FCC RF Test Report

APPLICANT	:	Wistron Corporation
EQUIPMENT	:	Tablet PC
BRAND NAME	:	Lenovo
MODEL NAME	:	TP00082A
FCC ID	:	PU5-TP00082AI
STANDARD	:	FCC Part 15 Subpart E §15.407
CLASSIFICATION	:	(NII) Unlicensed National Information Infrastructure

Equipment: Intel 8265D2W tested inside of Lenovo Tablet PC

This is a partial report which is included the conducted emission and radiated emission test items. The product was received on Sep. 12, 2016 and testing was completed on Nov. 21, 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.

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR5N2711-09E	Rev. 01	Initial issue of report	Dec. 05, 2016

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) &15.209(a)	Pass	Under limit 6.25 dB at 35.670 MHz
3.2	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 9.30 dB at 0.470 MHz and 0.550 MHz
3.3	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.4	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Wistron Corporation
21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist, New Taipei City 221,Taiwan R.O.C.

1.2 Manufacturer

Wistron Corporation
21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist, New Taipei City 221,Taiwan R.O.C.

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Tablet PC
Brand Name	Lenovo
Model Name	TP00082A
FCC ID	PU5-TP00082AI
Integrated WLAN Module	Brand Name: Intel Model Name: 8265D2W
EUT supports Radios application	WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. Equipment: Intel 8265D2W tested inside of Lenovo Tablet PC.

Antenna Information		
Manufacturer	PULSE	
Antenna Type	Main: Dipole Antenna	Aux.: Dipole Antenna
Part Number	025.900FC.0001	025.900FD.0001
Peak Gain	WLAN (2.4GHz): -0.82 WLAN (5GHz): 2.31	WLAN (2.4GHz): 1.39 Bluetooth : 1.39 WLAN (5GHz): 3.13

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>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 Function Description</td><td>
<table>
<tr><td></td><td>Ant. 1</td><td>Ant. 2</td></tr>
<tr><td>802.11 a/n/ac</td><td>V</td><td>V</td></tr>
<tr><td>802.11 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.

<table>
<tr><td>Test Site</td><td colspan="2">SPORTON INTERNATIONAL INC.</td></tr>
<tr><td>Test Site Location</td><td colspan="2">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</td></tr>
<tr><td rowspan="2">Test Site No.</td><td colspan="2">Sporton Site No.</td></tr>
<tr><td>CO05-HY</td><td>03CH07-HY</td></tr>
</table>

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.
- FCC KDB 644545 D03 Guidance for IEEE 802 11ac New Rules v01
- ANSI C63.10-2013

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

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 (Z plane for Ant. 2; X plane for Ant. 1+2) 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.

Single Antenna

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

MIMO Antenna

Modulation	Data Rate
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) Tx + TF + TC

Remark:

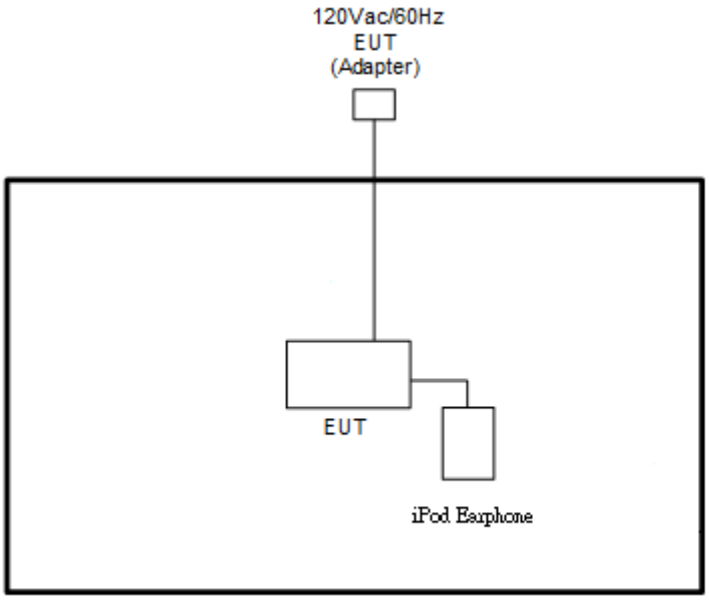
1. TF stands for Test Function, and consists of MPEG4 and H-pattern.
2. TC stands for Test Configuration, and consists of iPod Earphone, USB HD, Adapter, SD Card, and DP Cable.

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

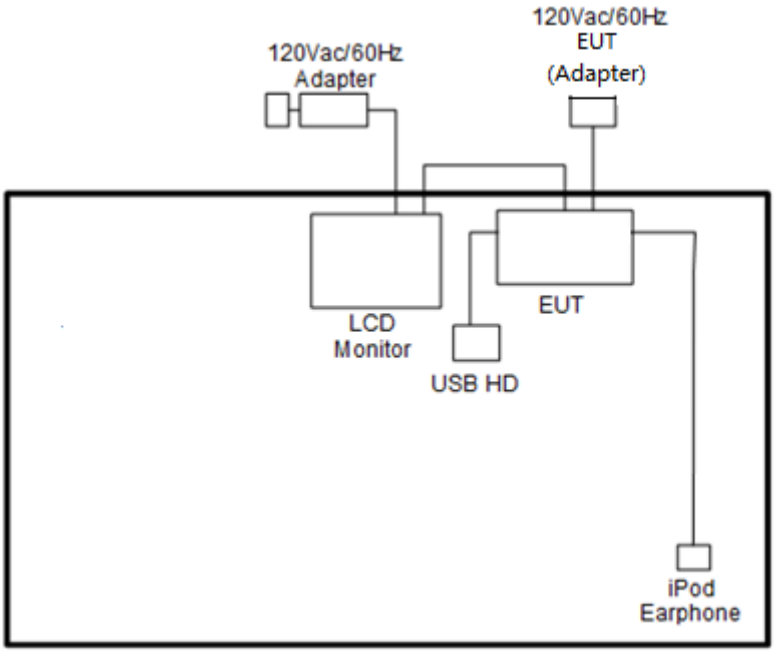
Ch. #		Band IV：5725-5850 MHz		
		802.11ac VHT20	802.11ac VHT40	802.11ac VHT80
L	Low	149	151	-
M	Middle	157	-	155
H	High	165	159	-

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 Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
2.	LCD Monitor	DELL	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
3.	USB HD	PQI	H568V	FCC DoC	Unshielded, 0.5 m	N/A
4.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.5 EUT Operation Test Setup

The programmed RF utility, “DRTU Tool”, is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

3 Test Result

3.1 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.

3.1.1 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.

3.1.2 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 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

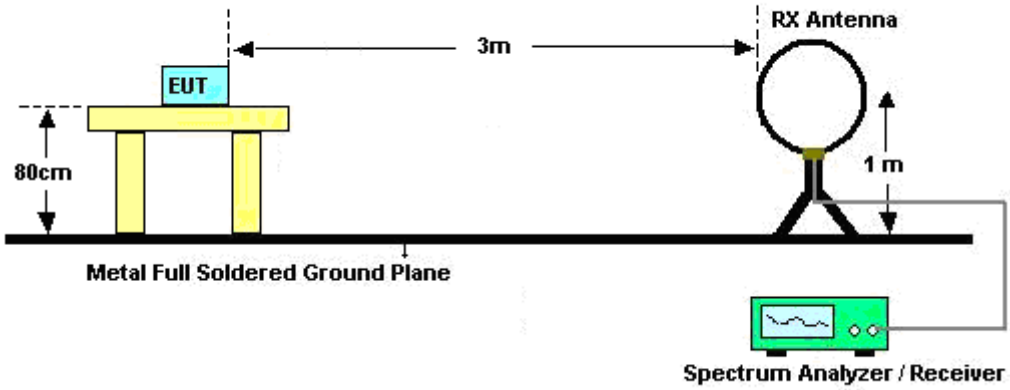
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   - 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.

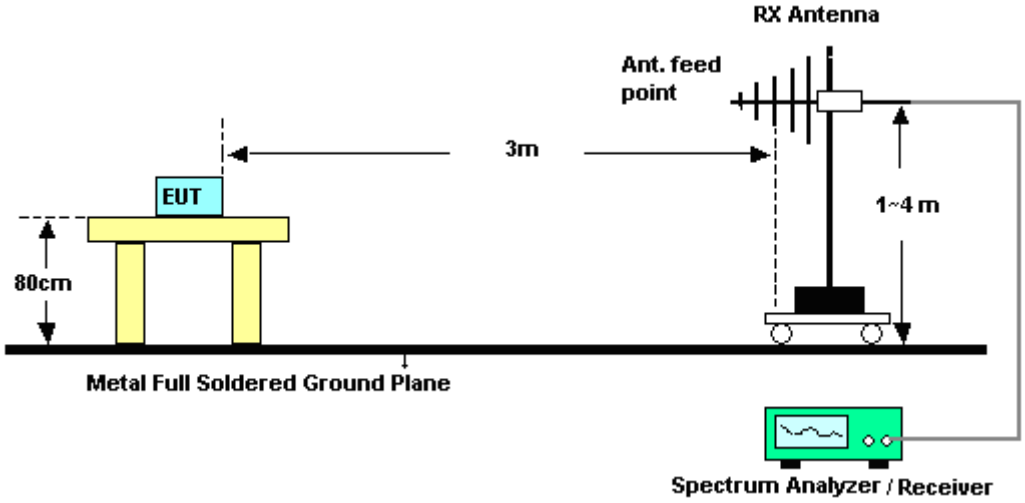
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband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

3.1.4 Test Setup

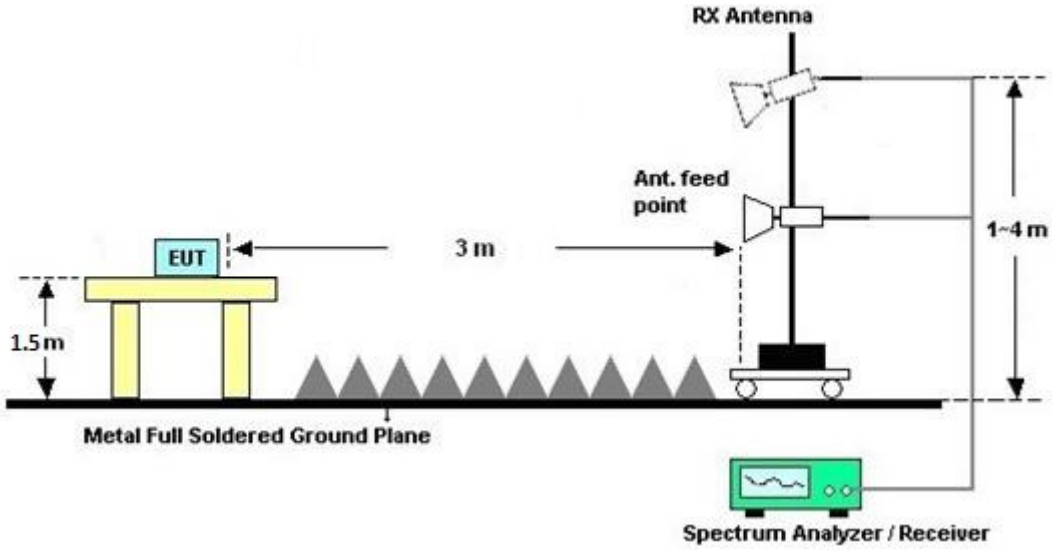
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.1.5 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.

3.1.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix A and B.

3.1.7 Duty Cycle

Please refer to Appendix C.

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

Please refer to Appendix A and B.

3.2 AC Conducted Emission Measurement

3.2.1 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.

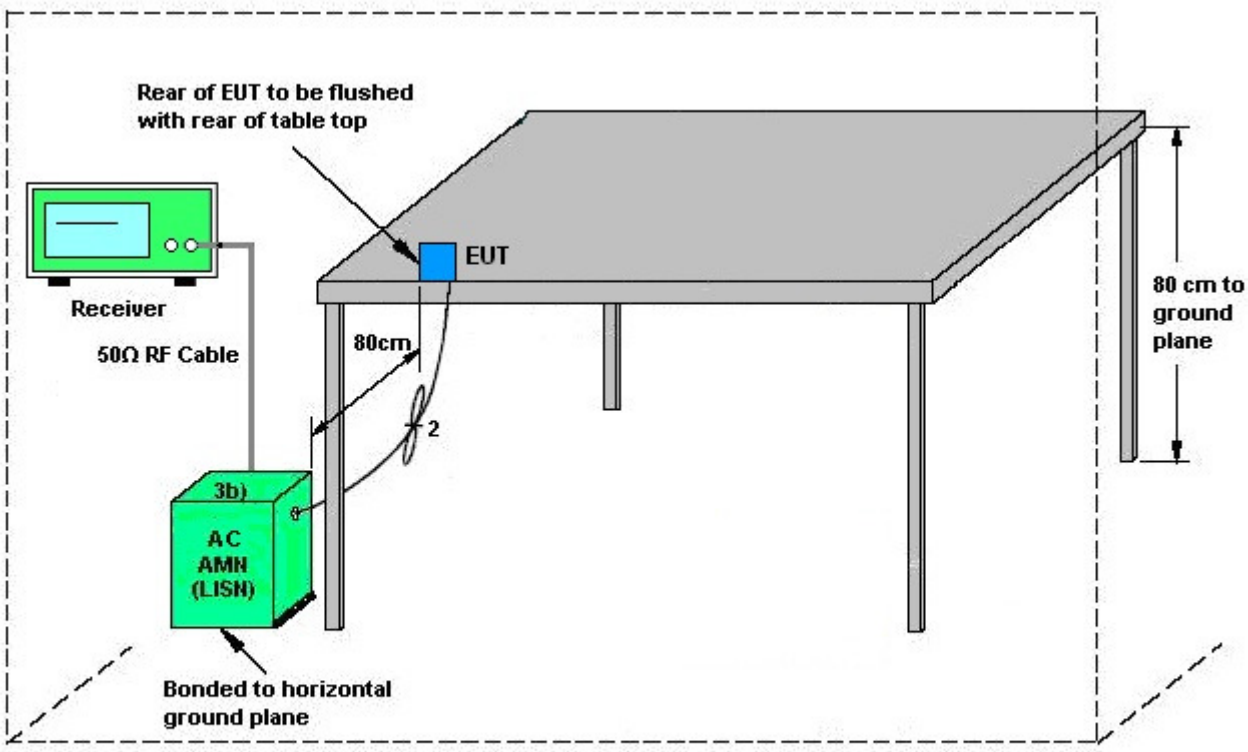
3.2.2 Measuring Instruments

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

3.2.3 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.

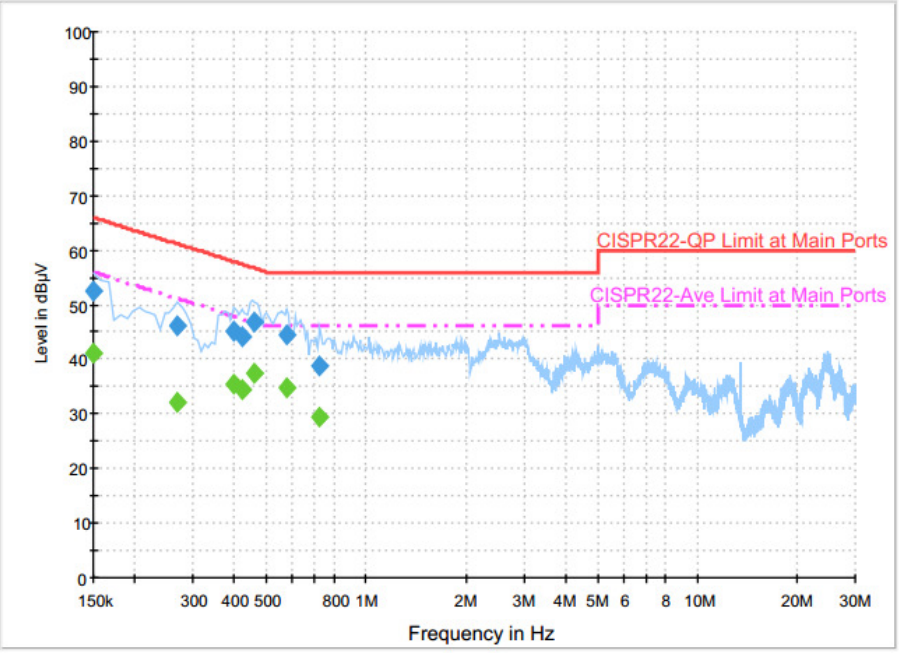
3.2.4 Test Setup



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

3.2.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	James Chiu	Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN (5GHz) Tx + TF + TC		



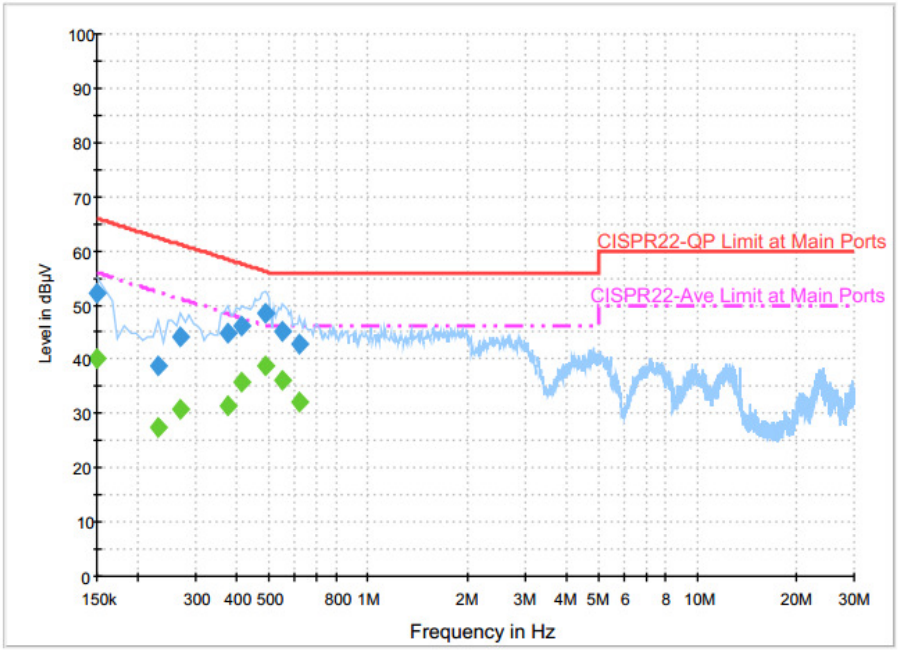
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	52.7	Off	L1	19.6	13.3	66.0
0.270000	46.3	Off	L1	19.6	14.8	61.1
0.398000	45.2	Off	L1	19.6	12.7	57.9
0.422000	44.1	Off	L1	19.6	13.3	57.4
0.462000	46.9	Off	L1	19.6	9.8	56.7
0.574000	44.5	Off	L1	19.6	11.5	56.0
0.726000	38.9	Off	L1	19.6	17.1	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	41.1	Off	L1	19.6	14.9	56.0
0.270000	32.1	Off	L1	19.6	19.0	51.1
0.398000	35.4	Off	L1	19.6	12.5	47.9
0.422000	34.5	Off	L1	19.6	12.9	47.4
0.462000	37.4	Off	L1	19.6	9.3	46.7
0.574000	34.6	Off	L1	19.6	11.4	46.0
0.726000	29.5	Off	L1	19.6	16.5	46.0

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	James Chiu	Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN (5GHz) Tx + TF + TC		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	52.1	Off	N	19.6	13.9	66.0
0.230000	38.7	Off	N	19.6	23.7	62.4
0.270000	44.1	Off	N	19.6	17.0	61.1
0.374000	44.8	Off	N	19.6	13.6	58.4
0.414000	46.1	Off	N	19.6	11.5	57.6
0.486000	48.6	Off	N	19.6	7.6	56.2
0.550000	45.3	Off	N	19.6	10.7	56.0
0.622000	42.9	Off	N	19.6	13.1	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	40.3	Off	N	19.6	15.7	56.0
0.230000	27.6	Off	N	19.6	24.8	52.4
0.270000	30.7	Off	N	19.6	20.4	51.1
0.374000	31.5	Off	N	19.6	16.9	48.4
0.414000	35.6	Off	N	19.6	12.0	47.6
0.486000	38.8	Off	N	19.6	7.4	46.2
0.550000	36.2	Off	N	19.6	9.8	46.0
0.622000	32.0	Off	N	19.6	14.0	46.0

3.3 Automatically Discontinue Transmission

3.3.1 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.

3.3.2 Measuring Instruments

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

3.3.3 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.

3.4 Antenna Requirements

3.4.1 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.

3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.4.3 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	1.10	2.44	2.44	4.81	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
Bilog Antenna	TESEQ	CBL 6111D&00800 N1D01N-06	35419&03	30MHz to 1GHz	Jan. 13, 2016	Nov. 05, 2016 ~ Nov. 16, 2016	Jan. 12, 2017	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2016	Nov. 05, 2016 ~ Nov. 16, 2016	Aug. 18, 2017	Radiation (03CH07-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20Hz ~ 8.4GHz	Oct. 26, 2016	Nov. 05, 2016 ~ Nov. 16, 2016	Oct. 25, 2017	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Nov. 05, 2016 ~ Nov. 16, 2016	Sep. 01, 2017	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz ~ 18GHz	Apr. 15, 2016	Nov. 05, 2016 ~ Nov. 16, 2016	Apr. 14, 2017	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz-1GHz	Mar. 18, 2016	Nov. 05, 2016 ~ Nov. 16, 2016	Mar. 17, 2017	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Oct. 12, 2016	Nov. 05, 2016 ~ Nov. 16, 2016	Oct. 11, 2017	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Feb. 27, 2016	Nov. 05, 2016 ~ Nov. 16, 2016	Feb. 26, 2017	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Nov. 05, 2016 ~ Nov. 16, 2016	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Nov. 05, 2016 ~ Nov. 16, 2016	N/A	Radiation (03CH07-HY)
Loop Cable	Rohde & Schwarz	N/A	N/A	9KHz~30MHz	Dec. 03, 2015	Nov. 05, 2016 ~ Nov. 16, 2016	Dec. 02, 2016	Radiation (03CH07-HY)
Preamplifier	MITEQ	JS44-18004000-33-8P	1840917	18GHz ~ 40GHz	Jun. 14, 2016	Nov. 05, 2016 ~ Nov. 16, 2016	Jun. 13, 2017	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz- 40GHz	Oct. 07, 2016	Nov. 05, 2016 ~ Nov. 16, 2016	Oct. 06, 2017	Radiation (03CH07-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jul. 17, 2016	Sep. 19, 2016 ~ Nov. 21, 2016	Jul. 16, 2017	Radiation (03CH07-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Nov. 07, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Nov. 07, 2016	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Nov. 07, 2016	Dec. 01, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 14, 2015	Nov. 07, 2016	Dec. 13, 2016	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.7**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.7**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.5**

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

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

Appendix A. Radiated Spurious Emission

Test Engineer :	Ken Wu, Jesse Wang, and James Chiu	Temperature :	21~24°C
		Relative Humidity :	50~54%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5638	50.26	-17.94	68.2	38.84	34.6	11.95	35.13	380	242	P	H
		5666.2	50.05	-30.17	80.22	38.58	34.6	12	35.13	380	242	P	H
		5716.4	51.25	-58.54	109.79	39.73	34.6	12.06	35.14	380	242	P	H
		5725	54.33	-67.87	122.2	42.81	34.6	12.06	35.14	380	242	P	H
	*	5745	102.05	-	-	90.49	34.6	12.11	35.15	380	242	P	H
	*	5745	93.98	-	-	82.42	34.6	12.11	35.15	380	242	A	H
													H
													H
		5641	52.99	-15.21	68.2	41.57	34.6	11.95	35.13	299	84	P	V
		5681.4	52.7	-38.77	91.47	41.24	34.6	12	35.14	299	84	P	V
		5720	56.92	-53.88	110.8	45.4	34.6	12.06	35.14	299	84	P	V
		5724.2	62.75	-57.63	120.38	51.23	34.6	12.06	35.14	299	84	P	V
	*	5745	108.36	-	-	96.8	34.6	12.11	35.15	299	84	P	V
	*	5745	100.16	-	-	88.6	34.6	12.11	35.15	299	84	A	V
													V
													V

WIFI Ant. 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)
		5609.4	49.8	-18.4	68.2	38.43	34.6	11.89	35.12	380	36	P	H
		5685.2	49.65	-44.63	94.28	38.19	34.6	12	35.14	380	36	P	H
		5719.6	50.24	-60.45	110.69	38.72	34.6	12.06	35.14	380	36	P	H
		5723.4	49.62	-68.93	118.55	38.1	34.6	12.06	35.14	380	36	P	H
	*	5785	101.08	-	-	89.47	34.6	12.17	35.16	380	36	P	H
	*	5785	92.63	-	-	81.02	34.6	12.17	35.16	380	36	A	H
		5853	49.69	-65.67	115.36	37.98	34.6	12.28	35.17	380	36	P	H
		5856.8	50.2	-60.1	110.3	38.49	34.6	12.28	35.17	380	36	P	H
		5900	50.24	-36.42	86.66	38.44	34.6	12.39	35.19	380	36	P	H
		5926.4	49.79	-18.41	68.2	37.87	34.6	12.51	35.19	380	36	P	H
													H
802.11a CH 157 5785MHz													H
		5626.6	53.56	-14.64	68.2	42.13	34.6	11.95	35.12	309	82	P	V
		5687.6	52.99	-43.06	96.05	41.53	34.6	12	35.14	309	82	P	V
		5707.2	52.53	-54.69	107.22	41.01	34.6	12.06	35.14	309	82	P	V
		5724.6	50.82	-70.47	121.29	39.3	34.6	12.06	35.14	309	82	P	V
	*	5785	108.41	-	-	96.8	34.6	12.17	35.16	309	82	P	V
	*	5785	100.54	-	-	88.93	34.6	12.17	35.16	309	82	A	V
		5852.2	51.44	-65.74	117.18	39.73	34.6	12.28	35.17	309	82	P	V
		5855.6	52.09	-58.54	110.63	40.38	34.6	12.28	35.17	309	82	P	V
		5882	52.13	-47.87	100	40.32	34.6	12.39	35.18	309	82	P	V
		5944.6	52.4	-15.8	68.2	40.38	34.6	12.62	35.2	309	82	P	V
													V
													V

WIFI Ant. 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)
	*	5825	100.31	-	-	88.6	34.6	12.28	35.17	380	221	P	H
	*	5825	92.26	-	-	80.55	34.6	12.28	35.17	380	221	A	H
		5850.4	51.76	-69.53	121.29	40.05	34.6	12.28	35.17	380	221	P	H
		5858.8	49.84	-59.89	109.73	38.14	34.6	12.28	35.18	380	221	P	H
		5876.2	50.05	-54.26	104.31	38.24	34.6	12.39	35.18	380	221	P	H
		5942.2	49.81	-18.39	68.2	37.79	34.6	12.62	35.2	380	221	P	H
													H
802.11a													H
CH 165	*	5825	108.28	-	-	96.57	34.6	12.28	35.17	304	84	P	V
5825MHz	*	5825	100.01	-	-	88.3	34.6	12.28	35.17	304	84	A	V
		5853.2	56.02	-58.88	114.9	44.31	34.6	12.28	35.17	304	84	P	V
		5855.4	55.1	-55.59	110.69	43.39	34.6	12.28	35.17	304	84	P	V
		5881.8	52.67	-47.48	100.15	40.86	34.6	12.39	35.18	304	84	P	V
		5941	51.3	-16.9	68.2	39.28	34.6	12.62	35.2	304	84	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. 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	42.74	-31.26	74	43.65	39.27	17.16	57.34	100	0	P	H
		17235	49.16	-19.04	68.2	41.86	42.43	20.76	55.89	100	0	P	H
													H
													H
		11490	42.85	-31.15	74	43.76	39.27	17.16	57.34	100	0	P	V
		17235	54.67	-13.53	68.2	47.37	42.43	20.76	55.89	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	41.87	-32.13	74	42.7	39.2	17.16	57.19	100	0	P	H
		17355	49.16	-19.04	68.2	42.02	42.24	20.84	55.94	100	0	P	H
													H
													H
		11570	41.62	-32.38	74	42.45	39.2	17.16	57.19	100	0	P	V
		17355	54.08	-14.12	68.2	46.94	42.24	20.84	55.94	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	41.41	-32.59	74	42.22	39.11	17.16	57.08	100	0	P	H
		17475	45.59	-22.61	68.2	38.6	42.05	20.93	55.99	100	0	P	H
													H
													H
		11650	41.07	-32.93	74	41.88	39.11	17.16	57.08	100	0	P	V
		17475	50.39	-17.81	68.2	43.4	42.05	20.93	55.99	100	0	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 (Band Edge @ 3m)

WIFI Ant. 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)
		5615.8	49.69	-18.51	68.2	38.32	34.6	11.89	35.12	380	242	P	H
		5654.4	50.06	-21.41	71.47	38.64	34.6	11.95	35.13	380	242	P	H
		5716.2	51.91	-57.83	109.74	40.39	34.6	12.06	35.14	380	242	P	H
		5724.2	55.11	-65.27	120.38	43.59	34.6	12.06	35.14	380	242	P	H
	*	5745	102.26	-	-	90.7	34.6	12.11	35.15	380	242	P	H
	*	5745	94.11	-	-	82.55	34.6	12.11	35.15	380	242	A	H
802.11n													H
HT20													H
CH 149		5646.8	52.97	-15.23	68.2	41.55	34.6	11.95	35.13	299	84	P	V
5745MHz		5687.6	53.36	-42.69	96.05	41.9	34.6	12	35.14	299	84	P	V
		5719.4	56.67	-53.96	110.63	45.15	34.6	12.06	35.14	299	84	P	V
		5723.4	61.03	-57.52	118.55	49.51	34.6	12.06	35.14	299	84	P	V
	*	5745	108.23	-	-	96.67	34.6	12.11	35.15	299	84	P	V
	*	5745	100.18	-	-	88.62	34.6	12.11	35.15	299	84	A	V
													V
													V

WIFI Ant. 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)
		5625	48.97	-19.23	68.2	37.54	34.6	11.95	35.12	380	36	P	H
		5657	49.85	-23.55	73.4	38.43	34.6	11.95	35.13	380	36	P	H
		5707.4	49.85	-57.42	107.27	38.33	34.6	12.06	35.14	380	36	P	H
		5723.8	49.61	-69.85	119.46	38.09	34.6	12.06	35.14	380	36	P	H
	*	5785	99.62	-	-	88.01	34.6	12.17	35.16	380	36	P	H
	*	5785	91.75	-	-	80.14	34.6	12.17	35.16	380	36	A	H
		5853.2	49.5	-65.4	114.9	37.79	34.6	12.28	35.17	380	36	P	H
		5869.2	49.47	-57.35	106.82	37.66	34.6	12.39	35.18	380	36	P	H
		5910	49.91	-29.36	79.27	37.99	34.6	12.51	35.19	380	36	P	H
		5945.6	50.06	-18.14	68.2	38.04	34.6	12.62	35.2	380	36	P	H
802.11n													H
HT20													H
CH 157		5622.8	51.78	-16.42	68.2	40.35	34.6	11.95	35.12	309	82	P	V
5785MHz		5678	52.7	-36.26	88.96	41.23	34.6	12	35.13	309	82	P	V
		5713.2	51.68	-57.22	108.9	40.16	34.6	12.06	35.14	309	82	P	V
		5722.4	50.25	-66.02	116.27	38.73	34.6	12.06	35.14	309	82	P	V
	*	5785	107.69	-	-	96.08	34.6	12.17	35.16	309	82	P	V
	*	5785	99.77	-	-	88.16	34.6	12.17	35.16	309	82	A	V
		5854.4	51.21	-60.96	112.17	39.5	34.6	12.28	35.17	309	82	P	V
		5870.4	51.73	-54.76	106.49	39.92	34.6	12.39	35.18	309	82	P	V
		5883.2	52.24	-46.87	99.11	40.43	34.6	12.39	35.18	309	82	P	V
		5937.2	51.17	-17.03	68.2	39.26	34.6	12.51	35.2	309	82	P	V
													V
													V

WIFI Ant. 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)
	*	5825	99.47	-	-	87.76	34.6	12.28	35.17	380	221	P	H
	*	5825	91.6	-	-	79.89	34.6	12.28	35.17	380	221	A	H
		5852.2	52.92	-64.26	117.18	41.21	34.6	12.28	35.17	380	221	P	H
		5856.6	51.09	-59.26	110.35	39.38	34.6	12.28	35.17	380	221	P	H
		5891.4	49.61	-43.42	93.03	37.81	34.6	12.39	35.19	380	221	P	H
		5937.4	50.17	-18.03	68.2	38.26	34.6	12.51	35.2	380	221	P	H
802.11n													H
HT20													H
CH 165	*	5825	107.49	-	-	95.78	34.6	12.28	35.17	304	84	P	V
5825MHz	*	5825	99.28	-	-	87.57	34.6	12.28	35.17	304	84	A	V
		5852	59.77	-57.87	117.64	48.06	34.6	12.28	35.17	304	84	P	V
		5857	55.76	-54.48	110.24	44.05	34.6	12.28	35.17	304	84	P	V
		5902.8	52.67	-31.92	84.59	40.75	34.6	12.51	35.19	304	84	P	V
		5931.6	50.34	-17.86	68.2	38.42	34.6	12.51	35.19	304	84	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. 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	41.96	-32.04	74	42.87	39.27	17.16	57.34	100	0	P	H
		17235	47.75	-20.45	68.2	40.45	42.43	20.76	55.89	100	0	P	H
802.11n													H
HT20													H
CH 149		11490	42.71	-31.29	74	43.62	39.27	17.16	57.34	100	0	P	V
5745MHz		17235	53.95	-14.25	68.2	46.65	42.43	20.76	55.89	100	0	P	V
													V
													V
		11570	41.98	-32.02	74	42.81	39.2	17.16	57.19	100	0	P	H
		17355	48.31	-19.89	68.2	41.17	42.24	20.84	55.94	100	0	P	H
802.11n													H
HT20													H
CH 157		11570	41.62	-32.38	74	42.45	39.2	17.16	57.19	100	0	P	V
5785MHz		17355	53.57	-14.63	68.2	46.43	42.24	20.84	55.94	100	0	P	V
													V
													V
		11650	41.41	-32.59	74	42.22	39.11	17.16	57.08	100	0	P	H
		17475	46.31	-21.89	68.2	39.32	42.05	20.93	55.99	100	0	P	H
802.11n													H
HT20													H
CH 165		11650	42.01	-31.99	74	42.82	39.11	17.16	57.08	100	0	P	V
5825MHz		17475	50.16	-18.04	68.2	43.17	42.05	20.93	55.99	100	0	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 (Band Edge @ 3m)

WIFI Ant. 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)
		5621.2	50.05	-18.15	68.2	38.62	34.6	11.95	35.12	380	242	P	H
		5694.2	50.18	-50.74	100.92	38.72	34.6	12	35.14	380	242	P	H
		5716.8	54.49	-55.42	109.91	42.97	34.6	12.06	35.14	380	242	P	H
		5723.6	55.85	-63.16	119.01	44.33	34.6	12.06	35.14	380	242	P	H
	*	5755	99.69	-	-	88.13	34.6	12.11	35.15	380	242	P	H
	*	5755	91.59	-	-	80.03	34.6	12.11	35.15	380	242	A	H
		5850.8	48.88	-71.5	120.38	37.17	34.6	12.28	35.17	380	242	P	H
		5867.6	50.5	-56.77	107.27	38.69	34.6	12.39	35.18	380	242	P	H
		5898	50.17	-37.97	88.14	38.37	34.6	12.39	35.19	380	242	P	H
		5941.8	49.4	-18.8	68.2	37.38	34.6	12.62	35.2	380	242	P	H
802.11n													H
HT40													H
CH 151		5650	52.51	-15.69	68.2	41.09	34.6	11.95	35.13	300	92	P	V
5755MHz		5693.6	56.98	-43.5	100.48	45.52	34.6	12	35.14	300	92	P	V
		5719.4	62.56	-48.07	110.63	51.04	34.6	12.06	35.14	300	92	P	V
		5724.6	61.53	-59.76	121.29	50.01	34.6	12.06	35.14	300	92	P	V
	*	5755	105.38	-	-	93.82	34.6	12.11	35.15	300	92	P	V
	*	5755	97.46	-	-	85.9	34.6	12.11	35.15	300	92	A	V
		5851.6	52.01	-66.54	118.55	40.3	34.6	12.28	35.17	300	92	P	V
		5866.2	52.47	-55.19	107.66	40.66	34.6	12.39	35.18	300	92	P	V
		5915.4	52.18	-23.1	75.28	40.26	34.6	12.51	35.19	300	92	P	V
		5935.2	50.71	-17.49	68.2	38.8	34.6	12.51	35.2	300	92	P	V
													V
													V

WIFI Ant. 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)
		5604.8	49.53	-18.67	68.2	38.16	34.6	11.89	35.12	313	348	P	H
		5651.2	48.8	-20.29	69.09	37.38	34.6	11.95	35.13	313	348	P	H
		5718.8	48.97	-61.49	110.46	37.45	34.6	12.06	35.14	313	348	P	H
		5724.6	48.29	-73	121.29	36.77	34.6	12.06	35.14	313	348	P	H
	*	5795	97.63	-	-	86.02	34.6	12.17	35.16	313	348	P	H
	*	5795	89.39	-	-	77.78	34.6	12.17	35.16	313	348	A	H
		5854.8	50.17	-61.09	111.26	38.46	34.6	12.28	35.17	313	348	P	H
		5861.4	49.61	-59.4	109.01	37.8	34.6	12.39	35.18	313	348	P	H
		5901	50.48	-35.44	85.92	38.56	34.6	12.51	35.19	313	348	P	H
		5925	49.93	-18.27	68.2	38.01	34.6	12.51	35.19	313	348	P	H
802.11n													H
HT40													H
CH 159		5646.6	51.62	-16.58	68.2	40.2	34.6	11.95	35.13	308	89	P	V
5795MHz		5695.2	52.62	-49.04	101.66	41.16	34.6	12	35.14	308	89	P	V
		5712.4	52.41	-56.26	108.67	40.89	34.6	12.06	35.14	308	89	P	V
		5722.8	52.23	-64.95	117.18	40.71	34.6	12.06	35.14	308	89	P	V
	*	5795	105.36	-	-	93.75	34.6	12.17	35.16	308	89	P	V
	*	5795	97.35	-	-	85.74	34.6	12.17	35.16	308	89	A	V
		5850.4	54.04	-67.25	121.29	42.33	34.6	12.28	35.17	308	89	P	V
		5863.8	53.1	-55.23	108.33	41.29	34.6	12.39	35.18	308	89	P	V
		5880.6	52.08	-48.96	101.04	40.27	34.6	12.39	35.18	308	89	P	V
		5948.8	50.97	-17.23	68.2	38.95	34.6	12.62	35.2	308	89	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. 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	43.24	-30.76	74	44.08	39.3	17.16	57.3	100	0	P	H
		17265	47.26	-20.94	68.2	40.01	42.37	20.79	55.91	100	0	P	H
802.11n													H
HT40													H
CH 151		11510	42.94	-31.06	74	43.78	39.3	17.16	57.3	100	0	P	V
5755MHz		17265	50.09	-18.11	68.2	42.84	42.37	20.79	55.91	100	0	P	V
													V
													V
		11590	42.49	-31.51	74	43.31	39.18	17.16	57.16	100	0	P	H
		17385	44.58	-23.62	68.2	37.47	42.19	20.87	55.95	100	0	P	H
802.11n													H
HT40													H
CH 159		11590	41.84	-32.16	74	42.66	39.18	17.16	57.16	100	0	P	V
5795MHz		17385	48.71	-19.49	68.2	41.6	42.19	20.87	55.95	100	0	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 (Band Edge @ 3m)

WIFI Ant. 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)
		5629.8	51.25	-16.95	68.2	39.83	34.6	11.95	35.13	380	241	P	H
		5690.4	52.43	-45.69	98.12	40.97	34.6	12	35.14	380	241	P	H
		5720	55.42	-55.38	110.8	43.9	34.6	12.06	35.14	380	241	P	H
		5724.6	56.31	-64.98	121.29	44.79	34.6	12.06	35.14	380	241	P	H
	*	5775	95.76	-	-	84.21	34.6	12.11	35.16	380	241	P	H
	*	5775	87.51	-	-	75.96	34.6	12.11	35.16	380	241	A	H
		5853.2	57.08	-57.82	114.9	45.37	34.6	12.28	35.17	380	241	P	H
		5856.8	57.7	-52.6	110.3	45.99	34.6	12.28	35.17	380	241	P	H
		5877.4	50.52	-52.9	103.42	38.71	34.6	12.39	35.18	380	241	P	H
		5935.4	50.43	-17.77	68.2	38.52	34.6	12.51	35.2	380	241	P	H
802.11ac													H
VHT80													H
CH 155		5644.2	57.33	-10.87	68.2	45.91	34.6	11.95	35.13	310	81	P	V
5775MHz		5699.4	61.14	-43.62	104.76	49.68	34.6	12	35.14	310	81	P	V
		5717.6	62.03	-48.1	110.13	50.51	34.6	12.06	35.14	310	81	P	V
		5724.2	61.18	-59.2	120.38	49.66	34.6	12.06	35.14	310	81	P	V
	*	5775	101.91	-	-	90.36	34.6	12.11	35.16	310	81	P	V
	*	5775	93.58	-	-	82.03	34.6	12.11	35.16	310	81	A	V
		5852.6	63.93	-52.34	116.27	52.22	34.6	12.28	35.17	310	81	P	V
		5861.2	60.54	-48.52	109.06	48.73	34.6	12.39	35.18	310	81	P	V
		5876.4	53.71	-50.45	104.16	41.9	34.6	12.39	35.18	310	81	P	V
		5933	52.22	-15.98	68.2	40.3	34.6	12.51	35.19	310	81	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. 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	42.24	-31.76	74	43.07	39.23	17.16	57.22	100	0	P	H
		17325	46.43	-21.77	68.2	39.26	42.29	20.81	55.93	100	0	P	H
802.11ac													H
VHT80													H
CH 155		11550	41.86	-32.14	74	42.69	39.23	17.16	57.22	100	0	P	V
5775MHz		17325	49.9	-18.3	68.2	42.73	42.29	20.81	55.93	100	0	P	V
													V
													V

Remark

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

Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (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.	
2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		30	27.46	-12.54	40	31.74	26	1.07	31.35	100	0	P	H
		49.17	26.14	-13.86	40	41.15	15.52	1.07	31.6	-	-	P	H
		187.68	29.07	-14.43	43.5	43.21	15.48	1.87	31.49	-	-	P	H
		447	24.89	-21.11	46	30.04	23.06	2.89	31.1	-	-	P	H
		734	29.6	-16.4	46	29.59	26.95	3.74	30.68	-	-	P	H
		949.6	33.09	-12.91	46	29.35	30.2	4.07	30.53	-	-	P	H
													H
													H
													H
													H
5GHz													H
802.11ac													H
VHT80		35.67	33.75	-6.25	40	41.39	22.72	1.07	31.43	100	75	P	V
LF		49.98	25.46	-14.54	40	40.89	15.1	1.07	31.6	-	-	P	V
		63.21	27.02	-12.98	40	45.11	12.21	1.28	31.58	-	-	P	V
		484.8	26.2	-19.8	46	30.34	23.86	3.04	31.04	-	-	P	V
		805.4	31.59	-14.41	46	30.48	27.8	3.9	30.59	-	-	P	V
		949.6	33.39	-12.61	46	29.65	30.2	4.07	30.53	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

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

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**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".

Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 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)
		5620.6	50.01	-18.19	68.2	38.72	34.6	11.95	35.26	100	18	P	H
		5666	51.31	-28.77	80.08	39.98	34.6	12	35.27	100	18	P	H
		5720	55.08	-55.72	110.8	43.7	34.6	12.06	35.28	100	18	P	H
		5722.6	58.75	-57.98	116.73	47.37	34.6	12.06	35.28	100	18	P	H
	*	5745	110.3	-	-	98.88	34.6	12.11	35.29	100	18	P	H
	*	5745	101.72	-	-	90.3	34.6	12.11	35.29	100	18	A	H
802.11n													H
HT20													H
CH 149		5618.8	51.52	-16.68	68.2	40.29	34.6	11.89	35.26	272	262	P	V
5745MHz		5696.8	52.14	-50.7	102.84	40.82	34.6	12	35.28	272	262	P	V
		5719.4	53.77	-56.86	110.63	42.39	34.6	12.06	35.28	272	262	P	V
		5723	53.27	-64.37	117.64	41.89	34.6	12.06	35.28	272	262	P	V
	*	5745	107.01	-	-	95.59	34.6	12.11	35.29	272	262	P	V
	*	5745	99.55	-	-	88.13	34.6	12.11	35.29	272	262	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)
		5622.8	49.8	-18.4	68.2	38.51	34.6	11.95	35.26	103	27	P	H
		5682.4	50.8	-41.41	92.21	39.48	34.6	12	35.28	103	27	P	H
		5704.4	50.96	-55.47	106.43	39.58	34.6	12.06	35.28	103	27	P	H
		5724.4	51.93	-68.9	120.83	40.55	34.6	12.06	35.28	103	27	P	H
	*	5785	106.92	-	-	95.45	34.6	12.17	35.3	103	27	P	H
	*	5785	99.68	-	-	88.21	34.6	12.17	35.3	103	27	A	H
		5850.2	49.43	-72.31	121.74	37.86	34.6	12.28	35.31	103	27	P	H
		5861.4	49.91	-59.1	109.01	38.23	34.6	12.39	35.31	103	27	P	H
		5890.2	50.87	-43.05	93.92	39.2	34.6	12.39	35.32	103	27	P	H
		5949.6	51.01	-17.19	68.2	39.12	34.6	12.62	35.33	103	27	P	H
802.11n													H
HT20													H
CH 157		5619.8	50.79	-17.41	68.2	39.56	34.6	11.89	35.26	268	279	P	V
5785MHz		5656.2	50.19	-22.62	72.81	38.91	34.6	11.95	35.27	268	279	P	V
		5712.8	51.26	-57.53	108.79	39.88	34.6	12.06	35.28	268	279	P	V
		5722.6	50.12	-66.61	116.73	38.74	34.6	12.06	35.28	268	279	P	V
	*	5785	107.03	-	-	95.56	34.6	12.17	35.3	268	279	P	V
	*	5785	99.68	-	-	88.21	34.6	12.17	35.3	268	279	A	V
		5851.6	50.05	-68.5	118.55	38.48	34.6	12.28	35.31	268	279	P	V
		5873.8	51.1	-54.44	105.54	39.42	34.6	12.39	35.31	268	279	P	V
		5911.8	50.86	-27.08	77.94	39.07	34.6	12.51	35.32	268	279	P	V
		5943.6	52.66	-15.54	68.2	40.77	34.6	12.62	35.33	268	279	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)
	*	5825	107.13	-	-	95.56	34.6	12.28	35.31	102	348	P	H
	*	5825	100.08	-	-	88.51	34.6	12.28	35.31	102	348	A	H
		5850.8	52.34	-68.04	120.38	40.77	34.6	12.28	35.31	102	348	P	H
		5869	52.97	-53.91	106.88	41.29	34.6	12.39	35.31	102	348	P	H
		5881.6	51.53	-48.77	100.3	39.86	34.6	12.39	35.32	102	348	P	H
		5936.2	50.36	-17.84	68.2	38.58	34.6	12.51	35.33	102	348	P	H
802.11n													H
HT20													H
CH 165	*	5825	107.37	-	-	95.8	34.6	12.28	35.31	277	281	P	V
5825MHz	*	5825	100.26	-	-	88.69	34.6	12.28	35.31	277	281	A	V
		5850.8	52.67	-67.71	120.38	41.1	34.6	12.28	35.31	277	281	P	V
		5866.6	53.74	-53.81	107.55	42.06	34.6	12.39	35.31	277	281	P	V
		5898.4	50.48	-37.37	87.85	38.81	34.6	12.39	35.32	277	281	P	V
		5933.6	50.25	-17.95	68.2	38.47	34.6	12.51	35.33	277	281	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	42.8	-31.2	74	43.71	39.27	17.16	57.34	100	0	P	H
		17235	54.61	-13.59	68.2	47.31	42.43	20.76	55.89	100	0	P	H
802.11n													H
HT20													H
CH 149		11490	43.6	-30.4	74	44.51	39.27	17.16	57.34	100	0	P	V
5745MHz		17235	47.19	-21.01	68.2	39.89	42.43	20.76	55.89	100	0	P	V
													V
													V
		11570	41.48	-32.52	74	42.31	39.2	17.16	57.19	100	0	P	H
		17355	51.61	-16.59	68.2	44.47	42.24	20.84	55.94	100	0	P	H
802.11n													H
HT20													H
CH 157		11570	42.38	-31.62	74	43.21	39.2	17.16	57.19	100	0	P	V
5785MHz		17352	48.64	-19.56	68.2	41.5	42.24	20.84	55.94	100	0	P	V
													V
													V
		11650	42.75	-31.25	74	43.56	39.11	17.16	57.08	100	0	P	H
		17475	49.77	-18.43	68.2	42.78	42.05	20.93	55.99	100	0	P	H
802.11n													H
HT20													H
CH 165		11650	42.23	-31.77	74	43.04	39.11	17.16	57.08	100	0	P	V
5825MHz		17475	50.03	-18.17	68.2	43.04	42.05	20.93	55.99	100	0	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 (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)
		5649.2	51.38	-16.82	68.2	40.1	34.6	11.95	35.27	100	18	P	H
		5693	52.93	-47.11	100.04	41.61	34.6	12	35.28	100	18	P	H
		5718.6	57.11	-53.3	110.41	45.73	34.6	12.06	35.28	100	18	P	H
		5724.6	56.99	-64.3	121.29	45.61	34.6	12.06	35.28	100	18	P	H
	*	5755	107.05	-	-	95.63	34.6	12.11	35.29	100	18	P	H
	*	5755	99.26	-	-	87.84	34.6	12.11	35.29	100	18	A	H
		5850	50.02	-72.18	122.2	38.45	34.6	12.28	35.31	100	18	P	H
		5874.8	49.1	-56.16	105.26	37.42	34.6	12.39	35.31	100	18	P	H
		5917.8	51.21	-22.3	73.51	39.42	34.6	12.51	35.32	100	18	P	H
		5925	50.49	-17.71	68.2	38.71	34.6	12.51	35.33	100	18	P	H
802.11n													H
HT40													H
CH 151		5629.6	51.73	-16.47	68.2	40.45	34.6	11.95	35.27	247	263	P	V
5755MHz		5698.8	53.84	-50.48	104.32	42.52	34.6	12	35.28	247	263	P	V
		5716.4	54.91	-54.88	109.79	43.53	34.6	12.06	35.28	247	263	P	V
		5724.4	55.4	-65.43	120.83	44.02	34.6	12.06	35.28	247	263	P	V
	*	5755	103.87	-	-	92.45	34.6	12.11	35.29	247	263	P	V
	*	5755	96.3	-	-	84.88	34.6	12.11	35.29	247	263	A	V
		5854.8	49.52	-61.74	111.26	37.95	34.6	12.28	35.31	247	263	P	V
		5860.2	51.07	-58.27	109.34	39.39	34.6	12.39	35.31	247	263	P	V
		5911.2	51.23	-27.15	78.38	39.44	34.6	12.51	35.32	247	263	P	V
		5926.2	50.13	-18.07	68.2	38.35	34.6	12.51	35.33	247	263	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)
		5633.8	50.56	-17.64	68.2	39.28	34.6	11.95	35.27	100	348	P	H
		5663.6	50.67	-27.63	78.3	39.34	34.6	12	35.27	100	348	P	H
		5703.6	49.88	-56.33	106.21	38.5	34.6	12.06	35.28	100	348	P	H
		5721.4	49.07	-64.92	113.99	37.69	34.6	12.06	35.28	100	348	P	H
	*	5795	103.9	-	-	92.43	34.6	12.17	35.3	100	348	P	H
	*	5795	95.87	-	-	84.4	34.6	12.17	35.3	100	348	A	H
		5852.2	50.58	-66.6	117.18	39.01	34.6	12.28	35.31	100	348	P	H
		5874.4	50.69	-54.68	105.37	39.01	34.6	12.39	35.31	100	348	P	H
		5922.8	50.49	-19.33	69.82	38.7	34.6	12.51	35.32	100	348	P	H
		5949.6	49.88	-18.32	68.2	37.99	34.6	12.62	35.33	100	348	P	H
802.11n													H
HT40													H
CH 159		5621.8	50.07	-18.13	68.2	38.78	34.6	11.95	35.26	277	280	P	V
5795MHz		5664.2	50.8	-27.94	78.74	39.47	34.6	12	35.27	277	280	P	V
		5714	50.23	-58.89	109.12	38.85	34.6	12.06	35.28	277	280	P	V
		5724	50.96	-68.96	119.92	39.58	34.6	12.06	35.28	277	280	P	V
	*	5795	104.08	-	-	92.61	34.6	12.17	35.3	277	280	P	V
	*	5795	96.64	-	-	85.17	34.6	12.17	35.3	277	280	A	V
		5853.6	49.41	-64.58	113.99	37.84	34.6	12.28	35.31	277	280	P	V
		5860	50.71	-58.69	109.4	39.14	34.6	12.28	35.31	277	280	P	V
		5889.2	50.86	-43.8	94.66	39.19	34.6	12.39	35.32	277	280	P	V
		5942.6	50.24	-17.96	68.2	38.35	34.6	12.62	35.33	277	280	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	42.44	-31.56	74	43.28	39.3	17.16	57.3	100	0	P	H
		17265	53.11	-15.09	68.2	45.86	42.37	20.79	55.91	100	4	P	H
802.11n													H
HT40													H
CH 151		11510	44.24	-29.76	74	45.08	39.3	17.16	57.3	100	0	P	V
5755MHz		17265	47.18	-21.02	68.2	39.93	42.37	20.79	55.91	100	0	P	V
													V
													V
		11590	41.05	-32.95	74	41.87	39.18	17.16	57.16	100	0	P	H
		17385	54.25	-13.95	68.2	47.14	42.19	20.87	55.95	100	4	P	H
802.11n													H
HT40													H
CH 159		11590	41.78	-32.22	74	42.6	39.18	17.16	57.16	100	0	P	V
5795MHz		17385	47.24	-20.96	68.2	40.13	42.19	20.87	55.95	100	0	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 (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)
		5646.8	49.6	-18.6	68.2	38.32	34.6	11.95	35.27	100	43	P	H
		5699	53.24	-51.22	104.46	41.92	34.6	12	35.28	100	43	P	H
		5719.6	55.64	-55.05	110.69	44.26	34.6	12.06	35.28	100	43	P	H
		5723.6	55.77	-63.24	119.01	44.39	34.6	12.06	35.28	100	43	P	H
	*	5775	102.16	-	-	90.75	34.6	12.11	35.3	100	43	P	H
	*	5775	94.63	-	-	83.22	34.6	12.11	35.3	100	43	A	H
		5853.6	50.97	-63.02	113.99	39.4	34.6	12.28	35.31	100	43	P	H
		5858.4	52.88	-56.97	109.85	41.31	34.6	12.28	35.31	100	43	P	H
		5887.8	51.75	-43.95	95.7	40.08	34.6	12.39	35.32	100	43	P	H
		5949	51.15	-17.05	68.2	39.26	34.6	12.62	35.33	100	43	P	H
802.11ac													H
VHT80													H
CH 155		5618.4	49.26	-18.94	68.2	38.03	34.6	11.89	35.26	243	260	P	V
5775MHz		5695	52.02	-49.49	101.51	40.7	34.6	12	35.28	243	260	P	V
		5711.2	52.9	-55.44	108.34	41.52	34.6	12.06	35.28	243	260	P	V
		5721	53.16	-59.92	113.08	41.78	34.6	12.06	35.28	243	260	P	V
	*	5775	100.35	-	-	88.94	34.6	12.11	35.3	243	260	P	V
	*	5775	92.56	-	-	81.15	34.6	12.11	35.3	243	260	A	V
		5851.2	50.21	-69.25	119.46	38.64	34.6	12.28	35.31	243	260	P	V
		5855.6	51.08	-59.55	110.63	39.51	34.6	12.28	35.31	243	260	P	V
		5902.2	50.58	-34.45	85.03	38.79	34.6	12.51	35.32	243	260	P	V
		5926.4	49.36	-18.84	68.2	37.58	34.6	12.51	35.33	243	260	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	41.23	-32.77	74	42.06	39.23	17.16	57.22	100	0	P	H
		17325	49.32	-18.88	68.2	42.15	42.29	20.81	55.93	100	0	P	H
802.11ac													H
VHT80													H
CH 155		11550	42.03	-31.97	74	42.86	39.23	17.16	57.22	100	0	P	V
5775MHz		17325	46.63	-21.57	68.2	39.46	42.29	20.81	55.93	100	0	P	V
													V
													V

Remark

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

Emission below 1GHz

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)
		30.27	27.55	-12.45	40	31.83	26	1.07	31.35	-	-	P	H
		81.57	24.68	-15.32	40	40.93	14.02	1.28	31.55	-	-	P	H
		187.14	29.69	-13.81	43.5	43.84	15.47	1.87	31.49	-	-	P	H
		477.1	26.75	-19.25	46	31.07	23.69	3.04	31.05	-	-	P	H
		731.9	29.81	-16.19	46	29.83	26.92	3.74	30.68	-	-	P	H
		955.2	33.99	-12.01	46	30.24	30.21	4.07	30.53	100	0	P	H
													H
													H
													H
													H
5GHz													H
802.11n													H
HT20		34.86	33.25	-6.75	40	40.29	23.3	1.07	31.41	100	85	P	V
LF		48.36	27.93	-12.07	40	42.52	15.93	1.07	31.59	-	-	P	V
		110.46	31.66	-11.84	43.5	44.28	17.35	1.55	31.52	-	-	P	V
		522.6	26.76	-19.24	46	30.21	24.38	3.14	30.97	-	-	P	V
		734.7	30.31	-15.69	46	30.29	26.95	3.74	30.67	-	-	P	V
		951.7	34.22	-11.78	46	30.48	30.2	4.07	30.53	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

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

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**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)

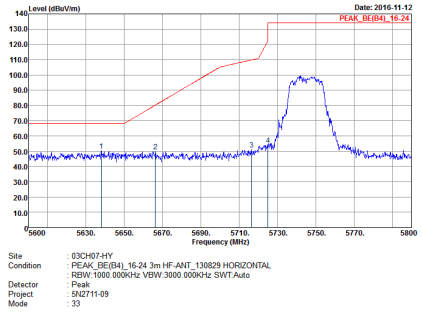
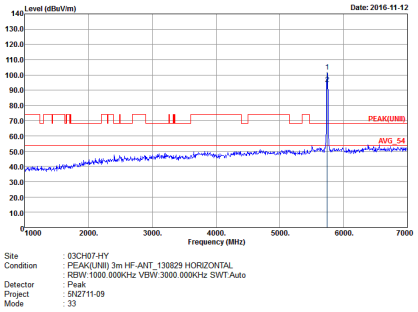
Both peak and average measured complies with the limit line, so test result is "PASS".

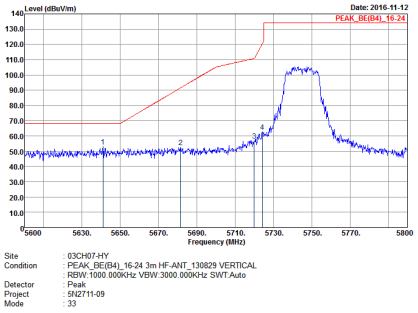
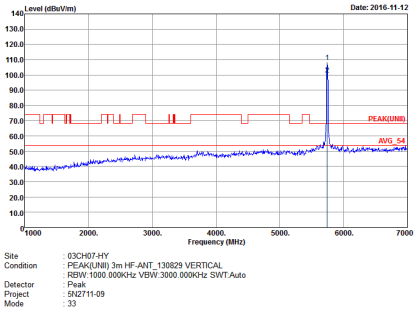
Appendix B. Radiated Spurious Emission Plots

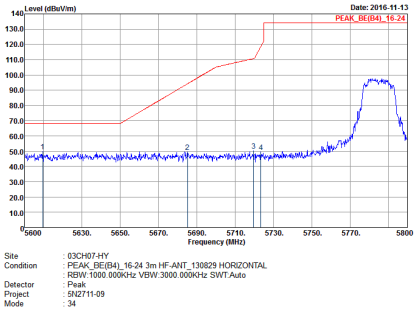
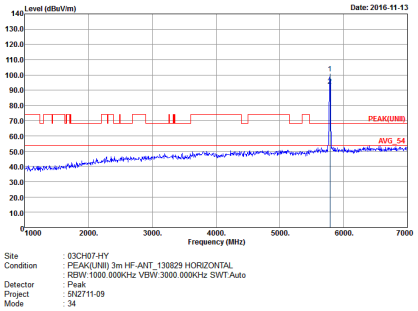
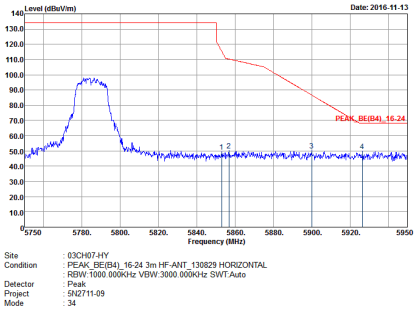
Test Engineer :	Ken Wu, Jesse Wang, and James Chiu	Temperature :	21~24°C
		Relative Humidity :	50~54%

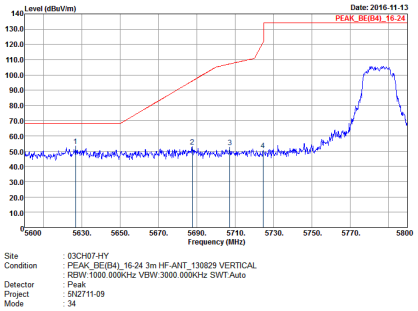
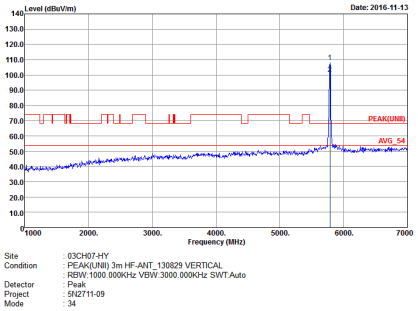
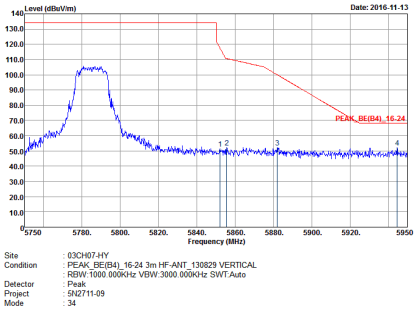
Band 4 - 5725~5850MHz

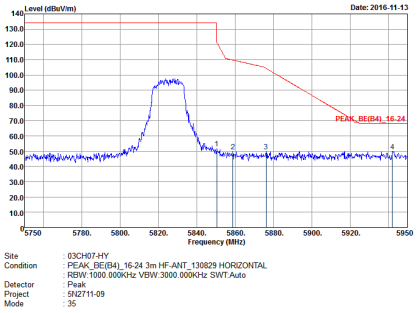
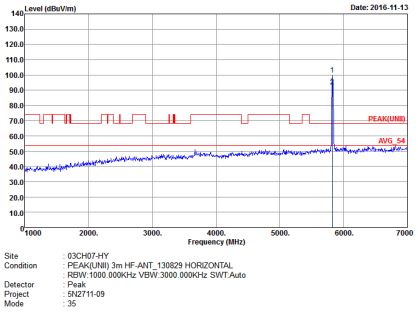
WIFI 802.11a (Band Edge @ 3m)

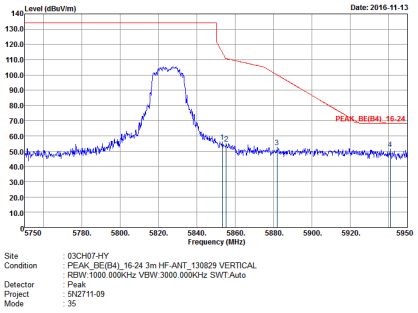
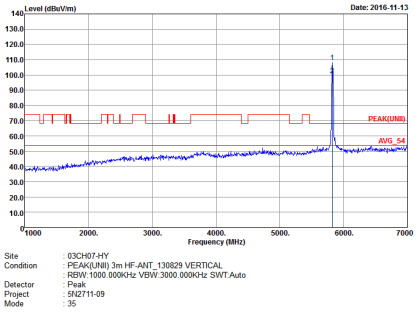
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Fundamental
Peak		

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

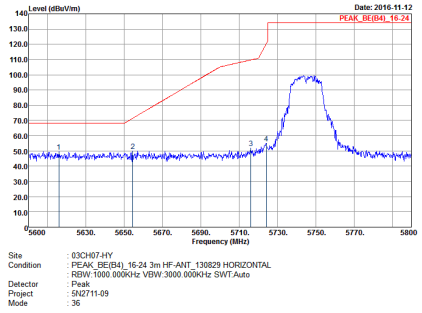
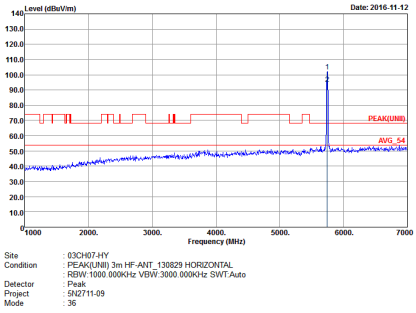
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Fundamental
Peak		
Peak		Left blank

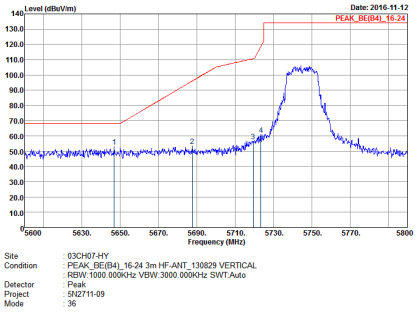
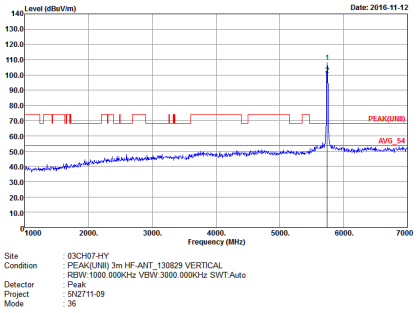
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Vertical	Fundamental
Peak		
Peak		Left blank

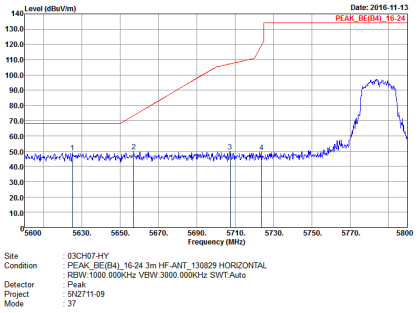
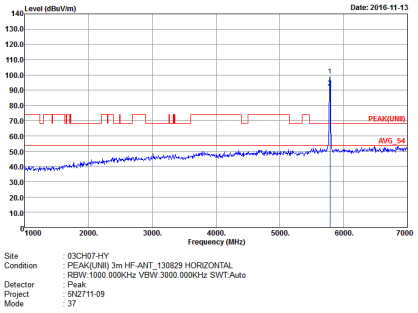
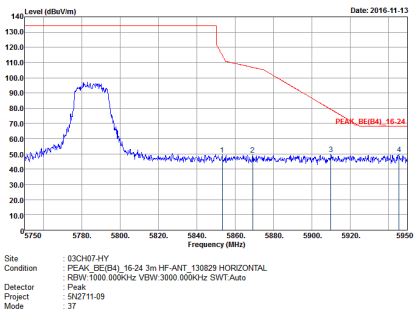
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Fundamental
Peak		

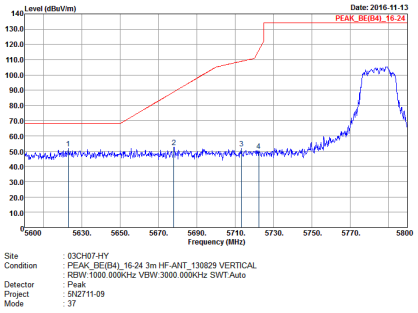
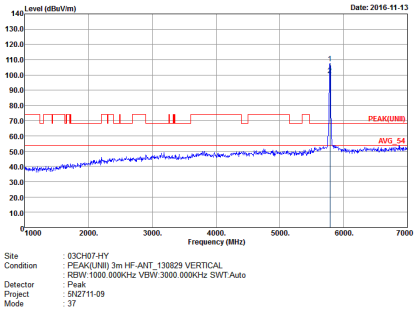
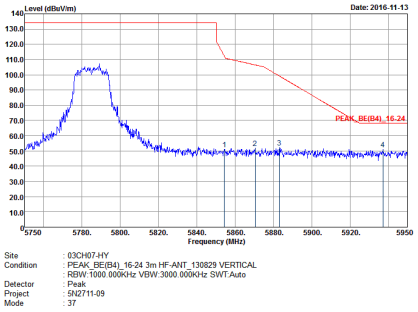
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Vertical	Fundamental
Peak		

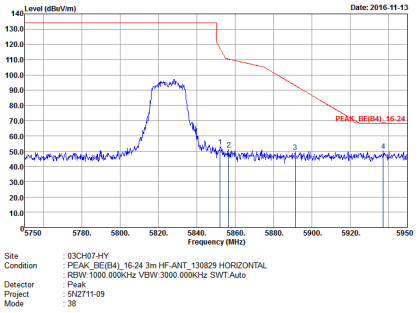
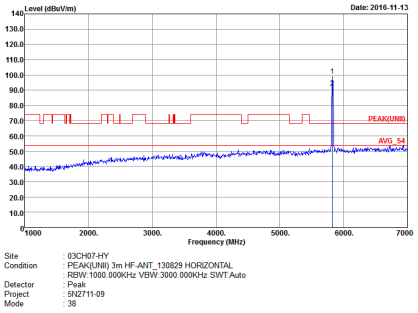
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

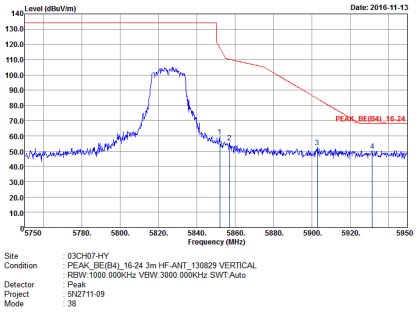
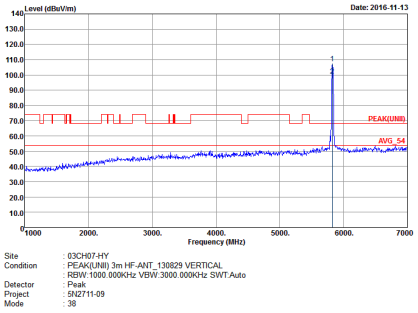
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Fundamental
Peak		

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

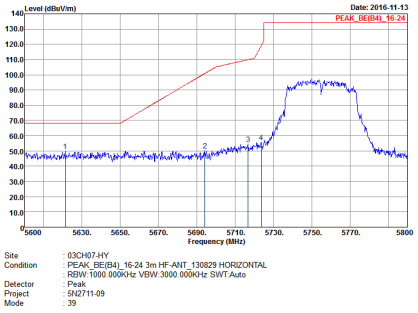
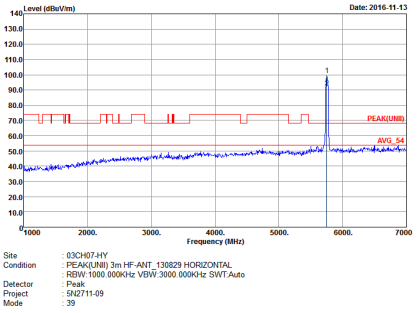
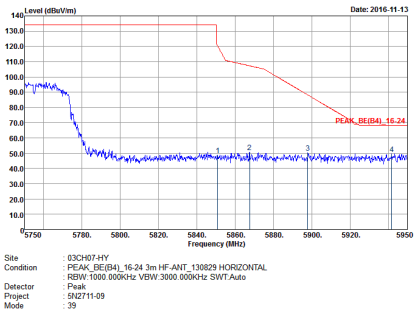
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Fundamental
Peak		
Peak		Left blank

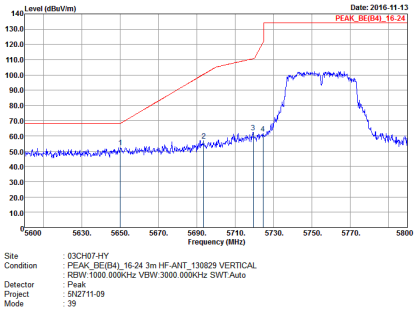
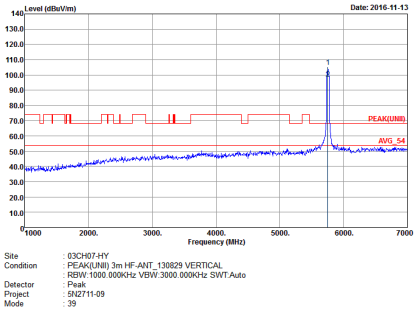
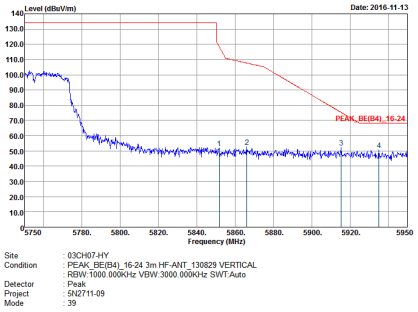
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Vertical	Fundamental
Peak		
Peak		Left blank

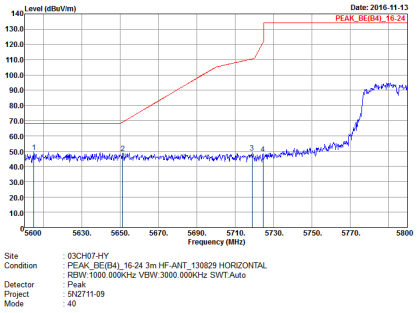
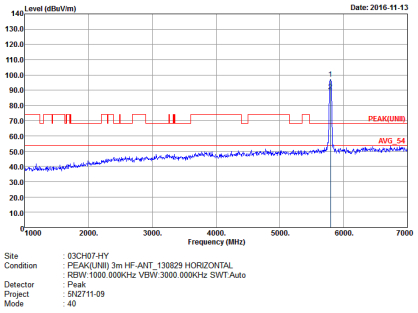
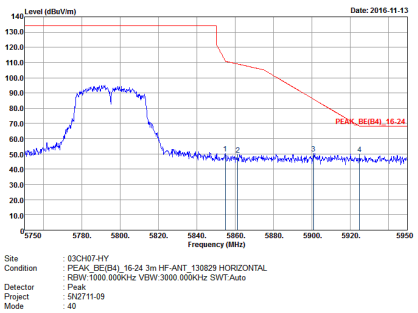
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Fundamental
Peak		

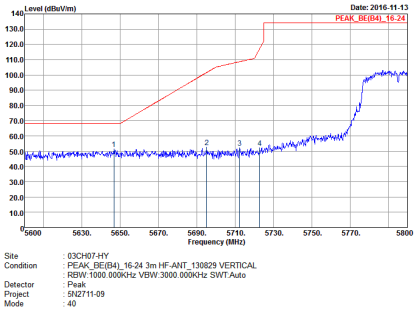
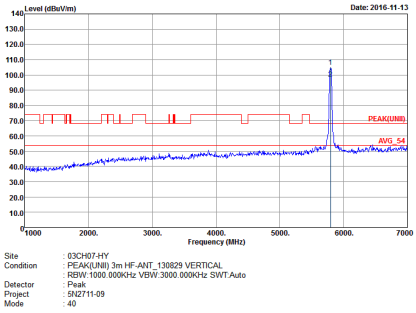
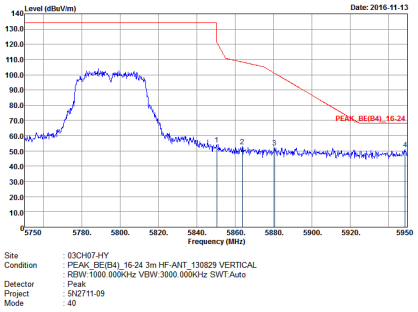
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Vertical	Fundamental
Peak		

Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

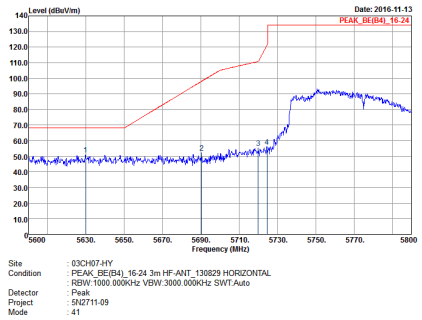
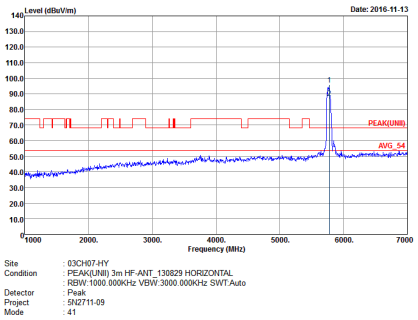
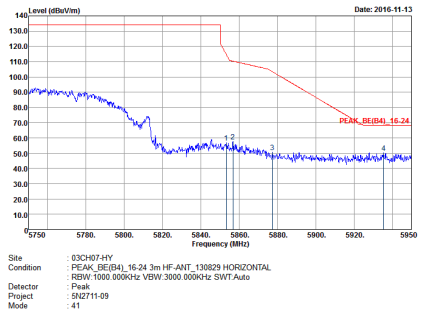
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Horizontal	Fundamental
Peak		
Peak		Left blank

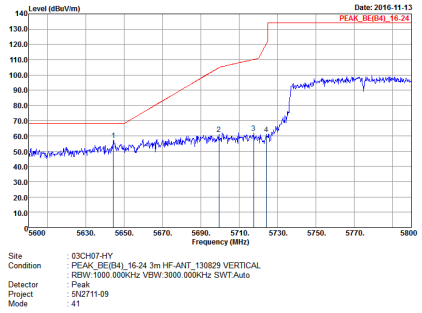
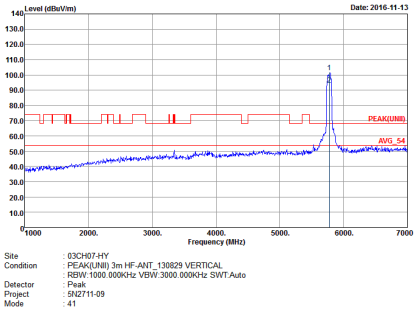
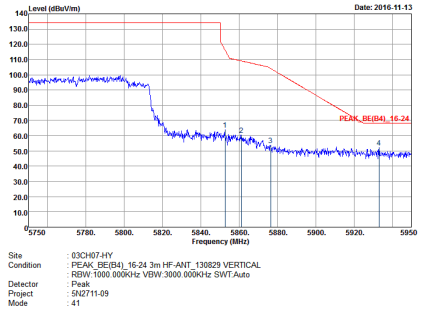
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Vertical	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Horizontal	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Vertical	Fundamental
Peak		
Peak		Left blank

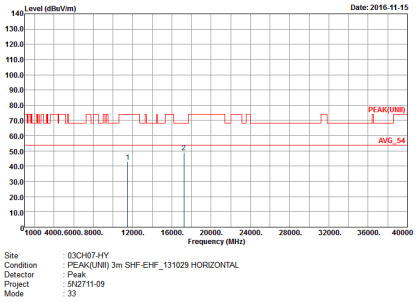
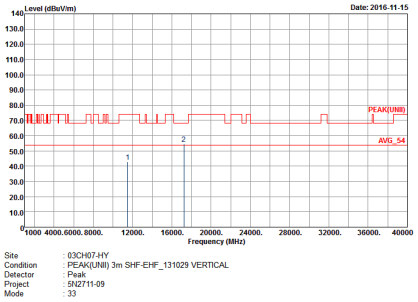
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

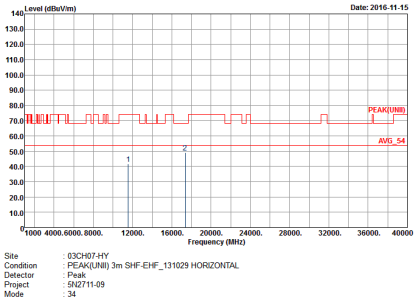
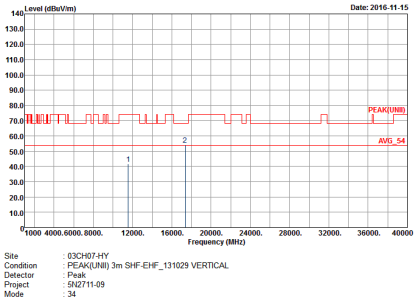
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Fundamental
Peak		
Peak		Left blank

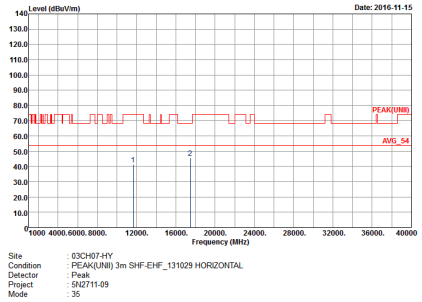
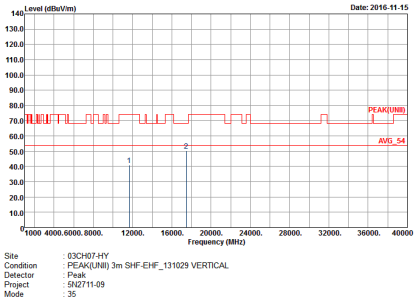
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Vertical	Fundamental
Peak		
Peak		Left blank

Band 4 - 5725~5850MHz

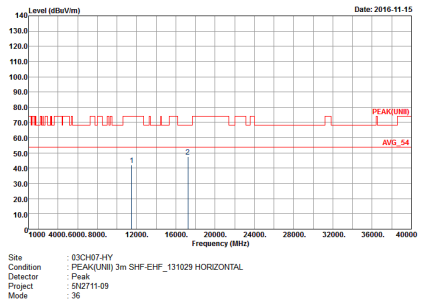
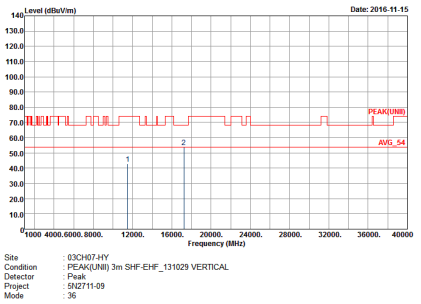
WIFI 802.11a (Harmonic @ 3m)

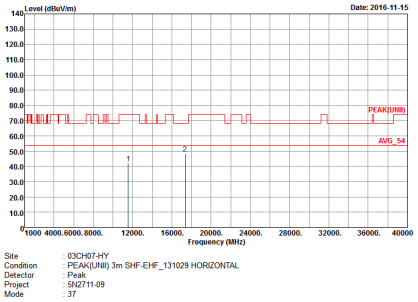
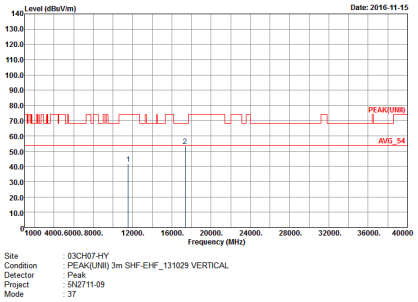
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.		

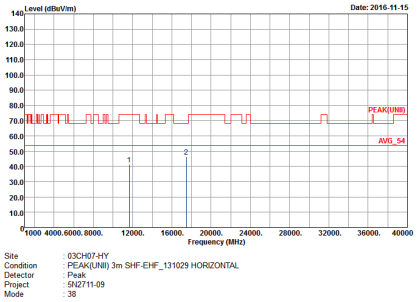
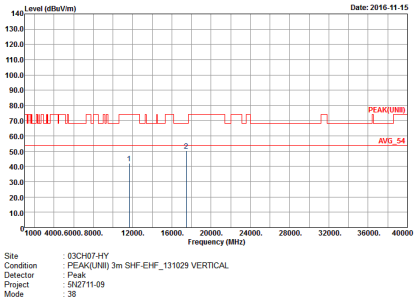
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.		

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

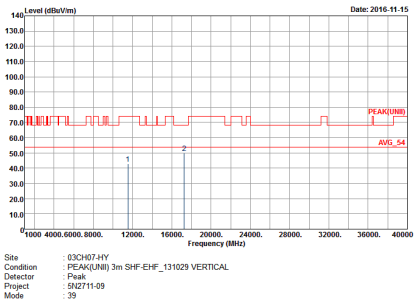
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

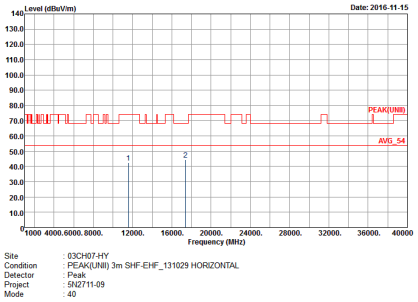
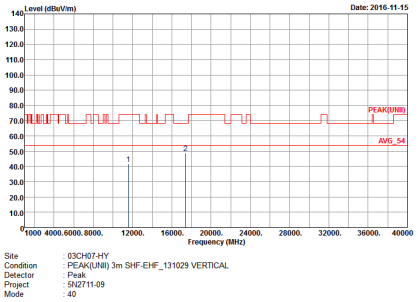
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.		

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

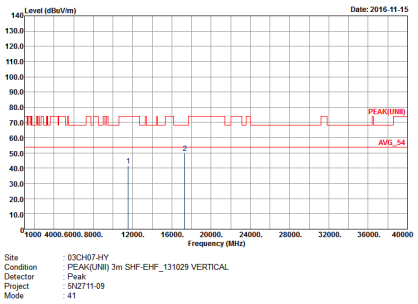
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

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

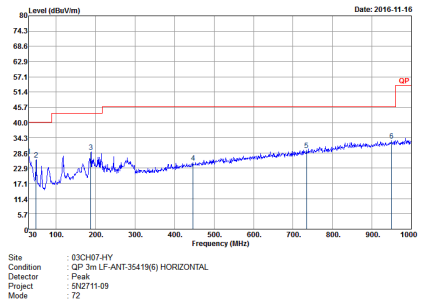
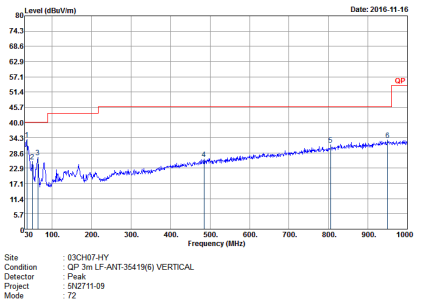
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Horizontal	Vertical
Peak Avg.		

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

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

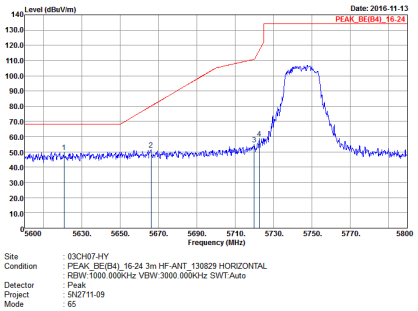
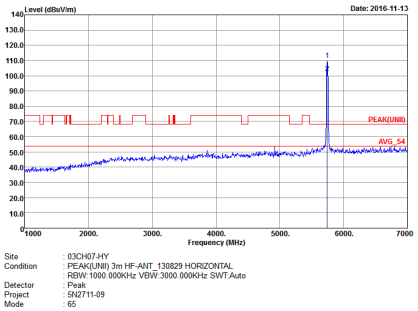
Emission below 1GHz

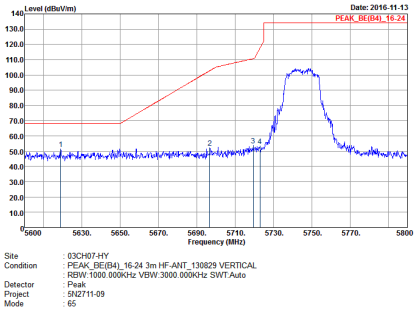
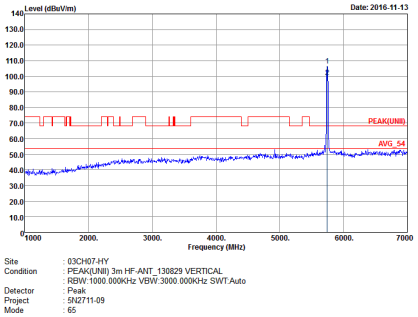
5GHz WIFI 802.11ac VHT80 (LF)

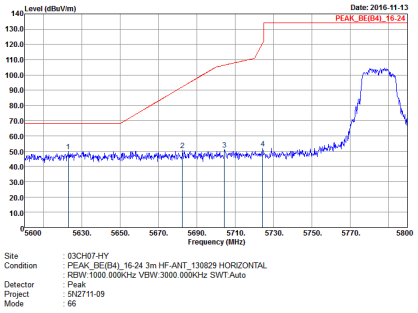
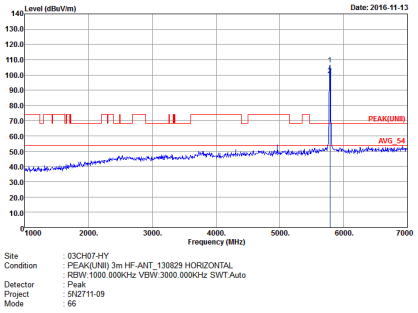
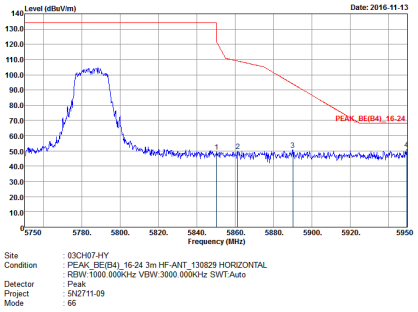
WIFI	5GHz 5725~5850MHz	
ANT	802.11ac VHT80 LF	
1	Horizontal	Vertical
QP / Peak		

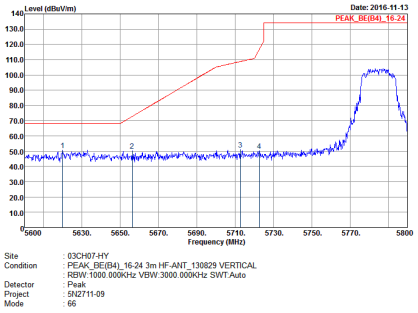
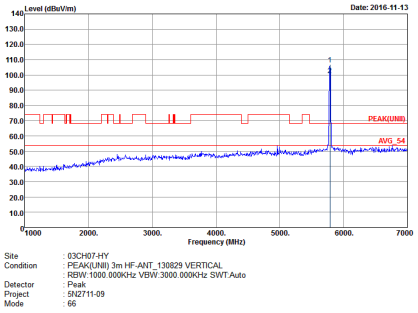
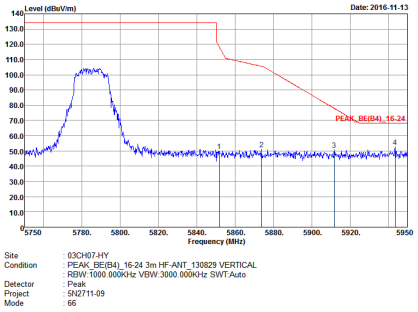
Band 4 - 5725~5850MHz

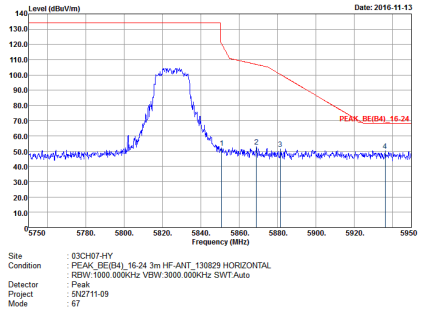
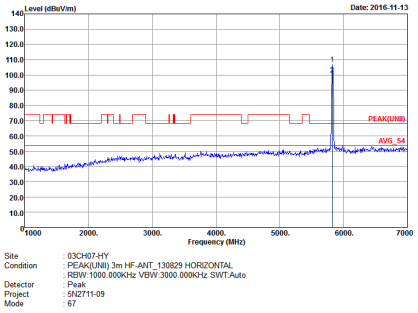
WIFI 802.11n HT20 (Band Edge @ 3m)

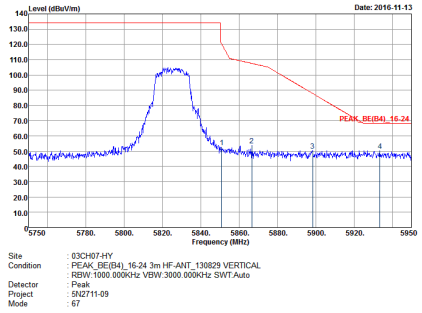
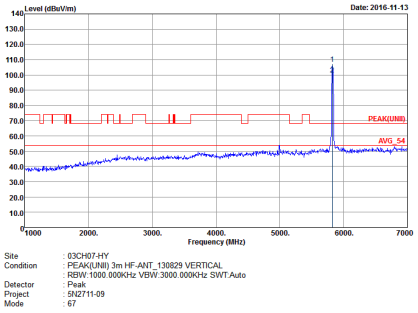
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak		

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

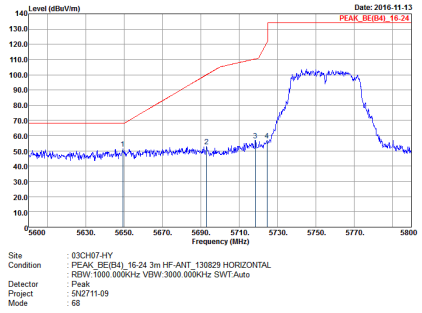
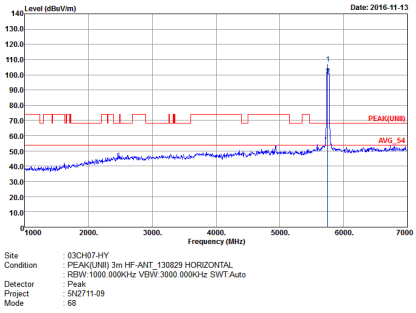
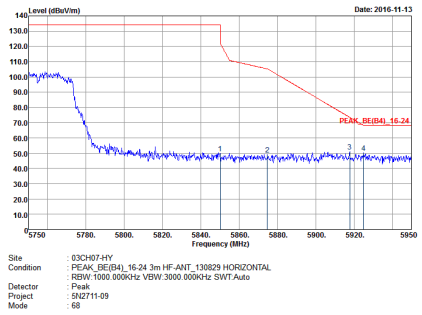
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

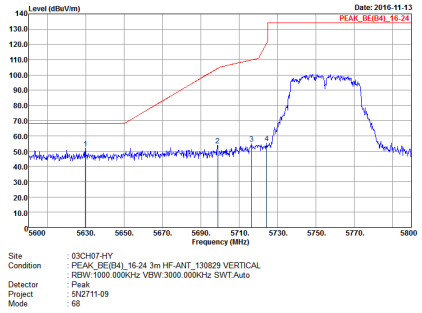
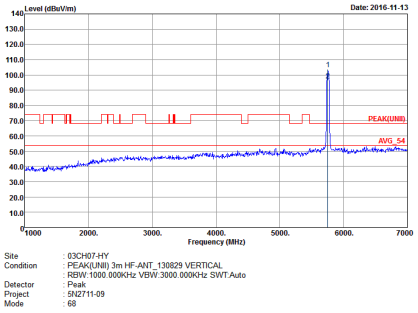
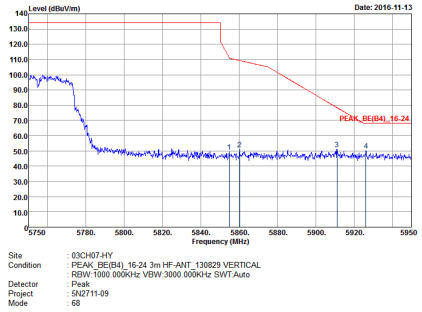
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

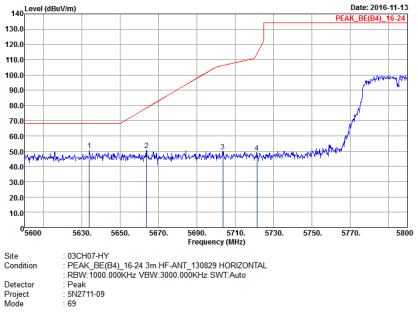
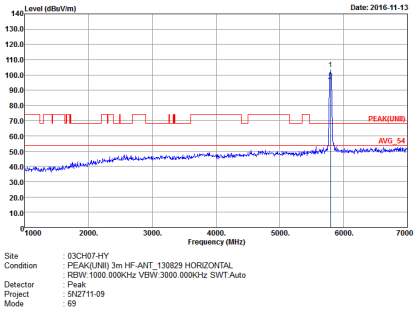
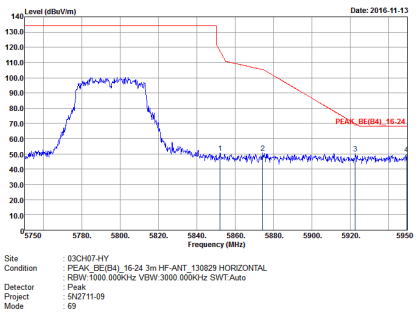
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak		

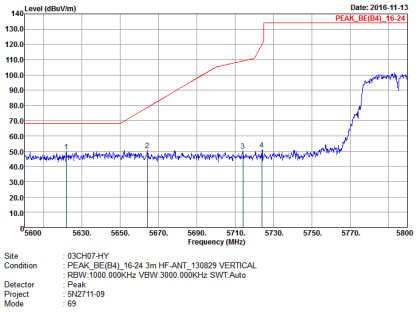
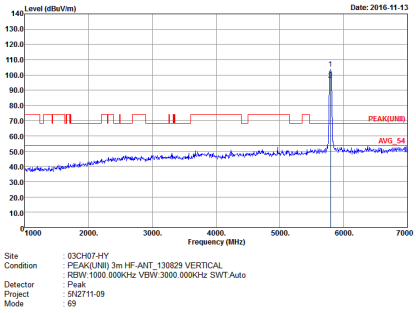
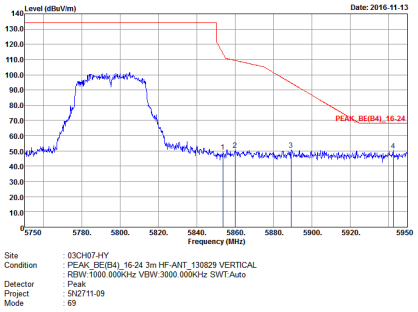
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Vertical	Fundamental
Peak		

Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

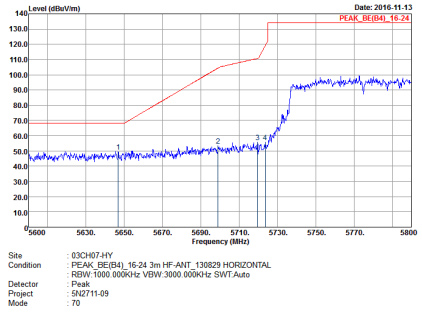
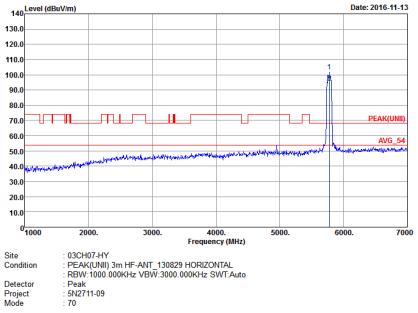
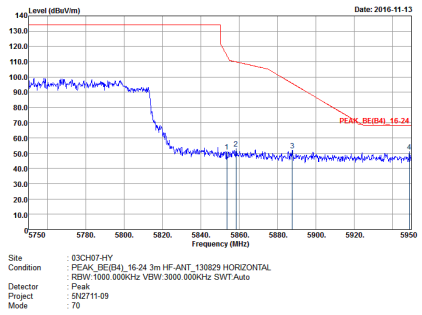
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

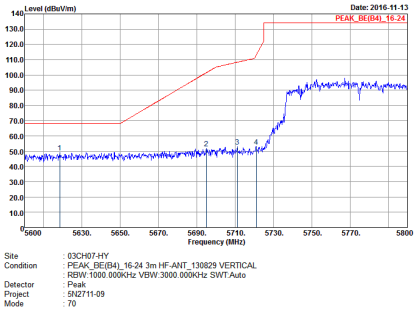
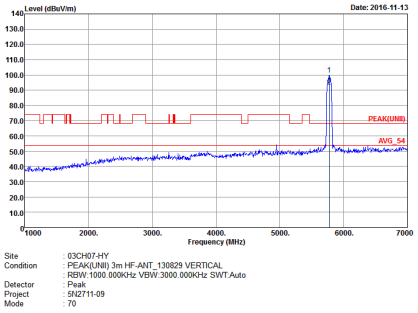
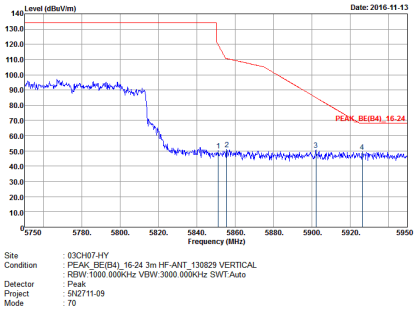
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

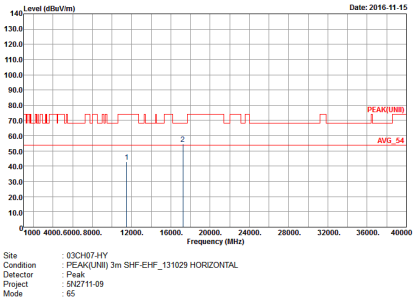
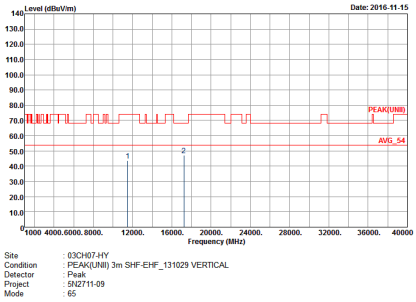
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

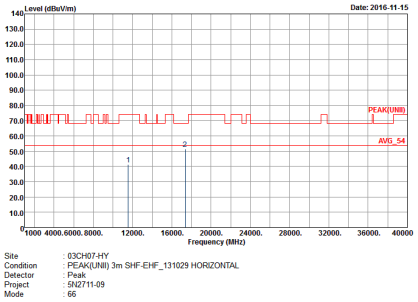
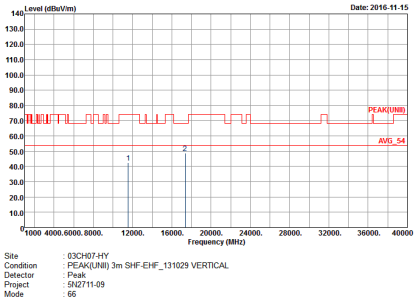
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

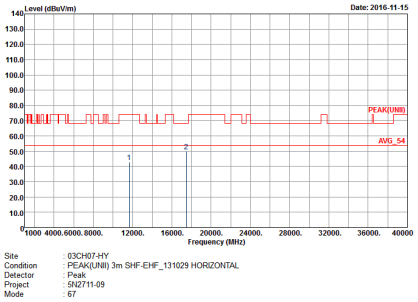
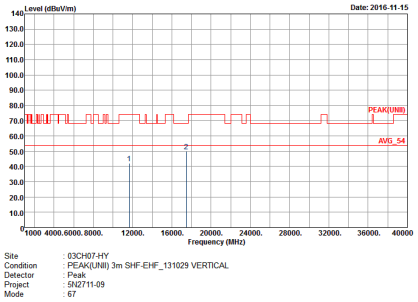
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

Band 4 - 5725~5850MHz

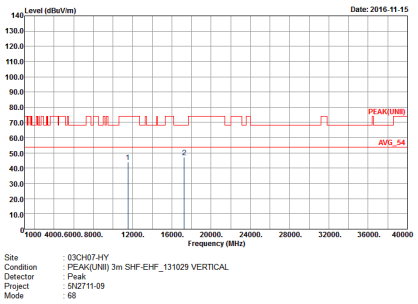
WIFI 802.11n HT20 (Harmonic @ 3m)

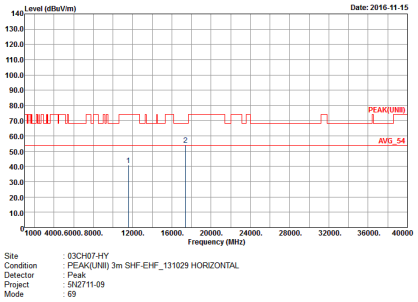
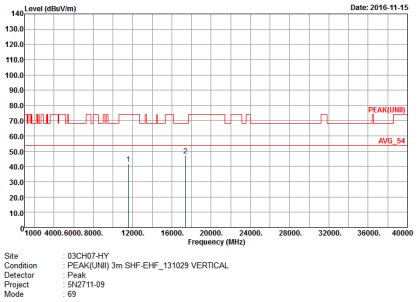
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

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

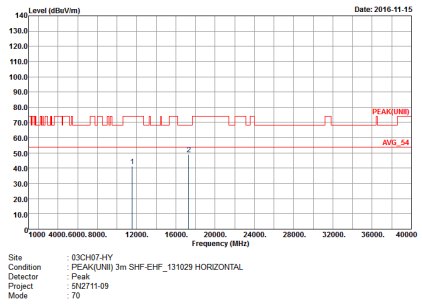
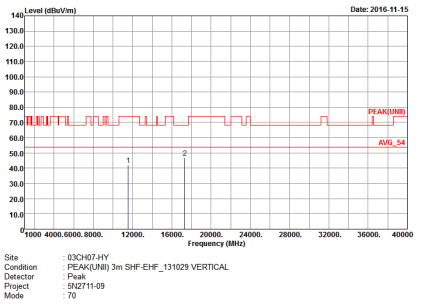
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.		

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.		

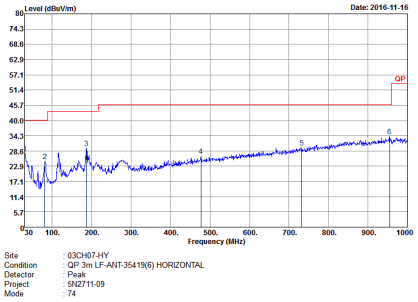
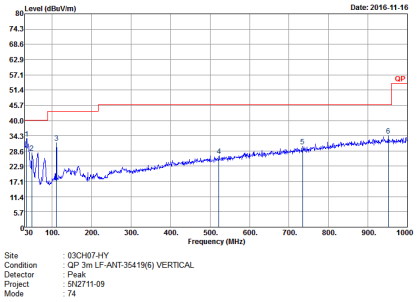
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Vertical
Peak Avg.		

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)

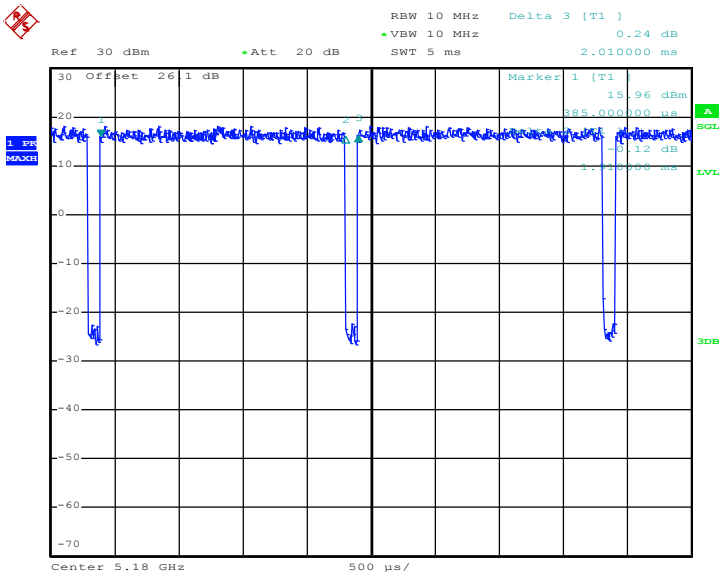
WIFI	5GHz 5725~5850MHz	
ANT	802.11n HT20 LF	
1+2	Horizontal	Vertical
QP / Peak		

Appendix C Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11a	95.03	1910.00	0.52	1kHz
1	5GHz 802.11n HT20	95.52	1920.00	0.52	1kHz
1	5GHz 802.11n HT40	97.41	940.00	1.06	3kHz
1	5GHz 802.11ac VHT80	94.26	460.00	2.17	3kHz
2	802.11a	95.03	1910.00	0.52	1kHz
2	5GHz 802.11n HT20	95.03	1910.00	0.52	1kHz
2	5GHz 802.11n HT40	96.91	940.00	1.06	3kHz
2	5GHz 802.11ac VHT80	93.50	460.00	2.17	3kHz
1+2	5GHz 802.11n HT20 for Ant 1	96.08	980.00	1.02	3kHz
1+2	5GHz 802.11n HT20 for Ant 2	96.08	980.00	1.02	3kHz
1+2	5GHz 802.11n HT40 for Ant 1	93.18	492.00	2.03	3kHz
1+2	5GHz 802.11n HT40 for Ant 2	92.42	488.00	2.05	3kHz
1+2	5GHz 802.11ac VHT80 for Ant 1	86.30	252.00	3.97	10kHz
1+2	5GHz 802.11ac VHT80 for Ant 2	86.30	252.00	3.97	10kHz

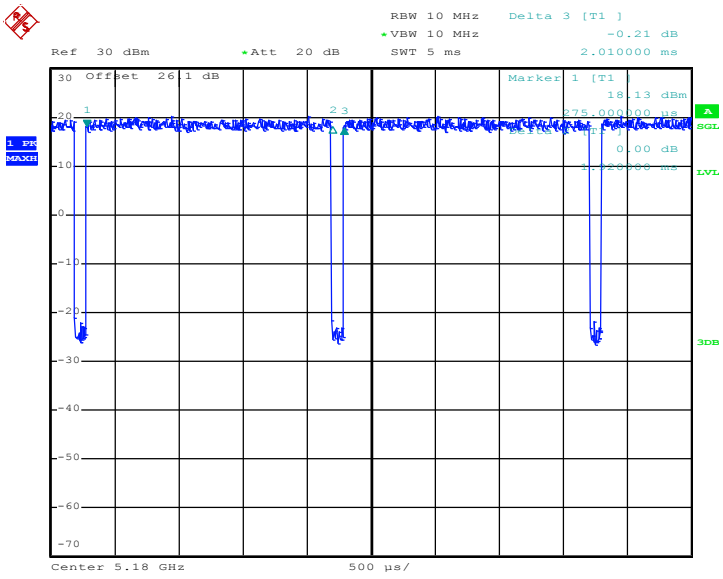
<Ant. 1>

802.11a



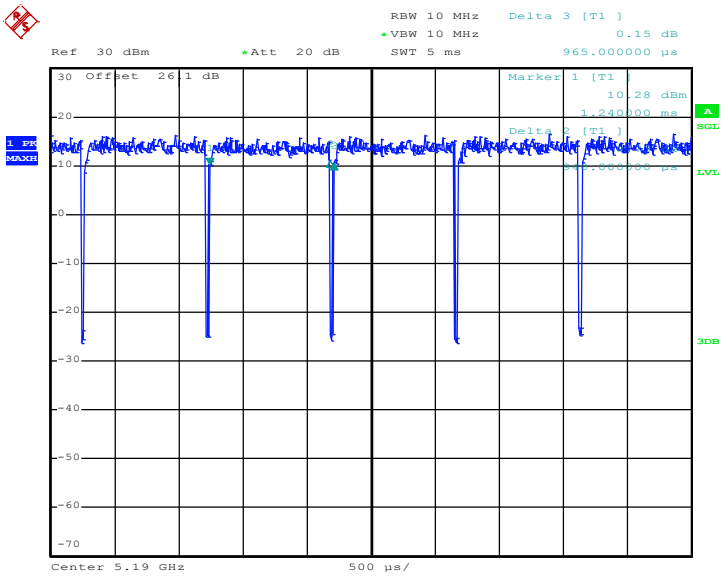
Date: 19.SEP.2016 09:58:18

5GHz 802.11n HT20



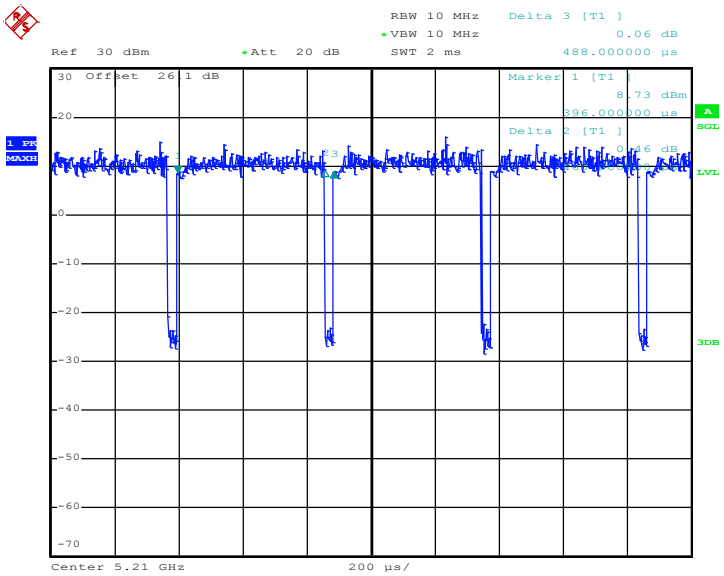
Date: 19.SEP.2016 10:09:37

5GHz 802.11n HT40



Date: 19.SEP.2016 10:30:30

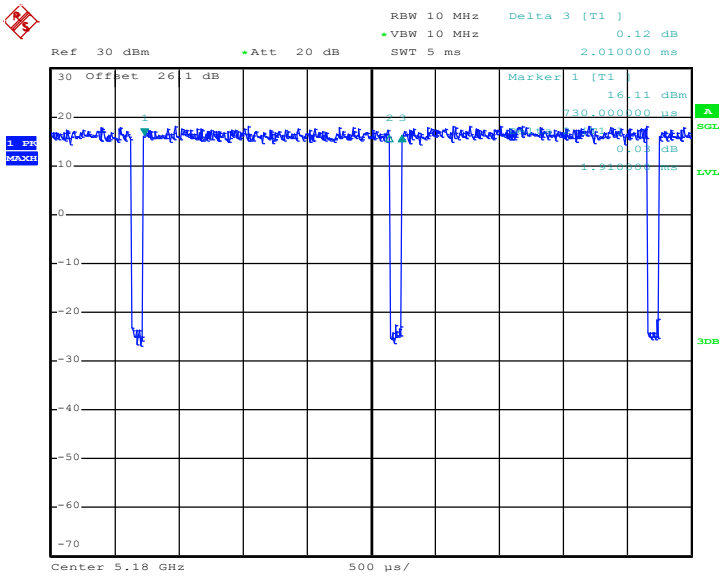
5GHz 802.11ac VHT80



Date: 19.SEP.2016 11:05:42

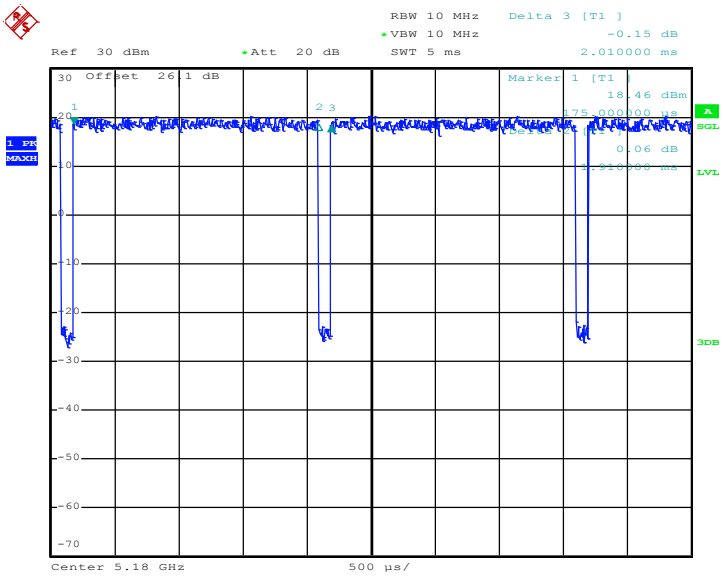
<Ant. 2>

802.11a



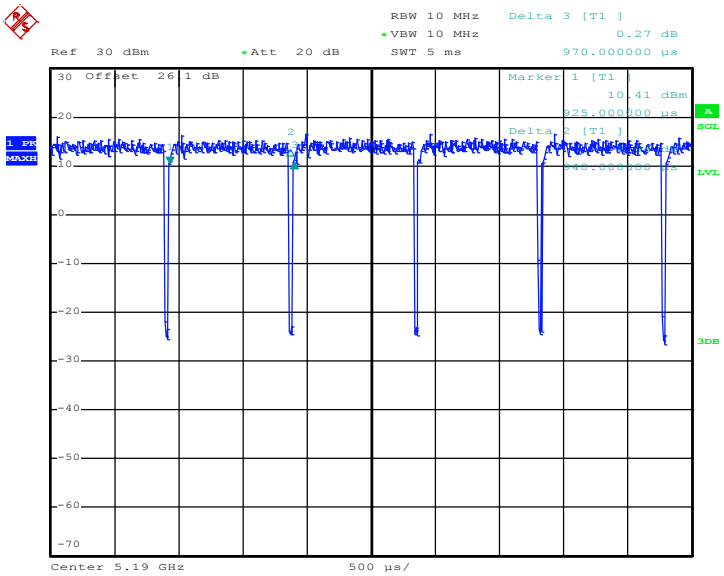
Date: 19.SEP.2016 09:58:47

5GHz 802.11n HT20



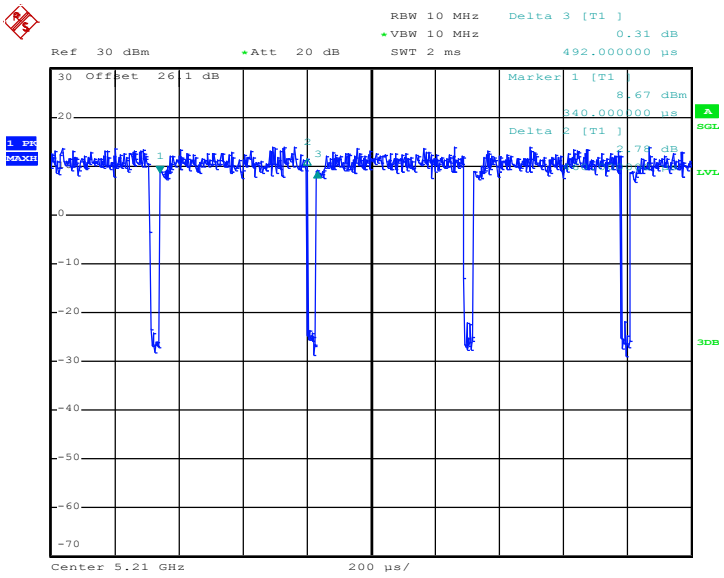
Date: 19.SEP.2016 10:10:09

5GHz 802.11n HT40



Date: 19.SEP.2016 10:30:58

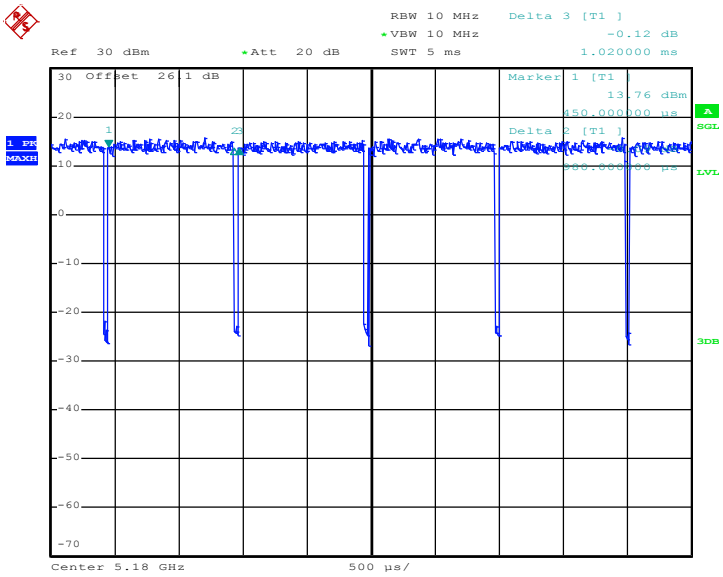
5GHz 802.11ac VHT80



Date: 19.SEP.2016 11:06:12

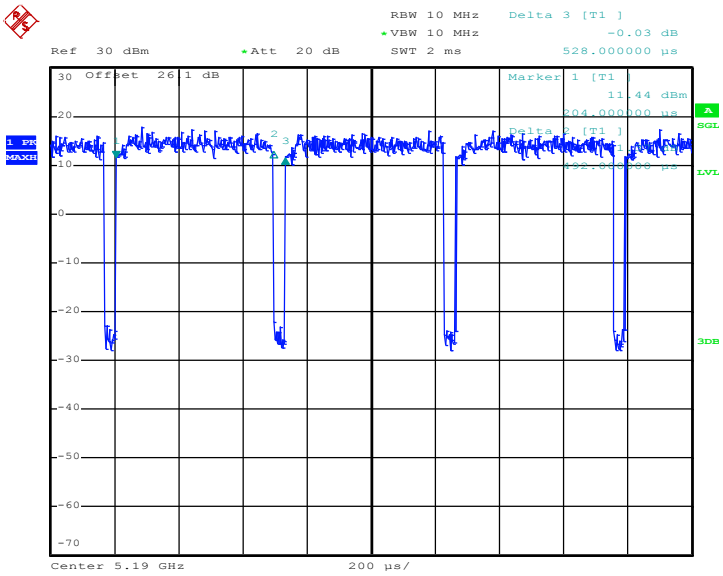
<MIMO Ant. 1+2(1)>

5GHz 802.11n HT20



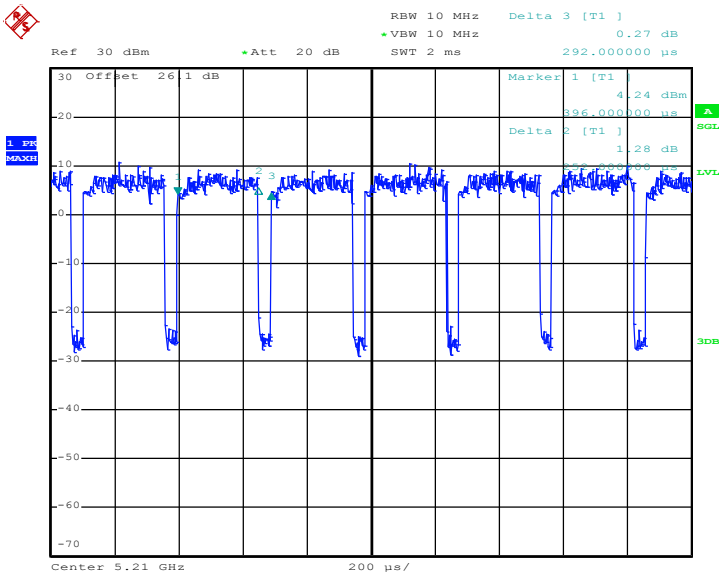
Date: 19.SEP.2016 10:20:55

5GHz 802.11n HT40



Date: 19.SEP.2016 10:44:13

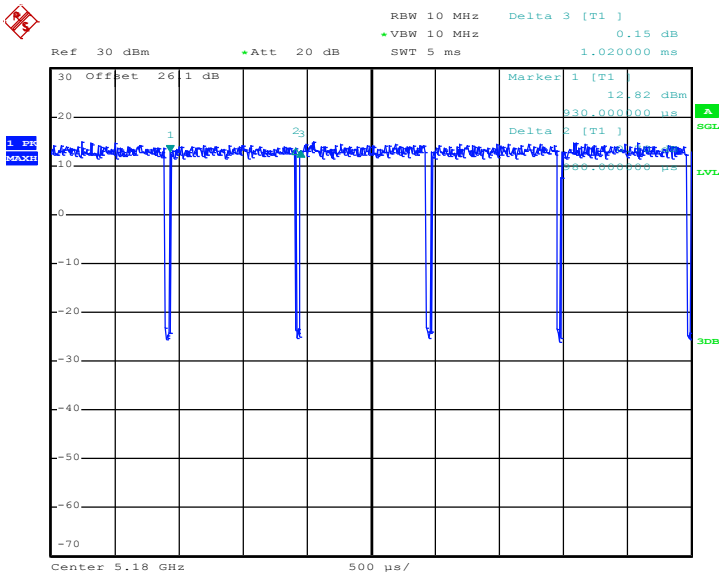
5GHz 802.11ac VHT80



Date: 19.SEP.2016 11:10:00

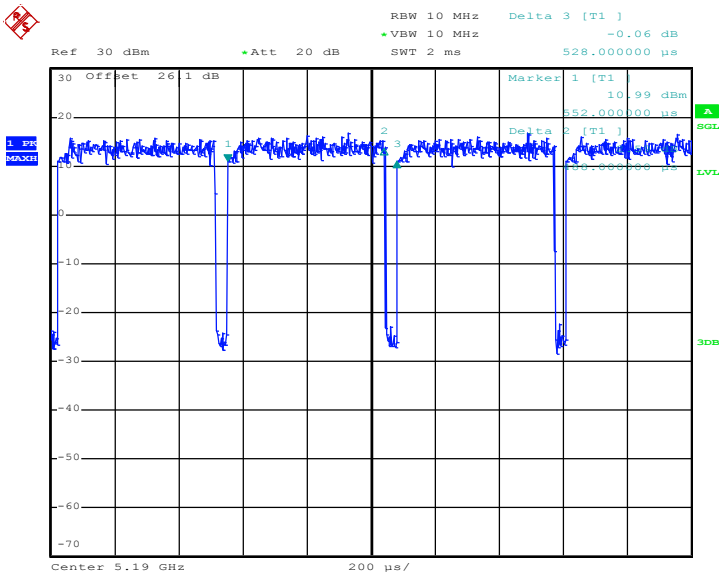
<MIMO Ant. 1+2(2)>

5GHz 802.11n HT20



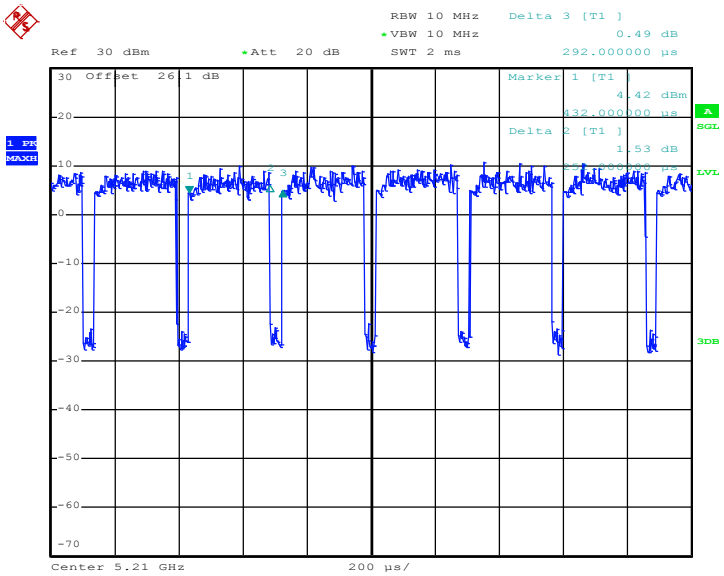
Date: 19.SEP.2016 10:21:26

5GHz 802.11n HT40



Date: 19.SEP.2016 10:44:52

5GHz 802.11ac VHT80



Date: 19.SEP.2016 11:10:29