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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Prepared by: James Huang / Manager

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Testing Laboratory 2627

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR670709D	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	15.403(i)	RSS-247 Section 6	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	-
3.2	15.407(a)	RSS-247 Section 6	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
3.3	15.407(a)	RSS-247 Section 6	Power Spectral Density	≤ 30 dBm/500kHz	Pass	-
0	15.407(b)	RSS-247 Section 6	Unwanted Emissions	15.407(b)(4)(i) &15.209(a)	Pass	Under limit 1.07 dB at 11645.000 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 Channel Frequency Range	5745 MHz ~ 5825 MHz
Maximum Output Power <CDD Modes> APIN0304	**<5745 MHz ~ 5825 MHz>** **MIMO <Ant. 1 + 2 + 3>** 802.11a : 23.18 dBm / 0.2080 W
Maximum Output Power <TXBF Modes> APIN0304	**<5745 MHz ~ 5825 MHz>** **MIMO <Ant. 1 + 2 + 3>** 802.11n HT20 / ac VHT20: 22.66 dBm / 0.1845 W 802.11n HT40 / ac VHT40: 23.20 dBm / 0.2089 W 802.11ac VHT80: 22.62 dBm / 0.1828 W
Maximum Output Power <CDD Modes> APIN0305	**<5745 MHz ~ 5825 MHz>** **MIMO <Ant. 1 + 2 + 3>** 802.11a : 23.18 dBm / 0.2080 W
Maximum Output Power <TXBF Modes> APIN0305	**<5745 MHz ~ 5825 MHz>** **MIMO <Ant. 1 + 2 + 3>** 802.11n HT20 / ac VHT20: 22.66 dBm / 0.1845 W 802.11n HT40 / ac VHT40: 23.20 dBm / 0.2089 W 802.11ac VHT80: 22.62 dBm / 0.1828 W
99% Occupied Bandwidth <CDD Modes> APIN0304	802.11a : 17.18 MHz
99% Occupied Bandwidth <TXBF Modes> APIN0304	802.11ac VHT20 : 18.18 MHz 802.11ac VHT40 : 35.86 MHz 802.11ac VHT80 : 75.64 MHz
99% Occupied Bandwidth <CDD Modes> APIN0305	802.11a : 17.18 MHz
99% Occupied Bandwidth <TXBF Modes> APIN0305	802.11ac VHT20 : 18.18 MHz 802.11ac VHT40 : 35.86 MHz 802.11ac VHT80 : 75.64 MHz
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
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
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.
- 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)
5745-5825 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155#	5775	165	5825

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.

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

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:

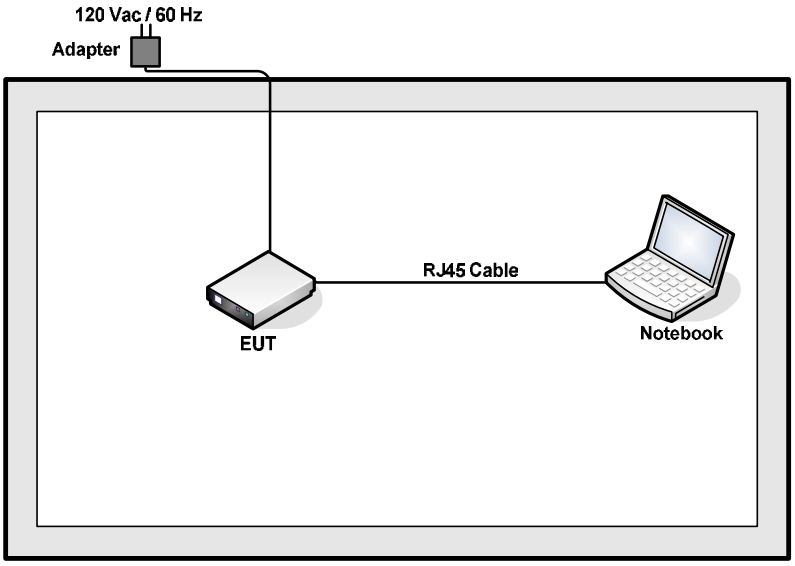
1. The worst case of conducted emission is mode 3; only the test data of it was reported.
2. For Radiated TCs, the tests were performed with adapter for Sample 1, Sample 2 and Sample 3. Only the worst case verified the POE adapter mode.

Ch. #		Band IV：5745-5825 MHz		
		802.11a	802.11n HT20	802.11n HT40
L	Low	149	149	151
M	Middle	157	157	-
H	High	165	165	159

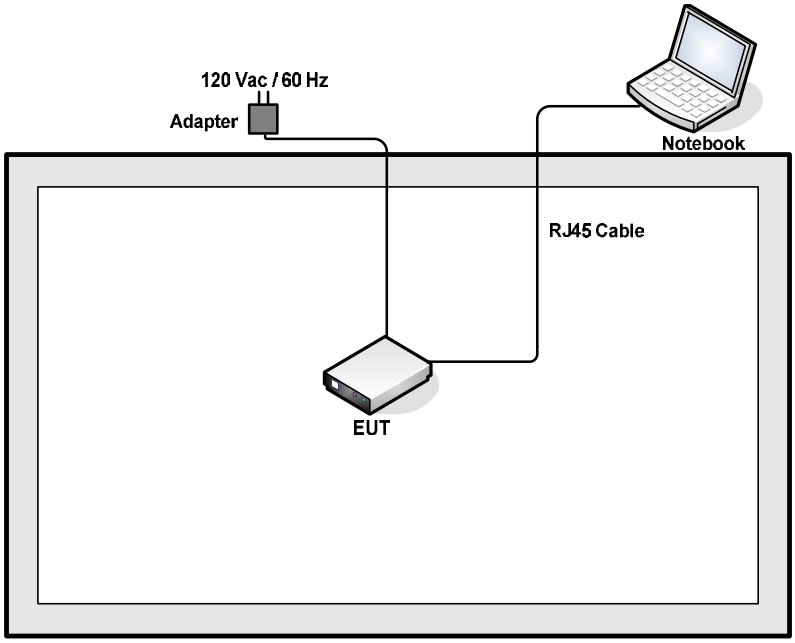
Ch. #		Band IV：5745-5825 MHz		
		802.11ac VHT20	802.11ac VHT40	802.11ac VHT80
L	Low	149	151	-
M	Middle	157	-	155
H	High	165	159	-

2.3 Connection Diagram of Test System

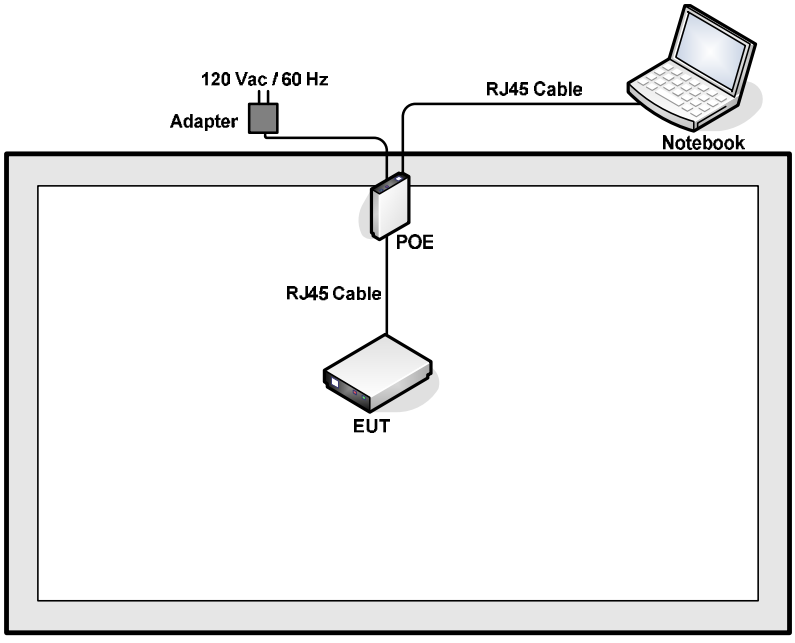
<Conducted Mode>



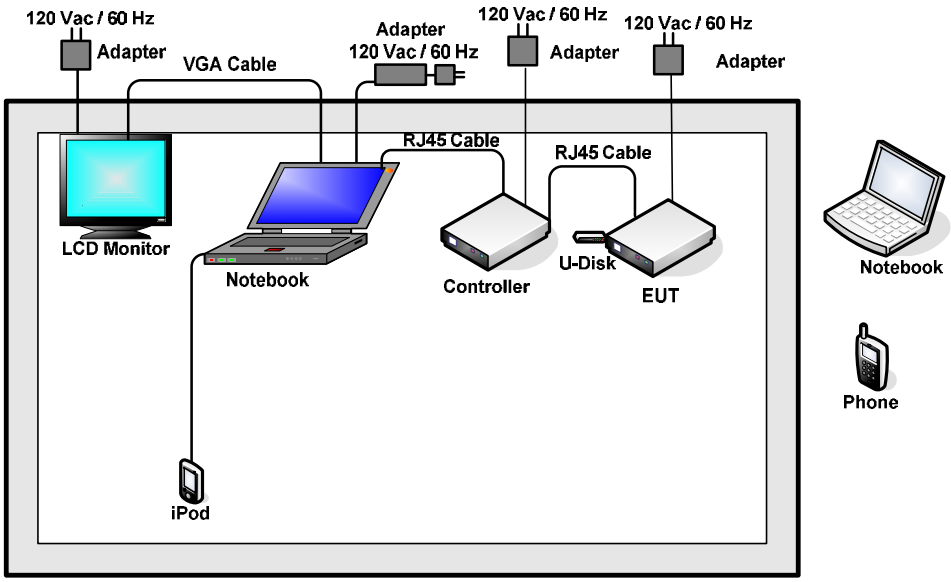
<WLAN Tx Mode with Adapter>



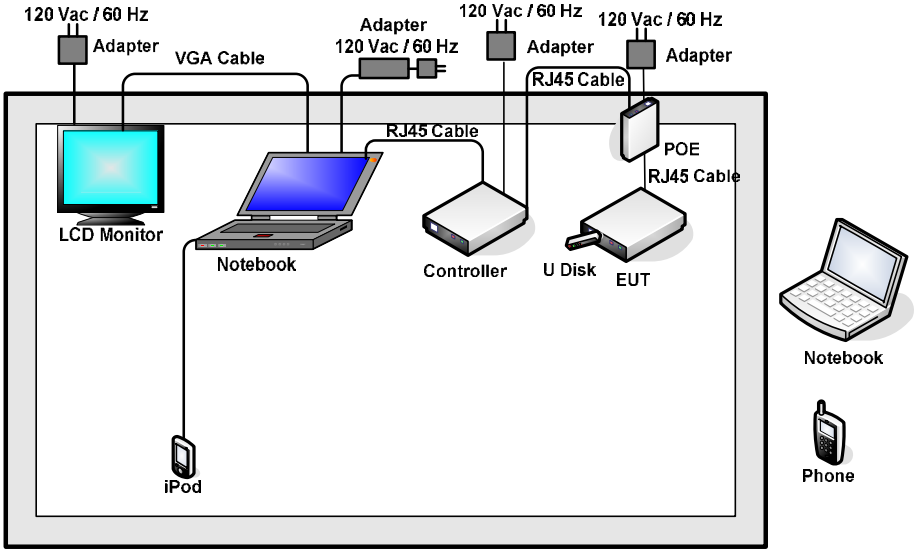
<WLAN Tx Mode with POE Adapter>



<AC Conducted Emission Mode with AC Adapter>



<AC Conducted Emission Mode with POE Adapter>



2.4 Support Unit used in test configuration and system

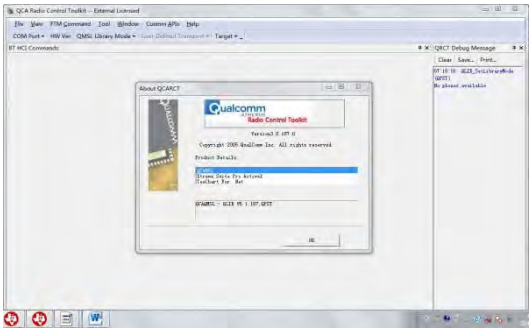
Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Lenovo	E40	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
2.	Notebook	Lenovo	E49	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
3.	POE	powersine	PD-3501G/AC	N/A	N/A	Shielded, 2 m
4.	Android Phone	ZTE	A1	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 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 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

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

26dB and 99% Occupied bandwidth are reporting only.

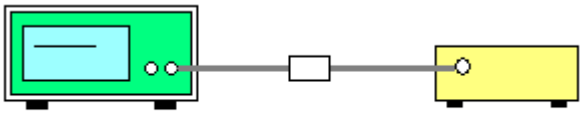
3.1.2 Measuring Instruments

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 for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

3.1.4 Test Setup



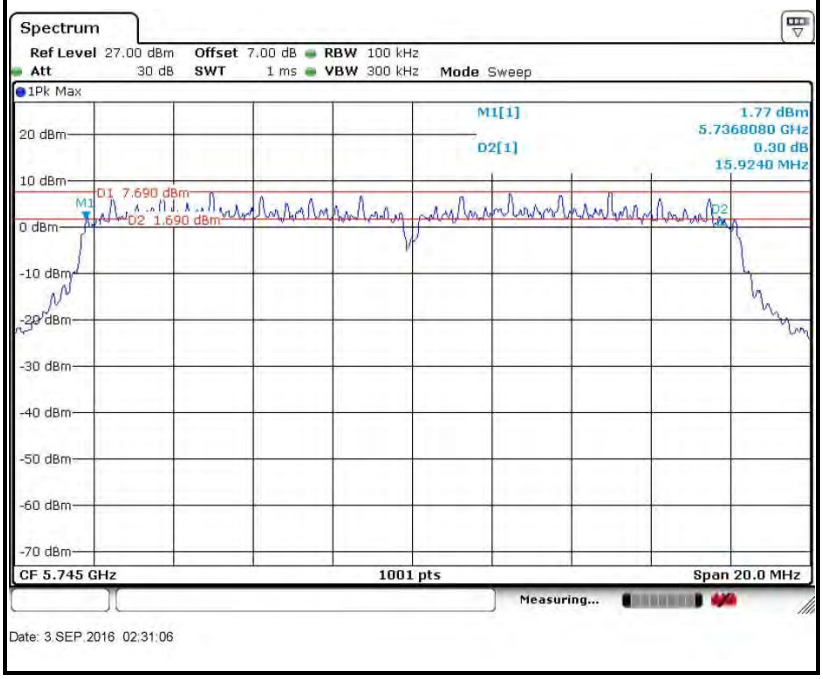
3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.

<CDD Mode> APIN0304

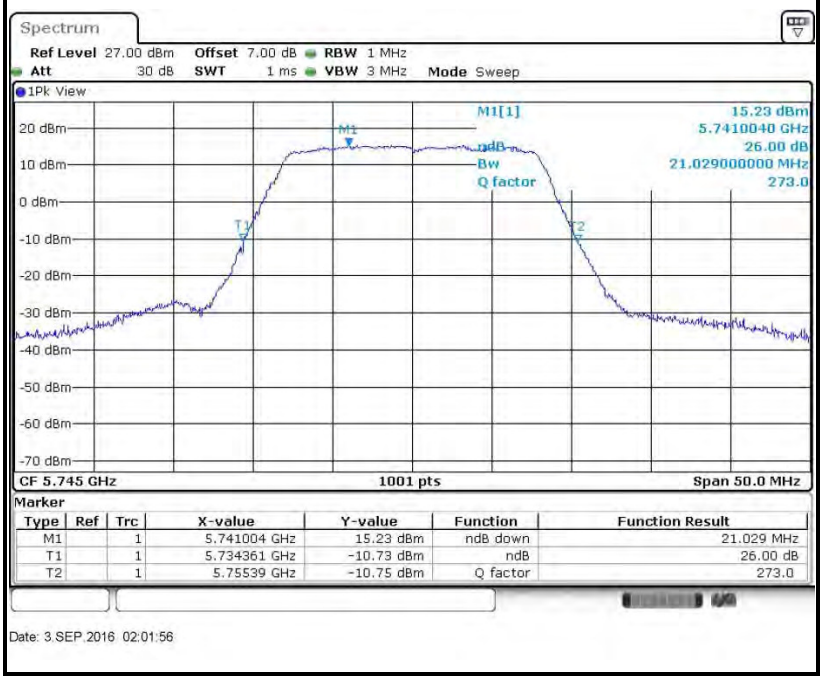
Minimum 6dB Bandwidth

MIMO Ant.1+2+3(3) 802.11a 6Mbps CH149

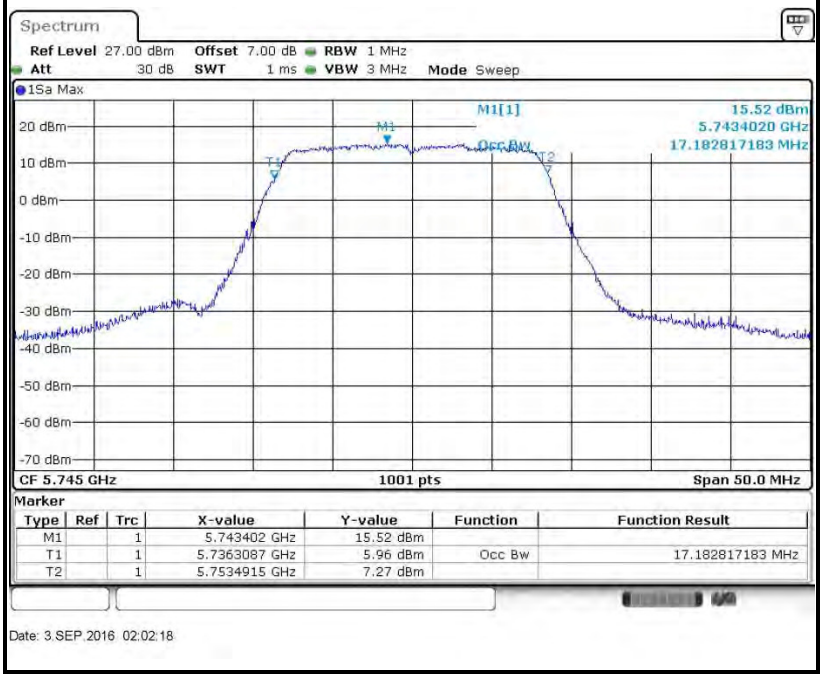


Maximum 26dB Bandwidth

MIMO Ant.1+2+3(1) 802.11a 6Mbps CH149



Maximum 99% Occupied Bandwidth
MIMO Ant.1+2+3(1) 802.11a 6Mbps CH149

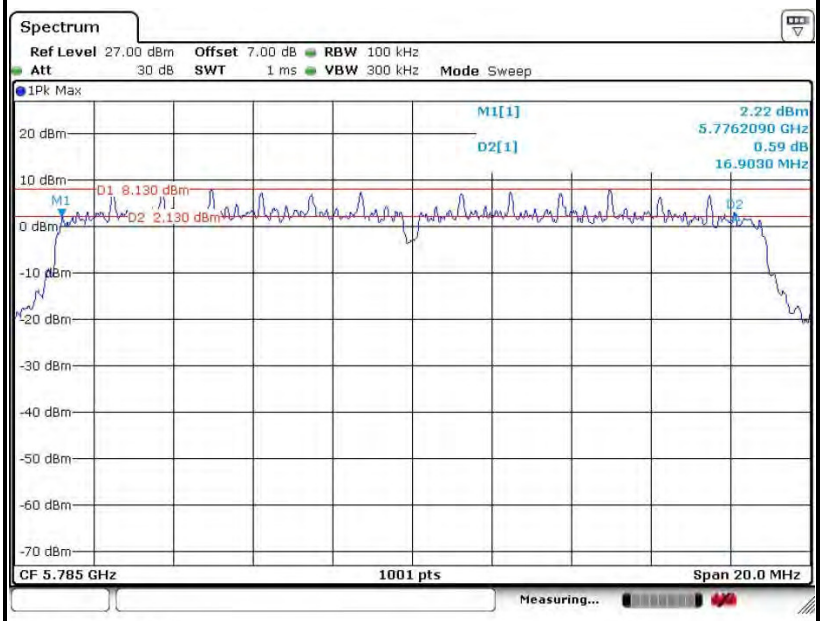


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<TXBF Mode> APIN0304

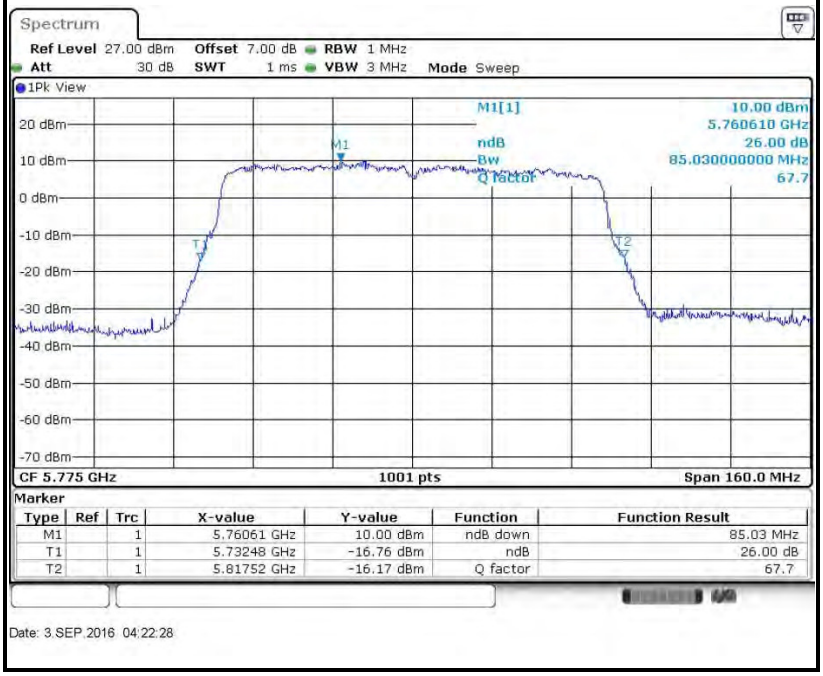
Minimum 6dB Bandwidth

MIMO Ant.1+2+3(2) 802.11ac VHT20 MCS0 CH157

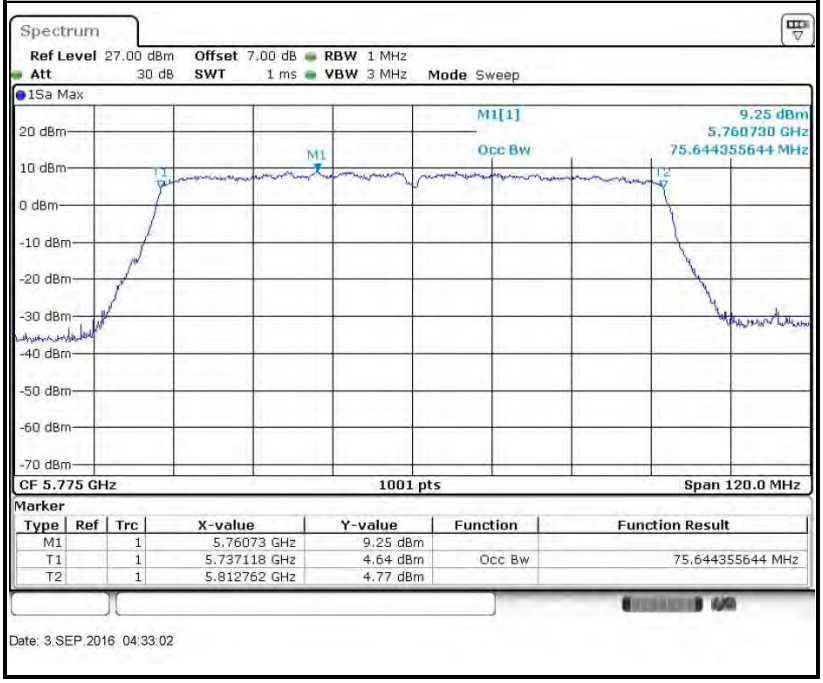


Maximum 26dB Bandwidth

MIMO Ant.1+2+3(3) 802.11ac VHT80 MCS0 CH155



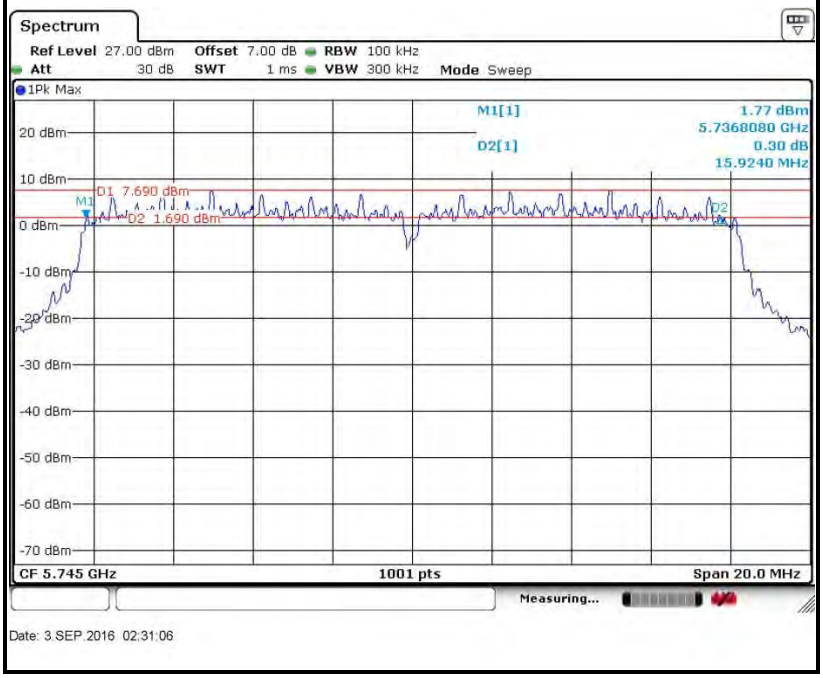
Maximum 99% Occupied Bandwidth
MIMO Ant.1+2+3(1) 802.11ac VHT80 MCS0 CH155



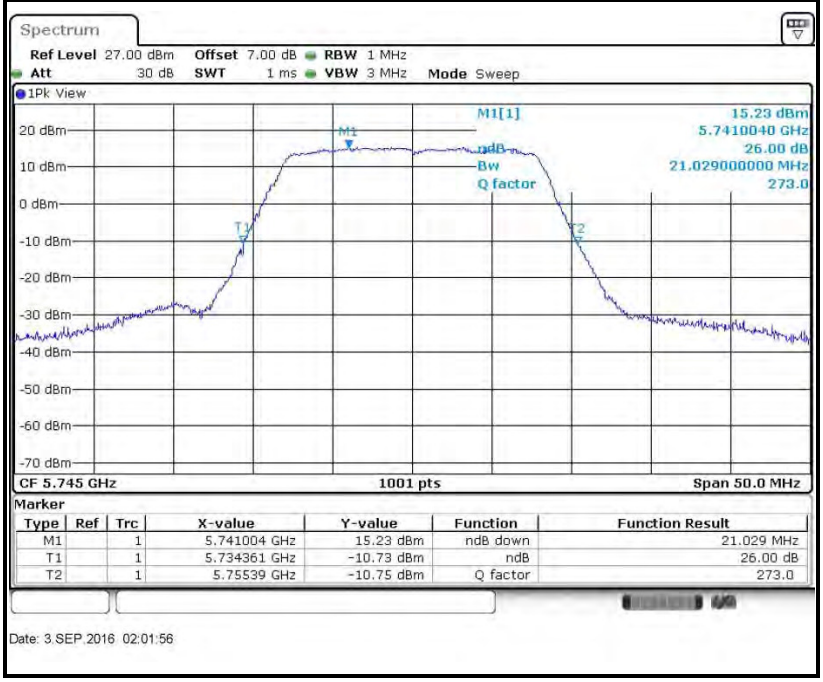
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<CDD Mode> APIN0305

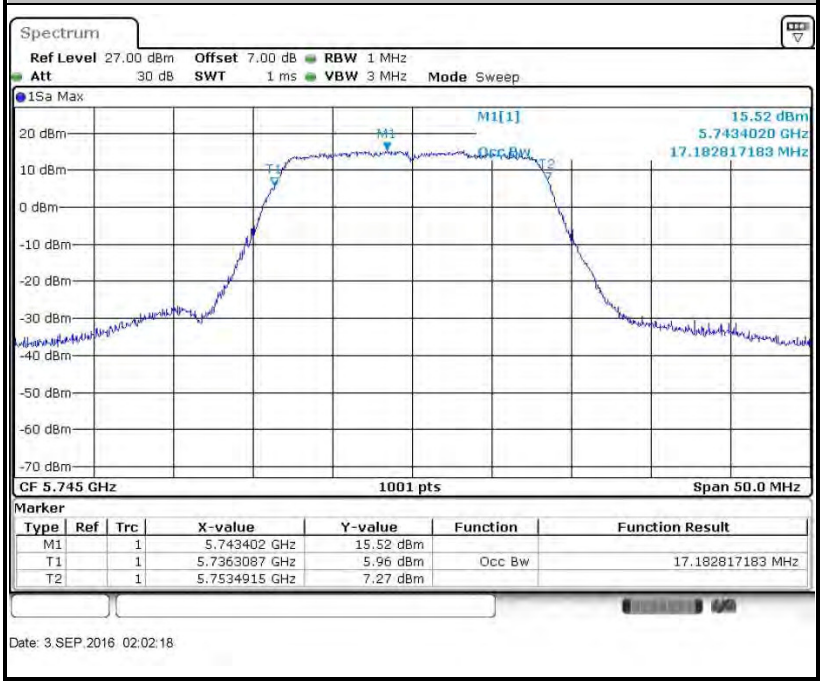
Minimum 6dB Bandwidth
MIMO Ant.1+2+3(3) 802.11a 6Mbps CH149



Maximum 26dB Bandwidth
MIMO Ant.1+2+3(1) 802.11a 6Mbps CH149



Maximum 99% Occupied Bandwidth
MIMO Ant.1+2+3(1) 802.11a 6Mbps CH149

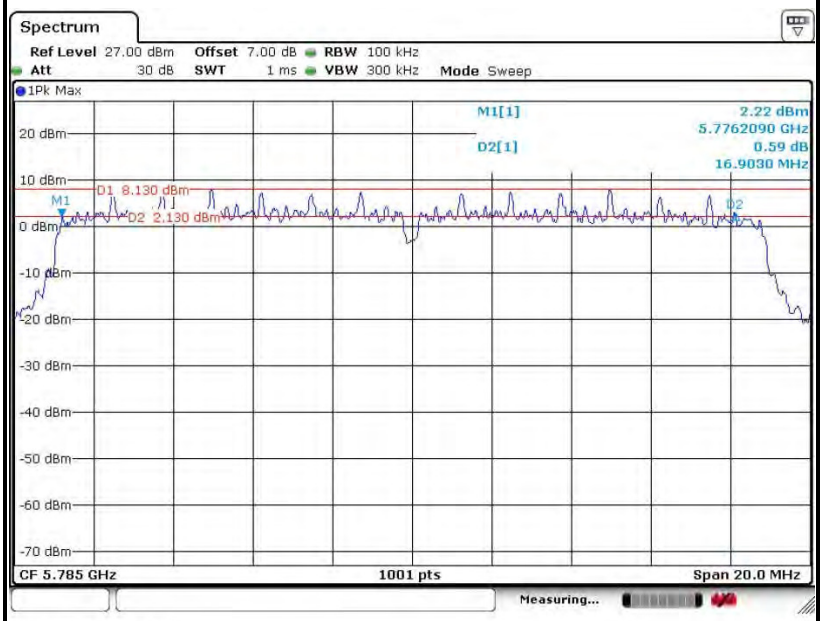


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<TXBF Mode> APIN0305

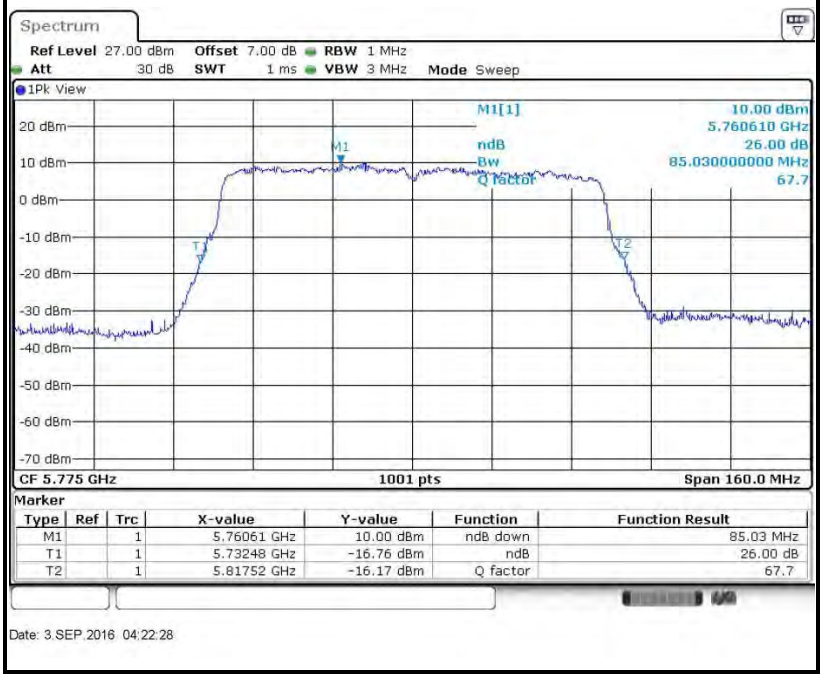
Minimum 6dB Bandwidth

MIMO Ant.1+2+3(2) 802.11ac VHT20 MCS0 CH157

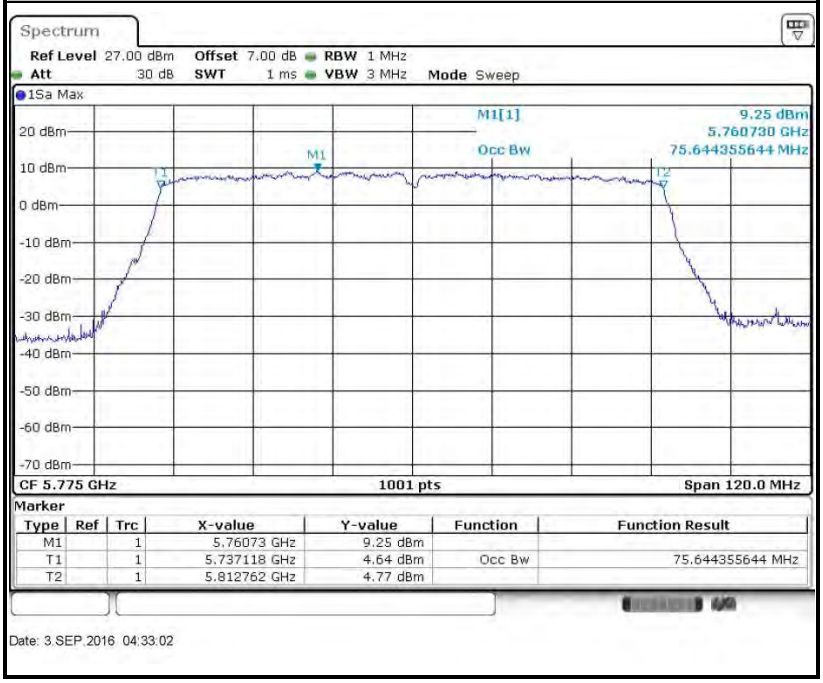


Maximum 26dB Bandwidth

MIMO Ant.1+2+3(3) 802.11ac VHT80 MCS0 CH155



Maximum 99% Occupied Bandwidth
MIMO Ant.1+2+3(1) 802.11ac VHT80 MCS0 CH155



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 the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

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

3.2.2 Measuring Instruments

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

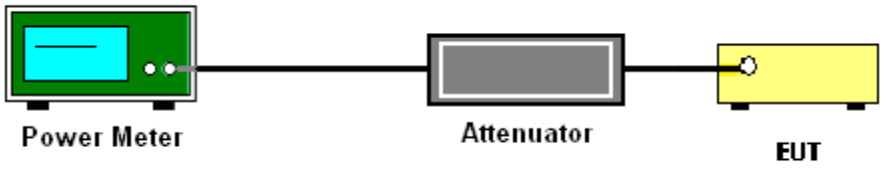
3.2.3 Test Procedures

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 the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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).

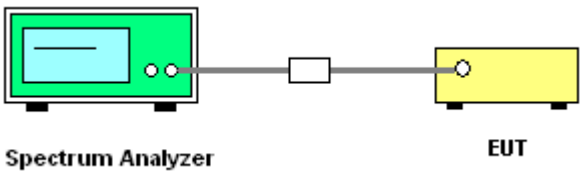
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(500kHz/RBW) to the test result.
- 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 (c): Measure and add 10 log(N_{ANT}) dB.

   With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity 10 log(N_{ANT}) dB is added to each spectrum value before comparing to the emission limit. The addition of 10 log(N_{ANT}) dB serves to apportion the emission limit among the N_{ANT} outputs so that each output is permitted to contribute no more than $1/N_{ANT}$ th of the PSD limit.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

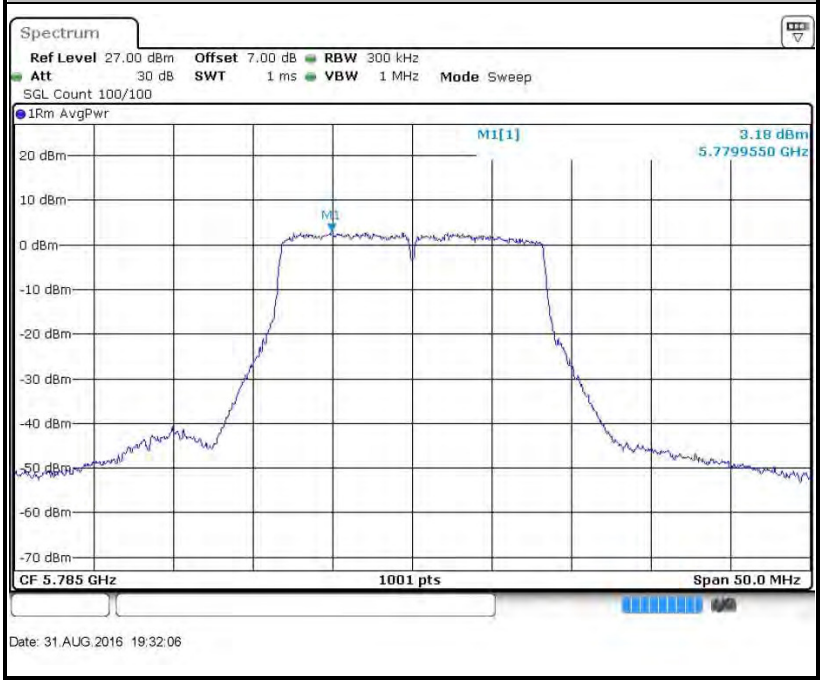
Please refer to Appendix A.

<CDD Mode> APIN0304

Worst Case Power Density (dBm/300kHz)
MIMO Ant.1+2+3 (1) 802.11a 6Mbps CH157

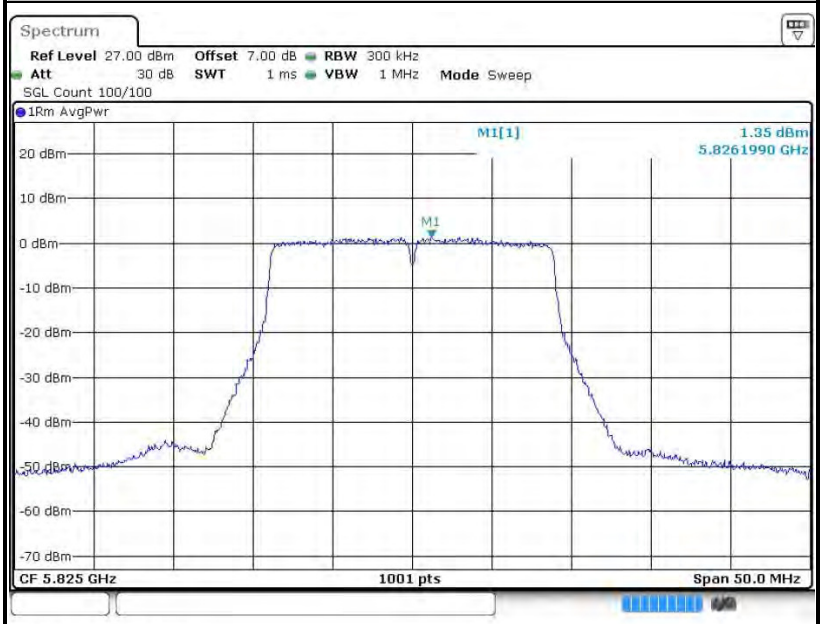
MIMO Ant.1+2+3 (2) 802.11a 6Mbps CH157

MIMO Ant.1+2+3 (3) 802.11a 6Mbps CH157

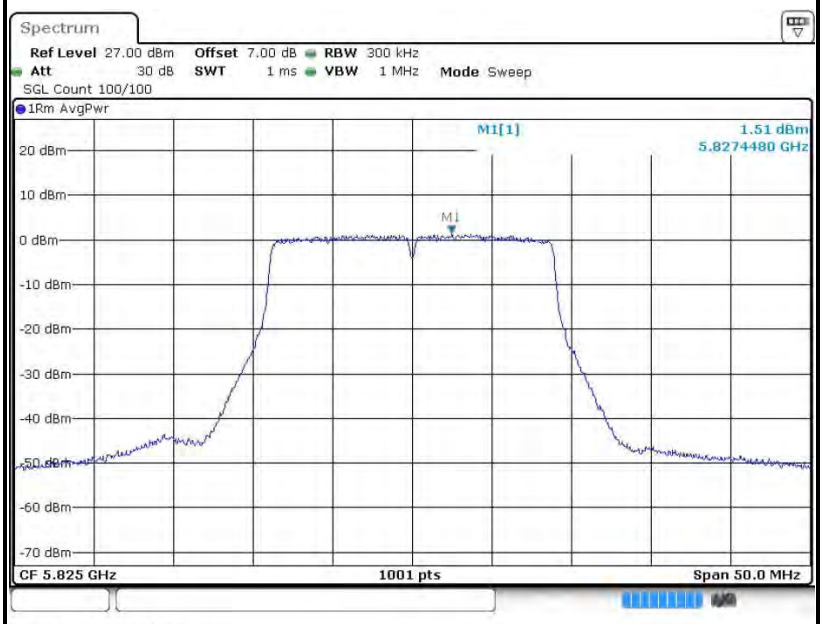


<TXBF Mode> APIN0304

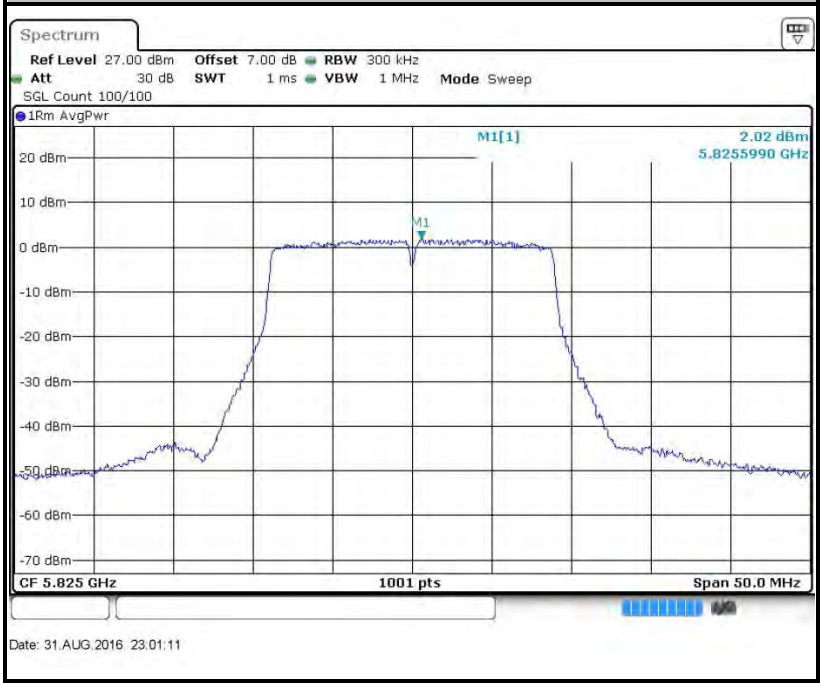
Worst Case Power Density (dBm/300kHz)
MIMO Ant.1+2+3(1) 802.11ac VHT20 MCS0 CH165



MIMO Ant.1+2+3(2) 802.11ac VHT20 MCS0 CH165

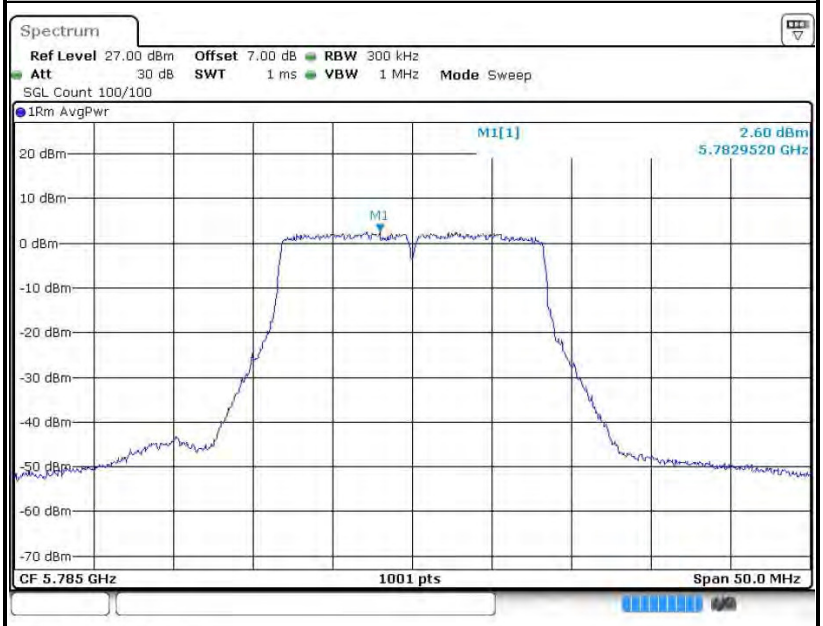


MIMO Ant.1+2+3(3) 802.11ac VHT20 MCS0 CH165

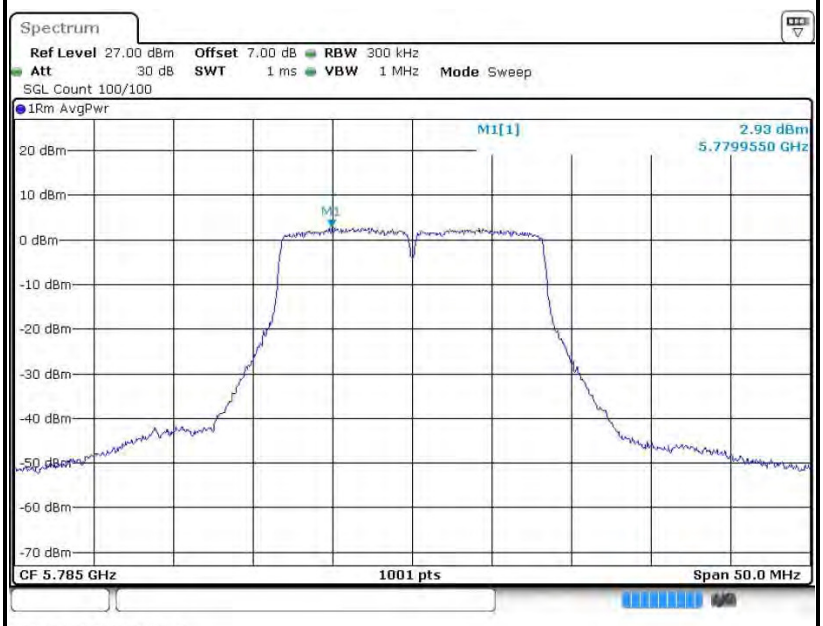


<CDD Mode> APIN0305

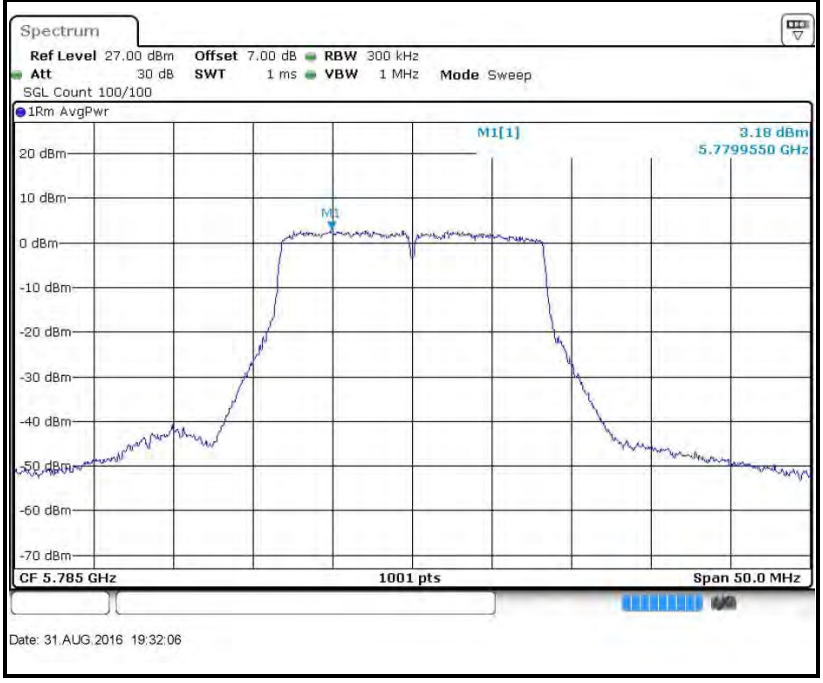
Worst Case Power Density (dBm/300kHz)
MIMO Ant.1+2+3 (1) 802.11a 6Mbps CH157



MIMO Ant.1+2+3 (2) 802.11a 6Mbps CH157

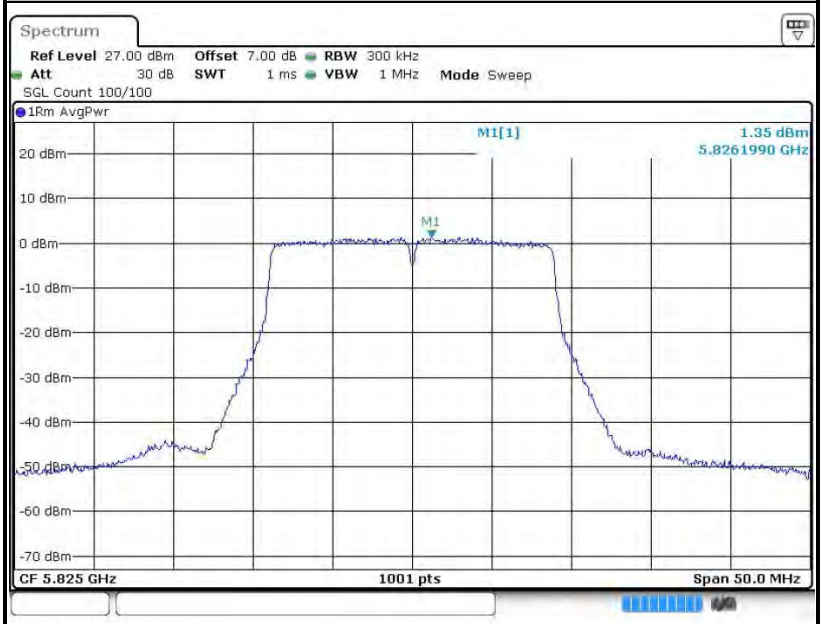


MIMO Ant.1+2+3 (3) 802.11a 6Mbps CH157

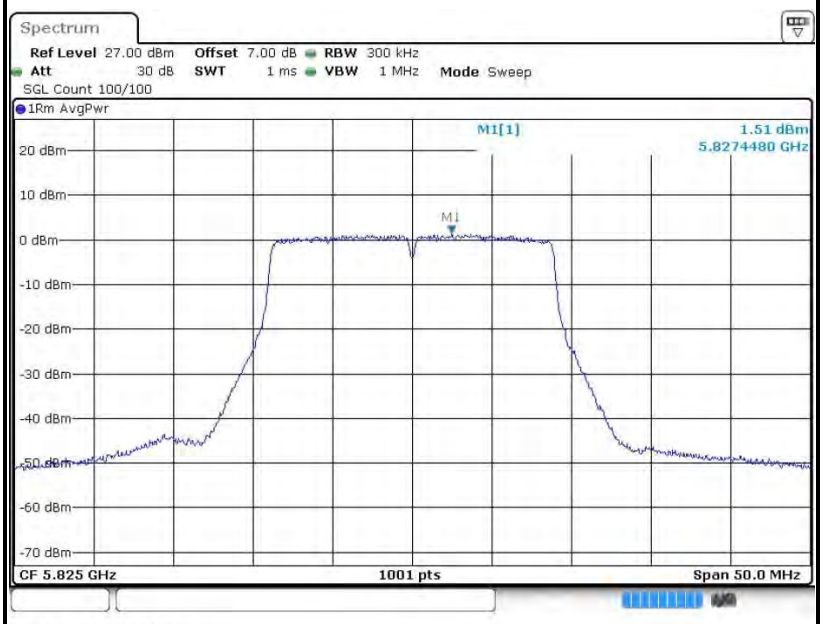


<TXBF Mode> APIN0305

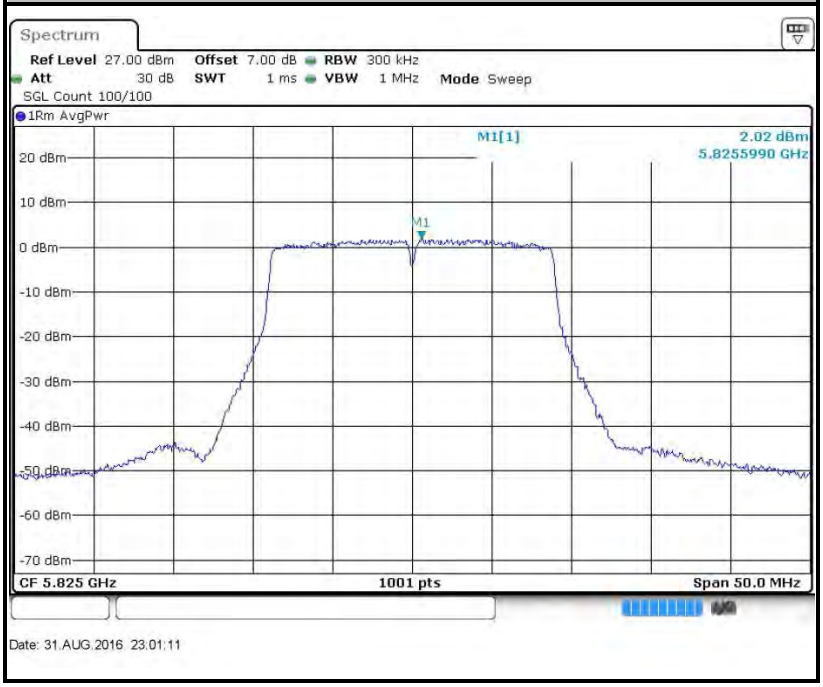
Worst Case Power Density (dBm/300kHz)
MIMO Ant.1+2+3(1) 802.11ac VHT20 MCS0 CH165



MIMO Ant.1+2+3(2) 802.11ac VHT20 MCS0 CH165



MIMO Ant.1+2+3(3) 802.11ac VHT20 MCS0 CH165



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 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(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) KDB 789033 D02 General UNII Test Procedures New Rules 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

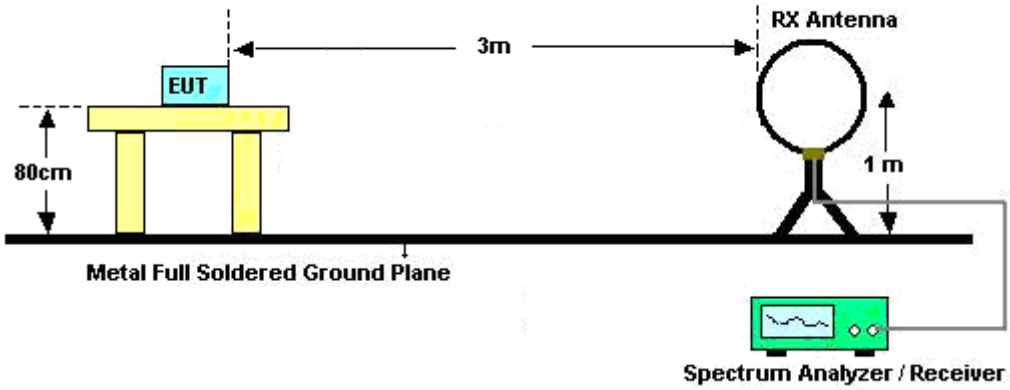
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   - 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.

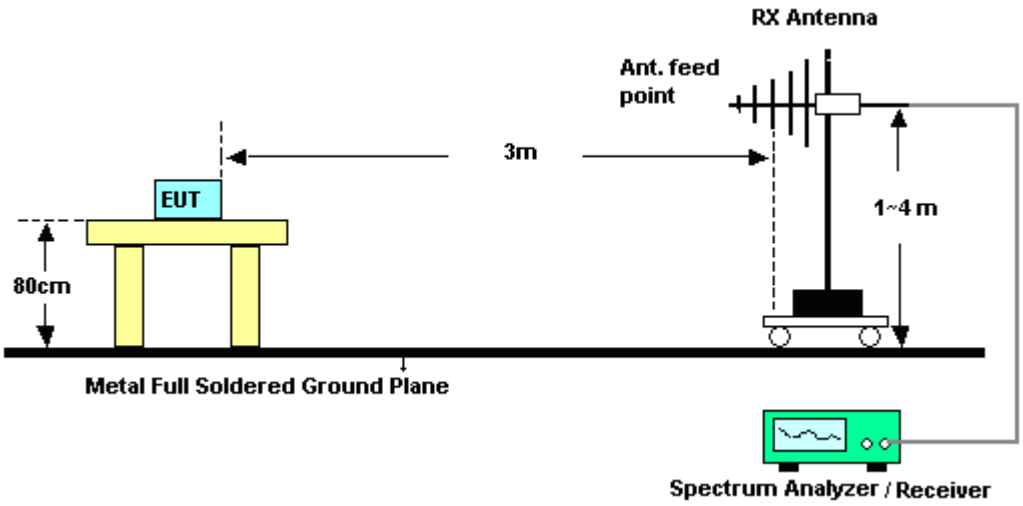
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband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

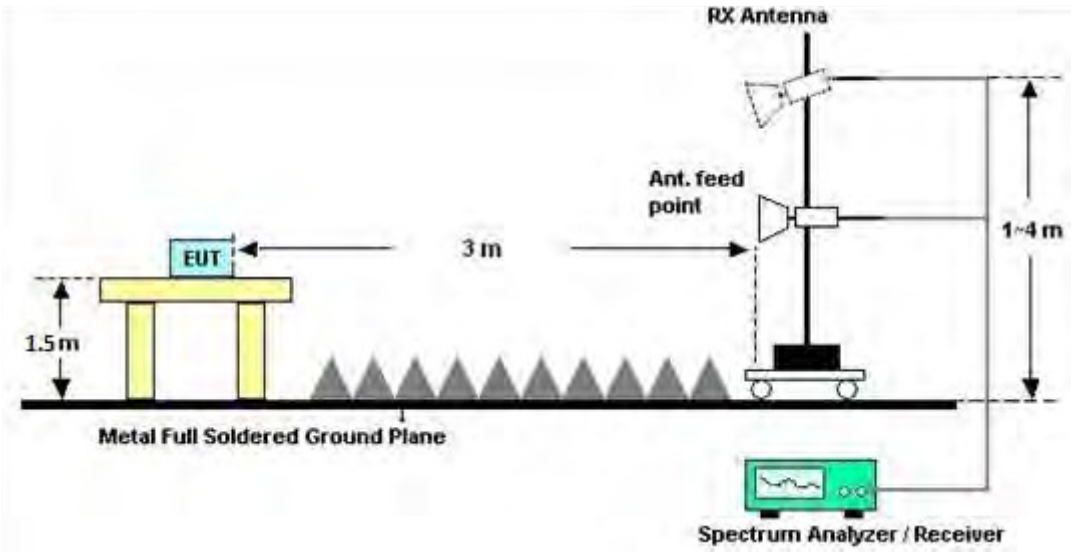


For radiated emissions from 30MHz to 1GHz

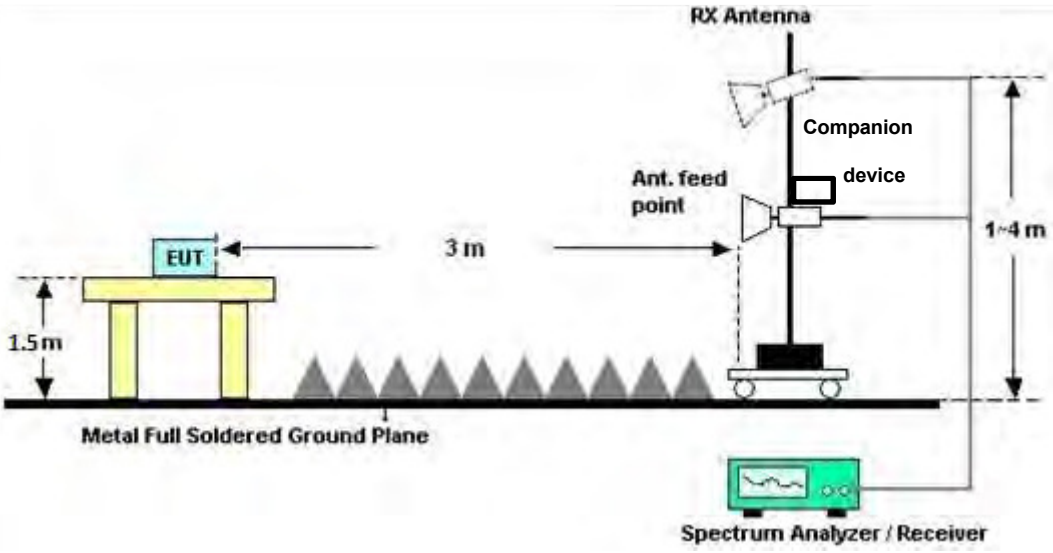


For radiated emissions above 1GHz

CDD Mode



TXBF Mode


RX Antenna
Companion
device
Ant. feed
point
1~4 m
EUT
3 m
1.5 m
Metal Full Soldered Ground Plane
Spectrum Analyzer / Receiver

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

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

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix B and C.

3.4.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

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.

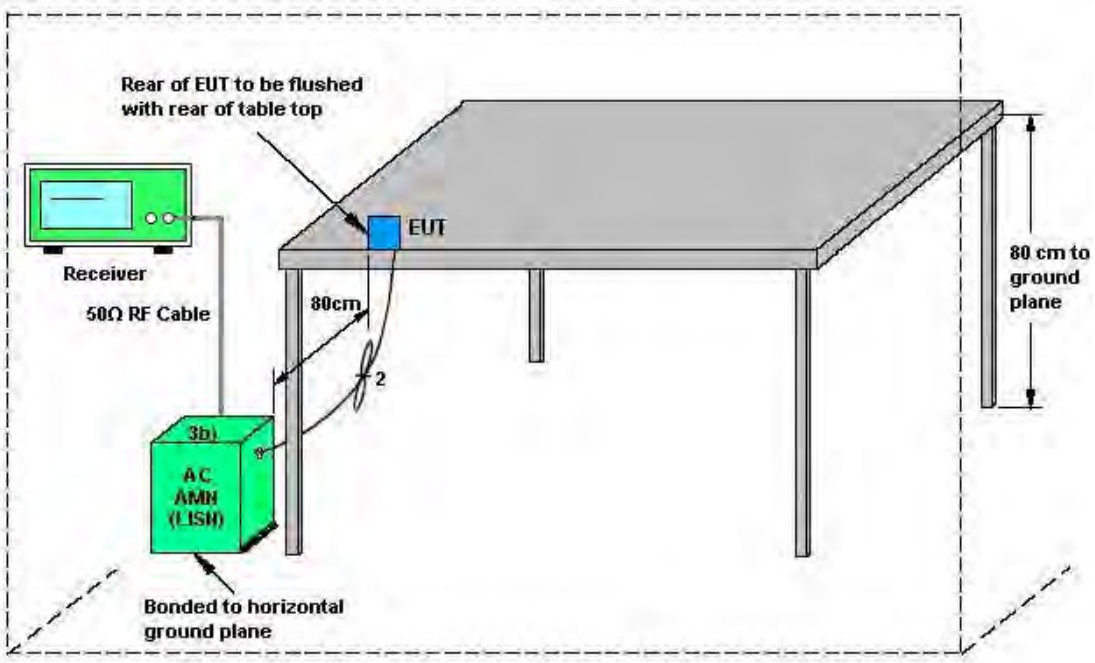
3.5.2 Measuring Instruments

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.

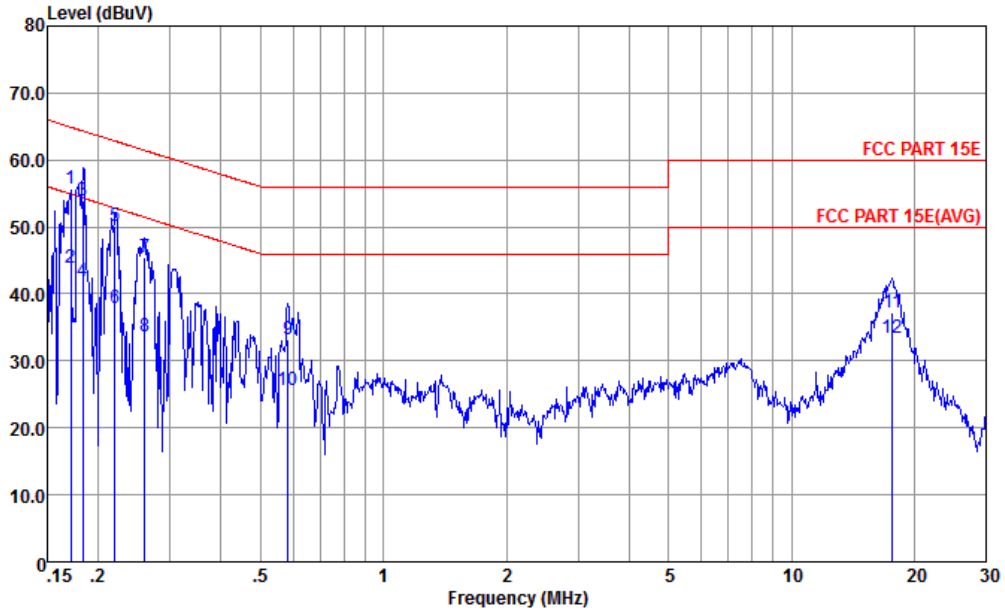
3.5.4 Test Setup



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

3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 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		

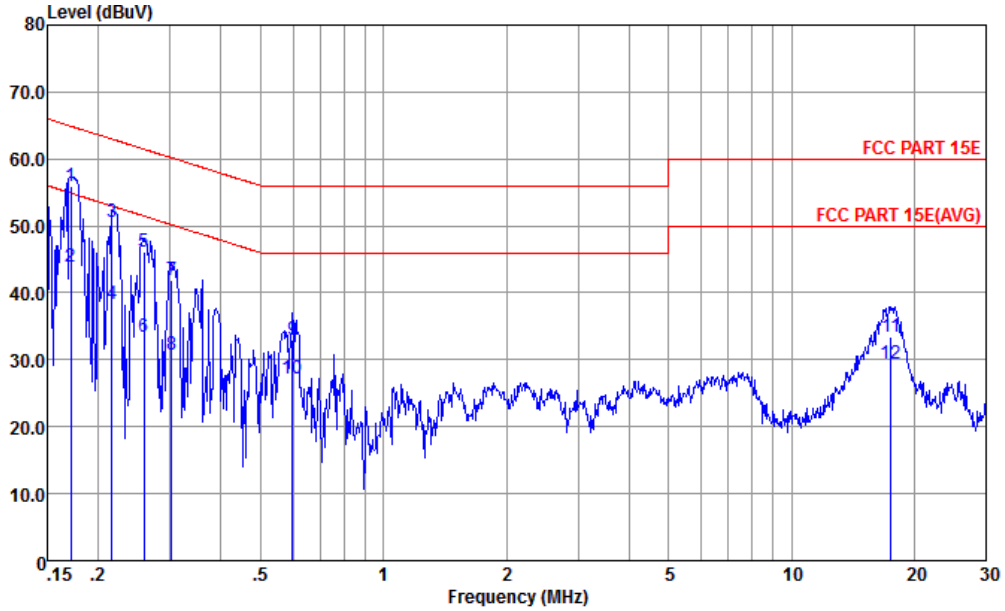


Site : CO01-KS
Condition : FCC PART 15E LISN-L-20151024 LINE

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

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

5.8G 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

5.8G 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

5.8G 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	Aug. 31, 2016~ Sep. 03, 2016	Sep. 09, 2016	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 20, 2016	Aug. 31, 2016~ Sep. 03, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 20, 2016	Aug. 31, 2016~ Sep. 03, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 24, 2015	Aug. 31, 2016~ Sep. 03, 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 : FR670709D

Test Engineer:	Ivan Zhan	Temperature:	24~25	°C
Test Date:	2016/8/31~2016/9/3	Relative Humidity:	54~55	%

TEST RESULTS DATA
6dB and 99% OBW APIN0304

Band IV																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)			26 dB Bandwidth (MHz)			6 dB Bandwidth (MHz)			6 dB Bandwidth Min. Limit (MHz)			Pass/Fail
					Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	
11a	6Mbps	3	149	5745	17.18	17.13	17.03	21.03	20.58	20.68	16.28	16.26	15.92	0.5			Pass
11a	6Mbps	3	157	5785	17.13	17.13	17.03	20.68	20.48	20.73	16.30	16.04	16.30	0.5			Pass
11a	6Mbps	3	165	5825	17.13	17.13	17.08	20.88	20.53	20.63	16.30	16.30	16.30	0.5			Pass
VHT20	MCS0	3	149	5745	18.08	18.18	18.13	21.58	21.83	21.68	17.14	17.14	17.50	0.5			Pass
VHT20	MCS0	3	157	5785	18.08	18.18	18.08	21.58	21.68	21.68	17.14	16.90	17.14	0.5			Pass
VHT20	MCS0	3	165	5825	18.08	18.18	18.13	21.48	21.63	21.43	17.50	17.16	17.16	0.5			Pass
VHT40	MCS0	3	151	5755	35.86	35.86	35.86	40.46	40.37	40.10	35.09	35.05	35.05	0.5			Pass
VHT40	MCS0	3	159	5795	35.86	35.86	35.86	40.55	40.46	40.28	35.09	35.09	35.05	0.5			Pass
VHT80	MCS0	3	155	5775	75.64	75.52	75.64	84.08	84.40	85.03	75.05	75.05	75.05	0.5			Pass

TEST RESULTS DATA
Average Power Table APIN0304

Band IV																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power with duty factor (dBm)				Power Setting	FCC Conducted Power Limit (dBm)			DG (dBi)			Pass/Fail
					Ant 1	Ant 2	Ant 3	SUM	-	Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	
11a	6Mbps	3	149	5745	18.16	18.32	18.05	22.95	17.50	30.00			6.00			Pass
11a	6Mbps	3	157	5785	18.34	18.48	18.40	23.18	17.50	30.00			6.00			Pass
11a	6Mbps	3	165	5825	18.29	18.18	18.36	23.05	17.50	30.00			6.00			Pass
VHT20	MCS0	3	149	5745	17.47	17.92	17.38	22.36	17.00	25.23			10.77			Pass
VHT20	MCS0	3	157	5785	17.75	18.13	17.80	22.66	17.00	25.23			10.77			Pass
VHT20	MCS0	3	165	5825	17.60	17.74	18.05	22.57	17.00	25.23			10.77			Pass
VHT40	MCS0	3	151	5755	18.21	18.44	18.16	23.04	16.50	25.23			10.77			Pass
VHT40	MCS0	3	159	5795	18.36	18.51	18.43	23.20	16.50	25.23			10.77			Pass
VHT80	MCS0	3	155	5775	17.65	18.09	17.80	22.62	16.50	25.23			10.77			Pass

TEST RESULTS DATA
Power Spectral Density APIN0304

FCC Band IV															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Power Density with RBW and duty factor (dBm/500kHz)				Average PSD Limit (dBm/500kHz)			DG (dBi)			Pass /Fail
					Ant 1	Ant 2	Ant 3	SUM	Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	
11a	6Mbps	3	149	5745	4.61	5.00	4.67	9.77	25.23			10.77			Pass
11a	6Mbps	3	157	5785	4.95	5.28	5.52	10.29	25.23			10.77			Pass
11a	6Mbps	3	165	5825	4.76	4.58	5.19	9.96	25.23			10.77			Pass
VHT20	MCS0	3	149	5745	3.75	4.08	3.38	8.85	25.23			10.77			Pass
VHT20	MCS0	3	157	5785	3.95	4.26	3.82	9.03	25.23			10.77			Pass
VHT20	MCS0	3	165	5825	3.74	3.90	4.40	9.17	25.23			10.77			Pass
VHT40	MCS0	3	151	5755	1.73	2.18	1.91	6.95	25.23			10.77			Pass
VHT40	MCS0	3	159	5795	2.16	1.88	1.77	6.93	25.23			10.77			Pass
VHT80	MCS0	3	155	5775	-1.83	-1.29	-1.49	3.48	25.23			10.77			Pass

TEST RESULTS DATA
Frequency Stability APIN0304

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stablility (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	149	5745	5744.975	-0.025	-4.35	20	11.4	
11a	6Mbps	1	149	5745	5744.975	-0.025	-4.35	20	12.6	
11a	6Mbps	1	149	5745	5744.975	-0.025	-4.35	20	12	
11a	6Mbps	1	149	5745	5745.075	0.075	13.05	-30	12	
11a	6Mbps	1	149	5745	5744.950	-0.050	-8.70	50	12	

TEST RESULTS DATA
6dB and 99% OBW APIN0305

Band IV																	
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	99% Bandwidth (MHz)			26 dB Bandwidth (MHz)			6 dB Bandwidth (MHz)			6 dB Bandwidth Min. Limit (MHz)			Pass/Fail
					Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	
11a	6Mbps	3	149	5745	17.18	17.13	17.03	21.03	20.58	20.68	16.28	16.26	15.92	0.5			Pass
11a	6Mbps	3	157	5785	17.13	17.13	17.03	20.68	20.48	20.73	16.30	16.04	16.30	0.5			Pass
11a	6Mbps	3	165	5825	17.13	17.13	17.08	20.88	20.53	20.63	16.30	16.30	16.30	0.5			Pass
VHT20	MCS0	3	149	5745	18.08	18.18	18.13	21.58	21.83	21.68	17.14	17.14	17.50	0.5			Pass
VHT20	MCS0	3	157	5785	18.08	18.18	18.08	21.58	21.68	21.68	17.14	16.90	17.14	0.5			Pass
VHT20	MCS0	3	165	5825	18.08	18.18	18.13	21.48	21.63	21.43	17.50	17.16	17.16	0.5			Pass
VHT40	MCS0	3	151	5755	35.86	35.86	35.86	40.46	40.37	40.10	35.09	35.05	35.05	0.5			Pass
VHT40	MCS0	3	159	5795	35.86	35.86	35.86	40.55	40.46	40.28	35.09	35.09	35.05	0.5			Pass
VHT80	MCS0	3	155	5775	75.64	75.52	75.64	84.08	84.40	85.03	75.05	75.05	75.05	0.5			Pass

TEST RESULTS DATA
Average Power Table APIN0305

Band IV																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power with duty factor (dBm)				Power Setting	FCC Conducted Power Limit (dBm)			DG (dBi)			Pass/Fail
					Ant 1	Ant 2	Ant 3	SUM	-	Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	
11a	6Mbps	3	149	5745	18.16	18.32	18.05	22.95	17.50	30.00			2.80			Pass
11a	6Mbps	3	157	5785	18.34	18.48	18.40	23.18	17.50	30.00			2.80			Pass
11a	6Mbps	3	165	5825	18.29	18.18	18.36	23.05	17.50	30.00			2.80			Pass
VHT20	MCS0	3	149	5745	17.47	17.92	17.38	22.36	17.00	28.43			7.57			Pass
VHT20	MCS0	3	157	5785	17.75	18.13	17.80	22.66	17.00	28.43			7.57			Pass
VHT20	MCS0	3	165	5825	17.60	17.74	18.05	22.57	17.00	28.43			7.57			Pass
VHT40	MCS0	3	151	5755	18.21	18.44	18.16	23.04	16.50	28.43			7.57			Pass
VHT40	MCS0	3	159	5795	18.36	18.51	18.43	23.20	16.50	28.43			7.57			Pass
VHT80	MCS0	3	155	5775	17.65	18.09	17.80	22.62	16.50	28.43			7.57			Pass

TEST RESULTS DATA
Power Spectral Density APIN0305

FCC Band IV															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Power Density with RBW and duty factor (dBm/500kHz)				Average PSD Limit (dBm/500kHz)			DG (dBi)			Pass /Fail
					Ant 1	Ant 2	Ant 3	SUM	Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	
11a	6Mbps	3	149	5745	4.61	5.00	4.67	9.77	28.43			7.57			Pass
11a	6Mbps	3	157	5785	4.95	5.28	5.52	10.29	28.43			7.57			Pass
11a	6Mbps	3	165	5825	4.76	4.58	5.19	9.96	28.43			7.57			Pass
VHT20	MCS0	3	149	5745	3.75	4.08	3.38	8.85	28.43			7.57			Pass
VHT20	MCS0	3	157	5785	3.95	4.26	3.82	9.03	28.43			7.57			Pass
VHT20	MCS0	3	165	5825	3.74	3.90	4.40	9.17	28.43			7.57			Pass
VHT40	MCS0	3	151	5755	1.73	2.18	1.91	6.95	28.43			7.57			Pass
VHT40	MCS0	3	159	5795	2.16	1.88	1.77	6.93	28.43			7.57			Pass
VHT80	MCS0	3	155	5775	-1.83	-1.29	-1.49	3.48	28.43			7.57			Pass

TEST RESULTS DATA
Frequency Stability APIN0305

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stablility (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	149	5745	5744.975	-0.025	-4.35	20	11.4	
11a	6Mbps	1	149	5745	5744.975	-0.025	-4.35	20	12.6	
11a	6Mbps	1	149	5745	5744.975	-0.025	-4.35	20	12	
11a	6Mbps	1	149	5745	5745.075	0.075	13.05	-30	12	
11a	6Mbps	1	149	5745	5744.950	-0.050	-8.70	50	12	

Appendix B. Radiated Spurious Emission

For Sample 1 with Adapter

Band 4 - 5725~5850MHz

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 149 5745MHz		5696	53.25	-49.1	102.35	49.23	32.02	8.25	36.25	145	327	P	H
		5703.8	52.4	-53.97	106.37	48.36	32.03	8.28	36.27	145	327	P	H
		5723.1	53.98	-63.99	117.97	49.91	32.04	8.31	36.28	145	327	P	H
	*	5748	103.3	-	-	99.2	32.05	8.34	36.29	145	327	P	H
	*	5748	96.24	-	-	92.14	32.05	8.34	36.29	145	327	A	H
		5697.9	58.14	-45.61	103.75	54.12	32.02	8.25	36.25	176	314	P	V
		5718.1	62.13	-48.24	110.37	58.06	32.04	8.31	36.28	176	314	P	V
		5722.6	72.63	-44.2	116.83	68.56	32.04	8.31	36.28	176	314	P	V
	*	5744	117.11	-	-	113.01	32.05	8.34	36.29	176	314	P	V
	*	5748	109.58	-	-	105.48	32.05	8.34	36.29	176	314	A	V
802.11a CH 157 5785MHz	*	5786	103.65	-	-	99.47	32.07	8.43	36.32	108	217	P	H
	*	5782	96.58	-	-	92.43	32.06	8.4	36.31	108	217	A	H
	*	5788	116.01	-	-	111.83	32.07	8.43	36.32	170	314	P	V
	*	5788	109.53	-	-	105.35	32.07	8.43	36.32	170	314	A	V
802.11a CH 165 5825MHz	*	5822	102.73	-	-	98.53	32.08	8.47	36.35	105	36	P	H
	*	5828	96.38	-	-	92.18	32.08	8.47	36.35	105	36	A	H
		5854.09	52.29	-60.68	112.97	48.05	32.1	8.51	36.37	105	36	P	H
		5861.69	52.96	-56.06	109.02	48.72	32.1	8.51	36.37	105	36	P	H
		5882.4	53.13	-46.67	99.8	48.88	32.1	8.53	36.38	105	36	P	H
	*	5828	114.53	-	-	110.33	32.08	8.47	36.35	132	346	P	V
	*	5828	107.17	-	-	102.97	32.08	8.47	36.35	132	346	A	V
		5852.38	61.05	-55.82	116.87	56.83	32.09	8.49	36.36	132	346	P	V
		5857.32	57.75	-52.5	110.25	53.51	32.1	8.51	36.37	132	346	P	V
		5875.75	55.78	-48.96	104.74	51.53	32.1	8.53	36.38	132	346	P	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

Band 4 5725~5850MHz

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		11490	44.45	-29.55	74	50.27	38.59	12.57	56.98	100	0	P	H
CH 149 5745MHz		11495	50.93	-23.07	74	56.75	38.59	12.57	56.98	100	360	P	V
802.11a		11570	44.62	-29.38	74	50.39	38.75	12.63	57.15	100	0	P	H
CH 157		11565	57.49	-16.51	74	63.28	38.71	12.62	57.12	222	178	P	V
5785MHz	!	11565	48.38	-5.62	54	54.17	38.71	12.62	57.12	222	178	A	V
802.11a		11650	44.18	-29.82	74	49.9	38.9	12.67	57.29	100	0	P	H
CH 165		11645	53.91	-20.09	74	59.63	38.9	12.67	57.29	284	353	P	V
5825MHz		11645	47.96	-6.04	54	53.68	38.9	12.67	57.29	284	353	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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)
		5690.7	53.48	-44.96	98.44	49.46	32.02	8.25	36.25	113	218	P	H
		5716.6	53.4	-56.55	109.95	49.36	32.03	8.28	36.27	113	218	P	H
		5723.5	54.61	-64.27	118.88	50.54	32.04	8.31	36.28	113	218	P	H
802.11ac	*	5748	103.27	-	-	99.17	32.05	8.34	36.29	113	218	P	H
VHT20	*	5748	96.23	-	-	92.13	32.05	8.34	36.29	113	218	A	H
CH 149		5698.9	54	-50.49	104.49	49.98	32.02	8.25	36.25	100	219	P	V
5745MHz		5712.8	58.19	-50.7	108.89	54.15	32.03	8.28	36.27	100	219	P	V
		5724.8	62.74	-59.1	121.84	58.67	32.04	8.31	36.28	100	219	P	V
	*	5744	112.39	-	-	108.29	32.05	8.34	36.29	100	219	P	V
	*	5744	105.47	-	-	101.37	32.05	8.34	36.29	100	219	A	V
802.11ac	*	5784	106.89	-	-	102.74	32.06	8.4	36.31	295	23	P	H
VHT20	*	5792	98.73	-	-	94.55	32.07	8.43	36.32	295	23	A	H
CH 157	*	5788	115.61	-	-	111.43	32.07	8.43	36.32	183	44	P	V
5785MHz	*	5784	106.87	-	-	102.72	32.06	8.4	36.31	183	44	A	V
	*	5820	105.9	-	-	101.7	32.08	8.47	36.35	300	22	P	H
	*	5820	96.83	-	-	92.63	32.08	8.47	36.35	300	22	A	H
		5851.81	60.64	-57.53	118.17	56.42	32.09	8.49	36.36	300	22	P	H
802.11ac		5859.98	56.17	-53.33	109.5	51.93	32.1	8.51	36.37	300	22	P	H
VHT20		5887.91	53.33	-42.39	95.72	49.07	32.11	8.55	36.4	300	22	P	H
CH 165	*	5828	114.27	-	-	110.07	32.08	8.47	36.35	102	218	P	V
5825MHz	*	5828	106.51	-	-	102.31	32.08	8.47	36.35	102	218	A	V
		5850	69.86	-52.44	122.3	65.64	32.09	8.49	36.36	102	218	P	V
		5855.8	65.49	-45.19	110.68	61.25	32.1	8.51	36.37	102	218	P	V
		5886.96	62.74	-33.68	96.42	58.49	32.1	8.53	36.38	102	218	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11480	51.94	-22.06	74	57.74	38.59	12.56	56.95	100	360	P	H
VHT20		11480	46.1	-7.9	54	51.9	38.59	12.56	56.95	100	247	A	H
CH 149 5745MHz		11490	47.65	-26.35	74	53.47	38.59	12.57	56.98	100	360	P	V
802.11ac		11570	46.04	-27.96	74	51.81	38.75	12.63	57.15	100	360	P	H
VHT20 CH 157 5785MHz		11570	49.57	-24.43	74	55.34	38.75	12.63	57.15	100	360	P	V
802.11ac		11650	44.68	-29.32	74	50.4	38.9	12.67	57.29	100	360	P	H
VHT20 CH 165 5825MHz		11650	48.06	-25.94	74	53.78	38.9	12.67	57.29	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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)
		5694.6	54	-47.32	101.32	49.98	32.02	8.25	36.25	100	43	P	H
		5711.2	62.41	-46.03	108.44	58.37	32.03	8.28	36.27	100	43	P	H
		5722.4	65.04	-51.33	116.37	60.97	32.04	8.31	36.28	100	43	P	H
802.11ac	*	5756	101.32	-	-	97.2	32.05	8.37	36.3	100	43	P	H
VHT40	*	5752	93.98	-	-	89.86	32.05	8.37	36.3	100	43	A	H
CH 151		5691.1	70.87	-27.87	98.74	66.85	32.02	8.25	36.25	168	44	P	V
5755MHz		5719.9	79.63	-31.24	110.87	75.56	32.04	8.31	36.28	168	44	P	V
		5724.8	80.75	-41.09	121.84	76.68	32.04	8.31	36.28	168	44	P	V
	*	5746	115.56	-	-	111.46	32.05	8.34	36.29	168	44	P	V
	*	5766	104.19	-	-	100.07	32.05	8.37	36.3	168	44	A	V
	*	5792	103.22	-	-	99.04	32.07	8.43	36.32	299	22	P	H
	*	5792	95.96	-	-	91.78	32.07	8.43	36.32	299	22	A	H
		5853.52	57.31	-56.96	114.27	53.07	32.1	8.51	36.37	299	22	P	H
802.11ac		5858.27	54.93	-55.05	109.98	50.69	32.1	8.51	36.37	299	22	P	H
VHT40		5877.84	54.7	-48.49	103.19	50.45	32.1	8.53	36.38	299	22	P	H
CH 159	*	5798	111.65	-	-	107.47	32.07	8.43	36.32	109	218	P	V
5795MHz	*	5802	103.53	-	-	99.35	32.07	8.43	36.32	109	218	A	V
		5850.67	66.66	-54.11	120.77	62.44	32.09	8.49	36.36	109	218	P	V
		5859.98	65.68	-43.82	109.5	61.44	32.1	8.51	36.37	109	218	P	V
		5876.32	63.26	-41.06	104.32	59.01	32.1	8.53	36.38	109	218	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11510	49	-25	74	54.84	38.6	12.58	57.02	100	360	P	H
VHT40 CH 151 5755MHz		11510	46.22	-27.78	74	52.06	38.6	12.58	57.02	100	360	P	V
802.11ac		11590	45.73	-28.27	74	51.49	38.79	12.64	57.19	100	360	P	H
VHT40		11575	54.12	-19.88	74	59.89	38.75	12.63	57.15	100	0	P	V
CH 159 5795MHz		11575	44.84	-9.16	54	50.61	38.75	12.63	57.15	100	221	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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 155 5775MHz	*	5760	103.59	-	-	99.47	32.05	8.37	36.3	286	21	P	H
	*	5760	98.72	-	-	94.6	32.05	8.37	36.3	286	21	A	H
		5699.2	59.15	-45.56	104.71	55.13	32.02	8.25	36.25	286	21	P	H
		5711.7	67.46	-41.12	108.58	63.42	32.03	8.28	36.27	286	21	P	H
		5724.9	61.03	-61.04	122.07	56.96	32.04	8.31	36.28	286	21	P	H
		5850.29	59	-62.64	121.64	54.78	32.09	8.49	36.36	286	21	P	H
		5871.76	58.78	-47.43	106.21	54.53	32.1	8.53	36.38	286	21	P	H
		5879.93	55.41	-46.23	101.64	51.16	32.1	8.53	36.38	286	21	P	H
	*	5758	112.52	-	-	108.4	32.05	8.37	36.3	145	221	P	V
	*	5768	108.07	-	-	103.95	32.05	8.37	36.3	145	221	A	V
		5698.3	73.64	-30.41	104.05	69.62	32.02	8.25	36.25	145	221	P	V
		5719.1	83.22	-27.43	110.65	79.15	32.04	8.31	36.28	145	221	P	V
		5723.3	80.88	-37.54	118.42	76.81	32.04	8.31	36.28	145	221	P	V
		5852	72.4	-45.34	117.74	68.18	32.09	8.49	36.36	145	221	P	V
		5855.99	72.19	-38.43	110.62	67.95	32.1	8.51	36.37	145	221	P	V
		5875.75	66.7	-38.04	104.74	62.45	32.1	8.53	36.38	145	221	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11550	45.08	-28.92	74	50.87	38.71	12.62	57.12	100	360	P	H
VHT80 CH 155 5775MHz		11550	46.81	-27.19	74	52.6	38.71	12.62	57.12	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

For Sample 2 with Adapter

Band 4 - 5725~5850MHz

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 149 5745MHz		5699.7	57.39	-47.69	105.08	53.37	32.02	8.25	36.25	204	190	P	H
		5716.2	59.59	-50.25	109.84	55.55	32.03	8.28	36.27	204	190	P	H
		5724.1	65.31	-54.94	120.25	61.24	32.04	8.31	36.28	204	190	P	H
	*	5746	114.11	-	-	110.01	32.05	8.34	36.29	204	190	P	H
	*	5746	107.47	-	-	103.37	32.05	8.34	36.29	204	190	A	H
		5697.8	57.87	-45.81	103.68	53.85	32.02	8.25	36.25	229	177	P	V
		5718.7	60.8	-49.74	110.54	56.73	32.04	8.31	36.28	229	177	P	V
		5724.7	66.79	-54.83	121.62	62.72	32.04	8.31	36.28	229	177	P	V
	*	5748	114.45	-	-	110.35	32.05	8.34	36.29	229	177	P	V
	*	5744	107.83	-	-	103.73	32.05	8.34	36.29	229	177	A	V
802.11a CH 157 5785MHz	*	5788	114.96	-	-	110.78	32.07	8.43	36.32	204	179	P	H
	*	5782	108.32	-	-	104.17	32.06	8.4	36.31	204	179	A	H
	*	5786	114.83	-	-	110.65	32.07	8.43	36.32	220	184	P	V
	*	5782	107.71	-	-	103.56	32.06	8.4	36.31	220	184	A	V
802.11a CH 165 5825MHz	*	5822	114.9	-	-	110.7	32.08	8.47	36.35	186	192	P	H
	*	5822	107.43	-	-	103.23	32.08	8.47	36.35	186	192	A	H
		5851.81	60.83	-57.34	118.17	56.61	32.09	8.49	36.36	186	192	P	H
		5855.8	58.86	-51.82	110.68	54.62	32.1	8.51	36.37	186	192	P	H
		5886.77	55	-41.56	96.56	50.75	32.1	8.53	36.38	186	192	P	H
	*	5822	113.48	-	-	109.28	32.08	8.47	36.35	207	188	P	V
	*	5822	106.36	-	-	102.16	32.08	8.47	36.35	207	188	A	V
		5852	59.89	-57.85	117.74	55.67	32.09	8.49	36.36	207	188	P	V
		5856.56	57.58	-52.88	110.46	53.34	32.1	8.51	36.37	207	188	P	V
		5876.7	54.6	-49.44	104.04	50.35	32.1	8.53	36.38	207	188	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11490	44.42	-29.58	74	50.24	38.59	12.57	56.98	100	360	P	H
CH 149 5745MHz		11490	46.47	-27.53	74	52.29	38.59	12.57	56.98	100	0	P	V
802.11a		11570	45.34	-28.66	74	51.11	38.75	12.63	57.15	100	360	P	H
CH 157		11565	58.86	-15.14	74	64.65	38.71	12.62	57.12	298	334	P	V
5785MHz		11565	47.7	-6.3	54	53.49	38.71	12.62	57.12	298	334	A	V
802.11a		11660	48.55	-25.45	74	54.25	38.94	12.68	57.32	300	360	P	H
CH 165		11645	59.4	-14.6	74	65.12	38.9	12.67	57.29	305	334	P	V
5825MHz	!	11645	50.57	-3.43	54	56.29	38.9	12.67	57.29	305	334	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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)
		5689.9	59.22	-38.63	97.85	55.2	32.02	8.25	36.25	251	177	P	H
		5719.6	71.25	-39.54	110.79	67.18	32.04	8.31	36.28	251	177	P	H
		5723.3	81.74	-36.68	118.42	77.67	32.04	8.31	36.28	251	177	P	H
802.11ac	*	5752	114.76	-	-	110.64	32.05	8.37	36.3	251	177	P	H
VHT20	*	5742	107.52	-	-	103.42	32.05	8.34	36.29	251	177	A	H
CH 149		5692.5	61.67	-38.1	99.77	57.65	32.02	8.25	36.25	277	188	P	V
5745MHz		5719.3	68.69	-42.01	110.7	64.62	32.04	8.31	36.28	277	188	P	V
		5724.3	78.64	-42.06	120.7	74.57	32.04	8.31	36.28	277	188	P	V
	*	5740	116.32	-	-	112.22	32.05	8.34	36.29	277	188	P	V
	*	5750	109.49	-	-	105.39	32.05	8.34	36.29	277	188	A	V
802.11ac	*	5784	117.92	-	-	113.77	32.06	8.4	36.31	144	180	P	H
VHT20	*	5788	109.76	-	-	105.58	32.07	8.43	36.32	144	180	A	H
CH 157	*	5790	116.45	-	-	112.27	32.07	8.43	36.32	235	178	P	V
5785MHz	*	5782	107.83	-	-	103.68	32.06	8.4	36.31	235	178	A	V
	*	5828	119.11	-	-	114.91	32.08	8.47	36.35	135	184	P	H
	*	5828	108.95	-	-	104.75	32.08	8.47	36.35	135	184	A	H
		5850.48	74.05	-47.16	121.21	69.83	32.09	8.49	36.36	135	184	P	H
802.11ac		5858.27	66.77	-43.21	109.98	62.53	32.1	8.51	36.37	135	184	P	H
VHT20		5878.6	64.97	-37.66	102.63	60.72	32.1	8.53	36.38	135	184	P	H
CH 165	*	5822	115.21	-	-	111.01	32.08	8.47	36.35	261	186	P	V
5825MHz	*	5830	106.75	-	-	102.55	32.08	8.47	36.35	261	186	A	V
		5850	70.4	-51.9	122.3	66.18	32.09	8.49	36.36	261	186	P	V
		5858.46	64.72	-45.21	109.93	60.48	32.1	8.51	36.37	261	186	P	V
		5875.56	58.77	-46.11	104.88	54.52	32.1	8.53	36.38	261	186	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11490	45.52	-28.48	74	51.34	38.59	12.57	56.98	100	360	P	H
VHT20 CH 149 5745MHz		11490	47.95	-26.05	74	53.77	38.59	12.57	56.98	100	360	P	V
802.11ac		11570	47.04	-26.96	74	52.81	38.75	12.63	57.15	100	360	P	H
VHT20		11580	58.78	-15.22	74	64.55	38.75	12.63	57.15	249	181	P	V
CH 157 5785MHz	!	11580	48.68	-5.32	54	54.45	38.75	12.63	57.15	249	181	A	V
802.11ac		11650	45.96	-28.04	74	51.68	38.9	12.67	57.29	100	360	P	H
VHT20		11645	59.77	-14.23	74	65.49	38.9	12.67	57.29	235	179	P	V
CH 165 5825MHz	!	11645	52.93	-1.07	54	58.65	38.9	12.67	57.29	235	179	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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)
	*	5752	117.52	-	-	113.4	32.05	8.37	36.3	209	180	P	H
	*	5742	110.81	-	-	106.71	32.05	8.34	36.29	209	180	A	H
		5694	67.04	-33.84	100.88	63.02	32.02	8.25	36.25	209	180	P	H
802.11ac		5718.9	80.43	-30.16	110.59	76.36	32.04	8.31	36.28	209	180	P	H
VHT40		5722.5	83.73	-32.87	116.6	79.66	32.04	8.31	36.28	209	180	P	H
CH 151	*	5760	113.19	-	-	109.07	32.05	8.37	36.3	250	188	P	V
5755MHz	*	5760	104.61	-	-	100.49	32.05	8.37	36.3	250	188	A	V
		5690.8	66.96	-31.56	98.52	62.94	32.02	8.25	36.25	250	188	P	V
		5719.2	86.25	-24.43	110.68	82.18	32.04	8.31	36.28	250	188	P	V
		5721.8	87.12	-27.88	115	83.05	32.04	8.31	36.28	250	188	P	V
	*	5788	114.62	-	-	110.44	32.07	8.43	36.32	198	184	P	H
	*	5788	105.58	-	-	101.4	32.07	8.43	36.32	198	184	A	H
		5853.71	65.66	-48.18	113.84	61.42	32.1	8.51	36.37	198	184	P	H
802.11ac		5868.34	67.7	-39.46	107.16	63.46	32.1	8.51	36.37	198	184	P	H
VHT40		5888.29	63.35	-32.08	95.43	59.09	32.11	8.55	36.4	198	184	P	H
CH 159	*	5792	111.47	-	-	107.29	32.07	8.43	36.32	207	178	P	V
5795MHz	*	5778	108.59	-	-	104.44	32.06	8.4	36.31	207	178	A	V
		5851.43	65.13	-53.91	119.04	60.91	32.09	8.49	36.36	207	178	P	V
		5864.54	63.45	-44.78	108.23	59.21	32.1	8.51	36.37	207	178	P	V
		5882.4	61.86	-37.94	99.8	57.61	32.1	8.53	36.38	207	178	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11510	44.75	-29.25	74	50.59	38.6	12.58	57.02	100	360	P	H
VHT40 CH 151 5755MHz		11510	47.52	-26.48	74	53.36	38.6	12.58	57.02	100	360	P	V
802.11ac		11590	45.56	-28.44	74	51.32	38.79	12.64	57.19	100	360	P	H
VHT40		11590	57.93	-16.07	74	63.69	38.79	12.64	57.19	277	184	P	V
CH 159 5795MHz	!	11590	50.11	-3.89	54	55.87	38.79	12.64	57.19	277	184	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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 155 5775MHz		5698.5	74.08	-30.11	104.19	70.06	32.02	8.25	36.25	253	170	P	H
		5700.8	83.31	-22.21	105.52	79.27	32.03	8.28	36.27	253	170	P	H
		5720.1	78.84	-32.29	111.13	74.77	32.04	8.31	36.28	253	170	P	H
	*	5752	110.94	-	-	106.82	32.05	8.37	36.3	253	170	P	H
	*	5772	101.65	-	-	97.5	32.06	8.4	36.31	253	170	A	H
		5851.81	80.79	-37.38	118.17	76.57	32.09	8.49	36.36	253	170	P	H
		5858.84	71.76	-38.06	109.82	67.52	32.1	8.51	36.37	253	170	P	H
		5877.27	66.22	-37.39	103.61	61.97	32.1	8.53	36.38	253	170	P	H
		5691.6	59.34	-39.77	99.11	55.32	32.02	8.25	36.25	147	194	P	V
		5719.1	65.05	-45.6	110.65	60.98	32.04	8.31	36.28	147	194	P	V
		5724.6	67.78	-53.61	121.39	63.71	32.04	8.31	36.28	147	194	P	V
	*	5750	109.59	-	-	105.49	32.05	8.34	36.29	174	178	P	V
	*	5770	108.1	-	-	103.95	32.06	8.4	36.31	174	178	A	V
		5850.48	74.02	-47.19	121.21	69.8	32.09	8.49	36.36	174	178	P	V
		5864.16	71.48	-36.85	108.33	67.24	32.1	8.51	36.37	174	178	P	V
		5877.46	66.33	-37.14	103.47	62.08	32.1	8.53	36.38	174	178	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11550	43.99	-30.01	74	49.78	38.71	12.62	57.12	100	360	P	H
VHT80		11575	53.82	-20.18	74	59.59	38.75	12.63	57.15	241	180	P	V
CH 155 5775MHz	!	11575	49.04	-4.96	54	54.81	38.75	12.63	57.15	241	180	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

5GHz WIFI 802.11ac VHT20 (LF @ 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)
5GHz 802.11ac VHT20 LF		33.88	32.25	-7.75	40	44.84	18.04	0.7	31.33	-	-	P	H
		39.7	34.65	-5.35	40	51.07	14.2	0.75	31.37	100	25	P	H
		45.52	33.25	-6.75	40	51.63	12.22	0.83	31.43	-	-	P	H
		66.86	30.63	-9.37	40	53.66	7.48	0.98	31.49	-	-	P	H
		72.68	32.04	-7.96	40	53.91	8.62	1.03	31.52	-	-	P	H
		89.17	30.17	-13.33	43.5	48.94	11.56	1.14	31.47	-	-	P	H
		34.85	31.6	-8.4	40	44.34	17.9	0.71	31.35	-	-	P	V
		39.7	33.52	-6.48	40	49.94	14.2	0.75	31.37	300	125	P	V
		66.86	31.92	-8.08	40	54.95	7.48	0.98	31.49	-	-	P	V
		72.68	32.61	-7.39	40	54.48	8.62	1.03	31.52	-	-	P	V
		79.47	29.14	-10.86	40	50.26	9.27	1.08	31.47	-	-	P	V
		89.17	28.88	-14.62	43.5	47.65	11.56	1.14	31.47	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

For Sample 3 with Adapter

Band 4 - 5725~5850MHz

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 149 5745MHz		5693.9	56.13	-44.67	100.8	52.11	32.02	8.25	36.25	322	177	P	H
		5712.4	59.89	-48.88	108.77	55.85	32.03	8.28	36.27	322	177	P	H
		5723.3	64.21	-54.21	118.42	60.14	32.04	8.31	36.28	322	177	P	H
	*	5742	114.36	-	-	110.26	32.05	8.34	36.29	322	177	P	H
	*	5742	107.4	-	-	103.3	32.05	8.34	36.29	322	177	A	H
		5691.1	52.27	-46.47	98.74	48.25	32.02	8.25	36.25	219	238	P	V
		5712.3	60.53	-48.22	108.75	56.49	32.03	8.28	36.27	219	238	P	V
		5722.7	61.18	-55.88	117.06	57.11	32.04	8.31	36.28	219	238	P	V
	*	5742	113.67	-	-	109.57	32.05	8.34	36.29	219	238	P	V
	*	5742	106.98	-	-	102.88	32.05	8.34	36.29	219	238	A	V
802.11a CH 157 5785MHz	*	5782	113.76	-	-	109.61	32.06	8.4	36.31	106	251	P	H
	*	5782	107.77	-	-	103.62	32.06	8.4	36.31	106	251	A	H
	*	5786	112.85	-	-	108.67	32.07	8.43	36.32	100	232	P	V
	*	5786	106.47	-	-	102.29	32.07	8.43	36.32	100	232	A	V
802.11a CH 165 5825MHz	*	5832	113.39	-	-	109.19	32.08	8.47	36.35	100	247	P	H
	*	5822	107.13	-	-	102.93	32.08	8.47	36.35	100	247	A	H
		5852.57	60.68	-55.76	116.44	56.46	32.09	8.49	36.36	100	247	P	H
		5862.45	56.82	-51.99	108.81	52.58	32.1	8.51	36.37	100	247	P	H
		5883.16	51.45	-47.79	99.24	47.2	32.1	8.53	36.38	100	247	P	H
	*	5822	112.93	-	-	108.73	32.08	8.47	36.35	104	203	P	V
	*	5822	106.21	-	-	102.01	32.08	8.47	36.35	104	203	A	V
		5852.57	57.57	-58.87	116.44	53.35	32.09	8.49	36.36	104	203	P	V
		5862.07	55.84	-53.08	108.92	51.6	32.1	8.51	36.37	104	203	P	V
		5884.11	49.08	-49.46	98.54	44.83	32.1	8.53	36.38	104	203	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11490	49.92	-24.08	74	55.74	38.59	12.57	56.98	100	0	P	H
CH 149 5745MHz		11490	49.8	-24.2	74	55.62	38.59	12.57	56.98	100	0	P	V
802.11a		11570	51.26	-22.74	74	57.03	38.75	12.63	57.15	100	0	P	H
CH 157 5785MHz		11570	50.19	-23.81	74	55.96	38.75	12.63	57.15	100	0	P	V
802.11a		11650	50.54	-23.46	74	56.26	38.9	12.67	57.29	100	0	P	H
CH 165 5825MHz		11650	50.9	-23.1	74	56.62	38.9	12.67	57.29	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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)
		5696	65.39	-36.96	102.35	61.37	32.02	8.25	36.25	264	245	P	H
		5718.8	67.16	-43.4	110.56	63.09	32.04	8.31	36.28	264	245	P	H
		5725	70.46	-51.84	122.3	66.39	32.04	8.31	36.28	264	245	P	H
802.11ac	*	5750	114.04	-	-	109.94	32.05	8.34	36.29	264	245	P	H
VHT20	*	5748	108.16	-	-	104.06	32.05	8.34	36.29	264	245	A	H
CH 149		5688.6	55.1	-41.79	96.89	51.08	32.02	8.25	36.25	378	175	P	V
5745MHz		5718.8	67.83	-42.73	110.56	63.76	32.04	8.31	36.28	378	175	P	V
		5725	71.87	-50.43	122.3	67.8	32.04	8.31	36.28	378	175	P	V
	*	5750	114.82	-	-	110.72	32.05	8.34	36.29	378	175	P	V
	*	5750	107.3	-	-	103.2	32.05	8.34	36.29	378	175	A	V
802.11ac	*	5788	113.73	-	-	109.55	32.07	8.43	36.32	100	240	P	H
VHT20	*	5786	104.4	-	-	100.22	32.07	8.43	36.32	100	240	A	H
CH 157	*	5792	109.62	-	-	105.44	32.07	8.43	36.32	316	241	P	V
5785MHz	*	5782	101.85	-	-	97.7	32.06	8.4	36.31	316	241	A	V
	*	5828	114.21	-	-	110.01	32.08	8.47	36.35	255	248	P	H
	*	5828	105.12	-	-	100.92	32.08	8.47	36.35	255	248	A	H
		5850.1	66.13	-55.94	122.07	61.91	32.09	8.49	36.36	255	248	P	H
802.11ac		5855.42	63.33	-47.45	110.78	59.09	32.1	8.51	36.37	255	248	P	H
VHT20		5878.41	61.83	-40.94	102.77	57.58	32.1	8.53	36.38	255	248	P	H
CH 165	*	5824	111.09	-	-	106.89	32.08	8.47	36.35	128	225	P	V
5825MHz	*	5832	102.65	-	-	98.45	32.08	8.47	36.35	128	225	A	V
		5854.47	68.14	-43.97	112.11	63.9	32.1	8.51	36.37	128	225	P	V
		5856.75	68.56	-41.85	110.41	64.32	32.1	8.51	36.37	128	225	P	V
		5881.83	67.33	-32.9	100.23	63.08	32.1	8.53	36.38	128	225	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11490	43.42	-30.58	74	49.24	38.59	12.57	56.98	100	360	P	H
VHT20 CH 149 5745MHz		11490	43.44	-30.56	74	49.26	38.59	12.57	56.98	100	360	P	V
802.11ac		11570	42.81	-31.19	74	48.58	38.75	12.63	57.15	100	135	P	H
VHT20 CH 157 5785MHz		11570	43.61	-30.39	74	49.38	38.75	12.63	57.15	100	105	P	V
802.11ac		11650	46.55	-27.45	74	52.27	38.9	12.67	57.29	100	360	P	H
VHT20 CH 165 5825MHz		11650	44.44	-29.56	74	50.16	38.9	12.67	57.29	100	356	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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)
		5696.8	58.3	-44.64	102.94	54.28	32.02	8.25	36.25	349	280	P	H
		5718	62.52	-47.82	110.34	58.45	32.04	8.31	36.28	349	280	P	H
		5720.3	66.42	-45.16	111.58	62.35	32.04	8.31	36.28	349	280	P	H
802.11ac	*	5760	106.48	-	-	102.36	32.05	8.37	36.3	349	280	P	H
VHT40	*	5750	103.29	-	-	99.19	32.05	8.34	36.29	349	280	A	H
CH 151		5699.1	57.48	-47.16	104.64	53.46	32.02	8.25	36.25	304	263	P	V
5755MHz		5715.3	68.11	-41.48	109.59	64.07	32.03	8.28	36.27	304	263	P	V
		5720.7	75.34	-37.16	112.5	71.27	32.04	8.31	36.28	304	263	P	V
	*	5752	111.11	-	-	106.99	32.05	8.37	36.3	304	263	P	V
	*	5752	106.16	-	-	102.04	32.05	8.37	36.3	304	263	A	V
	*	5792	111.78	-	-	107.6	32.07	8.43	36.32	333	276	P	H
	*	5790	104.84	-	-	100.66	32.07	8.43	36.32	333	276	A	H
		5851.81	60.75	-57.42	118.17	56.53	32.09	8.49	36.36	333	276	P	H
802.11ac		5857.7	60.36	-49.78	110.14	56.12	32.1	8.51	36.37	333	276	P	H
VHT40		5887.53	59.54	-36.46	96	55.28	32.11	8.55	36.4	333	276	P	H
CH 159	*	5808	110.87	-	-	106.67	32.08	8.45	36.33	298	251	P	V
5795MHz	*	5786	101.64	-	-	97.46	32.07	8.43	36.32	298	251	A	V
		5853.52	66.66	-47.61	114.27	62.42	32.1	8.51	36.37	298	251	P	V
		5857.89	67.65	-42.44	110.09	63.41	32.1	8.51	36.37	298	251	P	V
		5878.98	67.1	-35.24	102.34	62.85	32.1	8.53	36.38	298	251	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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 VHT40 CH 151 5755MHz		11510	47.34	-26.66	74	53.18	38.6	12.58	57.02	100	300	P	H
		11510	53.21	-20.79	74	59.05	38.6	12.58	57.02	100	190	P	V
		11510	42.68	-11.32	54	48.52	38.6	12.58	57.02	100	190	A	V
802.11ac VHT40 CH 159 5795MHz		11590	42.97	-31.03	74	48.73	38.79	12.64	57.19	100	360	P	H
		11590	43.75	-30.25	74	49.51	38.79	12.64	57.19	300	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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 155 5775MHz		5696.12	70.55	-31.89	102.44	66.53	32.02	8.25	36.25	259	115	P	H
		5716.6	76.17	-33.78	109.95	72.13	32.03	8.28	36.27	259	115	P	H
		5724.52	67.4	-53.81	121.21	63.33	32.04	8.31	36.28	259	115	P	H
	*	5808	107.15	-	-	102.95	32.08	8.45	36.33	259	115	P	H
	*	5798	97.85	-	-	93.67	32.07	8.43	36.32	259	115	A	H
		5851.44	68.76	-50.26	119.02	64.54	32.09	8.49	36.36	259	115	P	H
		5868.88	70.63	-36.38	107.01	66.39	32.1	8.51	36.37	259	115	P	H
		5880.8	61.52	-39.47	100.99	57.27	32.1	8.53	36.38	259	115	P	H
		5692.76	65.41	-34.55	99.96	61.39	32.02	8.25	36.25	173	195	P	V
		5718.44	66.62	-43.84	110.46	62.55	32.04	8.31	36.28	173	195	P	V
		5720.28	72.72	-38.82	111.54	68.65	32.04	8.31	36.28	173	195	P	V
	*	5760	104.74	-	-	100.62	32.05	8.37	36.3	173	195	P	V
	*	5752	96.17	-	-	92.05	32.05	8.37	36.3	173	195	A	V
		5852	63.42	-54.32	117.74	59.2	32.09	8.49	36.36	173	195	P	V
		5862.64	64.99	-43.77	108.76	60.75	32.1	8.51	36.37	173	195	P	V
		5879.76	59.14	-42.62	101.76	54.89	32.1	8.53	36.38	173	195	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11550	50.6	-23.4	74	56.39	38.71	12.62	57.12	300	0	P	H
VHT80 CH 155 5775MHz		11550	50.46	-23.54	74	56.25	38.71	12.62	57.12	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

For Sample 2 with POE Adapter

Band 4 - 5725~5850MHz

WIFI 802.11ac VHT20 (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)
	*	5820	116.06	-	-	111.86	32.08	8.47	36.35	100	178	P	H
	*	5822	109.79	-	-	105.59	32.08	8.47	36.35	100	178	A	H
		5850	71.14	-51.16	122.3	66.92	32.09	8.49	36.36	100	178	P	H
802.11ac		5869.67	69.45	-37.34	106.79	65.21	32.1	8.51	36.37	100	178	P	H
VHT20		5877.84	69.31	-33.88	103.19	65.06	32.1	8.53	36.38	100	178	P	H
CH 165	*	5822	113.19	-	-	108.99	32.08	8.47	36.35	160	196	P	V
5825MHz	*	5832	107.24	-	-	103.04	32.08	8.47	36.35	160	196	A	V
		5850.67	67.8	-52.97	120.77	63.58	32.09	8.49	36.36	160	196	P	V
		5856.18	66.99	-43.58	110.57	62.75	32.1	8.51	36.37	160	196	P	V
		5884.68	65.64	-32.47	98.11	61.39	32.1	8.53	36.38	160	196	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

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		11490	46.16	-27.84	74	53.91	38.59	14.2	60.54	100	0	P	H
VHT20 CH 149 5745MHz		11490	42.62	-31.38	74	50.37	38.59	14.2	60.54	100	0	P	V
802.11ac		11650	44.06	-29.94	74	49.78	38.9	12.67	57.29	100	0	P	H
VHT20		11645	54.23	-19.77	74	59.95	38.9	12.67	57.29	300	320	P	V
CH 165 5825MHz	!	11645	49.36	-4.64	54	55.08	38.9	12.67	57.29	300	320	A	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		(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)

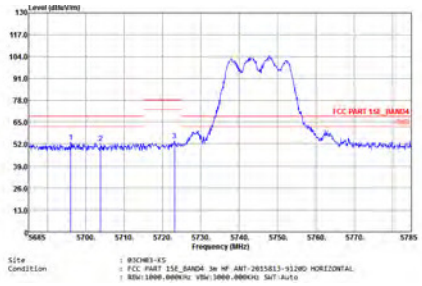
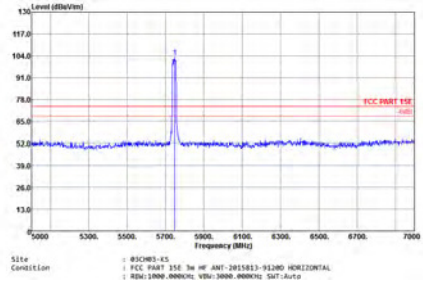
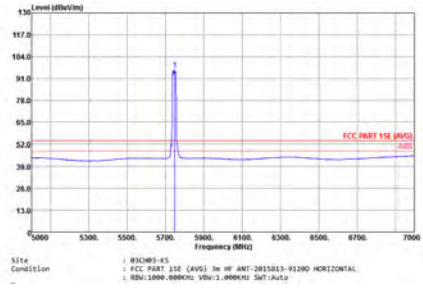
Both peak and average measured complies with the limit line, so test result is "PASS".

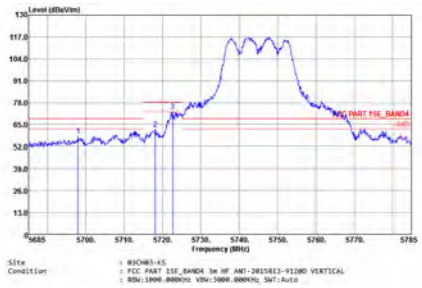
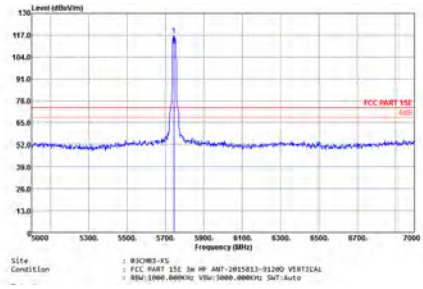
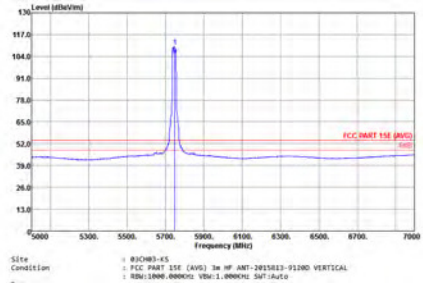
Appendix C. Radiated Spurious Emission Plots

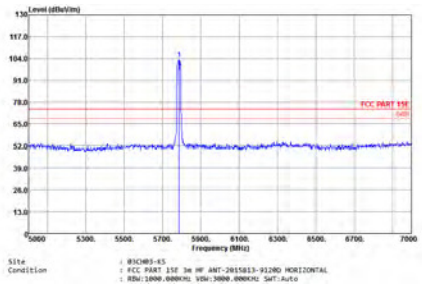
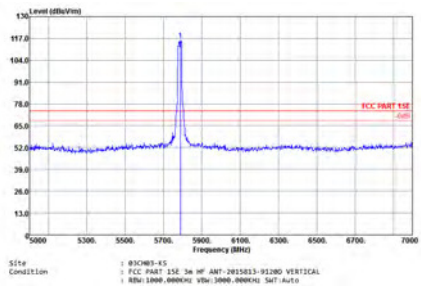
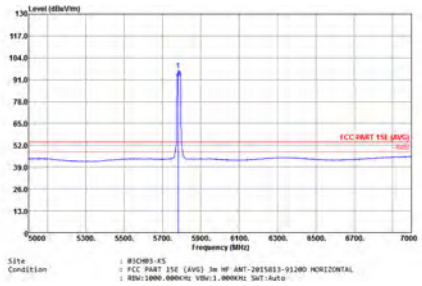
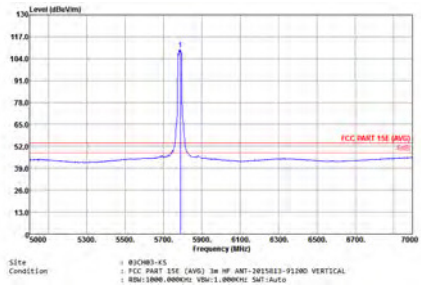
For Sample 1 with Adapter

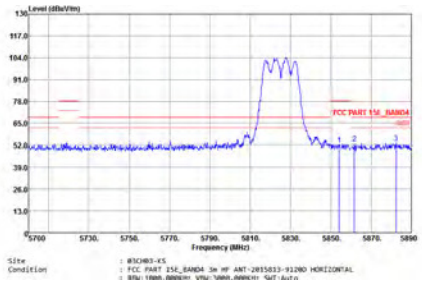
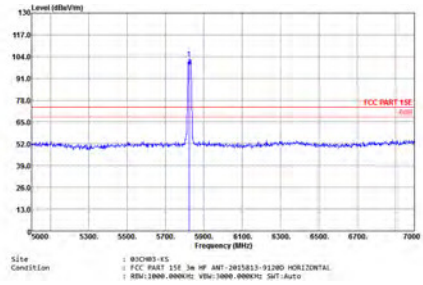
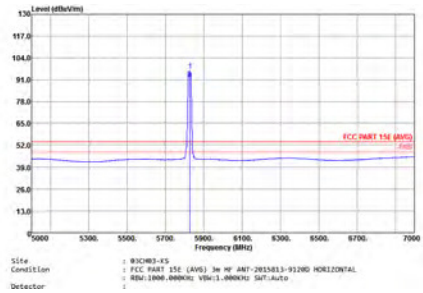
Band 4 - 5725~5850MHz

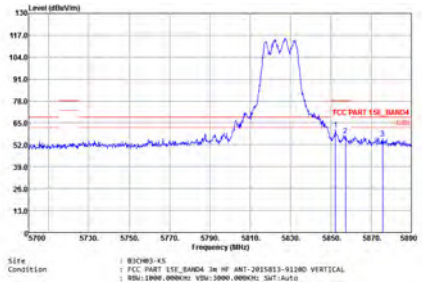
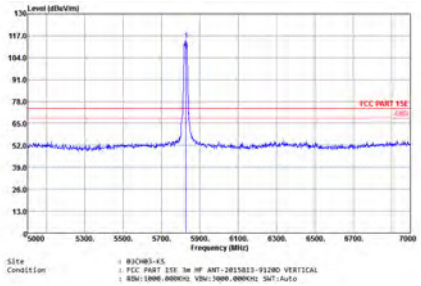
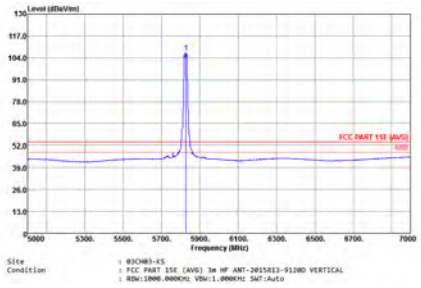
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

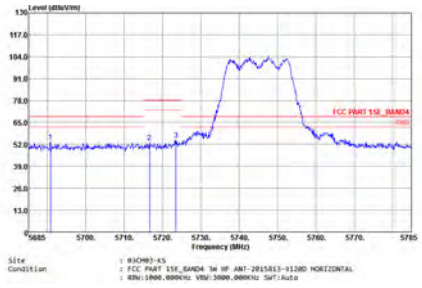
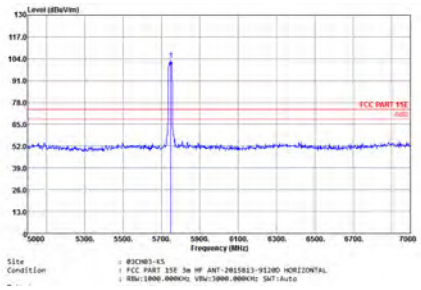
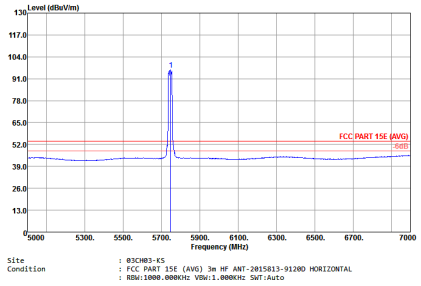
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

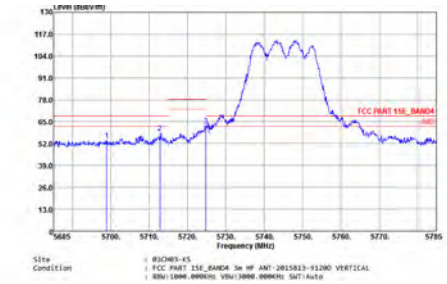
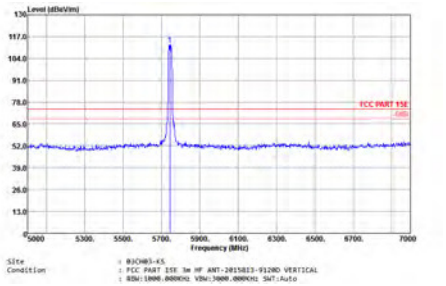
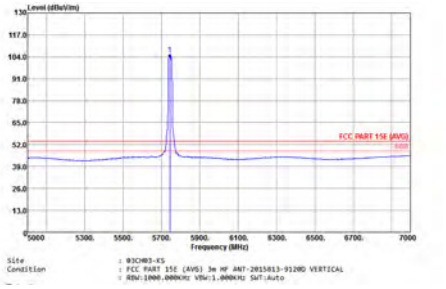
WIFI	Band 4 5725~5850MHz Fundamental @ 3m	
ANT	802.11a CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

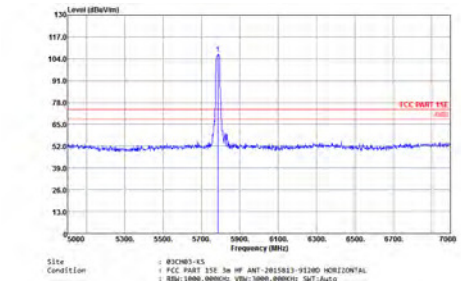
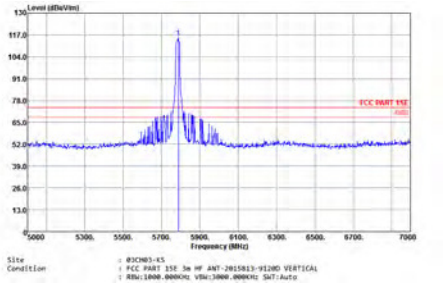
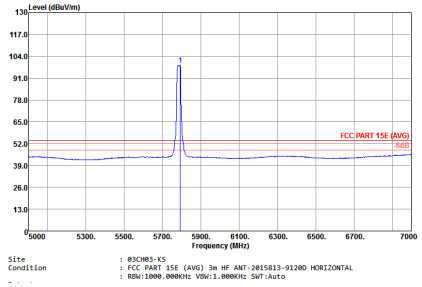
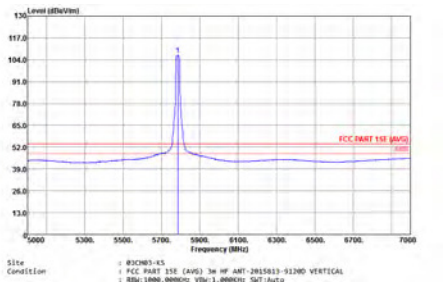
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

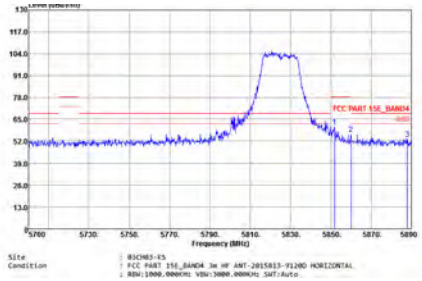
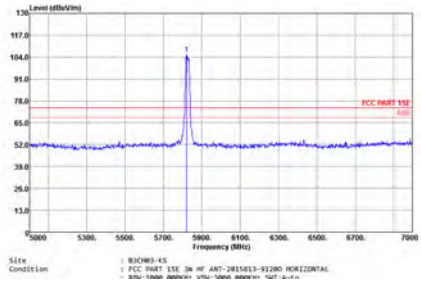
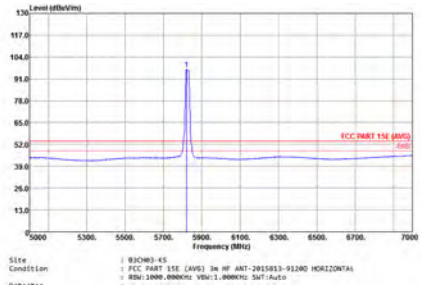
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

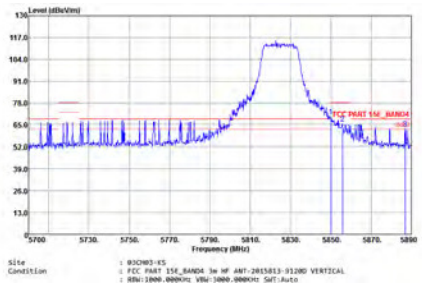
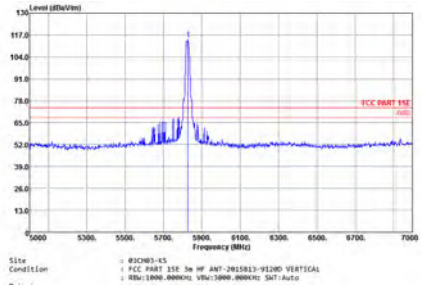
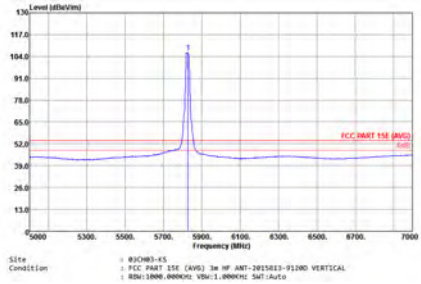
Band 4 5725~5850MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

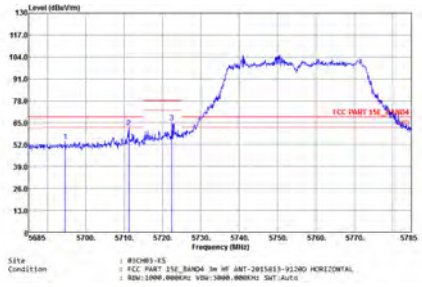
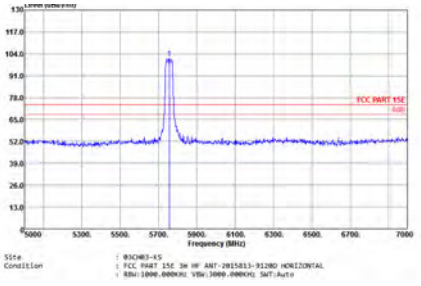
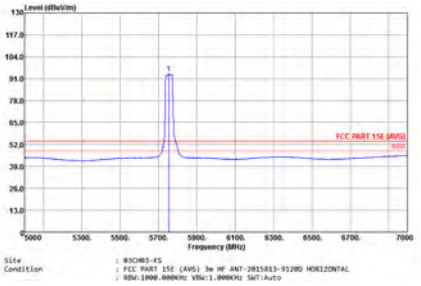
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

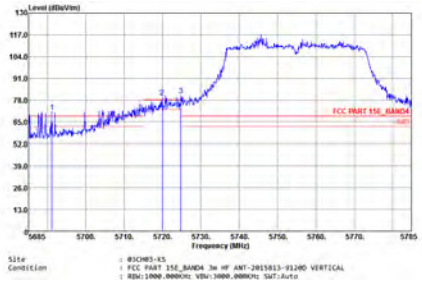
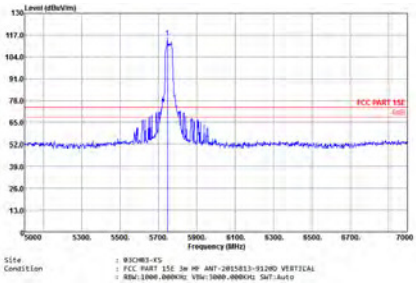
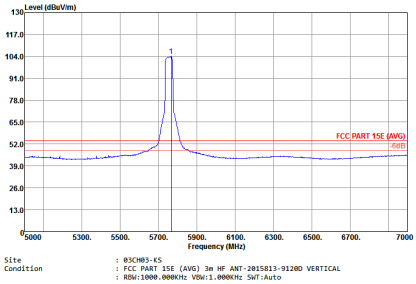
WIFI	Band 4 5725~5850MHz Fundamental @ 3m	
ANT	802.11ac VHT20 CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

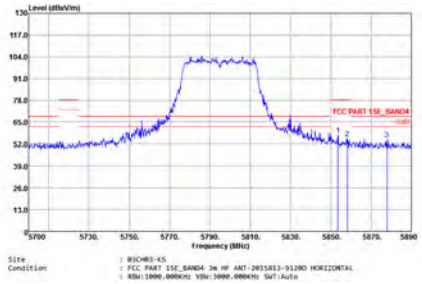
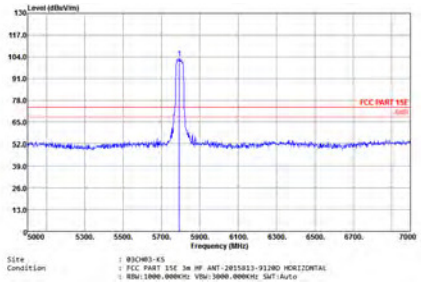
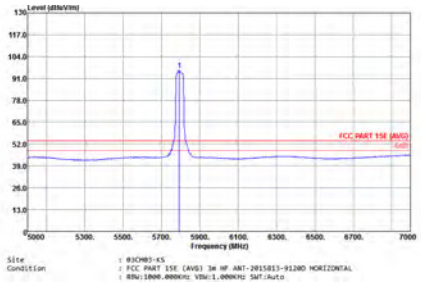
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

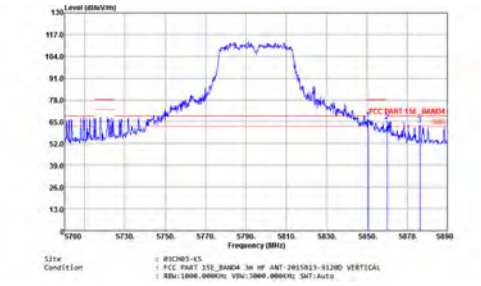
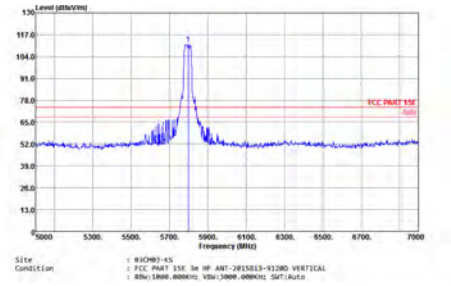
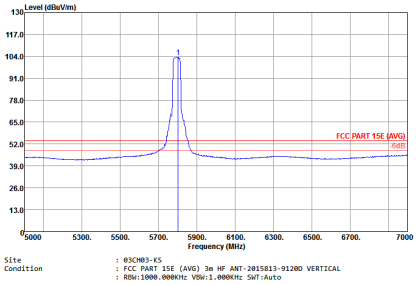
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)

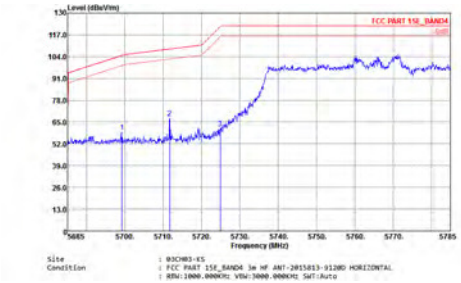
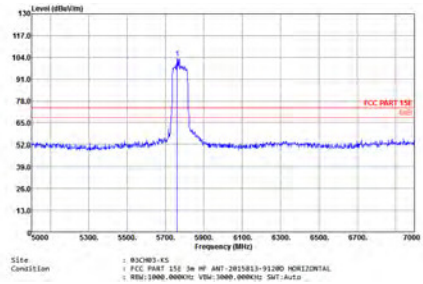
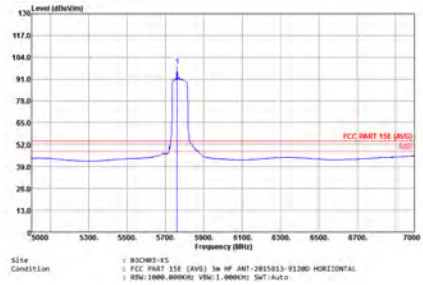
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

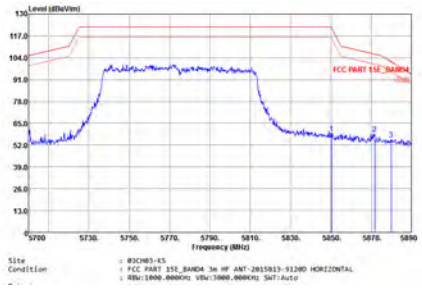
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

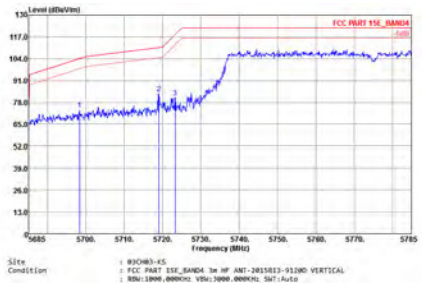
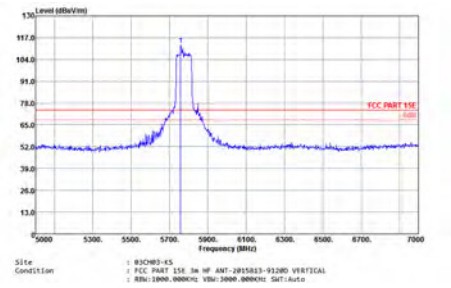
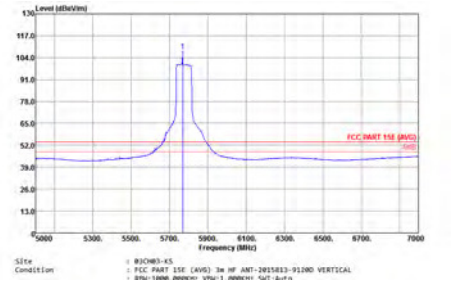
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

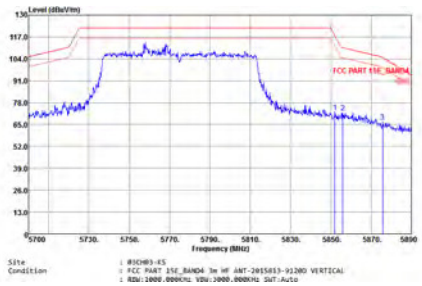
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

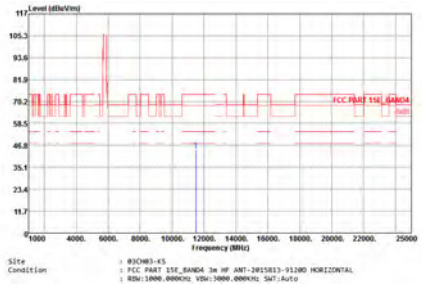
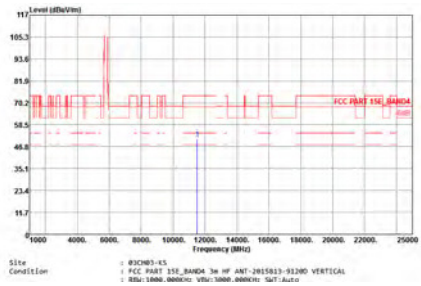
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Horizontal	
Peak		

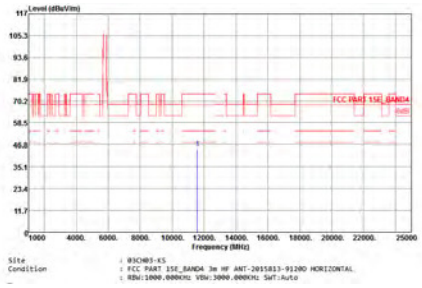
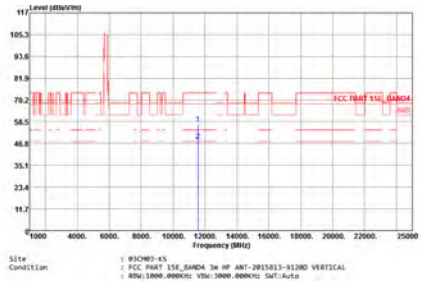
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

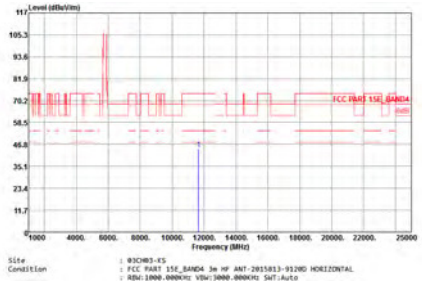
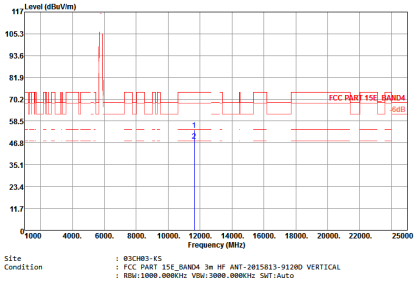
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Vertical	
Peak		

Band 4 - 5725~5850MHz

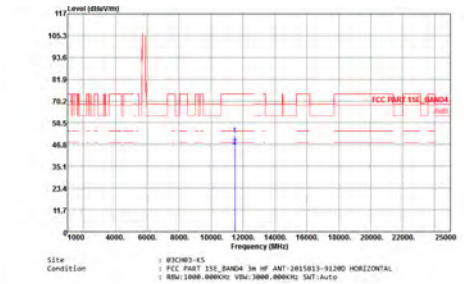
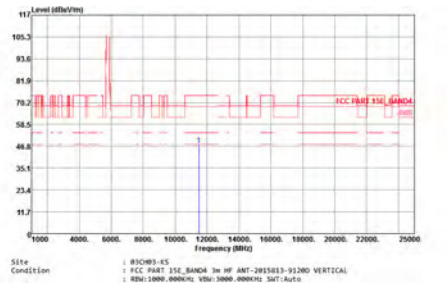
WIFI 802.11a (Harmonic @ 3m)

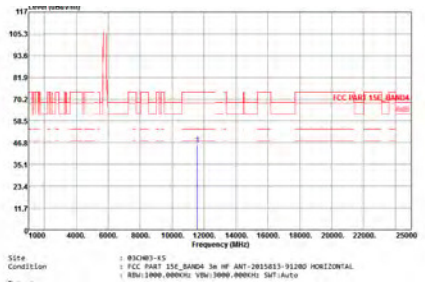
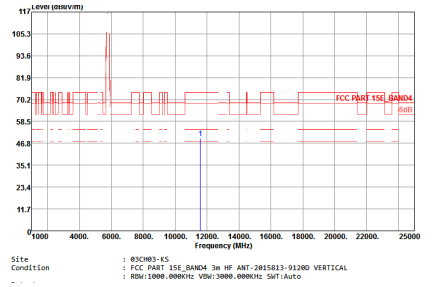
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

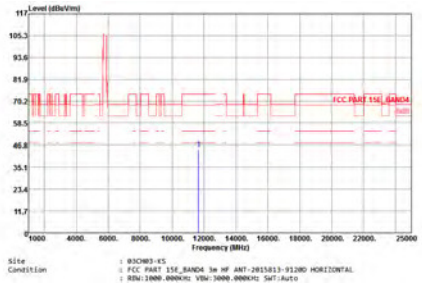
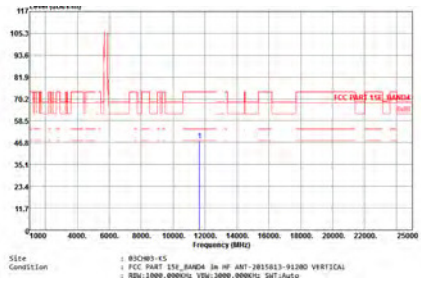
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

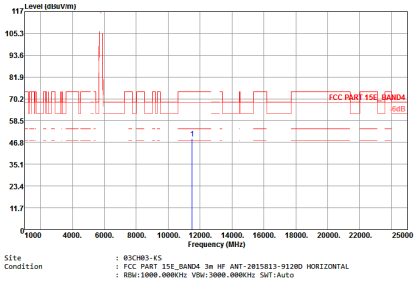
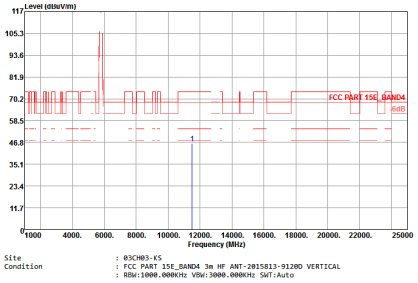
Band 4 5725~5850MHz
WIFI 802.11ac VHT20 (Harmonic @ 3m)

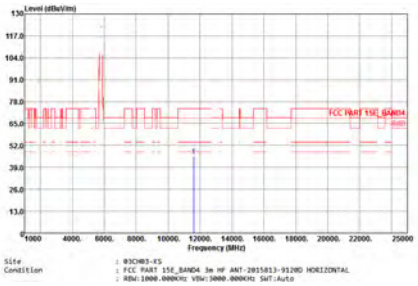
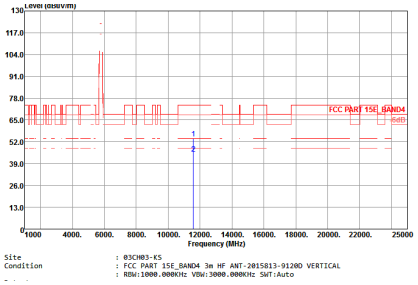
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

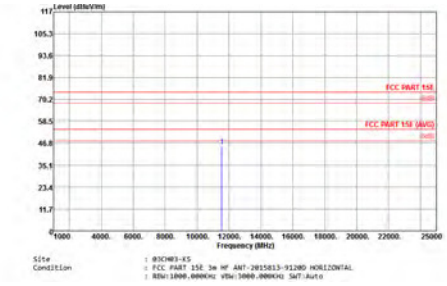
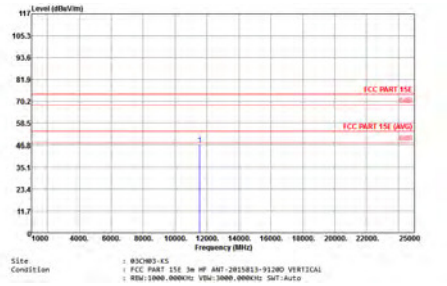
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

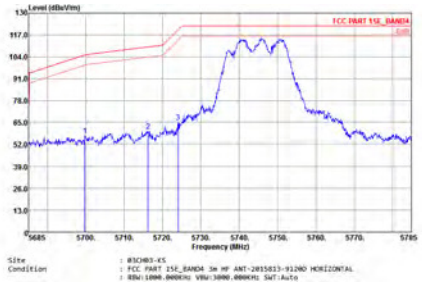
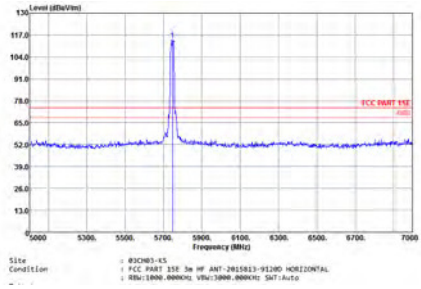
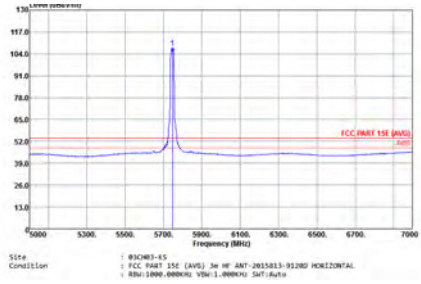
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

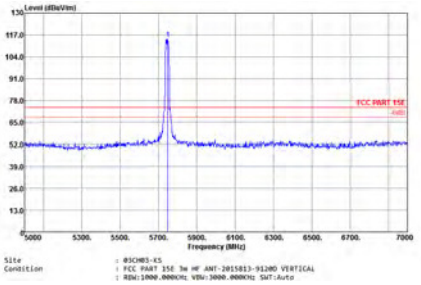
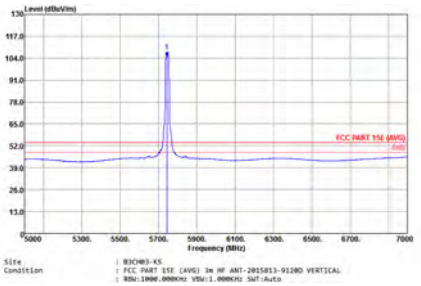
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

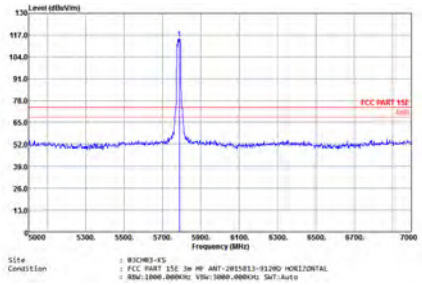
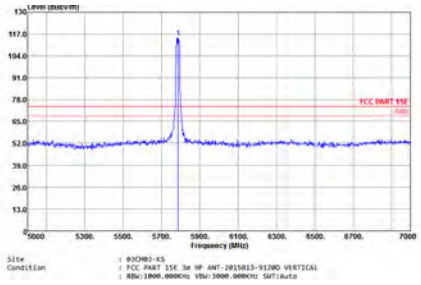
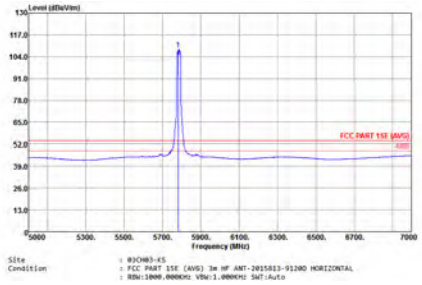
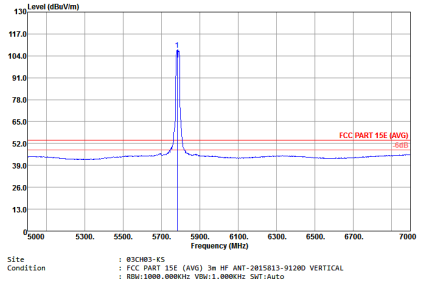
For Sample 2 with Adapter

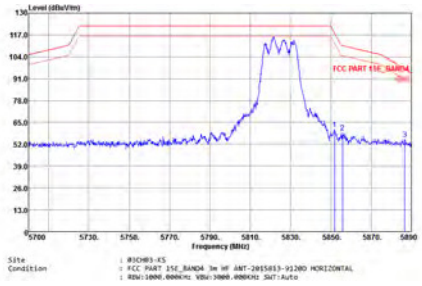
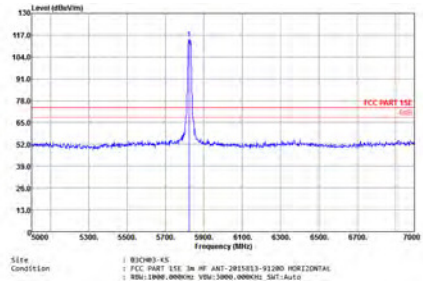
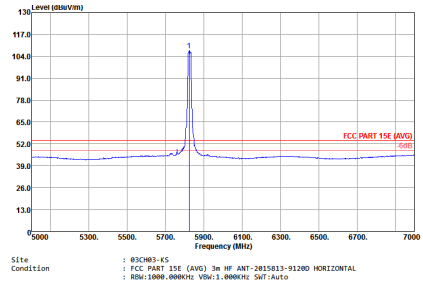
Band 4 - 5725~5850MHz

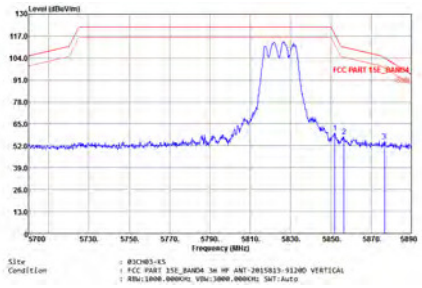
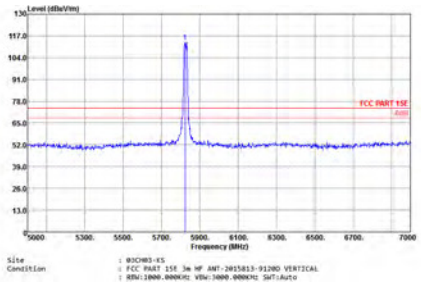
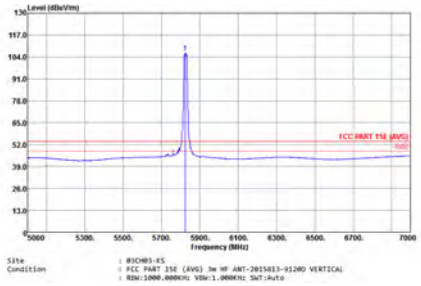
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

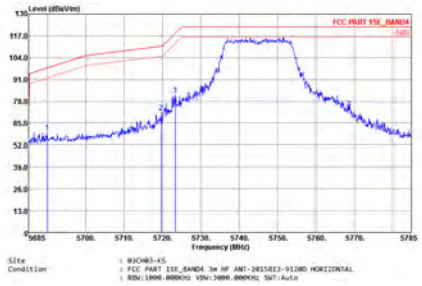
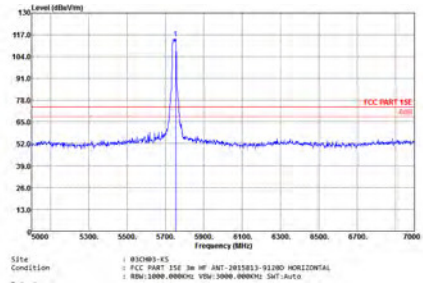
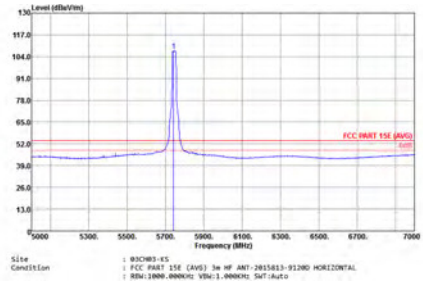
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

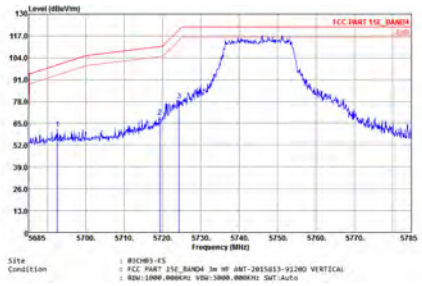
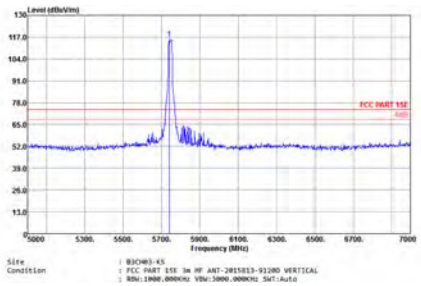
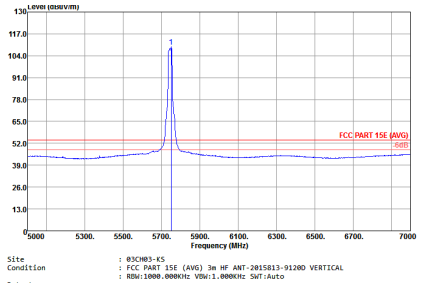
WIFI	Band 4 5725~5850MHz Fundamental @ 3m	
ANT	802.11a CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

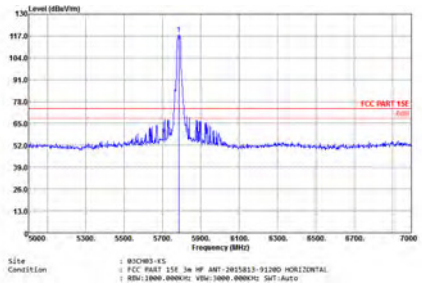
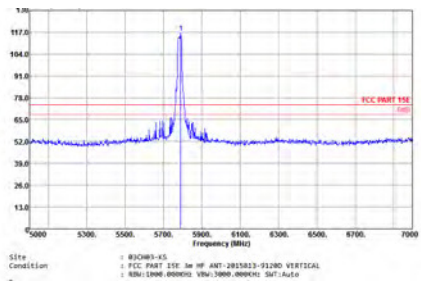
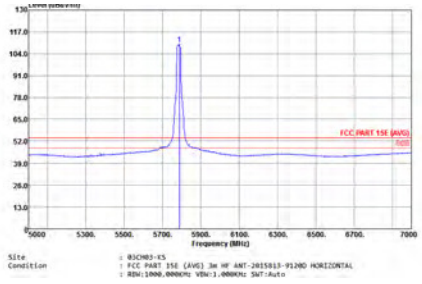
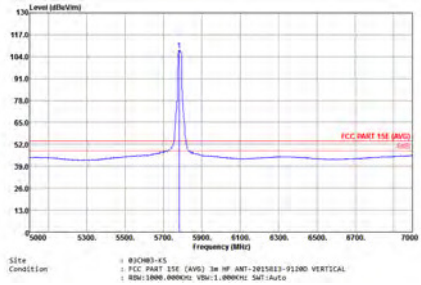
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

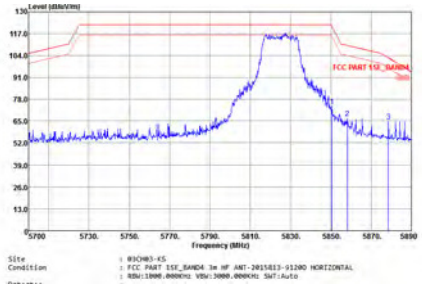
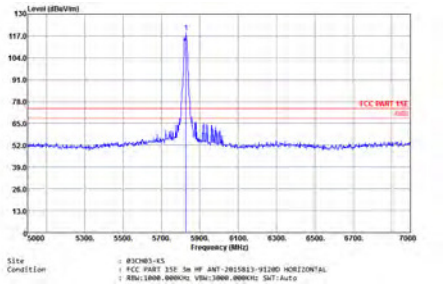
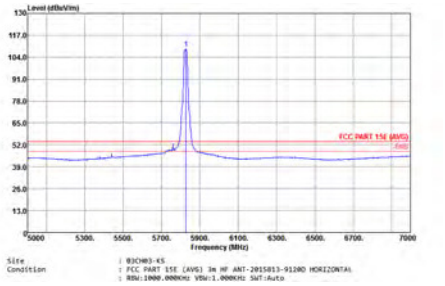
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

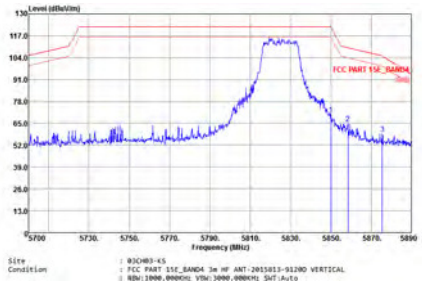
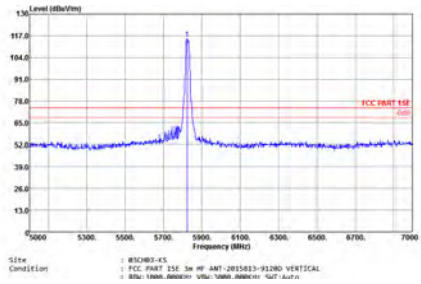
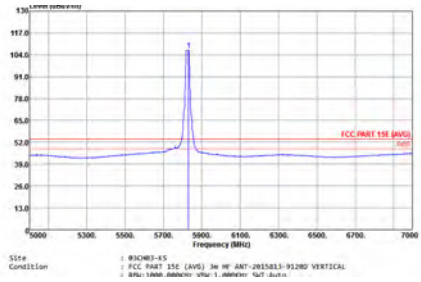
Band 4 5725~5850MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

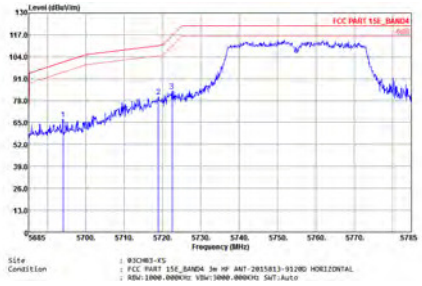
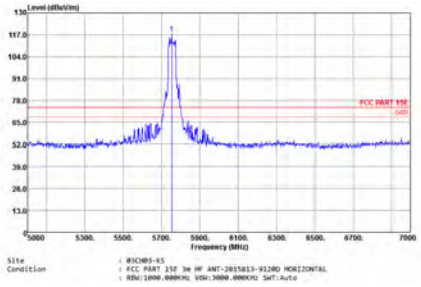
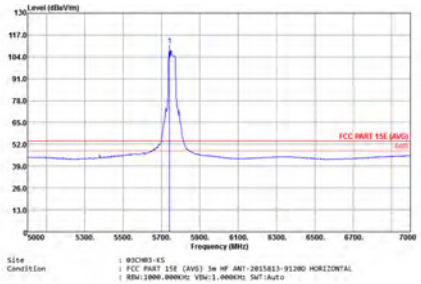
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

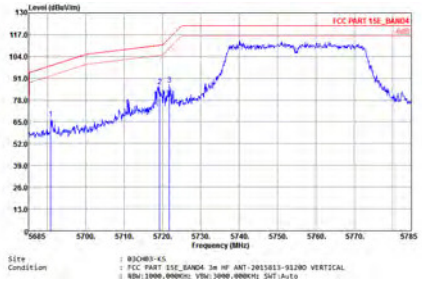
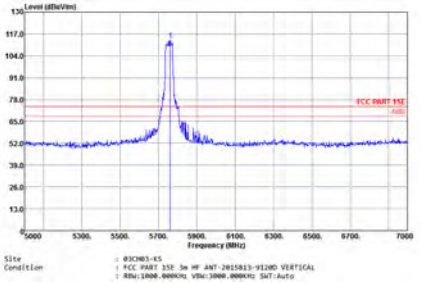
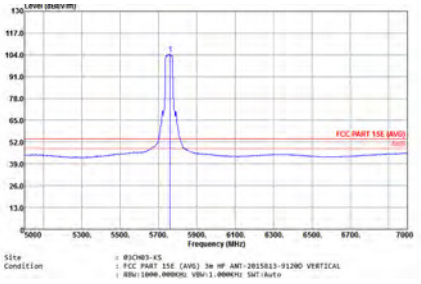
WIFI	Band 4 5725~5850MHz Fundamental @ 3m	
ANT	802.11ac VHT20 CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

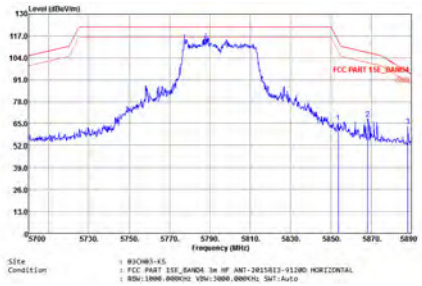
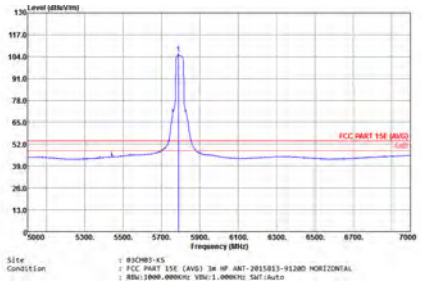
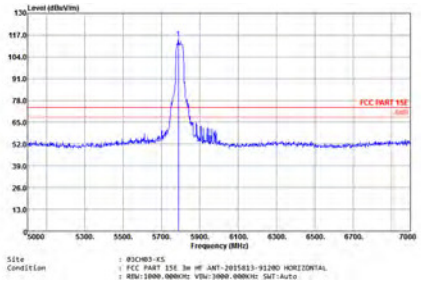
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

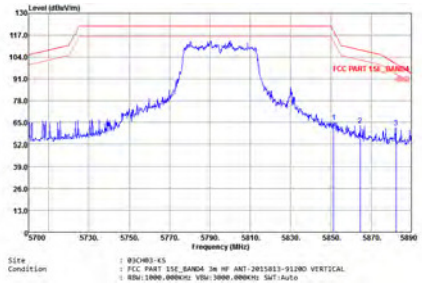
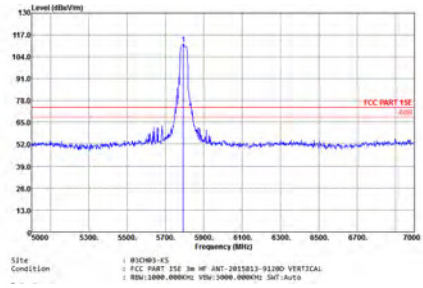
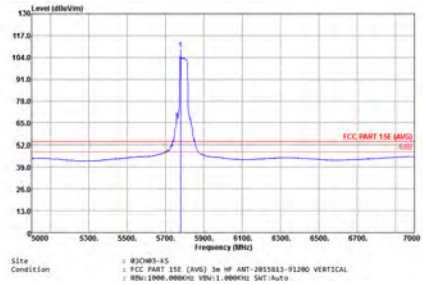
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)

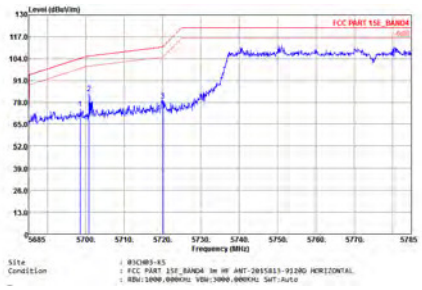
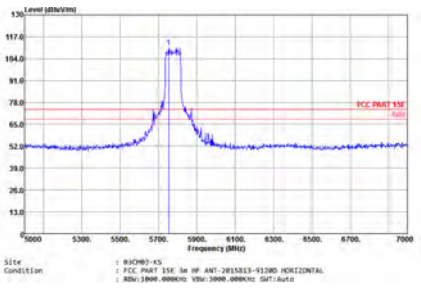
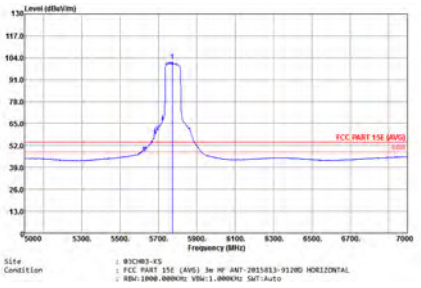
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

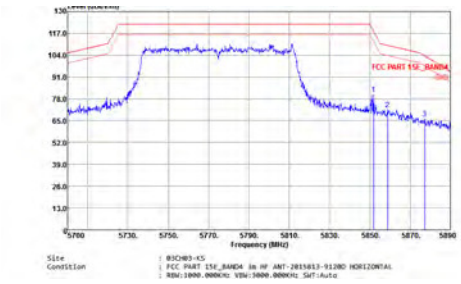
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

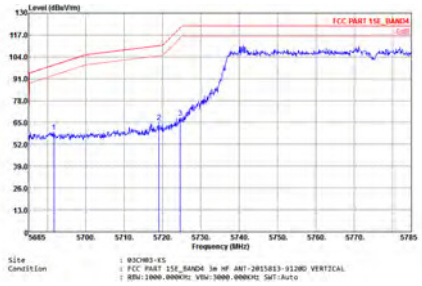
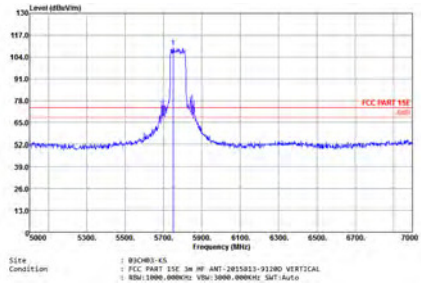
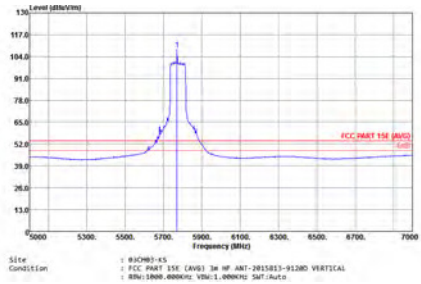
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

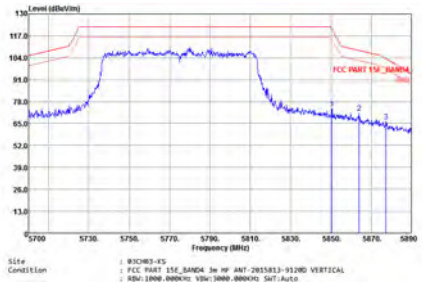
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

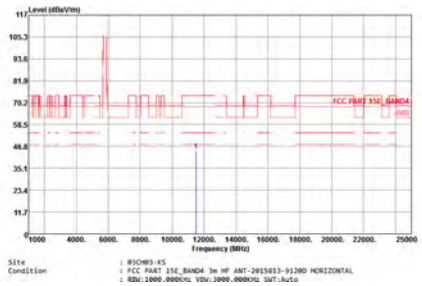
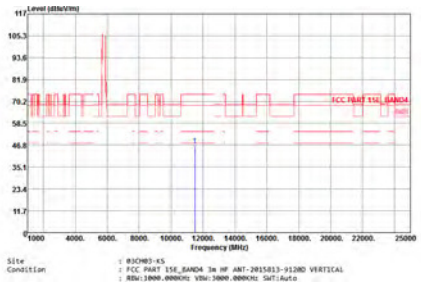
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Horizontal	
Peak		

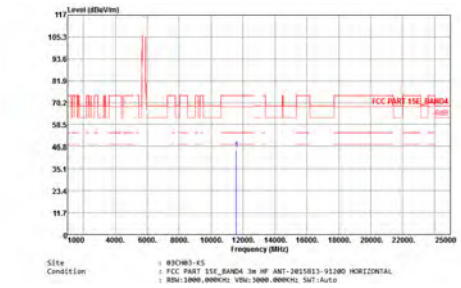
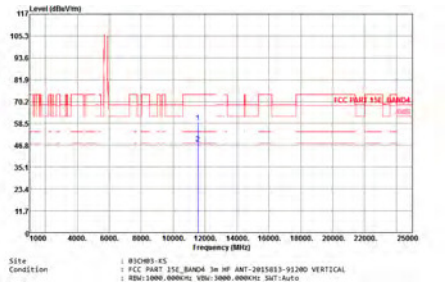
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Vertical	Vertical
Peak		
Avg.		

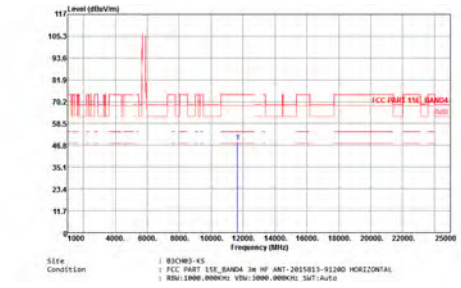
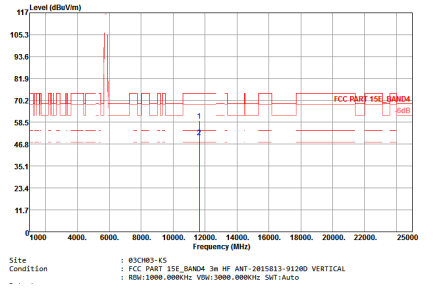
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Vertical	
Peak		

Band 4 - 5725~5850MHz

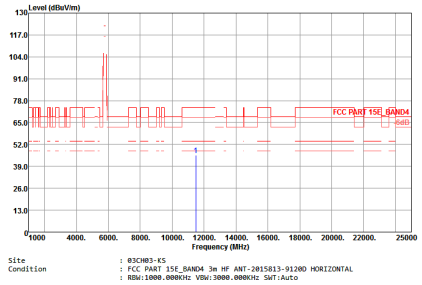
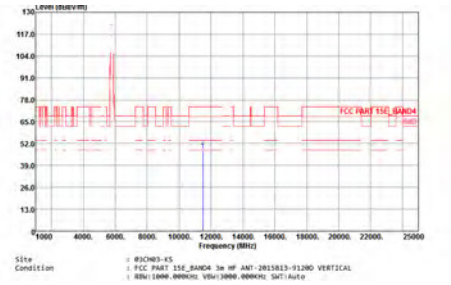
WIFI 802.11a (Harmonic @ 3m)

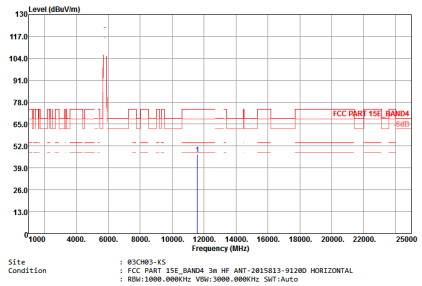
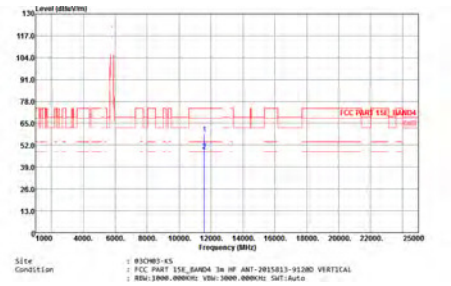
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

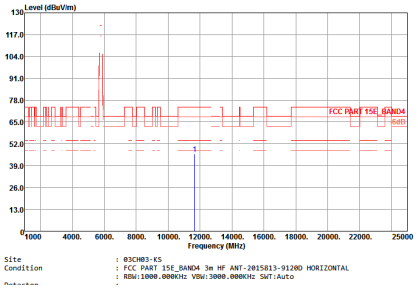
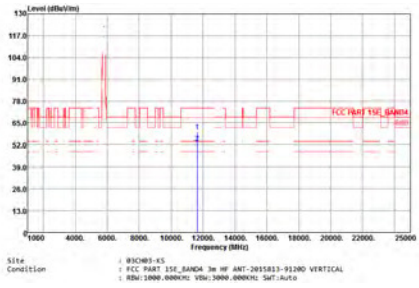
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

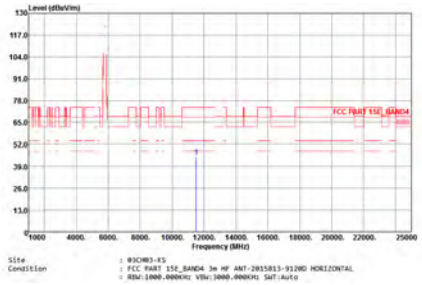
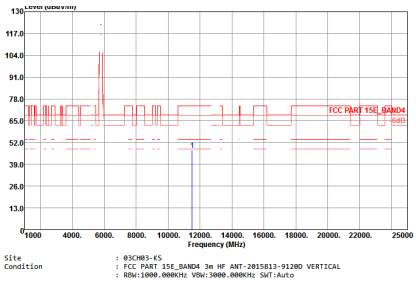
Band 4 5725~5850MHz
WIFI 802.11ac VHT20 (Harmonic @ 3m)

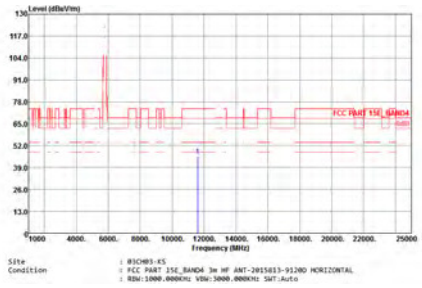
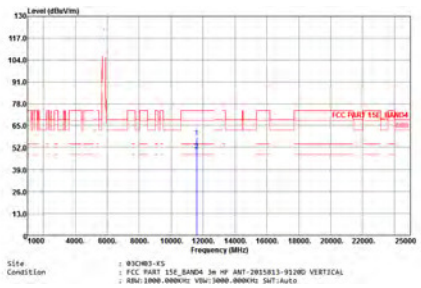
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

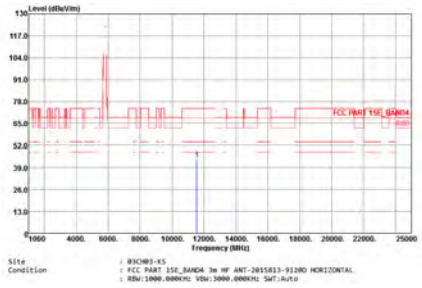
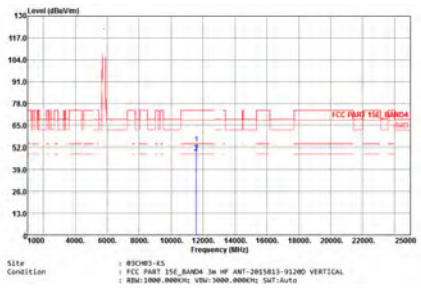
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

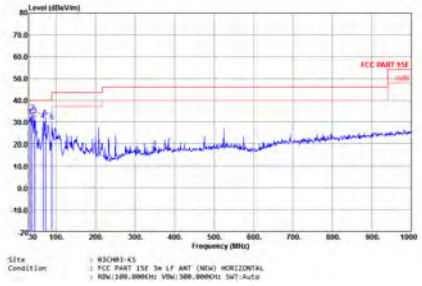
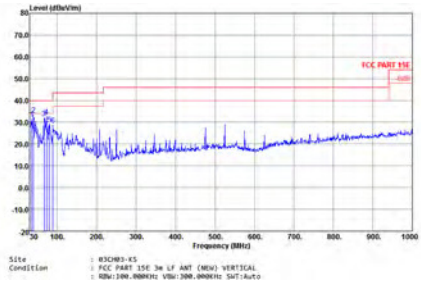
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

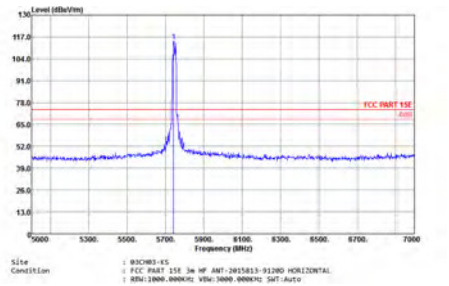
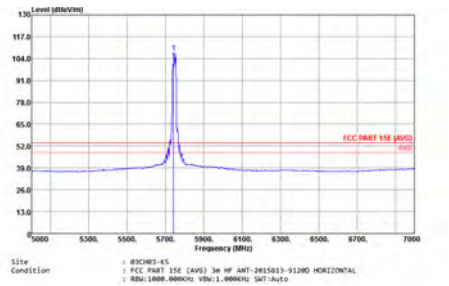
5GHz WIFI 802.11ac VHT20 (LF)

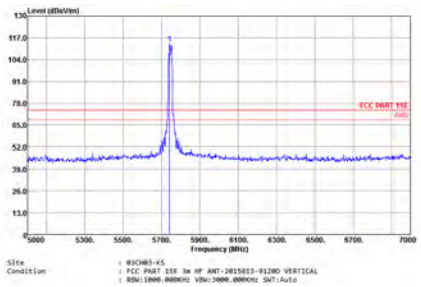
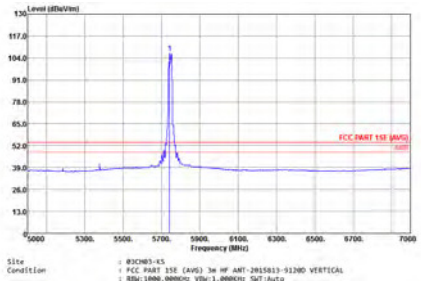
WIFI	5GHz 5725~5850MHz	
ANT	802.11ac VHT20 LF	
1+2+3	Horizontal	Vertical
QP / Peak		

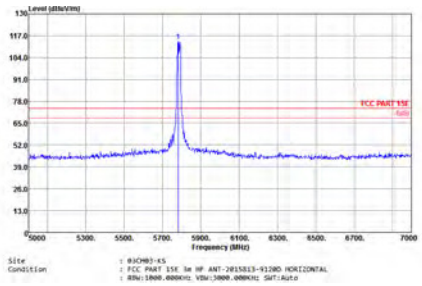
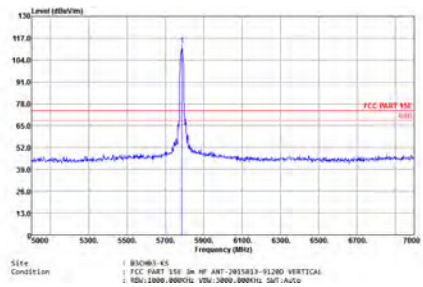
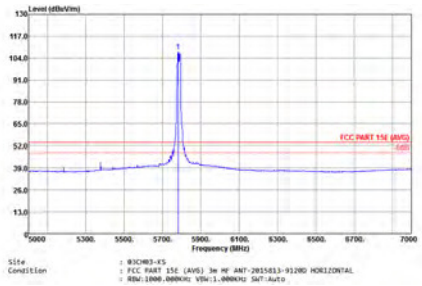
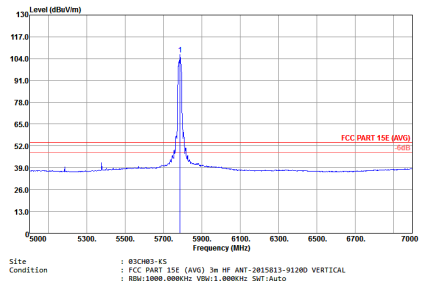
For Sample 3 with AC Adapter

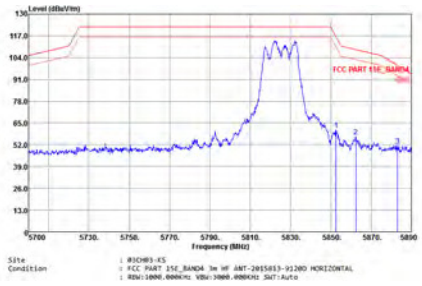
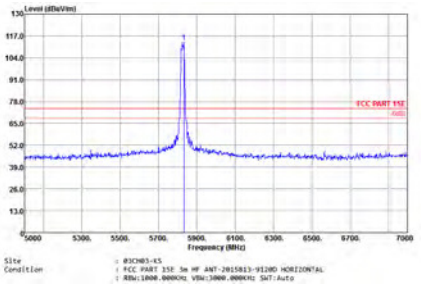
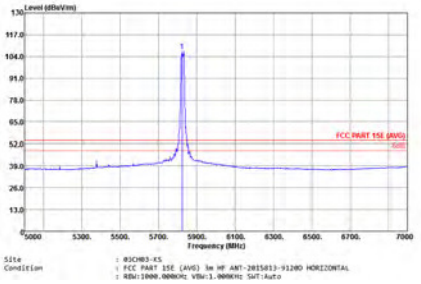
Band 4 - 5725~5850MHz

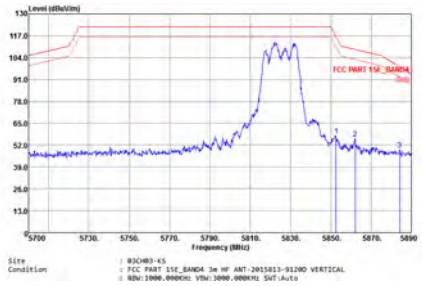
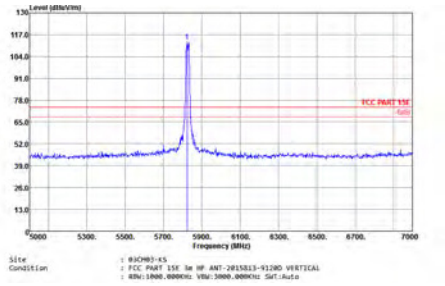
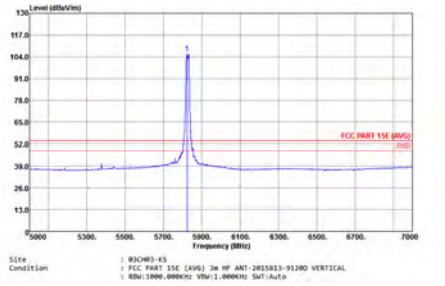
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

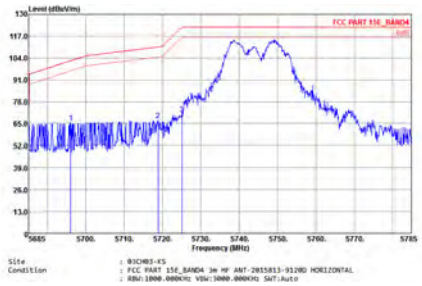
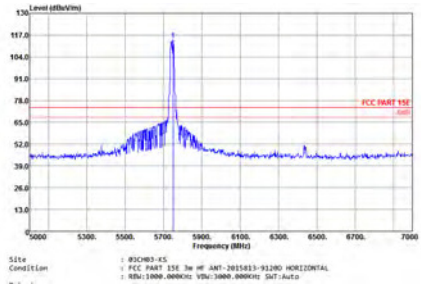
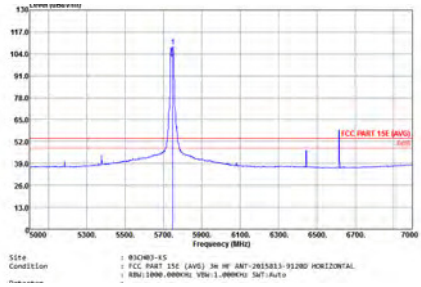
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

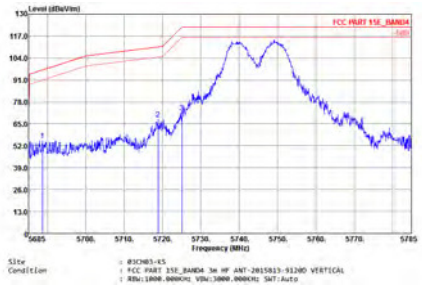
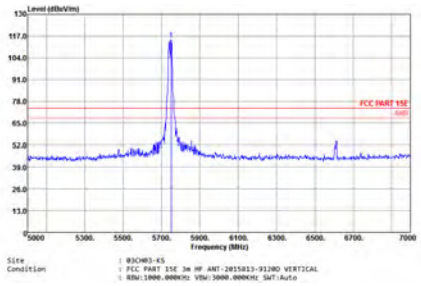
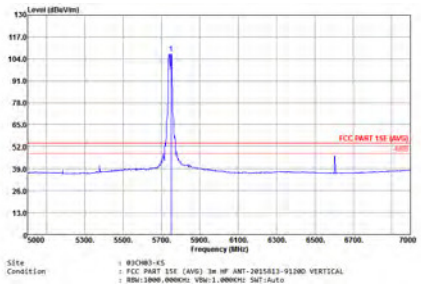
WIFI	Band 4 5725~5850MHz Fundamental @ 3m	
ANT	802.11a CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

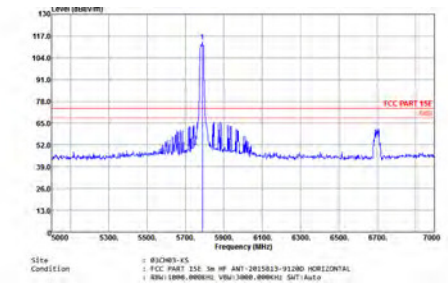
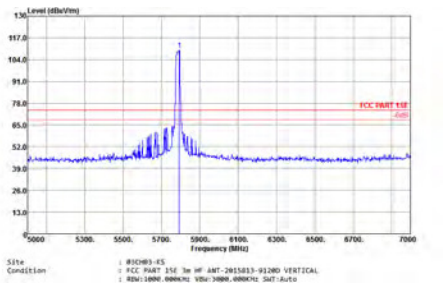
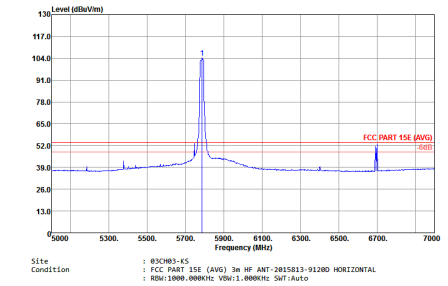
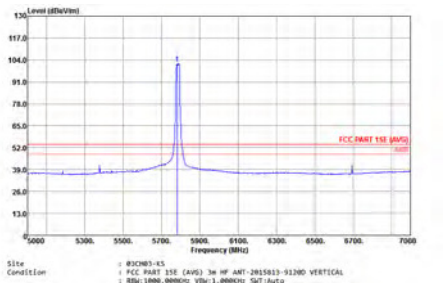
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

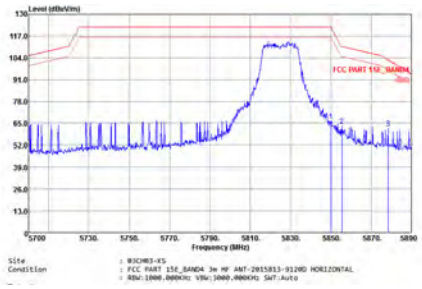
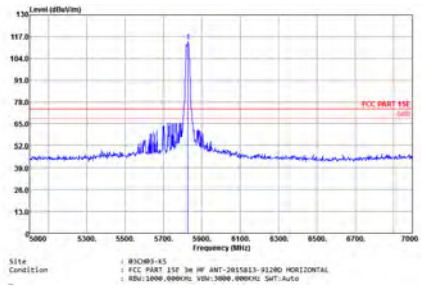
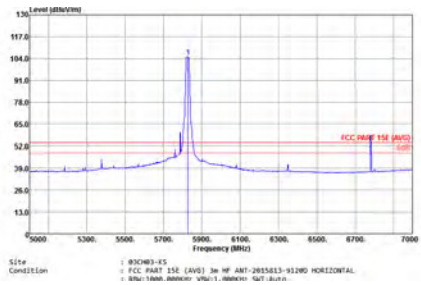
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

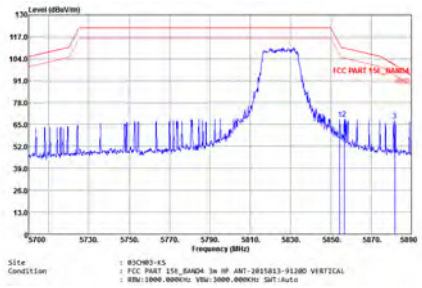
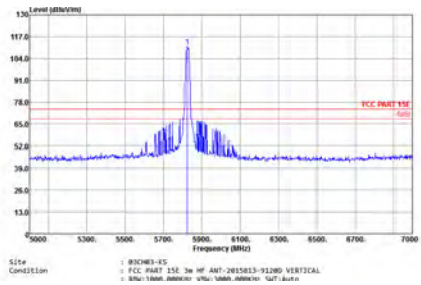
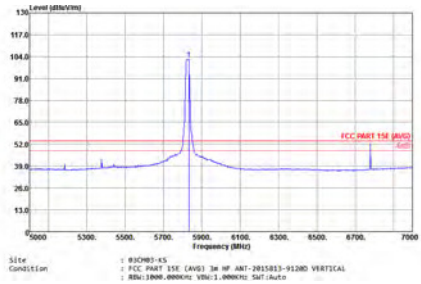
Band 4 5725~5850MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

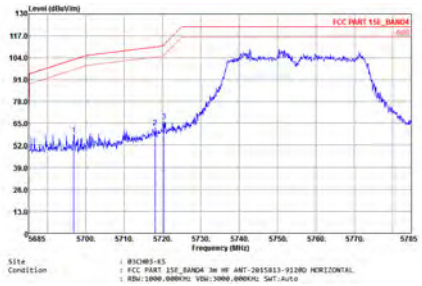
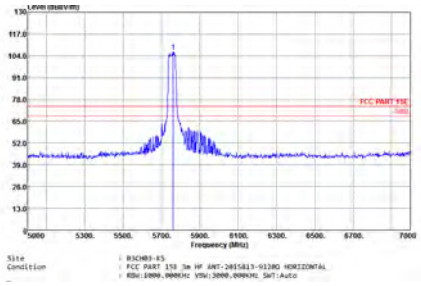
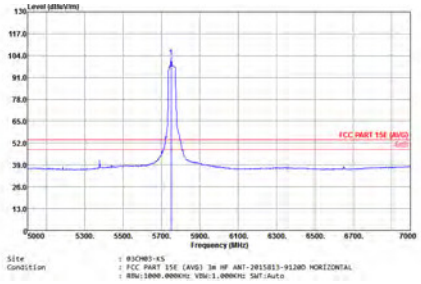
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

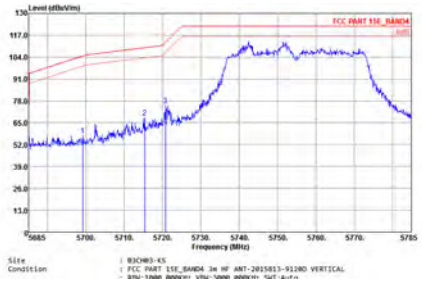
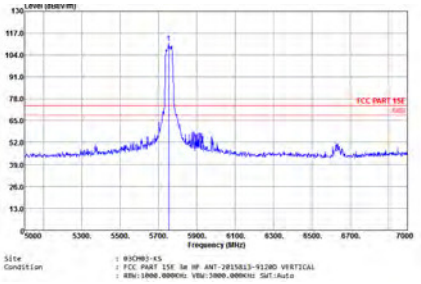
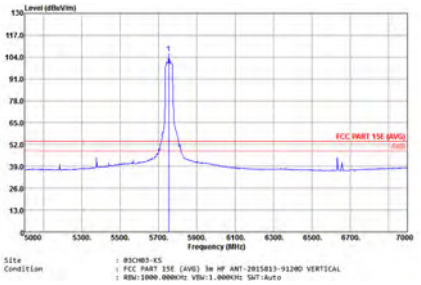
WIFI	Band 4 5725~5850MHz Fundamental @ 3m	
ANT	802.11ac VHT20 CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

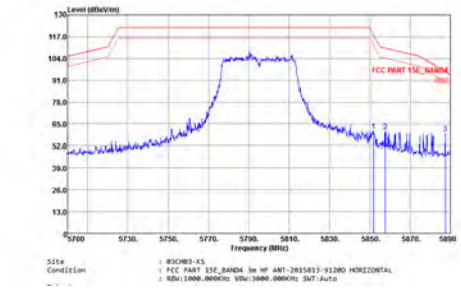
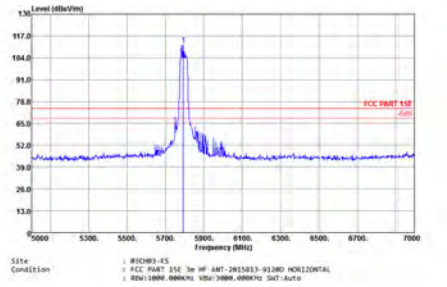
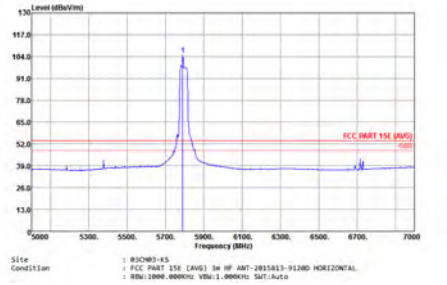
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

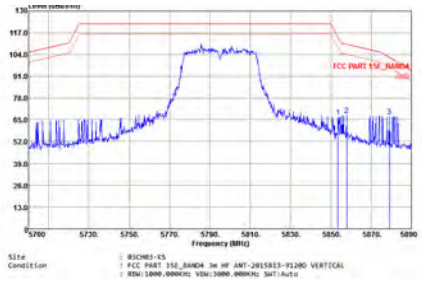
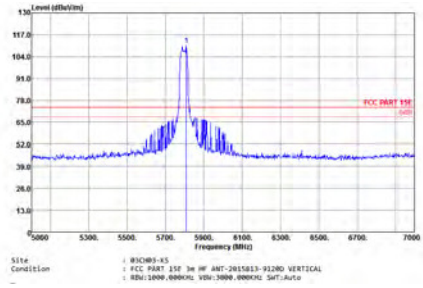
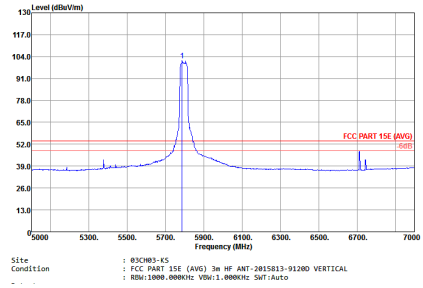
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)

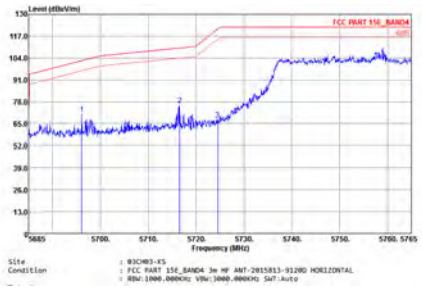
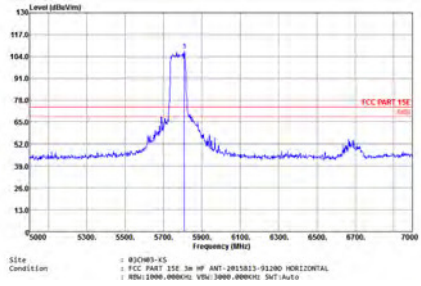
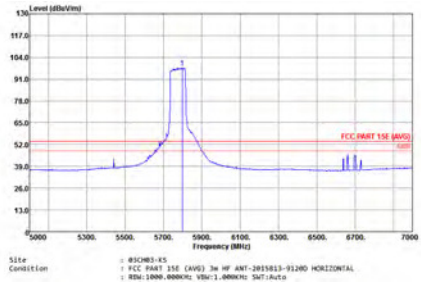
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

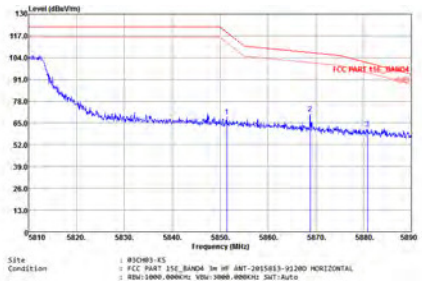
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

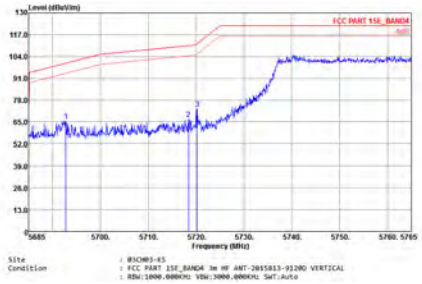
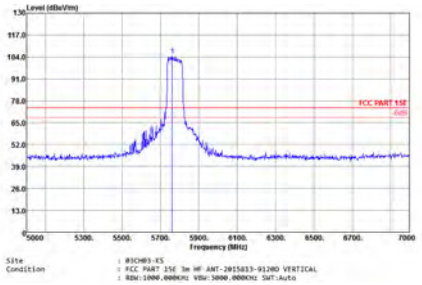
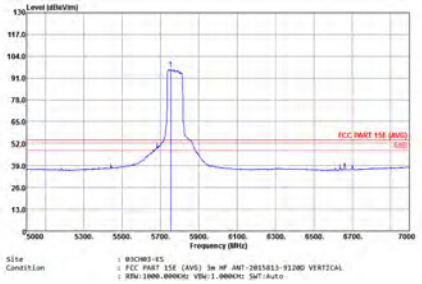
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

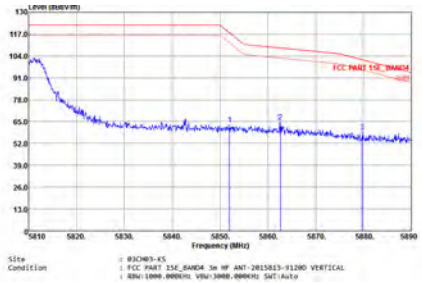
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1+2+3	Vertical	Fundamental
Peak		
Avg.		

Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

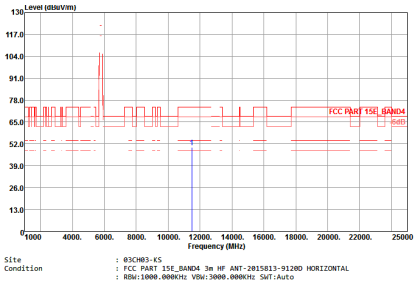
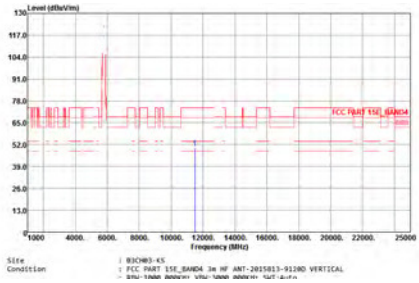
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Horizontal	
Peak		

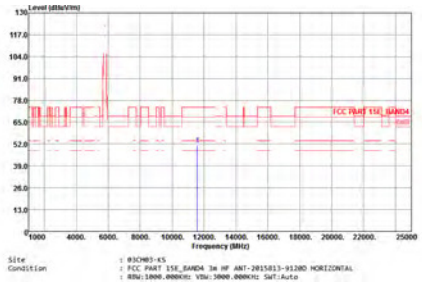
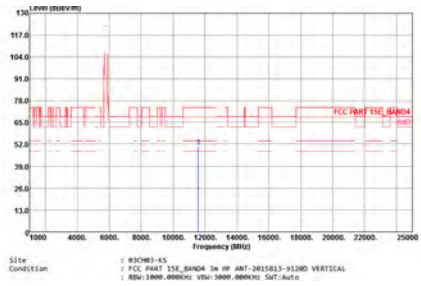
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Vertical	Vertical
Peak		
Avg.		

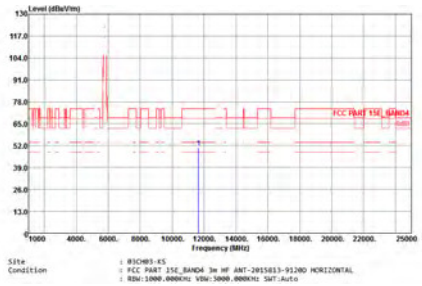
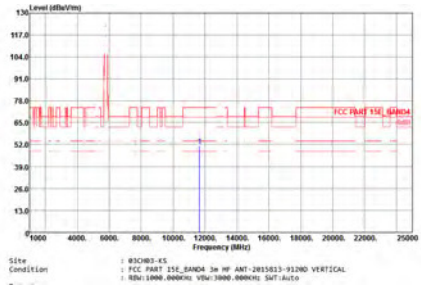
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Vertical	
Peak		

Band 4 - 5725~5850MHz

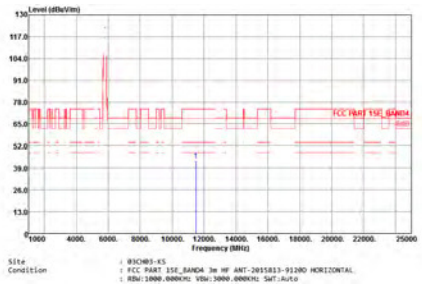
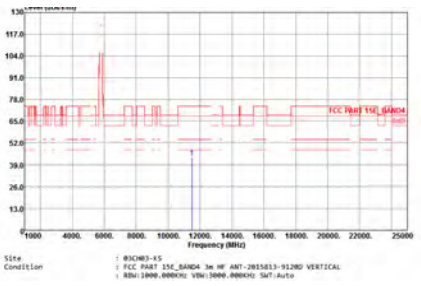
WIFI 802.11a (Harmonic @ 3m)

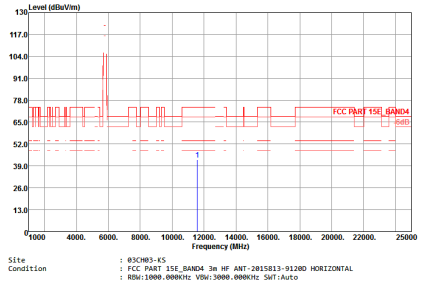
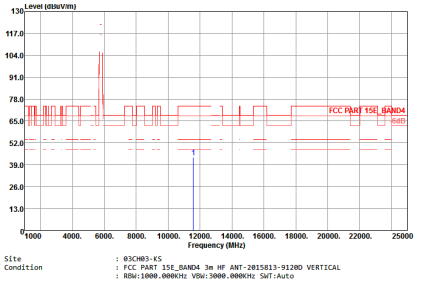
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

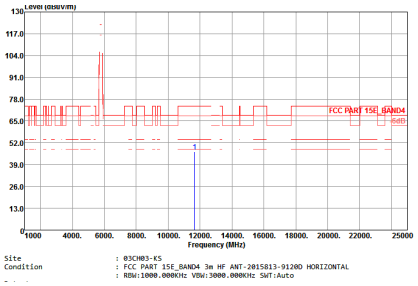
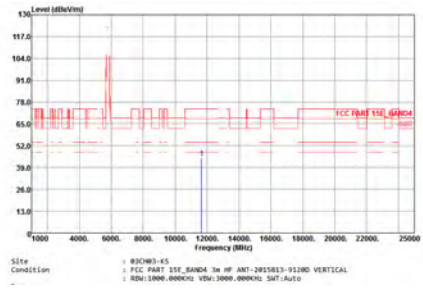
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

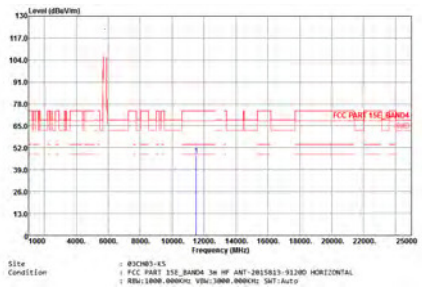
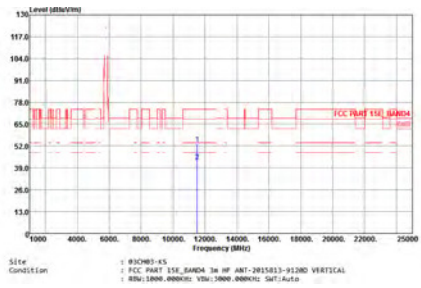
Band 4 5725~5850MHz
WIFI 802.11ac VHT20 (Harmonic @ 3m)

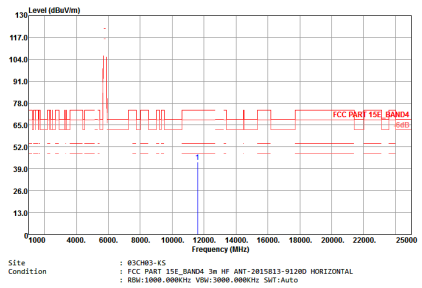
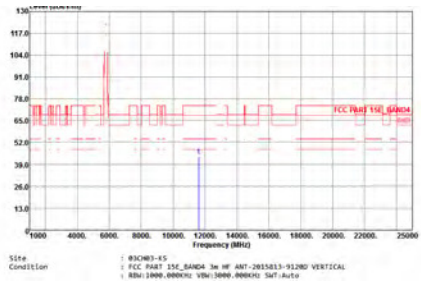
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH157 5785MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

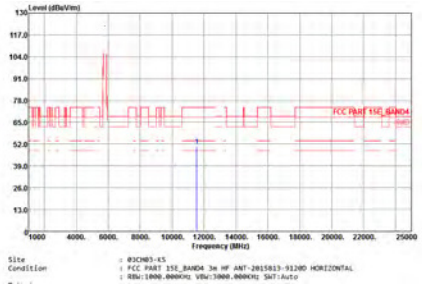
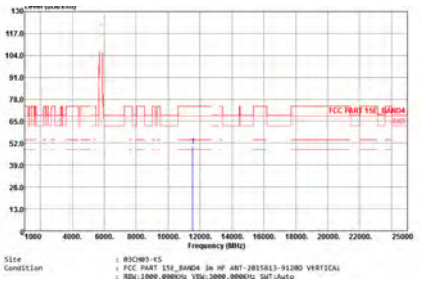
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

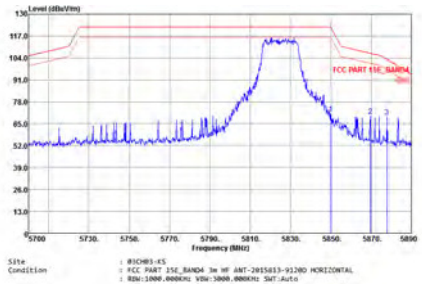
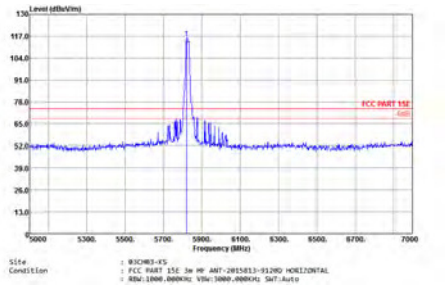
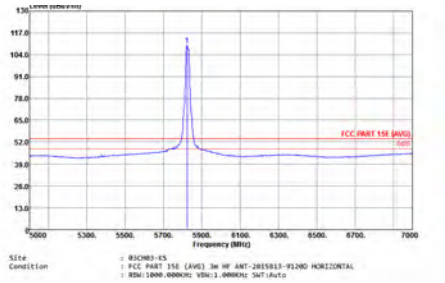
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

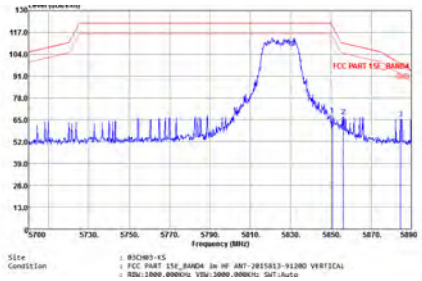
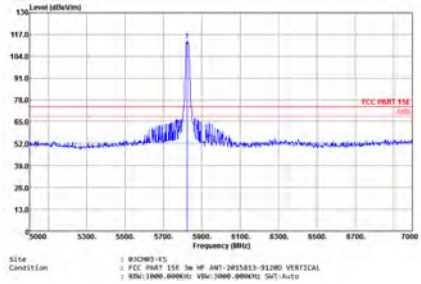
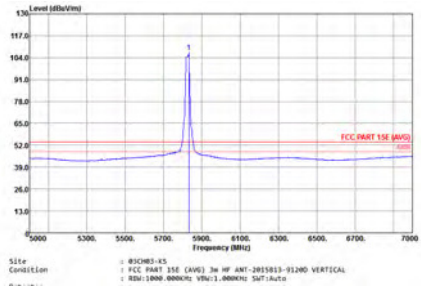
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

For Sample 2 with POE Adapter

Band 4 - 5725~5850MHz

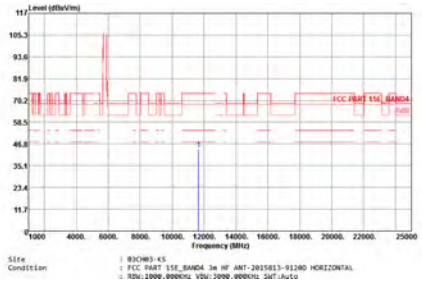
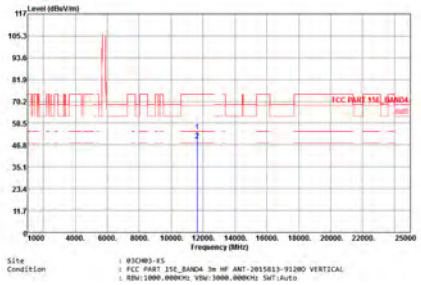
WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Horizontal	Fundamental
Peak		
Avg.		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Horizontal	Vertical
Peak		
Avg.		

Band 4 5725~5850MHz

WIFI 802.11ac VHT20 (Harmonic @ 3m)

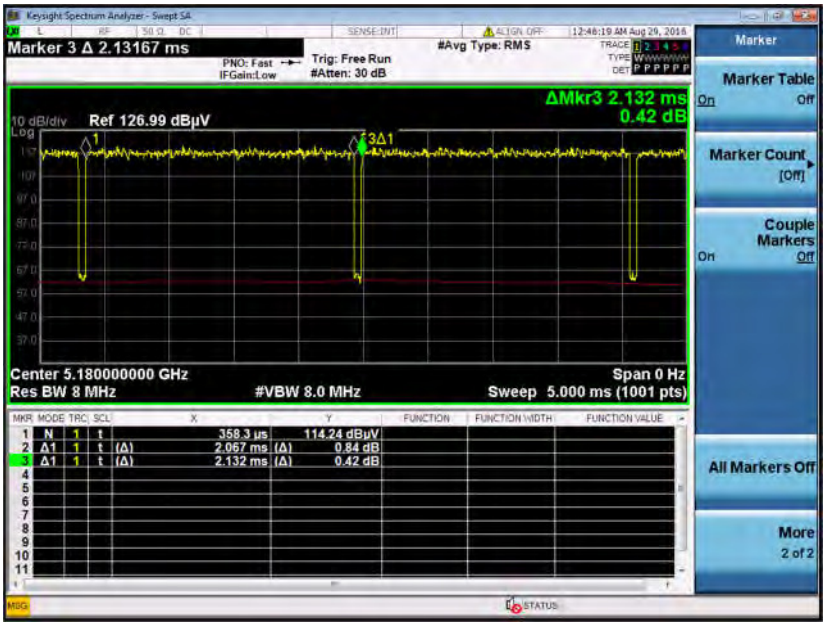
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1+2+3	Horizontal	Vertical
Peak Avg.		

Appendix D. Duty Cycle Plots

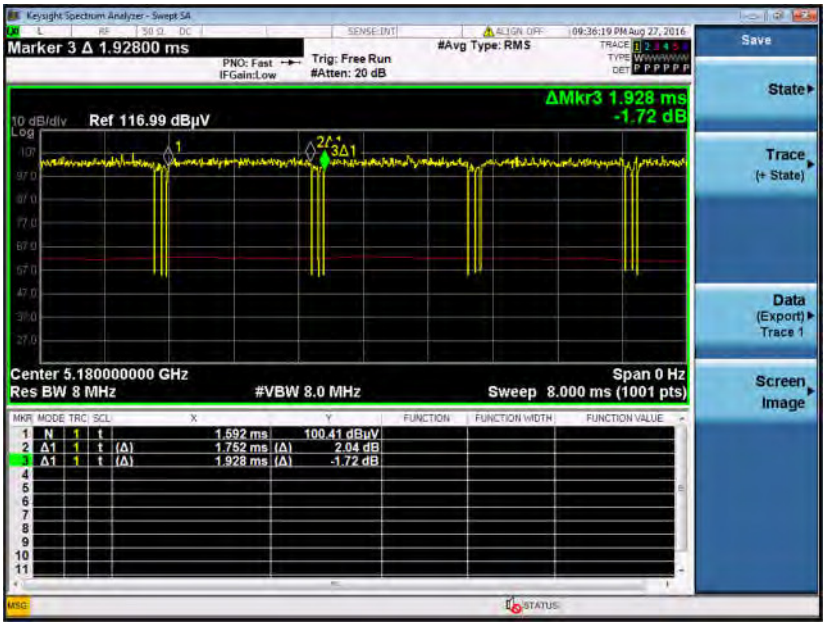
For Sample1

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

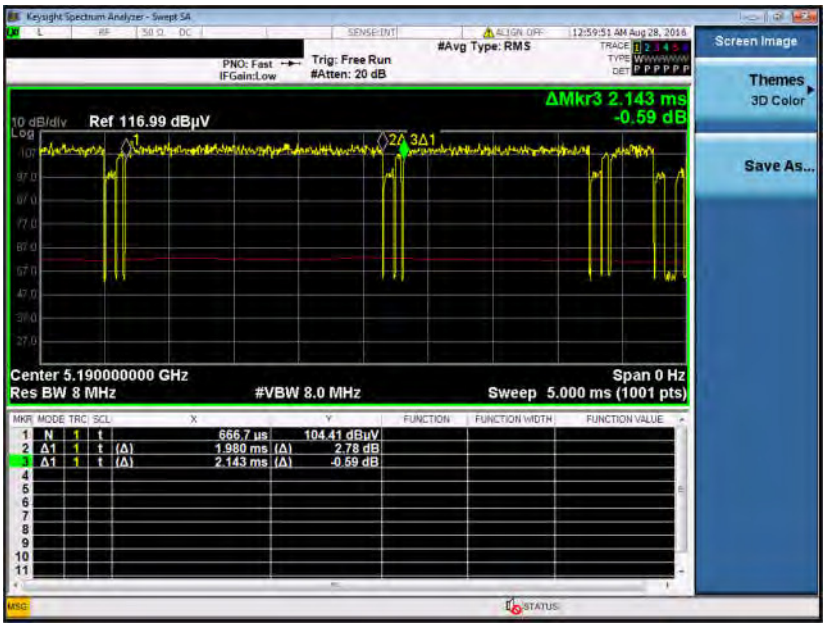
802.11a Antenna 1+2+3



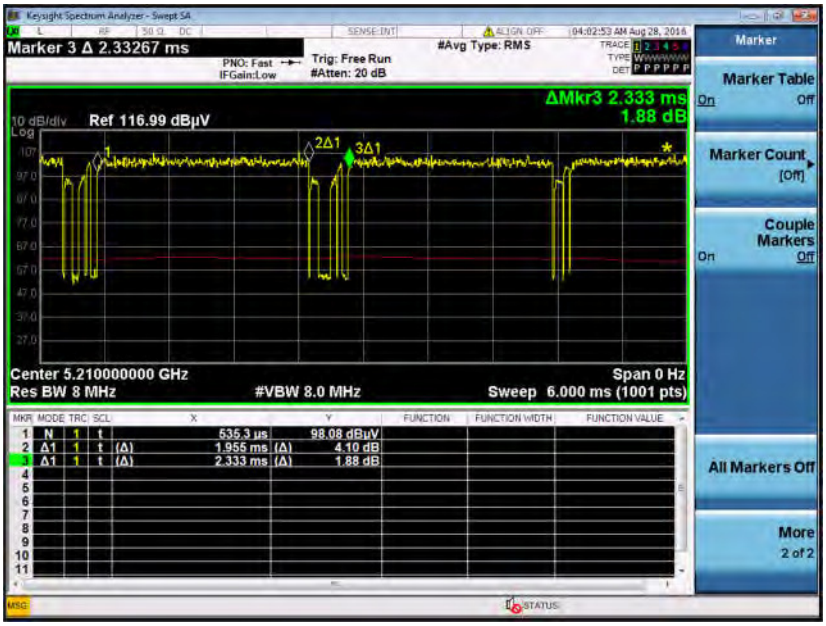
802.11ac VHT20 Antenna 1+2+3



802.11ac VH40 Antenna 1+2+3



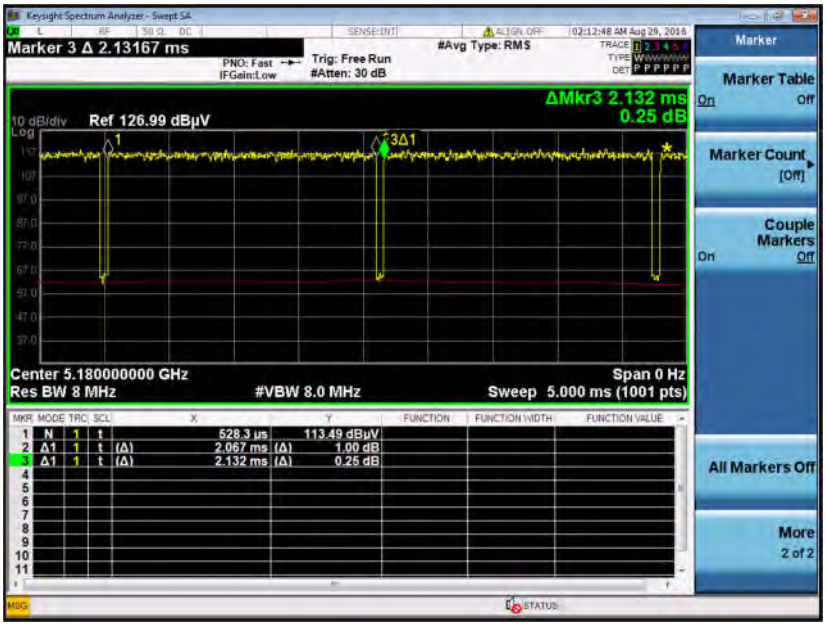
802.11ac VHT80 Antenna 1+2+3



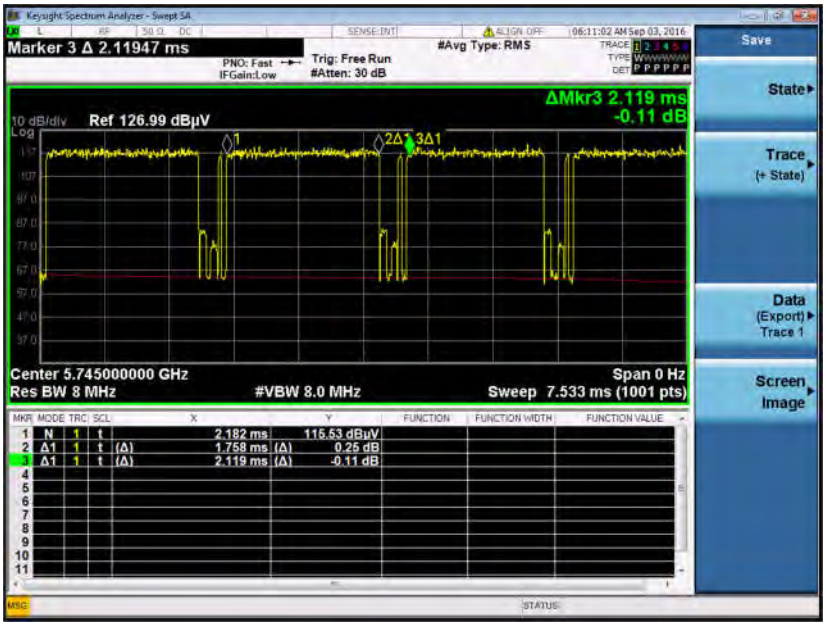
For Sample2

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

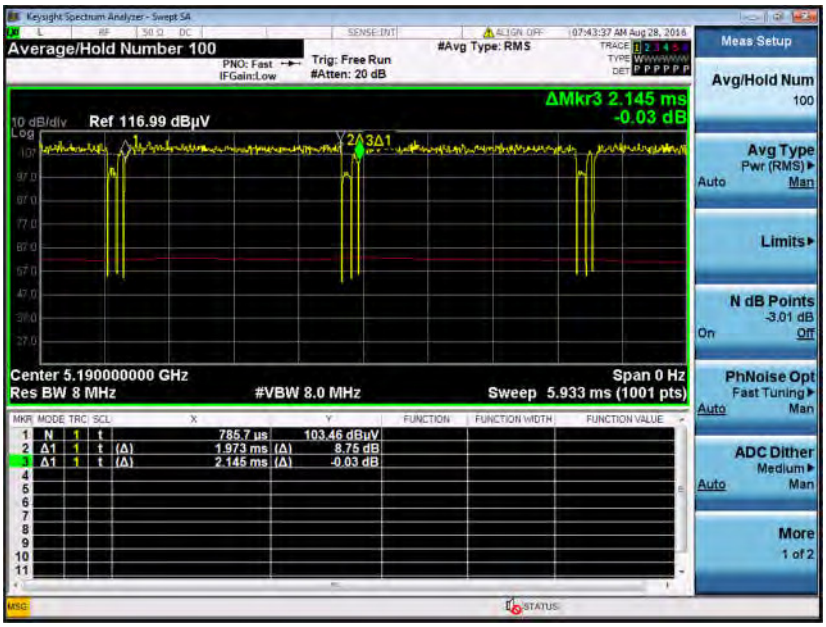
802.11a Antenna 1+2+3



802.11ac VHT20 Antenna 1+2+3



802.11ac VH40 Antenna 1+2+3

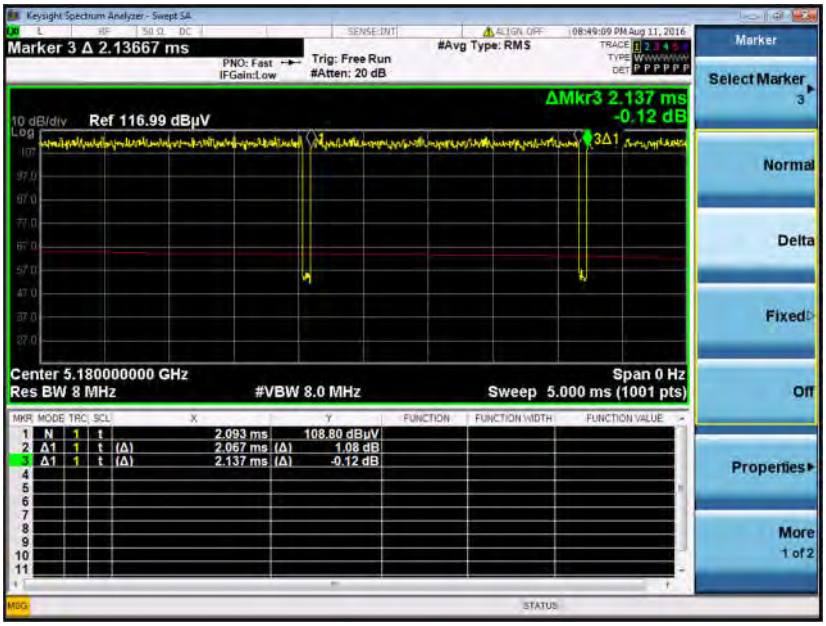


802.11ac VHT80 Antenna 1+2+3

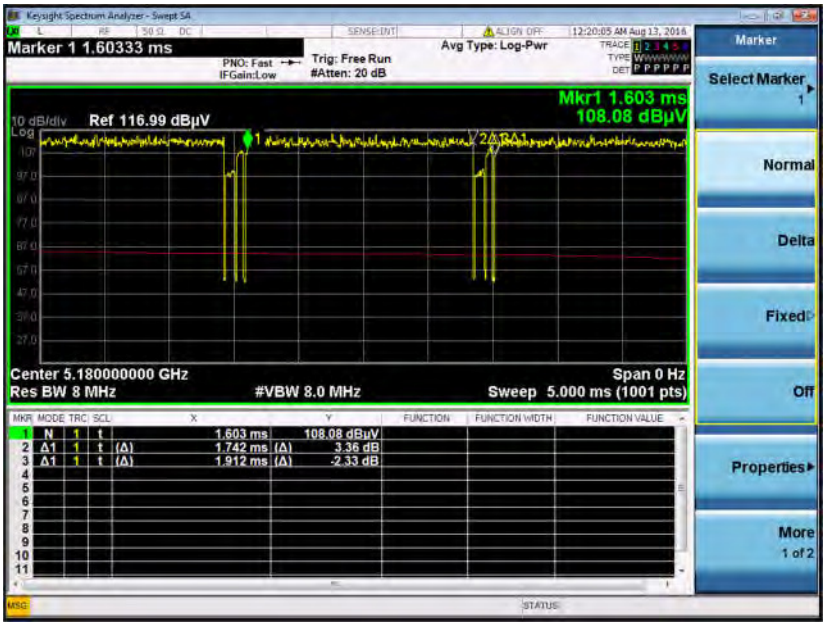
For Sample3

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

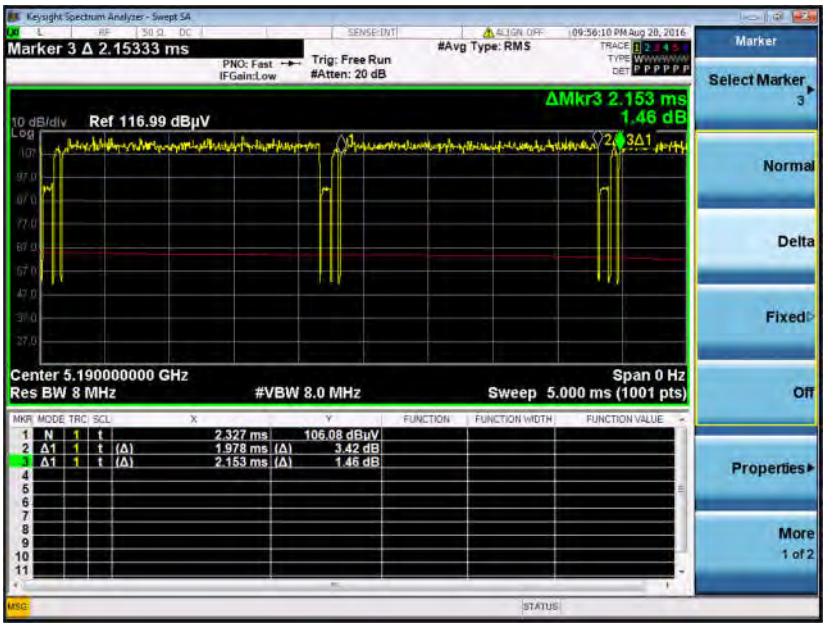
802.11a Antenna 1+2+3



802.11ac VHT20 Antenna 1+2+3



802.11ac VH40 Antenna 1+2+3



802.11ac VHT80 Antenna 1+2+3