FCC RF Test Report

APPLICANT	:	Ubiquiti Networks, Inc.
EQUIPMENT	:	UniFi® AC In-Wall Wi-Fi Access Point
BRAND NAME	:	UBIQUITI
MODEL NAME	:	UAP-AC-IW
FCC ID	:	SWX-UAPACIW
STANDARD	:	FCC Part 15 Subpart E §15.407
CLASSIFICATION	:	(NII) Unlicensed National Information Infrastructure

The product was received on Oct. 04, 2016 and testing was completed on Oct. 23, 2016. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR6O0709-01C	Rev. 01	Initial issue of report	Dec. 01, 2016
FR6O0709-01C	Rev. 02	Revising Antenna Type	Dec. 08, 2016

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) ≤ -17, -27 dBm/MHz &15.209(a)	Pass	Under limit 0.05 dB at 11570.000 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 10.00 dB at 0.294 MHz
3.6	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Ubiquiti Networks, Inc.
2580 Orchard Pkwy., San Jose, CA95131, U.S.A

1.2 Manufacturer

Ubiquiti Networks, Inc.
2580 Orchard Pkwy., San Jose, CA95131, U.S.A

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	UniFi® AC In-Wall Wi-Fi Access Point
Brand Name	UBIQUITI
Model Name	UAP-AC-IW
FCC ID	SWX-UAPACIW
EUT supports Radios application	WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80
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

<table>
<tr><th colspan="2">Standards-related Product Specification</th></tr>
<tr><td>Tx/Rx Channel Frequency Range</td><td>5745 MHz ~ 5825 MHz</td></tr>
<tr><td>Maximum Output Power</td><td>MIMO <Ant. 1 + 2>
802.11a : 18.75 dBm / 0.0750 W
802.11n HT20 : 19.04 dBm / 0.0802 W
802.11n HT40 : 20.38 dBm / 0.1091 W
802.11ac VHT20: 19.03 dBm / 0.0800 W
802.11ac VHT40: 20.23 dBm / 0.1054 W
802.11ac VHT80: 20.14 dBm / 0.1033 W</td></tr>
<tr><td>99% Occupied Bandwidth</td><td>802.11a : 17.60 MHz
802.11n HT20 : 18.85 MHz
802.11n HT40 : 36.90 MHz
802.11ac VHT80 : 76.08 MHz</td></tr>
<tr><td>Type of Modulation</td><td>802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)</td></tr>
<tr><td>Antenna Type / Gain</td><td><Ant. 1> : Internal Antenna with gain 2.00 dBi
<Ant. 2> : Internal Antenna with gain 2.00 dBi</td></tr>
<tr><td>Antenna Function Description</td><td><table><tr><td></td><td>Ant. 1</td><td>Ant. 2</td></tr><tr><td>802.11 a/n/ac MIMO</td><td>V</td><td>V</td></tr></table></td></tr>
</table>

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

1.5 Modification of EUT

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

1.6 Testing Location

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

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	
	TH02-HY	CO05-HY

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

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	**Sporton Site No.**	
	03CH12-HY	03CH13-HY

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

1.7 Applicable Standards

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

- FCC Part 15 Subpart 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.

2 Test Configuration of Equipment Under Test

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

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 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 from the power table described in section 2.2.

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

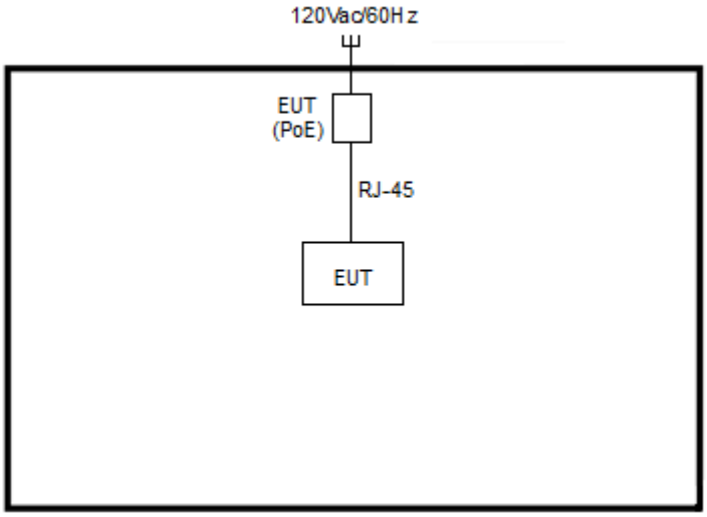
AC Conducted Emission	Mode 1 ： WLAN (5GHz) Link + POE + LAN Link

Ch. #		Band IV：5725-5850 MHz		
		802.11a	802.11n HT20	802.11n HT40
L	Low	149	149	151
M	Middle	157	157	-
H	High	165	165	159

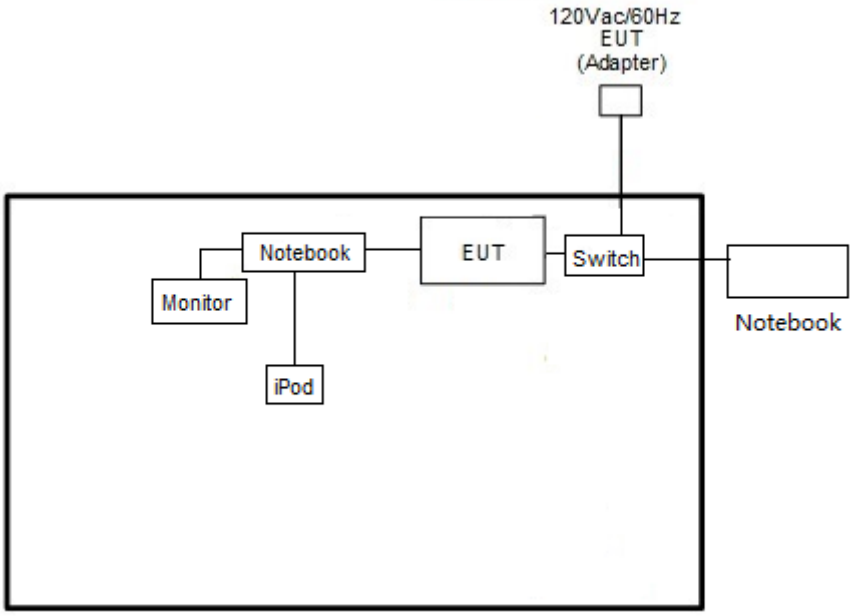
Ch. #		Band IV：5725-5850 MHz		
		802.11ac VHT20	802.11ac VHT40	802.11ac VHT80
L	Low	149	151	-
M	Middle	157	-	155
H	High	165	159	-

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
2.	Notebook	DELL	P20G	FCC DoC/ Contains FCC ID: QDS-BRCM1051	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	LCD Monitor	DELL	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	AP	Ubiquiti	UAP-IW	N/A	Shielded, 0.8m	Unshielded,1.8m
6.	Switch Hub	Ubiquiti	US-8	N/A	Shielded, 0.8m	Unshielded,1.8m
7.	RJ-45 Cable	INVAX DATA CABLE	IVX011	N/A	N/A	Unshielded, 1m

2.5 EUT Operation Test Setup

For WLAN function, programmed RF utility, “putty” installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

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

= 4.2 + 10 = 14.2 (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

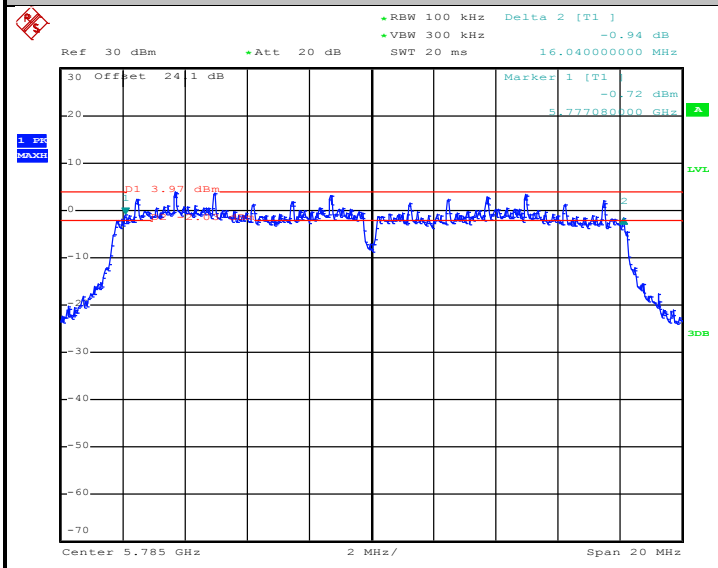
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03. Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

3.1.4 Test Setup

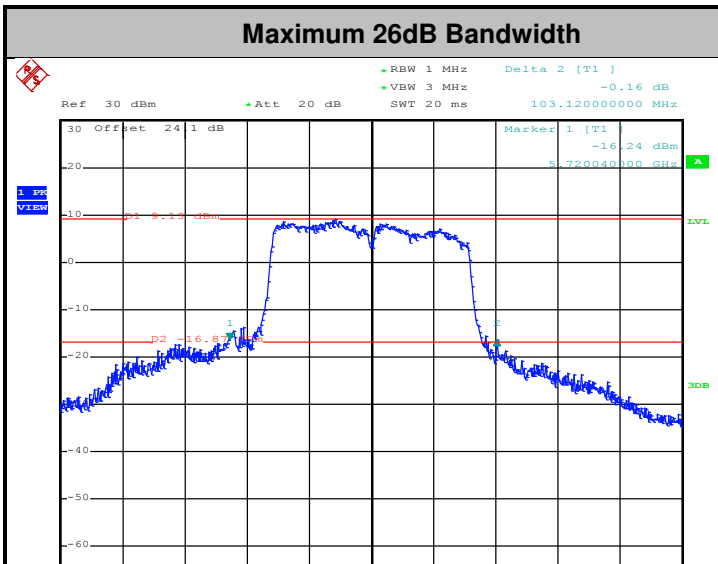
3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

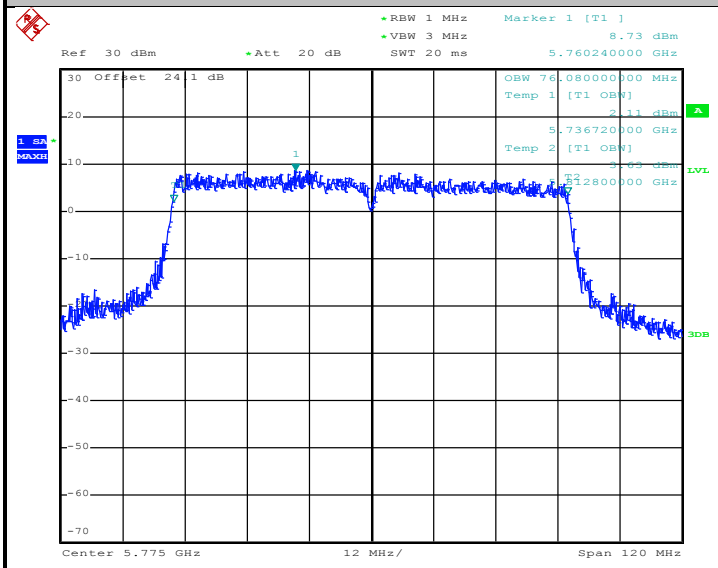
Minimum 6dB Bandwidth



Maximum 26dB Bandwidth



Maximum 99% Occupied Bandwidth



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.

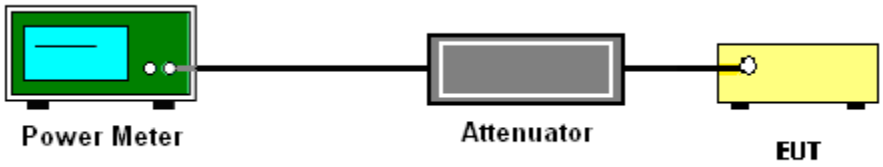
3.2.3 Test Procedures

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).

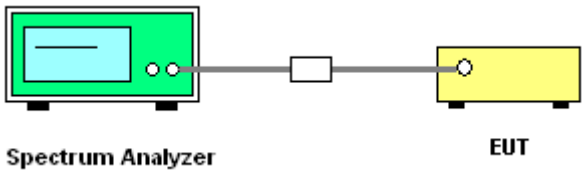
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(500kHz/RBW)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

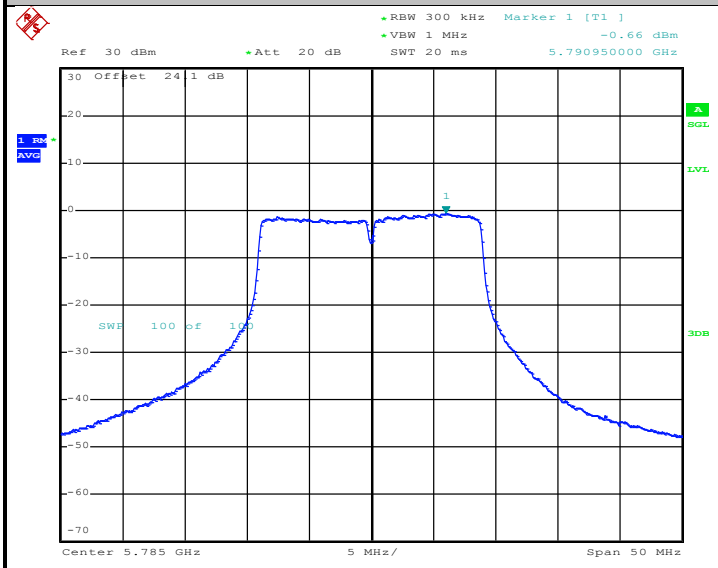


3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

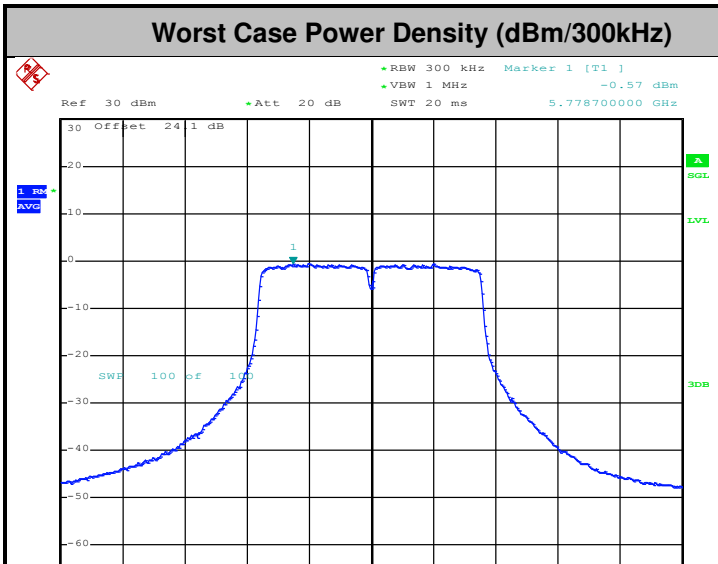
<Ant. 1>

Worst Case Power Density (dBm/300kHz)



<Ant. 2>

Worst Case Power Density (dBm/300kHz)



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

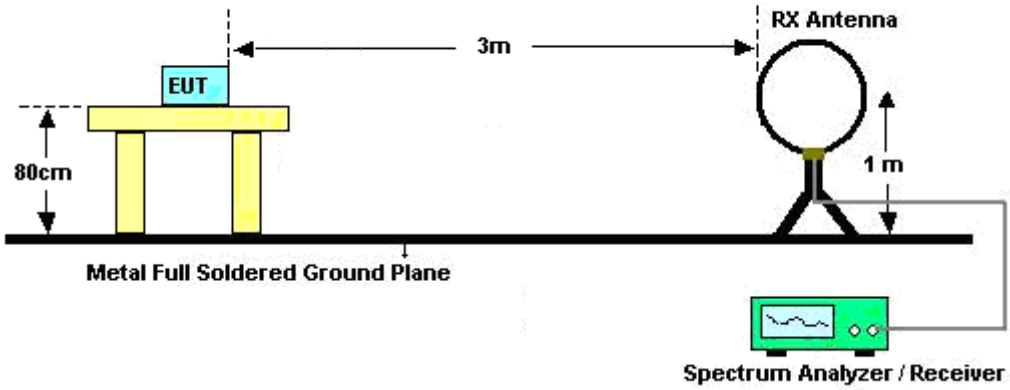
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   - 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.

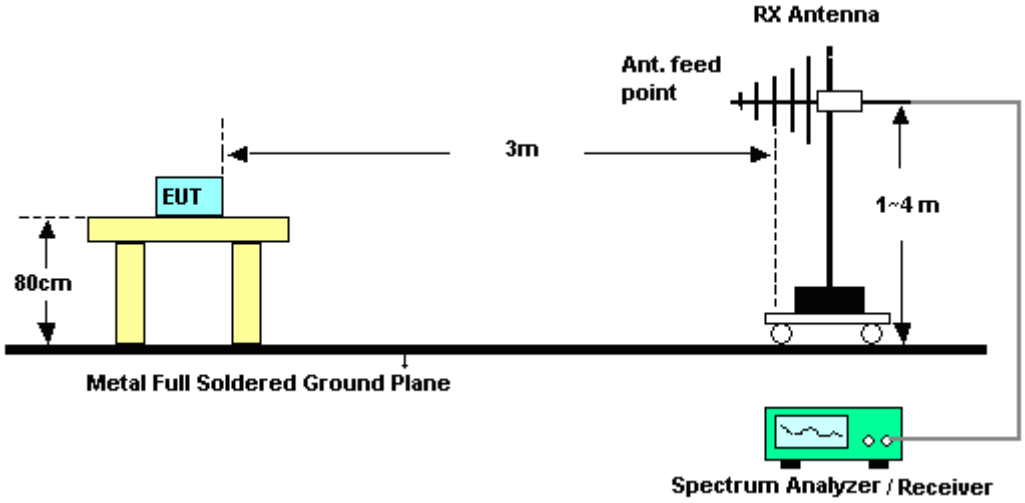
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband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

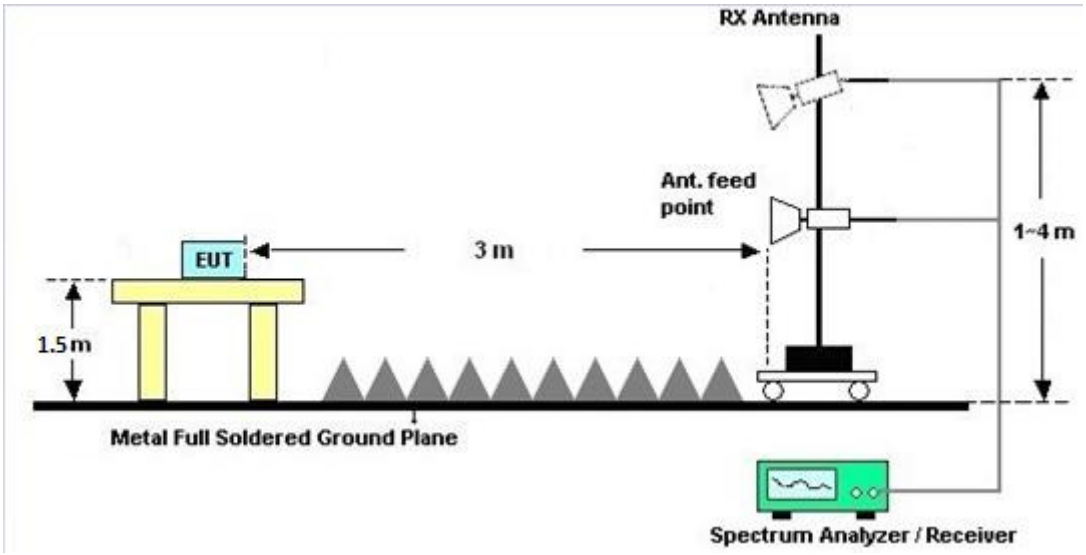
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

3.4.6 Test Result of Conducted Spurious Emission in the Restricted Ban

Please refer to Appendix E.

3.4.7 Test Result of Conducted Spurious Emission in the Restricted Ban Plots

Please refer to Appendix F.

3.4.8 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.4.9 Duty Cycle

Please refer to Appendix D.

3.4.10 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

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

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

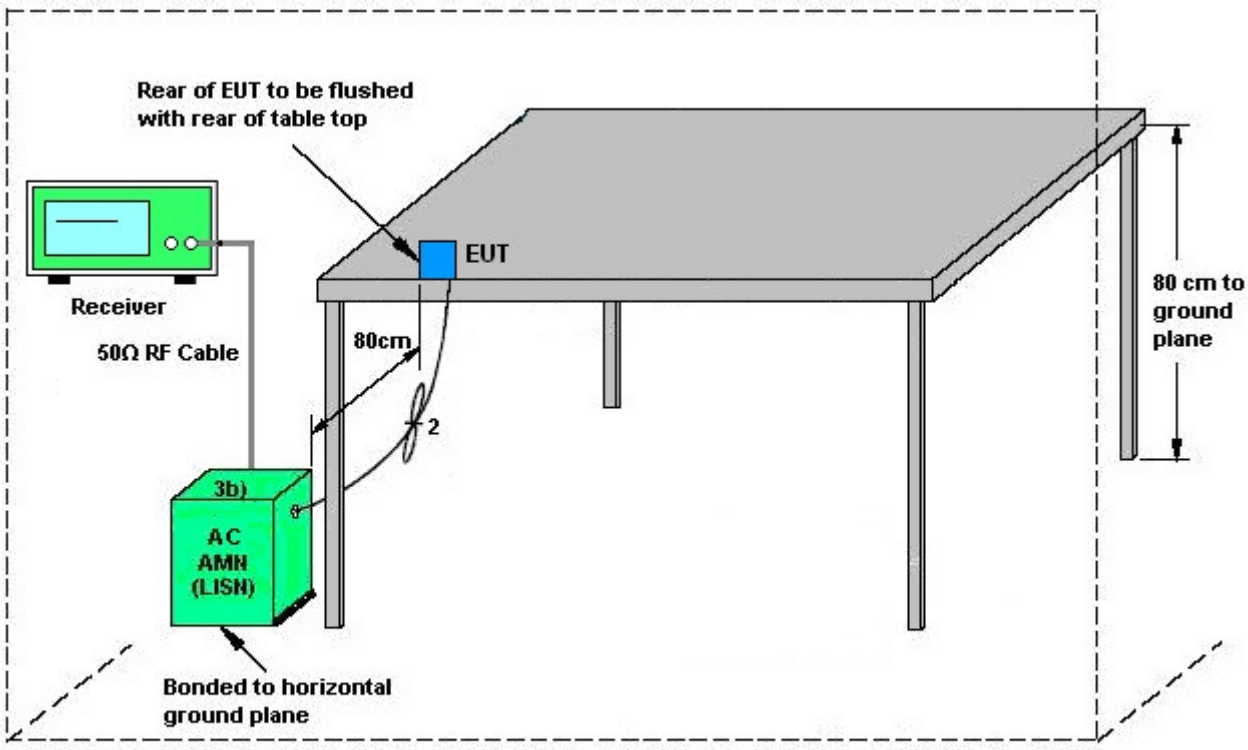
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

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

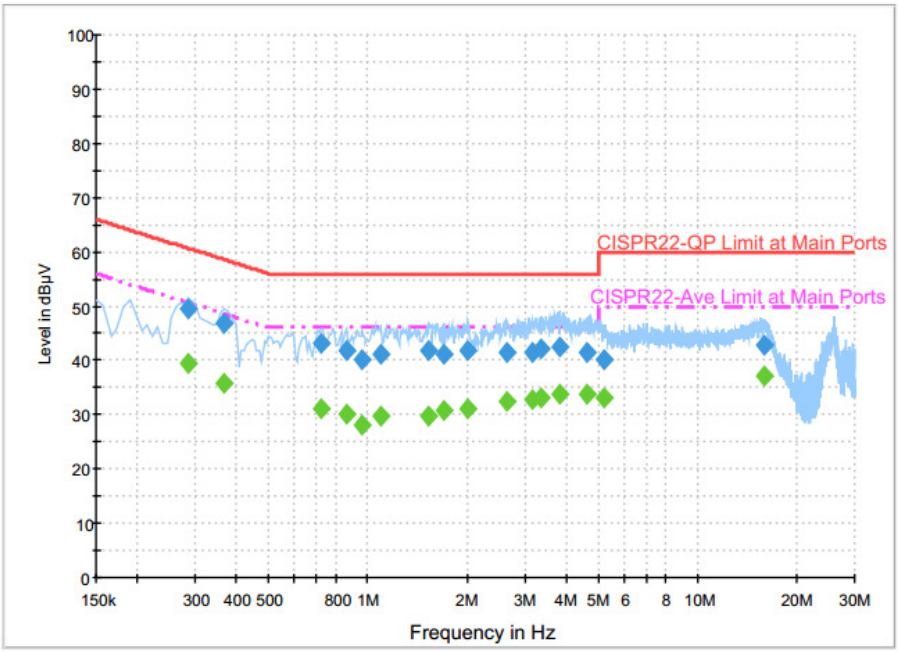
3.5.4 Test Setup



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

3.5.5 Test Result of AC Conducted Emission

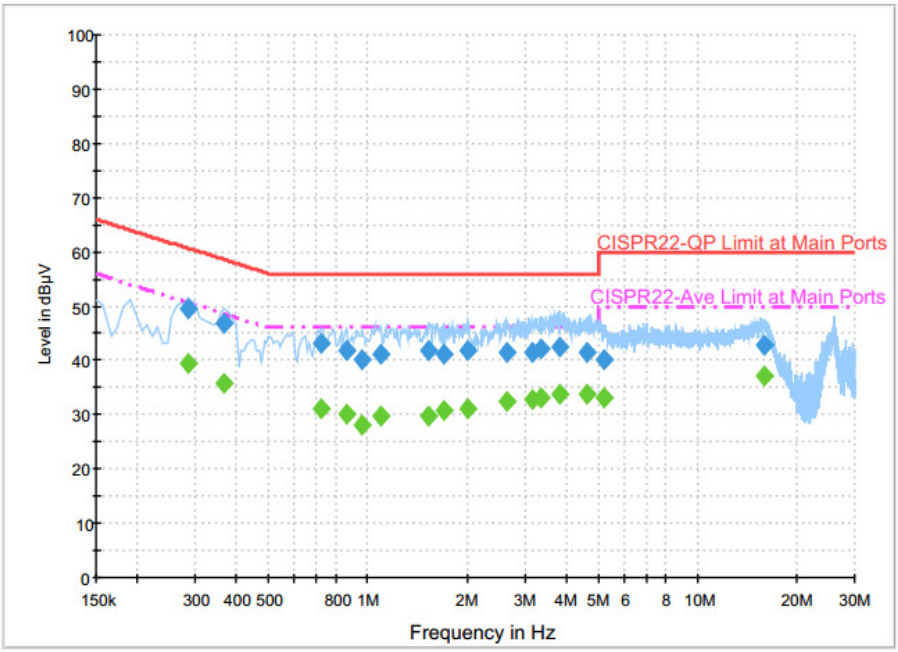
Test Mode :	Mode 1	Temperature :	23~24℃
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN (5GHz) Link + POE + LAN Link		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.286000	49.4	Off	L1	19.6	11.2	60.6
0.366000	46.7	Off	L1	19.6	11.9	58.6
0.726000	43.2	Off	L1	19.6	12.8	56.0
0.862000	41.8	Off	L1	19.7	14.2	56.0
0.966000	40.0	Off	L1	19.7	16.0	56.0
1.102000	41.1	Off	L1	19.7	14.9	56.0
1.534000	41.8	Off	L1	19.7	14.2	56.0
1.702000	41.1	Off	L1	19.7	14.9	56.0
2.022000	41.7	Off	L1	19.7	14.3	56.0
2.654000	41.5	Off	L1	19.4	14.5	56.0
3.150000	41.5	Off	L1	19.7	14.5	56.0
3.366000	42.1	Off	L1	19.7	13.9	56.0
3.830000	42.3	Off	L1	19.8	13.7	56.0
4.630000	41.5	Off	L1	19.9	14.5	56.0
5.230000	40.1	Off	L1	19.9	19.9	60.0
15.894000	42.7	Off	L1	20.5	17.3	60.0

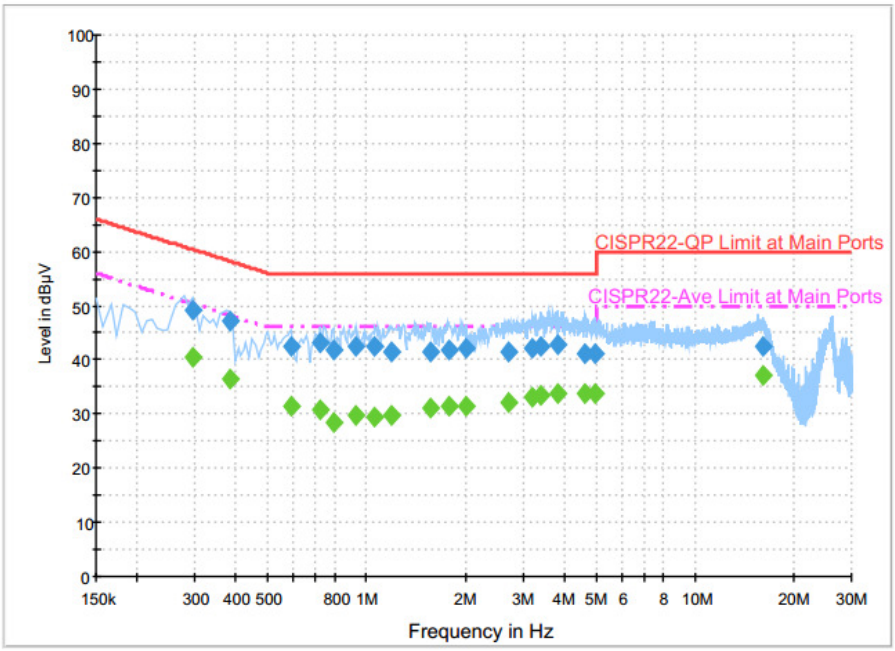
Test Mode :	Mode 1	Temperature :	23~24℃
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN (5GHz) Link + POE + LAN Link		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.286000	39.4	Off	L1	19.6	11.2	50.6
0.366000	35.8	Off	L1	19.6	12.8	48.6
0.726000	31.2	Off	L1	19.6	14.8	46.0
0.862000	30.0	Off	L1	19.7	16.0	46.0
0.966000	28.0	Off	L1	19.7	18.0	46.0
1.102000	29.6	Off	L1	19.7	16.4	46.0
1.534000	29.9	Off	L1	19.7	16.1	46.0
1.702000	30.6	Off	L1	19.7	15.4	46.0
2.022000	31.1	Off	L1	19.7	14.9	46.0
2.654000	32.4	Off	L1	19.4	13.6	46.0
3.150000	32.8	Off	L1	19.7	13.2	46.0
3.366000	33.3	Off	L1	19.7	12.7	46.0
3.830000	33.8	Off	L1	19.8	12.2	46.0
4.630000	33.6	Off	L1	19.9	12.4	46.0
5.230000	32.9	Off	L1	19.9	17.1	50.0
15.894000	37.3	Off	L1	20.5	12.7	50.0

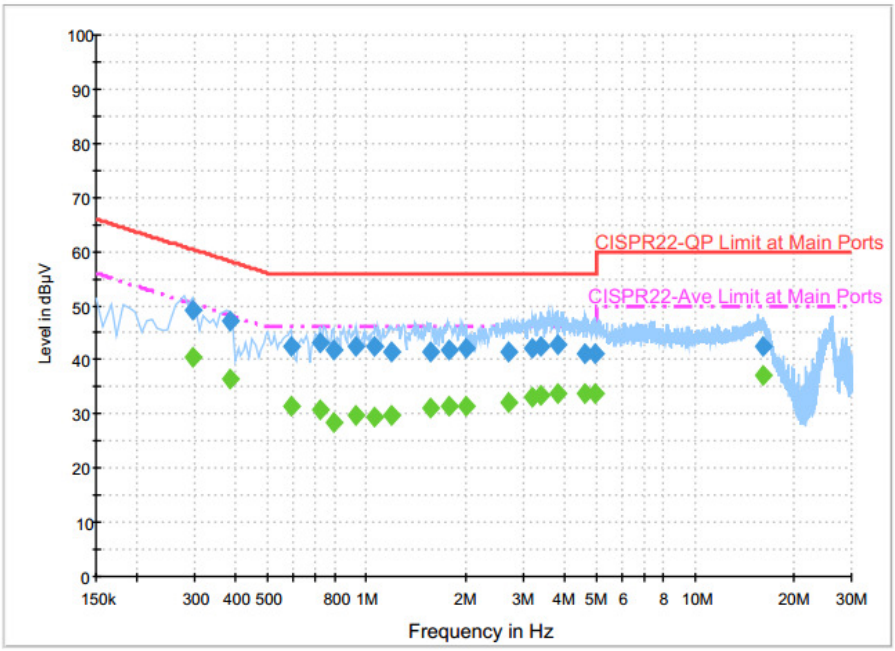
Test Mode :	Mode 1	Temperature :	23~24℃
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN (5GHz) Link + POE + LAN Link		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.294000	49.2	Off	N	19.6	11.2	60.4
0.382000	47.0	Off	N	19.6	11.2	58.2
0.590000	42.5	Off	N	19.6	13.5	56.0
0.726000	43.1	Off	N	19.6	12.9	56.0
0.790000	41.8	Off	N	19.6	14.2	56.0
0.926000	42.4	Off	N	19.6	13.6	56.0
1.062000	42.6	Off	N	19.6	13.4	56.0
1.190000	41.5	Off	N	19.6	14.5	56.0
1.558000	41.6	Off	N	19.7	14.4	56.0
1.782000	42.0	Off	N	19.7	14.0	56.0
2.014000	42.0	Off	N	19.7	14.0	56.0
2.694000	41.5	Off	N	19.4	14.5	56.0
3.198000	42.1	Off	N	19.7	13.9	56.0
3.382000	42.4	Off	N	19.7	13.6	56.0
3.830000	42.8	Off	N	19.7	13.2	56.0
4.654000	41.0	Off	N	19.8	15.0	56.0
4.950000	41.3	Off	N	19.8	14.7	56.0
16.158000	42.5	Off	N	20.5	17.5	60.0

Test Mode :	Mode 1	Temperature :	23~24℃
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN (5GHz) Link + POE + LAN Link		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.294000	40.4	Off	N	19.6	10.0	50.4
0.382000	36.3	Off	N	19.6	11.9	48.2
0.590000	31.3	Off	N	19.6	14.7	46.0
0.726000	30.7	Off	N	19.6	15.3	46.0
0.790000	28.5	Off	N	19.6	17.5	46.0
0.926000	29.6	Off	N	19.6	16.4	46.0
1.062000	29.4	Off	N	19.6	16.6	46.0
1.190000	29.7	Off	N	19.6	16.3	46.0
1.558000	31.1	Off	N	19.7	14.9	46.0
1.782000	31.3	Off	N	19.7	14.7	46.0
2.014000	31.5	Off	N	19.7	14.5	46.0
2.694000	32.1	Off	N	19.4	13.9	46.0
3.198000	33.2	Off	N	19.7	12.8	46.0
3.382000	33.5	Off	N	19.7	12.5	46.0
3.830000	33.7	Off	N	19.7	12.3	46.0
4.654000	33.8	Off	N	19.8	12.2	46.0
4.950000	33.8	Off	N	19.8	12.2	46.0
16.158000	37.2	Off	N	20.5	12.8	50.0

3.6 Frequency Stability Measurement

3.6.1 Limit of Frequency Stability

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

3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

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

3.6.4 Test Setup

3.6.5 Test Result of Frequency Stability

Please refer to Appendix A.

3.7 Automatically Discontinue Transmission

3.7.1 Limit of Automatically Discontinue Transmission

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

3.7.2 Measuring Instruments

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

3.7.3 Test Result of Automatically Discontinue Transmission

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

3.8 Antenna Requirements

3.8.1 Standard Applicable

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

3.8.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.8.3 Antenna Gain

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.

	Ant 1 (dBi)	Ant 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
Band IV	2.00	2.00	2.00	5.01	0.00	0.00

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

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	AC POWER	AFC-500W	F104070011	50Hz~60Hz	Dec. 02, 2015	Oct. 04 2016 ~ Oct. 22, 2016	Dec. 01, 2016	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Jul. 28, 2016	Oct. 04 2016 ~ Oct. 22, 2016	Jul. 27, 2017	Conducted (TH02-HY)
Power Sensor	DARE	RPR3006W	13I00030SNO31	9kHz~6GHz	Sep. 21, 2016	Oct. 04, 2016 ~ Oct. 22, 2016	Sep. 20, 2017	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Jul. 28, 2016	Oct. 04, 2016 ~ Oct. 22, 2016	Jul. 27, 2017	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 17, 2016	Oct. 04, 2016 ~ Oct. 22, 2016	Jun. 16, 2017	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 11, 2016	Oct. 04 2016 ~ Oct. 22, 2016	Jul. 10, 2017	Conducted (TH02-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Oct. 19, 2016 ~ Oct. 23, 2016	Sep. 01, 2017	Radiation (03CH12-HY)
Loop Cable	Rohde & Schwarz	N/A	N/A	9KHz~30MHz	Dec. 03, 2015	Oct. 19, 2016 ~ Oct. 23, 2016	Dec. 02, 2016	Radiation (03CH12-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 20, 2015	Oct. 19, 2016 ~ Oct. 23, 2016	Nov. 19, 2016	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Mar. 21, 2016	Oct. 19, 2016 ~ Oct. 23, 2016	Mar. 20, 2017	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-06	35414&AT-N0602	30MHz~1GHz	Nov. 17, 2015	Oct. 19, 2016 ~ Oct. 23, 2016	Nov. 16, 2016	Radiation (03CH12-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 21, 2015	Oct. 19, 2016 ~ Oct. 23, 2016	Dec. 20, 2016	Radiation (03CH12-HY)
Preamplifier	MITEQ	TTA0204	1872107	2GHz~40GHz	Feb. 15, 2016	Oct. 19, 2016 ~ Oct. 23, 2016	Feb. 14, 2017	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1328	1GHz ~ 18GHz	Nov. 02, 2015	Oct. 19, 2016 ~ Oct. 23, 2016	Nov. 01, 2016	Radiation (03CH12-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1815698	1GHz~18GHz	Dec. 14, 2015	Oct. 19, 2016 ~ Oct. 23, 2016	Dec. 13, 2016	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY53270148	1GHz~26.5GHz	Jan. 30, 2016	Oct. 19, 2016 ~ Oct. 23, 2016	Jan. 29, 2017	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24958/4, MY28653/4, MY9839/4PE	26GHz~40GHz	Jan. 12, 2016	Oct. 19, 2016 ~ Oct. 23, 2016	Jan. 11, 2017	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24958/4, MY28653/4, MY9839/4PE	1GHz~26GHz	Jan. 12, 2016	Oct. 19, 2016 ~ Oct. 23, 2016	Jan. 11, 2017	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24958/4, MY28653/4, MY9839/4PE	30MHz~1GHz	Jan. 12, 2016	Oct. 19, 2016 ~ Oct. 23, 2016	Jan. 11, 2017	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24958/4, MY28653/4, MY9839/4PE	9K~30MHz	Jan. 12, 2016	Oct. 19, 2016 ~ Oct. 23, 2016	Jan. 11, 2017	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Oct. 19, 2016 ~ Oct. 23, 2016	N/A	Radiation (03CH12-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 24, 2016	Oct. 07, 2016 ~ Oct. 18, 2016	Aug. 23, 2017	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9030A	MY54200485	3Hz ~ 44GHz	Mar. 21, 2016	Oct. 07, 2016 ~ Oct. 18, 2016	Mar. 20, 2017	Radiation (03CH13-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 20, 2015	Oct. 07, 2016 ~ Oct. 18, 2016	Nov. 19, 2016	Radiation (03CH13-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY55420170	N/A	Mar. 10, 2016	Oct. 07, 2016 ~ Oct. 18, 2016	Mar. 09, 2017	Radiation (03CH13-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Oct. 21, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Oct. 21, 2016	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Oct. 21, 2016	Dec. 01, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 14, 2015	Oct. 21, 2016	Dec. 13, 2016	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 06, 2016	Oct. 21, 2016	Jan. 05, 2017	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 08, 2016	Oct. 21, 2016	Jan. 07, 2017	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.10**

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.70**

Appendix A. Conducted Test Results

Test Engineer:	AC Chang / Derek Hsu	Temperature:	21~25	°C
Test Date:	2016/10/04 ~ 2016/10/22	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

Band IV													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	17.60	17.55	23.86	23.41	16.34	16.28	0.5		Pass
11a	6Mbps	2	157	5785	17.45	17.45	23.69	23.21	16.04	16.32	0.5		Pass
11a	6Mbps	2	165	5825	17.60	17.40	25.20	23.67	16.32	16.30	0.5		Pass
HT20	MCS0	2	149	5745	18.55	18.55	24.32	24.85	17.16	17.52	0.5		Pass
HT20	MCS0	2	157	5785	18.70	18.50	24.64	24.76	17.54	17.28	0.5		Pass
HT20	MCS0	2	165	5825	18.85	18.50	24.87	24.26	17.58	17.50	0.5		Pass
HT40	MCS0	2	151	5755	36.70	36.70	46.89	46.56	35.76	36.00	0.5		Pass
HT40	MCS0	2	159	5795	36.70	36.90	48.84	47.16	35.68	36.00	0.5		Pass
VHT80	MCS0	2	155	5775	75.84	76.08	103.12	98.96	70.72	75.68	0.5		Pass

TEST RESULTS DATA
Average Power Table

Band IV															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)			Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	2	149	5745	0.25	0.22	13.59	14.62	17.15	30.00		2.00			Pass
11a	6Mbps	2	157	5785	0.25	0.22	14.46	14.64	17.56	30.00		2.00			Pass
11a	6Mbps	2	165	5825	0.25	0.22	15.75	15.73	18.75	30.00		2.00			Pass
HT20	MCS0	2	149	5745	0.27	0.23	13.15	14.23	16.74	30.00		2.00			Pass
HT20	MCS0	2	157	5785	0.27	0.23	15.92	16.14	19.04	30.00		2.00			Pass
HT20	MCS0	2	165	5825	0.27	0.23	14.67	14.60	17.65	30.00		2.00			Pass
HT40	MCS0	2	151	5755	0.53	0.46	15.18	15.71	18.46	30.00		2.00			Pass
HT40	MCS0	2	159	5795	0.53	0.46	17.38	17.37	20.38	30.00		2.00			Pass
VHT20	MCS0	2	149	5745	0.27	0.23	13.07	14.21	16.69	30.00		2.00			Pass
VHT20	MCS0	2	157	5785	0.27	0.23	15.92	16.12	19.03	30.00		2.00			Pass
VHT20	MCS0	2	165	5825	0.27	0.23	14.65	14.58	17.62	30.00		2.00			Pass
VHT40	MCS0	2	151	5755	0.46	0.49	15.11	15.70	18.43	30.00		2.00			Pass
VHT40	MCS0	2	159	5795	0.46	0.49	17.11	17.33	20.23	30.00		2.00			Pass
VHT80	MCS0	2	155	5775	0.89	0.90	17.04	17.21	20.14	30.00		2.00			Pass

TEST RESULTS DATA
Power Spectral Density

Band IV																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	0.25	0.22	2.22				3.89	30.00		5.01		Pass
11a	6Mbps	2	157	5785	0.25	0.22	2.22				3.88	30.00		5.01		Pass
11a	6Mbps	2	165	5825	0.25	0.22	2.22				4.54	30.00		5.01		Pass
HT20	MCS0	2	149	5745	0.27	0.23	2.22				3.21	30.00		5.01		Pass
HT20	MCS0	2	157	5785	0.27	0.23	2.22				4.89	30.00		5.01		Pass
HT20	MCS0	2	165	5825	0.27	0.23	2.22				3.11	30.00		5.01		Pass
HT40	MCS0	2	151	5755	0.53	0.46	2.22				1.74	30.00		5.01		Pass
HT40	MCS0	2	159	5795	0.53	0.46	2.22				3.28	30.00		5.01		Pass
VHT80	MCS0	2	155	5775	0.89	0.90	2.22				0.82	30.00		5.01		Pass

TEST RESULTS DATA
Frequency Stability

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	5744.950	-0.050	-8.70	50	120	
11a	6Mbps	1	149	5745	5744.950	-0.050	-8.70	-30	120	
11a	6Mbps	1	149	5745	5744.950	-0.050	-8.70	20	132	
11a	6Mbps	1	149	5745	5744.950	-0.050	-8.70	20	108	
11a	6Mbps	1	149	5745	5744.950	-0.050	-8.70	20	120	

Appendix B. Radiated Spurious Emission

Test Engineer :	Peter Chiu, Karl Hou, and Nick Yu	Temperature :	21~23°C
		Relative Humidity :	54~58%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		5604.6	59.8	-8.4	68.2	46.9	32.12	11.77	30.99	219	321	P	H
		5689.2	59.59	-37.65	97.24	46.55	32.23	11.82	31.01	219	321	P	H
		5708.6	58.67	-48.94	107.61	45.6	32.25	11.84	31.02	219	321	P	H
		5721	59.23	-53.85	113.08	46.14	32.27	11.84	31.02	219	321	P	H
	*	5746	90.97	-	-	77.85	32.29	11.86	31.03	219	321	P	H
	*	5746	79.98	-	-	66.86	32.29	11.86	31.03	219	321	A	H
													H
													H
		5612.8	59.89	-8.31	68.2	46.99	32.12	11.77	30.99	296	23	P	V
		5696.8	59.66	-43.18	102.84	46.62	32.23	11.82	31.01	296	23	P	V
		5706.4	59.84	-47.15	106.99	46.77	32.25	11.84	31.02	296	23	P	V
		5724.4	58.61	-62.22	120.83	45.52	32.27	11.84	31.02	296	23	P	V
	*	5743	92.81	-	-	79.69	32.29	11.86	31.03	296	23	P	V
	*	5743	81.65	-	-	68.53	32.29	11.86	31.03	296	23	A	V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5610.2	60.38	-7.82	68.2	47.48	32.12	11.77	30.99	222	321	P	H
		5693.2	60.14	-40.05	100.19	47.1	32.23	11.82	31.01	222	321	P	H
		5716.6	59.26	-50.59	109.85	46.19	32.25	11.84	31.02	222	321	P	H
		5723.2	58.68	-59.42	118.1	45.59	32.27	11.84	31.02	222	321	P	H
	*	5787	92.99	-	-	79.81	32.35	11.88	31.05	222	321	P	H
	*	5787	81.8	-	-	68.62	32.35	11.88	31.05	222	321	A	H
		5853	58.74	-56.62	115.36	45.36	32.41	12.03	31.06	222	321	P	H
		5873.8	60.25	-45.29	105.54	46.69	32.46	12.17	31.07	222	321	P	H
		5912	60.32	-17.47	77.79	46.6	32.5	12.31	31.09	222	321	P	H
		5949.8	61.44	-6.76	68.2	47.54	32.54	12.45	31.09	222	321	P	H
													H
802.11a CH 157 5785MHz													H
		5648.2	59.8	-8.4	68.2	46.84	32.17	11.79	31	394	11	P	V
		5655.4	59.36	-12.85	72.21	46.39	32.19	11.79	31.01	394	11	P	V
		5710.4	60.06	-48.05	108.11	46.99	32.25	11.84	31.02	394	11	P	V
		5721.2	59.16	-54.38	113.54	46.07	32.27	11.84	31.02	394	11	P	V
	*	5783	95.8	-	-	82.64	32.33	11.88	31.05	394	11	P	V
	*	5783	84.18	-	-	71.02	32.33	11.88	31.05	394	11	A	V
		5851.2	59.53	-59.93	119.46	46.15	32.41	12.03	31.06	394	11	P	V
		5864.6	59.87	-48.24	108.11	46.34	32.43	12.17	31.07	394	11	P	V
		5900	60.68	-25.98	86.66	47.11	32.48	12.17	31.08	394	11	P	V
		5931	61.14	-7.06	68.2	47.4	32.52	12.31	31.09	394	11	P	V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	*	5823	93.83	-	-	80.46	32.39	12.03	31.05	209	321	P	H
	*	5823	82.42	-	-	69.05	32.39	12.03	31.05	209	321	A	H
		5851.4	59.11	-59.9	119.01	45.73	32.41	12.03	31.06	209	321	P	H
		5873	60.3	-45.46	105.76	46.74	32.46	12.17	31.07	209	321	P	H
		5905.2	60.93	-21.88	82.81	47.2	32.5	12.31	31.08	209	321	P	H
		5946.4	60.24	-7.96	68.2	46.34	32.54	12.45	31.09	209	321	P	H
													H
802.11a													H
CH 165	*	5824	95.77	-	-	82.4	32.39	12.03	31.05	392	12	P	V
5825MHz	*	5824	84.36	-	-	70.99	32.39	12.03	31.05	392	12	A	V
		5854.4	58.9	-53.27	112.17	45.5	32.43	12.03	31.06	392	12	P	V
		5862.2	60.28	-48.5	108.78	46.75	32.43	12.17	31.07	392	12	P	V
		5892	60.39	-32.19	92.58	46.82	32.48	12.17	31.08	392	12	P	V
		5935.8	60.34	-7.86	68.2	46.6	32.52	12.31	31.09	392	12	P	V
													V
													V
													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)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	66.91	-7.09	74	65.99	40.3	18.4	57.78	192	109	P	H
		11490	52.85	-1.15	54	51.93	40.3	18.4	57.78	192	109	A	H
		17235	51.46	-16.74	68.2	43.82	41.64	23.14	57.14	100	0	P	H
													H
		11490	67.41	-6.59	74	66.49	40.3	18.4	57.78	300	339	P	V
		11490	53.87	-0.13	54	52.95	40.3	18.4	57.78	300	339	A	V
		17235	52.52	-15.68	68.2	44.88	41.64	23.14	57.14	100	0	P	V
													V
802.11a CH 157 5785MHz		11570	65.11	-8.89	74	64.3	40.12	18.49	57.8	187	109	P	H
		11570	51.45	-2.55	54	50.64	40.12	18.49	57.8	187	109	A	H
		17352	49.62	-18.58	68.2	41.87	42.06	23.25	57.56	166	264	P	H
													H
		11570	67.58	-6.42	74	66.77	40.12	18.49	57.8	236	59	P	V
		11570	53.8	-0.2	54	52.99	40.12	18.49	57.8	236	59	A	V
		17352	50.89	-17.31	68.2	43.14	42.06	23.25	57.56	132	6	P	V
													V
802.11a CH 165 5825MHz		11650	67.11	-6.89	74	66.39	39.94	18.58	57.8	301	106	P	H
		11650	52.69	-1.31	54	51.97	39.94	18.58	57.8	301	106	A	H
		17475	52.74	-15.46	68.2	44.88	42.48	23.36	57.98	100	0	P	H
													H
		11650	67.57	-6.43	74	66.85	39.94	18.58	57.8	392	315	P	V
		11650	53.75	-0.25	54	53.03	39.94	18.58	57.8	392	315	A	V
		17475	50.77	-17.43	68.2	42.91	42.48	23.36	57.98	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5634.8	59.75	-8.45	68.2	46.79	32.17	11.79	31	211	320	P	H
		5667.4	60.14	-20.97	81.11	47.12	32.21	11.82	31.01	211	320	P	H
		5703.8	58.93	-47.34	106.27	45.85	32.25	11.84	31.01	211	320	P	H
		5722.4	58.33	-57.94	116.27	45.24	32.27	11.84	31.02	211	320	P	H
	*	5747	90.29	-	-	77.17	32.29	11.86	31.03	211	320	P	H
	*	5747	79.15	-	-	66.03	32.29	11.86	31.03	211	320	P	H
802.11n													H
HT20													H
CH 149		5613.6	59.19	-9.01	68.2	46.29	32.12	11.77	30.99	380	15	P	V
5745MHz		5693.6	59.31	-41.17	100.48	46.27	32.23	11.82	31.01	380	15	P	V
		5713.4	58.8	-50.15	108.95	45.73	32.25	11.84	31.02	380	15	P	V
		5724.8	59.13	-62.61	121.74	46.04	32.27	11.84	31.02	380	15	P	V
	*	5746	93.97	-	-	80.85	32.29	11.86	31.03	380	15	P	V
	*	5746	82.38	-	-	69.26	32.29	11.86	31.03	380	15	A	V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5641.6	59.45	-8.75	68.2	46.49	32.17	11.79	31	213	321	P	H
		5681.6	59.46	-32.16	91.62	46.44	32.21	11.82	31.01	213	321	P	H
		5719.6	59.96	-50.73	110.69	46.87	32.27	11.84	31.02	213	321	P	H
		5720.2	58.86	-52.4	111.26	45.77	32.27	11.84	31.02	213	321	P	H
	*	5783	90.54	-	-	77.38	32.33	11.88	31.05	213	321	P	H
	*	5783	79.32	-	-	66.16	32.33	11.88	31.05	213	321	A	H
		5852	59.09	-58.55	117.64	45.71	32.41	12.03	31.06	213	321	P	H
		5863	59.94	-48.62	108.56	46.41	32.43	12.17	31.07	213	321	P	H
		5894.8	60.51	-30	90.51	46.94	32.48	12.17	31.08	213	321	P	H
		5930	60.26	-7.94	68.2	46.52	32.52	12.31	31.09	213	321	P	H
802.11n													H
HT20													H
CH 157		5647.8	59.82	-8.38	68.2	46.86	32.17	11.79	31	375	16	P	V
5785MHz		5683	59.7	-32.96	92.66	46.68	32.21	11.82	31.01	375	16	P	V
		5716.8	60	-49.91	109.91	46.93	32.25	11.84	31.02	375	16	P	V
		5720.4	59.02	-52.69	111.71	45.93	32.27	11.84	31.02	375	16	P	V
	*	5783	94.35	-	-	81.19	32.33	11.88	31.05	375	16	P	V
	*	5783	83.49	-	-	70.33	32.33	11.88	31.05	375	16	A	V
		5852.2	58.81	-58.37	117.18	45.43	32.41	12.03	31.06	375	16	P	V
		5868.2	59.81	-47.29	107.1	46.28	32.43	12.17	31.07	375	16	P	V
		5915	61.77	-13.8	75.57	48.05	32.5	12.31	31.09	375	16	P	V
		5949.6	60.04	-8.16	68.2	46.14	32.54	12.45	31.09	375	16	P	V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	*	5824	89.7	-	-	76.33	32.39	12.03	31.05	220	321	P	H
	*	5824	78.32	-	-	64.95	32.39	12.03	31.05	220	321	A	H
		5854.8	59.9	-51.36	111.26	46.5	32.43	12.03	31.06	220	321	P	H
		5855.4	59.74	-50.95	110.69	46.34	32.43	12.03	31.06	220	321	P	H
		5877	61.19	-42.52	103.71	47.63	32.46	12.17	31.07	220	321	P	H
		5934.8	60.38	-7.82	68.2	46.64	32.52	12.31	31.09	220	321	P	H
802.11n													H
HT20													H
CH 165	*	5827	93.66	-	-	80.29	32.39	12.03	31.05	345	16	P	V
5825MHz	*	5827	82.57	-	-	69.2	32.39	12.03	31.05	345	16	A	V
		5854	58.73	-54.35	113.08	45.33	32.43	12.03	31.06	345	16	P	V
		5867.8	59.87	-47.34	107.21	46.34	32.43	12.17	31.07	345	16	P	V
		5908.6	60.31	-19.99	80.3	46.58	32.5	12.31	31.08	345	16	P	V
		5942	60.04	-8.16	68.2	46.14	32.54	12.45	31.09	345	16	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11490	65.12	-8.88	74	64.2	40.3	18.4	57.78	304	101	P	H
		11490	50.95	-3.05	54	50.03	40.3	18.4	57.78	304	101	A	H
802.11n		17235	50.15	-18.05	68.2	42.51	41.64	23.14	57.14	100	0	P	H
HT20													H
CH 149		11490	67.41	-6.59	74	66.49	40.3	18.4	57.78	179	195	P	V
5745MHz		11490	53.2	-0.8	54	52.28	40.3	18.4	57.78	179	195	A	V
		17235	52.95	-15.25	68.2	45.31	41.64	23.14	57.14	100	0	P	V
													V
		11570	67.9	-6.1	74	67.09	40.12	18.49	57.8	188	108	P	H
		11570	53.86	-0.14	54	53.05	40.12	18.49	57.8	188	108	A	H
802.11n		17355	54.36	-13.84	68.2	46.61	42.06	23.25	57.56	100	0	P	H
HT20													H
CH 157		11570	68.3	-5.7	74	67.49	40.12	18.49	57.8	399	313	P	V
5785MHz		11570	53.95	-0.05	54	53.14	40.12	18.49	57.8	399	313	A	V
		17355	53.32	-14.88	68.2	45.57	42.06	23.25	57.56	100	0	P	V
													V
		11650	64.88	-9.12	74	64.16	39.94	18.58	57.8	239	107	P	H
		11650	51.57	-2.43	54	50.85	39.94	18.58	57.8	239	107	A	H
802.11n		17475	49.79	-18.41	68.2	41.93	42.48	23.36	57.98	100	0	P	H
HT20													H
CH 165		11650	66.76	-7.24	74	66.04	39.94	18.58	57.8	172	207	P	V
5825MHz		11650	53.59	-0.41	54	52.87	39.94	18.58	57.8	172	207	A	V
		17475	49.73	-18.47	68.2	41.87	42.48	23.36	57.98	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5642.2	59.07	-9.13	68.2	46.11	32.17	11.79	31	212	321	P	H
		5664.2	60.1	-18.64	78.74	47.1	32.19	11.82	31.01	212	321	P	H
		5700.4	60.3	-45.01	105.31	47.24	32.23	11.84	31.01	212	321	P	H
		5721.2	58.81	-54.73	113.54	45.72	32.27	11.84	31.02	212	321	P	H
	*	5753	87	-	-	73.86	32.31	11.86	31.03	212	321	P	H
	*	5753	76.19	-	-	63.05	32.31	11.86	31.03	212	321	A	H
		5850.4	59.26	-62.03	121.29	45.88	32.41	12.03	31.06	212	321	P	H
		5872.6	59.63	-46.24	105.87	46.07	32.46	12.17	31.07	212	321	P	H
		5898.6	59.85	-27.85	87.7	46.28	32.48	12.17	31.08	212	321	P	H
		5925.8	60.81	-7.39	68.2	47.07	32.52	12.31	31.09	212	321	P	H
802.11n													H
HT40													H
CH 151		5623	59.19	-9.01	68.2	46.25	32.14	11.79	30.99	376	16	P	V
5755MHz		5689.2	59.87	-37.37	97.24	46.83	32.23	11.82	31.01	376	16	P	V
		5708.2	59.08	-48.42	107.5	46.01	32.25	11.84	31.02	376	16	P	V
		5721.2	60.33	-53.21	113.54	47.24	32.27	11.84	31.02	376	16	P	V
	*	5753	91.22	-	-	78.08	32.31	11.86	31.03	376	16	P	V
	*	5753	80.8	-	-	67.66	32.31	11.86	31.03	376	16	A	V
		5851.8	60.32	-57.78	118.1	46.94	32.41	12.03	31.06	376	16	P	V
		5864	59.36	-48.92	108.28	45.83	32.43	12.17	31.07	376	16	P	V
		5915.2	60.93	-14.5	75.43	47.21	32.5	12.31	31.09	376	16	P	V
		5935.8	60.1	-8.1	68.2	46.36	32.52	12.31	31.09	376	16	P	V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5633.4	60.61	-7.59	68.2	47.65	32.17	11.79	31	214	321	P	H
		5699.4	59.38	-45.38	104.76	46.34	32.23	11.82	31.01	214	321	P	H
		5705.4	60.08	-46.63	106.71	47.01	32.25	11.84	31.02	214	321	P	H
		5724	59.17	-60.75	119.92	46.08	32.27	11.84	31.02	214	321	P	H
	*	5797	90.79	-	-	77.61	32.35	11.88	31.05	214	321	P	H
	*	5797	79.81	-	-	66.63	32.35	11.88	31.05	214	321	A	H
		5851.2	59.69	-59.77	119.46	46.31	32.41	12.03	31.06	214	321	P	H
		5869	59.97	-46.91	106.88	46.44	32.43	12.17	31.07	214	321	P	H
		5906.8	61.14	-20.49	81.63	47.41	32.5	12.31	31.08	214	321	P	H
		5936	61.33	-6.87	68.2	47.59	32.52	12.31	31.09	214	321	P	H
802.11n													H
HT40													H
CH 159		5612.8	59.82	-8.38	68.2	46.92	32.12	11.77	30.99	371	15	P	V
5795MHz		5675	59.63	-27.11	86.74	46.61	32.21	11.82	31.01	371	15	P	V
		5714.6	59.77	-49.52	109.29	46.7	32.25	11.84	31.02	371	15	P	V
		5721.6	58.97	-55.48	114.45	45.88	32.27	11.84	31.02	371	15	P	V
	*	5794	93.3	-	-	80.12	32.35	11.88	31.05	371	15	P	V
	*	5794	82.85	-	-	69.67	32.35	11.88	31.05	371	15	A	V
		5850.6	60.05	-60.78	120.83	46.67	32.41	12.03	31.06	371	15	P	V
		5873.4	60.04	-45.61	105.65	46.48	32.46	12.17	31.07	371	15	P	V
		5887.4	59.91	-36.08	95.99	46.36	32.46	12.17	31.08	371	15	P	V
		5939.4	60.97	-7.23	68.2	47.21	32.54	12.31	31.09	371	15	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11510	64.22	-9.78	74	63.27	40.3	18.45	57.8	187	109	P	H
		11510	51.51	-2.49	54	50.56	40.3	18.45	57.8	187	109	A	H
802.11n		17268	49.08	-19.12	68.2	41.41	41.76	23.17	57.26	100	0	P	H
HT40													H
CH 151		11510	65.84	-8.16	74	64.89	40.3	18.45	57.8	182	230	P	V
5755MHz		11510	53.61	-0.39	54	52.66	40.3	18.45	57.8	182	230	A	V
		17268	49.01	-19.19	68.2	41.34	41.76	23.17	57.26	100	0	P	V
													V
		11590	65.97	-8.03	74	65.15	40.08	18.54	57.8	185	109	P	H
		11590	52.73	-1.27	54	51.91	40.08	18.54	57.8	185	109	A	H
802.11n		17388	48.13	-20.07	68.2	40.34	42.18	23.29	57.68	100	0	P	H
HT40													H
CH 159		11590	66.42	-7.58	74	65.6	40.08	18.54	57.8	186	233	P	V
5795MHz		11590	53.53	-0.47	54	52.71	40.08	18.54	57.8	186	233	A	V
		17388	49.54	-18.66	68.2	41.75	42.18	23.29	57.68	100	0	P	V
													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)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5631.2	59.75	-8.45	68.2	46.82	32.14	11.79	31	217	321	P	H
		5678.6	59.68	-29.72	89.4	46.66	32.21	11.82	31.01	217	321	P	H
		5710.4	60.79	-47.32	108.11	47.72	32.25	11.84	31.02	217	321	P	H
		5721.8	62.53	-52.37	114.9	49.44	32.27	11.84	31.02	217	321	P	H
	*	5773	87.53	-	-	74.38	32.33	11.86	31.04	217	321	P	H
	*	5773	76.57	-	-	63.42	32.33	11.86	31.04	217	321	A	H
		5852	59.3	-58.34	117.64	45.92	32.41	12.03	31.06	217	321	P	H
		5872	60.5	-45.54	106.04	46.94	32.46	12.17	31.07	217	321	P	H
		5915	60.29	-15.28	75.57	46.57	32.5	12.31	31.09	217	321	P	H
		5943.4	60.87	-7.33	68.2	46.97	32.54	12.45	31.09	217	321	P	H
802.11ac													H
VHT80													H
CH 155		5629	60.36	-7.84	68.2	47.43	32.14	11.79	31	359	20	P	V
5775MHz		5678.8	60.02	-29.53	89.55	47	32.21	11.82	31.01	359	20	P	V
		5715.2	61.88	-47.58	109.46	48.81	32.25	11.84	31.02	359	20	P	V
		5724.4	62.64	-58.19	120.83	49.55	32.27	11.84	31.02	359	20	P	V
	*	5773	90.67	-	-	77.52	32.33	11.86	31.04	359	20	P	V
	*	5773	80.68	-	-	67.53	32.33	11.86	31.04	359	20	A	V
		5853.2	60.02	-54.88	114.9	46.64	32.41	12.03	31.06	359	20	P	V
		5857.4	60.11	-50.02	110.13	46.71	32.43	12.03	31.06	359	20	P	V
		5878.6	59.83	-42.7	102.53	46.27	32.46	12.17	31.07	359	20	P	V
		5947.2	60.42	-7.78	68.2	46.52	32.54	12.45	31.09	359	20	P	V
													V
													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)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11550	63.18	-10.82	74	62.32	40.17	18.49	57.8	186	109	P	H
		11550	52.76	-1.24	54	51.9	40.17	18.49	57.8	186	109	A	H
802.11ac		17328	47.86	-20.34	68.2	40.15	41.94	23.21	57.44	100	0	P	H
VHT80													H
CH 155		11550	65.47	-8.53	74	64.61	40.17	18.49	57.8	188	231	P	V
5775MHz		11550	53.28	-0.72	54	52.42	40.17	18.49	57.8	188	231	A	V
		17328	47.68	-20.52	68.2	39.97	41.94	23.21	57.44	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

5GHz WIFI 802.11n HT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		78.6	34.48	-5.52	40	52.2	13.66	1.06	32.44			P	H
		137.46	35.17	-8.33	43.5	48.16	18	1.43	32.42			P	H
		234.39	45.53	-0.47	46	58.6	17.45	1.83	32.35	100	73	QP	H
	*	234.39	46.74	0.74	46	59.81	17.45	1.83	32.35	100	73	P	H
		437.2	32.96	-13.04	46	39.45	23	2.89	32.38			P	H
		650	32.44	-13.56	46	35.23	26	3.61	32.4			P	H
		687.8	32.62	-13.38	46	34.99	26.22	3.82	32.41			P	H
													H
													H
													H
5GHz													H
802.11n													H
HT20		36.75	36.28	-3.72	40	45.78	22.18	0.78	32.46	100	299	QP	V
LF		36.75	38.1	-1.9	40	47.6	22.18	0.78	32.46	100	299	P	V
		77.25	36.85	-3.15	40	54.68	13.55	1.06	32.44	100	105	QP	V
		77.25	39.6	-0.4	40	57.43	13.55	1.06	32.44	100	105	P	V
		234.39	40.22	-5.78	46	53.29	17.45	1.83	32.35			P	V
		437.2	29.18	-16.82	46	35.67	23	2.89	32.38			P	V
		650	33.37	-12.63	46	36.16	26	3.61	32.4			P	V
		687.8	31.51	-14.49	46	33.88	26.22	3.82	32.41			P	V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.

Note symbol

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

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

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

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

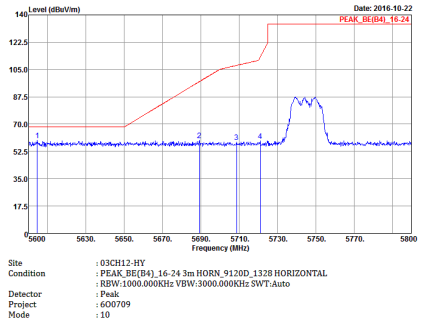
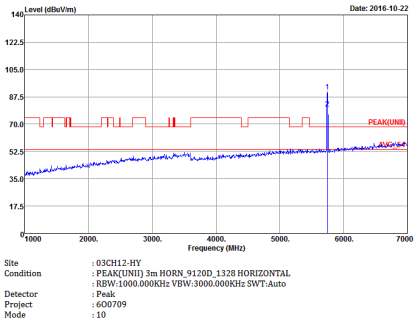
Both peak and average measured complies with the limit line, so test result is "PASS".

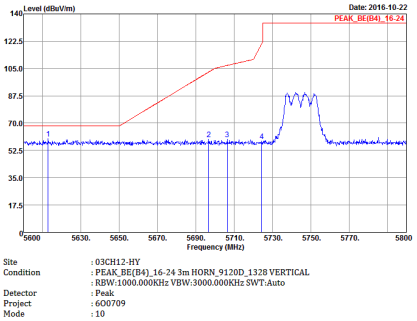
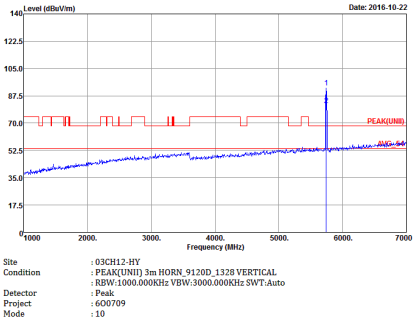
Appendix C. Radiated Spurious Emission Plots

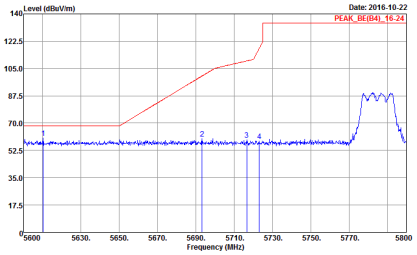
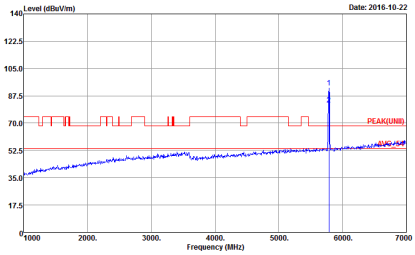
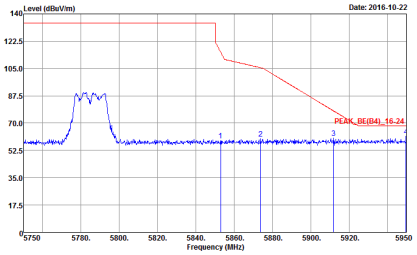
Test Engineer :	Peter Chiu, Karl Hou, and Nick Yu	**Temperature :**	21~23°C
		Relative Humidity :	54~58%

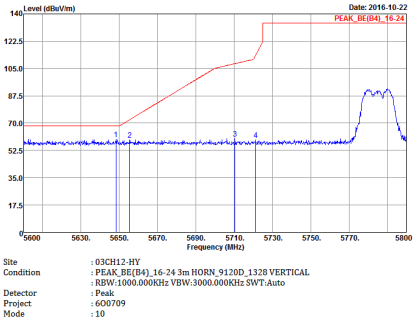
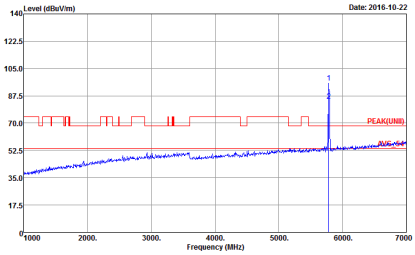
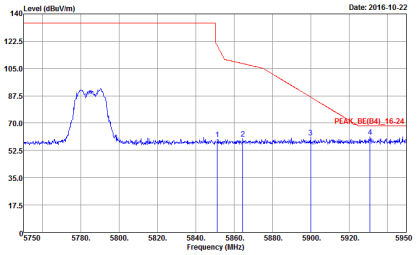
Band 4 - 5725~5850MHz

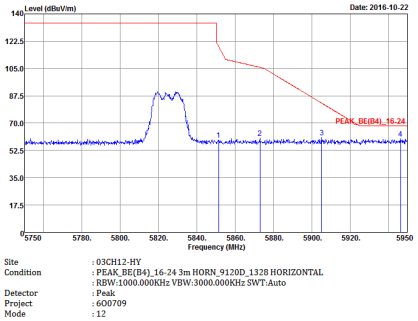
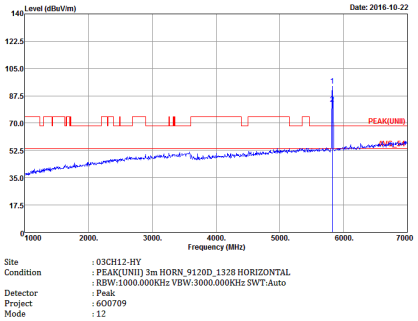
WIFI 802.11a (Band Edge @ 3m)

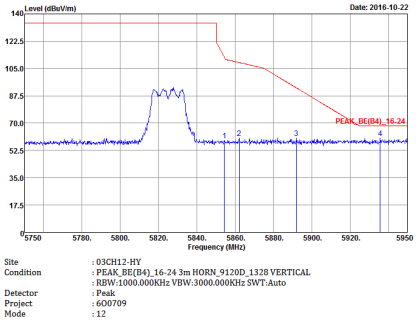
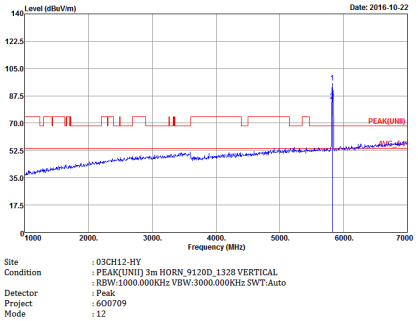
WIFI	**Band 4 5725~5850MHz Band Edge @ 3m**	
ANT	**802.11a CH149 5745MHz**	
1+2	**Horizontal**	**Fundamental**
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 10	 Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 10

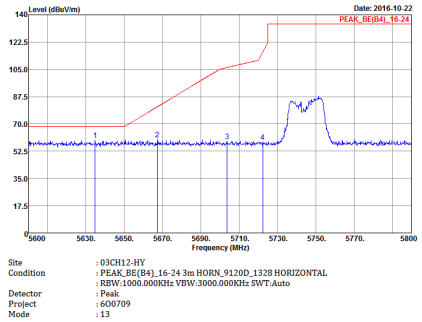
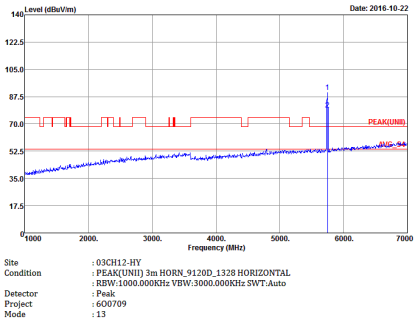
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 10	 Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 10
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 10	Left blank

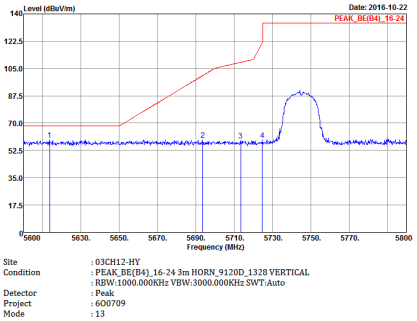
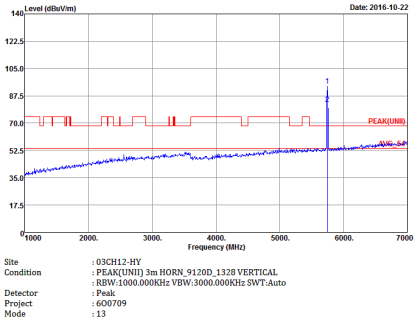
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 10	 Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 10
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 10	Left blank

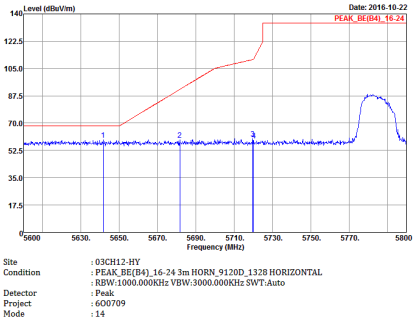
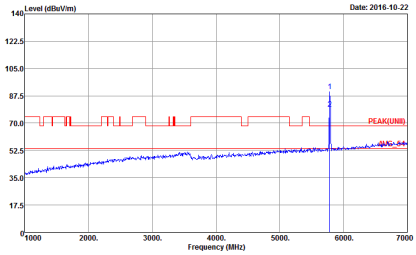
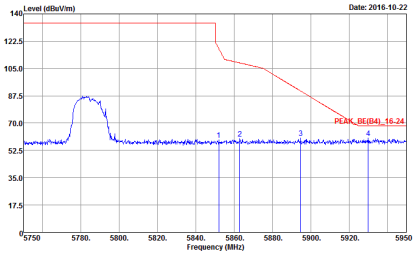
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak		

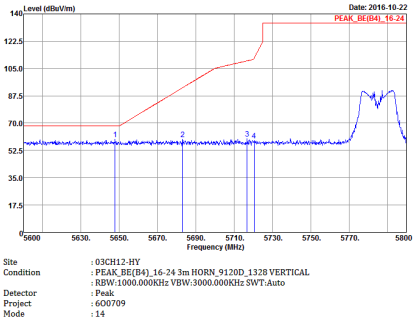
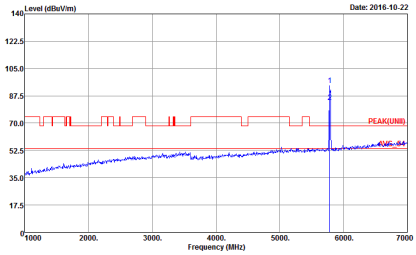
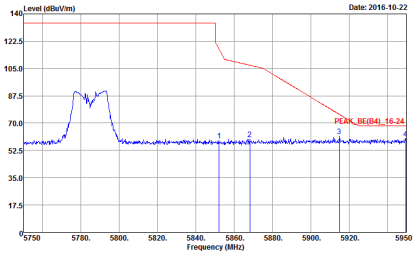
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Vertical	Fundamental
Peak		

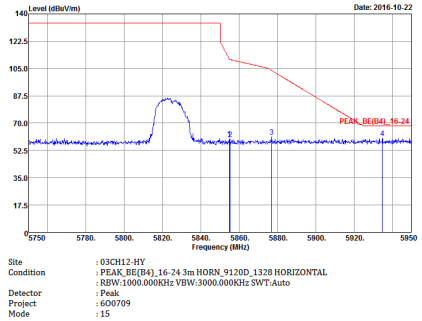
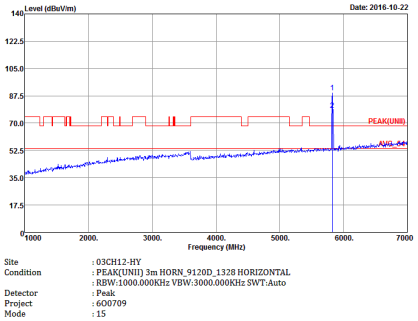
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

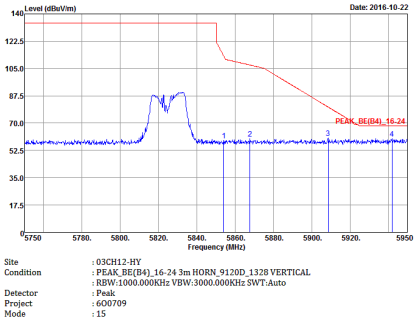
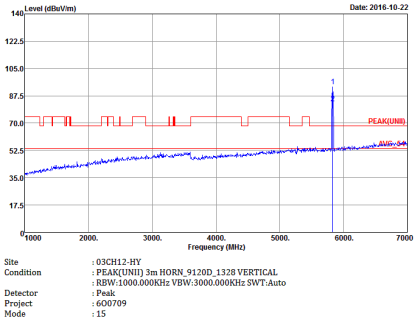
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Vertical	Fundamental
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 14	 Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 14
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 14	Left blank

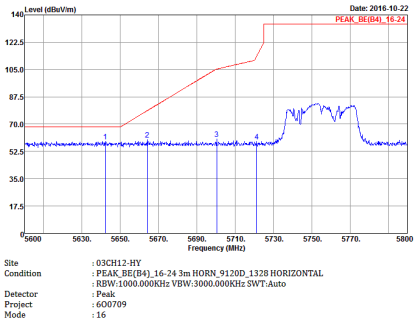
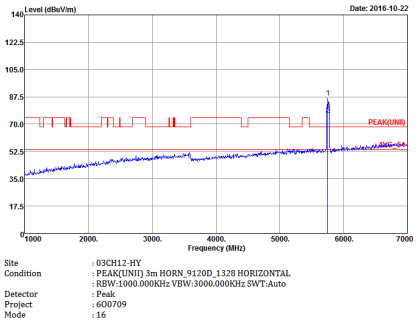
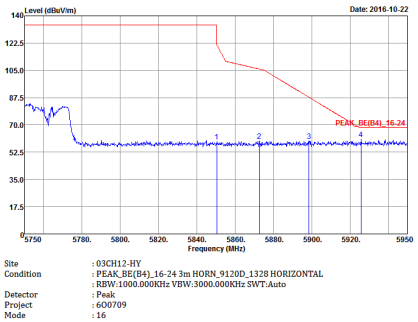
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 14	 Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 14
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 14	Left blank

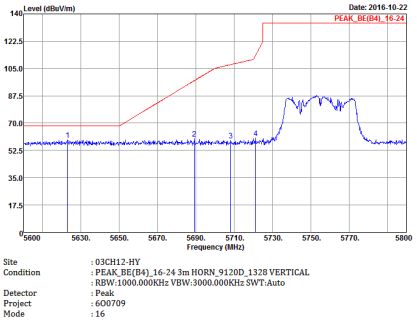
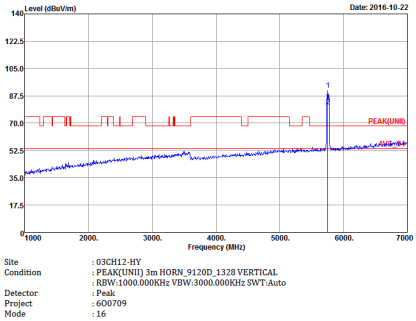
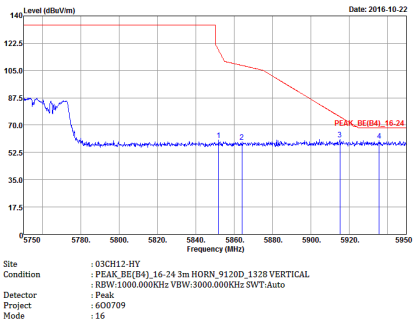
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak		

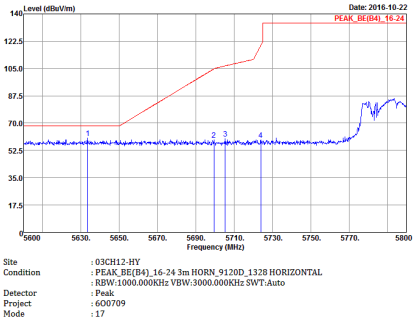
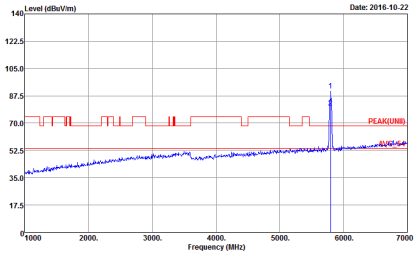
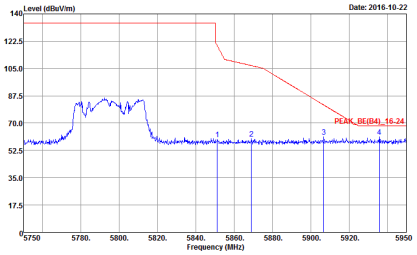
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Vertical	Fundamental
Peak		

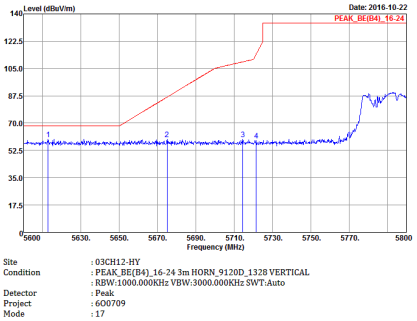
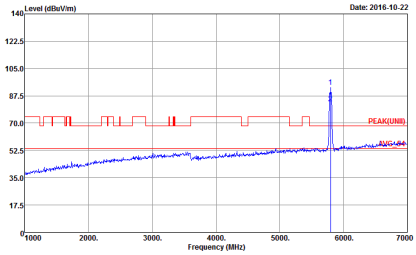
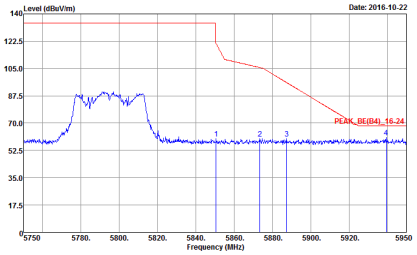
Band 4 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

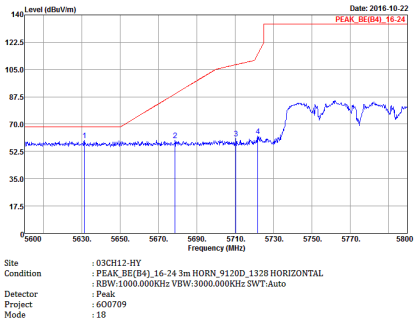
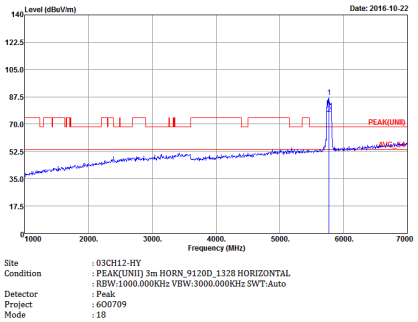
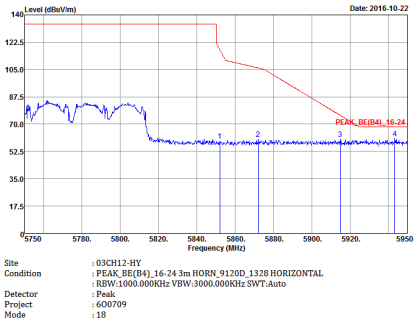
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

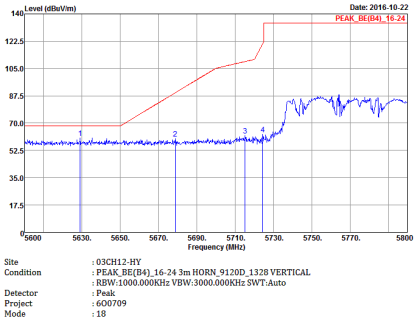
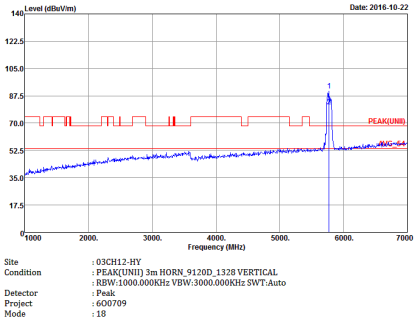
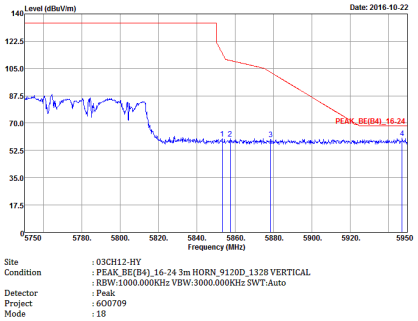
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 17	 Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 17
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 17	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 17	 Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 17
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 600709 Mode : 17	Left blank

Band 4 5725~5850MHz

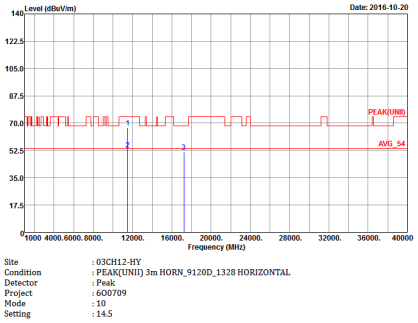
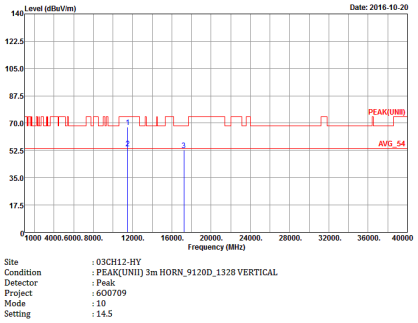
WIFI 802.11ac VHT80 (Band Edge @ 3m)

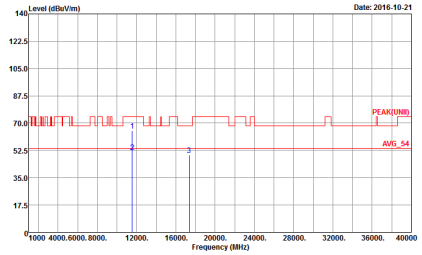
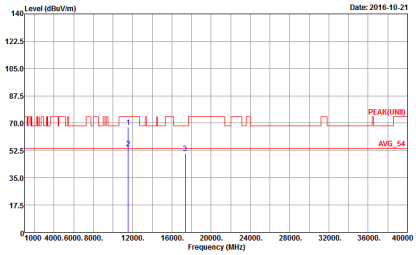
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

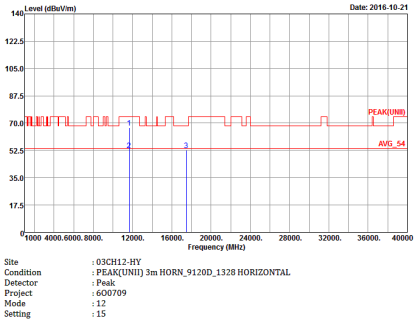
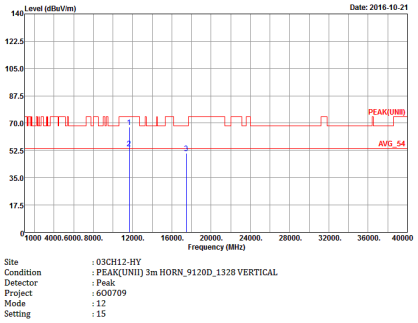
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6O0709 Mode : 18	 Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6O0709 Mode : 18
Peak	 Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6O0709 Mode : 18	Left blank

Band 4 - 5725~5850MHz

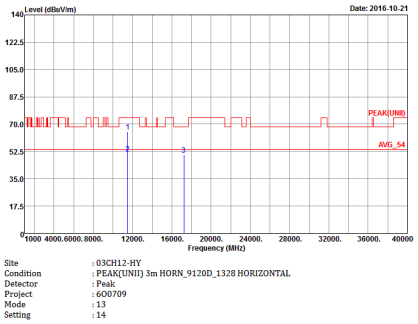
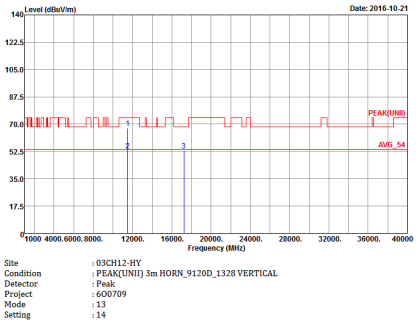
WIFI 802.11a (Harmonic @ 3m)

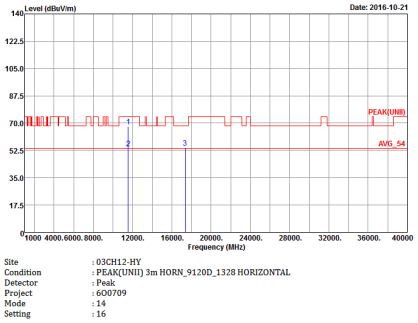
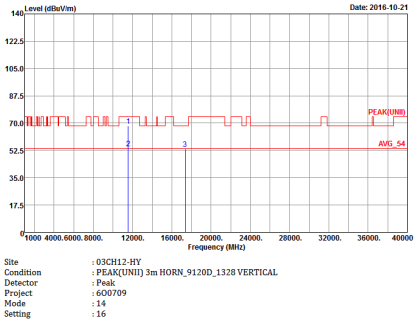
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

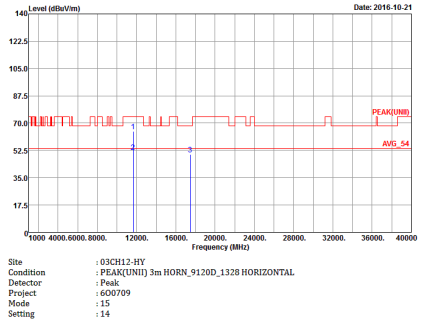
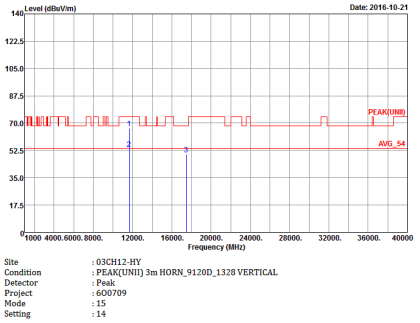
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 6O0709 Mode : 11 Power : 14.5	 Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 6O0709 Mode : 11 Power : 14.5

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

Band 4 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

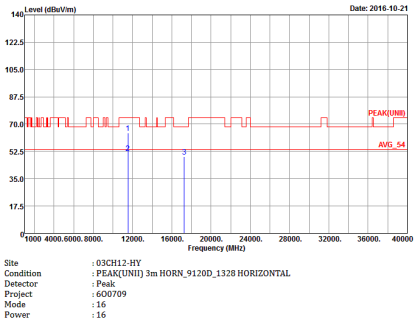
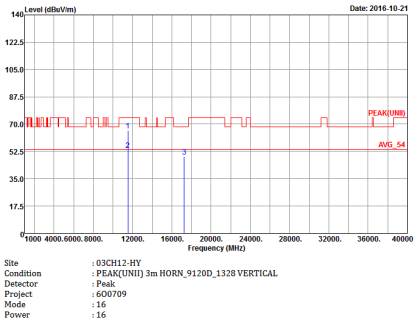
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

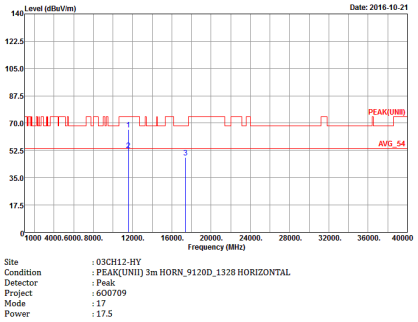
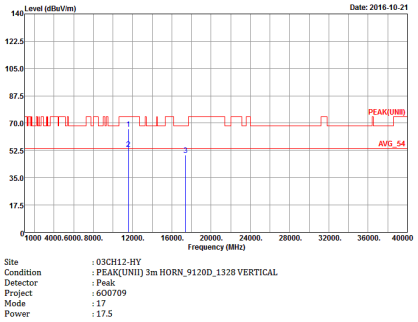
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz

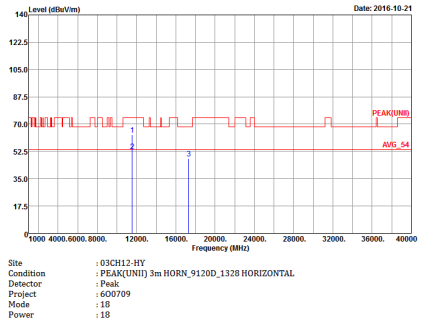
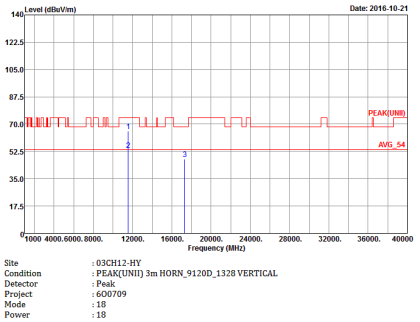
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Vertical
Peak Avg.		

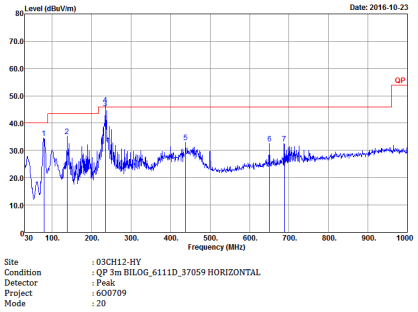
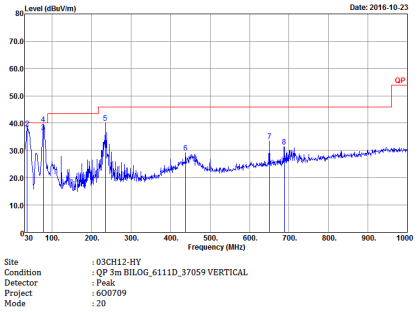
Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

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

Emission below 1GHz

5GHz WIFI 802.11n HT20 (LF)

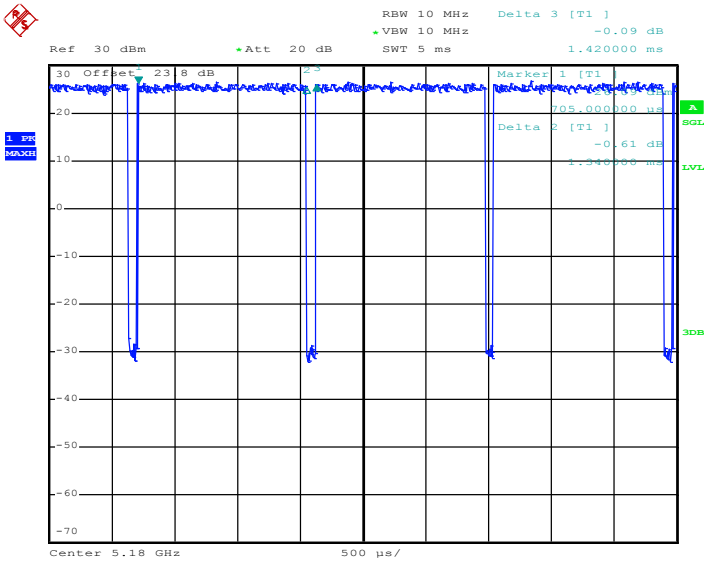
WIFI	5GHz 5725~5850MHz	
ANT	802.11n HT20 LF	
1+2	Horizontal	Vertical
QP / Peak		

Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1+2	802.11a for Ant 1	94.37	1340	0.75	1kHz
1+2	802.11a for Ant 2	95.07	1350	0.74	1kHz
1+2	5GHz 802.11n HT20 for Ant 1	94.03	1260	0.79	1kHz
1+2	5GHz 802.11n HT20 for Ant 2	94.78	1270	0.79	1kHz
1+2	5GHz 802.11n HT40 for Ant 1	88.57	620	1.61	3kHz
1+2	5GHz 802.11n HT40 for Ant 2	90.00	630	1.59	3kHz
1+2	5GHz 802.11ac VHT20 for Ant 1	94.07	1270	0.79	1kHz
1+2	5GHz 802.11ac VHT20 for Ant 2	94.80	1275	0.78	1kHz
1+2	5GHz 802.11ac VHT40 for Ant 1	90.00	630	1.59	3kHz
1+2	5GHz 802.11ac VHT40 for Ant 2	89.29	625	1.60	3kHz
1+2	5GHz 802.11ac VHT80 for Ant 1	81.44	316	3.16	10kHz
1+2	5GHz 802.11ac VHT80 for Ant 2	81.25	312	3.21	10kHz

MIMO <Ant. 1+2(1)>

802.11a



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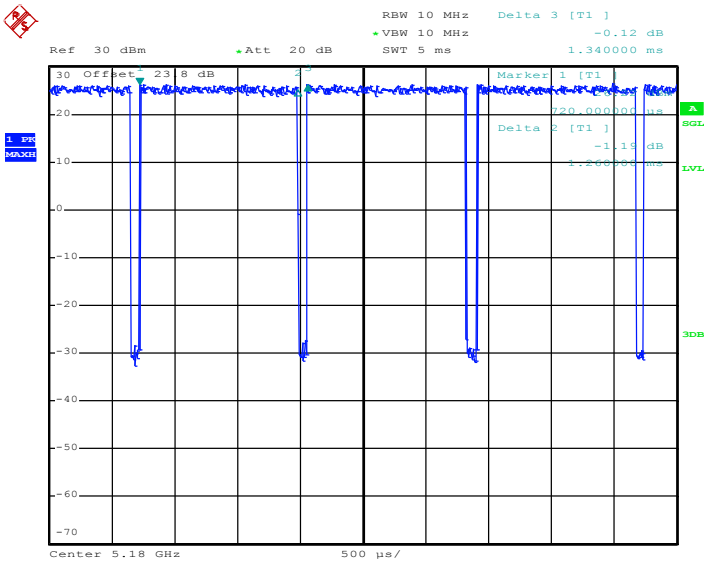
802.11n HT20



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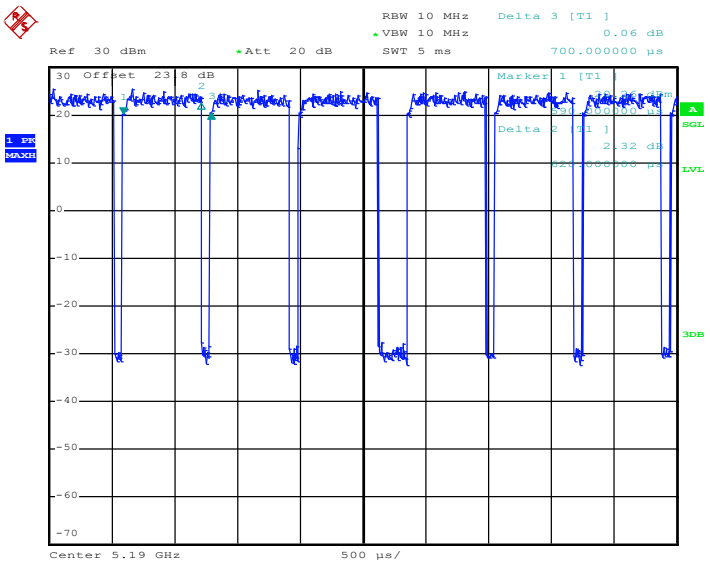
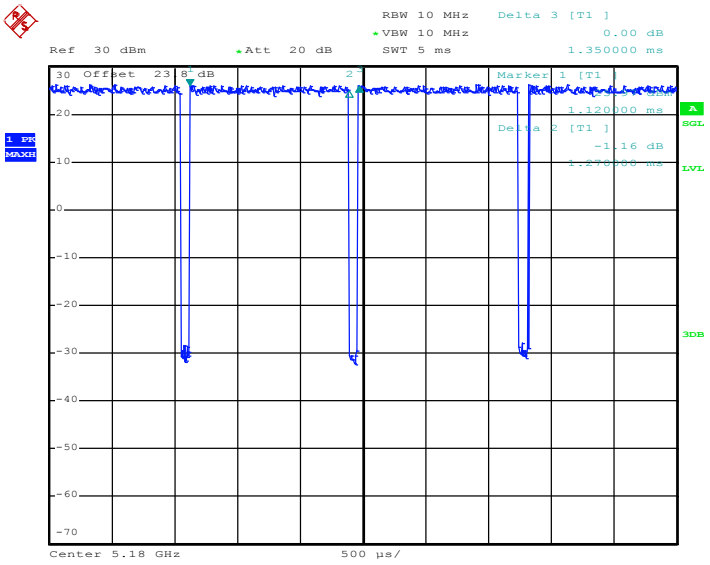
802.11n HT40



Date: 4.OCT.2016 22:06:00

802.11ac VHT20



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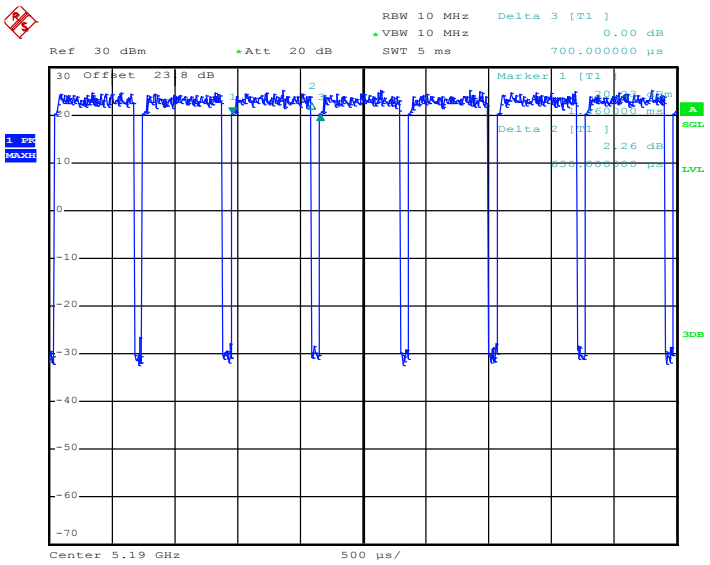
802.11ac VHT40



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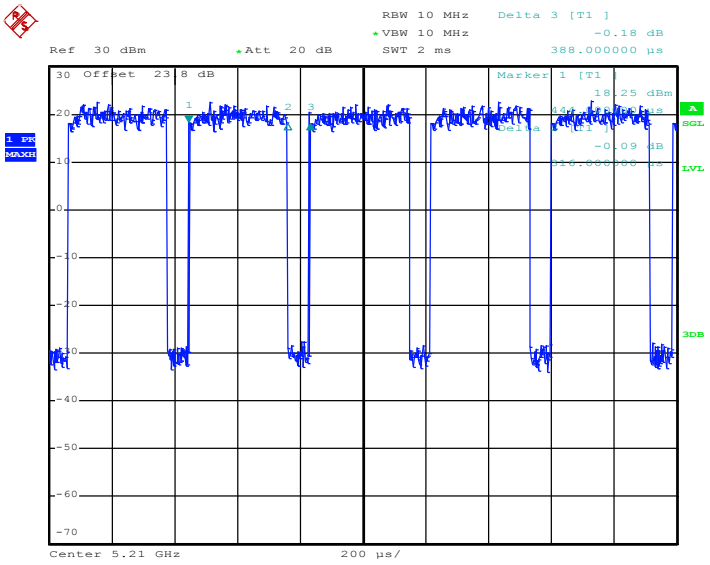
802.11ac VHT80



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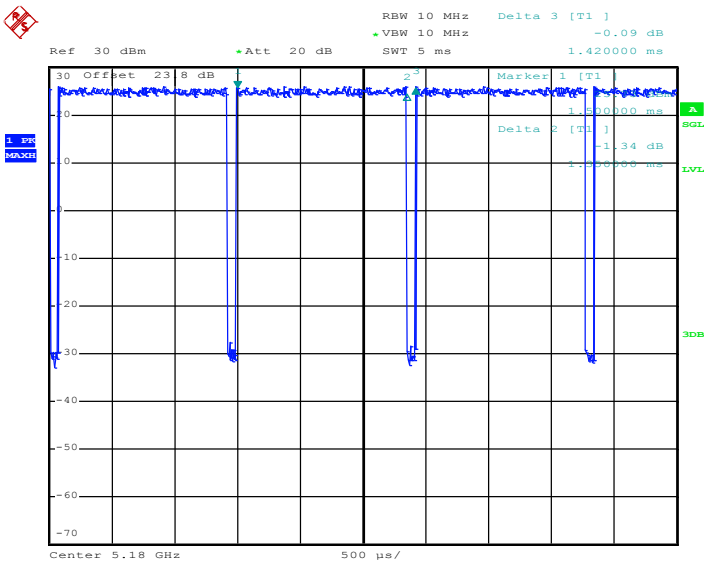
MIMO <Ant. 1+2(2)>

802.11a



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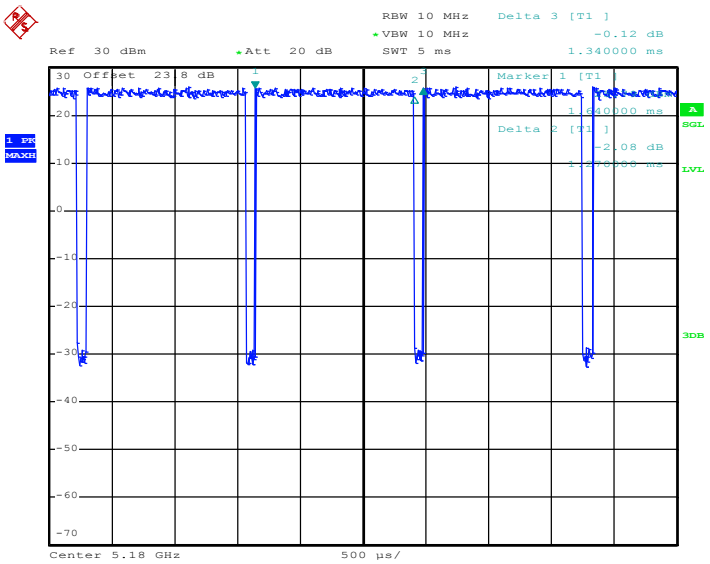
802.11n HT20



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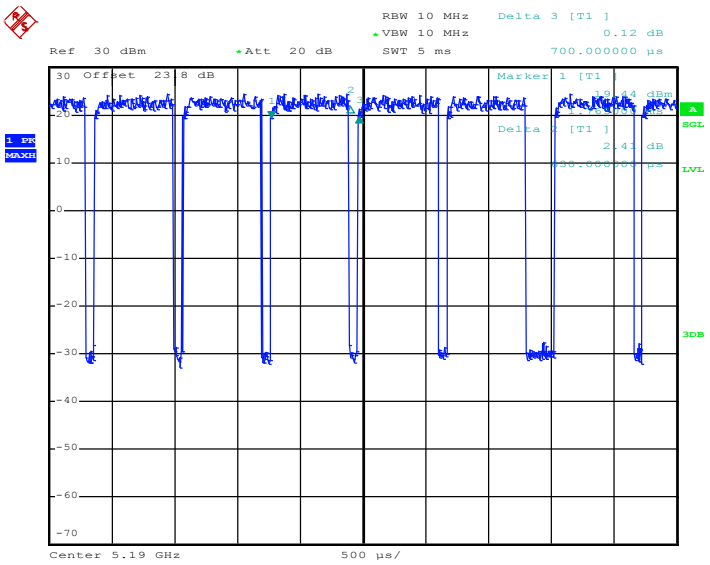
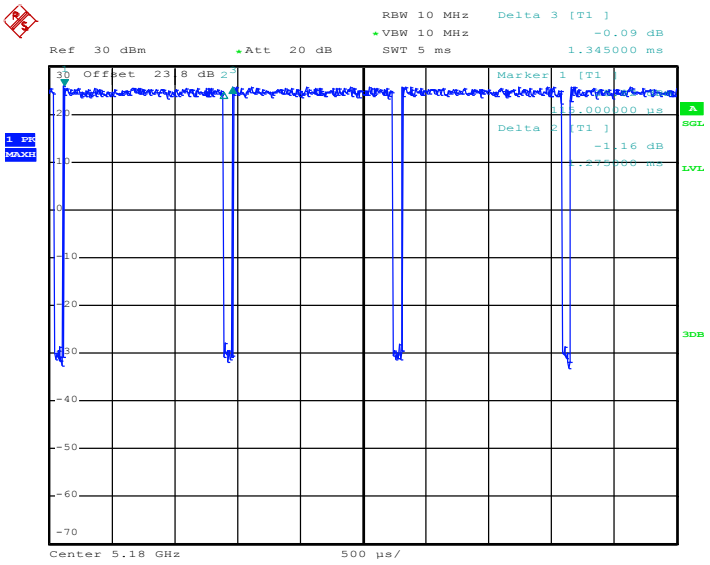
802.11n HT40



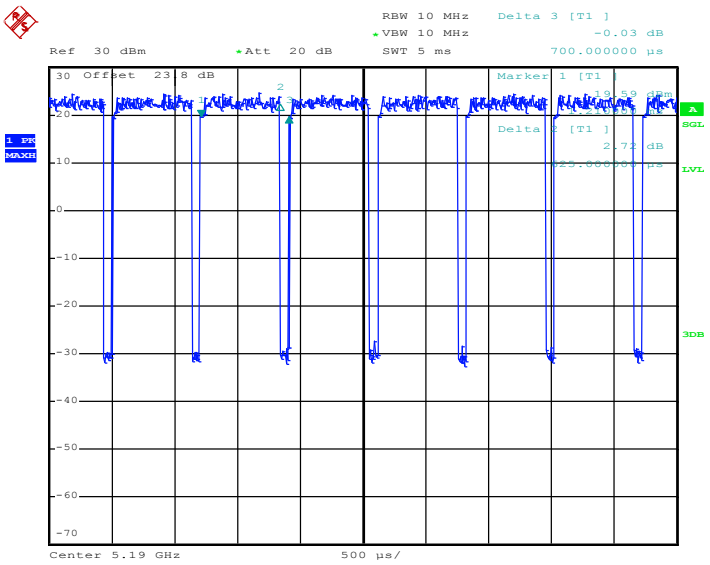
Date: 4.OCT.2016 22:06:47

802.11ac VHT20



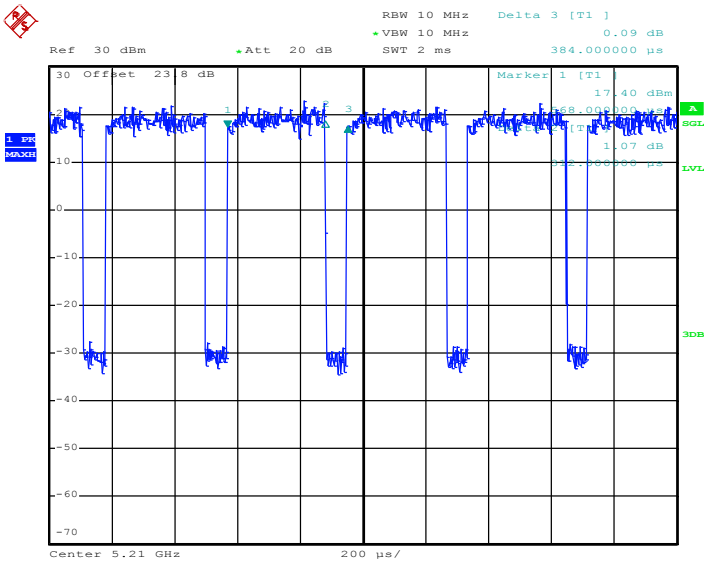
Date: 4.OCT.2016 22:00:01

802.11ac VHT40



Date: 4.OCT.2016 22:02:26

802.11ac VHT80



Date: 4.OCT.2016 22:09:06

Appendix E Conducted Spurious Emission in the Restricted Band

Test Engineer :	Peter Chiu, Karl Hou, and Nick Yu	Temperature :	21~23°C
		Relative Humidity :	54~58%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
802.11a CH 149 5745MHz		5649	-36.27	-9.27	-27	-45.98	2	4.7		3.01		P	
		5699.6	-16.18	-25.89	9.71	-26.02	2	4.83		3.01		P	
		5718.8	-7.61	-24.19	16.58	-17.49	2	4.87		3.01		P	
		5724.4	-2.69	-28.49	25.8	-12.57	2	4.87		3.01		P	
		5747	17.46	-9.54	27	7.54	2	4.91		3.01		P	
		5747	11.2			1.28	2	4.91		3.01		A	
		5853.2	-44.59	-65.19	20.6	-54.69	2	5.09		3.01		P	
		5856.8	-44.35	-60.72	16.37	-54.45	2	5.09		3.01		P	
		5888.4	-46.1	-46.15	0.05	-56.24	2	5.13		3.01		P	
		5945.6	-47.19	-20.19	-27	-57.38	2	5.18		3.01		P	

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5610.4	-39.74	-12.74	-27	-49.37	2	4.62		3.01		P	
		5693.4	-31.76	-36.89	5.13	-41.55	2	4.78		3.01		P	
		5719.4	-29.38	-46.17	16.79	-39.26	2	4.87		3.01		P	
		5723.6	-28.92	-53.12	24.2	-38.8	2	4.87		3.01		P	
		5787	19.18	-7.82	27	9.18	2	4.99		3.01		P	
		5787	13.18			3.18	2	4.99		3.01		A	
		5854.4	-33.22	-51.42	18.2	-43.32	2	5.09		3.01		P	
		5861.6	-34.39	-49.08	14.69	-44.51	2	5.11		3.01		P	
		5876	-38.09	-47.35	9.26	-48.21	2	5.11		3.01		P	
		5927.6	-49.3	-22.3	-27	-59.47	2	5.16		3.01		P	
802.11a													
CH 157													
5785MHz													

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5608.4	-36.86	-9.86	-27	-46.45	2	4.58		3.01		P	
		5681	-37.81	-33.79	-4.02	-47.56	2	4.74		3.01		P	
		5714	-37.22	-52.12	14.9	-47.06	2	4.83		3.01		P	
		5724	-39.31	-64.31	25	-49.19	2	4.87		3.01		P	
		5824	17.97	-9.03	27	7.91	2	5.05		3.01		P	
		5824	12.09			2.03	2	5.05		3.01		A	
		5851.2	-7.31	-31.91	24.6	-17.41	2	5.09		3.01		P	
802.11a		5855	-10.17	-27.17	17	-20.27	2	5.09		3.01		P	
CH 165		5877.4	-27.23	-35.45	8.22	-37.35	2	5.11		3.01		P	
5825MHz		5933.8	-43.12	-16.12	-27	-53.31	2	5.18		3.01		P	
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)

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
802.11a CH 149 5745MHz		11490	-45.24	-24.04	-21.2	-25.64	2	7.25	31.86	3.01		P	
		17235	-41.55	-14.55	-27	-24.46	2	9.29	31.39	3.01		P	
802.11a CH 157 5785MHz		11570	-45.19	-23.99	-21.2	-25.58	2	7.24	31.86	3.01		P	
		17355	-47.05	-20.05	-27	-30.02	2	9.34	31.38	3.01		P	
802.11a CH 165 5825MHz		11650	-41.21	-20.01	-21.2	-21.6	2	7.24	31.86	3.01		P	
		17475	-44.74	-17.74	-27	-27.77	2	9.39	31.37	3.01		P	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5645.8	-34.55	-7.55	-27	-44.26	2	4.7		3.01		P	
		5699.6	-14.75	-24.46	9.71	-24.59	2	4.83		3.01		P	
		5719.4	-6.52	-23.31	16.79	-16.4	2	4.87		3.01		P	
		5724	1.29	-23.71	25	-8.59	2	4.87		3.01		P	
		5743	17.25	-9.75	27	7.33	2	4.91		3.01		P	
		5743	10.98			1.06	2	4.91		3.01		A	
802.11n		5853.4	-43.76	-63.96	20.2	-53.86	2	5.09		3.01		P	
HT20		5861.8	-41.99	-56.61	14.62	-52.11	2	5.11		3.01		P	
CH 149		5878.2	-47.14	-54.76	7.62	-57.26	2	5.11		3.01		P	
5745MHz		5934.4	-48.96	-21.96	-27	-59.15	2	5.18		3.01		P	

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5603.8	-37.07	-10.07	-27	-46.66	2	4.58		3.01		P	
		5695	-32.64	-38.95	6.31	-42.43	2	4.78		3.01		P	
		5719.2	-29.01	-45.73	16.72	-38.89	2	4.87		3.01		P	
		5724	-25.64	-50.64	25	-35.52	2	4.87		3.01		P	
		5783	18.73	-8.27	27	8.73	2	4.99		3.01		P	
		5783	12.82			2.82	2	4.99		3.01		A	
		5850.2	-30.94	-57.54	26.6	-41.04	2	5.09		3.01		P	
		5861.8	-34.63	-49.25	14.62	-44.75	2	5.11		3.01		P	
		5876.8	-36.97	-45.63	8.66	-47.09	2	5.11		3.01		P	
		5925.8	-48.03	-21.03	-27	-58.2	2	5.16		3.01		P	
802.11n													
HT20													
CH 157													
5785MHz													

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5606.4	-36	-9	-27	-45.59	2	4.58		3.01		P	
		5662.8	-37.36	-19.86	-17.5	-47.07	2	4.7		3.01		P	
		5717.2	-37.05	-53.07	16.02	-46.89	2	4.83		3.01		P	
		5723.6	-37.59	-61.79	24.2	-47.47	2	4.87		3.01		P	
		5824	17.98	-9.02	27	7.92	2	5.05		3.01		P	
		5824	11.88			1.82	2	5.05		3.01		A	
802.11n		5850	-7.82	-34.82	27	-17.92	2	5.09		3.01		P	
HT20		5857.6	-8.51	-24.6	16.09	-18.61	2	5.09		3.01		P	
CH 165		5875.6	-25.08	-34.63	9.55	-35.2	2	5.11		3.01		P	
5825MHz		5930.2	-40.95	-13.95	-27	-51.12	2	5.16		3.01		P	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		11490	-44.13	-22.93	-21.2	-24.53	2	7.25	31.86	3.01		P	
		17235	-44.7	-17.7	-27	-27.61	2	9.29	31.39	3.01		P	
802.11n													
HT20													
CH 149													
5745MHz													
		11570	-45.05	-23.85	-21.2	-25.44	2	7.24	31.86	3.01		P	
		17355	-46.02	-19.02	-27	-28.99	2	9.34	31.38	3.01		P	
802.11n													
HT20													
CH 157													
5785MHz													
		11650	-43.24	-22.04	-21.2	-23.63	2	7.24	31.86	3.01		P	
		17475	-46.59	-19.59	-27	-29.62	2	9.39	31.37	3.01		P	
802.11n													
HT20													
CH 165													
5825MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5643.4	-27.94	-0.94	-27	-37.61	2	4.66		3.01		P	
		5699	-9.12	-18.38	9.26	-18.91	2	4.78		3.01		P	
		5719	-2.62	-19.27	16.65	-12.5	2	4.87		3.01		P	
		5722.6	-1.82	-24.02	22.2	-11.7	2	4.87		3.01		P	
		5757	13.71	-13.29	27	3.75	2	4.95		3.01		P	
		5757	7.89			-2.07	2	4.95		3.01		A	
		5852.6	-30.65	-52.45	21.8	-40.75	2	5.09		3.01		P	
		5860	-34.39	-49.64	15.25	-44.49	2	5.09		3.01		P	
		5882.4	-36.7	-41.2	4.5	-46.84	2	5.13		3.01		P	
		5925	-45.47	-18.47	-27	-55.64	2	5.16		3.01		P	
802.11n													
HT40													
CH 151													
5755MHz													

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5647.4	-31.52	-4.52	-27	-41.23	2	4.7		3.01		P	
		5700	-19.01	-29.01	10	-28.85	2	4.83		3.01		P	
		5719.2	-16.34	-33.06	16.72	-26.22	2	4.87		3.01		P	
		5724.6	-15.33	-41.53	26.2	-25.21	2	4.87		3.01		P	
		5793	15.6	-11.4	27	5.56	2	5.03		3.01		P	
		5793	9.69			-0.35	2	5.03		3.01		A	
		5852.8	-13.62	-35.02	21.4	-23.72	2	5.09		3.01		P	
		5855	-15.14	-32.14	17	-25.24	2	5.09		3.01		P	
		5875.8	-22.54	-31.95	9.41	-32.66	2	5.11		3.01		P	
		5929	-35.9	-8.9	-27	-46.07	2	5.16		3.01		P	
802.11n													
HT40													
CH 159													
5795MHz													

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		11510	-50.55	-29.35	-21.2	-30.94	2	7.24	31.86	3.01		P	
		17265	-47.64	-20.64	-27	-30.57	2	9.31	31.39	3.01		P	
802.11n													
HT40													
CH 151													
5755MHz													
		11590	-48.42	-27.22	-21.2	-28.81	2	7.24	31.86	3.01		P	
		17385	-48.19	-21.19	-27	-31.17	2	9.35	31.38	3.01		P	
802.11n													
HT40													
CH 159													
5795MHz													
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)

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5618.8	-27.33	-0.33	-27	-36.96	2	4.62		3.01		P	
		5686.6	-14.06	-14.18	0.12	-23.85	2	4.78		3.01		P	
		5717.6	-11.91	-28.07	16.16	-21.79	2	4.87		3.01		P	
		5722	-9.92	-30.92	21	-19.8	2	4.87		3.01		P	
		5773	9.47	-17.53	27	-0.53	2	4.99		3.01		P	
		5773	1.33			-8.67	2	4.99		3.01		A	
		5850.2	-18.98	-45.58	26.6	-29.08	2	5.09		3.01		P	
		5859	-19.6	-35.2	15.6	-29.7	2	5.09		3.01		P	
		5875.2	-28.28	-38.13	9.85	-38.4	2	5.11		3.01		P	
		5925.8	-40.58	-13.58	-27	-50.75	2	5.16		3.01		P	
802.11ac													
VHT80													
CH 155													
5775MHz													

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)

WIFI Ant. 1+2(1)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		11550	-57.63	-36.43	-21.2	-38.02	2	7.24	31.86	3.01		P	
		17325	-53.5	-26.5	-27	-36.46	2	9.33	31.38	3.01		P	
802.11ac													
VHT80													
CH 155													
5775MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Aux		Peak	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Factor		Avg.	
1+2(1)		(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dB)	(dB)	(dB)		(P/A)	
		99.93	-98.22	-46.52	-51.7	-71.5	2	0.46	32.19	3.01		P	
		115.59	-96.99	-45.29	-51.7	-70.35	2	0.55	32.2	3.01		P	
		155.55	-97.77	-46.07	-51.7	-71.22	2	0.65	32.21	3.01		P	
		650	-69.69	-20.49	-49.2	-43.94	2	1.42	32.18	3.01		P	
		775.3	-82.24	-33.04	-49.2	-56.8	2	1.55	32	3.01		P	
		962.2	-93.51	-52.31	-41.2	-69.42	2	1.78	30.88	3.01		P	
5GHz													
802.11ac													
VHT80													
LF													

Remark

1. No other spurious found.
2. All results are PASS against limit line.

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**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 E Conducted Spurious Emission in the Restricted Band

Test Engineer :	Peter Chiu, Karl Hou, and Nick Yu	Temperature :	21~23°C
		Relative Humidity :	54~58%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
802.11a CH 149 5745MHz		5649	-34.65	-7.65	-27	-44.36	2	4.7		3.01		P	
		5699.4	-18.1	-27.66	9.56	-27.89	2	4.78		3.01		P	
		5717.2	-4.34	-20.36	16.02	-14.18	2	4.83		3.01		P	
		5724.4	0.91	-24.89	25.8	-8.97	2	4.87		3.01		P	
		5743	21.39	-5.61	27	11.47	2	4.91		3.01		P	
		5743	15.06			5.14	2	4.91		3.01		A	
		5853.8	-38.16	-57.56	19.4	-48.26	2	5.09		3.01		P	
		5855.4	-38.87	-55.73	16.86	-48.97	2	5.09		3.01		P	
		5879	-41.34	-48.37	7.03	-51.46	2	5.11		3.01		P	
		5943.8	-41.24	-14.24	-27	-51.43	2	5.18		3.01		P	

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor	Aux Factor (dB)		Peak Avg. (P/A)	
		5611	-35.19	-8.19	-27	-44.82	2	4.62		3.01		P	
		5697.6	-32.44	-40.67	8.23	-42.23	2	4.78		3.01		P	
		5719.4	-30.22	-47.01	16.79	-40.1	2	4.87		3.01		P	
		5724.6	-24.93	-51.13	26.2	-34.81	2	4.87		3.01		P	
		5783	21.64	-5.36	27	11.64	2	4.99		3.01		P	
		5783	15.39			5.39	2	4.99		3.01		A	
		5850	-31.21	-58.21	27	-41.31	2	5.09		3.01		P	
		5859.6	-30.38	-45.77	15.39	-40.48	2	5.09		3.01		P	
		5875.6	-35.74	-45.29	9.55	-45.86	2	5.11		3.01		P	
		5949.2	-42	-15	-27	-52.19	2	5.18		3.01		P	
802.11a													
CH 157													
5785MHz													

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5613	-33.11	-6.11	-27	-42.74	2	4.62		3.01		P	
		5676.2	-34.46	-26.89	-7.57	-44.21	2	4.74		3.01		P	
		5718.2	-31.95	-48.32	16.37	-41.83	2	4.87		3.01		P	
		5721	-33.6	-52.6	19	-43.48	2	4.87		3.01		P	
		5827	21.82	-5.18	27	11.74	2	5.07		3.01		P	
		5827	15.05			4.97	2	5.07		3.01		A	
		5851.4	-3.2	-27.4	24.2	-13.3	2	5.09		3.01		P	
802.11a		5856.4	-5.84	-22.35	16.51	-15.94	2	5.09		3.01		P	
CH 165		5876.4	-15.49	-24.45	8.96	-25.61	2	5.11		3.01		P	
5825MHz		5926	-33.06	-6.06	-27	-43.23	2	5.16		3.01		P	
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)

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
802.11a CH 149 5745MHz		11490	-43.17	-21.97	-21.2	-23.57	2	7.25	31.86	3.01		P	
		17235	-39.07	-12.07	-27	-21.98	2	9.29	31.39	3.01		P	
802.11a CH 157 5785MHz		11570	-44.26	-23.06	-21.2	-24.65	2	7.24	31.86	3.01		P	
		17355	-40.99	-13.99	-27	-23.96	2	9.34	31.38	3.01		P	
802.11a CH 165 5825MHz		11650	-42.72	-21.52	-21.2	-23.11	2	7.24	31.86	3.01		P	
		17475	-35.77	-8.77	-27	-18.8	2	9.39	31.37	3.01		P	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5644	-34.37	-7.37	-27	-44.04	2	4.66		3.01		P	
		5699.4	-16.04	-25.6	9.56	-25.83	2	4.78		3.01		P	
		5719.8	-0.18	-17.11	16.93	-10.06	2	4.87		3.01		P	
		5724.8	3.12	-23.48	26.6	-6.76	2	4.87		3.01		P	
		5743	20.46	-6.54	27	10.54	2	4.91		3.01		P	
		5743	14.62			4.7	2	4.91		3.01		A	
802.11n		5854.8	-37.04	-54.44	17.4	-47.14	2	5.09		3.01		P	
HT20		5858.6	-37.76	-53.5	15.74	-47.86	2	5.09		3.01		P	
CH 149		5891	-41.09	-39.22	-1.87	-51.23	2	5.13		3.01		P	
5745MHz		5944	-41.35	-14.35	-27	-51.54	2	5.18		3.01		P	

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5622	-35.07	-8.07	-27	-44.7	2	4.62		3.01		P	
		5699.6	-32.82	-42.53	9.71	-42.66	2	4.83		3.01		P	
		5712	-28.89	-43.09	14.2	-38.73	2	4.83		3.01		P	
		5723.8	-25.59	-50.19	24.6	-35.47	2	4.87		3.01		P	
		5783	22.57	-4.43	27	12.57	2	4.99		3.01		P	
		5783	15.2			5.2	2	4.99		3.01		A	
		5854	-30.11	-49.11	19	-40.21	2	5.09		3.01		P	
		5855.2	-30.45	-47.38	16.93	-40.55	2	5.09		3.01		P	
		5886.2	-34.81	-36.49	1.68	-44.95	2	5.13		3.01		P	
		5950	-41.4	-14.4	-27	-51.59	2	5.18		3.01		P	
802.11n													
HT20													
CH 157													
5785MHz													

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5607.6	-33.57	-6.57	-27	-43.16	2	4.58		3.01		P	
		5655.8	-34.04	-11.35	-22.69	-43.75	2	4.7		3.01		P	
		5715	-29.87	-45.12	15.25	-39.71	2	4.83		3.01		P	
		5724	-32.64	-57.64	25	-42.52	2	4.87		3.01		P	
		5827	22.04	-4.96	27	11.96	2	5.07		3.01		P	
		5827	14.94			4.86	2	5.07		3.01		A	
802.11n		5850.6	-0.41	-26.21	25.8	-10.51	2	5.09		3.01		P	
HT20		5855.6	-5.55	-22.34	16.79	-15.65	2	5.09		3.01		P	
CH 165		5876.8	-18.56	-27.22	8.66	-28.68	2	5.11		3.01		P	
5825MHz		5926.4	-33.07	-6.07	-27	-43.24	2	5.16		3.01		P	

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		11490	-42.42	-21.22	-21.2	-22.82	2	7.25	31.86	3.01		P	
		17235	-40.06	-13.06	-27	-22.97	2	9.29	31.39	3.01		P	
802.11n													
HT20													
CH 149													
5745MHz													
		11570	-44.89	-23.69	-21.2	-25.28	2	7.24	31.86	3.01		P	
		17355	-41.54	-14.54	-27	-24.51	2	9.34	31.38	3.01		P	
802.11n													
HT20													
CH 157													
5785MHz													
		11650	-41.9	-20.7	-21.2	-22.29	2	7.24	31.86	3.01		P	
		17475	-35.68	-8.68	-27	-18.71	2	9.39	31.37	3.01		P	
802.11n													
HT20													
CH 165													
5825MHz													

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5643.2	-27.44	-0.44	-27	-37.11	2	4.66		3.01		P	H
		5699	-8.99	-18.25	9.26	-18.78	2	4.78		3.01		P	H
		5719.2	0.43	-16.29	16.72	-9.45	2	4.87		3.01		P	H
		5723.6	1.31	-22.89	24.2	-8.57	2	4.87		3.01		P	H
		5757	17.29	-9.71	27	7.33	2	4.95		3.01		P	H
		5757	10.82			0.86	2	4.95		3.01		A	H
		5853.8	-29.68	-49.08	19.4	-39.78	2	5.09		3.01		P	H
		5863	-30.87	-45.07	14.2	-40.99	2	5.11		3.01		P	H
		5881.6	-33.24	-38.34	5.1	-43.38	2	5.13		3.01		P	H
		5935.6	-38.78	-11.78	-27	-48.97	2	5.18		3.01		P	H
802.11n													H
HT40													H
CH 151													V
5755MHz													V
													V
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WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5643.4	-30.26	-3.26	-27	-39.93	2	4.66		3.01		P	
		5697.8	-21.44	-29.82	8.38	-31.23	2	4.78		3.01		P	
		5719.2	-12.91	-29.63	16.72	-22.79	2	4.87		3.01		P	
		5720.6	-13.58	-31.78	18.2	-23.46	2	4.87		3.01		P	
		5794	19.77	-7.23	27	9.73	2	5.03		3.01		P	
		5794	12.07			2.03	2	5.03		3.01		A	
		5850.2	-9.46	-36.06	26.6	-19.56	2	5.09		3.01		P	
		5858.2	-11.75	-27.63	15.88	-21.85	2	5.09		3.01		P	
		5878.4	-18.36	-25.83	7.47	-28.48	2	5.11		3.01		P	
		5939	-29.5	-2.5	-27	-39.69	2	5.18		3.01		P	
802.11n													
HT40													
CH 159													
5795MHz													

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

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		11510	-46.89	-25.69	-21.2	-27.28	2	7.24	31.86	3.01		P	
		17265	-43.19	-16.19	-27	-26.12	2	9.31	31.39	3.01		P	
802.11n													
HT40													
CH 151													
5755MHz													
		11590	-48.35	-27.15	-21.2	-28.74	2	7.24	31.86	3.01		P	
		17385	-42.92	-15.92	-27	-25.9	2	9.35	31.38	3.01		P	
802.11n													
HT40													
CH 159													
5795MHz													
													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)

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		5638.4	-27.78	-0.78	-27	-37.45	2	4.66		3.01		P	
		5699.4	-13.09	-22.65	9.56	-22.88	2	4.78		3.01		P	
		5719.4	-12.34	-29.13	16.79	-22.22	2	4.87		3.01		P	
		5722	-10.26	-31.26	21	-20.14	2	4.87		3.01		P	
		5777	10.91	-16.09	27	0.91	2	4.99		3.01		P	
		5777	2.77			-7.23	2	4.99		3.01		A	
		5850.6	-18.7	-44.5	25.8	-28.8	2	5.09		3.01		P	
		5870.6	-19.25	-30.79	11.54	-29.37	2	5.11		3.01		P	
		5879	-28.82	-35.85	7.03	-38.94	2	5.11		3.01		P	
		5935	-36.3	-9.3	-27	-46.49	2	5.18		3.01		P	
802.11ac													
VHT80													
CH 155													
5775MHz													

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)

WIFI Ant. 1+2(2)	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Aux Factor (dB)		Peak Avg. (P/A)	
		11550	-56.96	-35.76	-21.2	-37.35	2	7.24	31.86	3.01		P	
		17325	-47.66	-20.66	-27	-30.62	2	9.33	31.38	3.01		P	
802.11ac													
VHT80													
CH 155													
5775MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

5GHz WIFI 802.11n HT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Aux		Peak	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Factor		Avg.	
1+2(2)		(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dB)	(dB)	(dB)		(P/A)	
		102.36	-81.19	-29.49	-51.7	-54.47	2	0.46	32.19	3.01		P	
		242.76	-101.78	-52.58	-49.2	-75.47	2	0.84	32.16	3.01		P	
		298.92	-101.05	-51.85	-49.2	-74.89	2	0.9	32.07	3.01		P	
		650	-78.09	-28.89	-49.2	-52.34	2	1.42	32.18	3.01		P	
		774.6	-84.88	-35.68	-49.2	-59.44	2	1.55	32	3.01		P	
		970.6	-97.35	-56.15	-41.2	-73.34	2	1.78	30.8	3.01		P	
5GHz													
802.11n													
HT40													
LF													

Remark

1. No other spurious found.
2. All results are PASS against limit line.

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

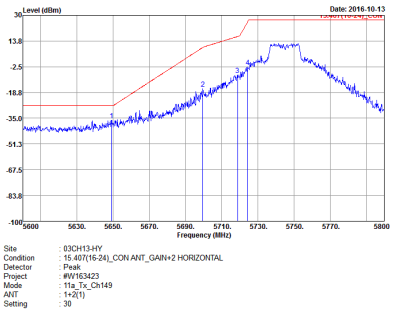
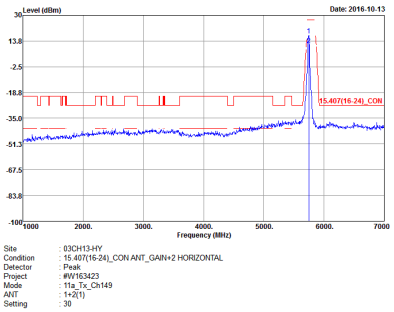
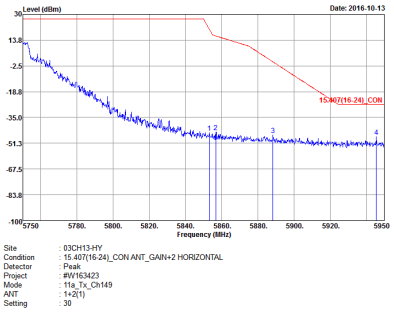
Both peak and average measured complies with the limit line, so test result is "PASS".

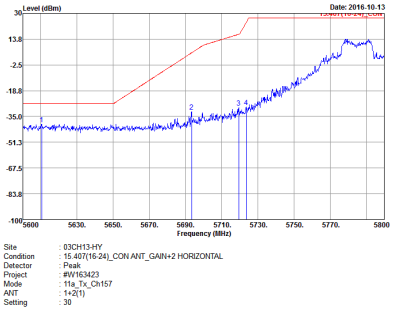
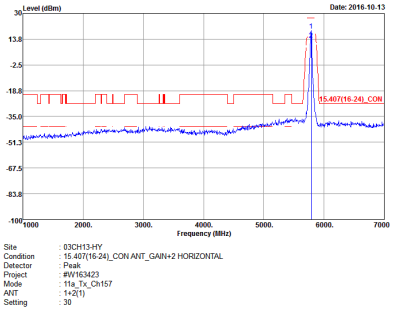
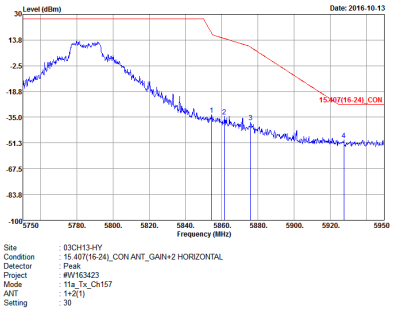
Appendix F. Conducted Spurious Emission in the Restricted Band Plots

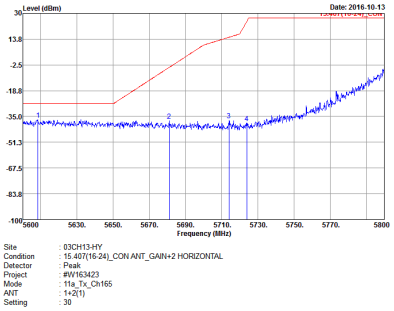
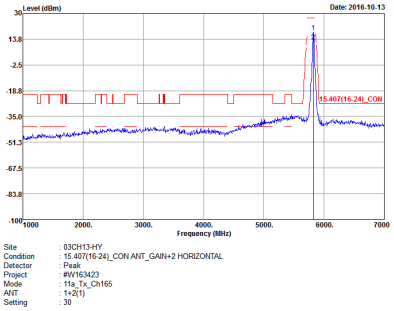
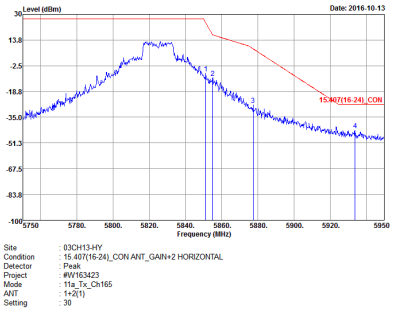
Test Engineer :	Peter Chiu, Karl Hou, and Nick Yu	**Temperature :**	21~23°C
		Relative Humidity :	54~58%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge)

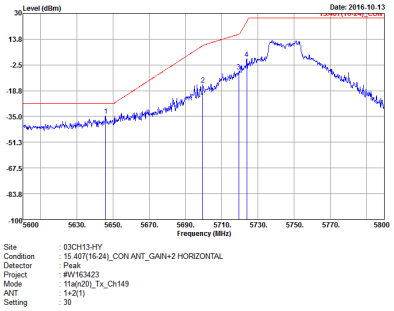
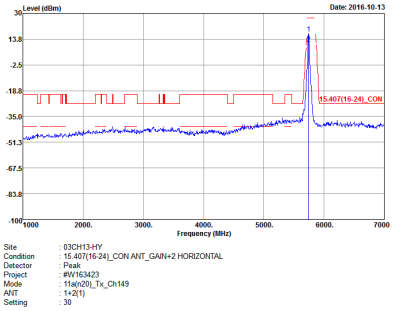
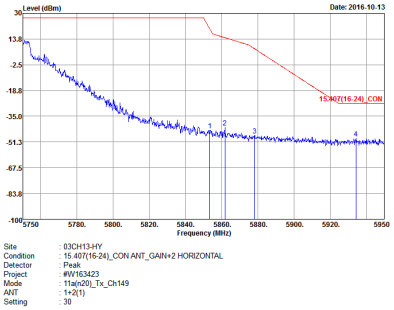
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11a CH149 5745MHz	
1+2(1)	Band Edge	Fundamental
Peak		
Peak		Left blank

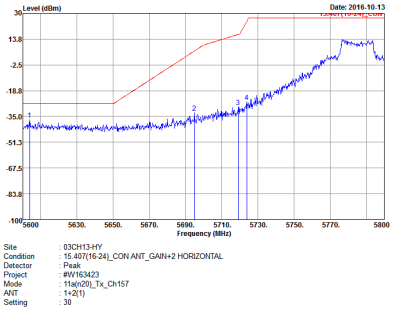
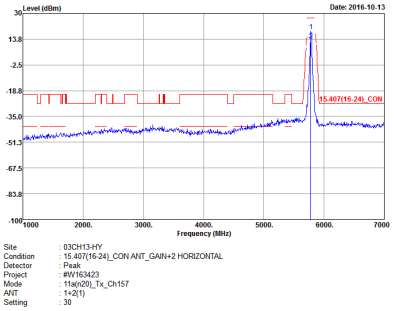
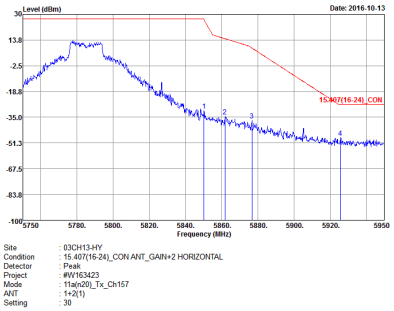
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11a CH157 5785MHz	
1+2(1)	Band Edge	Fundamental
Peak		
Peak		Left blank

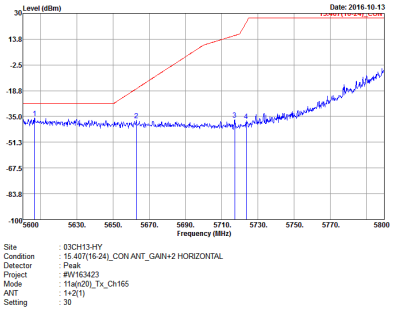
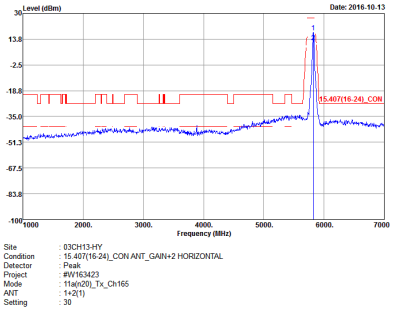
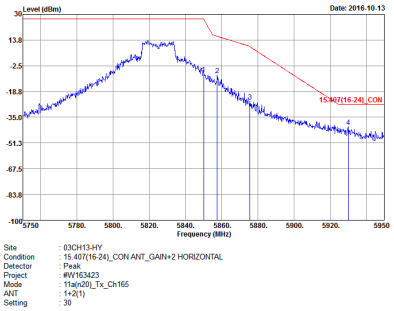
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11a CH165 5825MHz	
1+2(1)	Band Edge	Fundamental
Peak		
Peak		Left blank

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Band Edge)

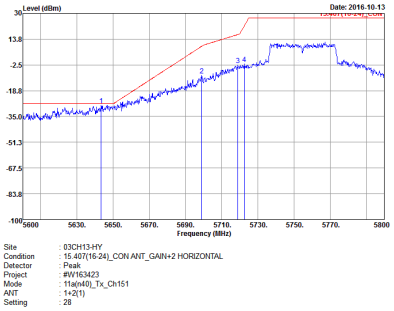
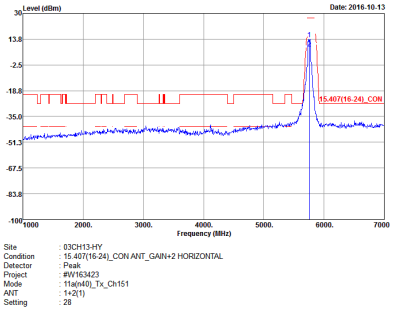
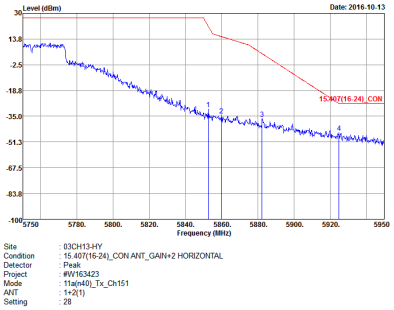
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11n HT20 CH149 5745MHz	
1+2(1)	Band Edge	Fundamental
Peak		
Peak		Left blank

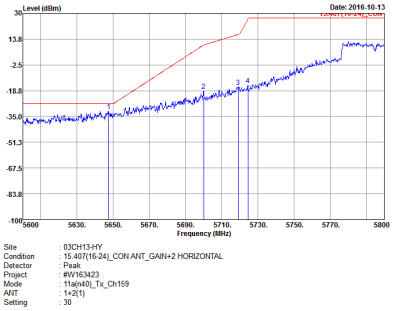
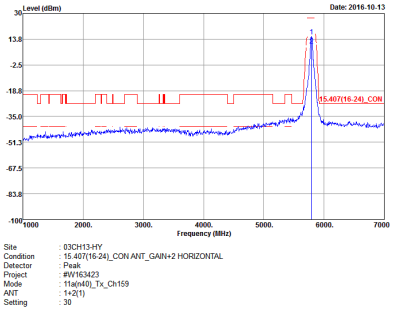
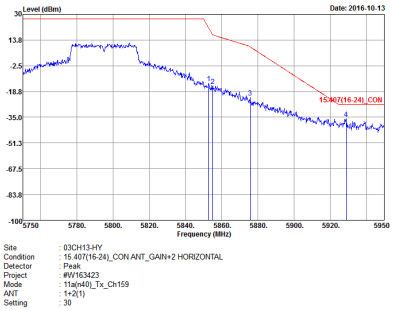
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11n HT20 CH157 5785MHz	
1+2(1)	Band Edge	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11n HT20 CH165 5825MHz	
1+2(1)	Band Edge	Fundamental
Peak		
Peak		Left blank

Band 4 5725~5850MHz

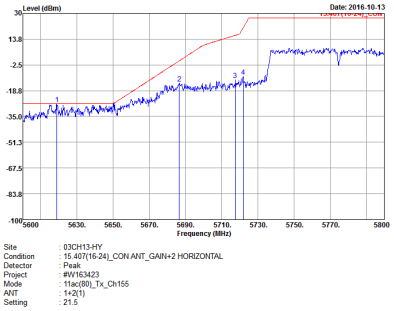
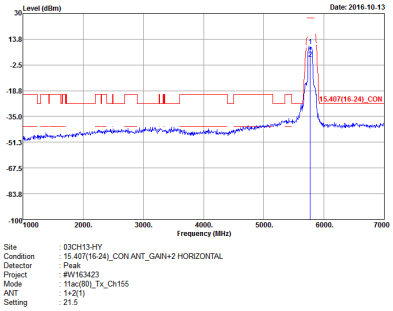
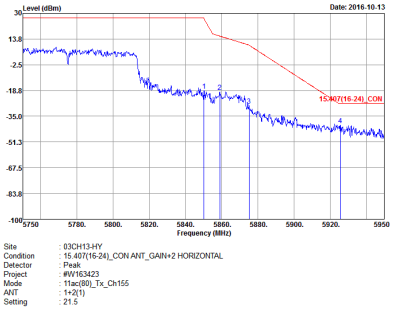
WIFI 802.11n HT40 (Band Edge)

WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11n HT40 CH151 5755MHz	
1+2(1)	Band Edge	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11n HT40 CH159 5795MHz	
1+2(1)	Band Edge	Fundamental
Peak		
Peak		Left blank

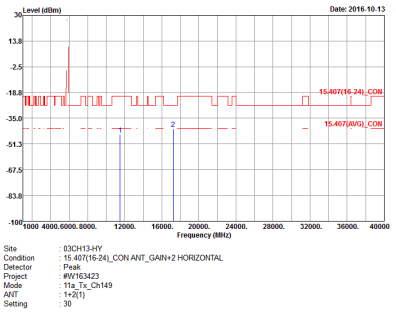
Band 4 5725~5850MHz

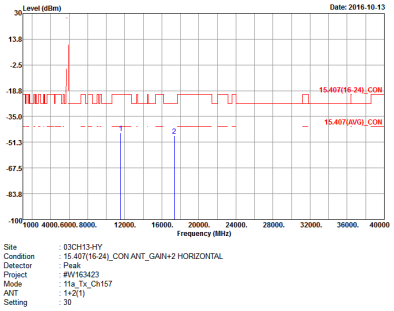
WIFI 802.11ac VHT80 (Band Edge)

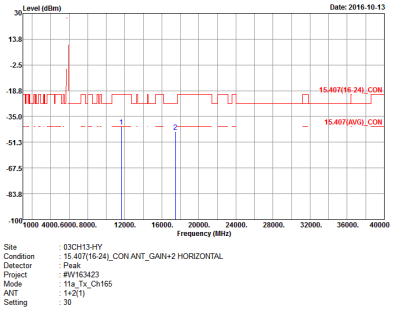
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2(1)	Band Edge	Fundamental
Peak		
Peak		Left blank

Band 4 - 5725~5850MHz

WIFI 802.11a (Harmonic)

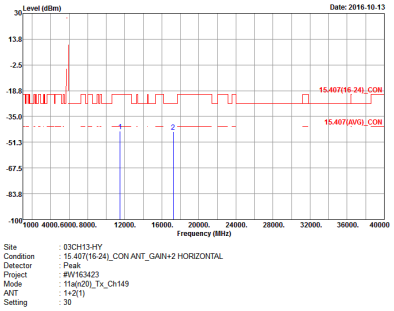
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11a CH149 5745MHz	
1+2(1)		
Peak Avg.		Left blank

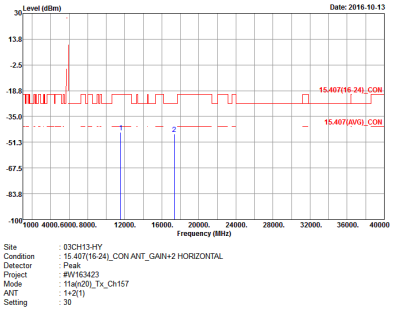
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11a CH157 5785MHz	
1+2(1)		
Peak Avg.		Left blank

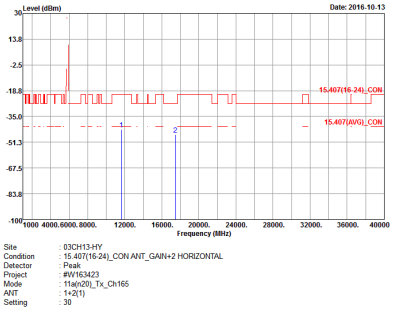
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11a CH165 5825MHz	
1+2(1)		
Peak Avg.		Left blank

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic)

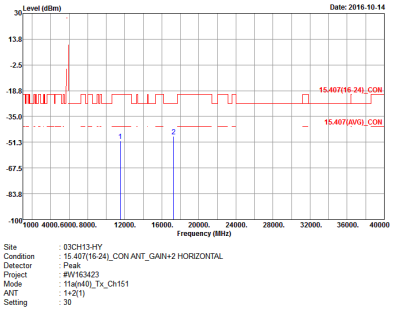
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11n HT20 CH149 5745MHz	
1+2(1)		
Peak Avg.		Left blank

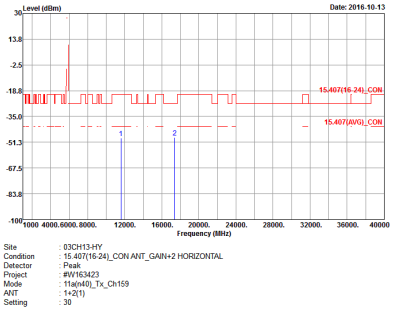
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11n HT20 CH157 5785MHz	
1+2(1)		
Peak Avg.		Left blank

WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11n HT20 CH165 5825MHz	
1+2(1)		
Peak Avg.		Left blank

Band 4 5725~5850MHz

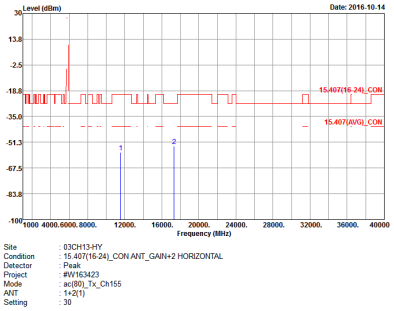
WIFI 802.11n HT40 (Harmonic)

WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11n HT40 CH151 5755MHz	
1+2(1)		
Peak Avg.		Left blank

WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11n HT40 CH159 5795MHz	
1+2(1)		
Peak Avg.		Left blank

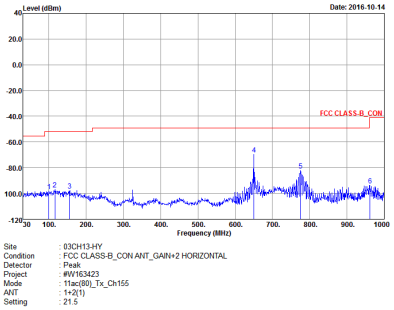
Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Harmonic)

WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2(1)		
Peak Avg.		Left blank

Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (LF)

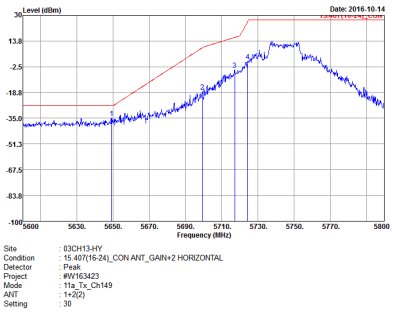
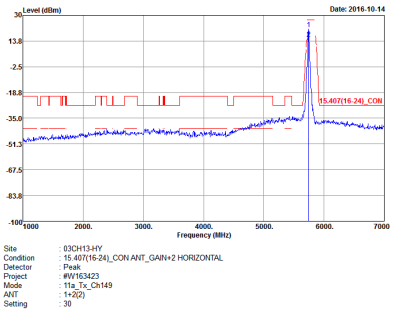
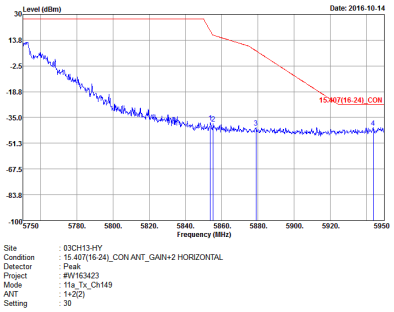
WIFI	5GHz 5725~5850MHz	
ANT	802.11ac VHT80 LF	
1+2(1)		
QP / Peak		Left blank

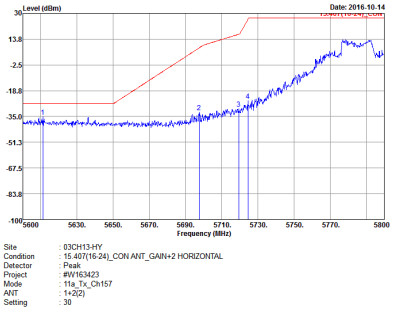
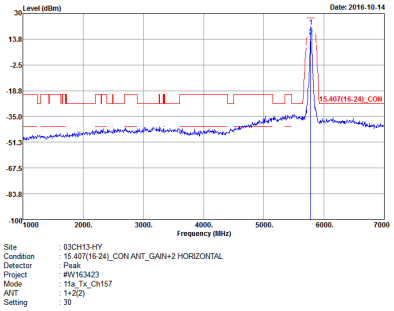
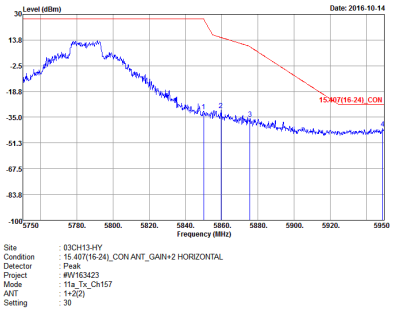
Appendix F. Conducted Spurious Emission in the Restricted Band Plots

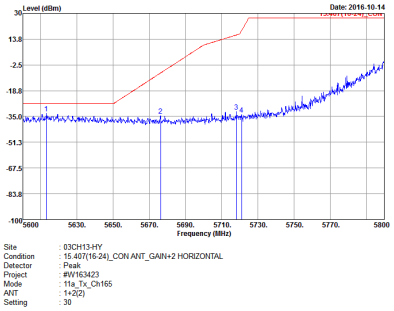
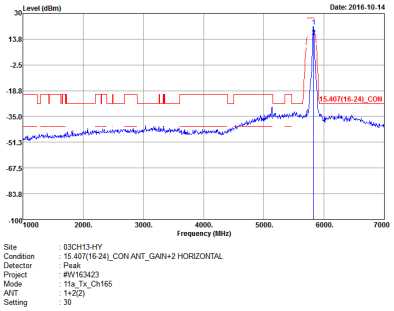
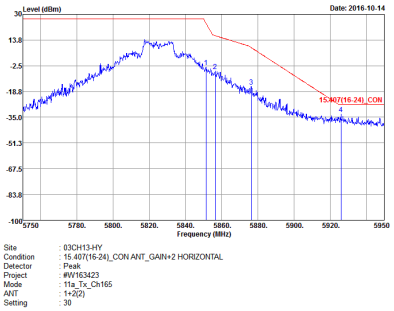
Test Engineer :	Peter Chiu, Karl Hou, and Nick Yu	**Temperature :**	21~23°C
		Relative Humidity :	54~58%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge)

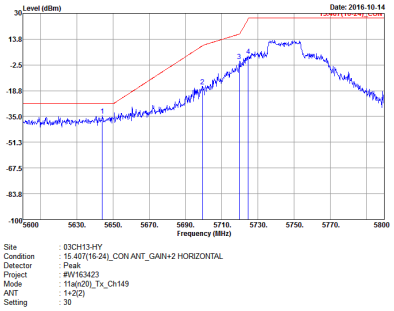
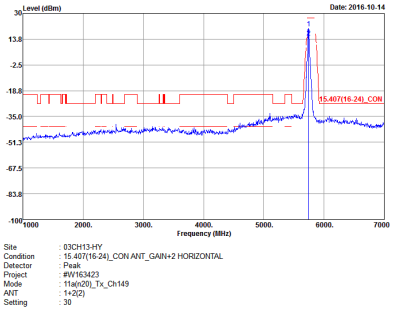
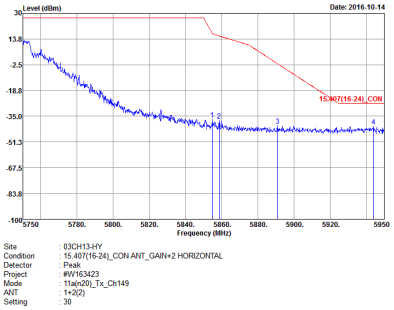
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11a CH149 5745MHz	
1+2(2)	Band Edge	Fundamental
Peak		
Peak		Left blank

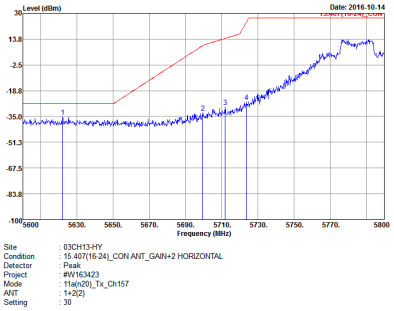
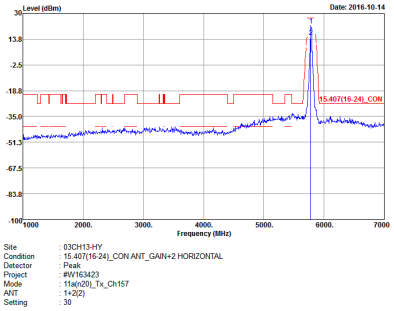
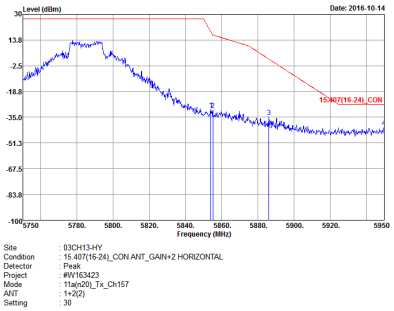
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11a CH157 5785MHz	
1+2(2)	Band Edge	Fundamental
Peak		
Peak		Left blank

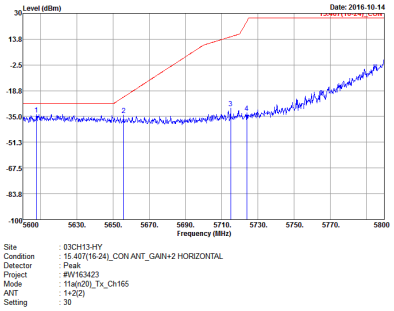
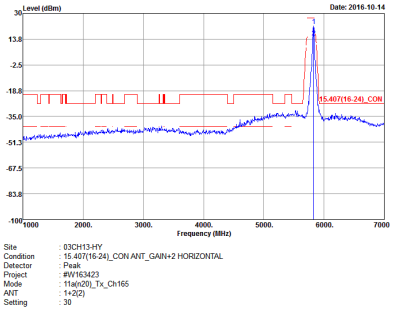
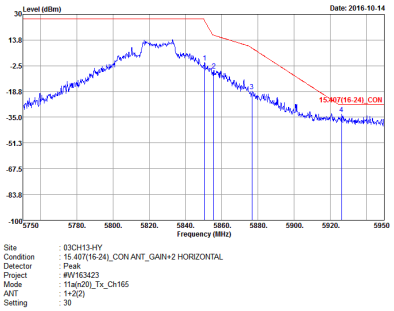
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11a CH165 5825MHz	
1+2(2)	Band Edge	Fundamental
Peak		
Peak		Left blank

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Band Edge)

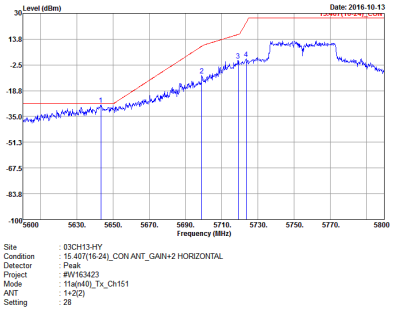
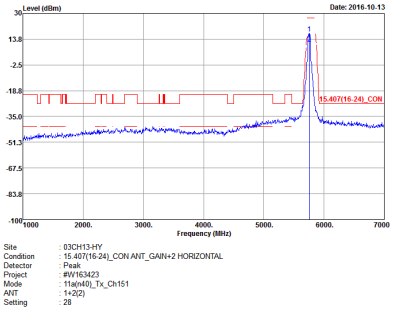
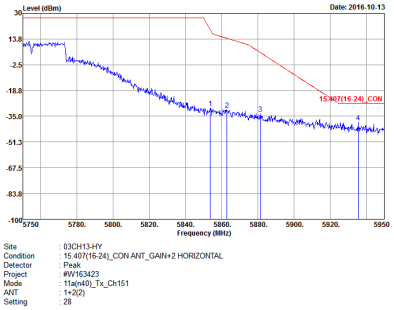
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11n HT20 CH149 5745MHz	
1+2(2)	Band Edge	Fundamental
Peak		
Peak		Left blank

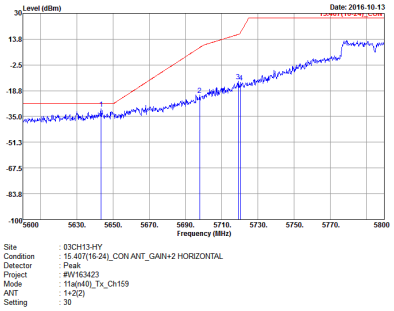
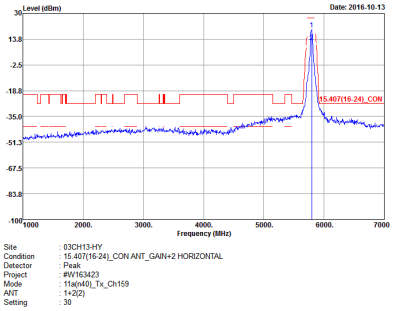
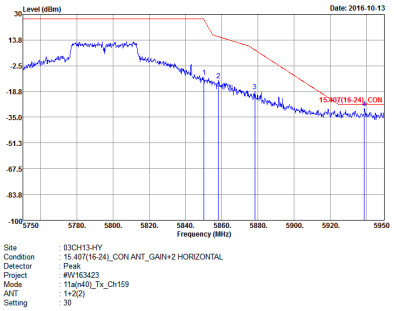
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11n HT20 CH157 5785MHz	
1+2(2)	Band Edge	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11n HT20 CH165 5825MHz	
1+2(2)	Band Edge	Fundamental
Peak		
Peak		Left blank

Band 4 5725~5850MHz

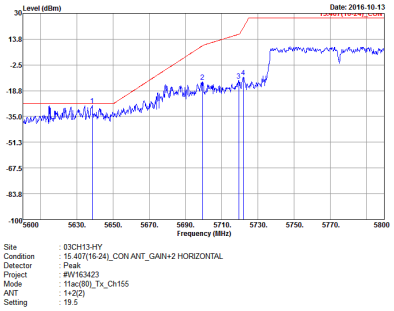
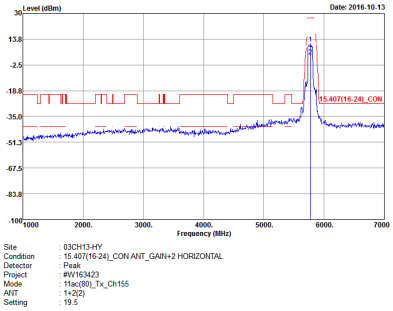
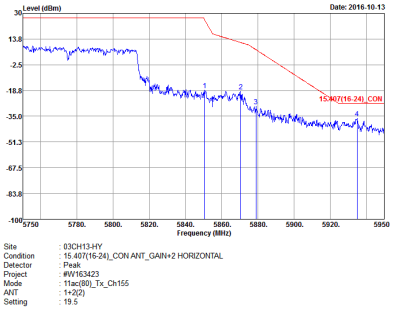
WIFI 802.11n HT40 (Band Edge)

WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11n HT40 CH151 5755MHz	
1+2(2)	Band Edge	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11n HT40 CH159 5795MHz	
1+2(2)	Band Edge	Fundamental
Peak		
Peak		Left blank

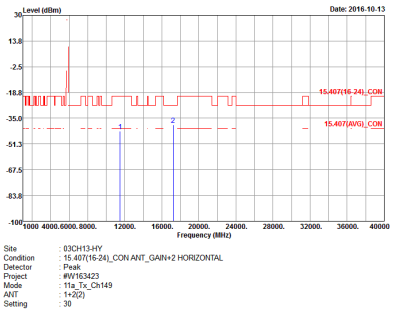
Band 4 5725~5850MHz

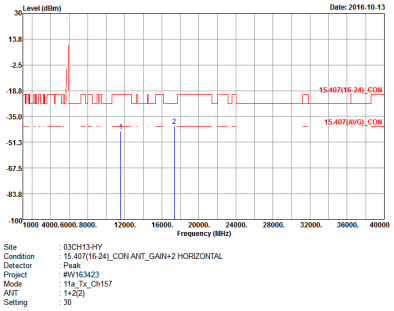
WIFI 802.11ac VHT80 (Band Edge)

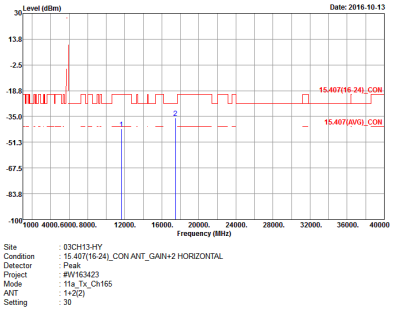
WIFI	Band 4 5725~5850MHz Band Edge	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2(2)	Band Edge	Fundamental
Peak		
Peak		Left blank

Band 4 - 5725~5850MHz

WIFI 802.11a (Harmonic)

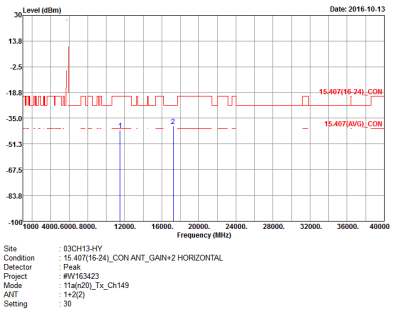
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11a CH149 5745MHz	
1+2(2)		
Peak Avg.		Left blank

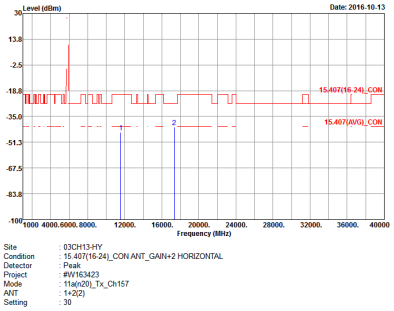
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11a CH157 5785MHz	
1+2(2)		
Peak Avg.		Left blank

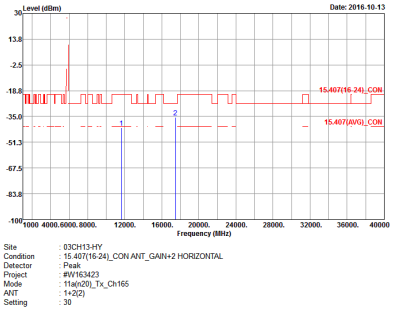
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11a CH165 5825MHz	
1+2(2)		
Peak Avg.		Left blank

Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (Harmonic)

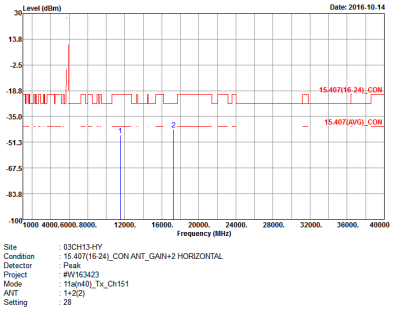
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11n HT20 CH149 5745MHz	
1+2(2)		
Peak Avg.		Left blank

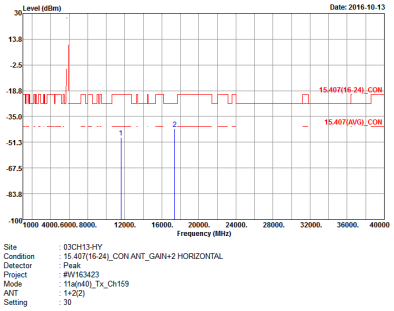
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11n HT20 CH157 5785MHz	
1+2(2)		
Peak Avg.		Left blank

WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11n HT20 CH165 5825MHz	
1+2(2)		
Peak Avg.		Left blank

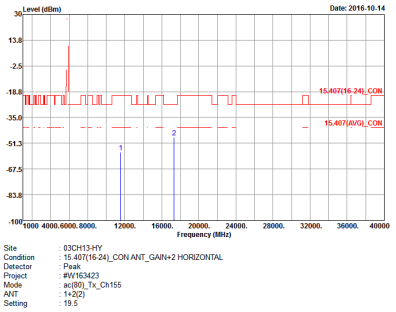
Band 4 5725~5850MHz

WIFI 802.11n HT40 (Harmonic)

WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11n HT40 CH151 5755MHz	
1+2(2)		
Peak Avg.		Left blank

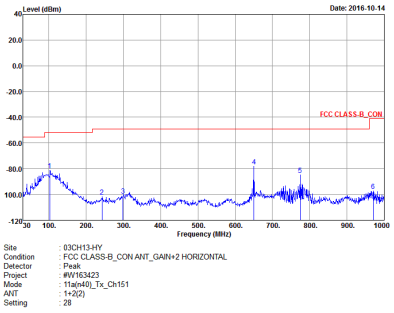
WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11n HT40 CH159 5755MHz	
1+2(2)		
Peak Avg.		Left blank

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

WIFI	Band 4 5725~5850MHz Harmonic	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2(2)		
Peak Avg.		Left blank

Emission below 1GHz

5GHz WIFI 802.11n HT40 (LF)

WIFI	5GHz 5725~5850MHz	
ANT	802.11n HT40 LF	
1+2(2)		
QP / Peak		Left blank