CH44 5220MHz | |
| 1+2 | Horizontal | Vertical |
| Peak Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



| | | |
|--------------|---|---|
| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
| ANT | 802.11n HT20 CH48 5240MHz | |
| 1+2 | Horizontal | Vertical |
| Peak Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



Band 1 5150~5250MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

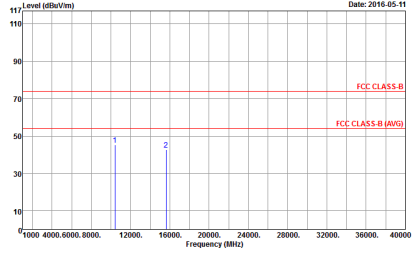
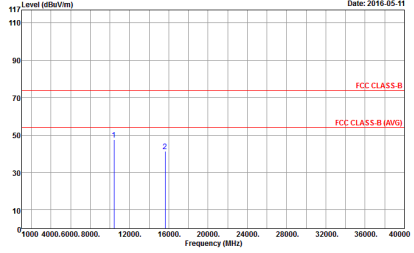
Table with 2 columns: Horizontal and Vertical. Each column contains a graph showing Level (dBuV/m) vs Frequency (MHz) with FCC CLASS-B and FCC CLASS-B (AVG) limits. Includes site and condition details for both orientations.



| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|--------------|---|---|
| ANT | 802.11n HT40 CH46 5230MHz | |
| 1+2 | Horizontal | Vertical |
| Peak Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> | <p>Site : 03CH10-VY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |

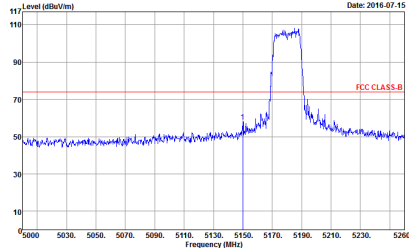
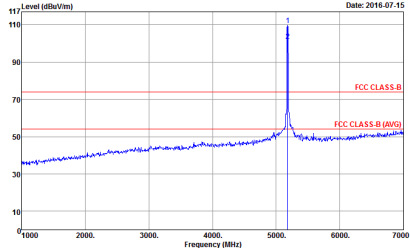
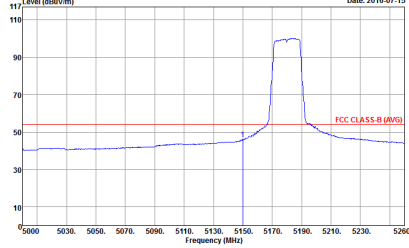


**Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)**

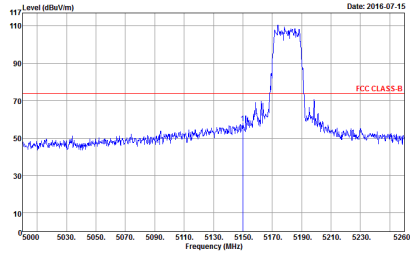
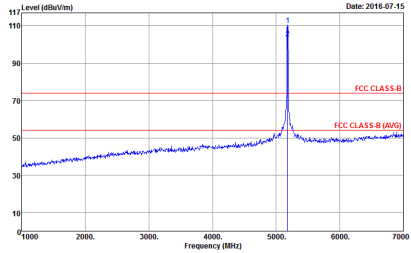
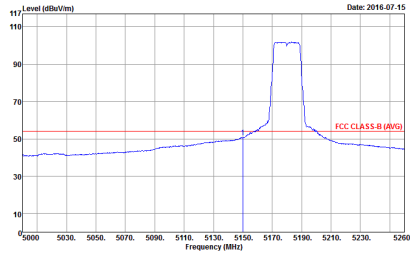
| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|------------------------------------|--|---|
| ANT | 802.11ac VHT80 CH42 5210MHz | |
| 1+2 | Horizontal | Vertical |
| <p>Peak Avg.</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



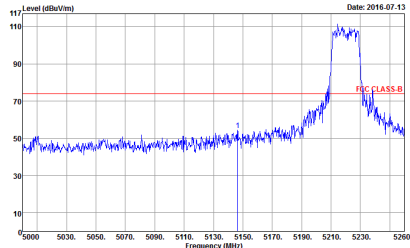
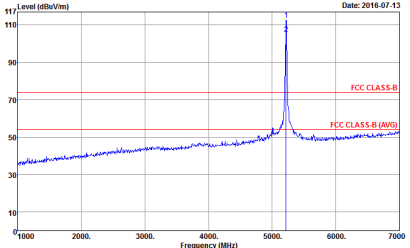
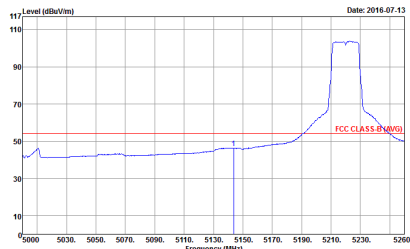
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Band 1 5150~5250MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|---|
| ANT | 802.11n HT20 CH36 5180MHz | |
| 1 | Horizontal | Fundamental |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|--|
| ANT | 802.11n HT20 CH36 5180MHz | |
| 1 | Vertical | Fundamental |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|--|
| ANT | 802.11n HT20 CH44 5220MHz - L | |
| 1 | Horizontal | Fundamental |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|-------------|
| ANT | 802.11n HT20 CH44 5220MHz - R | |
| 1 | Horizontal | Fundamental |
| Peak | <p>Date: 2016-07-13</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | |
| Avg. | <p>Date: 2016-07-13</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|---|
| ANT | 802.11n HT20 CH44 5220MHz - L | |
| 1 | Vertical | Fundamental |
| Peak | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|-------------|
| ANT | 802.11n HT20 CH44 5220MHz - R | |
| 1 | Vertical | Fundamental |
| Peak | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | |
| Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |

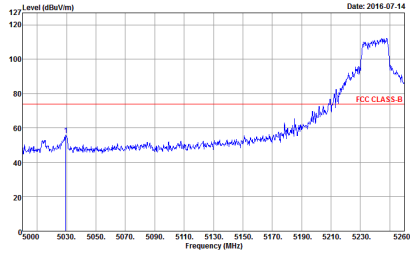
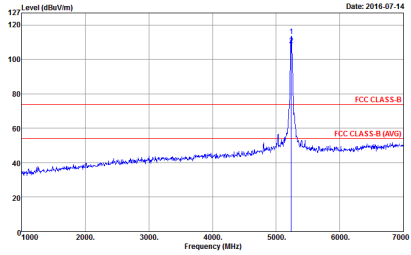
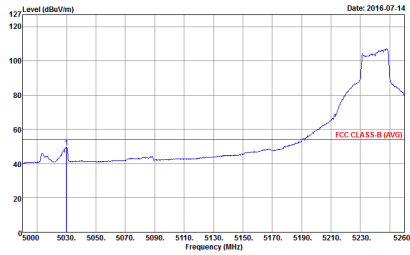


| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|---|
| ANT | 802.11n HT20 CH48 5240MHz - L | |
| 1 | Horizontal | Fundamental |
| Peak | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|-------------|
| ANT | 802.11n HT20 CH48 5240MHz - R | |
| 1 | Horizontal | Fundamental |
| Peak | <p>Level (dBu/m) vs Frequency (MHz) - Horizontal</p> <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | |
| Avg. | <p>Level (dBu/m) vs Frequency (MHz) - Horizontal</p> <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



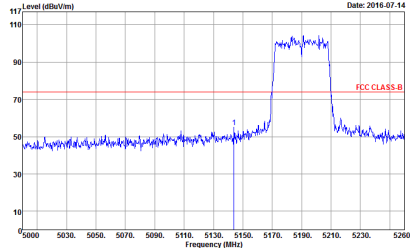
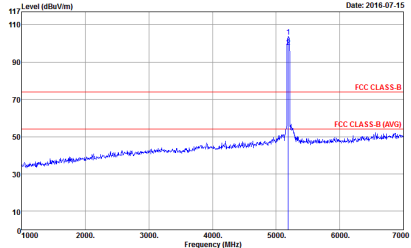
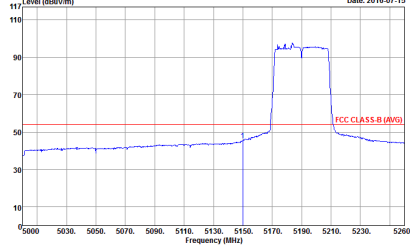
| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|--|
| ANT | 802.11n HT20 CH48 5240MHz - L | |
| 1 | Vertical | Fundamental |
| Peak |  <p>Level (dBuV/m) vs Frequency (MHz) plot for Peak Vertical. The plot shows a rising signal level from approximately 50 dBuV/m at 5150 MHz to about 110 dBuV/m at 5240 MHz. A red horizontal line indicates the FCC CLASS-B limit at approximately 75 dBuV/m. The date is 2016-07-14.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Level (dBuV/m) vs Frequency (MHz) plot for Peak Fundamental. The plot shows a sharp peak at approximately 5240 MHz reaching about 110 dBuV/m. Two red horizontal lines indicate FCC CLASS-B limits: one at approximately 75 dBuV/m and another at approximately 55 dBuV/m labeled 'FCC CLASS-B (AVG)'. The date is 2016-07-14.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Level (dBuV/m) vs Frequency (MHz) plot for Avg Vertical. The plot shows a rising signal level from approximately 45 dBuV/m at 5150 MHz to about 105 dBuV/m at 5240 MHz. A red horizontal line indicates the FCC CLASS-B (AVG) limit at approximately 55 dBuV/m. The date is 2016-07-14.</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|-------------|
| ANT | 802.11n HT20 CH48 5240MHz - R | |
| 1 | Vertical | Fundamental |
| Peak | <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | |
| Avg. | <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



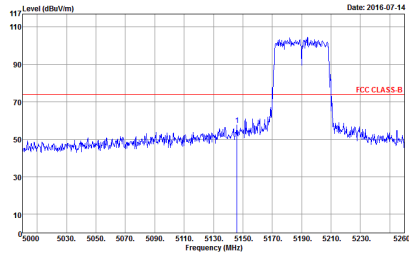
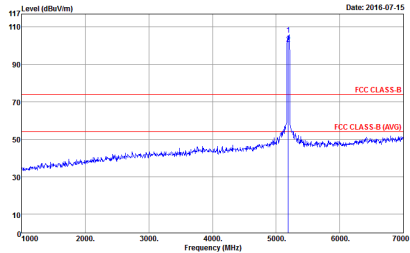
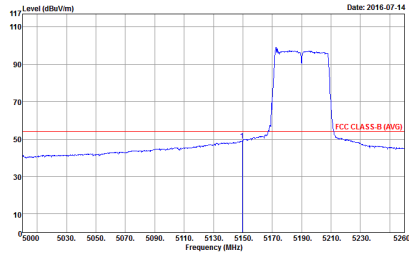
**Band 1 5150~5250MHz
WIFI 802.11n HT40 (Band Edge @ 3m)**

| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|---|
| ANT | 802.11n HT40 CH38 5190MHz - L | |
| 1 | Horizontal | Fundamental |
| Peak |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> |
| Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|--------------------|--|-------------|
| ANT | 802.11n HT40 CH38 5190MHz - R | |
| 1 | Horizontal | Fundamental |
| <p>Peak</p> | <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | |
| <p>Avg.</p> | <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |

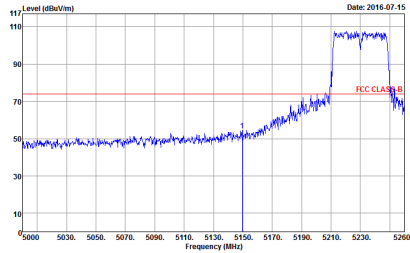
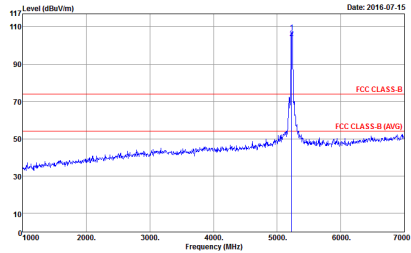
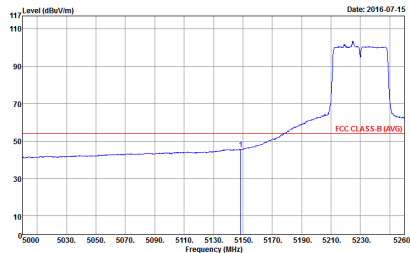


| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|--|
| ANT | 802.11n HT40 CH38 5190MHz - L | |
| 1 | Vertical | Fundamental |
| Peak |  <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|-------------|
| ANT | 802.11n HT40 CH38 5190MHz - R | |
| 1 | Vertical | Fundamental |
| Peak | <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | |
| Avg. | <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|--|
| ANT | 802.11n HT40 CH46 5230MHz - L | |
| 1 | Horizontal | Fundamental |
| Peak |  <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |  <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. |  <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|-------------|
| ANT | 802.11n HT40 CH46 5230MHz - R | |
| 1 | Horizontal | Fundamental |
| Peak | <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | |
| Avg. | <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|---|
| ANT | 802.11n HT40 CH46 5230MHz - L | |
| 1 | Vertical | Fundamental |
| Peak | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|-------------|
| ANT | 802.11n HT40 CH46 5230MHz - R | |
| 1 | Vertical | Fundamental |
| Peak | <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | |
| Avg. | <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

Table with 2 columns: WIFI, ANT and 2 rows: Peak, Avg. Each cell contains a spectral plot and technical details for the test.



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|-------------|
| ANT | 802.11ac VHT80 CH42 5210MHz - R | |
| 1 | Horizontal | Fundamental |
| Peak | <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | |
| Avg. | <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|---|
| ANT | 802.11ac VHT80 CH42 5210MHz - L | |
| 1 | Vertical | Fundamental |
| Peak | <p>Date: 2016-07-14</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. | <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



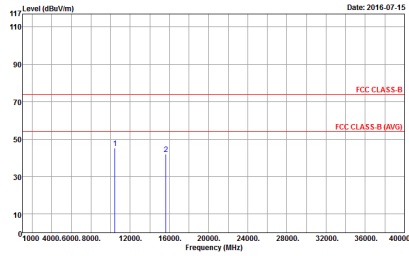
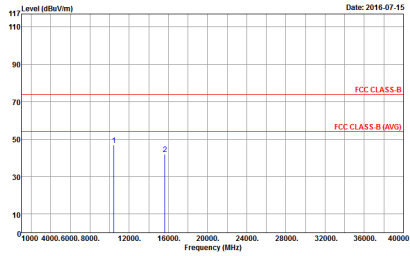
| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|---|-------------|
| ANT | 802.11ac VHT80 CH42 5210MHz - R | |
| 1 | Vertical | Fundamental |
| Peak | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | |
| Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak</p> | |



**Band 1 5150~5250MHz
WIFI 802.11n HT20 (Harmonic @ 3m)**

| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|------------------|---|---|
| ANT | 802.11n HT20 CH36 5180MHz | |
| 1 | Horizontal | Vertical |
| Peak Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



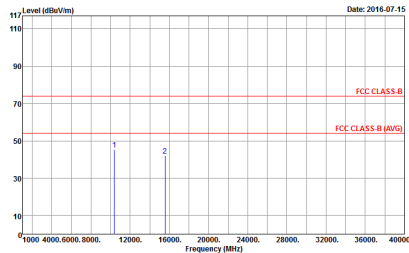
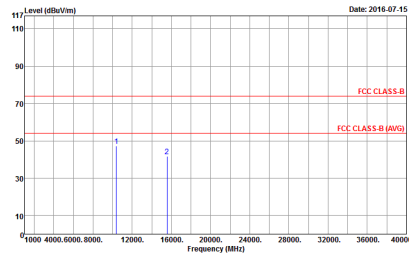
| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|------------------------------------|---|--|
| ANT | 802.11n HT20 CH44 5220MHz | |
| 1 | Horizontal | Vertical |
| <p>Peak Avg.</p> |  <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> |  <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



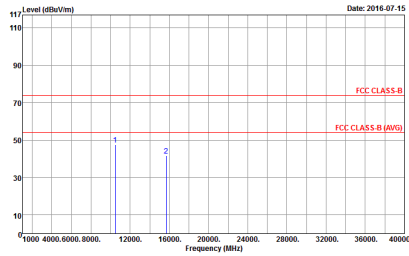
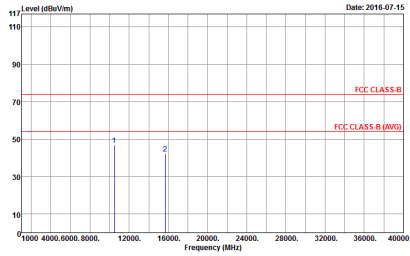
| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|---------------------------------------|---|---|
| ANT | 802.11n HT20 CH48 5240MHz | |
| 1 | Horizontal | Vertical |
| <p>Peak</p> <p>Avg.</p> | <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> | <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



**Band 1 5150~5250MHz
WIFI 802.11n HT40 (Harmonic @ 3m)**

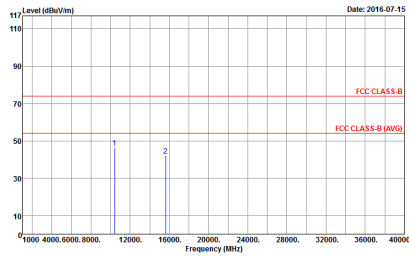
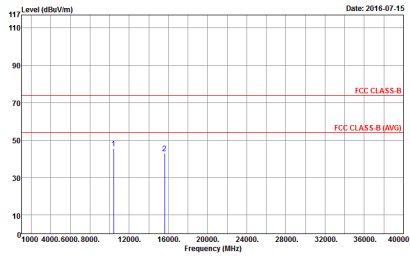
| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|------------------|--|---|
| ANT | 802.11n HT40 CH38 5190MHz | |
| 1 | Horizontal | Vertical |
| Peak Avg. |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|---------------------------------------|---|--|
| ANT | 802.11n HT40 CH46 5230MHz | |
| 1 | Horizontal | Vertical |
| <p>Peak</p> <p>Avg.</p> |  <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> |  <p>Date: 2016-07-15</p> <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



**Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)**

| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|-----------------------------|--|---|
| ANT | 802.11ac VHT80 CH42 5210MHz | |
| 1 | Horizontal | Vertical |
| <p>Peak Avg.</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> |  <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



**Worst case with AC Adapter
Emission below 1GHz
5GHz WIFI 802.11a (LF)**

| WIFI | 5GHz WIFI | |
|--------------|---|---|
| ANT | 802.11a LF | |
| 1+2 | Horizontal | Vertical |
| QP / Peak | <p>Site : 03CH10-HV Condition : FCC CLASS-B 3m BI-LO6 6111D-LF HORIZONTAL Detector : Peak</p> | <p>Site : 03CH10-HV Condition : FCC CLASS-B 3m BI-LO6 6111D-LF VERTICAL Detector : Peak</p> |



< Non-TXBF Modes with PoE Adapter >

Band 1 - 5150~5250MHz
WIFI 802.11a (Band Edge @ 3m)

| WIFI | Band 1 5150~5250MHz Band Edge @ 3m | |
|------|--|--|
| ANT | 802.11a CH36 5180MHz | |
| 1+2 | Horizontal | Vertical |
| Peak | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p> |
| Avg. | <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak</p> |



**Band 1 - 5150~5250MHz
WIFI 802.11a (Harmonic @ 3m)**

| WIFI | Band 1 5150~5250MHz Harmonic @ 3m | |
|------------------------------------|---|---|
| ANT | 802.11a CH36 5180MHz | |
| 1+2 | Horizontal | Vertical |
| <p>Peak Avg.</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak</p> |



Emission below 1GHz
5GHz WIFI 802.11a (LF)

| WIFI | 5GHz WIFI | |
|--------------|---|---|
| ANT | 802.11a LF | |
| 1+2 | Horizontal | Vertical |
| QP / Peak | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m BI-LOG 6111D-LF HORIZONTAL Detector : Peak</p> | <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m BI-LOG 6111D-LF VERTICAL Detector : Peak</p> |



Appendix D. Duty Cycle Plots

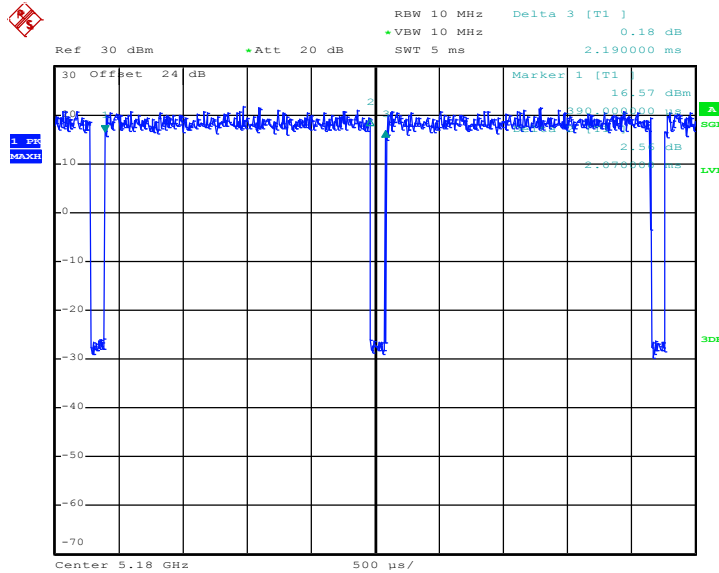
<Non-TXBF Modes>

| Antenna | Band | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting |
|---------|--------------------------------|---------------|-------|----------|-------------|
| 1+2 | 802.11a for Ant. 1 | 94.52 | 2070 | 0.48 | 1kHz |
| 1+2 | 802.11a for Ant. 2 | 94.52 | 2070 | 0.48 | 1kHz |
| 1+2 | 5GHz 802.11n HT20 for Ant. 1 | 90.06 | 978 | 1.02 | 3kHz |
| 1+2 | 5GHz 802.11n HT20 for Ant. 2 | 90.61 | 984 | 1.02 | 3kHz |
| 1+2 | 5GHz 802.11n HT40 for Ant. 1 | 83.22 | 496 | 2.02 | 3kHz |
| 1+2 | 5GHz 802.11n HT40 for Ant. 2 | 83.22 | 496 | 2.02 | 3kHz |
| 1+2 | 5GHz 802.11ac VHT80 for Ant. 1 | 88.89 | 256 | 3.91 | 10kHz |
| 1+2 | 5GHz 802.11ac VHT80 for Ant. 2 | 89.51 | 256 | 3.91 | 10kHz |



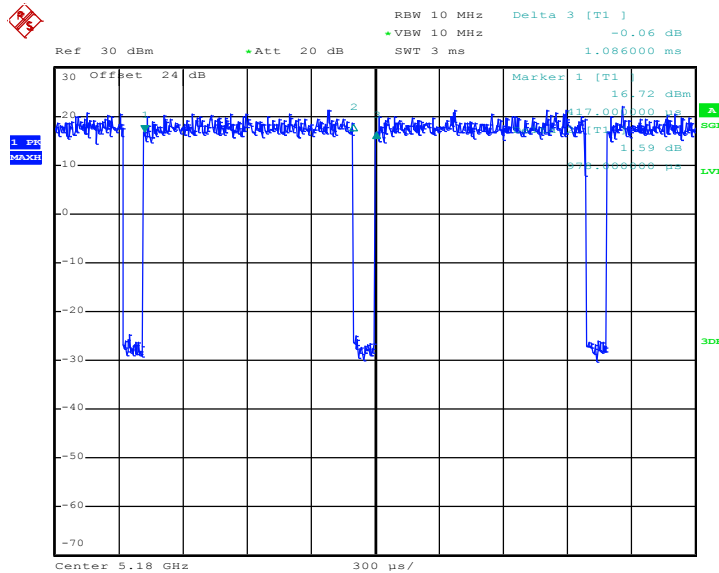
MIMO <Ant. 1+2(1)>

802.11a



Date: 27.APR.2016 18:57:35

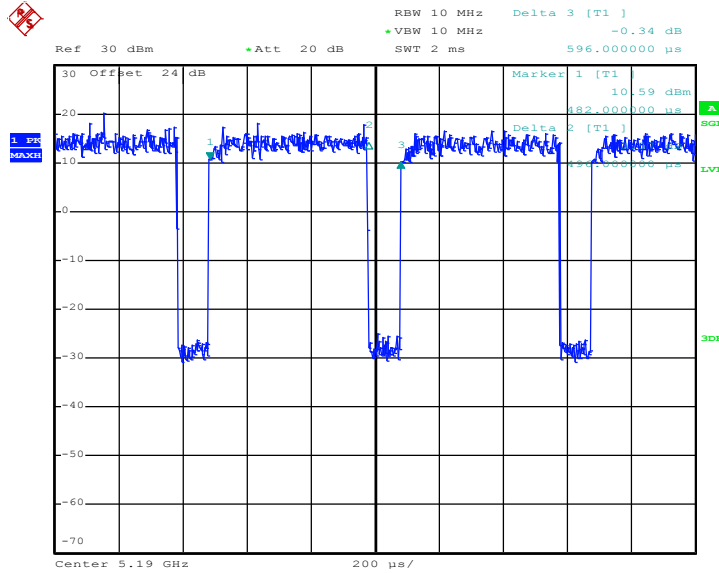
802.11n HT20



Date: 27.APR.2016 19:00:56

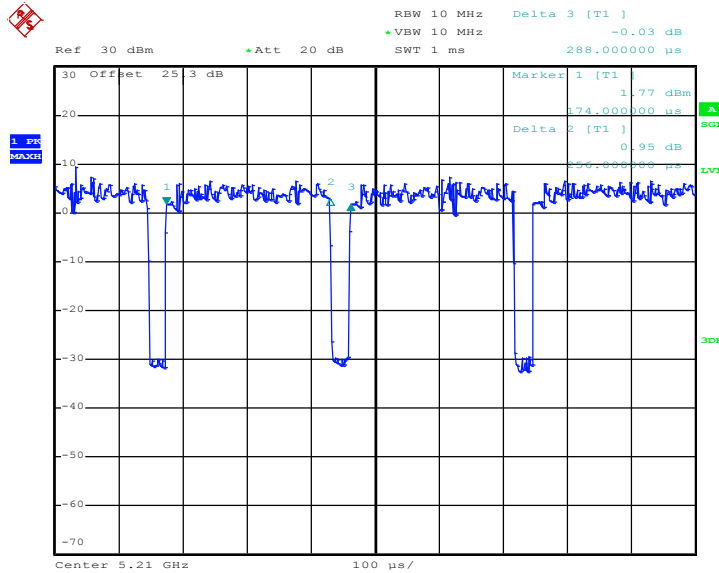


802.11n HT40



Date: 27.APR.2016 19:06:29

802.11ac VHT80

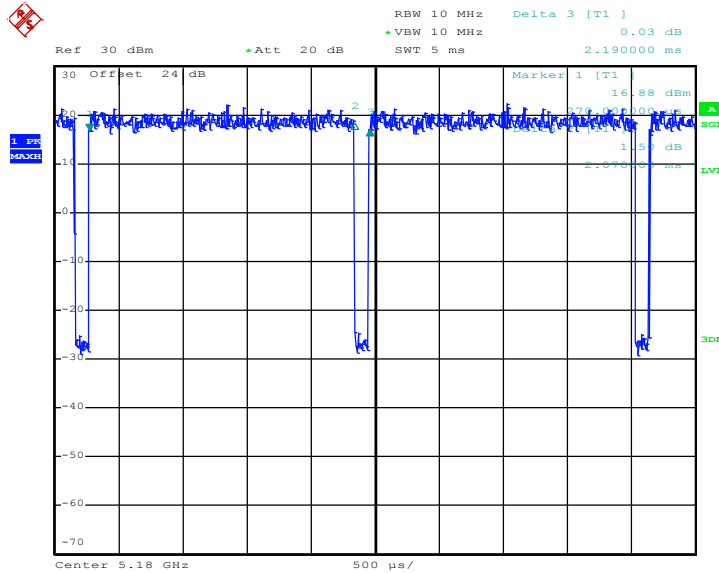


Date: 16.MAY.2016 23:58:13



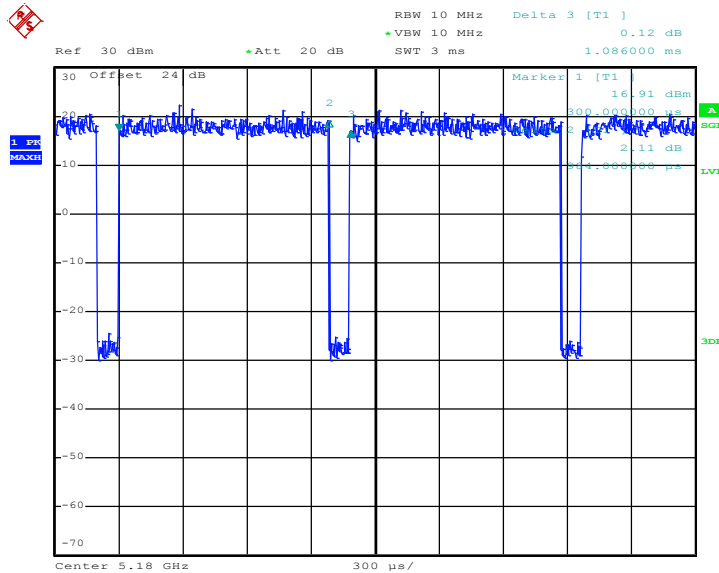
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802.11a



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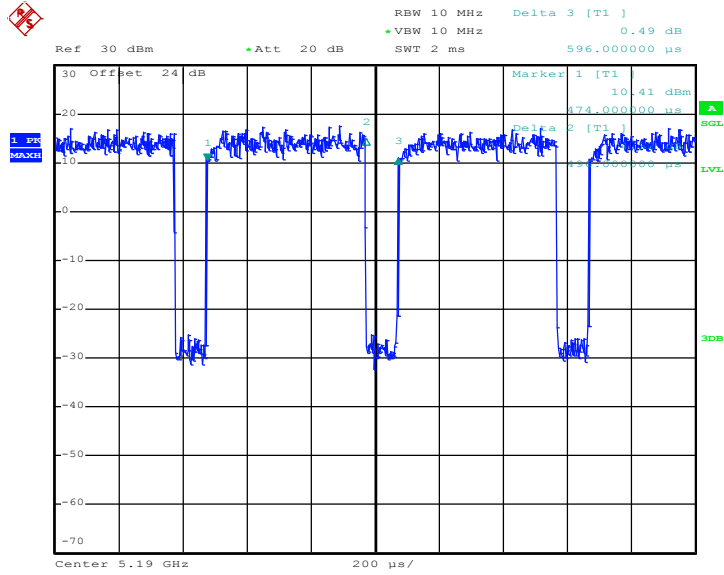
802.11n HT20



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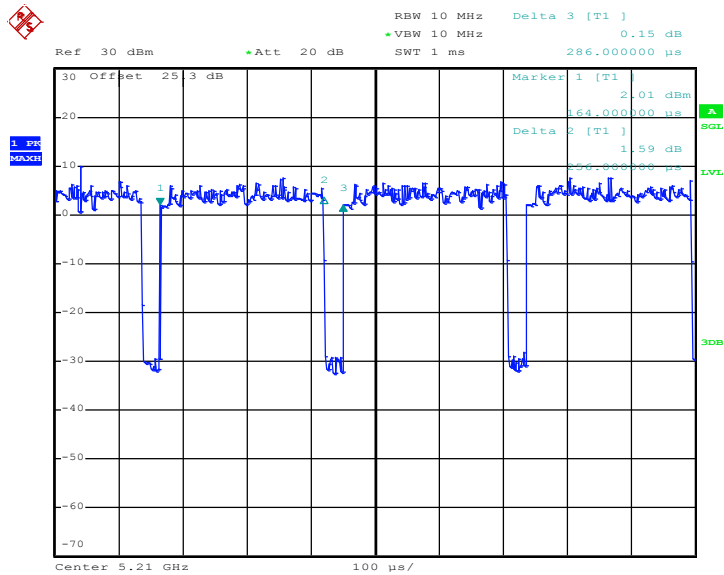


802.11n HT40



Date: 27.APR.2016 19:05:30

802.11ac VHT80



Date: 16.MAY.2016 23:55:57



<TXBF Modes>

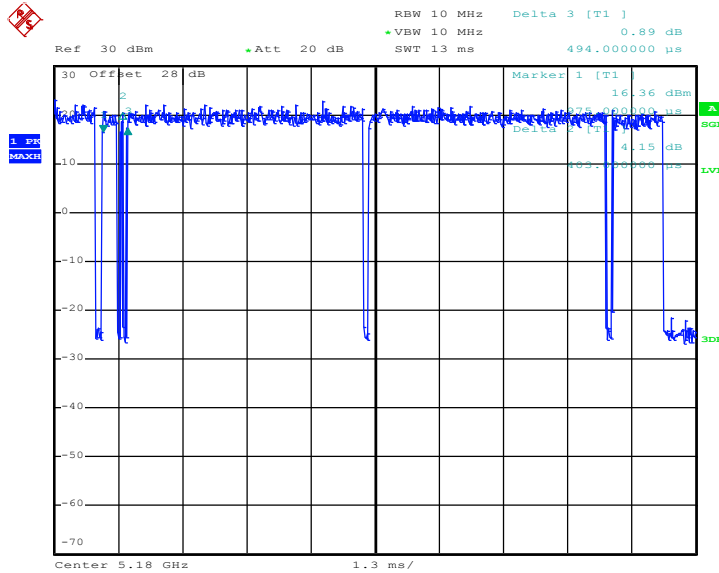
| Antenna | Band | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting |
|----------------|---------------------|----------------------|--------------|-----------------|--------------------|
| 1+2 | 5GHz 802.11n HT20 | 97.87 | 403 | 2.48 | 3kHz |
| 1+2 | 5GHz 802.11n HT40 | 97.29 | 468 | 2.14 | 3kHz |
| 1+2 | 5GHz 802.11ac VHT80 | 97.71 | 870 | 1.15 | 3kHz |

Note *: Duty cycle is not a constant value during the continuous beamforming transmission.



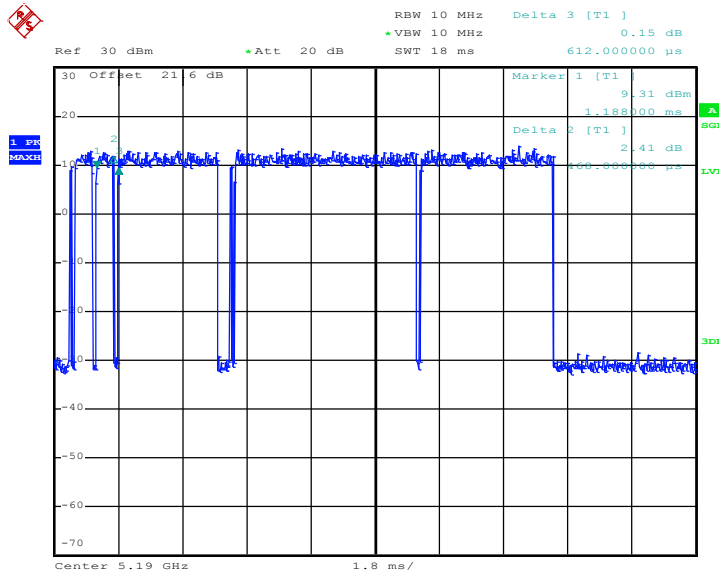
MIMO <Ant. 1+2>

802.11n HT20



Date: 19.JUL.2016 16:15:03

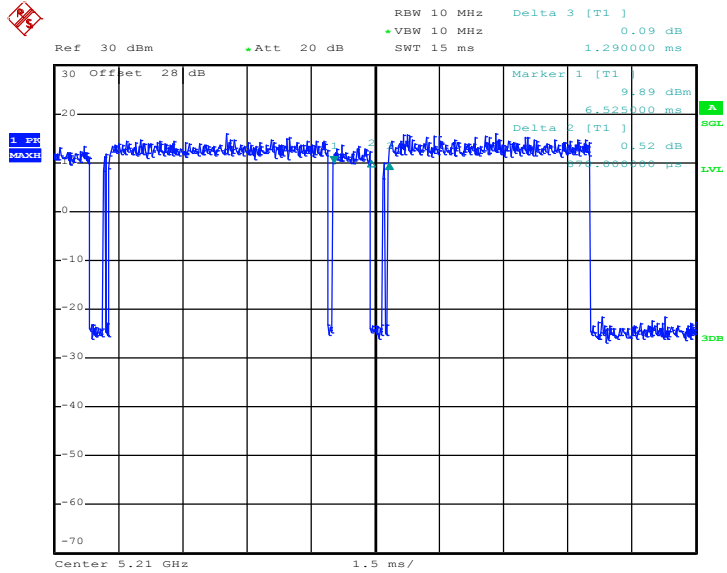
802.11n HT40



Date: 20.JUL.2016 14:36:42



802.11ac VHT80



Date: 19.JUL.2016 16:30:40