FCC RF Test Report

APPLICANT	:	Hewlett Packard Enterprise Company
EQUIPMENT	:	Wireless Access Point
BRAND NAME	:	aruba
MODEL NAME	:	APIN0304, APIN0305
MARKETING NAME	:	APIN0304, APIN0305
FCC ID	:	Q9DAPIN0304305
STANDARD	:	FCC Part 15 Subpart E §15.407
CLASSIFICATION	:	(NII) Unlicensed National Information Infrastructure

The product was received on Jul. 07, 2016 and testing was completed on Sep. 07, 2016. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

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Jones Tsai

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR670709C	Rev. 01	Initial issue of report	Sep. 20, 2016

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	2.1049 15.403(i)	RSS-247 Section 6	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	RSS-247 Section 6	Maximum Conducted Output Power	FCC ≤30 dBm (depend on band) IC RSS-247 Section 6 Limit	Pass	-
3.3	15.407(a)	RSS-247 Section 6	Power Spectral Density	FCC ≤ 17 dBm (depend on band) IC RSS-247 Section 6 Limit	Pass	-
3.4	15.407(b)	RSS-247 Section 6	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 0.4 dB at 5140.960 MHz
3.5	15.207	RSS-Gen 8.8	AC Conducted Emission	15.207(a)	Pass	Under limit 8.98 dB at 0.171 MHz
3.6	15.407(g)	-	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	RSS-247 6.4(2)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	N/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	APIN0304, APIN0305
Marketing Name	APIN0304, APIN0305
FCC ID	Q9DAPIN0304305
S/N	APIN0304: CNBYJSR02G (For RF Conducted) CNBRAAA01L (For Radiation) CNBYJSR00M(For Conduction) APIN0305: CNBYJSR02G (For RF Conducted) CNBRAAA02K (For Radiation) CNBYJSS072 (For Conduction)
EUT supports Radios application	WLAN2.4GHz 802.11b/g/n HT20/HT40/ WLAN5GHz 802.11a/n HT20/HT40/ WLAN5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth v4.0 LE
SW Version	6.5.1.0 build56105
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 Frequency Range	5180 MHz ~ 5240 MHz
Maximum Output Power to Antenna <CDD Modes> APIN0304	**<5180 MHz ~ 5240 MHz>** 802.11a : 23.29 dBm / 0.2133 W
Maximum Output Power to Antenna <Beamforming Modes> APIN0304	**<5180 MHz ~ 5240 MHz >** 802.11n HT20 / ac VHT20: 22.60 dBm / 0.1820 W 802.11n HT40 / ac VHT40: 20.79 dBm / 0.1199 W 802.11ac VHT80: 17.36 dBm / 0.0545 W
Maximum Output Power to Antenna <CDD Modes> APIN0305	**<5180 MHz ~ 5240 MHz>** 802.11a : 23.29 dBm / 0.2133 W
Maximum Output Power to Antenna <Beamforming Modes> APIN0305	**<5180 MHz ~ 5240 MHz >** 802.11n HT20 / ac VHT20: 22.72 dBm / 0.1871 W 802.11n HT40 / ac VHT40: 21.37 dBm / 0.1371 W 802.11ac VHT80: 19.37 dBm / 0.0865 W
99% Occupied Bandwidth <CDD Modes> APIN0304	802.11a : 17.18 MHz
99% Occupied Bandwidth <TXBF Modes> APIN0304	802.11ac VHT20 : 18.13 MHz 802.11ac VHT40 : 36.06 MHz 802.11ac VHT80 : 75.76 MHz
99% Occupied Bandwidth <CDD Modes> APIN0305	802.11a : 17.18 MHz
99% Occupied Bandwidth <TXBF Modes> APIN0305	802.11ac VHT20 : 18.13 MHz 802.11ac VHT40 : 36.06 MHz 802.11ac VHT80 : 75.76 MHz
Antenna Gain APIN0304	<Ant. 1> : with gain 6.00 dBi <Ant. 2> : with gain 6.00 dBi <Ant. 3> : with gain 6.00 dBi
Antenna Gain APIN0305	<Ant. 1> : with gain 2.80 dBi <Ant. 2> : with gain 2.80 dBi <Ant. 3> : with gain 2.80 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Antenna Function Description	<table><tr><td></td><td>Ant.1</td><td>Ant.2</td><td>Ant.3</td></tr><tr><td>802.11a/n/ac MIMO</td><td>V</td><td>V</td><td>V</td></tr></table>

Note:

1. MIMO Ant. 1+2+3 is a calculated result from sum of the power MIMO Ant. 1 MIMO Ant. 2 and MIMO Ant. 3.
2. For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing have assessed only 802.11ac VHT20/ VHT40 by referring to their maximum conducted power.

1.5 Sample List

There are two model names of EUT. Model APIN0305 is designed with built in antennas, and model APIN0304 with three RP-SMA connectors for external antennas. For model APIN0304, it has nine types of antenna as below table:

	type	Description	Gain	Polorization
1	AP-ANT-1W	2.4-2.5GHz/5GHz, 5.0dBi Tri-Band, Omni-Directional Antenna	3.8dBi @2.4GHz; 5.8dB @5.8GHz	Linear vertical
2	AP-ANT-13B	downtilt omni, dual-band	4.4dBi @2.4GHz; 3.3dB @5.8GHz	Linear vertical
3	AP-ANT-19,	Dual Band Omnidirectional	3dBi @2.4GHz; 6dB @5.8GHz	vertical
4	AP-ANT-20W,	2.4- and 5-GHz dual-band omni directional	2dBi @2.4GHz; 2dB @5.8GHz	Linear vertical
5	AP-ANT-16,	Triple Element Downtilt Omni, Dual-Band	3.9dBi @2.4GHz; 4.7dB @5.8GHz	vertical
6	AP-ANT-25A	2.4- and 5-GHz dual polarized sector antenna	5dBi @2.4GHz; 5dB @5.8GHz	slant +/-45°
7	AP-ANT-35A	2.4- and 5-GHz dual polarized sector antenna	5dBi @2.4GHz; 5dB @5.8GHz	slant +/-45°
8	AP-ANT-28	2.4- and 5-GHz dual-polarized sector antenna	7.5dBi @2.4GHz; 7.5dB @5.8GHz	slant +/-45°
9	AP-ANT-38	2.4- and 5-GHz dual-polarized sector antenna	7.5dBi @2.4GHz; 7.5dB @5.8GHz	slant +/-45°

For model APIN0304, we only evaluate testing for the antenna (AP-ANT-19 and AP-ANT-28) with the maximum antenna gain.

The detail test sample list as below table:

Sample	Mode name	Antenna Type
Sample 1	APIN0304	AP-ANT-19 Omnidirectional Antenna
Sample 2	APIN0304	AP-ANT-28 Directional Antenna
Sample 3	APIN0305	Internal Antenna

1.6 Modification of EUT

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

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.			
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
Test Site No.	**Sporton Site No.**			**FCC Registration No.**
	TH01-KS	CO01-KS	03CH03-KS	306251

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	20℃
Extreme Temperature	0℃ and 50℃

Note: The test temperature was between voltage 0℃~50℃ 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, the worst cases were recorded in this report.

2.1 Carrier Frequency and Channel

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

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "#" were 802.11ac VHT80.

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.

MIMO Antenna

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN (5G) Link + Adapter for Sample 1 Mode 2 : Bluetooth Link + WLAN (5G) Link + POE for Sample 2 Mode 3 : **Bluetooth Link + WLAN (5G) Link + Adapter for Sample 3**

Remark:

1. The worst case of conducted emission is mode 3; only the test data of it was reported.
2. For Radiated TCs, the tests were performed with adapter for Sample 1, Sample 2 and Sample 3. Only the worst case verified the POE adapter mode.

Ch. #		Band I : 5180-5240 MHz
		802.11a
L	Low	36
M	Middle	44
H	High	48

Ch. #		Band I : 5180-5240 MHz
		802.11n HT20
L	Low	36
M	Middle	44
H	High	48

Ch. #		Band I : 5180-5240 MHz
		802.11n HT40
L	Low	38
M	Middle	-
H	High	46

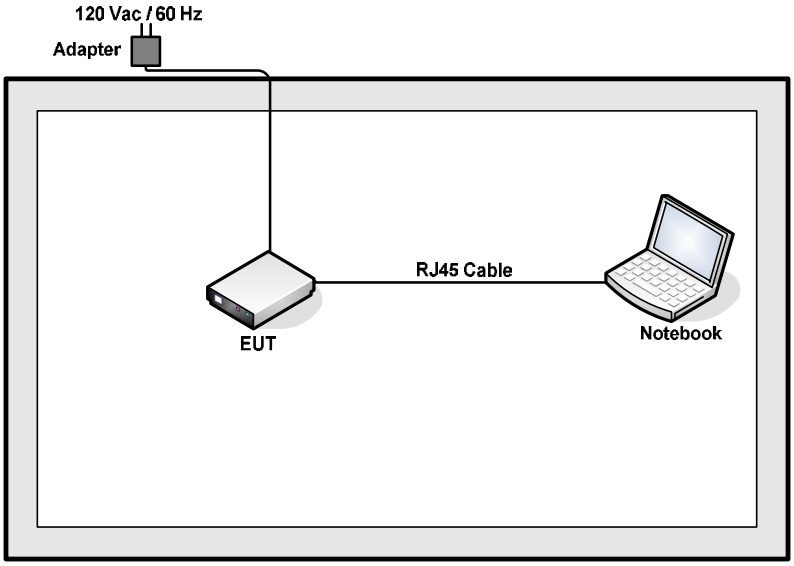
Ch. #		Band I : 5180-5240 MHz
		802.11ac VHT20
L	Low	36
M	Middle	44
H	High	48

Ch. #		Band I : 5180-5240 MHz
		802.11ac VHT40
L	Low	38
M	Middle	-
H	High	46

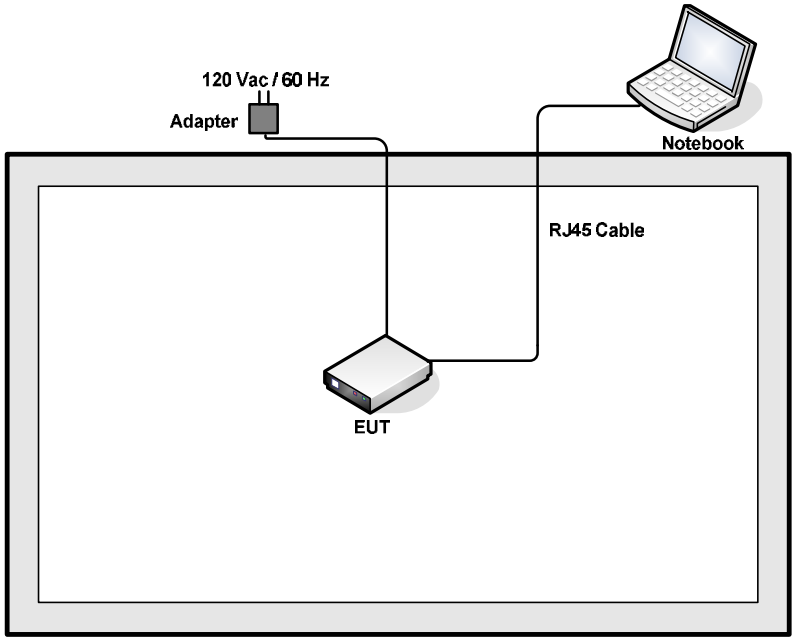
Ch. #		Band I : 5180-5240 MHz
		802.11ac VHT80
L	Low	-
M	Middle	42
H	High	-

2.3 Connection Diagram of Test System

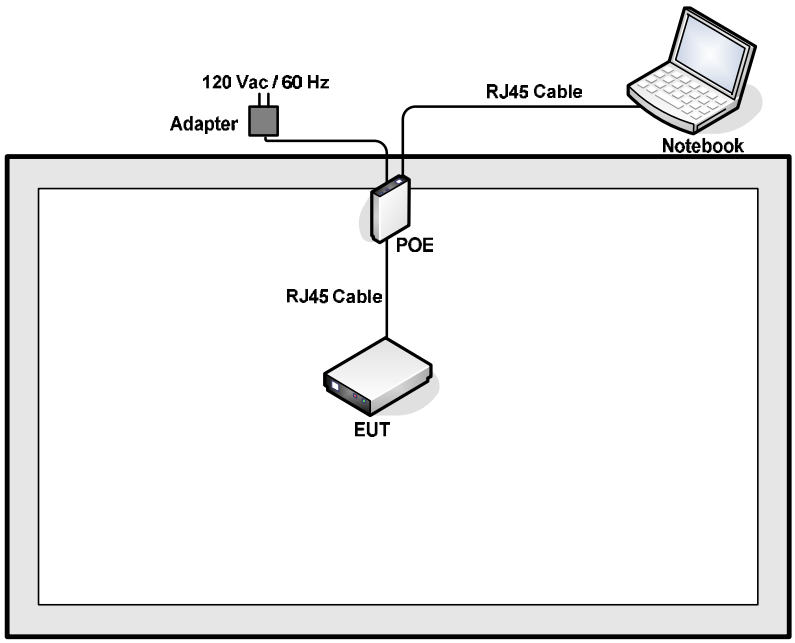
<Conducted Mode>



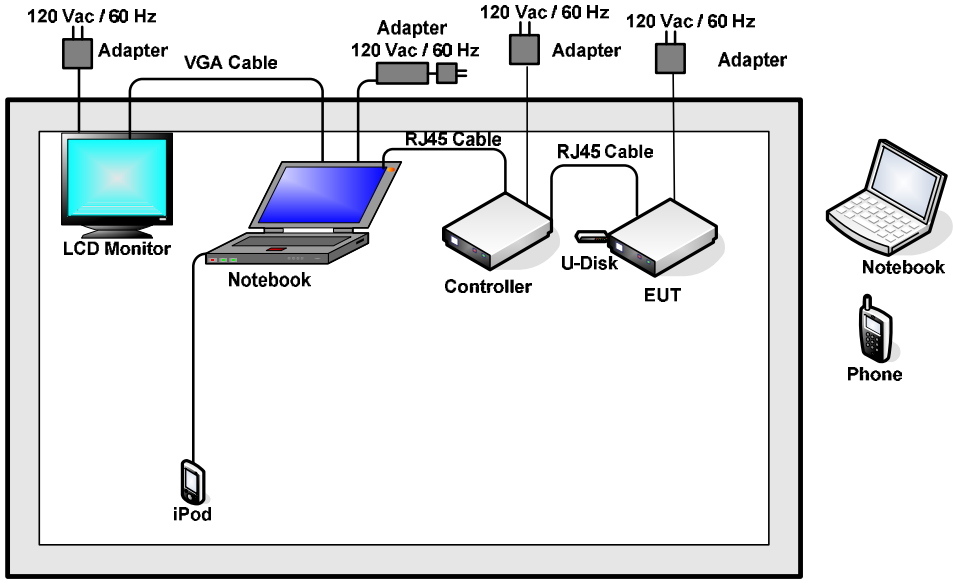
<WLAN Tx Mode with Adapter>



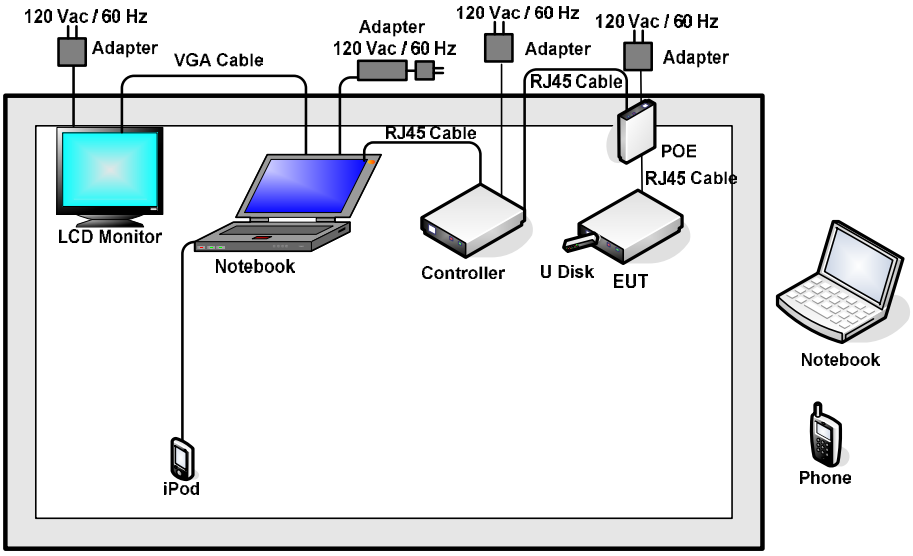
<WLAN Tx Mode with POE Adapter>



<AC Conducted Emission Mode with Adapter>



<AC Conducted Emission Mode with POE Adapter>



2.4 Support Unit used in test configuration and system

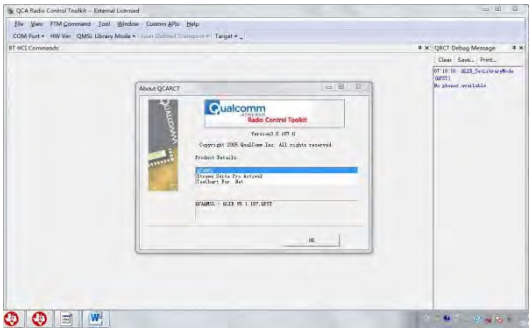
Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Lenovo	E40	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
2.	Notebook	Lenovo	E49	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
3.	POE	powersine	PD-3501G/AC	N/A	N/A	Shielded, 2 m
4.	Android Phone	ZTE	A1	N/A	N/A	N/A
5.	IPod	Apple	A1199	FCC Doc	Shielded, 2 m	N/A
6.	Monitor	Dell	IN1930MWc	FCC Doc	Shielded, 2 m	Unshielded, 1.8 m
7.	U-Disk	SanDisk	SDCZ51-004G	N/A	N/A	N/A
8.	Controller	Aruba	ARCN0103	N/A	N/A	AC I/P: Unshielded cable, 1.8m
9.	VGA Cable	N/A	N/A	N/A	Unshielded,1.5m	N/A
10.	AC Adapter	CUI INC	SDI30-12-U-P209-C1	N/A	N/A	Unshielded cable, 2m
11.	RJ45 Cable	N/A	N/A	N/A	N/A	N/A

2.5 EUT Operation Test Setup

For CCD modes, WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit/receive. EUT was connected to spectrum analyzer and notebook which is installed in QRCT software.

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. EUT was connected to spectrum analyzer and notebook which is installed in QRCT software.

For AC power line conducted emissions, the EUT was set to connect with the Notebook under large package sizes transmission.



Monitor the SW Version of QRCT

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 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.
Offset = RF cable loss.
Following shows an offset computation example with cable loss 7.0 dB.

Offset (dB) = RF cable loss(dB).
= 7.0 (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.

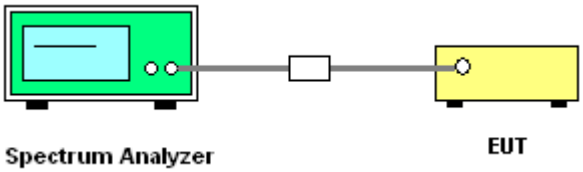
3.1.2 Measuring Instruments

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) ≥ 3 * RBW.
8. Measure and record the results in the test report.

3.1.4 Test Setup

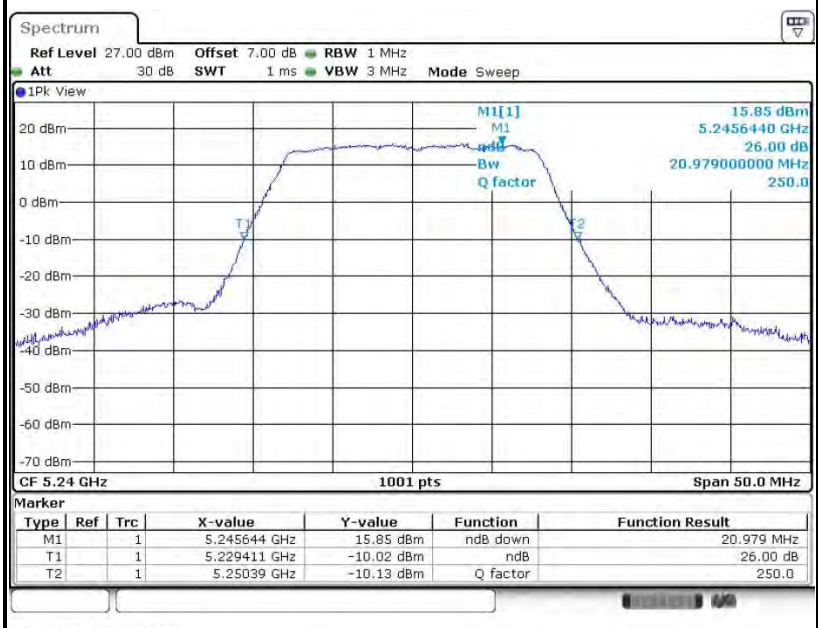


3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

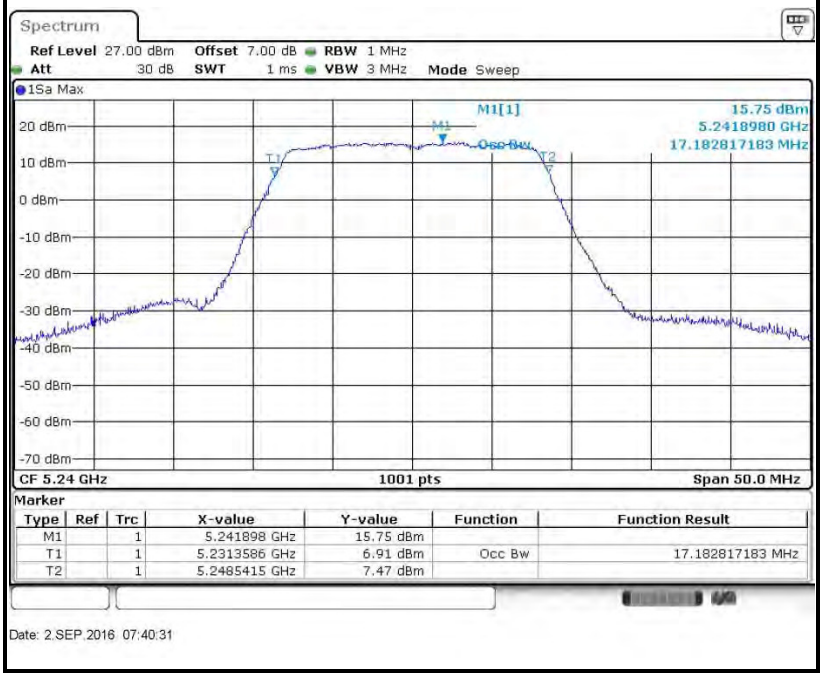
Please refer to Appendix A.

<CDD Mode> APIN0304

Maximum 26dB Bandwidth
MIMO Ant.1+2+3(1) 802.11a 6Mbps CH48



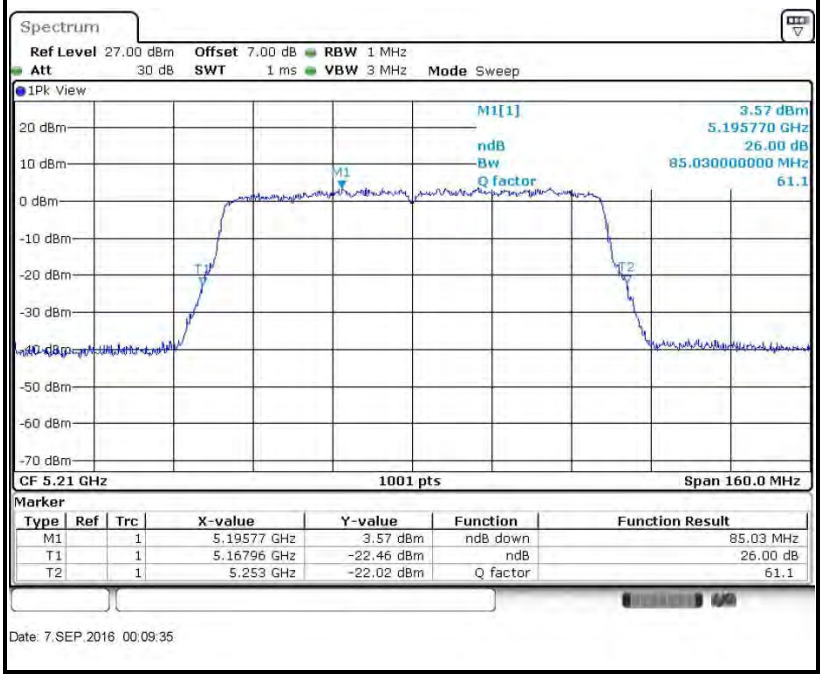
Maximum 99% Occupied Bandwidth
MIMO Ant.1+2+3(1) 802.11a 6Mbps CH48



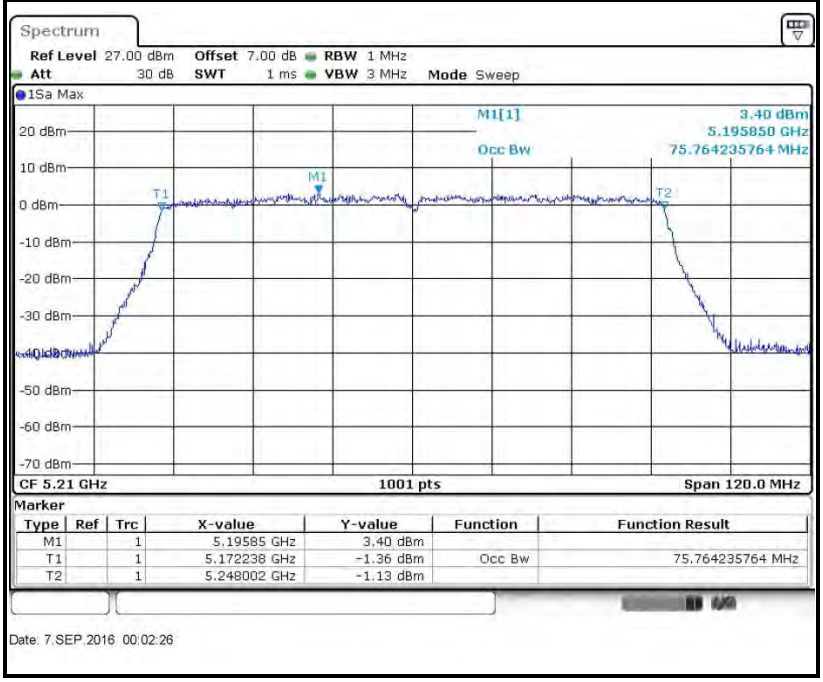
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<TXBF Mode> APIN0304

Maximum 26dB Bandwidth
MIMO Ant.1+2+3(3) 802.11ac VHT80 MCS0 CH42



Maximum 99% Occupied Bandwidth
MIMO Ant.1+2+3(1) 802.11ac VHT80 MCS0 CH42

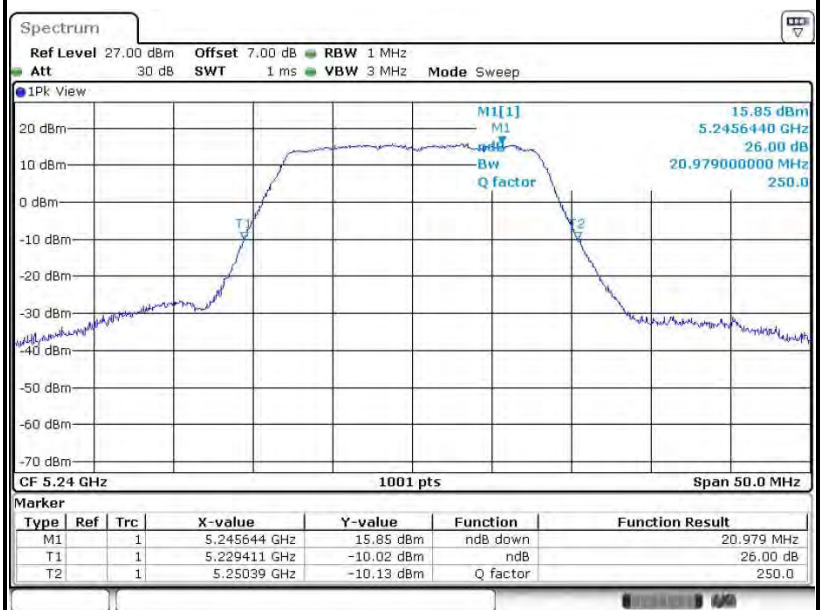


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<CDD Mode> APIN0305

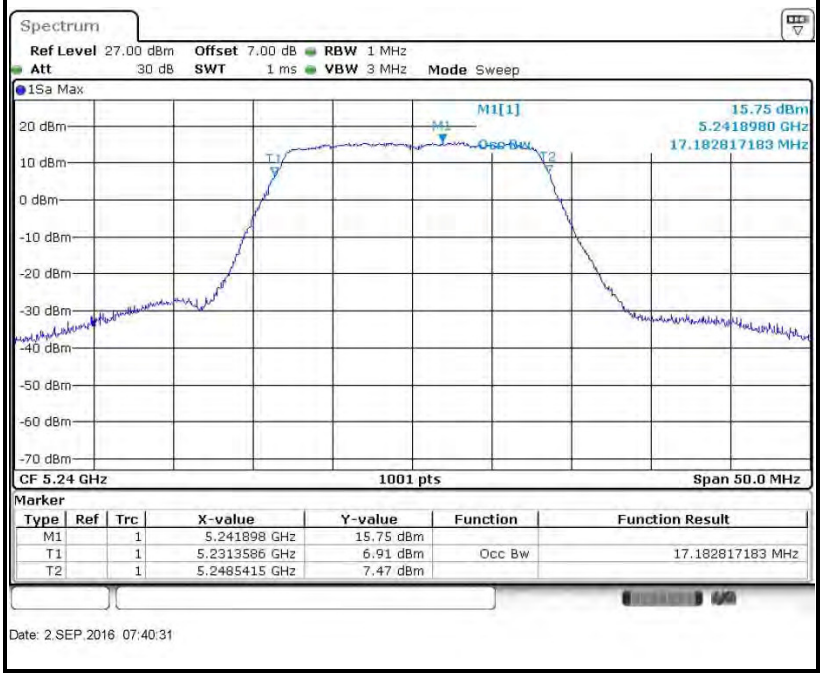
Maximum 26dB Bandwidth

MIMO Ant.1+2+3(1) 802.11a 6Mbps CH48



Maximum 99% Occupied Bandwidth

MIMO Ant.1+2+3(1) 802.11a 6Mbps CH48

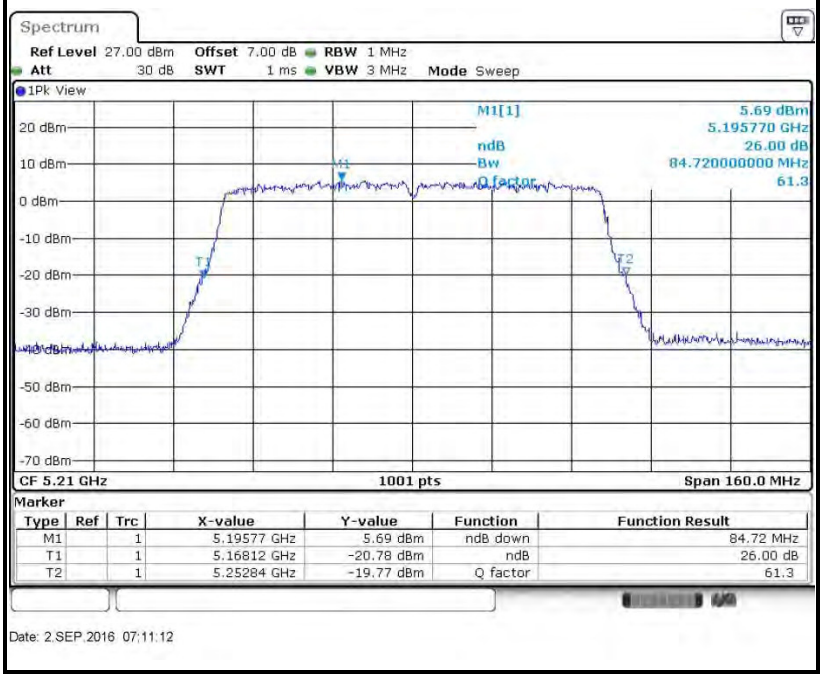


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<TXBF Mode> APIN0305

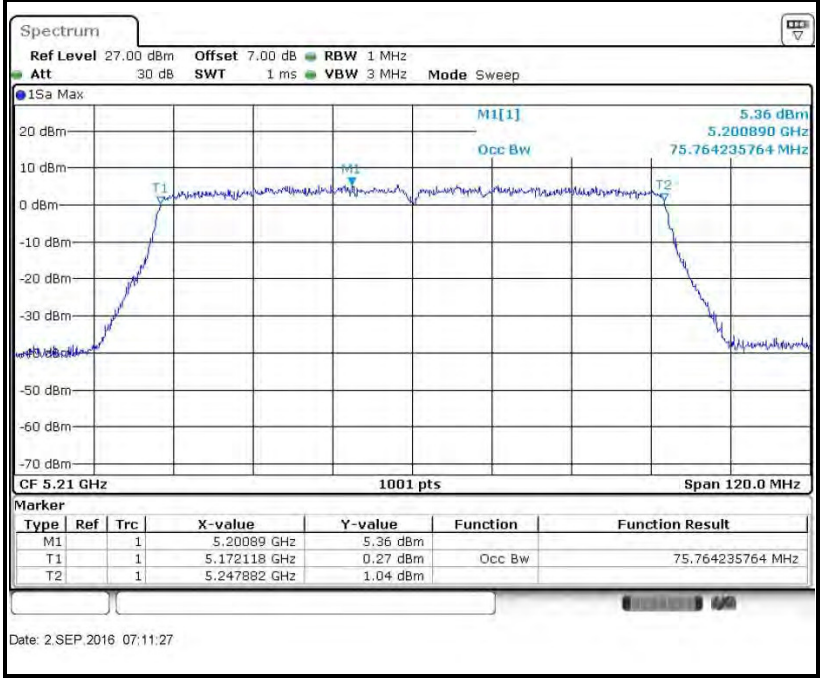
Maximum 26dB Bandwidth

MIMO Ant.1+2+3(1) 802.11ac VHT80 MCS0 CH42



Maximum 99% Occupied Bandwidth

MIMO Ant.1+2+3(1) 802.11ac VHT80 MCS0 CH42



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 1W.

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.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

3.2.2 Measuring Instruments

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

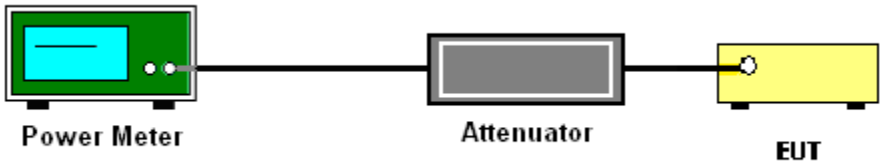
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.

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.

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 5.15–5.25GHz, 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.

 # Method SA-2 #

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

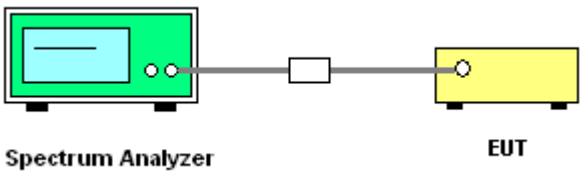
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), 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.

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 3 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 and output 3 to obtain the value for the first frequency bin of the summed spectrum.

3.3.4 Test Setup

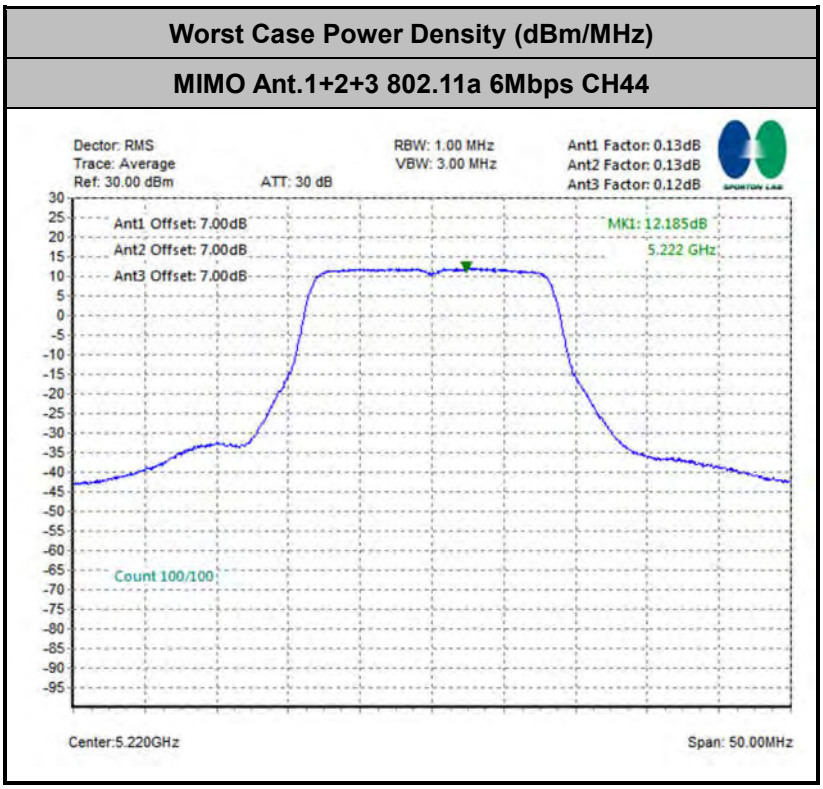


3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

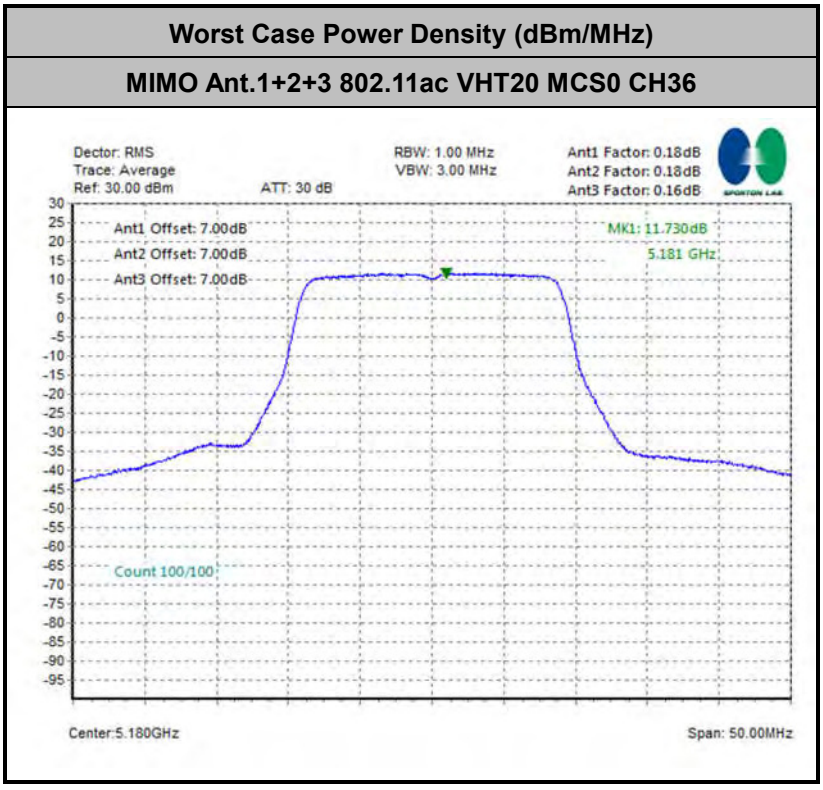
<CDD Mode> APIN0304

Worst Case Power Density (dBm/MHz)
MIMO Ant.1+2+3 802.11a 6Mbps CH44



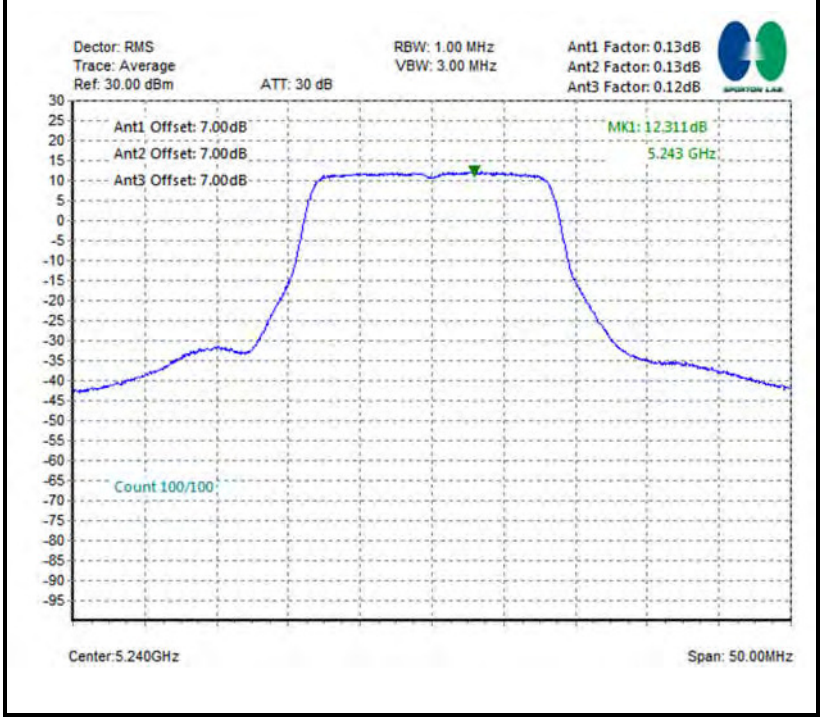
<TXBF Mode> APIN0304

Worst Case Power Density (dBm/MHz)
MIMO Ant.1+2+3 802.11ac VHT20 MCS0 CH36



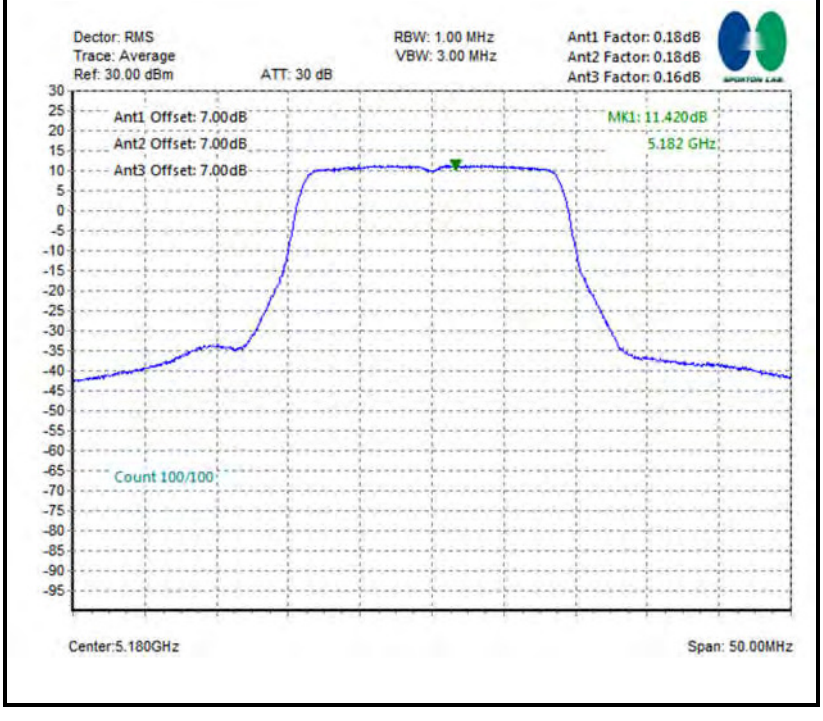
<CDD Mode> APIN0305

Worst Case Power Density (dBm/MHz)
MIMO Ant.1+2+3 802.11a 6Mbps CH48



<TXBF Mode> APIN0305

Worst Case Power Density (dBm/MHz)
MIMO Ant.1+2+3 802.11ac VHT20 MCS0 CH36



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.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/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 ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

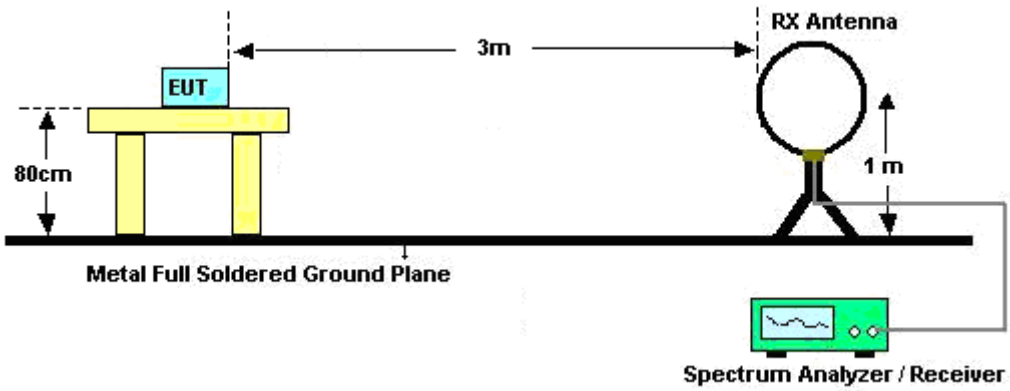
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 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.

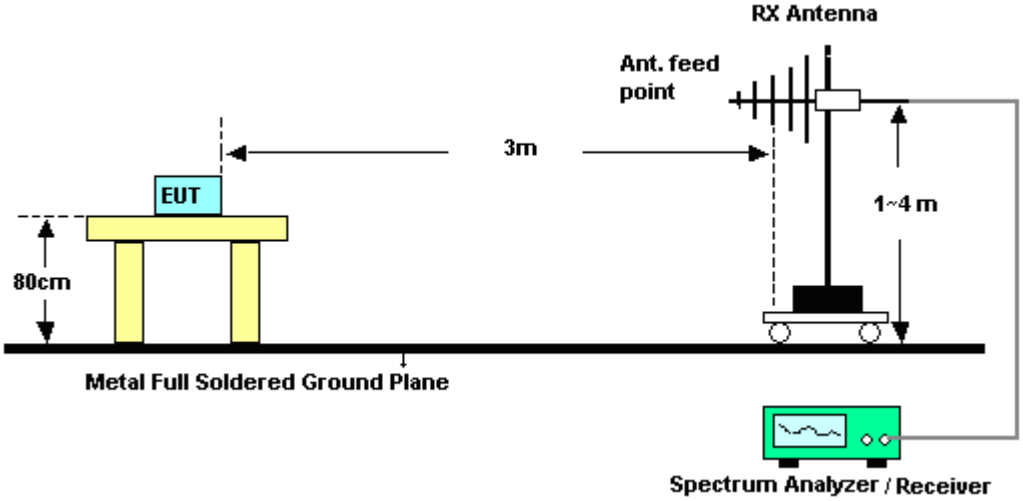
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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

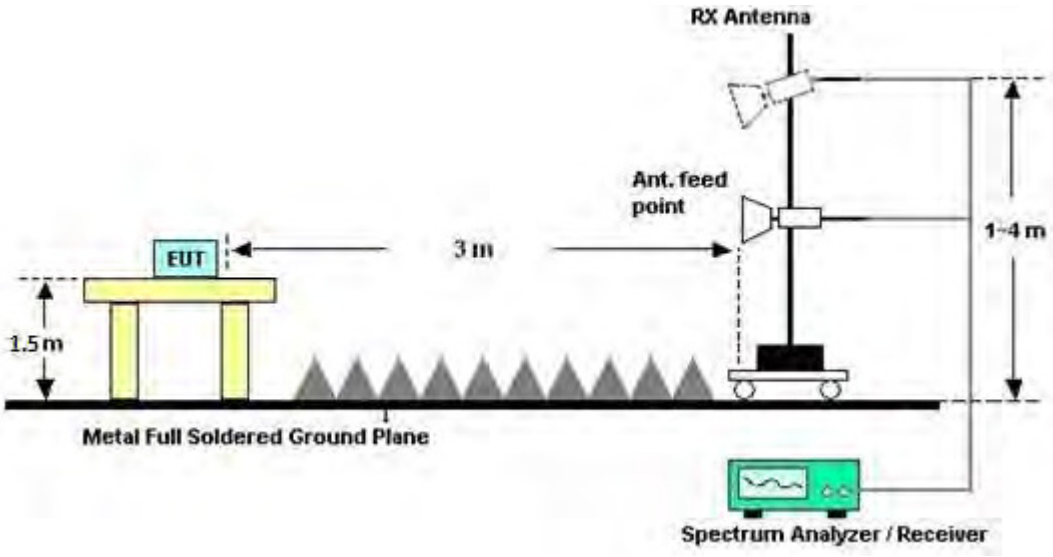


For radiated emissions from 30MHz to 1GHz

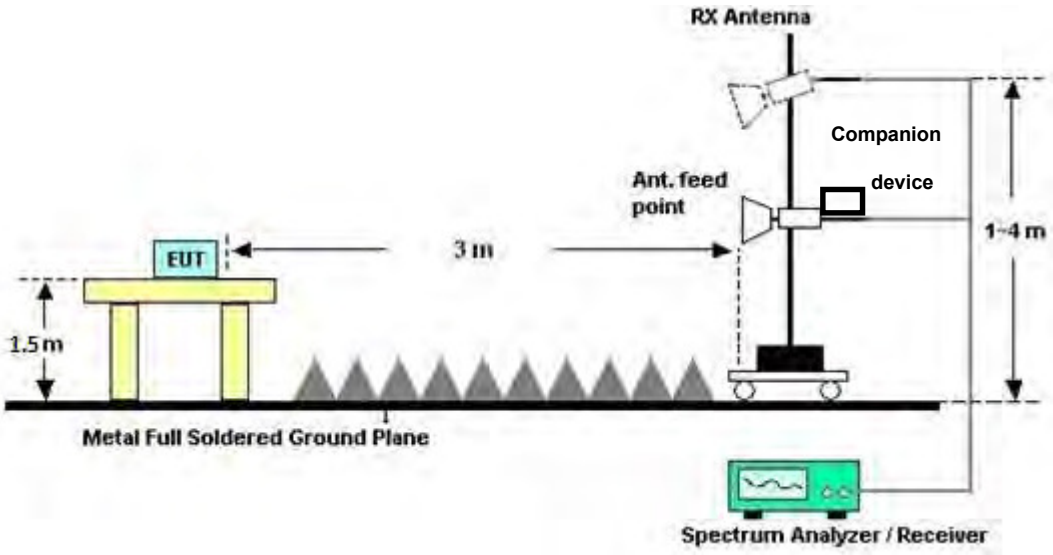


For radiated emissions above 1GHz

CDD Mode



TXBF Mode



3.4.5 Test Results of Radiated Spurious 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 Spurious at 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 Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

Remark: Pre-scanned all test modes and only choose the worst case mode recorded in the test report for radiated spurious emission below 1GHz.

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 (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

For terminal test result, the testing follows FCC KDB 174176.

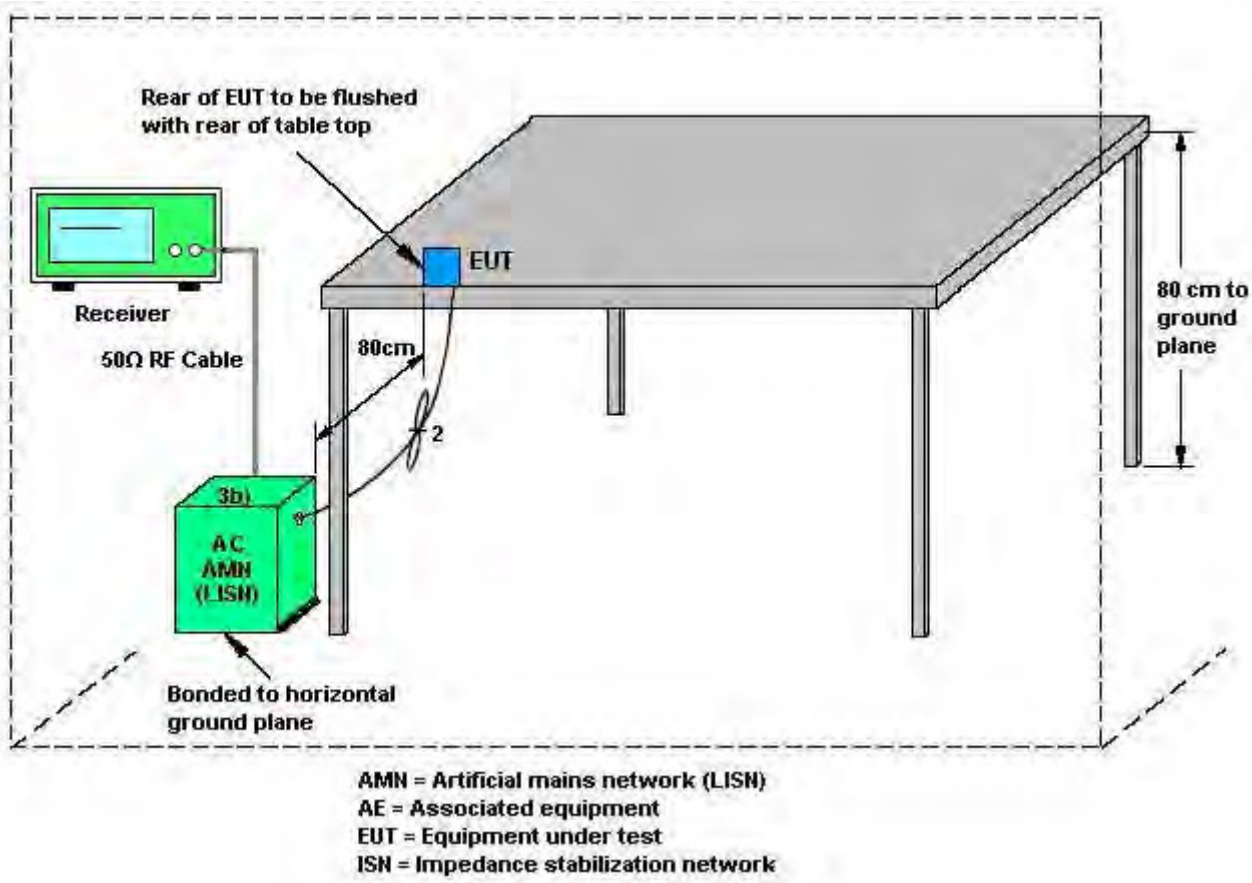
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

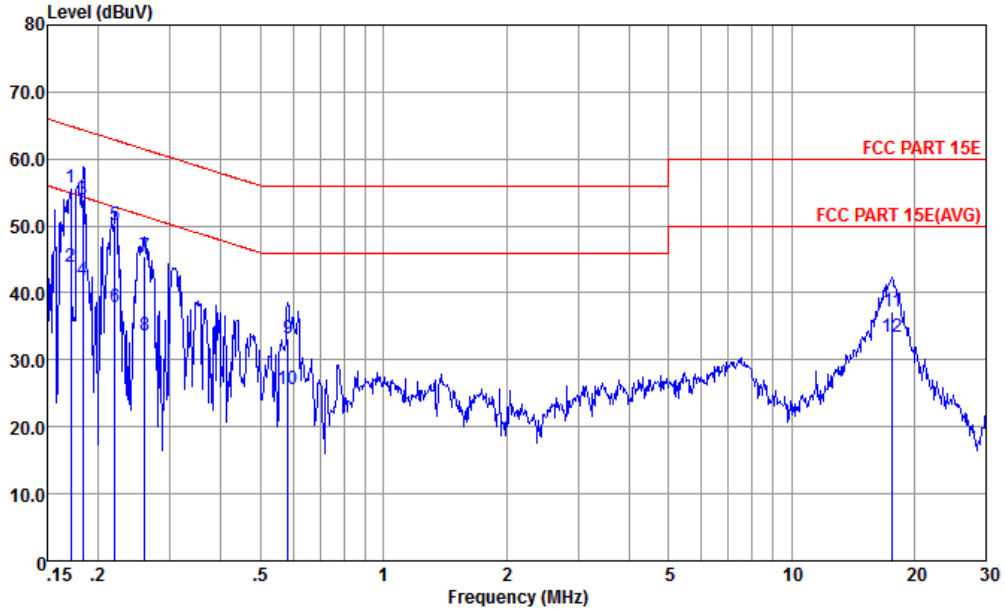
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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



3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 3	Temperature :	22~24℃
Test Engineer :	Morris Li	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN (5G) Link + Adapter for Sample 3		

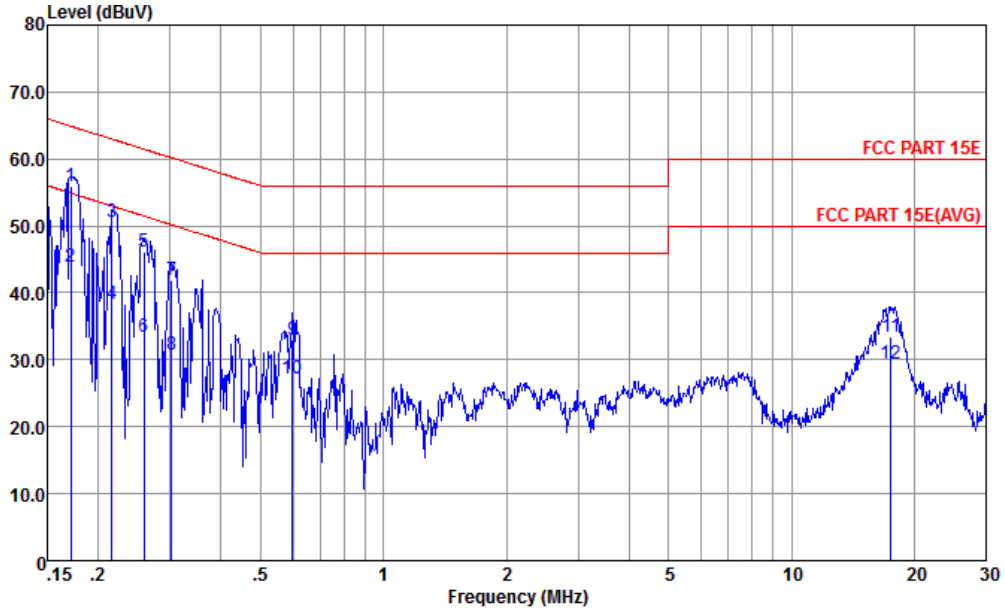


Site : CO01-KS
Condition : FCC PART 15E LISN-L-20151024 LINE

mode : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.171	55.81	-9.09	64.90	45.30	0.39	10.12	QP
2	0.171	43.91	-10.99	54.90	33.40	0.39	10.12	Average
3	0.183	54.03	-10.30	64.33	43.60	0.31	10.12	QP
4	0.183	41.93	-12.40	54.33	31.50	0.31	10.12	Average
5	0.220	50.05	-12.78	62.83	39.70	0.22	10.13	QP
6	0.220	37.95	-14.88	52.83	27.60	0.22	10.13	Average
7	0.260	45.47	-15.95	61.42	35.11	0.22	10.14	QP
8	0.260	33.57	-17.85	51.42	23.21	0.22	10.14	Average
9	0.582	33.09	-22.91	56.00	22.70	0.23	10.16	QP
10	0.582	25.69	-20.31	46.00	15.30	0.23	10.16	Average
11	17.661	37.23	-22.77	60.00	26.49	0.27	10.47	QP
12	17.661	33.43	-16.57	50.00	22.69	0.27	10.47	Average

Test Mode :	Mode 3	Temperature :	22~24℃
Test Engineer :	Morris Li	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN (5G) Link + Adapter for Sample 3		



Site : CO01-KS
Condition : FCC PART 15E LISN-N-20151024 NEUTRAL

mode : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.171	55.92	-8.98	64.90	45.50	0.30	10.12	QP
2	0.171	43.82	-11.08	54.90	33.40	0.30	10.12	Average
3	0.216	50.64	-12.32	62.96	40.20	0.31	10.13	QP
4	0.216	38.34	-14.62	52.96	27.90	0.31	10.13	Average
5	0.259	46.16	-15.31	61.47	35.71	0.31	10.14	QP
6	0.259	33.36	-18.11	51.47	22.91	0.31	10.14	Average
7	0.302	41.96	-18.23	60.19	31.50	0.31	10.15	QP
8	0.302	30.76	-19.43	50.19	20.30	0.31	10.15	Average
9	0.598	33.09	-22.91	56.00	22.60	0.33	10.16	QP
10	0.598	27.29	-18.71	46.00	16.80	0.33	10.16	Average
11	17.568	33.52	-26.48	60.00	22.80	0.26	10.46	QP
12	17.568	29.42	-20.58	50.00	18.70	0.26	10.46	Average

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 for APIN0305(Mode Name)

Non-standard antenna connector is used for APIN0304(Mode Name)

3.8.3 Antenna Gain

CDD modes

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

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

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

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

For power measurements on IEEE 802.11 devices,

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

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

The EUT supports CDD mode.

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

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

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

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

APIN0304

5.2G Band Antenna	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
1+2+3	6.00	10.77	0.00	4.77

APIN0305

5.2G Band Antenna	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
1+2+3	2.80	7.57	0.00	1.57

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 CDD 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 kth antenna is being fed by spatial stream j, or zero if it is not;

G_k is the gain in dBi of the kth antenna.

The EUT supports beamforming for 802.11ac 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.

APIN0304

5.2G Band Antenna	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
1+2+3	10.77	10.77	4.77	4.77

APIN0305

5.2G Band Antenna	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
1+2+3	7.57	7.57	1.57	1.57

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
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Sep. 10, 2015	Sep. 02, 2016~ Sep. 07, 2016	Sep. 09, 2016	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 20, 2016	Sep. 02, 2016~ Sep. 07, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 20, 2016	Sep. 02, 2016~ Sep. 07, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 24, 2015	Sep. 02, 2016~ Sep. 07, 2016	Oct. 23, 2016	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 09, 2016	Aug. 11, 2016~ Sep. 07, 2016	Aug. 08, 2017	Radiation (03CH03-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44GHz	Apr. 22, 2016	Aug. 11, 2016~ Sep. 07, 2016	Apr. 21, 2017	Radiation (03CH03-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 07, 2015	Aug. 11, 2016~ Sep. 07, 2016	Nov. 06, 2016	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz-2GHz	Apr. 16, 2016	Aug. 11, 2016~ Sep. 07, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Apr. 16, 2016	Aug. 11, 2016~ Sep. 07, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
SHF-EHF Horn	com-power	AH-840	101070	18GHz~40GHz	Oct. 10, 2015	Aug. 11, 2016~ Sep. 07, 2016	Oct. 09, 2016	Radiation (03CH03-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Aug. 09, 2016	Aug. 11, 2016~ Sep. 07, 2016	Aug. 08, 2017	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-HG	1887435	18GHz~40GHz	Jan. 20, 2016	Aug. 11, 2016~ Sep. 07, 2016	Jan. 19, 2017	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 24, 2015	Aug. 11, 2016~ Sep. 07, 2016	Oct. 23, 2016	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Aug. 11, 2016~ Sep. 07, 2016	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Aug. 11, 2016~ Sep. 07, 2016	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Aug. 11, 2016~ Sep. 07, 2016	NCR	Radiation (03CH03-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 09, 2016	Sep. 07, 2016	Aug. 08, 2017	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 24, 2015	Sep. 07, 2016	Oct. 23, 2016	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 24, 2015	Sep. 07, 2016	Oct. 23, 2016	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 24, 2015	Sep. 07, 2016	Oct. 23, 2016	Conduction (CO01-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.3dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.5dB

Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.5dB

Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.6dB

Appendix A. Conducted Test Results

Report Number : FR670709C

Test Engineer:	Ivan Zhang	Temperature:	24~25	°C
Test Date:	2016/9/2~2016/9/7	Relative Humidity:	54~55	%

TEST RESULTS DATA
26dB and 99% OBW APIN0304

Band I																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	26 dB Bandwidth (MHz)				99% Bandwidth (MHz)				IC 99% Bandwidth EIRP Limit (dBm)			
					Ant 1	Ant 2	Ant 3	Ant 4	Ant 1	Ant 2	Ant 3	Ant 4	Ant 1	Ant 2	Ant 3	Ant 4
11a	6Mbps	3	36	5180	20.83	20.53	20.58		17.13	17.13	17.03		22.34	22.34	22.31	
11a	6Mbps	3	44	5220	20.88	20.48	20.68		17.13	17.18	17.08		22.34	22.35	22.33	
11a	6Mbps	3	48	5240	20.98	20.53	20.68		17.18	17.13	17.03		22.35	22.34	22.31	
VHT20	MCS0	3	36	5180	21.58	21.43	21.53		18.08	18.13	18.13		22.57	22.58	22.58	
VHT20	MCS0	3	44	5220	21.63	21.63	21.73		18.08	18.13	18.08		22.57	22.58	22.57	
VHT20	MCS0	3	48	5240	21.68	21.63	21.63		18.13	18.13	18.08		22.58	22.58	22.57	
VHT40	MCS0	3	38	5190	40.55	40.37	40.19		36.06	35.96	35.86		23.01	23.01	23.01	
VHT40	MCS0	3	46	5230	40.55	40.55	40.28		35.96	35.96	35.96		23.01	23.01	23.01	
VHT80	MCS0	3	42	5210	83.92	84.72	85.03		75.76	75.64	75.76		23.01	23.01	23.01	

TEST RESULTS DATA
Average Power Table APIN0304

FCC Band I																
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Ant	Average Conducted Power with duty factor (dBm)					Power Setting	FCC Power Limit (dBm)	DG (dBi)	FCC EIRP Power (dBm)	FCC EIRP Power Limit (dBm)	Pass/Fail
						Ant 1	Ant 2	Ant 3	Ant 4	SUM	-					
11a	6Mbps	3	36	5180	1+2+3	18.38	18.71	18.44		23.29	17.50	30.00	6.00	29.29	-	Pass
11a	6Mbps	3	44	5220	1+2+3	18.16	18.44	18.37		23.10	17.50	30.00	6.00	29.10	-	Pass
11a	6Mbps	3	48	5240	1+2+3	18.25	18.49	18.40		23.15	17.50	30.00	6.00	29.15	-	Pass
VHT20	MCS0	3	36	5180	1+2+3	17.78	17.99	17.72		22.60	17.00	25.23	10.77	33.37	-	Pass
VHT20	MCS0	3	44	5220	1+2+3	17.57	17.85	17.60		22.44	17.00	25.23	10.77	33.21	-	Pass
VHT20	MCS0	3	48	5240	1+2+3	17.61	17.89	17.68		22.50	17.00	25.23	10.77	33.27	-	Pass
VHT40	MCS0	3	38	5190	1+2+3	15.95	16.08	16.03		20.79	14.00	25.23	10.77	31.56	-	Pass
VHT40	MCS0	3	46	5230	1+2+3	15.88	15.95	15.96		20.70	14.00	25.23	10.77	31.47	-	Pass
VHT80	MCS0	3	42	5210	1+2+3	12.38	12.74	12.63		17.36	11.00	25.23	10.77	28.13	-	Pass

TEST RESULTS DATA
Power Spectral Density APIN0304

FCC Band I													
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Ant	Duty Factor (dB)				Average PSD with Duty Factor (dBm/MHz)	PSD Limit (dBm/ MHz)	DG (dBi)	Pass /Fail
						Ant 1	Ant 2	Ant 3	Ant 4				
11a	6Mbps	3	36	5180	1+2+3	0.13	0.13	0.12		12.127	12.23	10.77	Pass
11a	6Mbps	3	44	5220	1+2+3	0.13	0.13	0.12		12.185	12.23	10.77	Pass
11a	6Mbps	3	48	5240	1+2+3	0.13	0.13	0.12		12.143	12.23	10.77	Pass
VHT20	MCS0	3	36	5180	1+2+3	0.18	0.18	0.16		11.73	12.23	10.77	Pass
VHT20	MCS0	3	44	5220	1+2+3	0.18	0.18	0.16		11.49	12.23	10.77	Pass
VHT20	MCS0	3	48	5240	1+2+3	0.18	0.18	0.16		11.72	12.23	10.77	Pass
VHT40	MCS0	3	38	5190	1+2+3	0.32	0.32	0.35		7.386	12.23	10.77	Pass
VHT40	MCS0	3	46	5230	1+2+3	0.32	0.32	0.35		7.264	12.23	10.77	Pass
VHT80	MCS0	3	42	5210	1+2+3	0.63	0.68	0.66		0.029	12.23	10.77	Pass

TEST RESULTS DATA
Frequency Stability APIN0304

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stablility (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	11.4	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	12.6	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	12	
11a	6Mbps	1	36	5180	5180.075	0.075	14.48	-30	12	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	50	12	

TEST RESULTS DATA
26dB and 99% OBW APIN0305

Band I																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	26 dB Bandwidth (MHz)				99% Bandwidth (MHz)				IC 99% Bandwidth EIRP Limit (dBm)				
					Ant 1	Ant 2	Ant 3	Ant 4	Ant 1	Ant 2	Ant 3	Ant 4	Ant 1	Ant 2	Ant 3	Ant 4	
11a	6Mbps	3	36	5180	20.83	20.53	20.58		17.13	17.13	17.03		22.34	22.34	22.31		
11a	6Mbps	3	44	5220	20.88	20.48	20.68		17.13	17.18	17.08		22.34	22.35	22.33		
11a	6Mbps	3	48	5240	20.98	20.53	20.68		17.18	17.13	17.03		22.35	22.34	22.31		
VHT20	MCS0	3	36	5180	21.53	21.43	21.53		18.08	18.13	18.13		22.57	22.58	22.58		
VHT20	MCS0	3	44	5220	21.63	21.68	21.58		18.13	18.08	18.08		22.58	22.57	22.57		
VHT20	MCS0	3	48	5240	21.68	21.68	21.63		18.13	18.13	18.08		22.58	22.58	22.57		
VHT40	MCS0	3	38	5190	40.55	40.37	40.19		36.06	35.96	35.86		23.01	23.01	23.01		
VHT40	MCS0	3	46	5230	40.55	40.55	40.28		35.96	35.96	35.96		23.01	23.01	23.01		
VHT80	MCS0	3	42	5210	84.72	84.72	84.08		75.76	75.64	75.76		23.01	23.01	23.01		

TEST RESULTS DATA
Average Power Table APIN0305

FCC Band I																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Ant	Average Conducted Power with duty factor (dBm)					Power Setting	FCC Power Limit (dBm)	DG (dBi)	FCC EIRP Power (dBm)	FCC EIRP Power Limit (dBm)	Pass/Fail
						Ant 1	Ant 2	Ant 3	Ant 4	SUM	-					
11a	6Mbps	3	36	5180	1+2+3	18.38	18.71	18.44		23.29	17.50	30.00	2.80	26.09	-	Pass
11a	6Mbps	3	44	5220	1+2+3	18.16	18.44	18.37		23.10	17.50	30.00	2.80	25.90	-	Pass
11a	6Mbps	3	48	5240	1+2+3	18.25	18.49	18.40		23.16	17.50	30.00	2.80	25.96	-	Pass
VHT20	MCS0	3	36	5180	1+2+3	17.85	18.19	17.82		22.72	17.00	28.43	7.57	30.29	-	Pass
VHT20	MCS0	3	44	5220	1+2+3	17.50	17.86	17.74		22.47	17.00	28.43	7.57	30.04	-	Pass
VHT20	MCS0	3	48	5240	1+2+3	17.63	17.93	17.78		22.55	17.00	28.43	7.57	30.12	-	Pass
VHT40	MCS0	3	38	5190	1+2+3	16.46	16.67	16.66		21.37	14.50	28.43	7.57	28.94	-	Pass
VHT40	MCS0	3	46	5230	1+2+3	16.41	16.48	16.59		21.26	14.50	28.43	7.57	28.83	-	Pass
VHT80	MCS0	3	42	5210	1+2+3	14.50	14.70	14.60		19.37	13.00	28.43	7.57	26.94	-	Pass

TEST RESULTS DATA
Power Spectral Density APIN0305

FCC Band I													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Ant	Duty Factor (dB)				Average PSD with Duty Factor (dBm/MHz)	PSD Limit (dBm/ MHz)	DG (dBi)	Pass /Fail
						Ant 1	Ant 2	Ant 3	Ant 4				
11a	6Mbps	3	36	5180	1+2+3	0.13	0.13	0.12		12.309	15.43	7.57	Pass
11a	6Mbps	3	44	5220	1+2+3	0.13	0.13	0.12		12.185	15.43	7.57	Pass
11a	6Mbps	3	48	5240	1+2+3	0.13	0.13	0.12		12.311	15.43	7.57	Pass
VHT20	MCS0	3	36	5180	1+2+3	0.18	0.18	0.16		11.42	15.43	7.57	Pass
VHT20	MCS0	3	44	5220	1+2+3	0.18	0.18	0.16		11.14	15.43	7.57	Pass
VHT20	MCS0	3	48	5240	1+2+3	0.18	0.18	0.16		11.214	15.43	7.57	Pass
VHT40	MCS0	3	38	5190	1+2+3	0.32	0.32	0.35		7.386	15.43	7.57	Pass
VHT40	MCS0	3	46	5230	1+2+3	0.32	0.32	0.35		7.264	15.43	7.57	Pass
VHT80	MCS0	3	42	5210	1+2+3	0.63	0.68	0.66		2.455	15.43	7.57	Pass

TEST RESULTS DATA
Frequency Stability APIN0305

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stablility (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	11.4	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	12.6	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	12	
11a	6Mbps	1	36	5180	5180.075	0.075	14.48	-30	12	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	50	12	

Appendix B. Radiated Spurious Emission

For Sample 1 with Adapter

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m) for CDD Mode

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+3		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz	*	5184	105.39	-	-	98.85	34.96	6.84	35.26	115	150	P	H
	*	5182	98.25	-	-	91.71	34.96	6.84	35.26	115	150	A	H
		5113.44	57.9	-16.1	74	51.48	34.9	6.43	34.91	115	150	P	H
	!	5107.04	48.17	-5.83	54	41.75	34.9	6.43	34.91	115	150	A	H
	*	5182	119.88	-	-	113.34	34.96	6.84	35.26	163	229	P	V
	*	5182	112.65	-	-	106.11	34.96	6.84	35.26	163	229	A	V
		5150	60.18	-13.82	74	53.83	34.93	6.57	35.15	163	229	P	V
	!	5150	53.01	-0.99	54	46.66	34.93	6.57	35.15	163	229	A	V
802.11a CH 44 5220MHz	*	5218	105.53	-	-	98.94	34.99	6.98	35.38	125	338	P	H
	*	5220	98.67	-	-	92.08	34.99	6.98	35.38	125	338	A	H
	*	5214	117.72	-	-	111.13	34.99	6.98	35.38	146	329	P	V
	*	5224	111.83	-	-	105.4	34.99	6.94	35.5	146	329	A	V
802.11a CH 48 5240MHz	*	5238	105.12	-	-	98.67	35.01	6.94	35.5	119	339	P	H
	*	5240	98.03	-	-	91.58	35.01	6.94	35.5	119	339	A	H
		5356.62	55.16	-18.84	74	49.38	35.12	6.74	36.08	119	339	P	H
		5359.5	45.57	-8.43	54	39.83	35.12	6.7	36.08	119	339	A	H
	*	5242	119.28	-	-	112.81	35.03	6.94	35.5	163	186	P	V
	*	5242	111.59	-	-	105.12	35.03	6.94	35.5	163	186	A	V
		5358.24	56.35	-17.65	74	50.57	35.12	6.74	36.08	163	186	P	V
		5376.06	47.47	-6.53	54	41.83	35.14	6.7	36.2	163	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 802.11a (Harmonic @ 3m) for CDD Mode

WIFI Ant. 1+2+3	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	45.41	-28.59	74	53.94	38.6	10.12	57.25	100	360	P	H
		10360	39.34	-34.66	74	47.87	38.6	10.12	57.25	100	0	P	V
802.11a CH 44 5220MHz		10440	43.89	-30.11	74	52.2	38.65	10.16	57.12	100	360	P	H
		10440	43.08	-30.92	74	51.39	38.65	10.16	57.12	100	0	P	V
802.11a CH 48 5240MHz		10480	45.16	-28.84	74	53.3	38.69	10.19	57.02	100	0	P	H
		10480	46.19	-27.81	74	54.33	38.69	10.19	57.02	100	359	P	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 VHT20 (Band Edge @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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)
	*	5174	104.48	-	-	98.07	34.96	6.71	35.26	268	287	P	H
	*	5174	95.62	-	-	89.21	34.96	6.71	35.26	268	287	A	H
802.11ac		5148.32	59.55	-14.45	74	53.2	34.93	6.57	35.15	268	287	P	H
VHT20		5149.44	46.1	-7.9	54	39.75	34.93	6.57	35.15	268	287	A	H
CH 36	*	5186	116.01	-	-	109.47	34.96	6.84	35.26	149	308	P	V
5180MHz	*	5186	108.41	-	-	101.87	34.96	6.84	35.26	149	308	A	V
		5144.64	65.52	-8.48	74	59.17	34.93	6.57	35.15	149	308	P	V
	!	5150.00	52.29	-1.71	54	45.94	34.93	6.57	35.15	149	308	A	V
802.11ac	*	5224	104.08	-	-	97.65	34.99	6.94	35.5	120	208	P	H
VHT20	*	5222	94.99	-	-	88.56	34.99	6.94	35.5	120	208	A	H
CH 44	*	5226	115.9	-	-	109.45	35.01	6.94	35.5	148	336	P	V
5220MHz	*	5216	109.64	-	-	103.05	34.99	6.98	35.38	148	336	A	V
	*	5242	104.07	-	-	97.6	35.03	6.94	35.5	102	197	P	H
	*	5234	94.62	-	-	88.17	35.01	6.94	35.5	102	197	A	H
802.11ac		5389.02	55.91	-18.09	74	50.29	35.16	6.66	36.2	102	197	P	H
VHT20		5343.12	45.77	-8.23	54	39.89	35.11	6.74	35.97	102	197	A	H
CH 48	*	5242	116.87	-	-	110.4	35.03	6.94	35.5	146	312	P	V
5240MHz	*	5242	109.78	-	-	103.31	35.03	6.94	35.5	146	312	A	V
		5352.48	61.46	-12.54	74	55.68	35.12	6.74	36.08	146	312	P	V
	!	5375.88	48.38	-5.62	54	42.74	35.14	6.7	36.2	146	312	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 VHT20 (Harmonic @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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		10360	43.8	-30.2	74	52.33	38.6	10.12	57.25	100	360	P	H
VHT20 CH 36 5180MHz		10360	43.67	-30.33	74	52.2	38.6	10.12	57.25	100	0	P	V
802.11ac		10440	44.82	-29.18	74	53.13	38.65	10.16	57.12	100	360	P	H
VHT20 CH 44 5220MHz		10440	41.9	-32.1	74	50.21	38.65	10.16	57.12	100	0	P	V
802.11ac		10480	46.02	-27.98	74	54.16	38.69	10.19	57.02	100	360	P	H
VHT20 CH 48 5240MHz		10480	42.43	-31.57	74	50.57	38.69	10.19	57.02	100	0	P	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 VHT40 (Band Edge @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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)
		5149.28	61.8	-12.2	74	55.45	34.93	6.57	35.15	100	356	P	H
	!	5149.76	48.73	-5.27	54	42.38	34.93	6.57	35.15	100	356	A	H
802.11ac	*	5202	99.75	-	-	93.17	34.98	6.98	35.38	100	356	P	H
VHT40	*	5186	94.29	-	-	87.75	34.96	6.84	35.26	100	356	A	H
CH 38		5148.96	63.43	-10.57	74	57.08	34.93	6.57	35.15	172	306	P	V
5190MHz	!	5149.6	53.12	-0.88	54	46.77	34.93	6.57	35.15	172	306	A	V
	*	5194	110.14	-	-	103.58	34.98	6.84	35.26	172	306	P	V
	*	5172	106.49	-	-	100.09	34.95	6.71	35.26	172	306	A	V
	*	5236	99.78	-	-	93.33	35.01	6.94	35.5	100	4	P	H
	*	5242	92.79	-	-	86.32	35.03	6.94	35.5	100	4	A	H
802.11ac		5358.96	55.53	-18.47	74	49.79	35.12	6.7	36.08	100	4	P	H
VHT40		5351.58	45.74	-8.26	54	39.96	35.12	6.74	36.08	100	4	A	H
CH 46	*	5226	109.2	-	-	102.75	35.01	6.94	35.5	156	29	P	V
5230MHz	*	5224	107.25	-	-	100.82	34.99	6.94	35.5	156	29	A	V
		5351.4	60.6	-13.4	74	54.82	35.12	6.74	36.08	156	29	P	V
		5353.92	46.89	-7.11	54	41.11	35.12	6.74	36.08	156	29	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 VHT40 (Harmonic @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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		10380	44.28	-29.72	74	52.76	38.61	10.13	57.22	100	360	P	H
VHT40 CH 38 5190MHz		10380	45.39	-28.61	74	53.87	38.61	10.13	57.22	100	0	P	V
802.11ac		10460	45.43	-28.57	74	53.67	38.66	10.18	57.08	100	360	P	H
VHT40 CH 46 5230MHz		10460	43.33	-30.67	74	51.57	38.66	10.18	57.08	100	0	P	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) for Beamforming Mode

WIFI Ant. 1+2+3	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	*	5202	97.83	-	-	91.25	34.98	6.98	35.38	100	353	P	H
	*	5206	91.32	-	-	84.74	34.98	6.98	35.38	100	353	A	H
		5133.28	64.02	-9.98	74	57.57	34.91	6.57	35.03	100	353	P	H
	!	5137.44	49.67	-4.33	54	43.22	34.91	6.57	35.03	100	353	A	H
		5364.72	54.95	-19.05	74	49.19	35.14	6.7	36.08	100	353	P	H
		5351.04	45.89	-8.11	54	40.11	35.12	6.74	36.08	100	353	A	H
	*	5202	110.5	-	-	103.92	34.98	6.98	35.38	148	354	P	V
	*	5196	100.57	-	-	94.13	34.98	6.84	35.38	148	354	A	V
		5144.8	61.65	-12.35	74	55.3	34.93	6.57	35.15	148	354	P	V
	!	5140.96	53.6	-0.4	54	47.13	34.93	6.57	35.03	148	354	A	V
		5355.36	62.87	-11.13	74	57.09	35.12	6.74	36.08	148	354	P	V
	!	5350.68	48.24	-5.76	54	42.46	35.12	6.74	36.08	148	354	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) for Beamforming Mode

WIFI Ant. 1+2+3	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		10420	44.73	-29.27	74	53.08	38.64	10.16	57.15	100	360	P	H
VHT80 CH 42 5210MHz		10420	43.46	-30.54	74	51.81	38.64	10.16	57.15	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI 802.11ac VHT80 (LF @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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 LF		31.94	32.95	-7.05	40	45.25	18.32	0.68	31.3	-	-	P	H
		39.7	33.6	-6.4	40	50.02	14.2	0.75	31.37	100	25	P	H
		72.68	32.8	-7.2	40	54.67	8.62	1.03	31.52	-	-	P	H
		92.08	29.36	-14.14	43.5	47.46	12.18	1.16	31.44	-	-	P	H
		97.9	32.54	-10.96	43.5	49.88	12.9	1.2	31.44	-	-	P	H
		524.7	27.76	-18.24	46	37.65	18.45	2.87	31.21	-	-	P	H
		30	33.08	-6.92	40	45.1	18.6	0.65	31.27	300	12	P	V
		33.88	33.07	-6.93	40	45.66	18.04	0.7	31.33	-	-	P	V
		49.4	30.72	-9.28	40	51.41	9.88	0.84	31.41	-	-	P	V
		68.8	30.67	-9.33	40	53.42	7.76	0.99	31.5	-	-	P	V
		72.68	31.97	-8.03	40	53.84	8.62	1.03	31.52	-	-	P	V
		89.17	30.08	-13.42	43.5	48.85	11.56	1.14	31.47	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

For Sample 2 with Adapter

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m) for CDD Mode

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+3		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz	*	5184	120.07	-	-	113.53	34.96	6.84	35.26	100	190	P	H
	*	5182	113.02	-	-	106.48	34.96	6.84	35.26	100	190	A	H
		5142.72	60.32	-13.68	74	53.85	34.93	6.57	35.03	100	190	P	H
	!	5143.36	53.02	-0.98	54	46.55	34.93	6.57	35.03	100	190	A	H
	*	5186	118.15	-	-	111.61	34.96	6.84	35.26	100	172	P	V
	*	5176	110.96	-	-	104.42	34.96	6.84	35.26	100	172	A	V
		5146.72	59.98	-14.02	74	53.63	34.93	6.57	35.15	100	172	P	V
	!	5147.36	50.84	-3.16	54	44.49	34.93	6.57	35.15	100	172	A	V
802.11a CH 44 5220MHz	*	5222	120.99	-	-	114.56	34.99	6.94	35.5	154	190	P	H
	*	5222	113.46	-	-	107.03	34.99	6.94	35.5	154	190	A	H
	*	5222	117.92	-	-	111.49	34.99	6.94	35.5	100	166	P	V
	*	5222	110.72	-	-	104.29	34.99	6.94	35.5	100	166	A	V
802.11a CH 48 5240MHz	*	5242	119.85	-	-	113.38	35.03	6.94	35.5	133	190	P	H
	*	5242	113.03	-	-	106.56	35.03	6.94	35.5	133	190	A	H
		5363.64	57.05	-16.95	74	51.29	35.14	6.7	36.08	133	190	P	H
	!	5375.88	48.23	-5.77	54	42.59	35.14	6.7	36.2	133	190	A	H
	*	5238	118.31	-	-	111.86	35.01	6.94	35.5	118	174	P	V
	*	5236	110.92	-	-	104.47	35.01	6.94	35.5	118	174	A	V
		5360.22	56.21	-17.79	74	50.47	35.12	6.7	36.08	118	174	P	V
		5375.7	47.6	-6.4	54	41.96	35.14	6.7	36.2	118	174	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) for CDD Mode

WIFI Ant. 1+2+3	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	45.07	-28.93	74	53.6	38.6	10.12	57.25	100	360	P	H
		10360	37.31	-36.69	74	45.84	38.6	10.12	57.25	100	0	P	V
802.11a CH 44 5220MHz		10440	45.39	-28.61	74	53.7	38.65	10.16	57.12	100	360	P	H
		10440	39.54	-34.46	74	47.85	38.65	10.16	57.12	100	0	P	V
802.11a CH 48 5240MHz		10480	45.61	-28.39	74	53.75	38.69	10.19	57.02	100	360	P	H
		10480	41.45	-32.55	74	49.59	38.69	10.19	57.02	100	0	P	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 VHT20 (Band Edge @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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)
		5138.4	67.71	-6.29	74	61.26	34.91	6.57	35.03	217	176	P	H
	!	5150.00	51.27	-2.73	54	44.92	34.93	6.57	35.15	217	176	A	H
802.11ac	*	5178	117.96	-	-	111.42	34.96	6.84	35.26	217	176	P	H
VHT20	*	5178	108.9	-	-	102.36	34.96	6.84	35.26	217	176	A	H
CH 36		5139.84	66.02	-7.98	74	59.55	34.93	6.57	35.03	171	180	P	V
5180MHz	!	5149.92	53.02	-0.98	54	46.67	34.93	6.57	35.15	171	180	A	V
	*	5182	113.73	-	-	107.19	34.96	6.84	35.26	171	180	P	V
	*	5172	107.27	-	-	100.87	34.95	6.71	35.26	171	180	A	V
802.11ac	*	5222	116.28	-	-	109.85	34.99	6.94	35.5	211	180	P	H
VHT20	*	5218	108.93	-	-	102.34	34.99	6.98	35.38	211	180	A	H
CH 44	*	5216	114.36	-	-	107.77	34.99	6.98	35.38	197	188	P	V
5220MHz	*	5218	103.59	-	-	97	34.99	6.98	35.38	197	188	A	V
	*	5236	118.2	-	-	111.75	35.01	6.94	35.5	214	174	P	H
	*	5236	108.66	-	-	102.21	35.01	6.94	35.5	214	174	A	H
802.11ac		5352.84	64.23	-9.77	74	58.45	35.12	6.74	36.08	214	174	P	H
VHT20	!	5376.42	53.2	-0.8	54	47.56	35.14	6.7	36.2	214	174	A	H
CH 48	*	5236	115.98	-	-	109.53	35.01	6.94	35.5	166	189	P	V
5240MHz	*	5244	106.51	-	-	100.08	35.03	6.9	35.5	166	189	A	V
		5340.24	64.51	-9.49	74	58.63	35.11	6.74	35.97	166	189	P	V
	!	5375.88	49.31	-4.69	54	43.67	35.14	6.7	36.2	166	189	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 VHT20 (Harmonic @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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		10360	44.72	-29.28	74	53.25	38.6	10.12	57.25	100	360	P	H
VHT20 CH 36 5180MHz		10360	44.16	-29.84	74	52.69	38.6	10.12	57.25	100	0	P	V
802.11ac		10440	45.55	-28.45	74	53.86	38.65	10.16	57.12	100	360	P	H
VHT20 CH 44 5220MHz		10440	40.28	-33.72	74	48.59	38.65	10.16	57.12	100	0	P	V
802.11ac		10480	45.09	-28.91	74	53.23	38.69	10.19	57.02	100	360	P	H
VHT20 CH 48 5240MHz		10480	44.96	-29.04	74	53.1	38.69	10.19	57.02	100	0	P	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 VHT40 (Band Edge @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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)
	!	5145.76	69.52	-4.48	74	63.17	34.93	6.57	35.15	160	182	P	H
	!	5150	53.49	-0.51	54	47.14	34.93	6.57	35.15	160	182	A	H
802.11ac	*	5188	111.63	-	-	105.09	34.96	6.84	35.26	160	182	P	H
VHT40	*	5186	110.29	-	-	103.75	34.96	6.84	35.26	160	182	A	H
CH 38		5144.96	64.47	-9.53	74	58.12	34.93	6.57	35.15	155	152	P	V
5190MHz	!	5150	51.81	-2.19	54	45.46	34.93	6.57	35.15	155	152	A	V
	*	5176	113.61	-	-	107.07	34.96	6.84	35.26	155	152	P	V
	*	5186	101.84	-	-	95.3	34.96	6.84	35.26	155	152	A	V
	*	5224	112.89	-	-	106.46	34.99	6.94	35.5	169	181	P	H
	*	5238	106.2	-	-	99.75	35.01	6.94	35.5	169	181	A	H
802.11ac		5351.04	67.14	-6.86	74	61.36	35.12	6.74	36.08	169	181	P	H
VHT40	!	5376.06	53.11	-0.89	54	47.47	35.14	6.7	36.2	169	181	A	H
CH 46	*	5226	112.49	-	-	106.04	35.01	6.94	35.5	100	161	P	V
5230MHz	*	5226	102.08	-	-	95.63	35.01	6.94	35.5	100	161	A	V
		5367.78	65.69	-8.31	74	59.93	35.14	6.7	36.08	100	161	P	V
	!	5375.88	48.22	-5.78	54	42.58	35.14	6.7	36.2	100	161	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 VHT40 (Harmonic @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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		10380	43.78	-30.22	74	52.26	38.61	10.13	57.22	100	360	P	H
VHT40 CH 38 5190MHz		10380	40.81	-33.19	74	49.29	38.61	10.13	57.22	100	0	P	V
802.11ac		10460	43.66	-30.34	74	51.9	38.66	10.18	57.08	100	360	P	H
VHT40 CH 46 5230MHz		10460	43.74	-30.26	74	51.98	38.66	10.18	57.08	100	0	P	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) for Beamforming Mode

WIFI Ant. 1+2+3	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		5133.6	67.32	-6.68	74	60.87	34.91	6.57	35.03	157	183	P	H
	!	5134.4	52.05	-1.95	54	45.6	34.91	6.57	35.03	157	183	A	H
	*	5236	108.95			102.5	35.01	6.94	35.5	157	183	P	H
	*	5194	100.4			93.84	34.98	6.84	35.26	157	183	A	H
		5355.36	66.81	-7.19	74	61.03	35.12	6.74	36.08	157	183	P	H
	!	5375.88	50.54	-3.46	54	44.9	35.14	6.7	36.2	157	183	A	H
	!	5146.88	68.48	-5.52	74	62.13	34.93	6.57	35.15	115	178	P	V
	!	5141.6	51.17	-2.83	54	44.7	34.93	6.57	35.03	115	178	A	V
	*	5188	106.07			99.53	34.96	6.84	35.26	115	178	P	V
	*	5202	99.17			92.59	34.98	6.98	35.38	115	178	A	V
		5362.38	66.85	-7.15	74	61.09	35.14	6.7	36.08	115	178	P	V
	!	5356.62	49.16	-4.84	54	43.38	35.12	6.74	36.08	115	178	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) for Beamforming Mode

WIFI Ant. 1+2+3	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		10420	43.94	-30.06	74	52.29	38.64	10.16	57.15	100	360	P	H
VHT80 CH 42 5210MHz		10420	41.67	-32.33	74	50.02	38.64	10.16	57.15	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

For Sample 3 with Adapter

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m) for CDD Mode

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+3		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz		5141.12	57.07	-16.93	74	53.84	31.84	7.92	36.53	240	242	P	H
		5145.44	47.89	-6.11	54	44.66	31.84	7.92	36.53	240	242	A	H
	*	5176	116.38	-	-	113.1	31.85	7.94	36.51	240	242	P	H
	*	5186	109.92	-	-	106.64	31.85	7.94	36.51	240	242	A	H
		5136.32	54.96	-19.04	74	51.75	31.84	7.91	36.54	100	226	P	V
		5142.24	46.36	-7.64	54	43.13	31.84	7.92	36.53	100	226	A	V
	*	5182	114.53	-	-	111.25	31.85	7.94	36.51	100	226	P	V
	*	5182	107.96	-	-	104.68	31.85	7.94	36.51	100	226	A	V
802.11a CH 44 5220MHz	*	5224	116.33	-	-	112.98	31.86	7.99	36.5	224	241	P	H
	*	5224	109.81	-	-	106.46	31.86	7.99	36.5	224	241	A	H
	*	5226	113.07	-	-	109.66	31.87	8.04	36.5	214	231	P	V
	*	5218	107.84	-	-	104.49	31.86	7.99	36.5	214	231	A	V
802.11a CH 48 5240MHz	*	5238	116.29	-	-	112.88	31.87	8.04	36.5	100	244	P	H
	*	5238	109.69	-	-	106.28	31.87	8.04	36.5	100	244	A	H
		5375.88	55.03	-18.97	74	51.23	31.91	8.39	36.5	100	244	P	H
	!	5375.88	49.3	-4.7	54	45.5	31.91	8.39	36.5	100	244	A	H
	*	5240	115.5	-	-	112.09	31.87	8.04	36.5	100	226	P	V
	*	5240	108.27	-	-	104.86	31.87	8.04	36.5	100	226	A	V
		5376.06	54.93	-19.07	74	51.13	31.91	8.39	36.5	100	226	P	V
		5375.88	47.78	-6.22	54	43.98	31.91	8.39	36.5	100	226	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) for CDD Mode

WIFI Ant. 1+2+3	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		10360	44.6	-29.4	74	55.73	38.02	8.1	57.25	100	360	P	H
CH 36 5180MHz		10360	43.53	-30.47	74	54.66	38.02	8.1	57.25	100	360	P	V
802.11a		10440	43.81	-30.19	74	54.65	38.06	8.22	57.12	100	360	P	H
CH 44 5220MHz		10440	43.67	-30.33	74	54.51	38.06	8.22	57.12	100	360	P	V
802.11a		10480	45.26	-28.74	74	55.88	38.09	8.31	57.02	100	360	P	H
CH 48 5240MHz		10480	43.57	-30.43	74	54.19	38.09	8.31	57.02	100	360	P	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 VHT20 (Band Edge @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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)
	!	5140.64	68.61	-5.39	74	65.38	31.84	7.92	36.53	100	248	P	H
	!	5149.6	53.21	-0.79	54	49.98	31.84	7.92	36.53	100	248	A	H
802.11ac	*	5184	112.97	-	-	109.69	31.85	7.94	36.51	100	248	P	H
VHT20	*	5178	106.21	-	-	102.93	31.85	7.94	36.51	100	248	A	H
CH 36	!	5145.92	68.34	-5.66	74	65.11	31.84	7.92	36.53	167	163	P	V
5180MHz	!	5149.12	49.87	-4.13	54	46.64	31.84	7.92	36.53	167	163	A	V
	*	5178	113.55	-	-	110.27	31.85	7.94	36.51	167	163	P	V
	*	5178	105.8	-	-	102.52	31.85	7.94	36.51	167	163	A	V
802.11ac	*	5226	112.71	-	-	109.3	31.87	8.04	36.5	208	165	P	H
VHT20	*	5222	104.88	-	-	101.53	31.86	7.99	36.5	208	165	A	H
CH 44	*	5216	114.04	-	-	110.69	31.86	7.99	36.5	187	236	P	V
5220MHz	*	5222	105.07	-	-	101.72	31.86	7.99	36.5	187	236	A	V
	*	5238	114.11	-	-	110.7	31.87	8.04	36.5	100	244	P	H
	*	5236	107.89	-	-	104.48	31.87	8.04	36.5	100	244	A	H
802.11ac		5382.9	61.29	-12.71	74	57.44	31.92	8.43	36.5	100	244	P	H
VHT20	!	5376.06	53.02	-0.98	54	49.22	31.91	8.39	36.5	100	244	A	H
CH 48	*	5240	110.42	-	-	109.32	31.87	5.73	36.5	100	227	P	V
5240MHz	*	5244	101.95	-	-	100.76	31.88	5.81	36.5	100	227	A	V
		5364.36	64.51	-9.49	74	62.73	31.91	6.37	36.5	100	227	P	V
		5376.06	46.05	-7.95	54	44.27	31.91	6.37	36.5	100	227	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 VHT20 (Harmonic @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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		10360	44.52	-29.48	74	51.91	38.02	11.84	57.25	100	0	P	H
VHT20 CH 36 5180MHz		10360	44.94	-29.06	74	52.33	38.02	11.84	57.25	100	360	P	V
802.11ac		10440	45.84	-28.16	74	53.01	38.06	11.89	57.12	100	360	P	H
VHT20 CH 44 5220MHz		10440	46.14	-27.86	74	53.31	38.06	11.89	57.12	100	0	P	V
802.11ac		10480	46.51	-27.49	74	53.52	38.09	11.92	57.02	100	360	P	H
VHT20 CH 48 5240MHz		10480	44.68	-29.32	74	51.69	38.09	11.92	57.02	100	0	P	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 VHT40 (Band Edge @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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)
		5144.96	64.33	-9.67	74	61.1	31.84	7.92	36.53	310	185	P	H
	!	5149.92	50.55	-3.45	54	47.32	31.84	7.92	36.53	310	185	A	H
802.11ac	*	5200	106.82	-	-	103.51	31.86	7.95	36.5	310	185	P	H
VHT40	*	5184	99.02	-	-	95.74	31.85	7.94	36.51	310	185	A	H
CH 38		5138.56	65.69	-8.31	74	62.48	31.84	7.91	36.54	307	174	P	V
5190MHz	!	5150	53.41	-0.59	54	50.18	31.84	7.92	36.53	307	174	A	V
	*	5180	107.9	-	-	104.62	31.85	7.94	36.51	307	174	P	V
	*	5194	99.53	-	-	96.22	31.86	7.95	36.5	307	174	A	V
	*	5236	105.79	-	-	102.38	31.87	8.04	36.5	314	269	P	H
	*	5224	104.25	-	-	100.9	31.86	7.99	36.5	314	269	A	H
802.11ac		5351.58	59.33	-14.67	74	55.58	31.91	8.34	36.5	314	269	P	H
VHT40		5375.88	46.95	-7.05	54	43.15	31.91	8.39	36.5	314	269	A	H
CH 46	*	5244	108.3	-	-	104.84	31.88	8.08	36.5	323	276	P	V
5230MHz	*	5234	100.44	-	-	97.03	31.87	8.04	36.5	323	276	A	V
		5400	54.11	-19.89	74	50.21	31.92	8.48	36.5	323	276	P	V
	!	5376.06	48	-6	54	44.2	31.91	8.39	36.5	323	276	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 VHT40 (Harmonic @ 3m) for Beamforming Mode

WIFI Ant. 1+2+3	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		10380	46.6	-27.4	74	53.94	38.03	11.85	57.22	100	0	P	H
VHT40 CH 38 5190MHz		10380	45.1	-28.9	74	52.44	38.03	11.85	57.22	100	360	P	V
802.11ac		10460	54.16	-19.84	74	61.27	38.07	11.9	57.08	100	0	P	H
VHT40		10460	41.48	-12.52	54	48.59	38.07	11.9	57.08	100	360	A	H
CH 46 5230MHz		10460	44.9	-29.1	74	52.01	38.07	11.9	57.08	100	0	P	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) for Beamforming Mode

WIFI Ant. 1+2+3	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		5130.85	67.79	-6.21	74	64.58	31.84	7.91	36.54	100	244	P	H
	!	5149.85	50.33	-3.67	54	47.1	31.84	7.92	36.53	100	244	A	H
	*	5246	103.63	-	-	100.17	31.88	8.08	36.5	100	244	P	H
	*	5234	95.96	-	-	92.55	31.87	8.04	36.5	100	244	A	H
		5352.55	64.43	-9.57	74	60.68	31.91	8.34	36.5	100	244	P	H
		5376.15	47.91	-6.09	54	44.11	31.91	8.39	36.5	100	244	A	H
		5140.65	65.2	-8.8	74	61.97	31.84	7.92	36.53	100	180	P	V
	!	5149.35	53.14	-0.86	54	49.91	31.84	7.92	36.53	100	180	A	V
	*	5246	103.53	-	-	100.07	31.88	8.08	36.5	100	180	P	V
	*	5230	95.02	-	-	91.61	31.87	8.04	36.5	100	180	A	V
		5351.9	57.41	-16.59	74	53.66	31.91	8.34	36.5	100	180	P	V
		5376.1	44.2	-9.8	54	40.4	31.91	8.39	36.5	100	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) for Beamforming Mode

WIFI Ant. 1+2+3	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		10420	45.21	-28.79	74	52.43	38.05	11.88	57.15	100	360	P	H
VHT80 CH 42 5210MHz		10420	44.8	-29.2	74	52.02	38.05	11.88	57.15	100	0	P	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												

For Sample 1 with POE Adapter

Band 1 5150~5250MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m) for Beamforming Mode

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+3		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
	*	5200	93.06	-	-	89.75	31.86	7.95	36.5	104	355	P	H
	*	5218	84.52	-	-	81.17	31.86	7.99	36.5	104	355	A	H
		5134.88	54.69	-19.31	74	51.48	31.84	7.91	36.54	104	355	P	H
		5135.36	46.09	-7.91	54	42.88	31.84	7.91	36.54	104	355	A	H
802.11ac		5385.6	51.45	-22.55	74	47.6	31.92	8.43	36.5	104	355	P	H
VHT80		5396.4	43.17	-10.83	54	39.27	31.92	8.48	36.5	104	355	A	H
CH 42	*	5204	108	-	-	104.69	31.86	7.95	36.5	162	320	P	V
5210MHz	*	5234	97.17	-	-	93.76	31.87	8.04	36.5	162	320	A	V
		5147.52	61.59	-12.41	74	58.36	31.84	7.92	36.53	162	320	P	V
	!	5149.12	52.14	-1.86	54	48.91	31.84	7.92	36.53	162	320	A	V
		5377.14	54.19	-19.81	74	50.39	31.91	8.39	36.5	162	320	P	V
		5375.88	45.72	-8.28	54	41.92	31.91	8.39	36.5	162	320	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) for Beamforming Mode

WIFI Ant. 1+2+3	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		10420	44.2	-29.8	74	51.42	38.05	11.88	57.15	100	0	P	H
VHT80 CH 42 5210MHz		10420	45.11	-28.89	74	52.33	38.05	11.88	57.15	100	0	P	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	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	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 CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

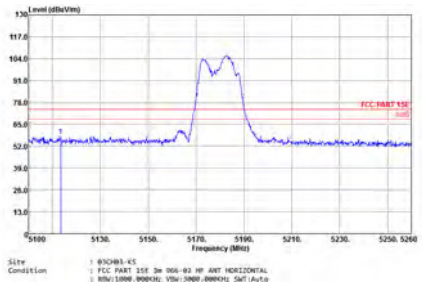
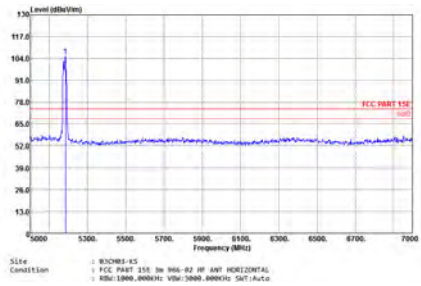
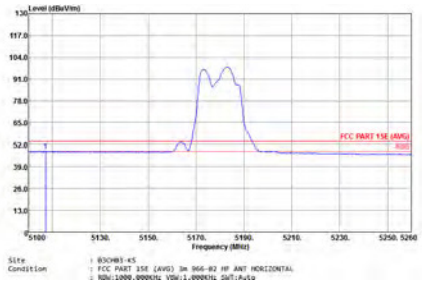
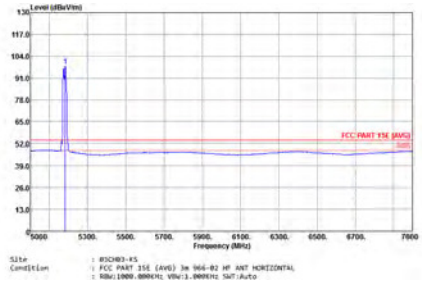
Both peak and average measured complies with the limit line, so test result is "PASS".

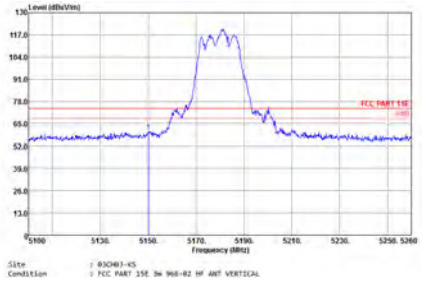
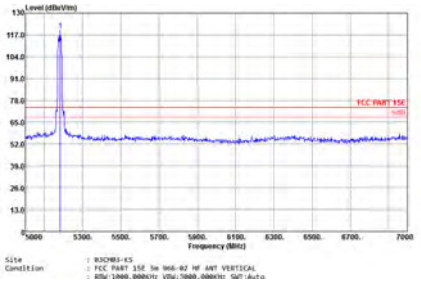
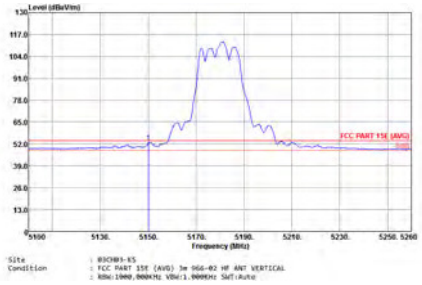
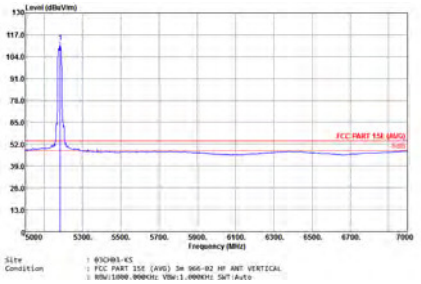
Appendix C. Radiated Spurious Emission

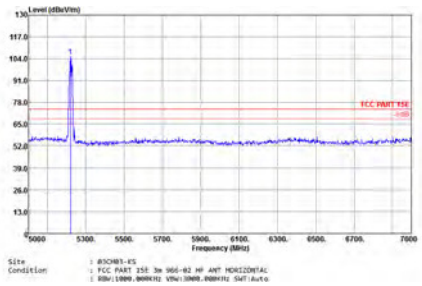
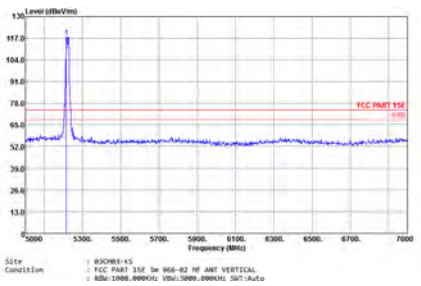
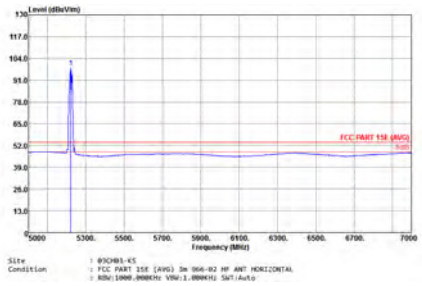
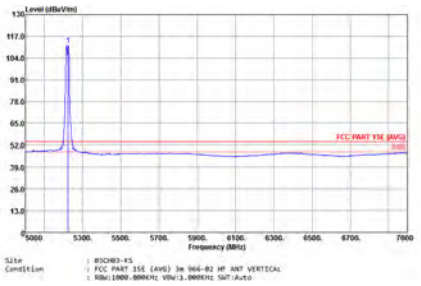
For Sample 1 with Adapter

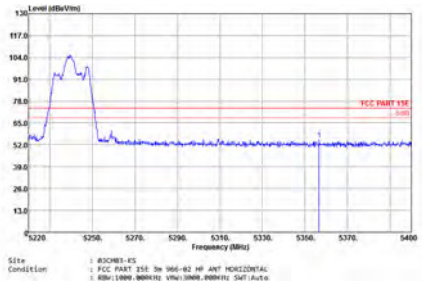
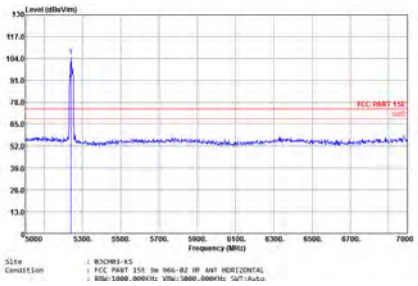
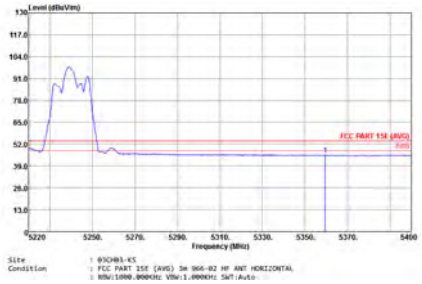
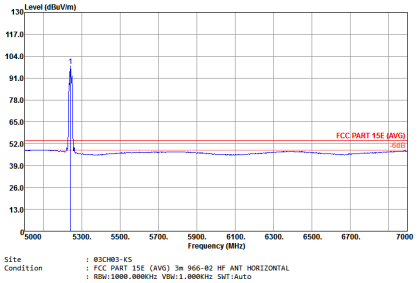
Band 1 - 5150~5250MHz

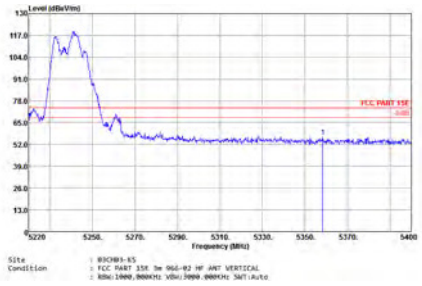
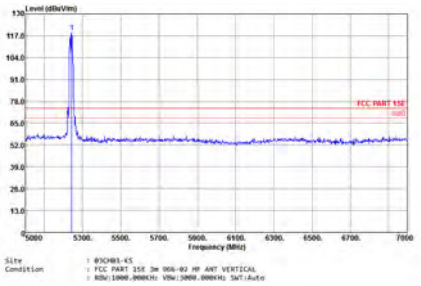
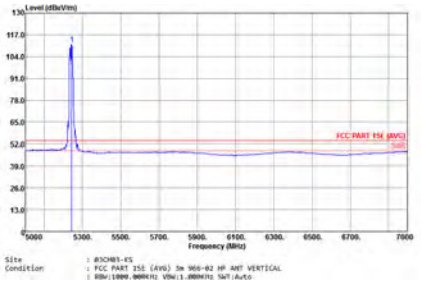
WIFI 802.11a (Band Edge @ 3m) for CDD Mode

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH36 5180MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH36 5180MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

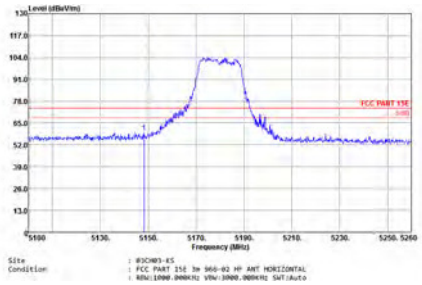
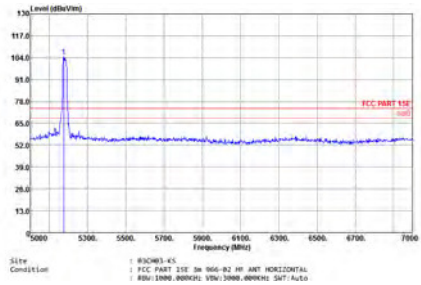
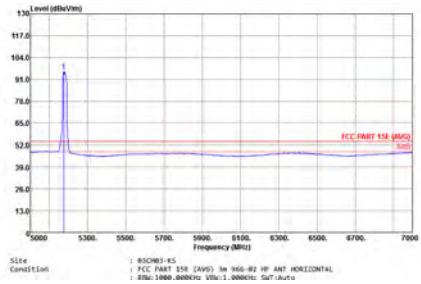
WIFI	Band 1 5150~5250MHz Fundamental @ 3m	
ANT	802.11a CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

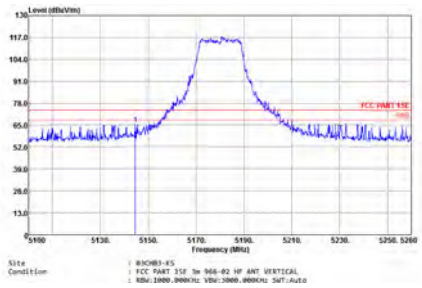
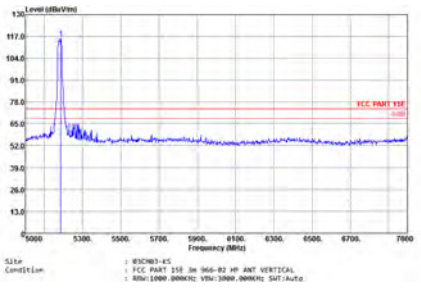
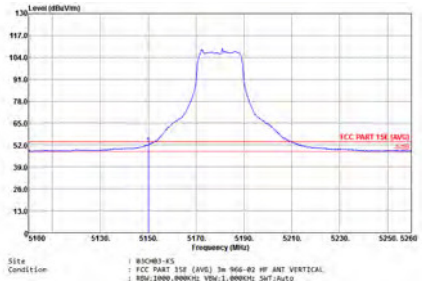
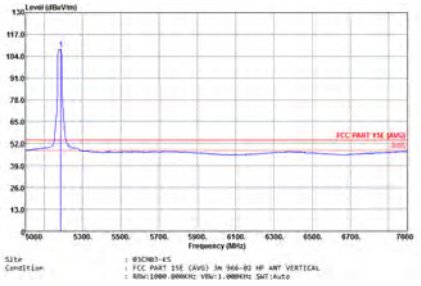
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

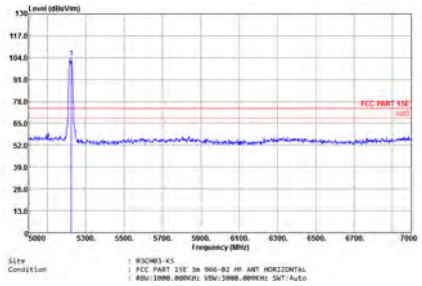
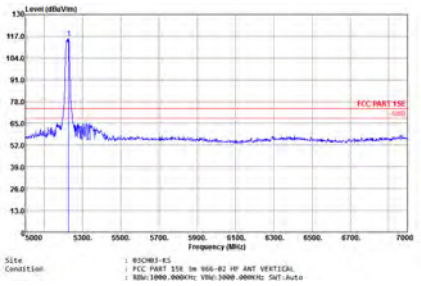
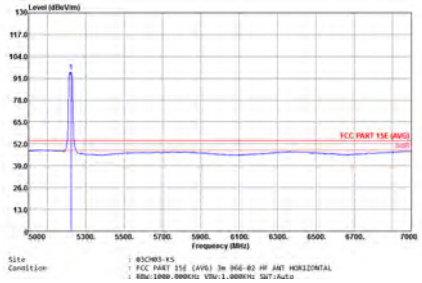
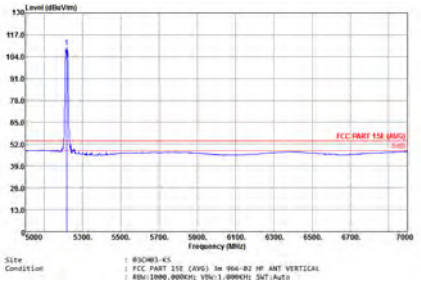
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

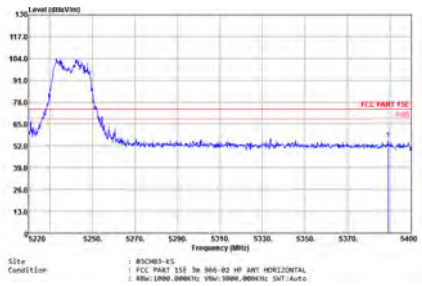
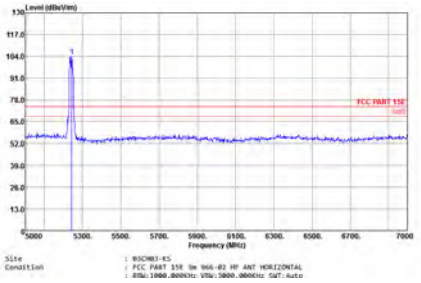
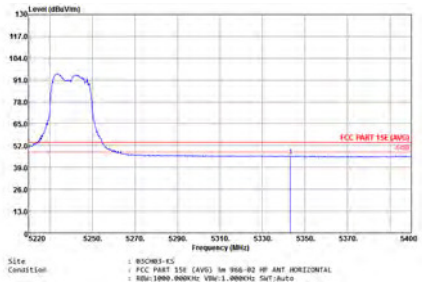
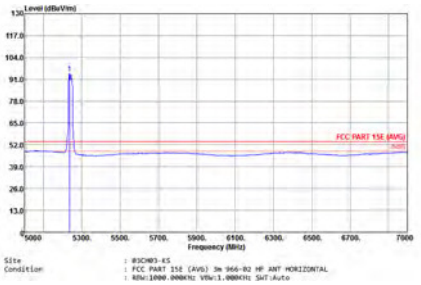
Band 1 5150~5250MHz

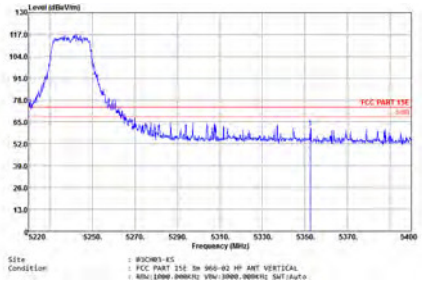
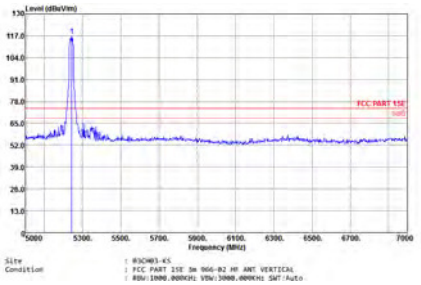
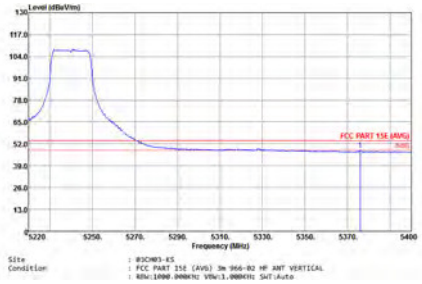
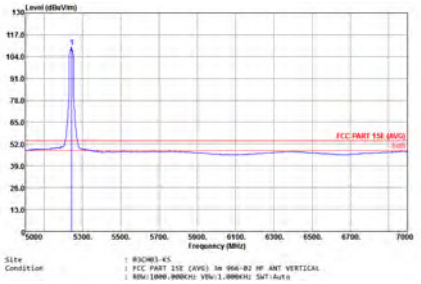
WIFI 802.11ac VHT20 (Band Edge @ 3m) for Beamforming Mode

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH36 5180MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH36 5180MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

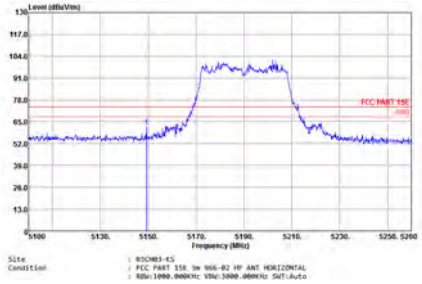
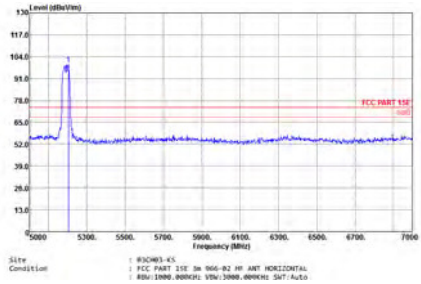
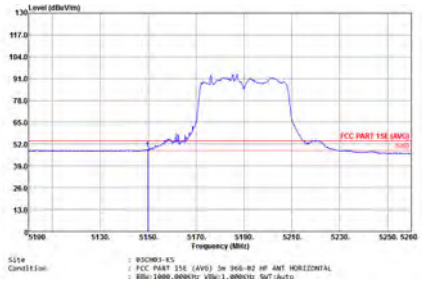
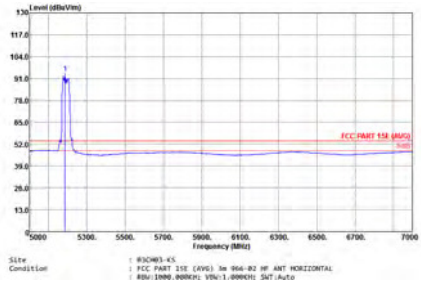
WIFI	Band 1 5150~5250MHz Fundamental @ 3m	
ANT	802.11ac VHT20 CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

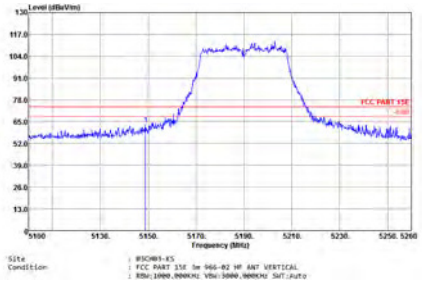
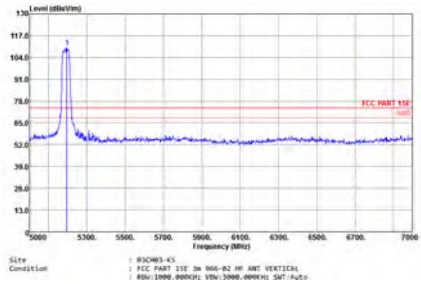
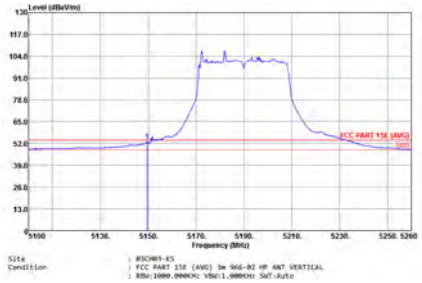
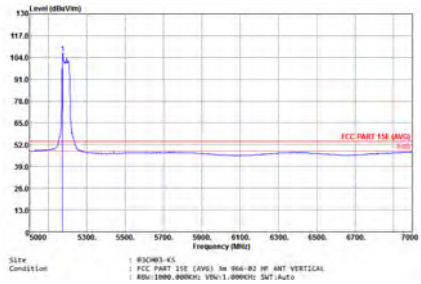
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH48 5240MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

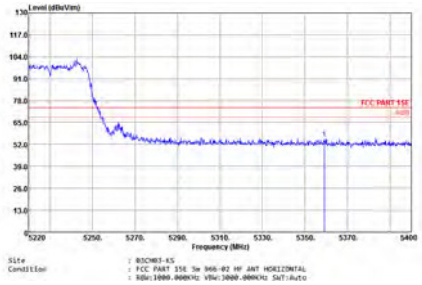
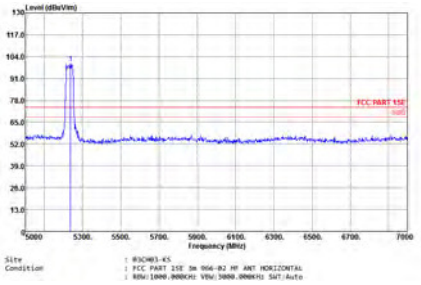
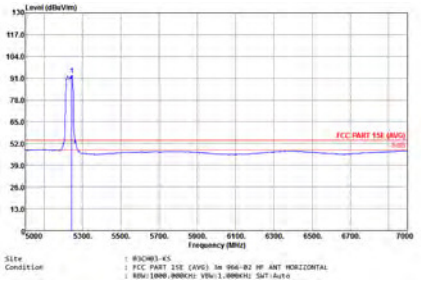
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH48 5240MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

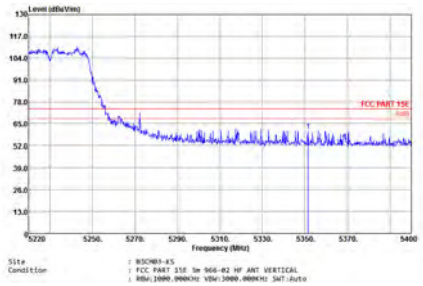
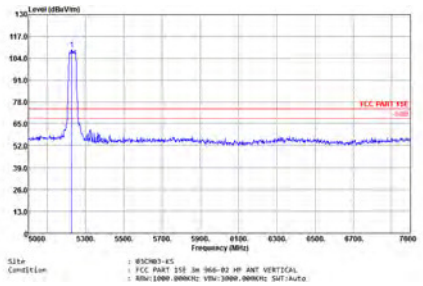
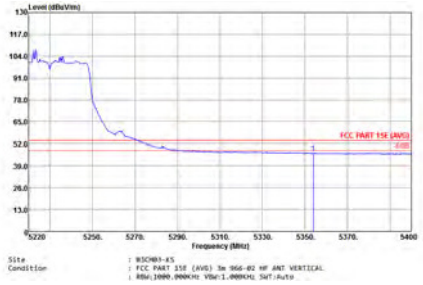
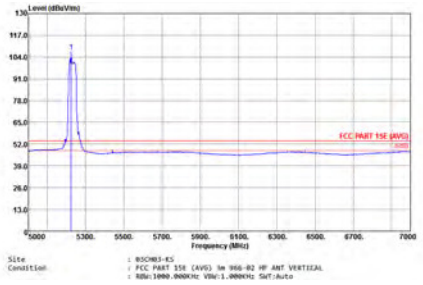
Band 1 5150~5250MHz

WIFI 802.11ac VHT40 (Band Edge @ 3m) for Beamforming Mode

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH38 5190MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

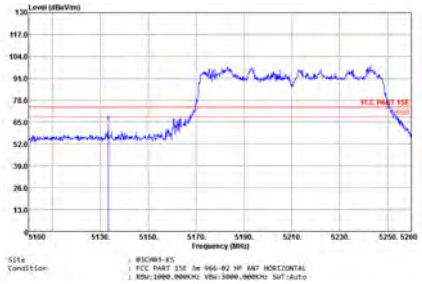
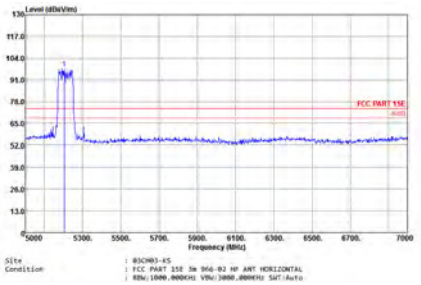
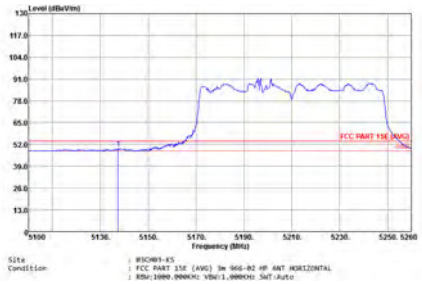
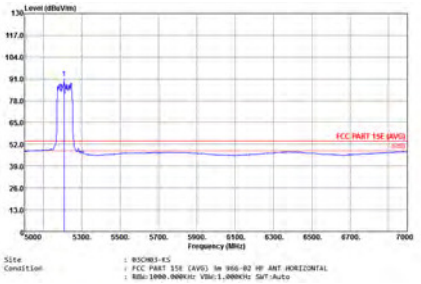
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH38 5190MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

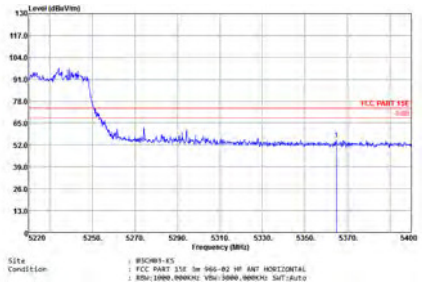
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH46 5230MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

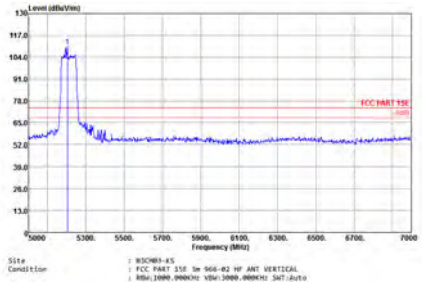
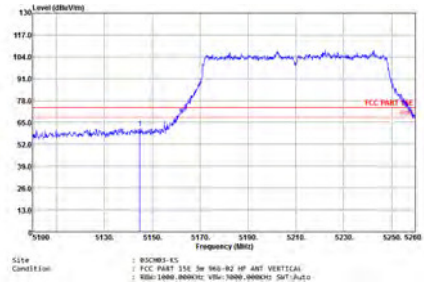
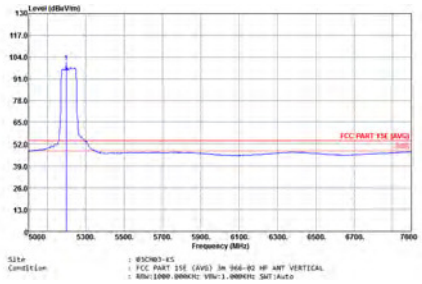
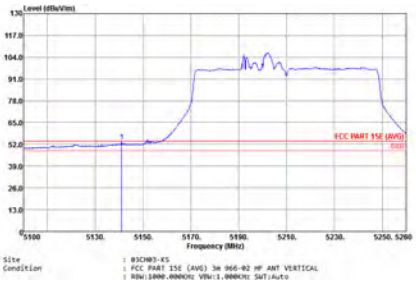
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH46 5230MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

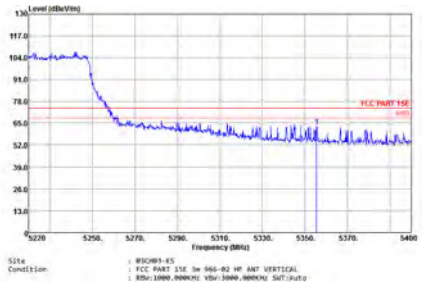
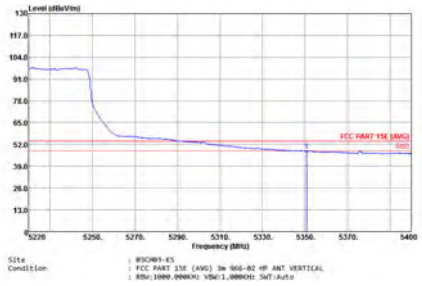
Band 1 5150~5250MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m) for Beamforming Mode

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

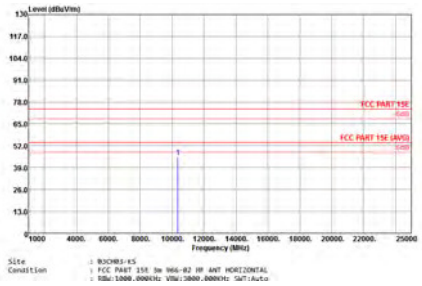
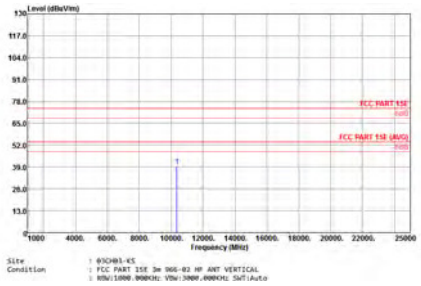
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	
Peak		
Avg.		

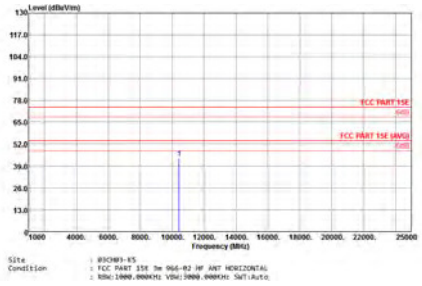
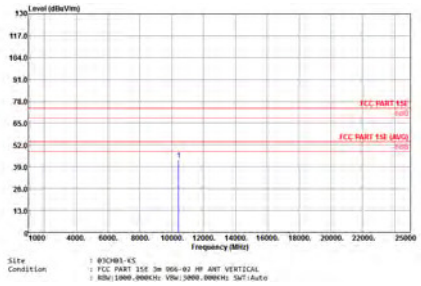
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

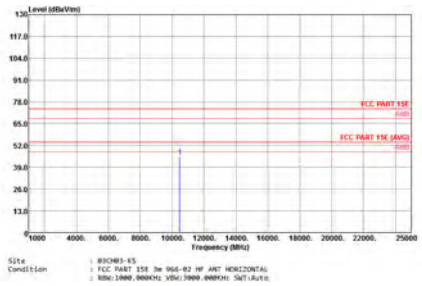
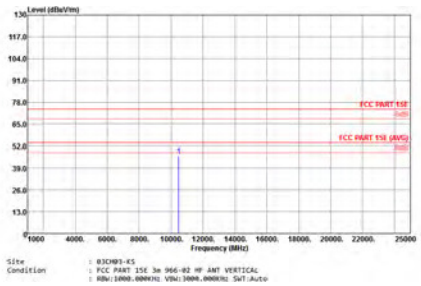
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Vertical	
Peak		
Avg.		

Band 1 - 5150~5250MHz

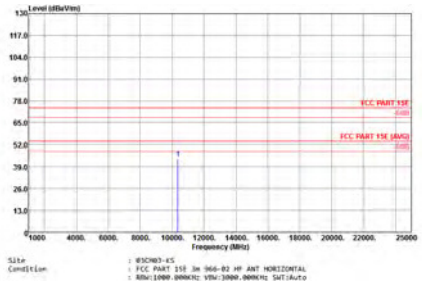
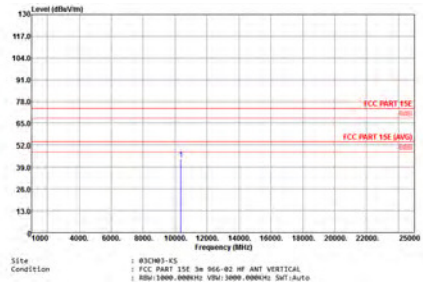
WIFI 802.11a (Harmonic @ 3m) for CDD Mode

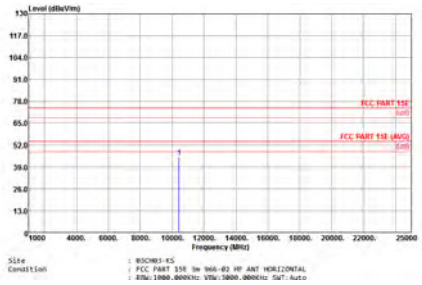
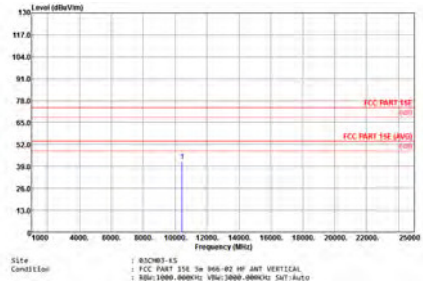
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH36 5180MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

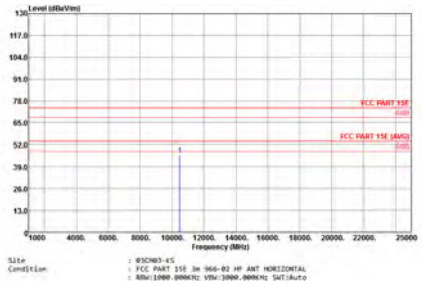
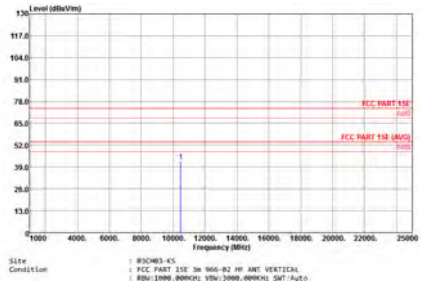
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH48 5240MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

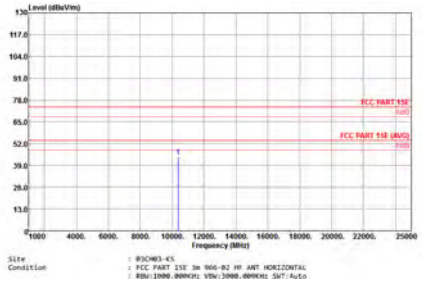
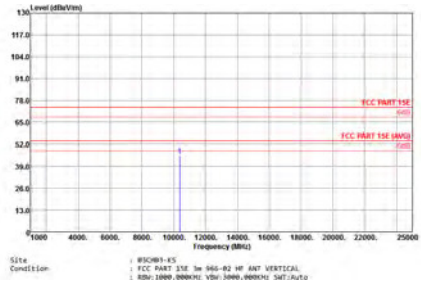
Band 1 5150~5250MHz
WIFI 802.11ac VHT20 (Harmonic @ 3m) for Beamforming Mode

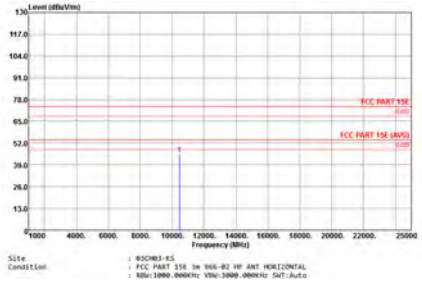
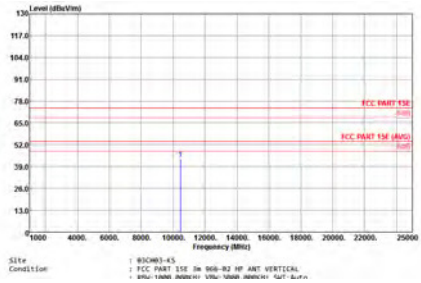
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH36 5180MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH48 5240MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

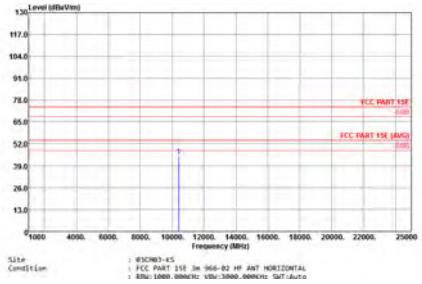
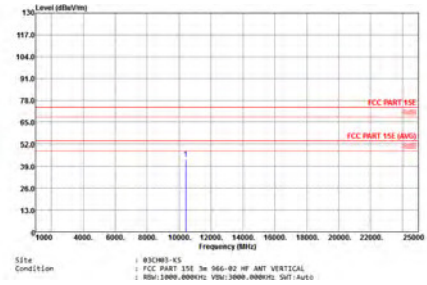
Band 1 5150~5250MHz
WIFI 802.11ac VHT40 (Harmonic @ 3m) for Beamforming Mode

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH38 5190MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH46 5230MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

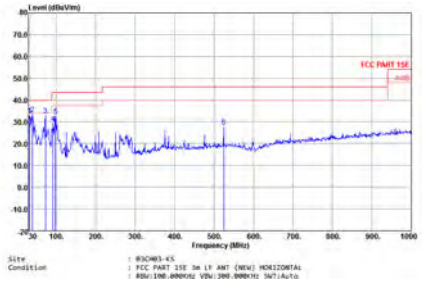
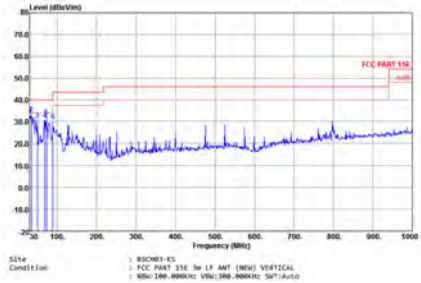
Band 1 5150~5250MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m) for Beamforming Mode

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

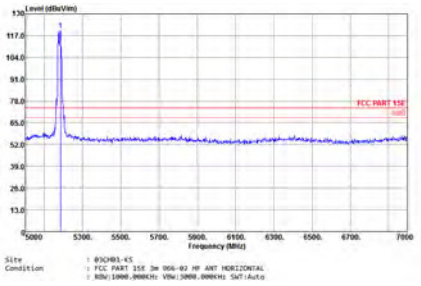
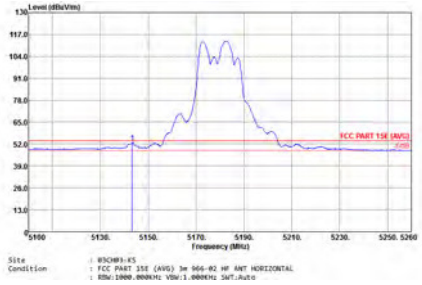
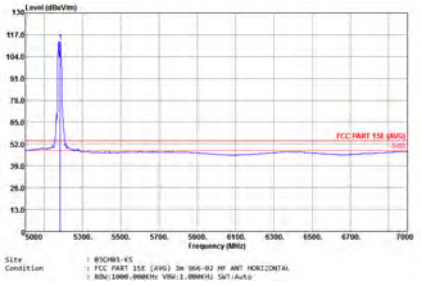
5GHz WIFI 802.11ac VHT80 (LF) for Beamforming Mode

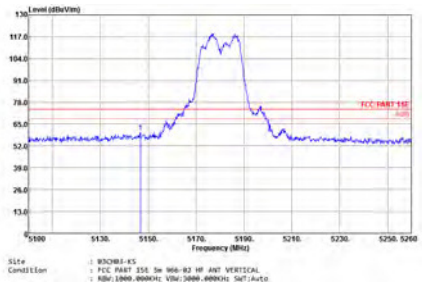
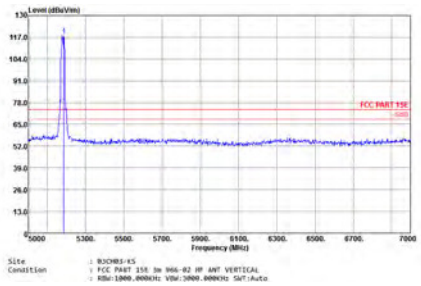
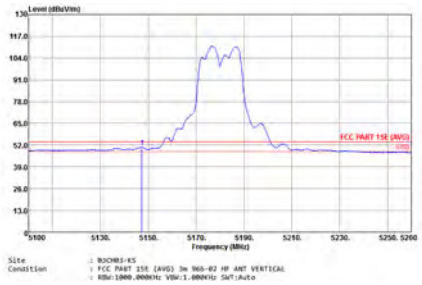
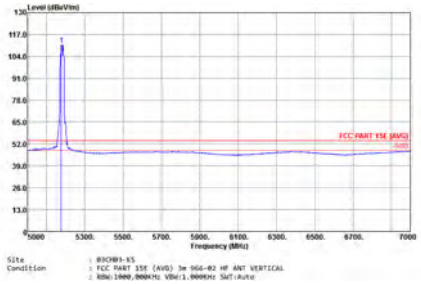
WIFI	5GHz WIFI	
ANT	802.11ac VHT80 LF	
1+2+3	Horizontal	Vertical
QP / Peak		

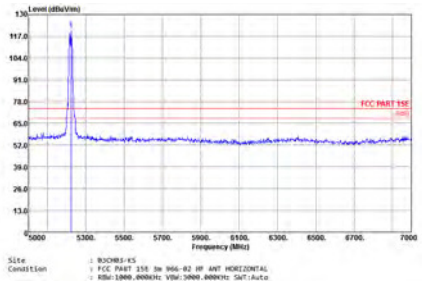
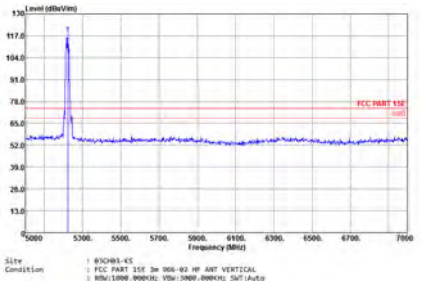
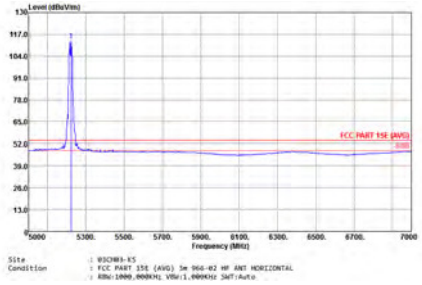
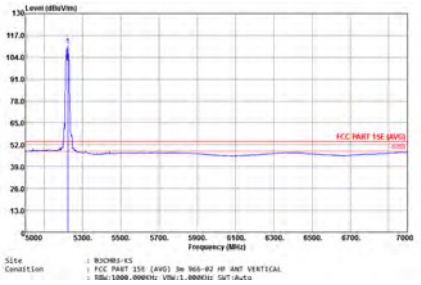
For Sample 2 with Adapter

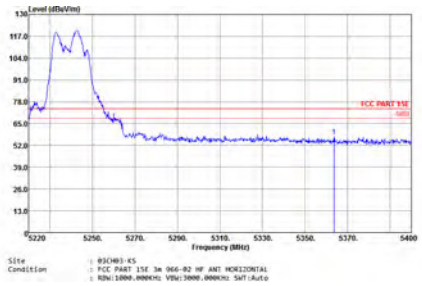
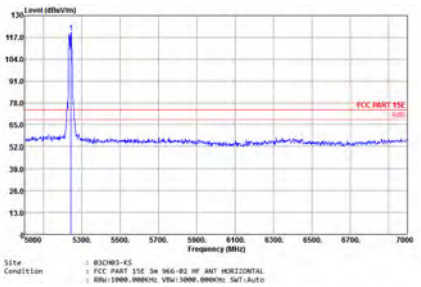
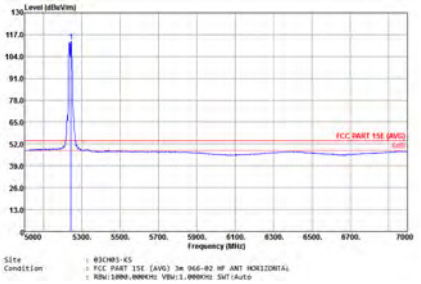
Band 1 - 5150~5250MHz

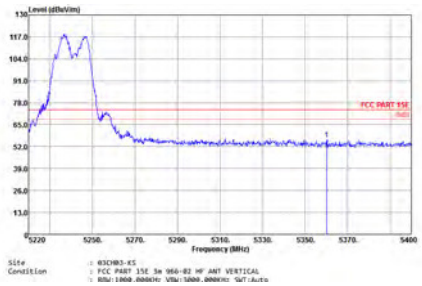
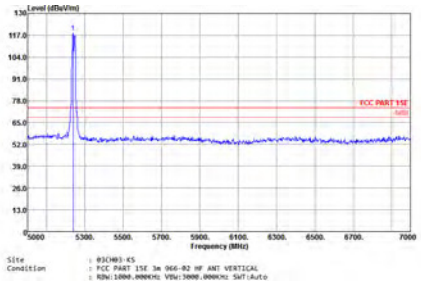
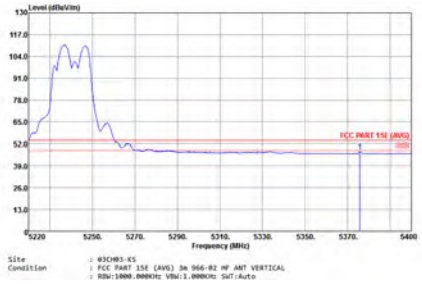
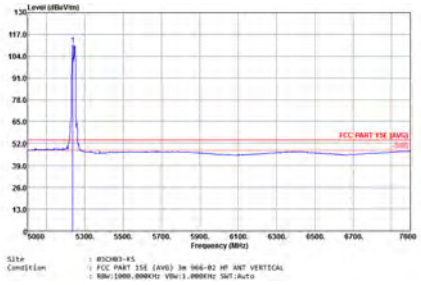
WIFI 802.11a (Band Edge @ 3m) for CDD Mode

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH36 5180MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

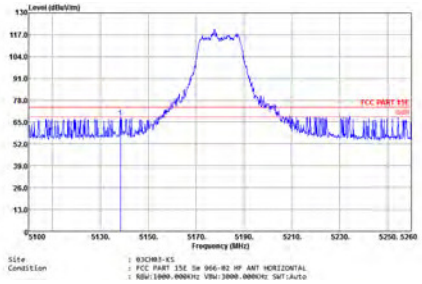
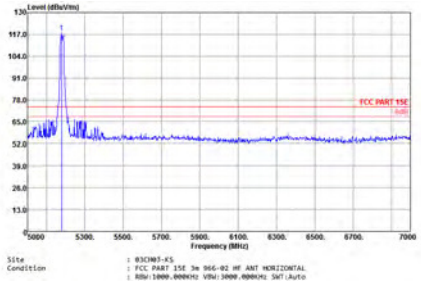
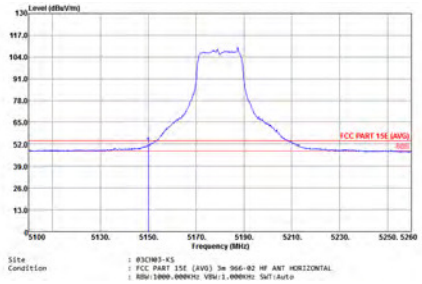
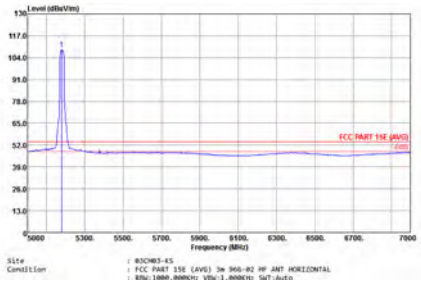
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH36 5180MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

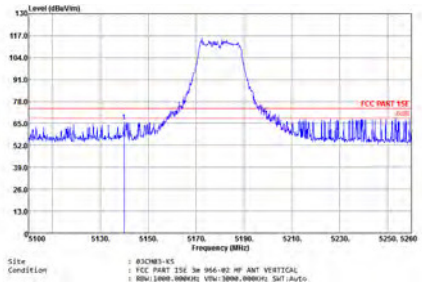
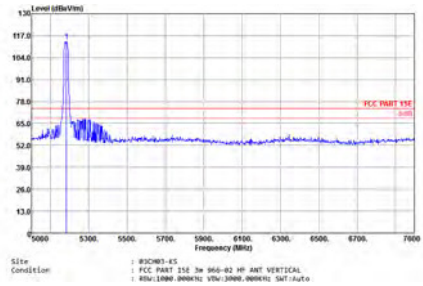
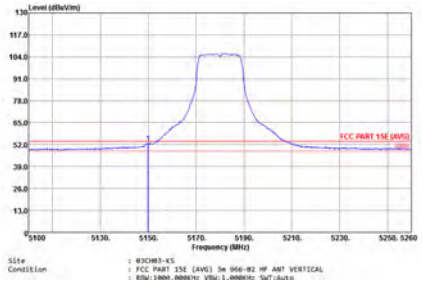
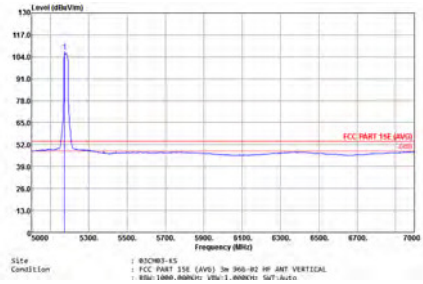
WIFI	Band 1 5150~5250MHz Fundamental @ 3m	
ANT	802.11a CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

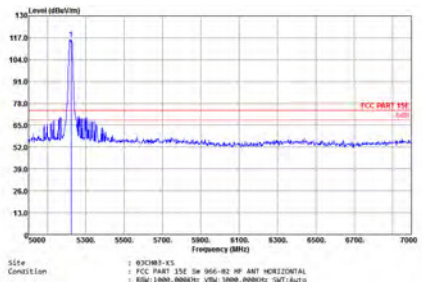
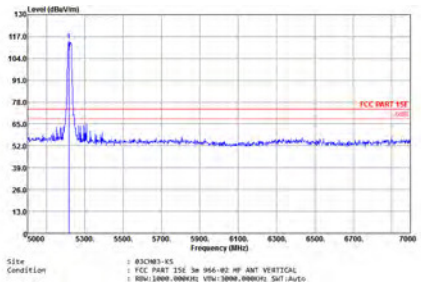
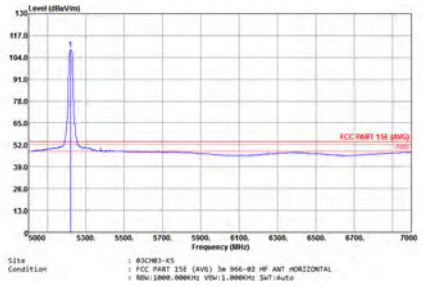
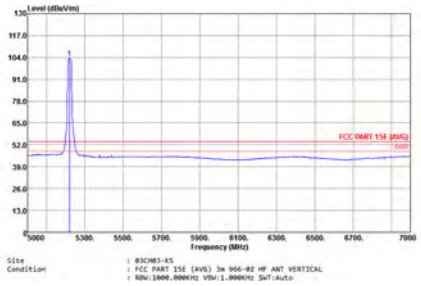
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

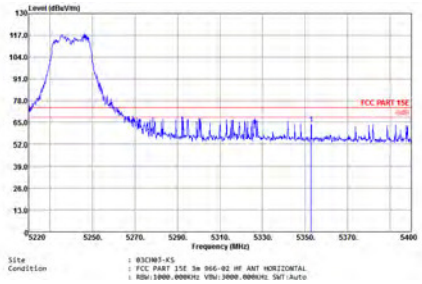
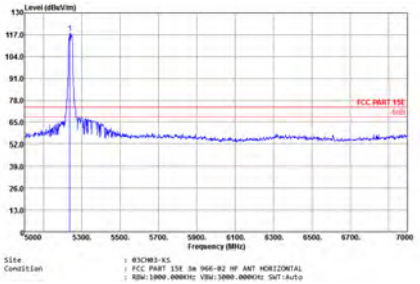
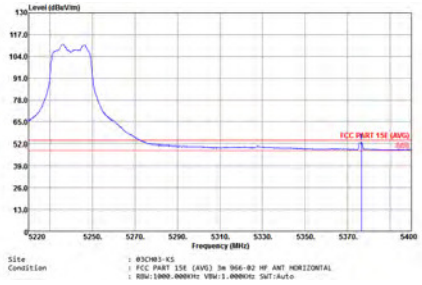
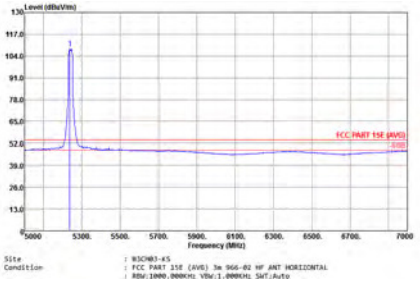
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

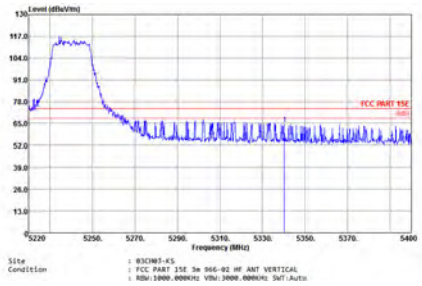
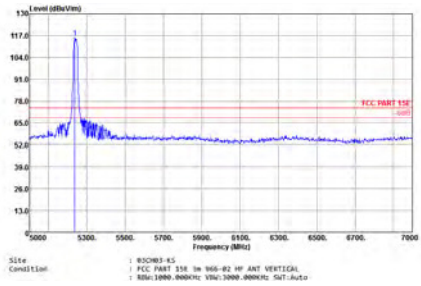
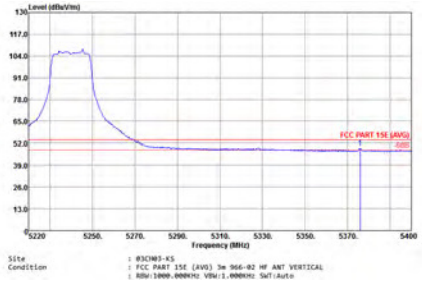
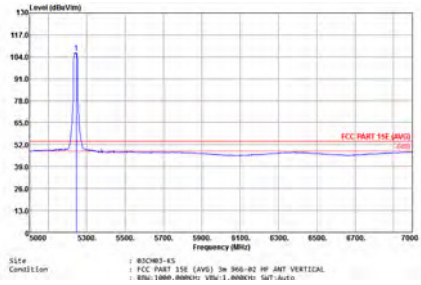
Band 1 5150~5250MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m) for Beamforming Mode

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH36 5180MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH36 5180MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

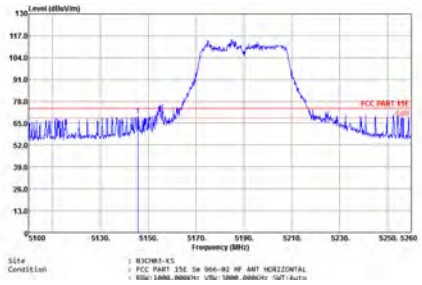
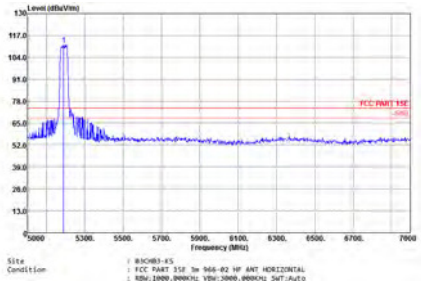
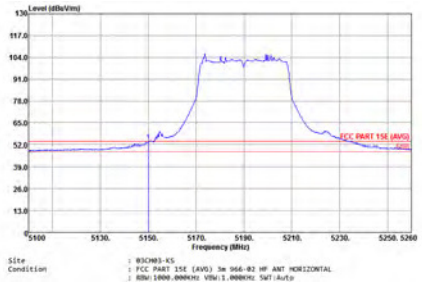
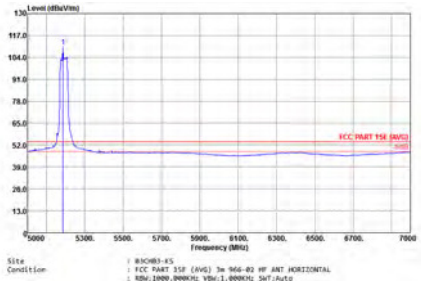
WIFI	Band 1 5150~5250MHz Fundamental @ 3m	
ANT	802.11ac VHT20 CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

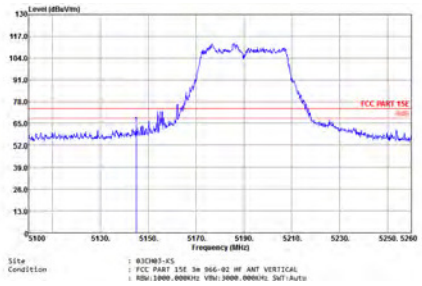
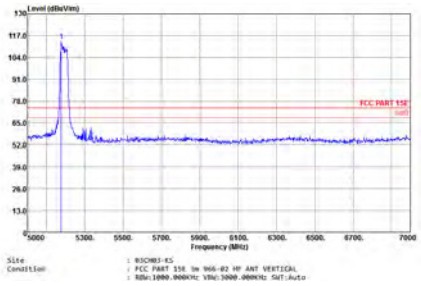
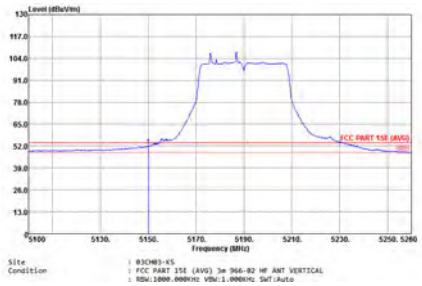
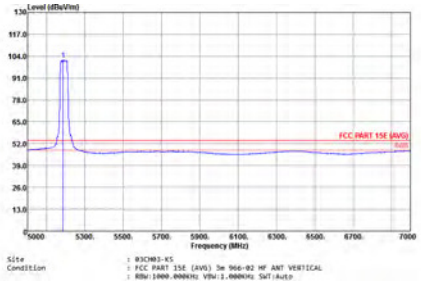
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH48 5240MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

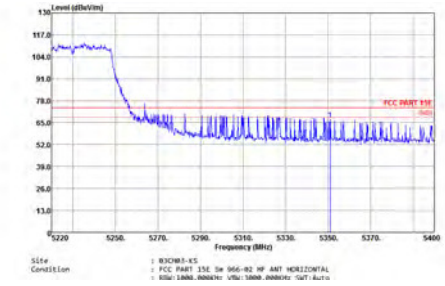
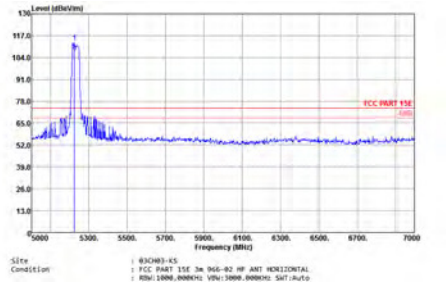
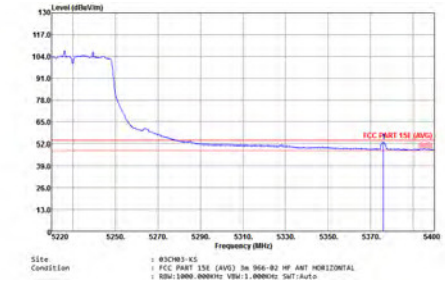
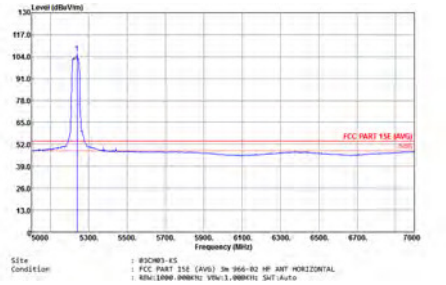
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH48 5240MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

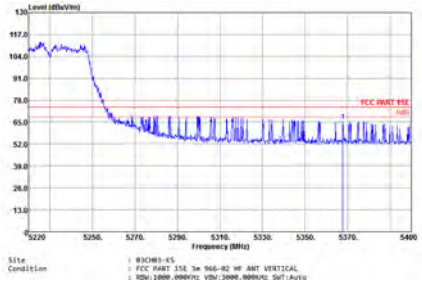
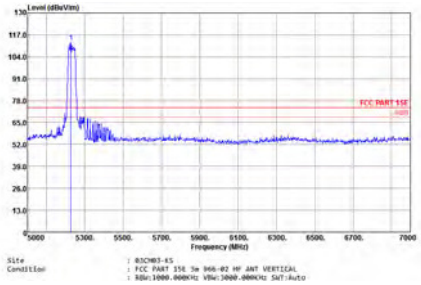
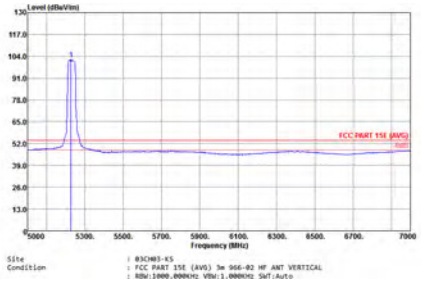
Band 1 5150~5250MHz

WIFI 802.11ac VHT40 (Band Edge @ 3m) for Beamforming Mode

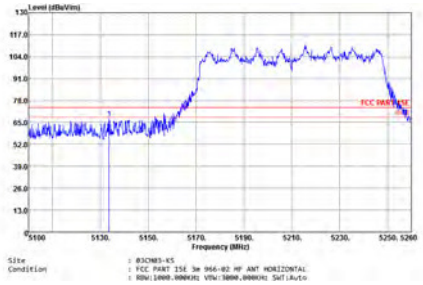
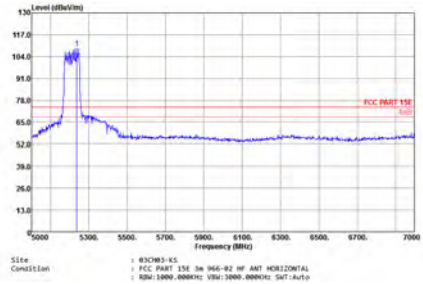
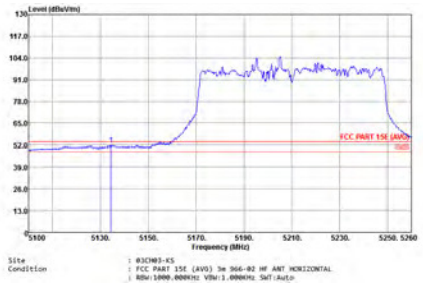
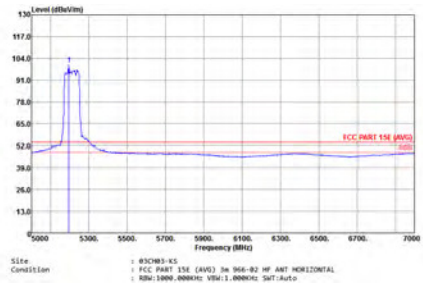
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH38 5190MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

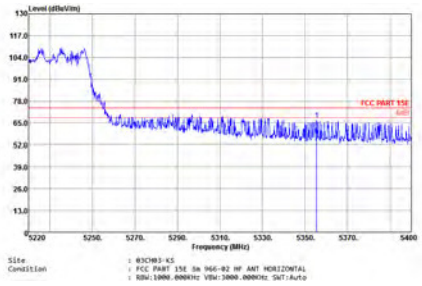
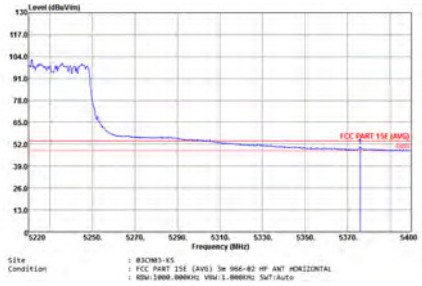
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH38 5190MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

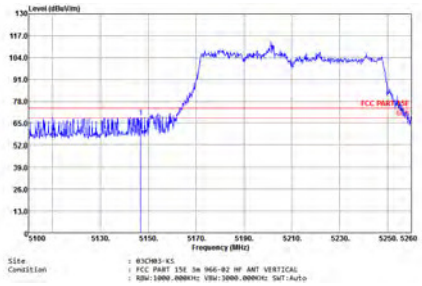
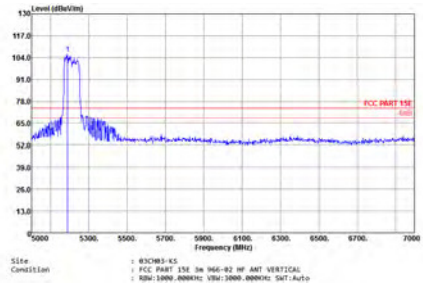
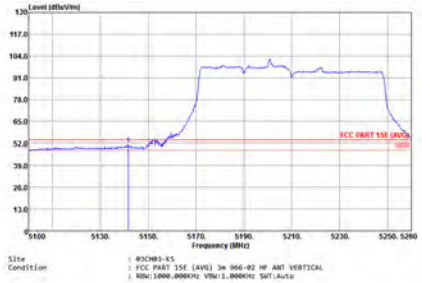
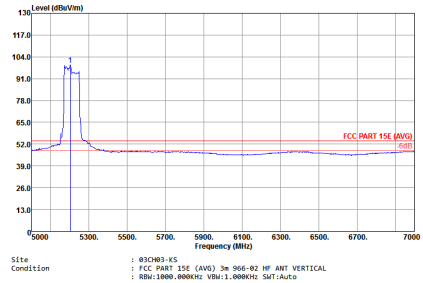
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH46 5230MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

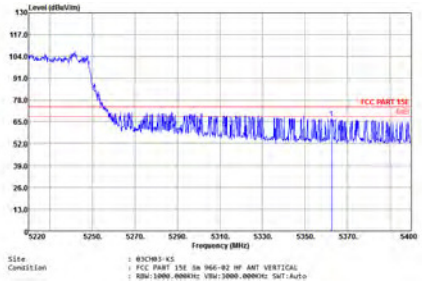
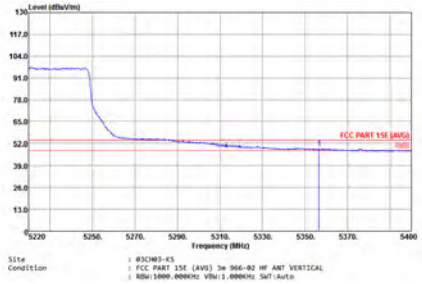
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH46 5230MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

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

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

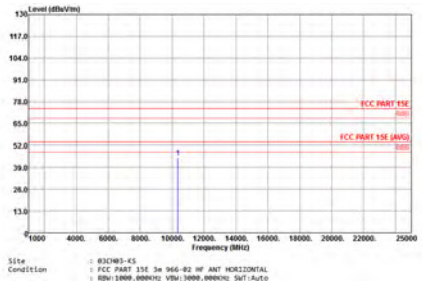
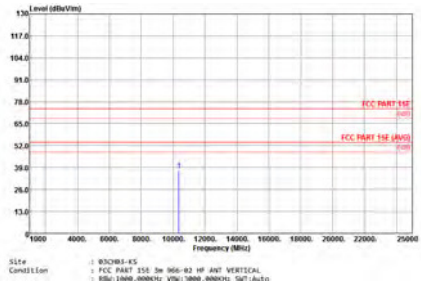
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	
Peak		
Avg.		

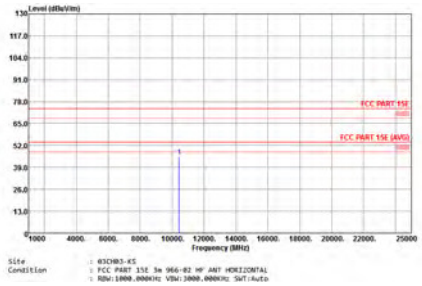
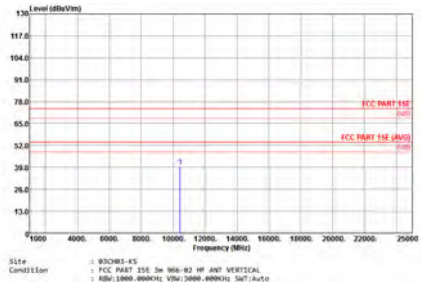
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

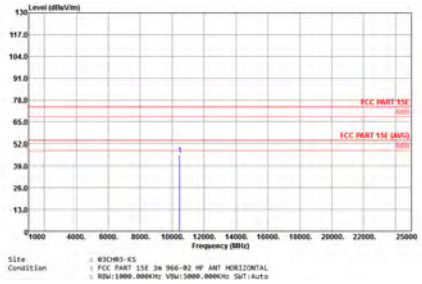
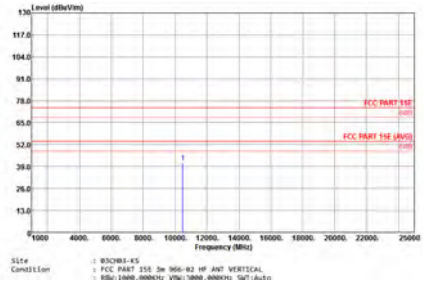
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Vertical	
Peak		
Avg.		

Band 1 - 5150~5250MHz

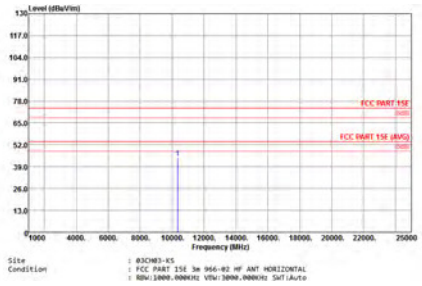
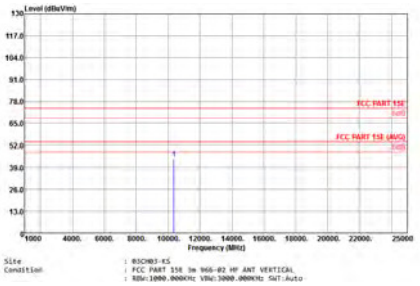
WIFI 802.11a (Harmonic @ 3m) for CDD Mode

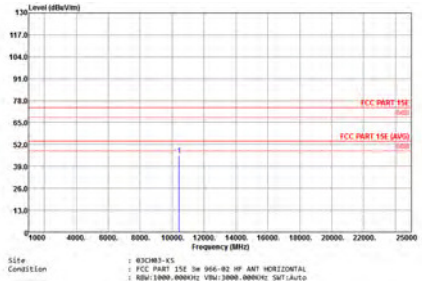
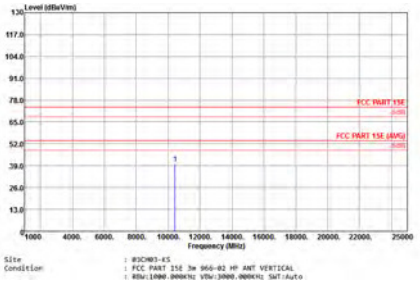
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH36 5180MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

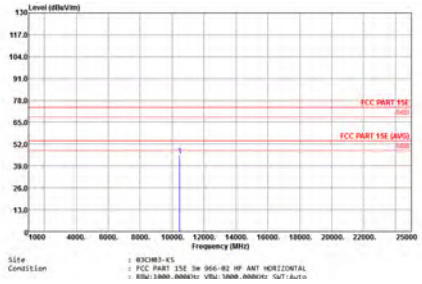
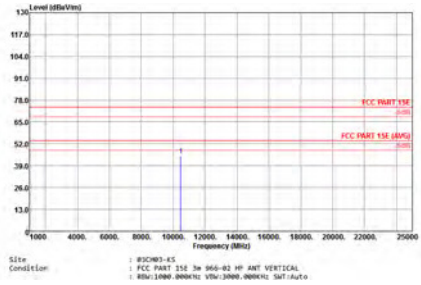
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH48 5240MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

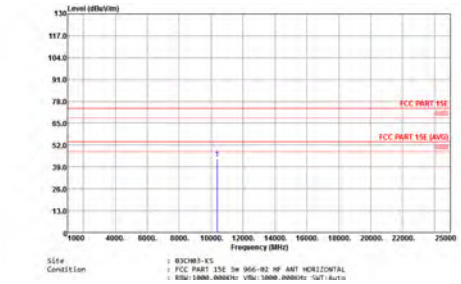
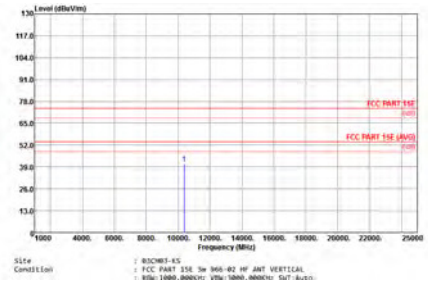
Band 1 5150~5250MHz
WIFI 802.11ac VHT20 (Harmonic @ 3m) for Beamforming Mode

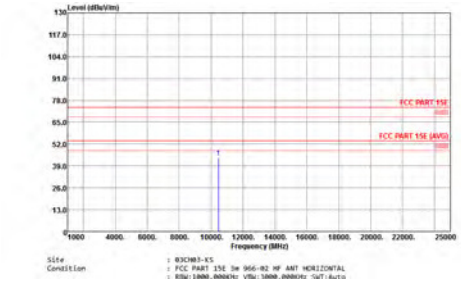
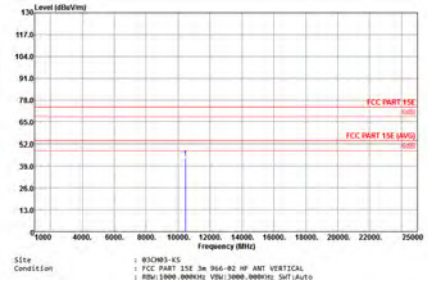
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH36 5180MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH48 5240MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

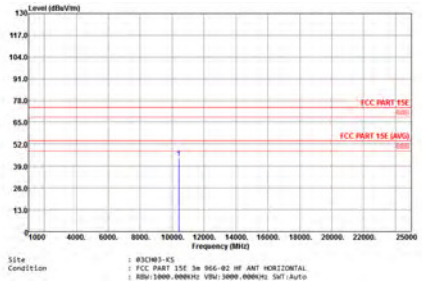
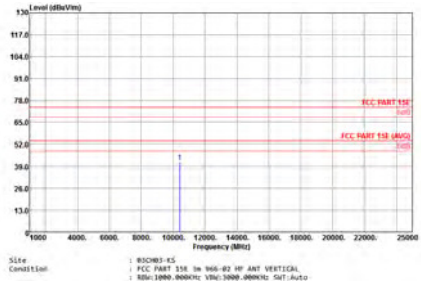
Band 1 5150~5250MHz
WIFI 802.11ac VHT40 (Harmonic @ 3m) for Beamforming Mode

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH38 5190MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH46 5230MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

Band 1 5150~5250MHz

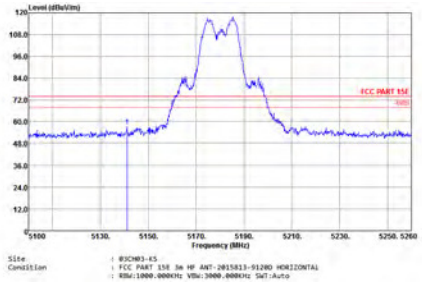
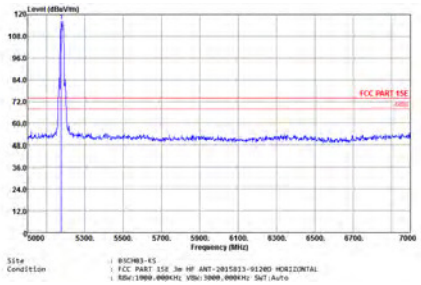
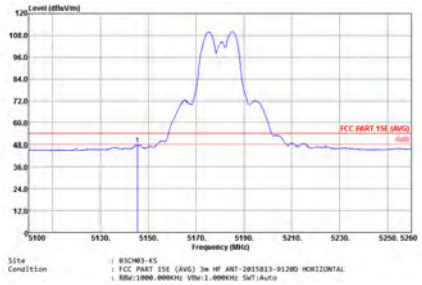
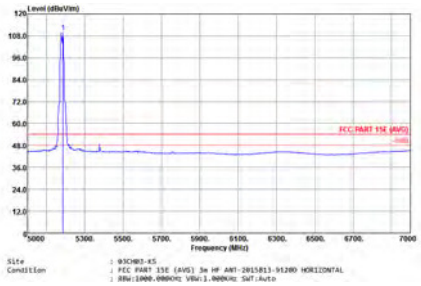
WIFI 802.11ac VHT80 (Harmonic @ 3m) for Beamforming Mode

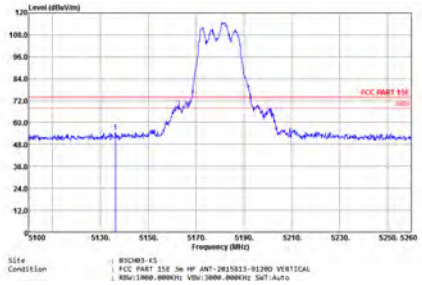
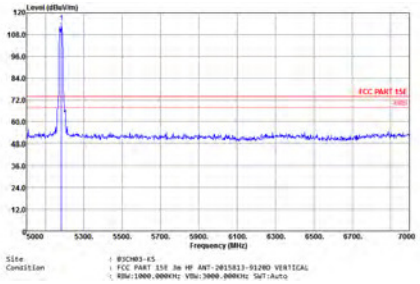
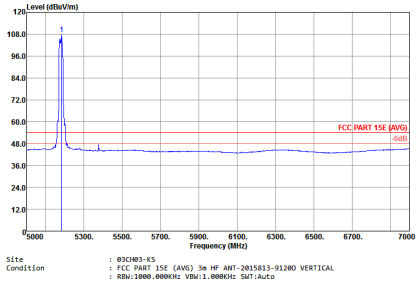
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

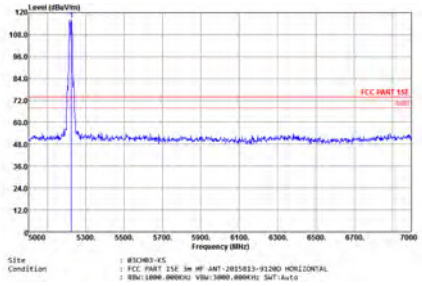
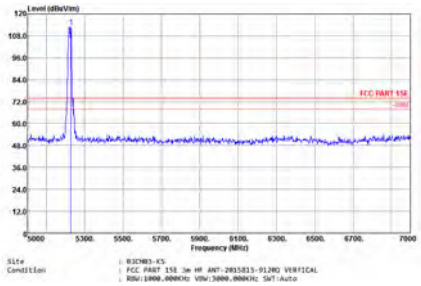
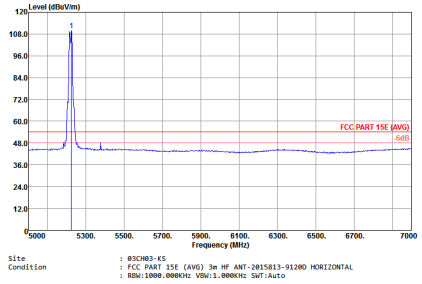
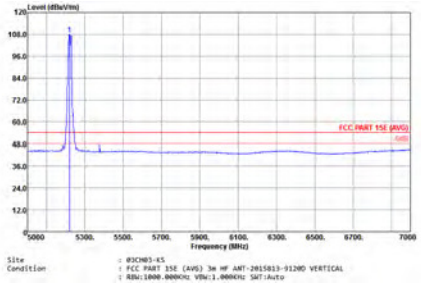
For Sample 3 with Adapter

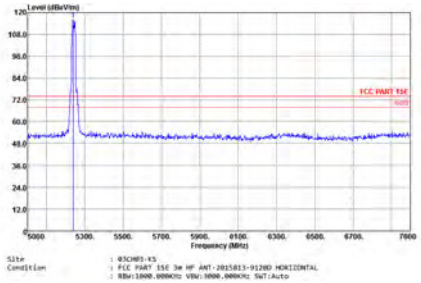
Band 1 - 5150~5250MHz

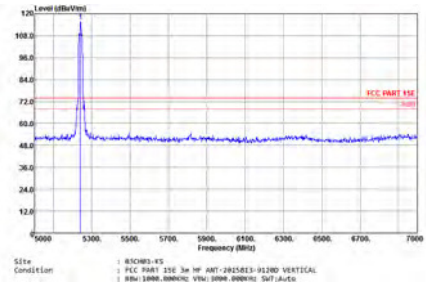
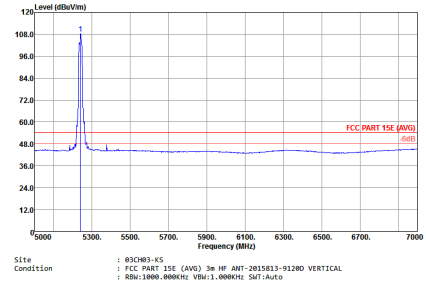
WIFI 802.11a (Band Edge @ 3m) for CDD Mode

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH36 5180MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

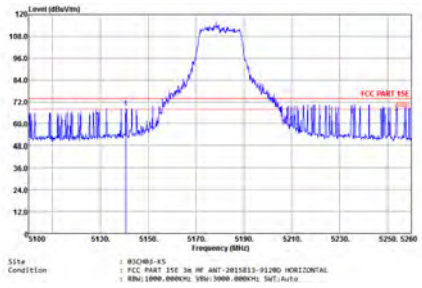
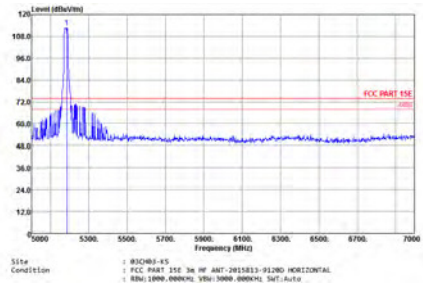
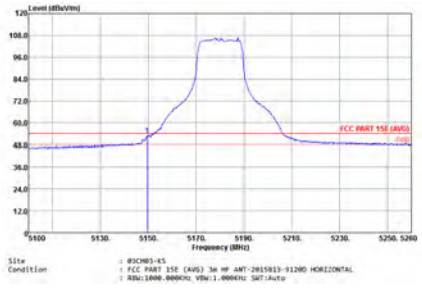
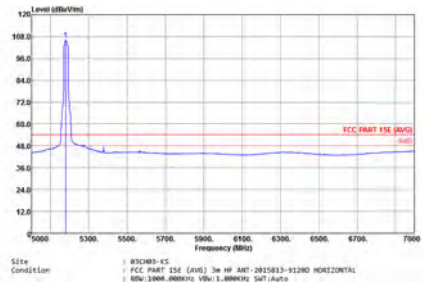
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH36 5180MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

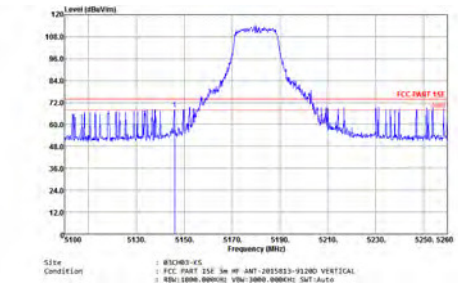
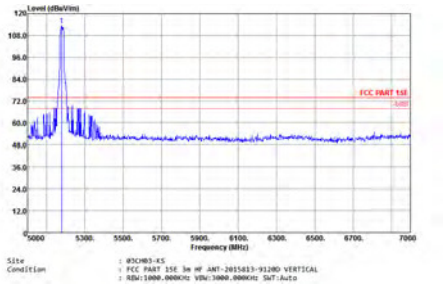
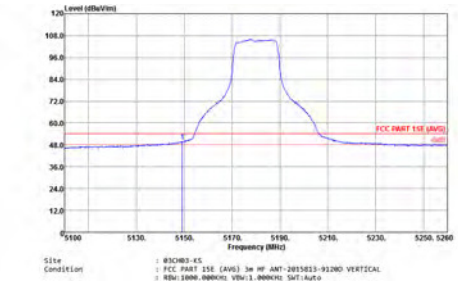
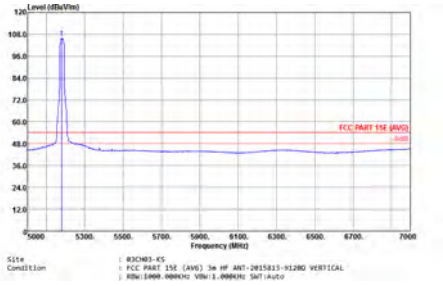
WIFI	Band 1 5150~5250MHz Fundamental @ 3m	
ANT	802.11a CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

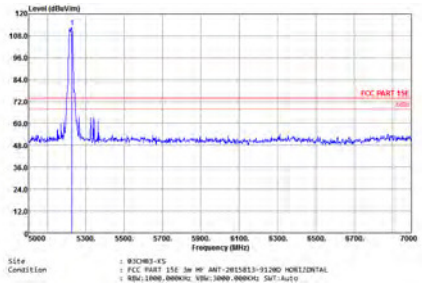
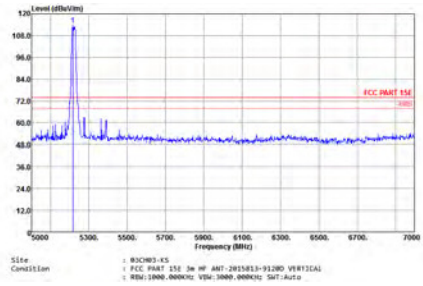
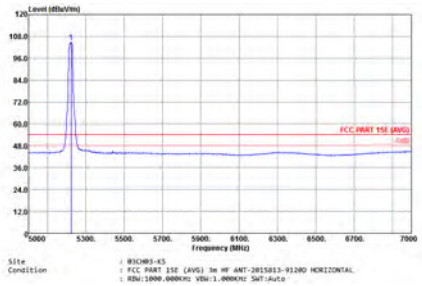
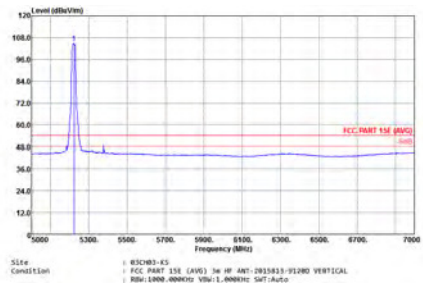
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

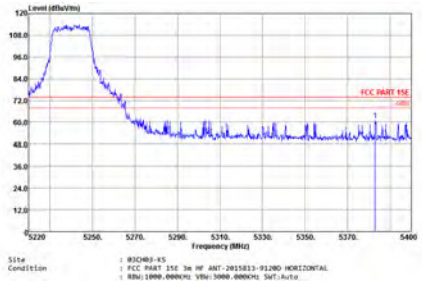
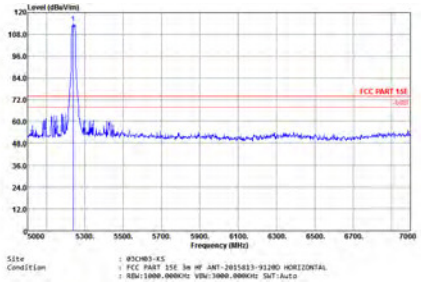
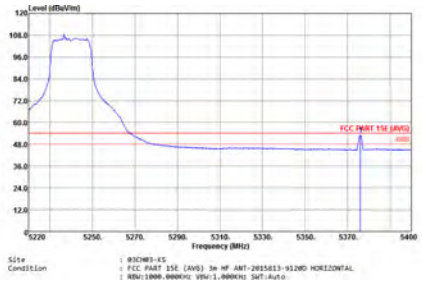
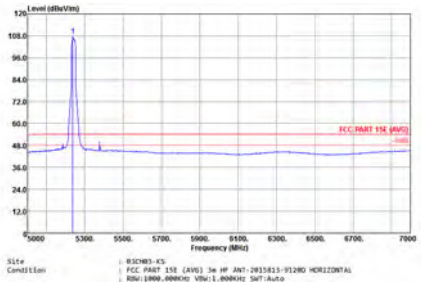
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

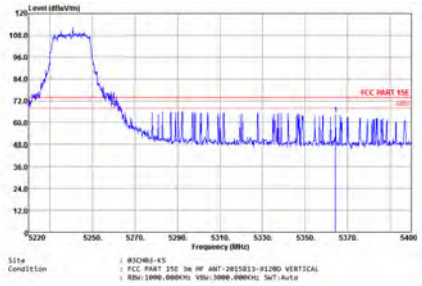
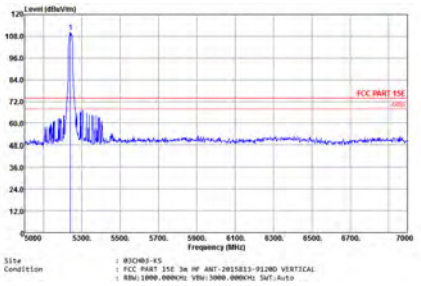
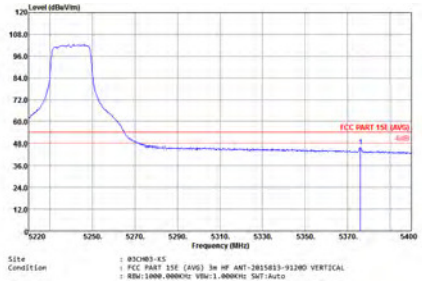
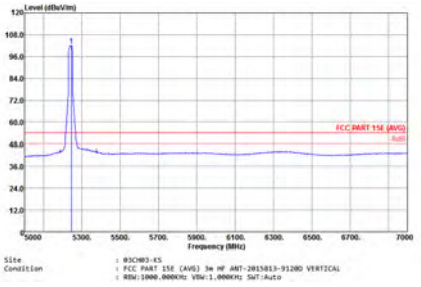
Band 1 5150~5250MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m) for Beamforming Mode

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH36 5180MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

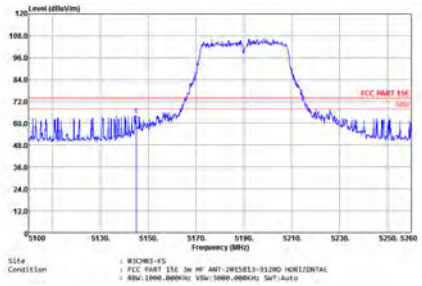
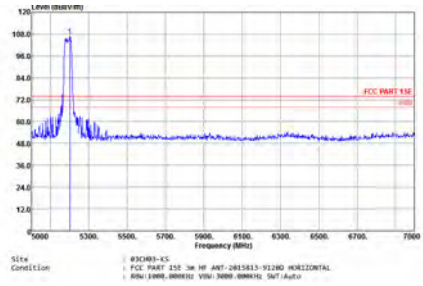
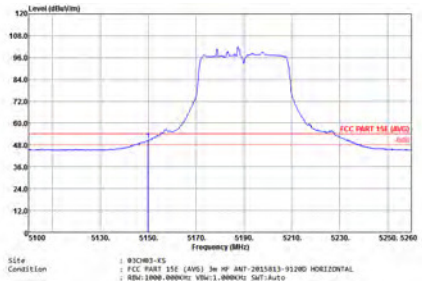
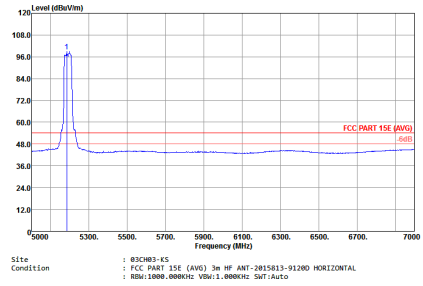
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH36 5180MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

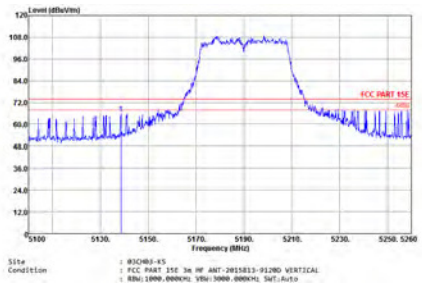
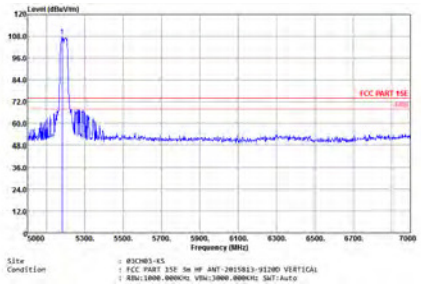
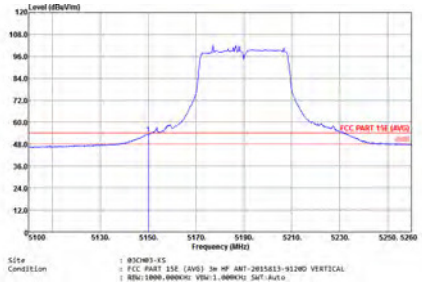
WIFI	Band 1 5150~5250MHz Fundamental @ 3m	
ANT	802.11ac VHT20 CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

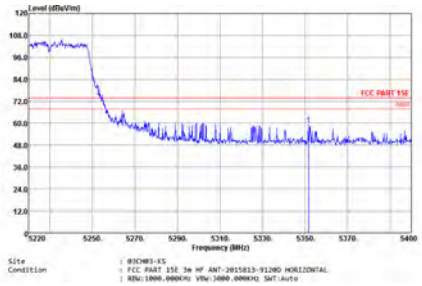
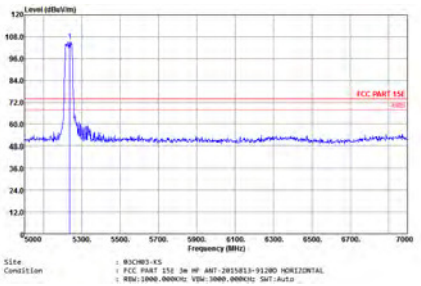
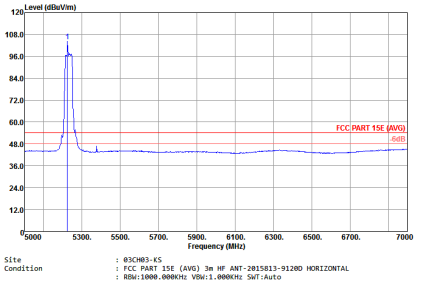
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH48 5240MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

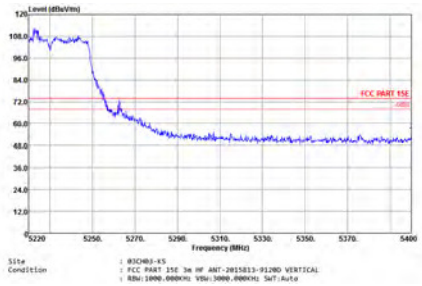
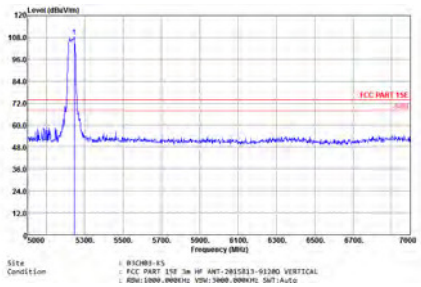
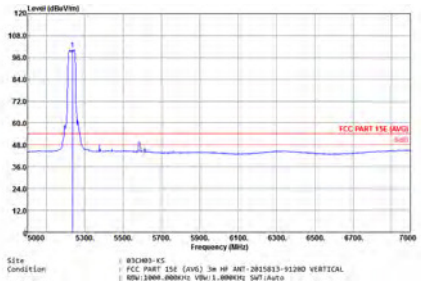
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH48 5240MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

Band 1 5150~5250MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m) for Beamforming Mode

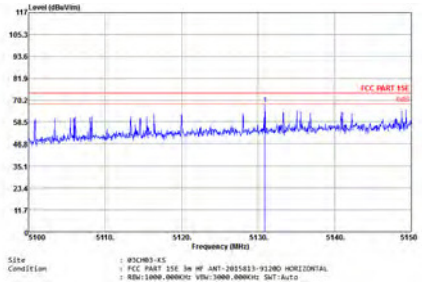
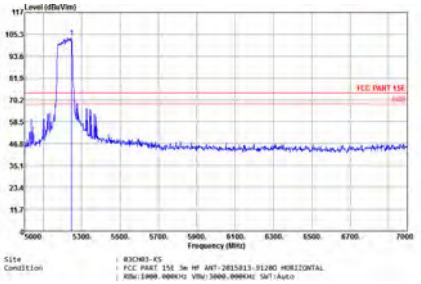
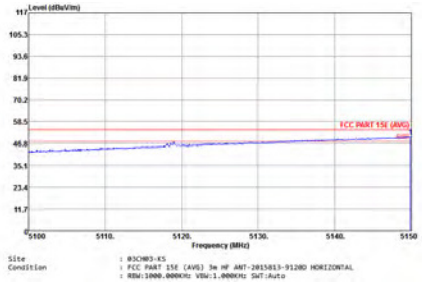
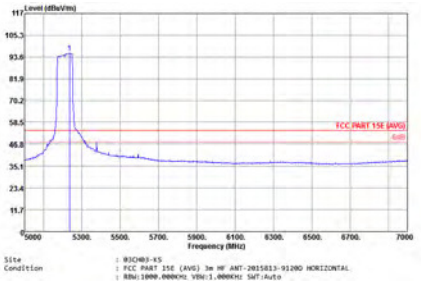
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH38 5190MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

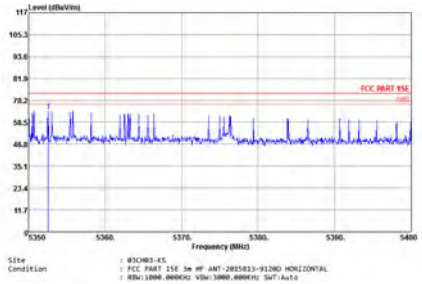
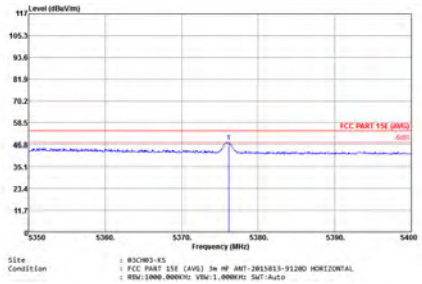
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH38 5190MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

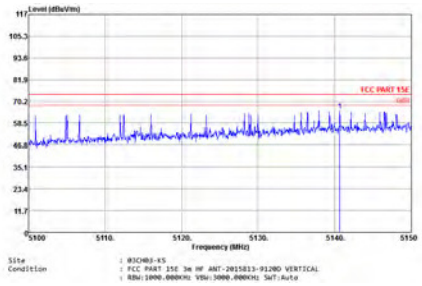
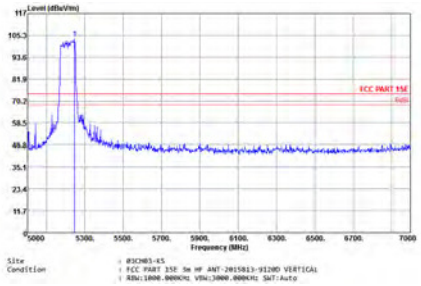
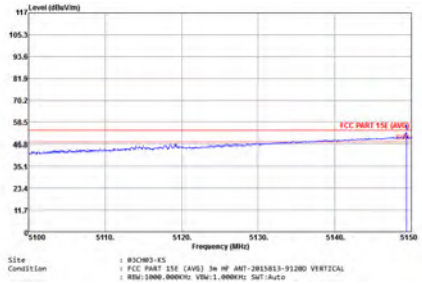
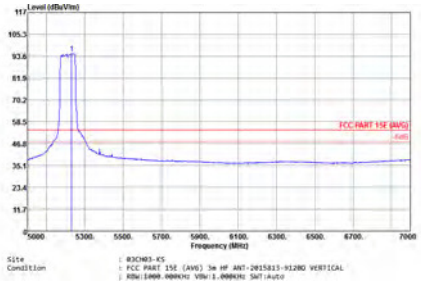
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH46 5230MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

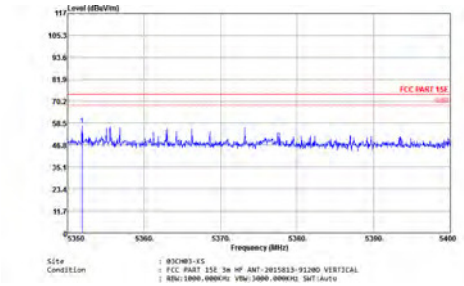
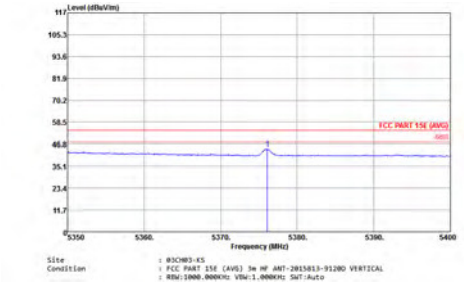
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH46 5230MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

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

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

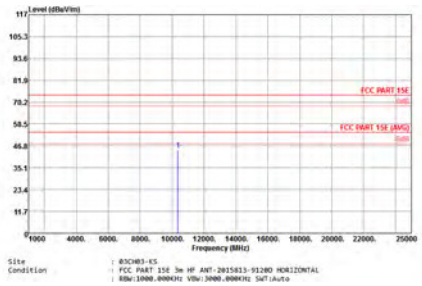
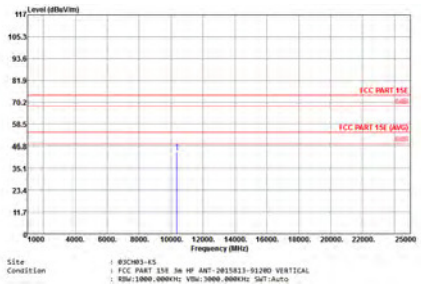
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	
Peak		
Avg.		

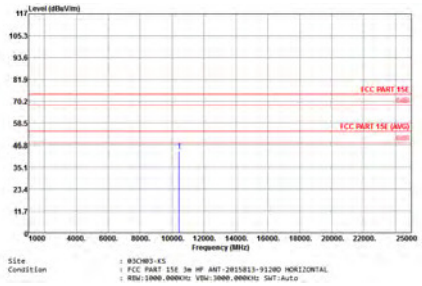
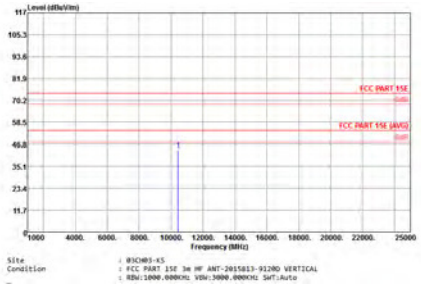
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

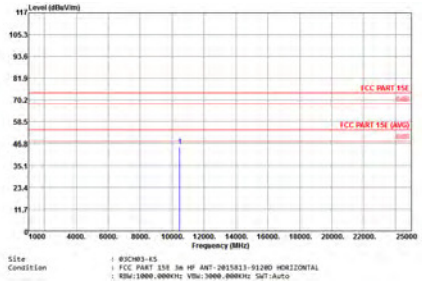
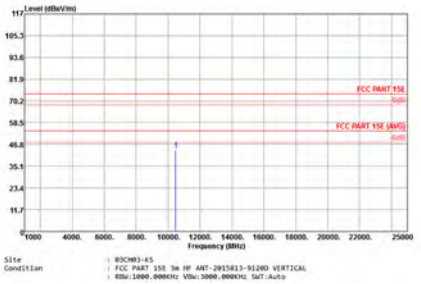
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Vertical	
Peak		
Avg.		

Band 1 - 5150~5250MHz

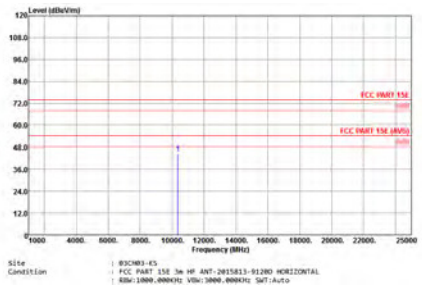
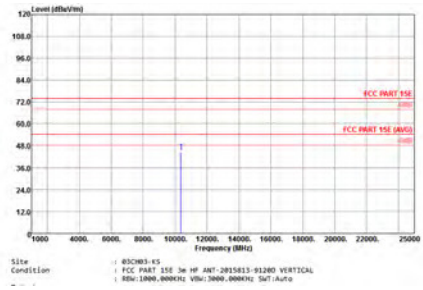
WIFI 802.11a (Harmonic @ 3m) for CDD Mode

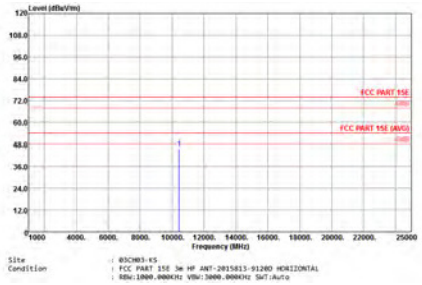
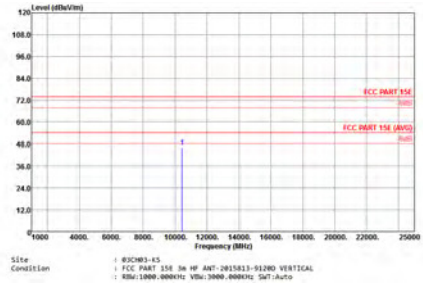
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH36 5180MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

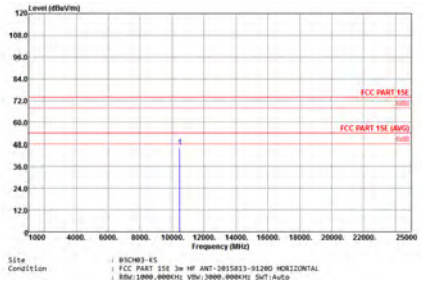
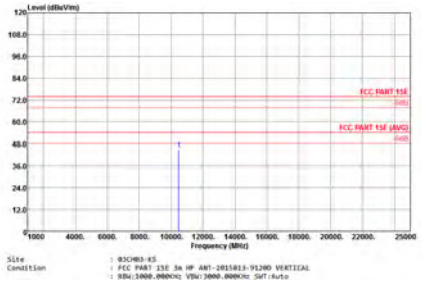
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH48 5240MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

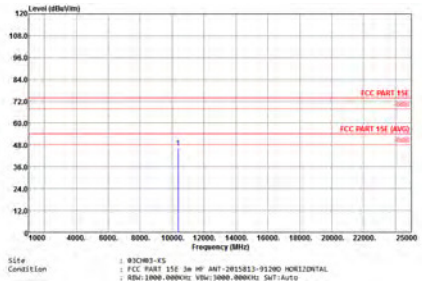
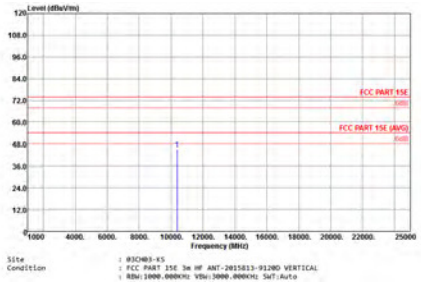
Band 1 5150~5250MHz
WIFI 802.11ac VHT20 (Harmonic @ 3m) for Beamforming Mode

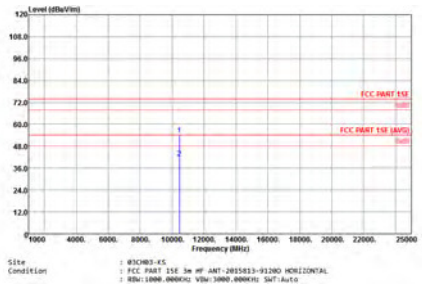
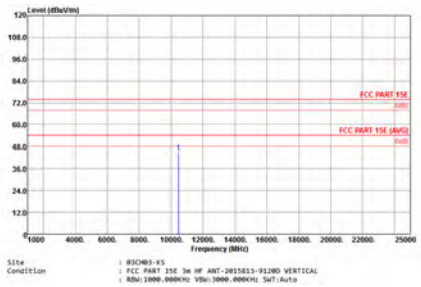
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH36 5180MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH44 5220MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH48 5240MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

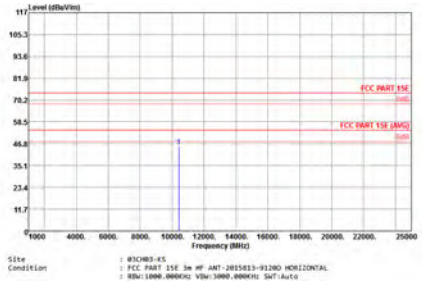
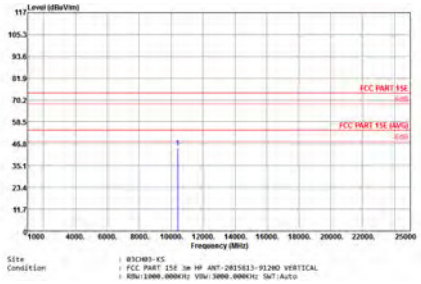
Band 1 5150~5250MHz
WIFI 802.11ac VHT40 (Harmonic @ 3m) for Beamforming Mode

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH38 5190MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH46 5230MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

Band 1 5150~5250MHz

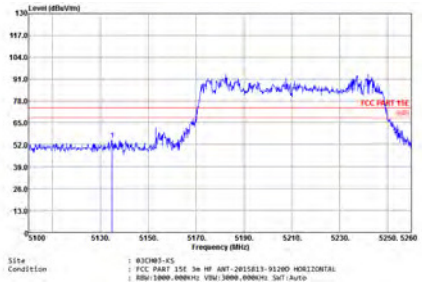
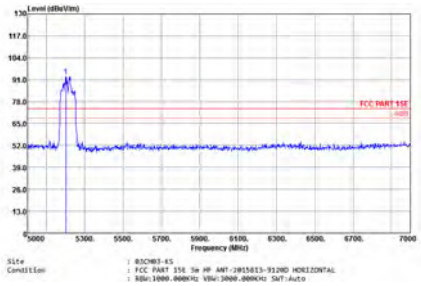
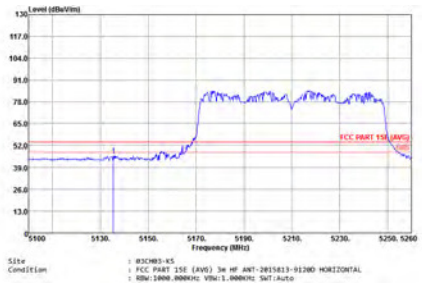
WIFI 802.11ac VHT80 (Harmonic @ 3m) for Beamforming Mode

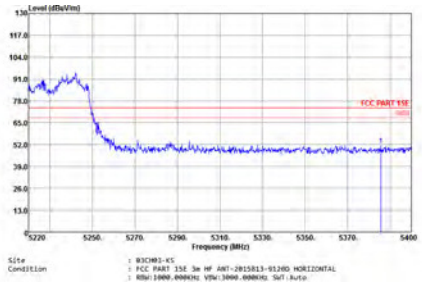
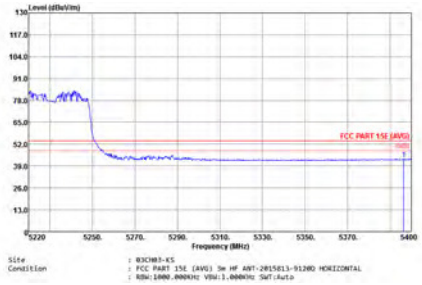
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

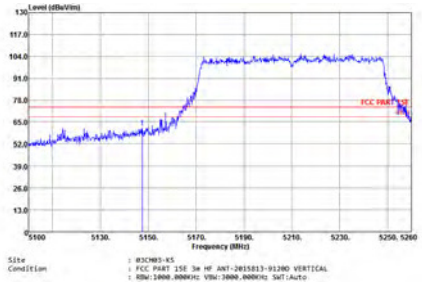
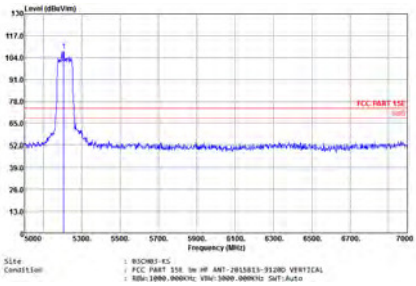
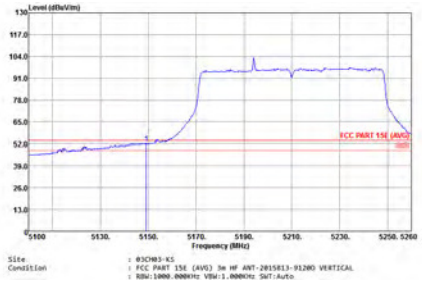
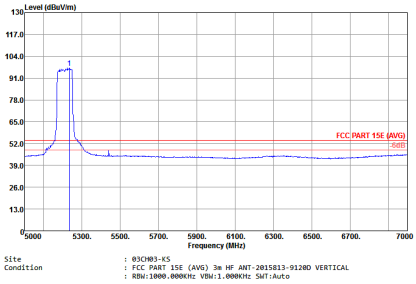
For Sample 1 with POE Adapter

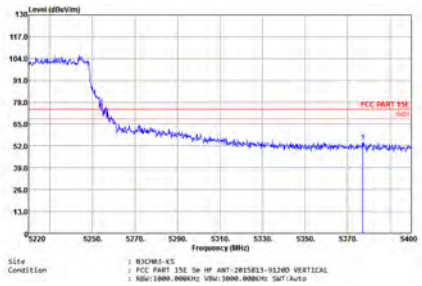
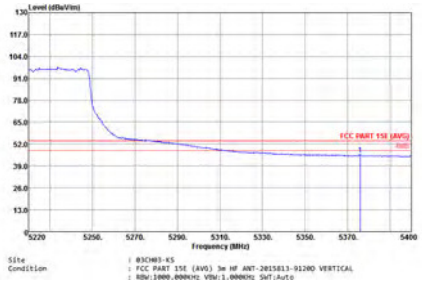
Band 1 5150~5250MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m) for Beamforming Mode

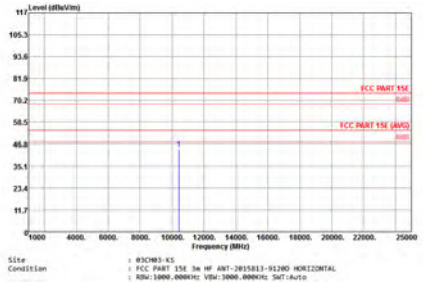
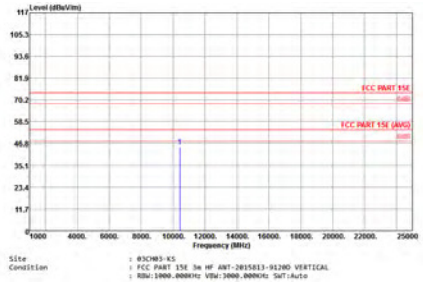
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Vertical	
Peak		
Avg.		

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

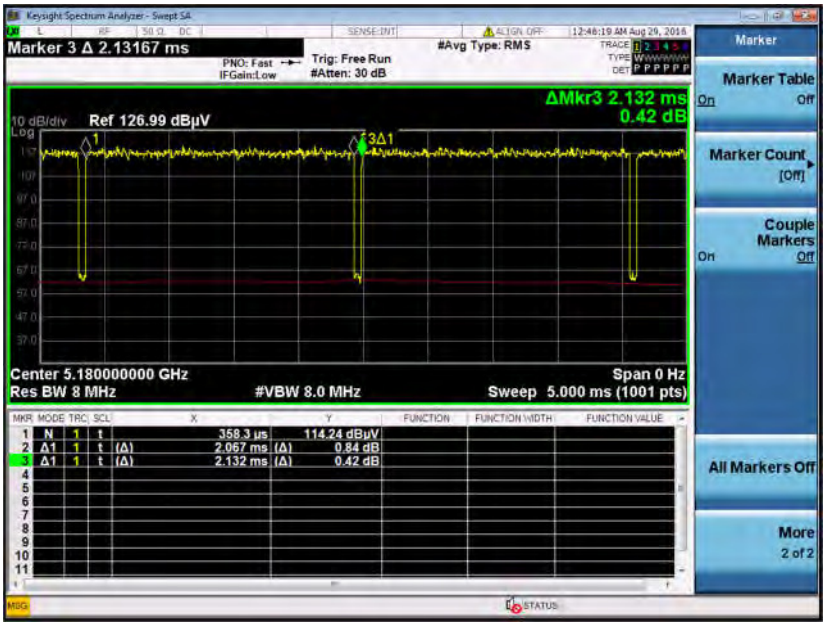
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

Appendix D. Duty Cycle Plots

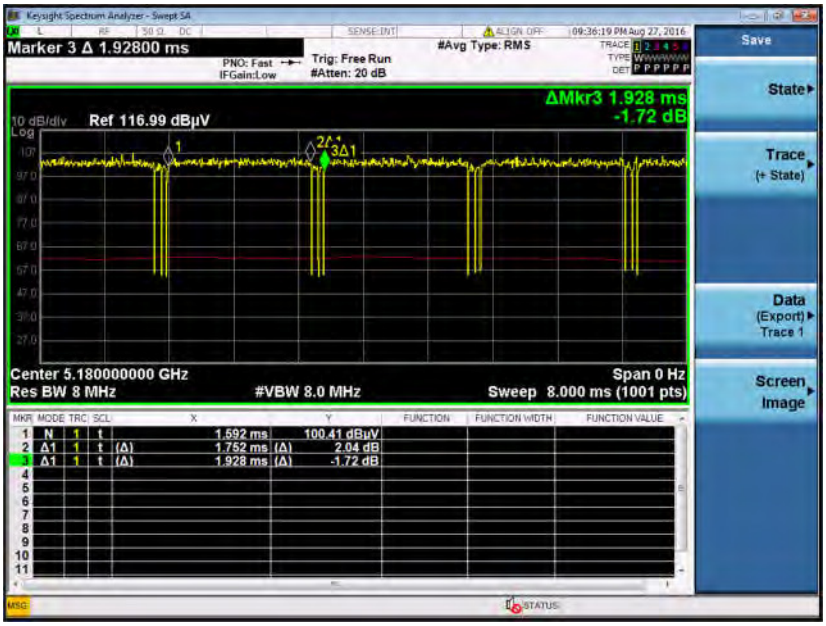
For Sample 1

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2+3	802.11a	96.95	2.07	0.48	1kHz
1+2+3	802.11ac VHT20	90.87	1.75	0.57	1kHz
1+2+3	802.11ac VHT40	92.39	1.98	0.51	1kHz
1+2+3	802.11ac VHT80	83.80	1.96	0.51	1kHz

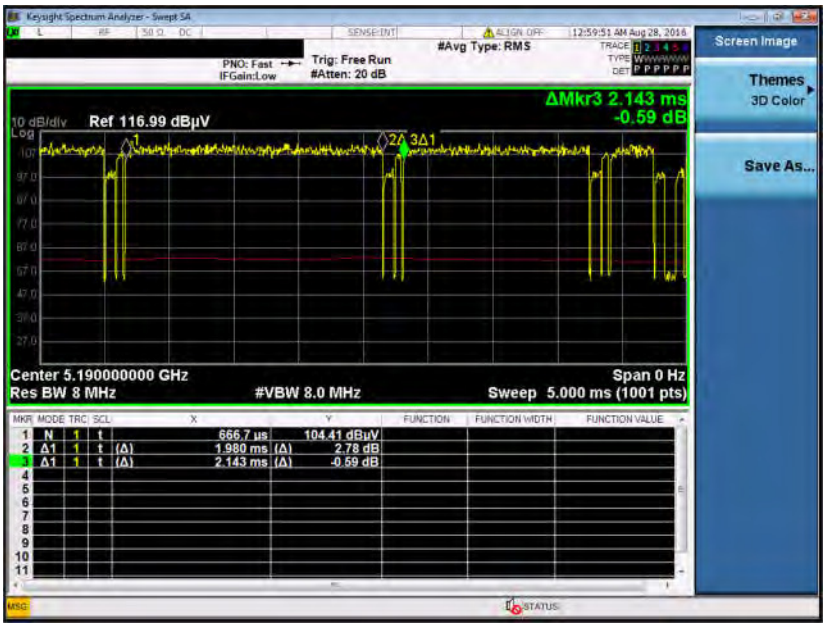
802.11a Antenna 1+2+3



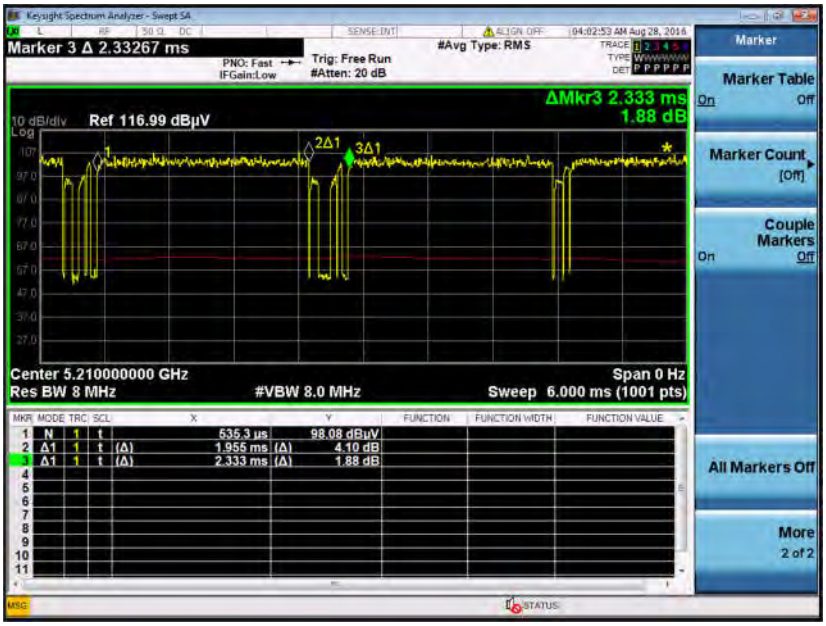
802.11ac VHT20 Antenna 1+2+3



802.11ac VH40 Antenna 1+2+3



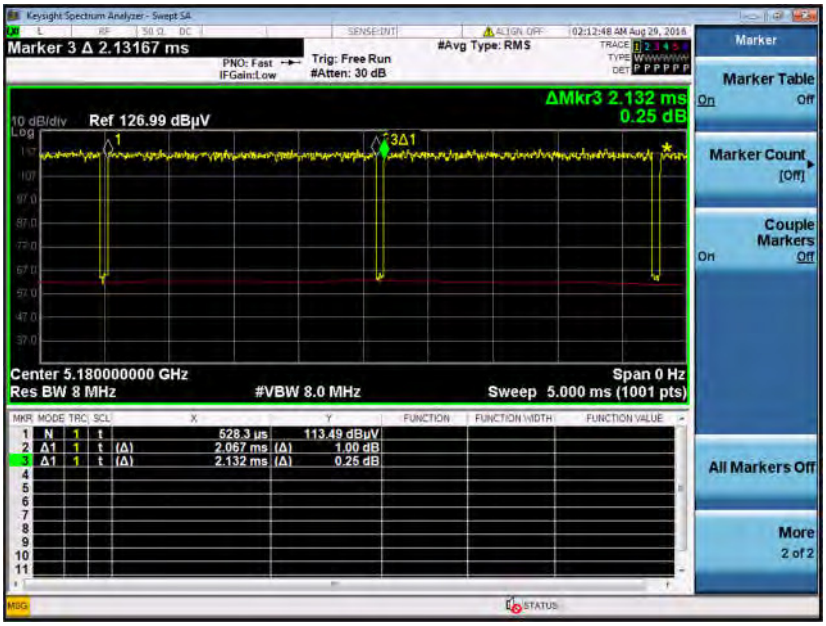
802.11ac VHT80 Antenna 1+2+3



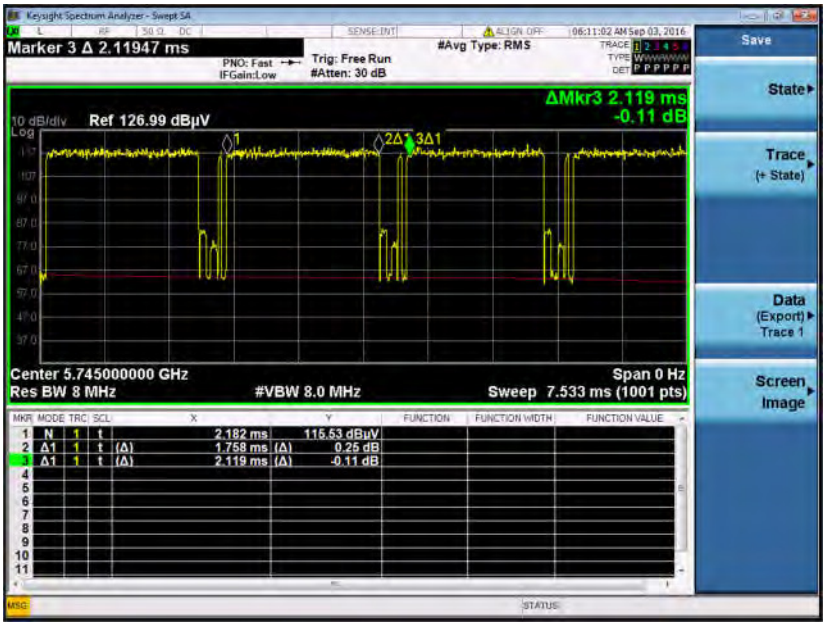
For Sample2

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2+3	802.11a	96.95	2.07	0.48	1kHz
1+2+3	802.11ac VHT20	82.73	1.75	0.57	1kHz
1+2+3	802.11ac VHT40	91.98	1.97	0.51	1kHz
1+2+3	802.11ac VHT80	89.35	1.84	0.54	1kHz

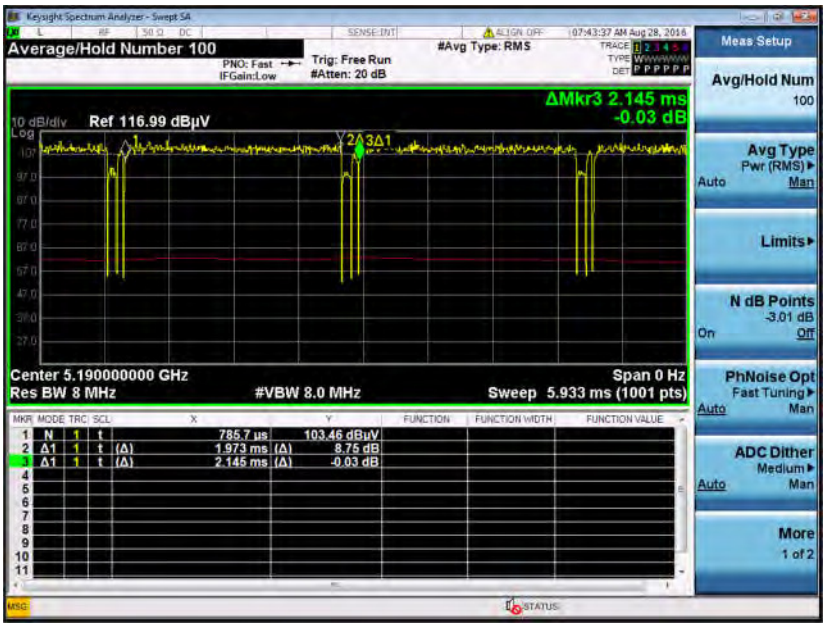
802.11a Antenna 1+2+3



802.11ac VHT20 Antenna 1+2+3



802.11ac VH40 Antenna 1+2+3

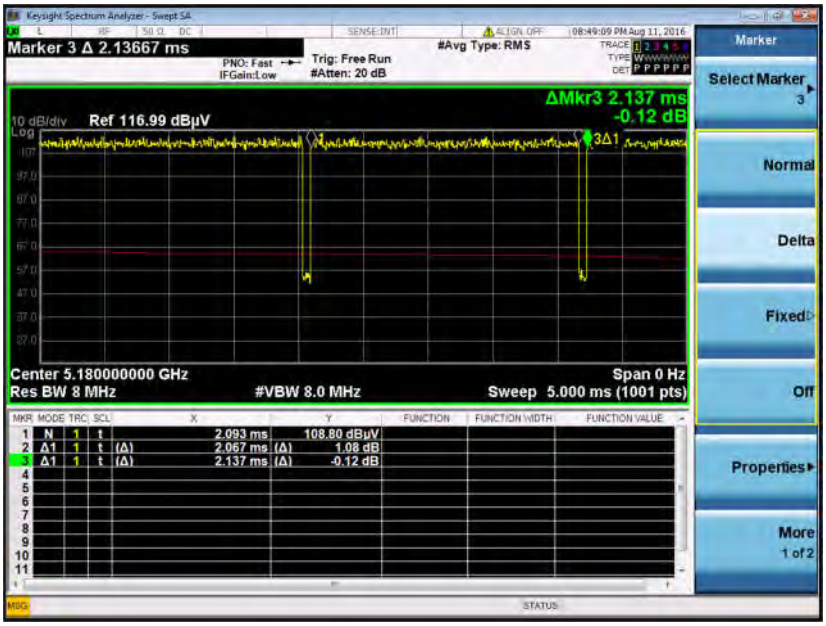


802.11ac VHT80 Antenna 1+2+3

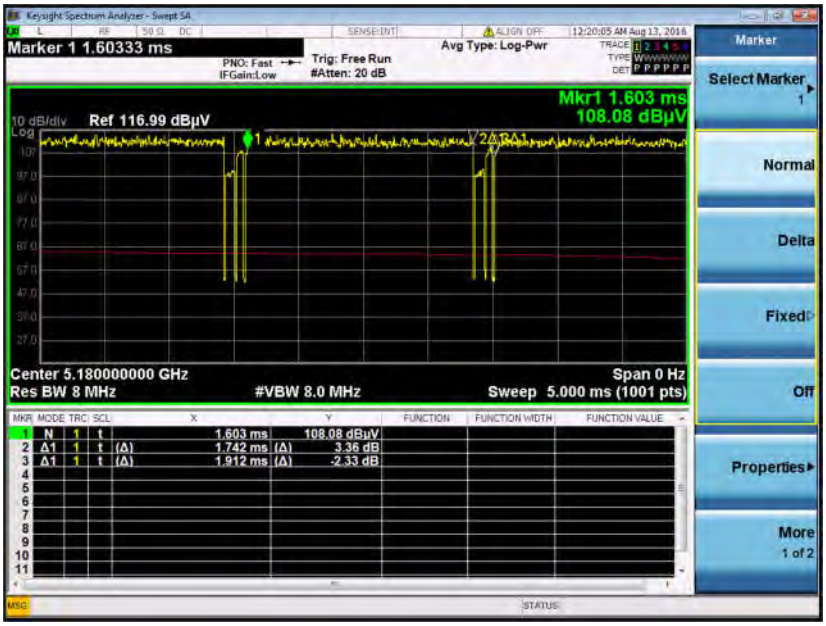
For Sample3

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2+3	802.11a	96.72	2.07	0.48	1kHz
1+2+3	802.11ac VHT20	91.11	1.74	0.57	1kHz
1+2+3	802.11ac VHT40	91.87	1.98	0.51	1kHz
1+2+3	802.11ac VHT80	91.47	1.99	0.50	1kHz

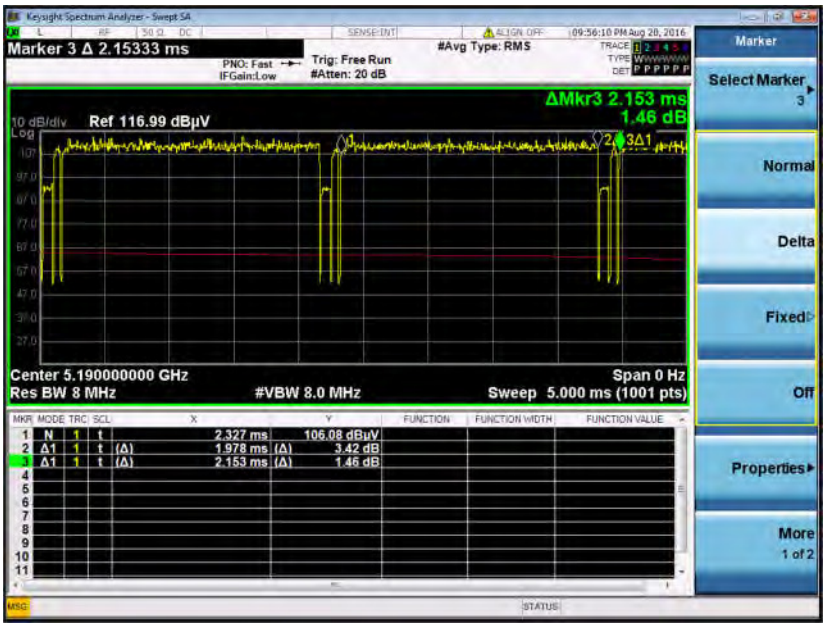
802.11a Antenna 1+2+3



802.11ac VHT20 Antenna 1+2+3



802.11ac VH40 Antenna 1+2+3



802.11ac VHT80 Antenna 1+2+3