



FCC RF Test Report

APPLICANT : HTC Corporation
EQUIPMENT : Smartphone
MODEL NAME : 2PZF100
FCC ID : NM82PZF100
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Nov. 25, 2016 and testing was completed on Jan. 17, 2017. 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.

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Approved by: Jones Tsai / Manager



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FCC ID : NM82PZF100

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TABLE OF CONTENTS

REVISION HISTORY 3

SUMMARY OF TEST RESULT 4

1 GENERAL DESCRIPTION 5

 1.1 Applicant 5

 1.2 Manufacturer 5

 1.3 Product Feature of Equipment Under Test 5

 1.4 Product Specification of Equipment Under Test 6

 1.5 Modification of EUT 6

 1.6 Testing Location 7

 1.7 Applicable Standards 7

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST 8

 2.1 Carrier Frequency and Channel 8

 2.2 Test Mode 9

 2.3 Connection Diagram of Test System 11

 2.4 Support Unit used in test configuration and system 12

 2.5 EUT Operation Test Setup 12

 2.6 Measurement Results Explanation Example 12

3 TEST RESULT 13

 3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement 13

 3.2 Maximum Conducted Output Power Measurement 16

 3.3 Power Spectral Density Measurement 17

 3.4 Unwanted Emissions Measurement 20

 3.5 AC Conducted Emission Measurement 25

 3.6 Frequency Stability Measurement 29

 3.7 Automatically Discontinue Transmission 30

 3.8 Antenna Requirements 31

4 LIST OF MEASURING EQUIPMENT 32

5 UNCERTAINTY OF EVALUATION 33

APPENDIX A. TEST RESULT OF CONDUCTED TEST ITEMS

APPENDIX B. RADIATED SPURIOUS EMISSION

APPENDIX C. RADIATED SPURIOUS EMISSION PLOTS

APPENDIX D. DUTY CYCLE PLOTS

APPENDIX E. SETUP PHOTOGRAPHS



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR6N2506-02F	Rev. 01	Initial issue of report	Jan. 25, 2017



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) & 15.209(a)	Pass	Under limit 7.76 dB at 5650.000 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 10.20 dB at 13.558 MHz
3.6	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

HTC Corporation

1F, 6-3 Baoqiang Rd., Xindian District, New Taipei City, Taiwan 231

1.2 Manufacturer

HTC Corporation

1F, 6-3 Baoqiang Rd., Xindian District, New Taipei City, Taiwan 231

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Smartphone
Model Name	2PZF100
FCC ID	NM82PZF100
Sample 1	EUT with battery 1 and memory 1
Sample 2	EUT with battery 2 and memory 2
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
EUT Stage	Production Unit

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



1.4 Product Specification of Equipment Under Test

Standards-related Product Specification													
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz												
Maximum Output Power	<p><Ant. 1> 802.11a : 15.58 dBm / 0.0361 W 802.11n HT20 : 15.58 dBm / 0.0361 W 802.11n HT40 : 15.89 dBm / 0.0388 W 802.11ac VHT20: 15.53 dBm / 0.0357 W 802.11ac VHT40: 15.84 dBm / 0.0384 W 802.11ac VHT80: 13.27 dBm / 0.0212 W</p> <p><Ant. 2> 802.11a : 15.53 dBm / 0.0357 W 802.11n HT20 : 15.61 dBm / 0.0364 W 802.11n HT40 : 15.86 dBm / 0.0385 W 802.11ac VHT20: 15.57 dBm / 0.0361 W 802.11ac VHT40: 15.79 dBm / 0.0379 W 802.11ac VHT80: 13.24 dBm / 0.0211 W</p> <p>MIMO <Ant. 1 + 2> 802.11n HT20 : 18.97 dBm / 0.0789 W 802.11n HT40 : 18.93 dBm / 0.0782 W 802.11ac VHT20: 18.86 dBm / 0.0769 W 802.11ac VHT40: 18.94 dBm / 0.0783 W 802.11ac VHT80: 16.51 dBm / 0.0448 W</p>												
99% Occupied Bandwidth	802.11a : 18.50 MHz 802.11n HT20 : 19.70 MHz 802.11n HT40 : 38.10 MHz 802.11ac VHT80 : 76.44 MHz												
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)												
Antenna Type / Gain	<Ant. 1> : PIFA Antenna with gain -1.50 dBi <Ant. 2> : PIFA Antenna with gain -2.00 dBi												
Antenna Function Description	<table border="1"> <thead> <tr> <th></th> <th>Ant. 1</th> <th>Ant. 2</th> </tr> </thead> <tbody> <tr> <td>802.11 a/n/ac</td> <td>V</td> <td>V</td> </tr> <tr> <td>802.11 n/ac</td> <td>V</td> <td>V</td> </tr> <tr> <td>MIMO</td> <td>V</td> <td>V</td> </tr> </tbody> </table>		Ant. 1	Ant. 2	802.11 a/n/ac	V	V	802.11 n/ac	V	V	MIMO	V	V
	Ant. 1	Ant. 2											
802.11 a/n/ac	V	V											
802.11 n/ac	V	V											
MIMO	V	V											

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

1.5 Modification of EUT

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



1.6 Testing Location

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

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

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

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH11-HY	

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

1.7 Applicable Standards

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

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ FCC KDB 644545 D03 Guidance for IEEE 802 11ac New Rules v01
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane for Ant. 1 and Ant. 1+2; Z plane for Ant. 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 as below table.

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

Test Cases	
AC Conducted Emission	Mode 1 :GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + NFC On + USB Cable 1 (Charging from Adapter 1) + SIM 1 for Sample 1
Remark: For radiated spurious emissions, all the test cases were performed with adapter 1, USB cable 1, and Sample 1.	

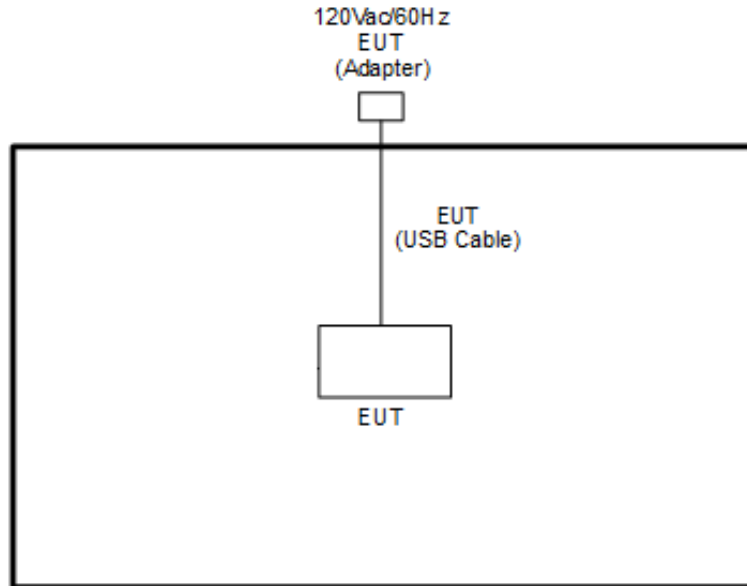


Ch. #		Band IV : 5725-5850 MHz		
		802.11a	802.11n HT20	802.11n HT40
L	Low	149	149	151
M	Middle	157	157	-
H	High	165	165	159

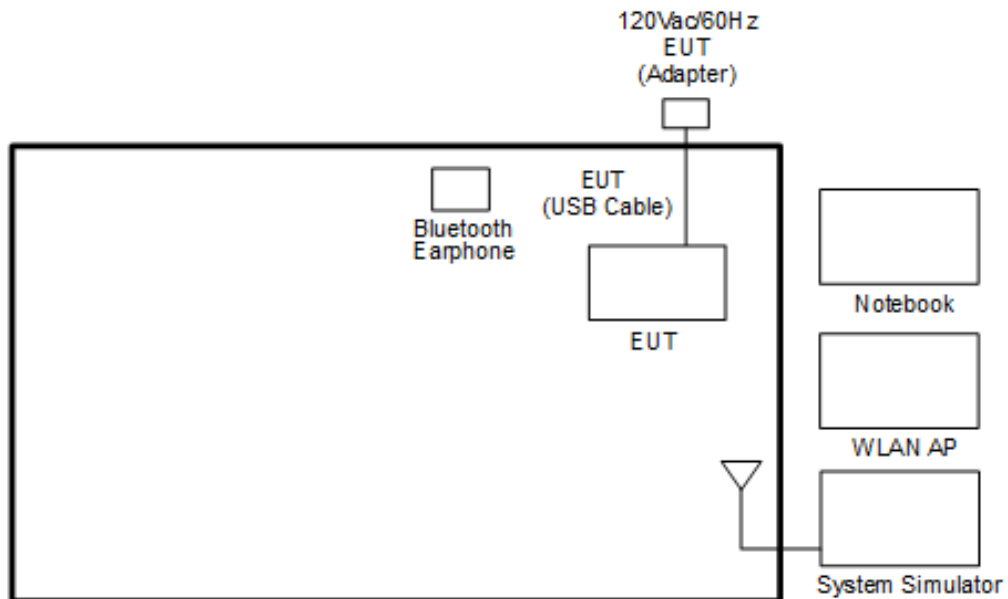
Ch. #		Band IV : 5725-5850 MHz		
		802.11ac VHT20	802.11ac VHT40	802.11ac VHT80
L	Low	149	151	-
M	Middle	157	-	155
H	High	165	159	-

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.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.5 EUT Operation Test Setup

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

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

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

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

26dB and 99% Occupied bandwidth are reporting only.

3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

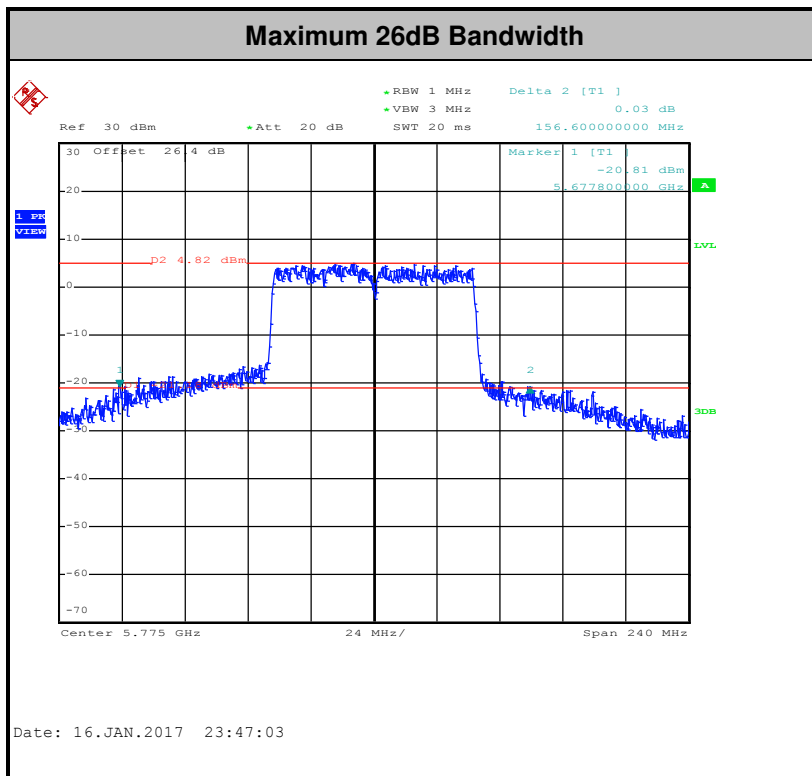
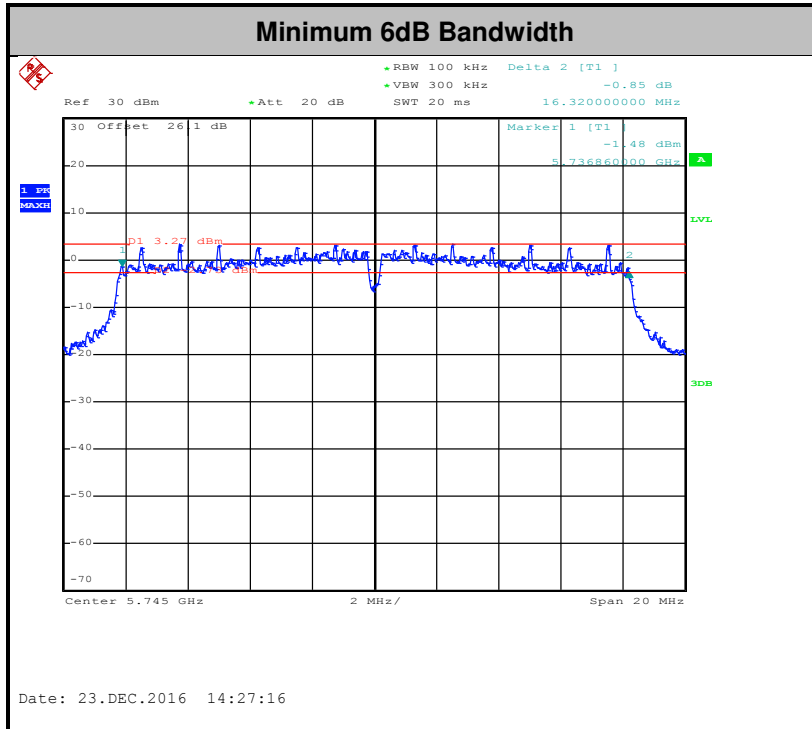
3.1.4 Test Setup

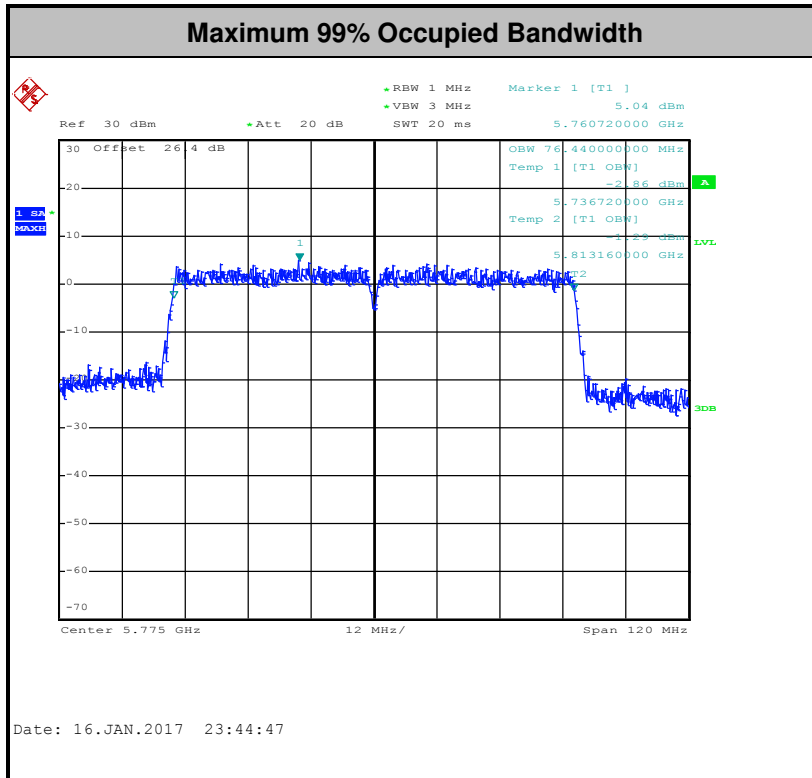




3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.





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

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

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

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

3.2.2 Measuring Instruments

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

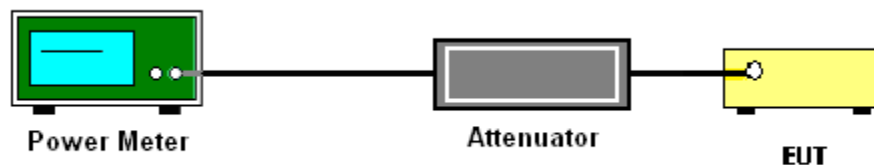
3.2.3 Test Procedures

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

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

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

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

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

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

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

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

Method SA-2

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

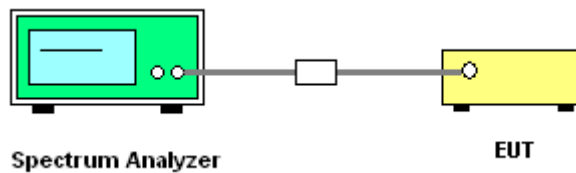
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW \geq 1 MHz.
- Number of points in sweep \geq 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add $10 \log(500\text{kHz}/\text{RBW})$ to the test result.
- Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.

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

Method (c): Measure and add $10 \log(N_{ANT})$ dB.

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

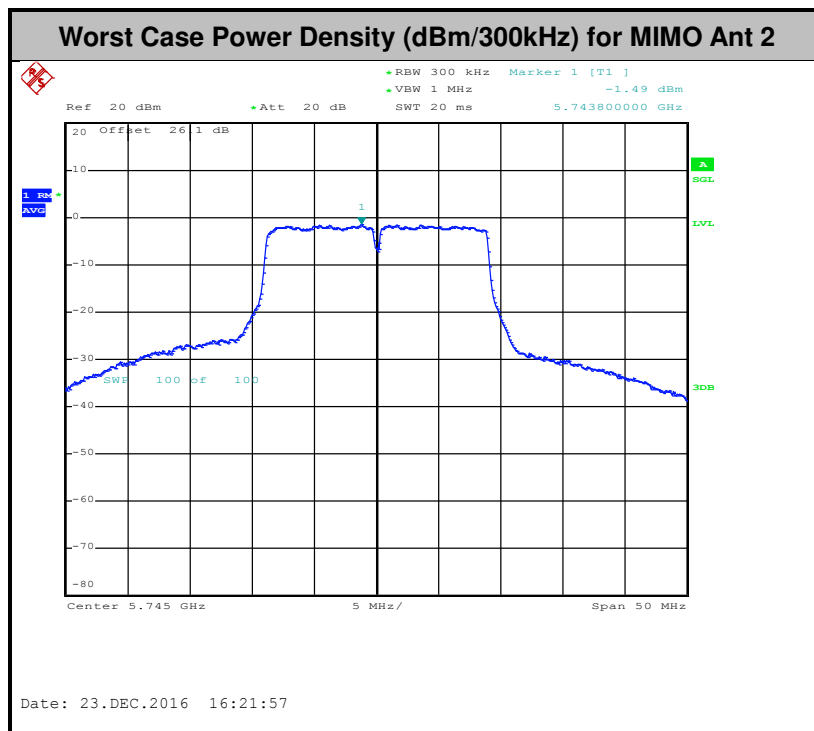
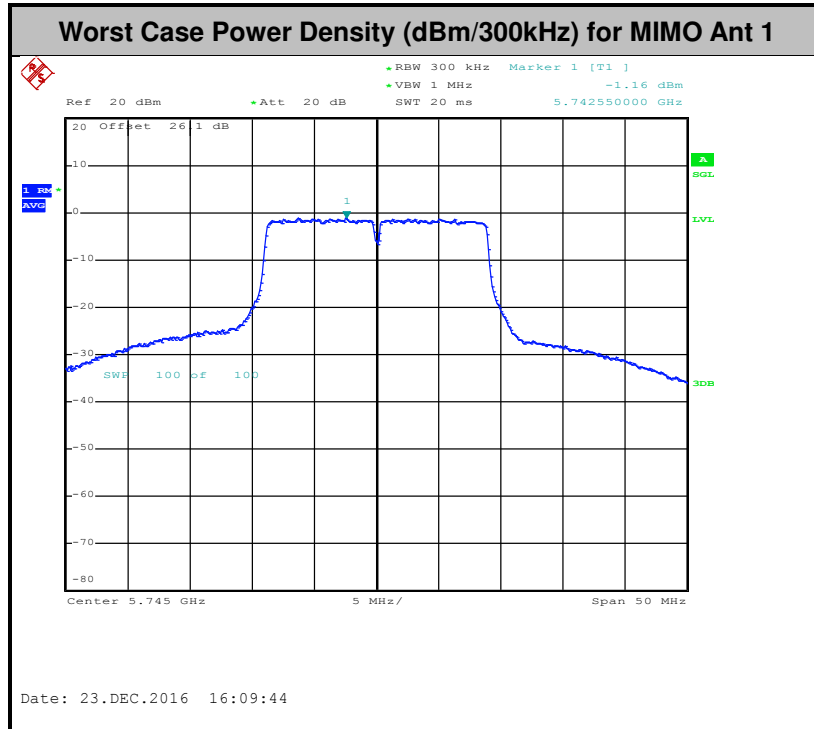
3.3.4 Test Setup





3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.





3.4 Unwanted Emissions Measurement

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

3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5.725-5.85 GHz band:
 15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

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

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



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

(3) KDB 789033 D02 General UNII Test Procedures New Rules v01r03 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

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

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

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

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

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

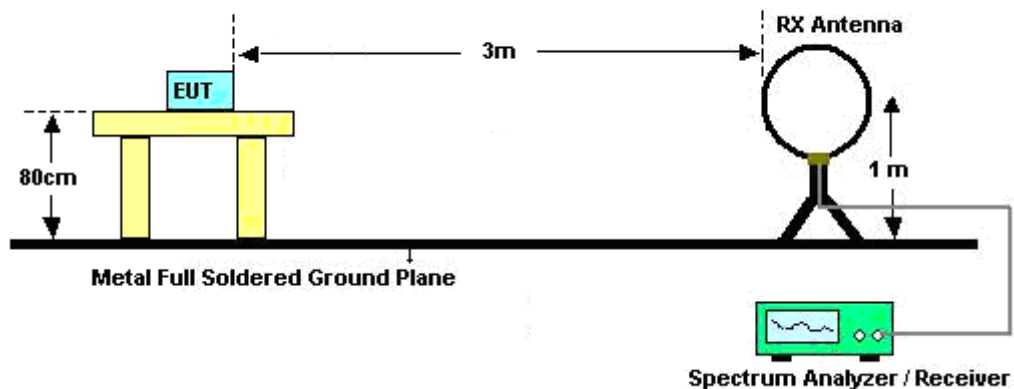
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

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

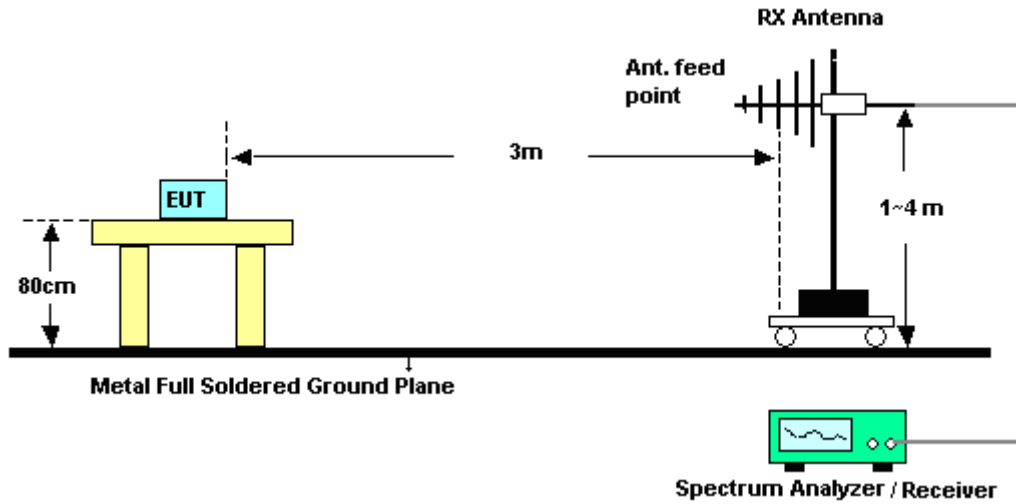
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

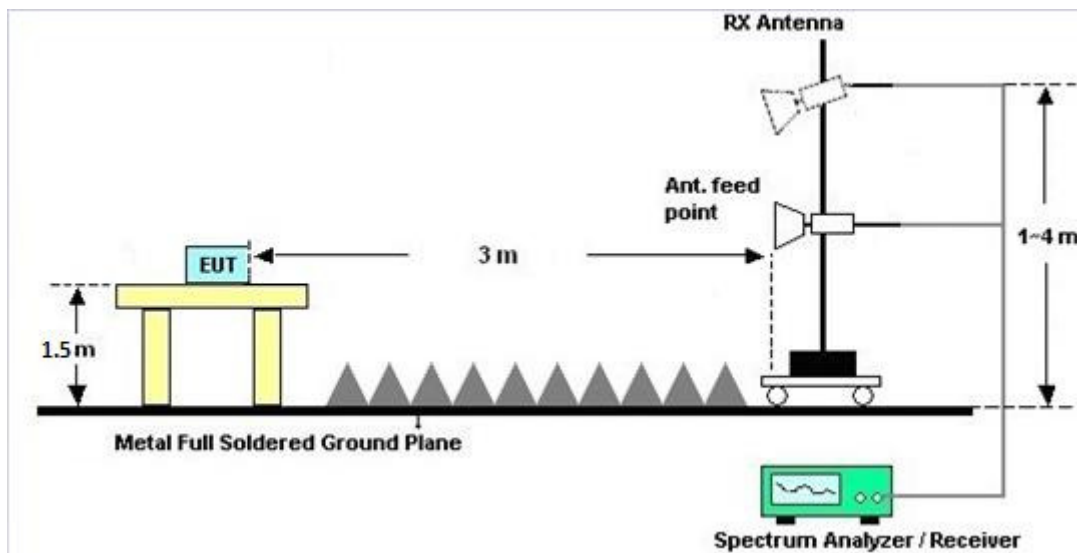
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





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

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

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.4.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.



3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

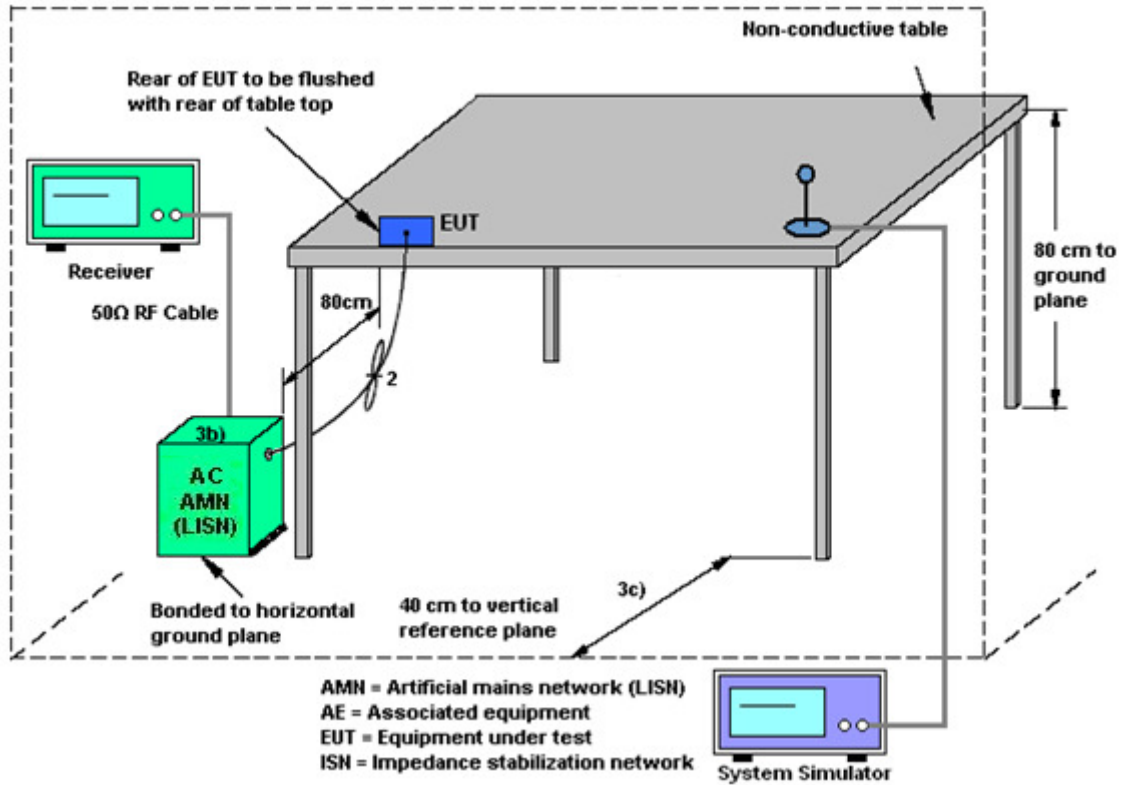
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

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

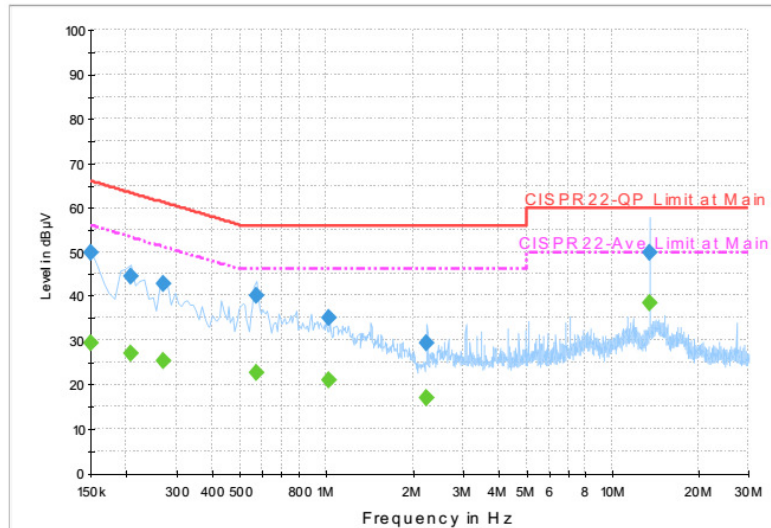
3.5.4 Test Setup





3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + NFC On + USB Cable 1 (Charging from Adapter 1) + SIM 1 for Sample 1		



Final Result : QuasiPeak

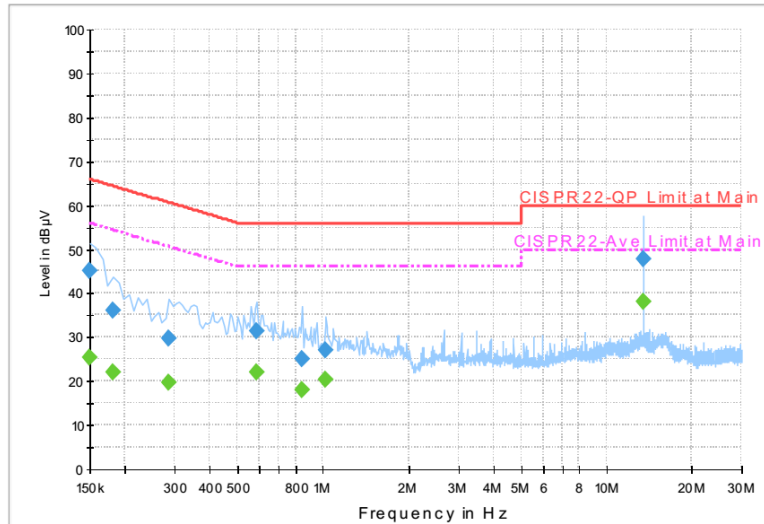
Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	49.8	Off	L1	19.6	16.2	66.0
0.206000	44.5	Off	L1	19.6	18.9	63.4
0.270000	42.8	Off	L1	19.6	18.3	61.1
0.566000	40.0	Off	L1	19.6	16.0	56.0
1.022000	35.1	Off	L1	19.6	20.9	56.0
2.246000	29.3	Off	L1	18.3	26.7	56.0
13.558000	49.8	Off	L1	20.2	10.2	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	29.3	Off	L1	19.6	26.7	56.0
0.206000	27.2	Off	L1	19.6	26.2	53.4
0.270000	25.4	Off	L1	19.6	25.7	51.1
0.566000	22.9	Off	L1	19.6	23.1	46.0
1.022000	21.1	Off	L1	19.6	24.9	46.0
2.246000	17.0	Off	L1	18.3	29.0	46.0
13.558000	38.4	Off	L1	20.2	11.6	50.0



Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + NFC On + USB Cable 1 (Charging from Adapter 1) + SIM 1 for Sample 1		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	45.0	Off	N	19.5	21.0	66.0
0.182000	36.3	Off	N	19.5	28.1	64.4
0.286000	29.8	Off	N	19.5	30.8	60.6
0.582000	31.3	Off	N	19.5	24.7	56.0
0.846000	24.9	Off	N	19.5	31.1	56.0
1.022000	27.0	Off	N	19.5	29.0	56.0
13.558000	47.8	Off	N	20.2	12.2	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	25.4	Off	N	19.5	30.6	56.0
0.182000	22.2	Off	N	19.5	32.2	54.4
0.286000	19.6	Off	N	19.5	31.0	50.6
0.582000	22.1	Off	N	19.5	23.9	46.0
0.846000	18.1	Off	N	19.5	27.9	46.0
1.022000	20.4	Off	N	19.5	25.6	46.0
13.558000	38.2	Off	N	20.2	11.8	50.0

3.6 Frequency Stability Measurement

3.6.1 Limit of Frequency Stability

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

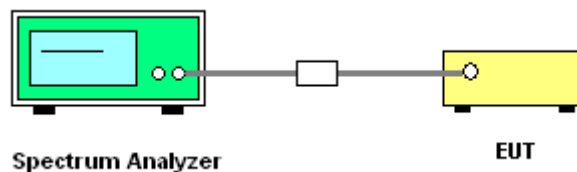
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

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

3.6.4 Test Setup



3.6.5 Test Result of Frequency Stability

Please refer to Appendix A.



3.7 Automatically Discontinue Transmission

3.7.1 Limit of Automatically Discontinue Transmission

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

3.7.2 Measuring Instruments

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

3.7.3 Test Result of Automatically Discontinue Transmission

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



3.8 Antenna Requirements

3.8.1 Standard Applicable

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

3.8.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.8.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

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

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

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

For power measurements on IEEE 802.11 devices,

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

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

The EUT supports CDD mode.

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

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

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

The directional gain "DG" is calculated as following table.

	Ant 1	Ant 2	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
Band IV	-1.50	-2.00	-1.50	1.26	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
Power Meter	Anritsu	ML2495A	0932001	300MHz~40GHz	Sep. 29, 2016	Dec. 08, 2016 ~ Jan. 17, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 29, 2016	Dec. 08, 2016 ~ Jan. 17, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jul. 17, 2016	Dec. 08, 2016 ~ Jan. 17, 2017	Jul. 16, 2017	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40°C ~90°C	Sep. 01, 2016	Dec. 08, 2016 ~ Jan. 17, 2017	Aug. 31, 2017	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 11, 2016	Dec. 08, 2016 ~ Jan. 17, 2017	Oct. 10, 2017	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Dec. 28, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Dec. 28, 2016	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 29, 2016	Dec. 28, 2016	Nov. 28, 2017	Conduction (CO05-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 10, 2016	Dec. 20, 2016 ~ Dec. 25, 2016	Nov. 09, 2017	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Dec. 20, 2016 ~ Dec. 25, 2016	Sep. 01, 2017	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	35414	30MHz~1GHz	Oct. 15, 2016	Dec. 20, 2016 ~ Dec. 25, 2016	Oct. 14, 2017	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1GHz ~ 18GHz	Mar. 30, 2016	Dec. 20, 2016 ~ Dec. 25, 2016	Mar. 31, 2017	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 10, 2016	Dec. 20, 2016 ~ Dec. 25, 2016	Nov. 09, 2017	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY52350276	10Hz ~ 44GHZ	Mar. 21, 2016	Dec. 20, 2016 ~ Dec. 25, 2016	Mar. 20, 2017	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Dec. 20, 2016 ~ Dec. 25, 2016	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Dec. 20, 2016 ~ Dec. 25, 2016	N/A	Radiation (03CH11-HY)
Preamplifier	MITEQ	TTA0204	1872107	2GHz~40GHz	Feb. 15, 2016	Dec. 20, 2016 ~ Dec. 25, 2016	Feb. 14, 2017	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 08, 2016	Dec. 20, 2016 ~ Dec. 25, 2016	Nov. 07, 2017	Radiation (03CH11-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
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.5
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Aking chang	Temperature:	21~25	°C
Test Date:	2016/12/08~2017/01/17	Relative Humidity:	51~54	%

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

Band IV													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	18.00	18.05	25.70	25.70	16.32	16.32	0.5	0.5	Pass
11a	6Mbps	1	157	5785	18.50	18.25	26.90	22.90	16.32	16.32	0.5	0.5	Pass
11a	6Mbps	1	165	5825	18.10	18.05	25.90	22.90	16.32	16.32	0.5	0.5	Pass
HT20	MCS8	2	149	5745	19.70	19.70	43.20	47.04	17.60	17.60	0.5		Pass
HT20	MCS8	2	157	5785	19.45	19.50	44.32	42.40	17.60	17.60	0.5		Pass
HT20	MCS8	2	165	5825	19.55	19.45	40.16	47.04	17.60	17.60	0.5		Pass
HT40	MCS8	2	151	5755	37.20	38.10	67.12	80.48	36.28	36.32	0.5		Pass
HT40	MCS8	2	159	5795	37.60	37.80	90.24	96.40	36.32	36.40	0.5		Pass
VHT80	MCS0	2	155	5775	75.96	76.44	108.96	156.60	76.40	76.32	0.5		Pass

TEST RESULTS DATA
Average Power Table

Band IV														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	0.25	0.21	15.58	15.53		30.00	30.00	-1.50	-2.00	Pass
11a	6Mbps	1	157	5785	0.25	0.21	15.54	15.50		30.00	30.00	-1.50	-2.00	Pass
11a	6Mbps	1	165	5825	0.25	0.21	15.57	15.52		30.00	30.00	-1.50	-2.00	Pass
HT20	MCS0	1	149	5745	0.22	0.22	15.57	15.60		30.00	30.00	-1.50	-2.00	Pass
HT20	MCS0	1	157	5785	0.22	0.22	15.58	15.61		30.00	30.00	-1.50	-2.00	Pass
HT20	MCS0	1	165	5825	0.22	0.22	15.56	15.58		30.00	30.00	-1.50	-2.00	Pass
HT40	MCS0	1	151	5755	0.14	0.14	14.42	14.39		30.00	30.00	-1.50	-2.00	Pass
HT40	MCS0	1	159	5795	0.14	0.14	15.89	15.86		30.00	30.00	-1.50	-2.00	Pass
VHT20	MCS0	1	149	5745	0.26	0.26	15.51	15.57		30.00	30.00	-1.50	-2.00	Pass
VHT20	MCS0	1	157	5785	0.26	0.26	15.50	15.56		30.00	30.00	-1.50	-2.00	Pass
VHT20	MCS0	1	165	5825	0.26	0.26	15.53	15.50		30.00	30.00	-1.50	-2.00	Pass
VHT40	MCS0	1	151	5755	0.09	0.14	15.84	15.79		30.00	30.00	-1.50	-2.00	Pass
VHT40	MCS0	1	159	5795	0.09	0.14	15.79	15.60		30.00	30.00	-1.50	-2.00	Pass
VHT80	MCS0	1	155	5775	0.22	0.22	13.27	13.24		30.00	30.00	-1.50	-2.00	Pass
HT20	MCS8	2	149	5745	0.46	0.46	16.06	15.86	18.97	30.00		-1.50		Pass
HT20	MCS8	2	157	5785	0.46	0.46	15.96	15.66	18.82	30.00		-1.50		Pass
HT20	MCS8	2	165	5825	0.46	0.46	16.01	15.77	18.90	30.00		-1.50		Pass
HT40	MCS8	2	151	5755	0.21	0.21	14.61	14.59	17.61	30.00		-1.50		Pass
HT40	MCS8	2	159	5795	0.21	0.21	15.89	15.95	18.93	30.00		-1.50		Pass
VHT20	MCS0	2	149	5745	0.41	0.41	15.95	15.74	18.86	30.00		-1.50		Pass
VHT20	MCS0	2	157	5785	0.41	0.41	15.85	15.54	18.71	30.00		-1.50		Pass
VHT20	MCS0	2	165	5825	0.41	0.41	15.90	15.65	18.79	30.00		-1.50		Pass
VHT40	MCS0	2	151	5755	0.20	0.25	16.00	15.85	18.94	30.00		-1.50		Pass
VHT40	MCS0	2	159	5795	0.20	0.25	15.98	15.80	18.91	30.00		-1.50		Pass
VHT80	MCS0	2	155	5775	0.39	0.39	13.59	13.40	16.51	30.00		-1.50		Pass

TEST RESULTS DATA
Power Spectral Density

Band IV																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	0.25	0.21	2.22	2.22	2.19	1.80		30.00	30.00	-1.50	-2.00	Pass
11a	6Mbps	1	157	5785	0.25	0.21	2.22	2.22	2.45	1.53		30.00	30.00	-1.50	-2.00	Pass
11a	6Mbps	1	165	5825	0.25	0.21	2.22	2.22	2.27	1.67		30.00	30.00	-1.50	-2.00	Pass
HT20	MCS8	2	149	5745	0.46	0.46	2.22					4.53	30.00	-1.50		Pass
HT20	MCS8	2	157	5785	0.46	0.46	2.22					4.41	30.00	-1.50		Pass
HT20	MCS8	2	165	5825	0.46	0.46	2.22					4.40	30.00	-1.50		Pass
HT40	MCS8	2	151	5755	0.21	0.21	2.22					-0.05	30.00	-1.50		Pass
HT40	MCS8	2	159	5795	0.21	0.21	2.22					1.62	30.00	-1.50		Pass
VHT80	MCS0	2	155	5775	0.39	0.39	2.22					-3.38	30.00	-1.50		Pass

TEST RESULTS DATA
Frequency Stability

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	149	5745	5745.000	0.000	0.00	50	3.85	
11a	6Mbps	1	149	5745	5745.050	0.050	8.70	-30	3.85	
11a	6Mbps	1	149	5745	5745.050	0.050	8.70	20	4.4	
11a	6Mbps	1	149	5745	5745.050	0.050	8.70	20	3.6	
11a	6Mbps	1	149	5745	5745.050	0.050	8.70	20	3.85	



Appendix B. Radiated Spurious Emission

Test Engineer :	J.C. Liang, Jacky Hung, and Ken Wu	Temperature :	20~23°C
		Relative Humidity :	58~63%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant. 1	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		5639.4	50.48	-17.72	68.2	39.22	32.89	11.47	33.1	110	360	P	H	
		5690.6	56.38	-41.89	98.27	45.06	32.97	11.47	33.12	110	360	P	H	
		5717.2	68.43	-41.59	110.02	57.11	32.99	11.46	33.13	110	360	P	H	
		5722	69	-46.36	115.36	57.66	33.01	11.46	33.13	110	360	P	H	
	*	5745	102.25	-	-	90.9	33.04	11.46	33.15	110	360	P	H	
	*	5745	94.86	-	-	83.51	33.04	11.46	33.15	110	360	A	H	
														H
														H
			5643.8	50.29	-17.91	68.2	39.03	32.89	11.47	33.1	106	21	P	V
			5691.6	52.45	-46.56	99.01	41.13	32.97	11.47	33.12	106	21	P	V
			5716	60.76	-48.92	109.68	49.44	32.99	11.46	33.13	106	21	P	V
			5723.6	63.36	-55.65	119.01	52.02	33.01	11.46	33.13	106	21	P	V
	*		5745	97.08	-	-	85.73	33.04	11.46	33.15	106	21	P	V
	*		5745	89.59	-	-	78.24	33.04	11.46	33.15	106	21	A	V
														V
													V	



WIFI Ant. 1	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)
		5644.6	51.7	-16.5	68.2	40.44	32.89	11.47	33.1	110	1	P	H
		5667.6	50.88	-30.38	81.26	39.58	32.94	11.47	33.11	110	1	P	H
		5718.8	53.2	-57.26	110.46	41.86	33.01	11.46	33.13	110	1	P	H
		5721.8	51.36	-63.54	114.9	40.02	33.01	11.46	33.13	110	1	P	H
	*	5785	103.29	-	-	91.92	33.09	11.45	33.17	110	1	P	H
	*	5785	95.95	-	-	84.58	33.09	11.45	33.17	110	1	A	H
		5851.6	51.31	-67.24	118.55	39.79	33.18	11.53	33.19	110	1	P	H
		5865.8	50.44	-57.33	107.77	38.84	33.21	11.6	33.21	110	1	P	H
		5908.8	51.86	-28.29	80.15	40.14	33.28	11.67	33.23	110	1	P	H
		5936.6	50.22	-17.98	68.2	38.49	33.3	11.67	33.24	110	1	P	H
													H
													H
802.11a													
CH 157													
5785MHz		5601.2	51.34	-16.86	68.2	40.09	32.84	11.48	33.07	113	10	P	V
		5689.8	50.8	-46.88	97.68	39.48	32.97	11.47	33.12	113	10	P	V
		5703.2	50.36	-55.74	106.1	39.03	32.99	11.46	33.12	113	10	P	V
		5721.6	49.51	-64.94	114.45	38.17	33.01	11.46	33.13	113	10	P	V
	*	5785	94.92	-	-	83.55	33.09	11.45	33.17	113	10	P	V
	*	5785	87.39	-	-	76.02	33.09	11.45	33.17	113	10	A	V
		5850.6	51.11	-69.72	120.83	39.59	33.18	11.53	33.19	113	10	P	V
		5865.8	49.33	-58.44	107.77	37.73	33.21	11.6	33.21	113	10	P	V
		5877	51.63	-52.08	103.71	40.01	33.23	11.6	33.21	113	10	P	V
		5933.6	50.73	-17.47	68.2	38.99	33.3	11.67	33.23	113	10	P	V
													V
													V



WiFi Ant. 1	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 165 5825MHz	*	5825	102.75	-	-	91.24	33.16	11.53	33.18	108	11	P	H	
	*	5825	95.73	-	-	84.22	33.16	11.53	33.18	108	11	A	H	
		5850.2	57.64	-64.1	121.74	46.12	33.18	11.53	33.19	108	11	P	H	
		5859.8	55.68	-53.77	109.45	44.15	33.21	11.53	33.21	108	11	P	H	
		5882.6	52.08	-47.48	99.56	40.46	33.23	11.6	33.21	108	11	P	H	
		5942	50.12	-18.08	68.2	38.29	33.33	11.74	33.24	108	11	P	H	
														H
														H
	*	5825	95.01	-	-	83.5	33.16	11.53	33.18	295	86	P	V	
	*	5825	88.21	-	-	76.7	33.16	11.53	33.18	295	86	A	V	
		5851	51.35	-68.57	119.92	39.83	33.18	11.53	33.19	295	86	P	V	
		5871.8	51.14	-54.95	106.09	39.52	33.23	11.6	33.21	295	86	P	V	
		5880.2	51.25	-50.09	101.34	39.63	33.23	11.6	33.21	295	86	P	V	
		5929.8	50.15	-18.05	68.2	38.41	33.3	11.67	33.23	295	86	P	V	
														V
														V
													V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	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	40.56	-33.44	74	36.83	39.12	15.85	51.24	100	0	P	H
		17235	45.8	-22.4	68.2	34.38	42.84	20.57	51.99	100	0	P	H
													H
													H
		11490	41.51	-32.49	74	37.78	39.12	15.85	51.24	100	0	P	V
		17235	46.34	-21.86	68.2	34.92	42.84	20.57	51.99	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	39.54	-34.46	74	35.82	39.07	15.91	51.26	100	0	P	H
		17355	46.49	-21.71	68.2	34.46	43.26	20.78	52.01	100	0	P	H
													H
													H
		11570	40.03	-33.97	74	36.31	39.07	15.91	51.26	100	0	P	V
		17355	45.12	-23.08	68.2	33.09	43.26	20.78	52.01	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	40.14	-33.86	74	36.42	39.04	15.97	51.29	100	0	P	H
		17475	47	-21.2	68.2	34.35	43.68	20.99	52.02	100	0	P	H
													H
													H
		11650	39.81	-34.19	74	36.09	39.04	15.97	51.29	100	0	P	V
		17475	46.99	-21.21	68.2	34.34	43.68	20.99	52.02	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 802.11a (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
5GHz 802.11a LF		33.24	24.73	-15.27	40	31.79	24.14	1.29	32.49	-	-	P	H	
		89.13	25.25	-18.25	43.5	41.44	14.78	1.51	32.48	-	-	P	H	
		154.2	22.77	-20.73	43.5	36.27	17.2	2	32.7	-	-	P	H	
		779.5	29.92	-16.08	46	30.01	28.06	4.09	32.24	-	-	P	H	
		895.7	31.97	-14.03	46	29.91	29.17	4.57	31.68	169	255	P	H	
		974.8	33.74	-20.26	54	29.47	30.55	4.69	30.97	-	-	P	H	
														H
														H
														H
														H
														H
														H
			35.67	30.03	-9.97	40	38.69	22.54	1.29	32.49	211	309	P	V
			81.03	24.07	-15.93	40	41.22	13.82	1.51	32.48	-	-	P	V
			276.51	24.66	-21.34	46	35.33	19.24	2.58	32.49	-	-	P	V
			693.4	28.77	-17.23	46	30.67	26.63	3.94	32.47	-	-	P	V
			930.7	33.48	-12.52	46	30.14	30.08	4.63	31.37	-	-	P	V
			945.4	33.68	-12.32	46	29.75	30.49	4.69	31.25	-	-	P	V
														V
														V
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



Note symbol

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



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

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

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

For Peak Limit @ 2390MHz:

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

For Average Limit @ 2390MHz:

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

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



Band 4 - 5725~5850MHz

WIFI 802.11a (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.		
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
802.11a CH 149 5745MHz		5649	51.4	-16.8	68.2	40.14	32.89	11.47	33.1	203	60	P	H	
		5693.4	60.01	-40.32	100.33	48.69	32.97	11.47	33.12	203	60	P	H	
		5718.4	70.94	-39.41	110.35	59.6	33.01	11.46	33.13	203	60	P	H	
		5721.6	73.88	-40.57	114.45	62.54	33.01	11.46	33.13	203	60	P	H	
	*	5745	107.58	-	-	96.23	33.04	11.46	33.15	203	60	P	H	
	*	5745	99.6	-	-	88.25	33.04	11.46	33.15	203	60	A	H	
														H
														H
			5607.4	50.72	-17.48	68.2	39.48	32.84	11.48	33.08	400	2	P	V
			5691.6	55.81	-43.2	99.01	44.49	32.97	11.47	33.12	400	2	P	V
			5718.6	66.87	-43.54	110.41	55.53	33.01	11.46	33.13	400	2	P	V
			5723.8	69.06	-50.4	119.46	57.72	33.01	11.46	33.13	400	2	P	V
	*		5745	102.81	-	-	91.46	33.04	11.46	33.15	400	2	P	V
	*		5745	94.67	-	-	83.32	33.04	11.46	33.15	400	2	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)
		5600.2	51.31	-16.89	68.2	40.06	32.84	11.48	33.07	219	59	P	H
		5698.2	52.98	-50.89	103.87	41.66	32.97	11.47	33.12	219	59	P	H
		5718.8	57.3	-53.16	110.46	45.96	33.01	11.46	33.13	219	59	P	H
		5724.8	57.47	-64.27	121.74	46.13	33.01	11.46	33.13	219	59	P	H
	*	5785	107.89	-	-	96.52	33.09	11.45	33.17	219	59	P	H
	*	5785	99.19	-	-	87.82	33.09	11.45	33.17	219	59	A	H
		5852.2	52.27	-64.91	117.18	40.75	33.18	11.53	33.19	219	59	P	H
		5856	52.63	-57.89	110.52	41.08	33.21	11.53	33.19	219	59	P	H
		5880.6	51.23	-49.81	101.04	39.61	33.23	11.6	33.21	219	59	P	H
		5928.2	50.88	-17.32	68.2	39.14	33.3	11.67	33.23	219	59	P	H
													H
													H
802.11a													
CH 157													
5785MHz		5601.4	50.68	-17.52	68.2	39.43	32.84	11.48	33.07	391	2	P	V
		5693.2	51.75	-48.44	100.19	40.43	32.97	11.47	33.12	391	2	P	V
		5717.8	52.59	-57.59	110.18	41.25	33.01	11.46	33.13	391	2	P	V
		5725	51.91	-70.29	122.2	40.57	33.01	11.46	33.13	391	2	P	V
	*	5785	102.71	-	-	91.34	33.09	11.45	33.17	391	2	P	V
	*	5785	95.14	-	-	83.77	33.09	11.45	33.17	391	2	A	V
		5852.4	51.28	-65.45	116.73	39.76	33.18	11.53	33.19	391	2	P	V
		5871.6	50.75	-55.4	106.15	39.13	33.23	11.6	33.21	391	2	P	V
		5881	51.22	-49.52	100.74	39.6	33.23	11.6	33.21	391	2	P	V
		5925.8	50.35	-17.85	68.2	38.61	33.3	11.67	33.23	391	2	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)	
802.11a CH 165 5825MHz	*	5825	106.13	-	-	94.62	33.16	11.53	33.18	219	58	P	H	
	*	5825	97.79	-	-	86.28	33.16	11.53	33.18	219	58	A	H	
		5850	61.09	-61.11	122.2	49.57	33.18	11.53	33.19	219	58	P	H	
		5855.2	57.2	-53.54	110.74	45.65	33.21	11.53	33.19	219	58	P	H	
		5884	53.89	-44.63	98.52	42.28	33.23	11.6	33.22	219	58	P	H	
		5947.4	51.67	-16.53	68.2	39.84	33.33	11.74	33.24	219	58	P	H	
														H
														H
	*	5825	100.78	-	-	89.27	33.16	11.53	33.18	400	358	P	V	
	*	5825	92.93	-	-	81.42	33.16	11.53	33.18	400	358	A	V	
		5851.2	55.32	-64.14	119.46	43.8	33.18	11.53	33.19	400	358	P	V	
		5855.8	55.92	-54.66	110.58	44.37	33.21	11.53	33.19	400	358	P	V	
		5914.4	52.38	-23.64	76.02	40.66	33.28	11.67	33.23	400	358	P	V	
		5931.2	50.35	-17.85	68.2	38.61	33.3	11.67	33.23	400	358	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	39.99	-34.01	74	36.26	39.12	15.85	51.24	100	0	P	H
		17235	53.46	-14.74	68.2	42.04	42.84	20.57	51.99	100	0	P	H
													H
													H
		11490	40.34	-33.66	74	36.61	39.12	15.85	51.24	100	0	P	V
		17235	49.49	-18.71	68.2	38.07	42.84	20.57	51.99	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	40.31	-33.69	74	36.59	39.07	15.91	51.26	100	0	P	H
		17355	53.56	-14.64	68.2	41.53	43.26	20.78	52.01	100	0	P	H
													H
													H
		11570	40.62	-33.38	74	36.9	39.07	15.91	51.26	100	0	P	V
		17355	50.05	-18.15	68.2	38.02	43.26	20.78	52.01	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	40.49	-33.51	74	36.77	39.04	15.97	51.29	100	0	P	H
		17475	53.01	-15.19	68.2	40.36	43.68	20.99	52.02	100	0	P	H
													H
													H
		11650	40.09	-33.91	74	36.37	39.04	15.97	51.29	100	0	P	V
		17475	50.15	-18.05	68.2	37.5	43.68	20.99	52.02	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 802.11a (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
5GHz 802.11a LF		81.03	25.06	-14.94	40	42.21	13.82	1.51	32.48	-	-	P	H	
		158.79	23.36	-20.14	43.5	37.13	16.95	2	32.72	-	-	P	H	
		278.4	23.67	-22.33	46	34.35	19.22	2.58	32.48	-	-	P	H	
		469.4	25.1	-20.9	46	30.57	23.61	3.28	32.36	-	-	P	H	
		711.6	28.75	-17.25	46	30.23	26.94	4.02	32.44	-	-	P	H	
		900.6	33.28	-12.72	46	31.07	29.23	4.63	31.65	155	211	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
			35.94	30.36	-9.64	40	39.02	22.54	1.29	32.49	205	291	P	V
			50.25	27.58	-12.42	40	43.88	14.9	1.29	32.49	-	-	P	V
			81.03	24.16	-15.84	40	41.31	13.82	1.51	32.48	-	-	P	V
			316.8	23.98	-22.02	46	33.48	20.18	2.68	32.36	-	-	P	V
			847.4	32.32	-13.68	46	30.99	28.88	4.39	31.94	-	-	P	V
			947.5	33.52	-12.48	46	29.51	30.55	4.69	31.23	-	-	P	V
														V
														V
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



Note symbol

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



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

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

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

For Peak Limit @ 2390MHz:

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

For Average Limit @ 2390MHz:

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

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



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)	
802.11n HT20 CH 149 5745MHz		5636.4	50.63	-17.57	68.2	39.37	32.89	11.47	33.1	125	19	P	H	
		5699	62.9	-41.56	104.46	51.58	32.97	11.47	33.12	125	19	P	H	
		5719.4	72.88	-37.75	110.63	61.54	33.01	11.46	33.13	125	19	P	H	
		5724.8	77	-44.74	121.74	65.66	33.01	11.46	33.13	125	19	P	H	
	*	5745	105.93	-	-	94.58	33.04	11.46	33.15	125	19	P	H	
	*	5745	96.64	-	-	85.29	33.04	11.46	33.15	125	19	A	H	
														H
														H
			5635.4	50.66	-17.54	68.2	39.4	32.89	11.47	33.1	103	337	P	V
			5697.6	63.6	-39.83	103.43	52.28	32.97	11.47	33.12	103	337	P	V
			5719.2	72.08	-38.5	110.58	60.74	33.01	11.46	33.13	103	337	P	V
			5721.2	73.14	-40.4	113.54	61.8	33.01	11.46	33.13	103	337	P	V
	*		5745	104.16	-	-	92.81	33.04	11.46	33.15	103	337	P	V
	*		5745	94.66	-	-	83.31	33.04	11.46	33.15	103	337	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)	
802.11n HT20 CH 157 5785MHz		5601	49.93	-18.27	68.2	38.68	32.84	11.48	33.07	106	1	P	H	
		5664	50.53	-28.06	78.59	39.25	32.92	11.47	33.11	106	1	P	H	
		5718.2	53.64	-56.66	110.3	42.3	33.01	11.46	33.13	106	1	P	H	
		5723.6	52.61	-66.4	119.01	41.27	33.01	11.46	33.13	106	1	P	H	
	*	5785	103.72	-	-	92.35	33.09	11.45	33.17	106	1	P	H	
	*	5785	95.21	-	-	83.84	33.09	11.45	33.17	106	1	A	H	
		5854.8	53.1	-58.16	111.26	41.55	33.21	11.53	33.19	106	1	P	H	
		5862.8	51.86	-56.75	108.61	40.26	33.21	11.6	33.21	106	1	P	H	
		5917.4	51.25	-22.55	73.8	39.53	33.28	11.67	33.23	106	1	P	H	
		5926	49.95	-18.25	68.2	38.21	33.3	11.67	33.23	106	1	P	H	
														H
														H
			5643	50.73	-17.47	68.2	39.47	32.89	11.47	33.1	131	332	P	V
			5687.4	50.47	-45.44	95.91	39.15	32.97	11.47	33.12	131	332	P	V
			5707.4	50.7	-56.57	107.27	39.38	32.99	11.46	33.13	131	332	P	V
			5723.8	53.92	-65.54	119.46	42.58	33.01	11.46	33.13	131	332	P	V
	*		5785	101.78	-	-	90.41	33.09	11.45	33.17	131	332	P	V
	*		5785	93.48	-	-	82.11	33.09	11.45	33.17	131	332	A	V
			5853	50.59	-64.77	115.36	39.07	33.18	11.53	33.19	131	332	P	V
			5872	51.82	-54.22	106.04	40.2	33.23	11.6	33.21	131	332	P	V
		5902	51.78	-33.4	85.18	40.07	33.26	11.67	33.22	131	332	P	V	
		5942.6	50.59	-17.61	68.2	38.76	33.33	11.74	33.24	131	332	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)	
802.11n HT20 CH 165 5825MHz	*	5825	105.09	-	-	93.58	33.16	11.53	33.18	137	4	P	H	
	*	5825	95.41	-	-	83.9	33.16	11.53	33.18	137	4	A	H	
		5851.4	62.26	-56.75	119.01	50.74	33.18	11.53	33.19	137	4	P	H	
		5865.4	59.25	-48.64	107.89	47.65	33.21	11.6	33.21	137	4	P	H	
		5879.4	54.46	-47.47	101.93	42.84	33.23	11.6	33.21	137	4	P	H	
		5927.8	51.21	-16.99	68.2	39.47	33.3	11.67	33.23	137	4	P	H	
														H
														H
	*	5825	100.86	-	-	89.35	33.16	11.53	33.18	105	19	19	P	V
	*	5825	91.93	-	-	80.42	33.16	11.53	33.18	105	19	19	A	V
		5851	58.26	-61.66	119.92	46.74	33.18	11.53	33.19	105	19	19	P	V
		5858	55.49	-54.47	109.96	43.96	33.21	11.53	33.21	105	19	19	P	V
		5875.6	51.96	-52.79	104.75	40.34	33.23	11.6	33.21	105	19	19	P	V
		5934.6	50.62	-17.58	68.2	38.89	33.3	11.67	33.24	105	19	19	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)
802.11n HT20 CH 149 5745MHz		11490	40.7	-33.3	74	36.97	39.12	15.85	51.24	100	0	P	H
		17235	49.02	-19.18	68.2	37.6	42.84	20.57	51.99	100	0	P	H
													H
													H
		11490	41.22	-32.78	74	37.49	39.12	15.85	51.24	100	0	P	V
		17235	45.46	-22.74	68.2	34.04	42.84	20.57	51.99	100	0	P	V
													V
													V
802.11n HT20 CH 157 5785MHz		11570	40	-34	74	36.28	39.07	15.91	51.26	100	0	P	H
		17355	48.62	-19.58	68.2	36.59	43.26	20.78	52.01	100	0	P	H
													H
													H
		11570	40.46	-33.54	74	36.74	39.07	15.91	51.26	100	0	P	V
		17355	46.13	-22.07	68.2	34.1	43.26	20.78	52.01	100	0	P	V
													V
													V
802.11n HT20 CH 165 5825MHz		11650	39.74	-34.26	74	36.02	39.04	15.97	51.29	100	0	P	H
		17475	48.98	-19.22	68.2	36.33	43.68	20.99	52.02	100	0	P	H
													H
													H
		11650	40.43	-33.57	74	36.71	39.04	15.97	51.29	100	0	P	V
		17475	46.97	-21.23	68.2	34.32	43.68	20.99	52.02	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)
		5646.2	54.86	-13.34	68.2	43.6	32.89	11.47	33.1	159	28	P	H
		5698.8	66.3	-38.02	104.32	54.98	32.97	11.47	33.12	159	28	P	H
		5717.8	73.65	-36.53	110.18	62.31	33.01	11.46	33.13	159	28	P	H
		5721.8	72.37	-42.53	114.9	61.03	33.01	11.46	33.13	159	28	P	H
	*	5755	101.63	-	-	90.26	33.06	11.46	33.15	159	28	P	H
	*	5755	93.39	-	-	82.02	33.06	11.46	33.15	159	28	A	H
		5851	53.14	-66.78	119.92	41.62	33.18	11.53	33.19	159	28	P	H
		5858.8	51.74	-57.99	109.73	40.21	33.21	11.53	33.21	159	28	P	H
		5880.6	51.2	-49.84	101.04	39.58	33.23	11.6	33.21	159	28	P	H
		5941.4	51.26	-16.94	68.2	39.43	33.33	11.74	33.24	159	28	P	H
802.11n													H
HT40													H
CH 151		5649	53.09	-15.11	68.2	41.83	32.89	11.47	33.1	143	335	P	V
5755MHz		5693.2	66.06	-34.13	100.19	54.74	32.97	11.47	33.12	143	335	P	V
		5718	70.72	-39.52	110.24	59.38	33.01	11.46	33.13	143	335	P	V
		5720.4	72.56	-39.15	111.71	61.22	33.01	11.46	33.13	143	335	P	V
	*	5755	99.12	-	-	87.75	33.06	11.46	33.15	143	335	P	V
	*	5755	90.83	-	-	79.46	33.06	11.46	33.15	143	335	A	V
		5854.2	52.6	-60.02	112.62	41.05	33.21	11.53	33.19	143	335	P	V
		5869.2	50.68	-56.14	106.82	39.08	33.21	11.6	33.21	143	335	P	V
		5883	51.78	-47.48	99.26	40.16	33.23	11.6	33.21	143	335	P	V
		5948	50.49	-17.71	68.2	38.66	33.33	11.74	33.24	143	335	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)
		5638.4	50.6	-17.6	68.2	39.34	32.89	11.47	33.1	103	10	P	H
		5697.2	54.32	-48.82	103.14	43	32.97	11.47	33.12	103	10	P	H
		5704	58.97	-47.35	106.32	47.64	32.99	11.46	33.12	103	10	P	H
		5720.8	60.96	-51.66	112.62	49.62	33.01	11.46	33.13	103	10	P	H
	*	5795	101.18	-	-	89.79	33.11	11.45	33.17	103	10	P	H
	*	5795	93.77	-	-	82.38	33.11	11.45	33.17	103	10	A	H
		5851.2	60.84	-58.62	119.46	49.32	33.18	11.53	33.19	103	10	P	H
		5861.6	61.87	-47.08	108.95	50.27	33.21	11.6	33.21	103	10	P	H
		5879.6	55.57	-46.21	101.78	43.95	33.23	11.6	33.21	103	10	P	H
		5933.6	50.72	-17.48	68.2	38.98	33.3	11.67	33.23	103	10	P	H
802.11n													H
HT40													H
CH 159		5636.8	51.17	-17.03	68.2	39.91	32.89	11.47	33.1	148	335	P	V
5795MHz		5695.8	55.38	-46.72	102.1	44.06	32.97	11.47	33.12	148	335	P	V
		5715.4	58.25	-51.26	109.51	46.93	32.99	11.46	33.13	148	335	P	V
		5725	60.68	-61.52	122.2	49.34	33.01	11.46	33.13	148	335	P	V
	*	5795	99.41	-	-	88.02	33.11	11.45	33.17	148	335	P	V
	*	5795	91.91	-	-	80.52	33.11	11.45	33.17	148	335	A	V
		5852.2	57.52	-59.66	117.18	46	33.18	11.53	33.19	148	335	P	V
		5862.4	56.72	-52.01	108.73	45.12	33.21	11.6	33.21	148	335	P	V
		5878.2	52.82	-50	102.82	41.2	33.23	11.6	33.21	148	335	P	V
		5926.4	50.64	-17.56	68.2	38.9	33.3	11.67	33.23	148	335	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)	
802.11n HT40 CH 151 5755MHz		11510	40.22	-33.78	74	36.48	39.1	15.88	51.24	100	0	P	H	
		17265	49.93	-18.27	68.2	38.33	42.96	20.64	52	100	0	P	H	
													H	
													H	
			11510	40.98	-33.02	74	37.24	39.1	15.88	51.24	100	0	P	V
			17265	47.2	-21	68.2	35.6	42.96	20.64	52	100	0	P	V
														V
														V
802.11n HT40 CH 159 5795MHz		11590	41.35	-32.65	74	37.6	39.07	15.94	51.26	100	0	P	H	
		17385	49.66	-18.54	68.2	37.44	43.38	20.85	52.01	100	0	P	H	
													H	
													H	
			11590	40.2	-33.8	74	36.45	39.07	15.94	51.26	100	0	P	V
			17385	47.96	-20.24	68.2	35.74	43.38	20.85	52.01	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)
		5650	60.44	-7.76	68.2	49.15	32.92	11.47	33.1	149	27	P	H
		5689.6	68.65	-28.88	97.53	57.33	32.97	11.47	33.12	149	27	P	H
		5714.4	68.7	-40.53	109.23	57.38	32.99	11.46	33.13	149	27	P	H
		5724.8	67.81	-53.93	121.74	56.47	33.01	11.46	33.13	149	27	P	H
	*	5775	97.25	-	-	85.86	33.09	11.46	33.16	149	27	P	H
	*	5775	91.09	-	-	79.7	33.09	11.46	33.16	149	27	A	H
		5851.8	60.51	-57.59	118.1	48.99	33.18	11.53	33.19	149	27	P	H
		5858.4	64.01	-45.84	109.85	52.48	33.21	11.53	33.21	149	27	P	H
		5883.2	54.7	-44.41	99.11	43.08	33.23	11.6	33.21	149	27	P	H
		5934.8	51.57	-16.63	68.2	39.84	33.3	11.67	33.24	149	27	P	H
802.11ac													H
VHT80													H
CH 155		5619	59.71	-8.49	68.2	48.44	32.87	11.48	33.08	106	332	P	V
5775MHz		5690	69.39	-28.44	97.83	58.07	32.97	11.47	33.12	106	332	P	V
		5718.4	68	-42.35	110.35	56.66	33.01	11.46	33.13	106	332	P	V
		5722.8	68.67	-48.51	117.18	57.33	33.01	11.46	33.13	106	332	P	V
	*	5775	95.4	-	-	84.01	33.09	11.46	33.16	106	332	P	V
	*	5775	88.12	-	-	76.73	33.09	11.46	33.16	106	332	A	V
		5850.4	57.29	-64	121.29	45.77	33.18	11.53	33.19	106	332	P	V
		5858.4	59.96	-49.89	109.85	48.43	33.21	11.53	33.21	106	332	P	V
		5881.8	54.99	-45.16	100.15	43.37	33.23	11.6	33.21	106	332	P	V
		5925	50.98	-17.22	68.2	39.24	33.3	11.67	33.23	106	332	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)	
802.11ac VHT80 CH 155 5775MHz		11550	40.93	-33.07	74	37.19	39.08	15.91	51.25	100	0	P	H	
		17325	45.81	-22.39	68.2	33.96	43.14	20.71	52	100	0	P	H	
													H	
													H	
			11550	41.38	-32.62	74	37.64	39.08	15.91	51.25	100	0	P	V
			17325	46.61	-21.59	68.2	34.76	43.14	20.71	52	100	0	P	V
														V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



Emission below 1GHz

5GHz WIFI 802.11ac 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.	
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11ac VHT80 LF		88.59	25.58	-17.92	43.5	41.89	14.66	1.51	32.48	-	-	P	H
		108.57	21.49	-22.01	43.5	35.13	17.09	1.78	32.51	-	-	P	H
		242.22	23.58	-22.42	46	35.94	17.97	2.34	32.67	-	-	P	H
		743.8	29.85	-16.15	46	30.52	27.58	4.09	32.34	-	-	P	H
		826.4	31.86	-14.14	46	30.89	28.62	4.39	32.04	-	-	P	H
		955.2	33.84	-12.16	46	29.71	30.59	4.69	31.15	128	221	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			36.21	30.16	-9.84	40	38.82	22.54	1.29	32.49	185	247	P
		48.36	28.05	-11.95	40	43.48	15.77	1.29	32.49	-	-	P	V
		78.33	24.22	-15.78	40	41.73	13.46	1.51	32.48	-	-	P	V
		552.7	26.18	-19.82	46	30.28	24.85	3.47	32.42	-	-	P	V
		707.4	28.59	-17.41	46	30.18	26.84	4.02	32.45	-	-	P	V
		949.6	34.88	-11.12	46	30.79	30.6	4.69	31.2	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

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



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

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

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

For Peak Limit @ 2390MHz:

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

For Average Limit @ 2390MHz:

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

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



Appendix C. Radiated Spurious Emission Plots

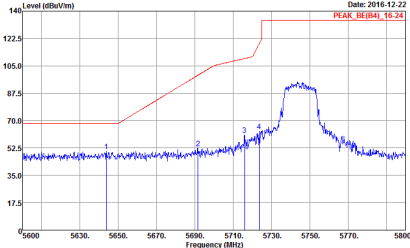
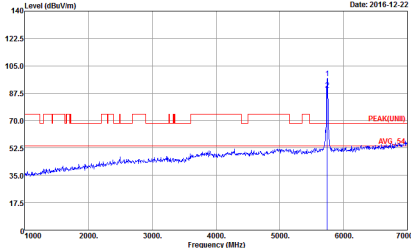
Test Engineer :	J.C. Liang, Jacky Hung, and Ken Wu	Temperature :	20~23°C
		Relative Humidity :	58~63%

Band 4 - 5725~5850MHz

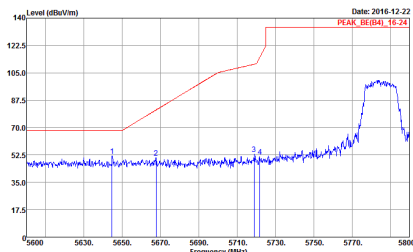
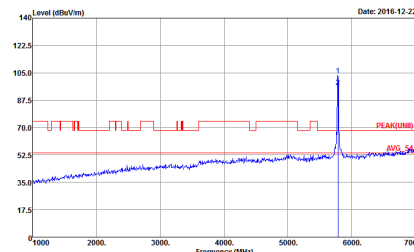
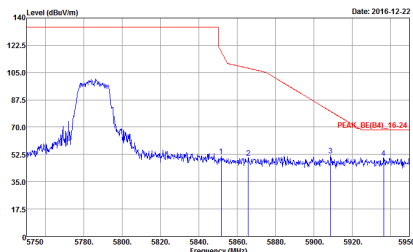
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p>	<p>Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p>

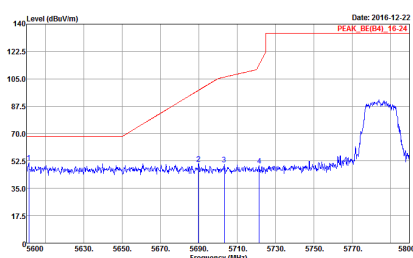
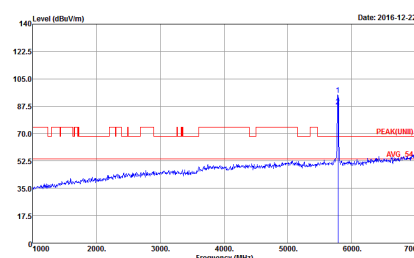
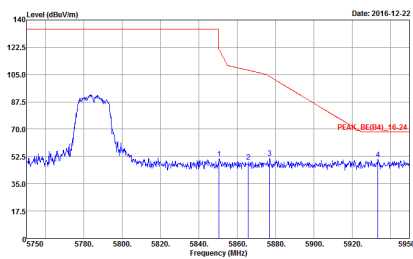


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Vertical	Fundamental
Peak	 <p>Date: 2016-12-22</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	 <p>Date: 2016-12-22</p> <p>Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>

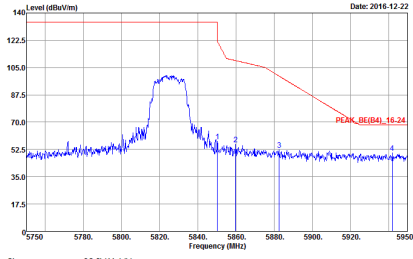
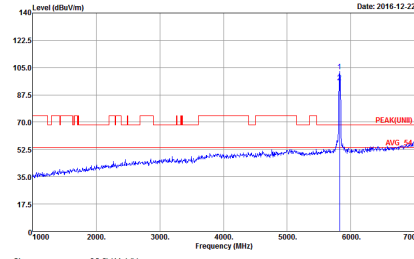


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Fundamental
Peak	 <p>Date: 2016-12-22</p> <p>Site : 03GH1-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	 <p>Date: 2016-12-22</p> <p>Site : 03GH1-HY Condition : PEAK(UMBI) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>
Peak	 <p>Date: 2016-12-22</p> <p>Site : 03GH1-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	<p style="text-align: center;">Vertical</p>  <p>Site : 03GH1-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	<p style="text-align: center;">Fundamental</p>  <p>Site : 03GH1-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>
Peak	 <p>Site : 03GH1-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Fundamental
Peak	 <p>Date: 2016-12-22</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	 <p>Date: 2016-12-22</p> <p>Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>

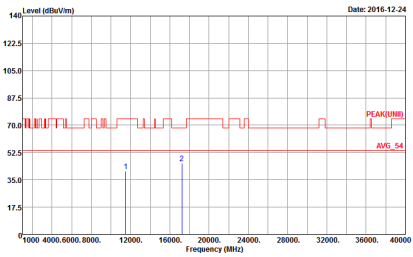
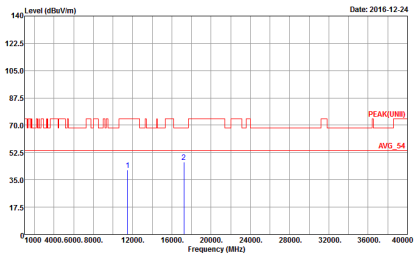


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Vertical	Fundamental
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Peak</p>	<p>Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Peak</p>



Band 4 - 5725~5850MHz

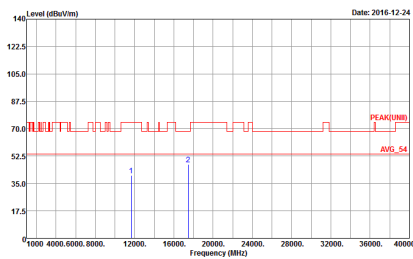
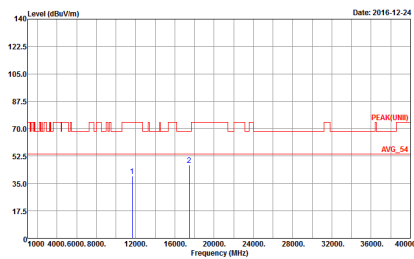
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 02CH11-4Y Condition : PEAK[UNII] 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak</p>	 <p>Site : 02CH11-4Y Condition : PEAK[UNII] 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak</p>



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH11-1FY Condition : PEAK(UNII) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH11-1FY Condition : PEAK(UNII) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak</p>

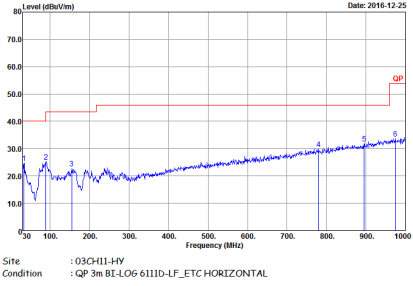
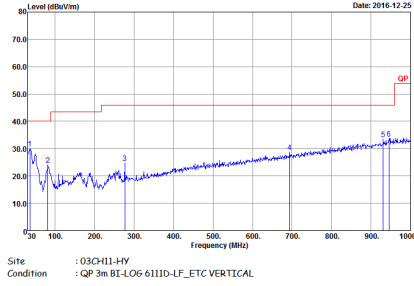


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH11-1FY Condition : PEAK(UNII) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH11-1FY Condition : PEAK(UNII) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak</p>



Emission below 1GHz

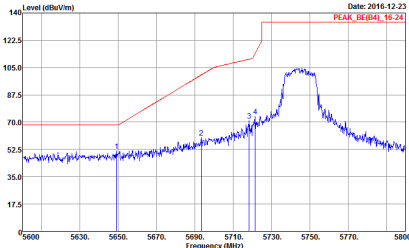
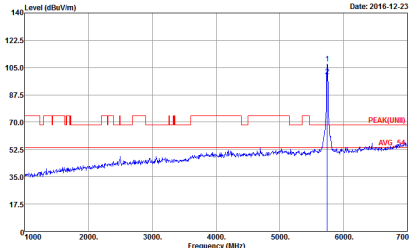
5GHz WIFI 802.11a (LF)

WIFI	5GHz 5725~5850MHz	
ANT	802.11a LF	
1	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH11-HY Condition : QP 3m BE-LOG 6111D-LF_ETC HORIZONTAL</p>	 <p>Site : 03CH11-HY Condition : QP 3m BE-LOG 6111D-LF_ETC VERTICAL</p>



Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
2	Horizontal	Fundamental
Peak	 <p>Date: 2016-12-23 PEAK_BE(B4)_16-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p>	 <p>Date: 2016-12-23 PEAK(UMB) AVG_BA</p> <p>Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Detector : Peak</p>

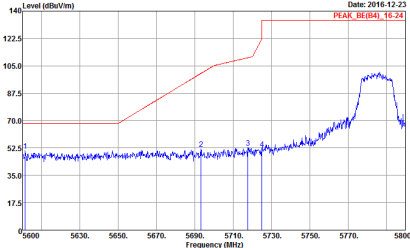
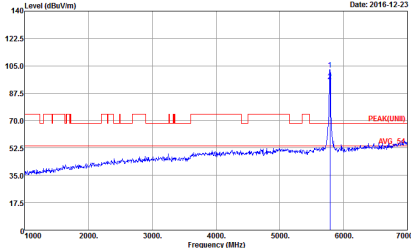
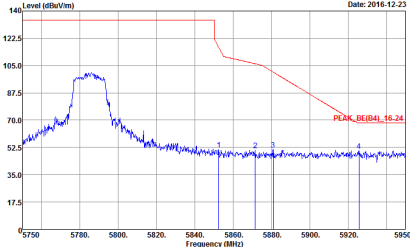


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
2	Vertical	Fundamental
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak</p>	<p>Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : Peak</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
2	Horizontal	Fundamental
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	<p>Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
2	Vertical	Fundamental
Peak	 <p>Site : 03GH1-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	 <p>Site : 03GH1-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>
Peak	 <p>Site : 03GH1-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
2	Horizontal	Fundamental
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	<p>Site : 03CH11-HY Condition : PEAK(UMBL) 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>

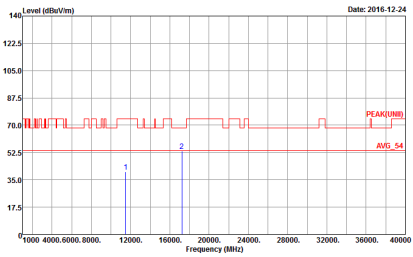
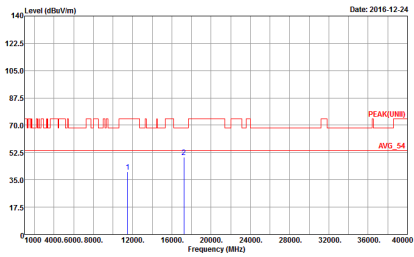


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
2	Vertical	Fundamental
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Peak</p>	<p>Site : 03CH11-HY Condition : PEAK(UMBL) 3m HORN 9120D-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Peak</p>



Band 4 - 5725~5850MHz

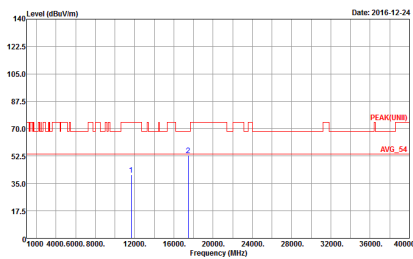
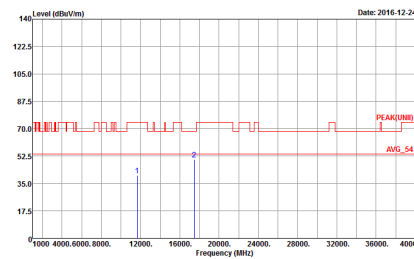
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
2	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 02CH11-4Y Condition : PEAK[UNII] 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak</p>	 <p>Site : 02CH11-4Y Condition : PEAK[UNII] 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak</p>



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
2	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH11-1Y Condition : PEAK(UNII) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH11-1Y Condition : PEAK(UNII) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak</p>



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
2	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH11-1Y Condition : PEAK(UNII) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH11-1Y Condition : PEAK(UNII) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak</p>



Emission below 1GHz

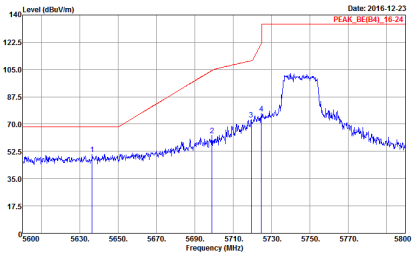
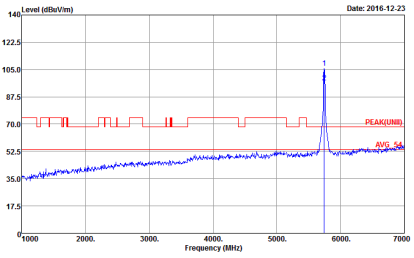
5GHz WIFI 802.11a (LF)

WIFI	5GHz 5725~5850MHz	
ANT	802.11a LF	
2	Horizontal	Vertical
QP / Peak	<p>Site : 03CH11-HY Condition : QP 3m BE-LOG 6111D-LF_ETC HORIZONTAL</p>	<p>Site : 03CH11-HY Condition : QP 3m BE-LOG 6111D-LF_ETC VERTICAL</p>

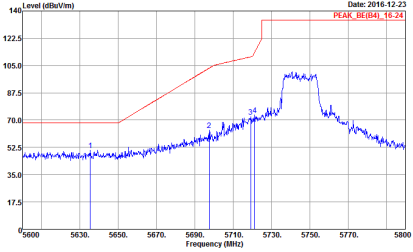
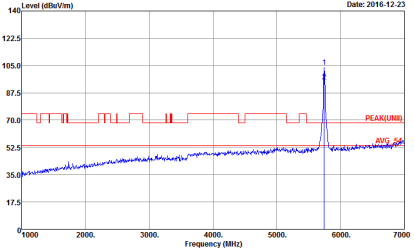


Band 4 - 5725~5850MHz

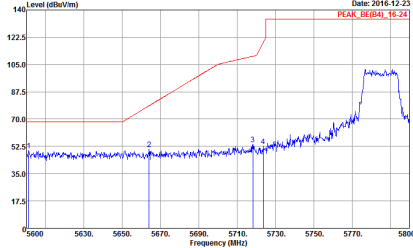
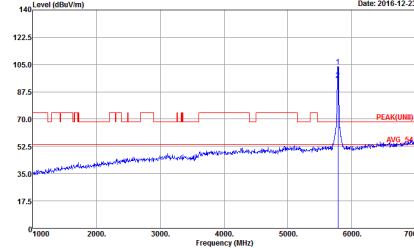
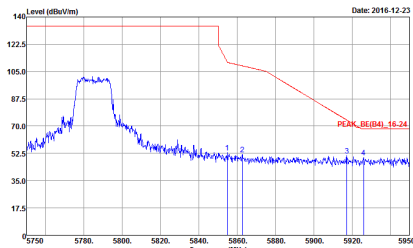
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Date: 2016-12-23 PEAK: 135.0 [5745.0]</p> <p>Site : 03CH11-HY Condition : PEAK_8E(BA)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	 <p>Date: 2016-12-23 PEAK: 105.0 [5745.0] AVG: 54</p> <p>Site : 03CH11-HY Condition : PEAK(UNEL) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>

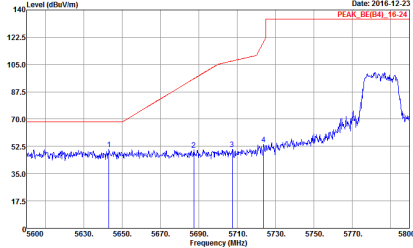
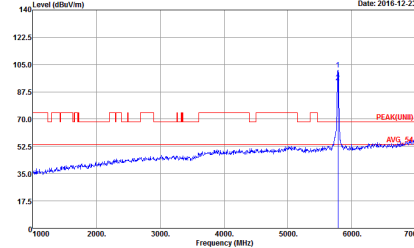
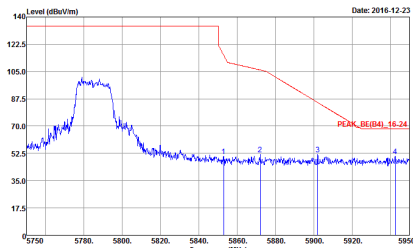


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 <p>Date: 2016-12-23 PEAK_BE(B4)_16-24</p> <p>Site : 03CH11-FY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 6N2506</p>	 <p>Date: 2016-12-23 PEAK(UNB) AVG 54</p> <p>Site : 03CH11-FY Condition : PEAK(UNB) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 6N2506</p>

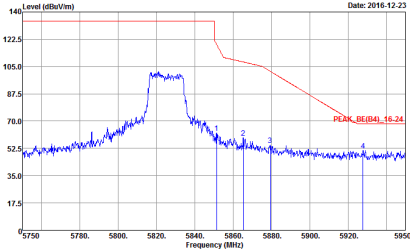
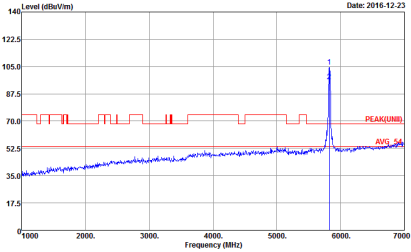


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Date: 2016-12-23 PEAK_BE(B4)_16-23</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	 <p>Date: 2016-12-23</p> <p>Site : 03CH11-HY Condition : PEAK(UNL) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>
Peak	 <p>Date: 2016-12-23</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	Left blank

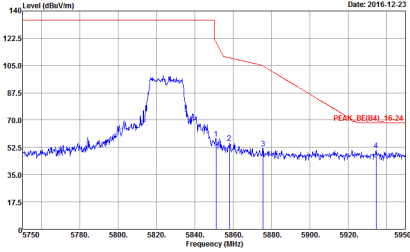
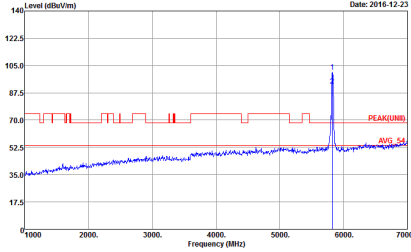


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Vertical	Fundamental
<p>Peak</p>	 <p>Date: 2016-12-23 PEAK_BE(B4)_16-23</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	 <p>Date: 2016-12-23 PEAK(UMB) AVG_54</p> <p>Site : 03CH11-HY Condition : PEAK(UMB) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>
<p>Peak</p>	 <p>Date: 2016-12-23 PEAK_BE(B4)_16-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	<p>Left blank</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 08CH11-1Y Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 6N2506</p>	 <p>Site : 08CH11-1Y Condition : PEAK(UMB) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 6N2506</p>



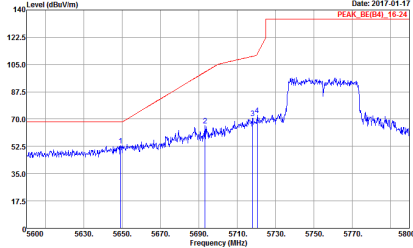
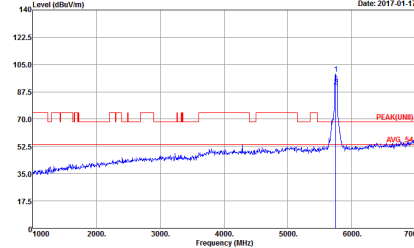
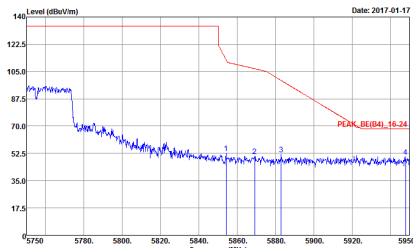
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Vertical	Fundamental
<p>Peak</p>	 <p>Date: 2016-12-23</p> <p>Site : 03CH11-4Y Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 6N2506</p>	 <p>Date: 2016-12-23</p> <p>Site : 03CH11-4Y Condition : PEAK(UNB) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 6N2506</p>



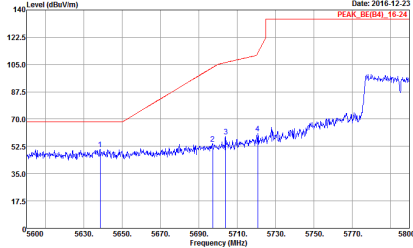
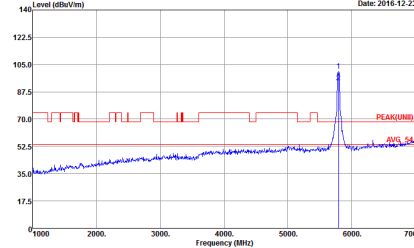
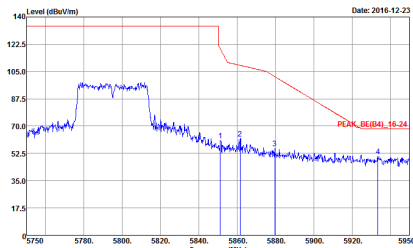
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Fundamental
<p>Peak</p>	<p>Date: 2017-01-17 PEAK_BE(B4)_16-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	<p>Date: 2017-01-17 PEAK(UMI) AVG 64</p> <p>Site : 03CH11-HY Condition : PEAK(UMI) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>
<p>Peak</p>	<p>Date: 2017-01-17 PEAK_BE(B4)_16-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	<p>Left blank</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Vertical	Fundamental
Peak	 <p>Date: 2017-01-17 PEAK_BE(B4)_16-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	 <p>Date: 2017-01-17 PEAK(UMB) AVG_54</p> <p>Site : 03CH11-HY Condition : PEAK(UMB) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>
Peak	 <p>Date: 2017-01-17 PEAK_BE(B4)_16-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
<p>Peak</p>	 <p>Date: 2016-12-23 PEAK_BE(B4)_16-23</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	 <p>Date: 2016-12-23</p> <p>Site : 03CH11-HY Condition : PEAK(UMB) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>
<p>Peak</p>	 <p>Date: 2016-12-23</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	<p>Left blank</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
<p>Peak</p>	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	<p>Site : 03CH11-HY Condition : PEAK(UMB) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>
<p>Peak</p>	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	<p>Left blank</p>



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
<p>Peak</p>	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	<p>Site : 03CH11-HY Condition : PEAK(UIN1) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>
<p>Peak</p>	<p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N2506</p>	<p>Left blank</p>

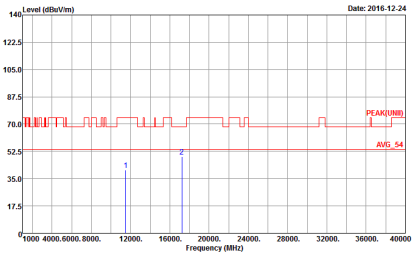
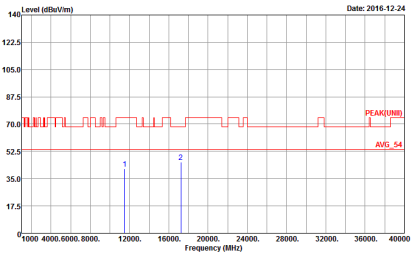


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	<p style="text-align: right;">Date: 2017-01-17 PEAK_BE(B4)_16-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 6N2506</p>	<p style="text-align: right;">Date: 2017-01-17 PEAK(UNB) AVG_5A</p> <p>Site : 03CH11-HY Condition : PEAK(UNB) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 6N2506</p>
Peak	<p style="text-align: right;">Date: 2017-01-17 PEAK_BE(B4)_16-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 6N2506</p>	Left blank

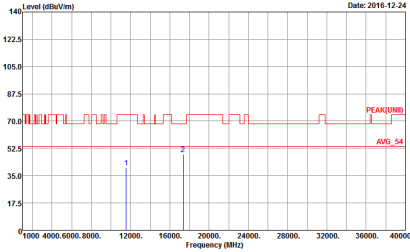
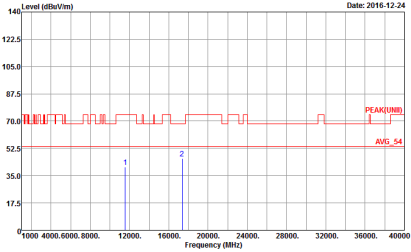


Band 4 - 5725~5850MHz

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.	 <p>Site : 03CH11-HY Condition : PEAK(UNIT) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak Project : 6N2506</p>	 <p>Site : 03CH11-HY Condition : PEAK(UNIT) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak Project : 6N2506</p>



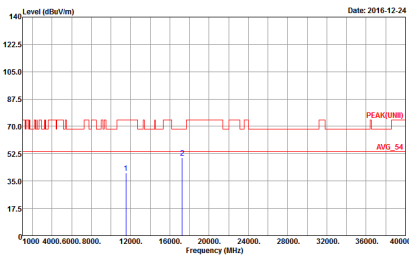
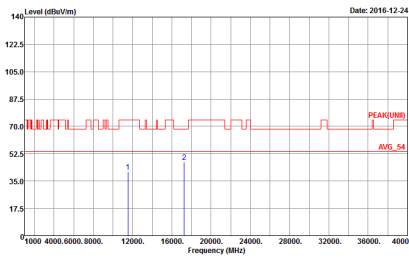
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Vertical
<p>Peak Avg.</p>	 <p>Site : 08CH11-HY Condition : PEAK(UNIT) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak Project : 6N2506</p>	 <p>Site : 08CH11-HY Condition : PEAK(UNIT) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak Project : 6N2506</p>



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.	<p>Site : 08CH11-FY Condition : PEAK(UNIT) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak Project : 6N2506</p>	<p>Site : 08CH11-FY Condition : PEAK(UNIT) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak Project : 6N2506</p>



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

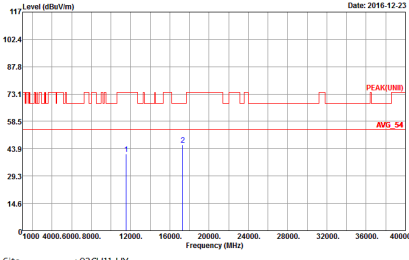
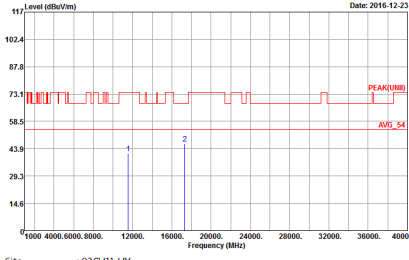
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH11-HY Condition : PEAK(UMBI) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak Project : 6N2506</p>	 <p>Site : 03CH11-HY Condition : PEAK(UMBI) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak Project : 6N2506</p>



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Vertical
Peak Avg.	<p>Site : 08CH11-HY Condition : PEAK(UNIT) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak Project : 6NZ506</p>	<p>Site : 08CH11-HY Condition : PEAK(UNIT) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak Project : 6NZ506</p>



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
<p>Peak</p> <p>Avg.</p>	 <p>Date: 2016-12-23</p> <p>Site : 03CH11-HY Condition : PEAK(UNII) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak Project : 6N2506</p>	 <p>Date: 2016-12-23</p> <p>Site : 03CH11-HY Condition : PEAK(UNII) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak Project : 6N2506</p>



Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (LF)

WIFI	5GHz 5725~5850MHz	
ANT	802.11ac VHT80 LF	
1+2	Horizontal	Vertical
QP / Peak	<p>Site : 03CH11-HY Condition : QP 3m BE-LO6 6111D-LF_ETC HORIZONTAL Project : 6N2506</p>	<p>Site : 03CH11-HY Condition : QP 3m BE-LO6 6111D-LF_ETC VERTICAL Project : 6N2506</p>



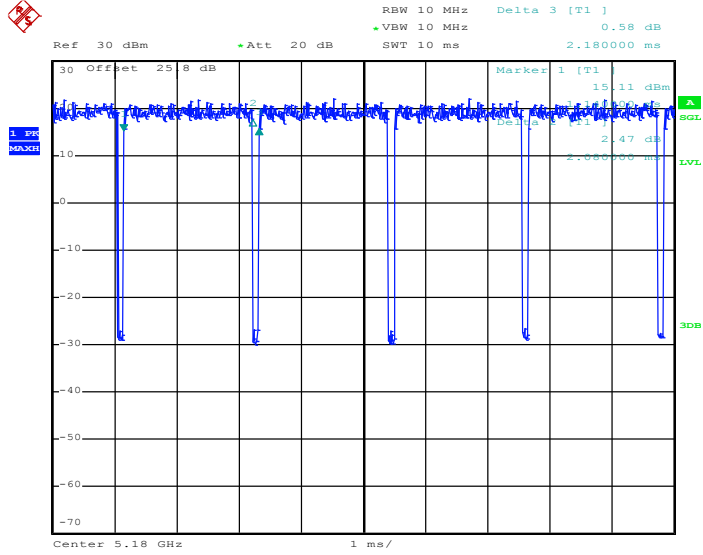
Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11a	95.41	2080.00	0.48	1kHz
2	802.11a	94.50	2060.00	0.49	1kHz
1+2	5GHz 802.11n HT20 for Ant 1	89.91	980.00	1.02	3kHz
1+2	5GHz 802.11n HT40 for Ant 1	95.39	496.00	2.02	3kHz
1+2	5GHz 802.11ac VHT80 for Ant 1	91.43	256.00	3.91	10kHz
1+2	5GHz 802.11n HT20 for Ant 2	90.83	990.00	1.01	3kHz
1+2	5GHz 802.11n HT40 for Ant 2	95.39	496.00	2.02	3kHz
1+2	5GHz 802.11ac VHT80 for Ant 2	91.43	256.00	3.91	10kHz



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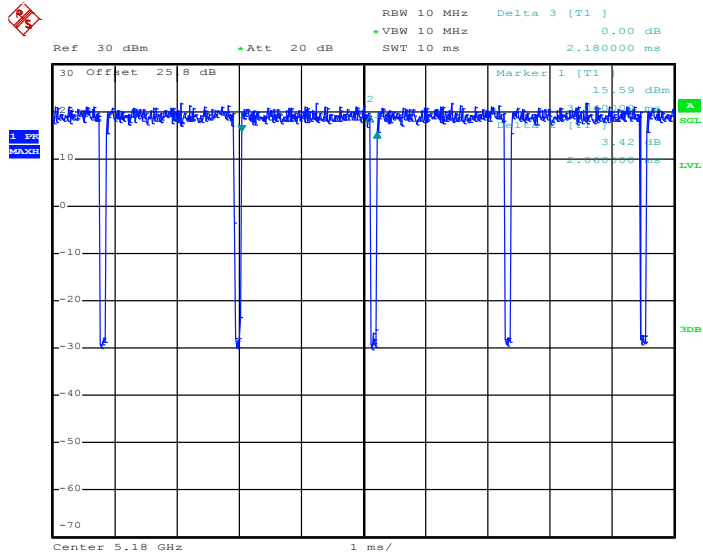
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Date: 9.DEC.2016 20:05:56

<Ant. 2>

802.11a

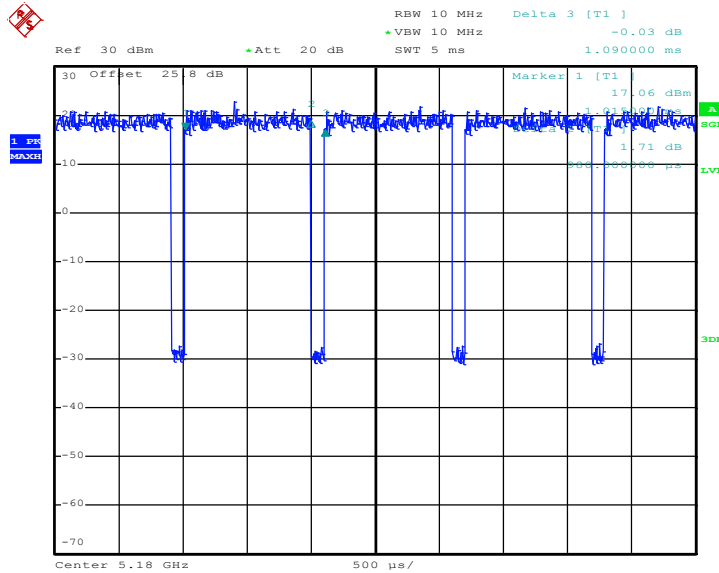


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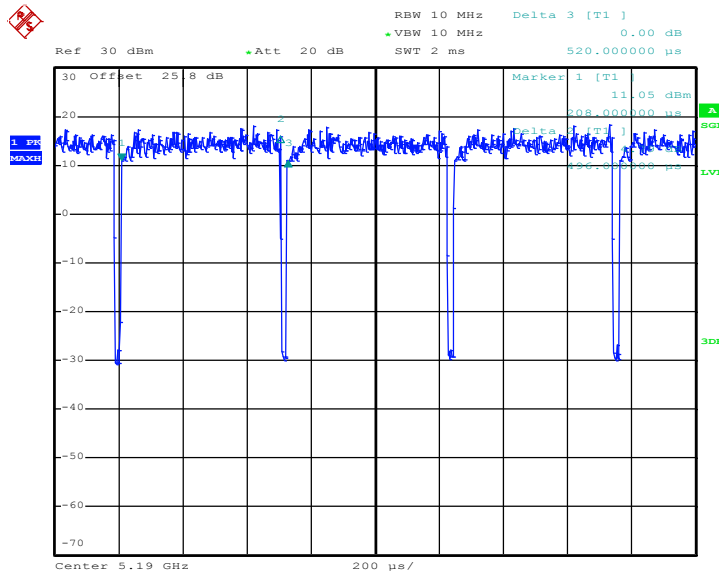
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802.11n HT20



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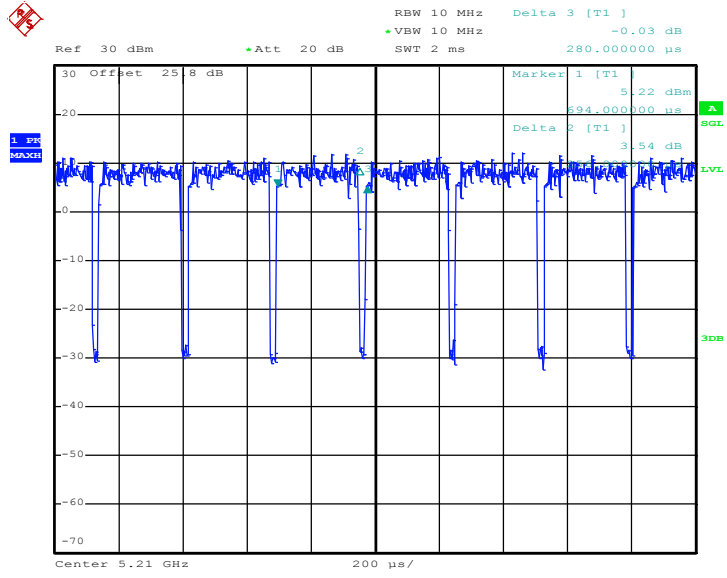
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802.11ac VHT80

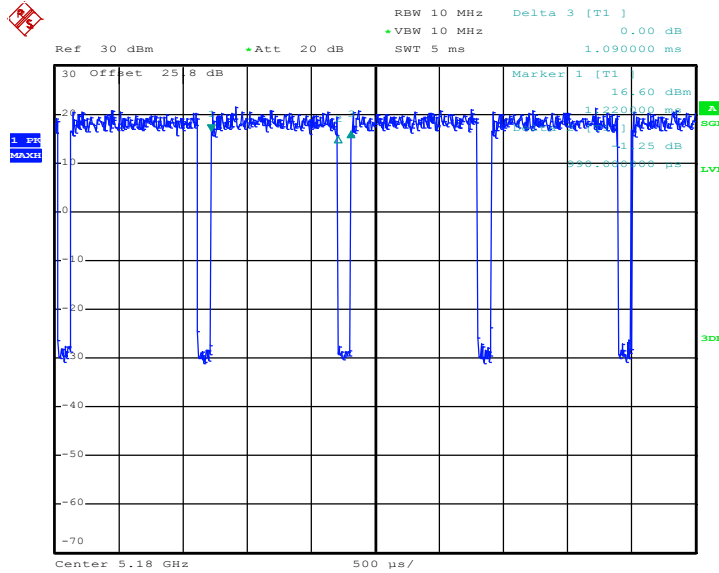


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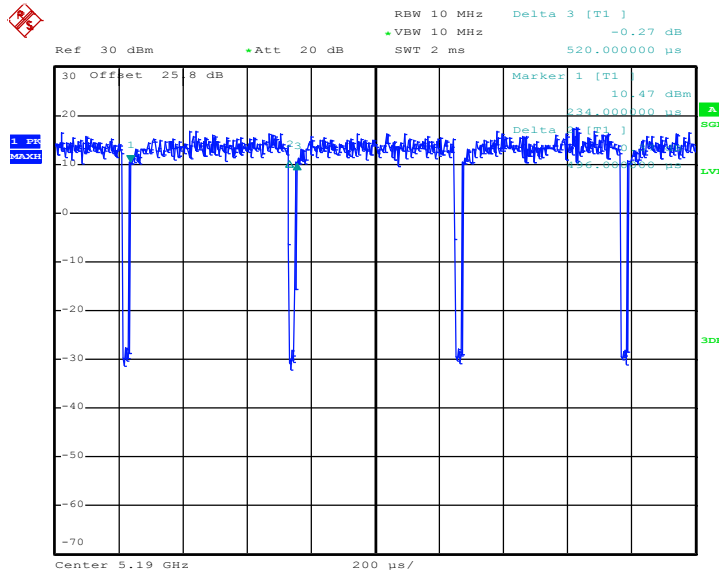
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802.11n HT20



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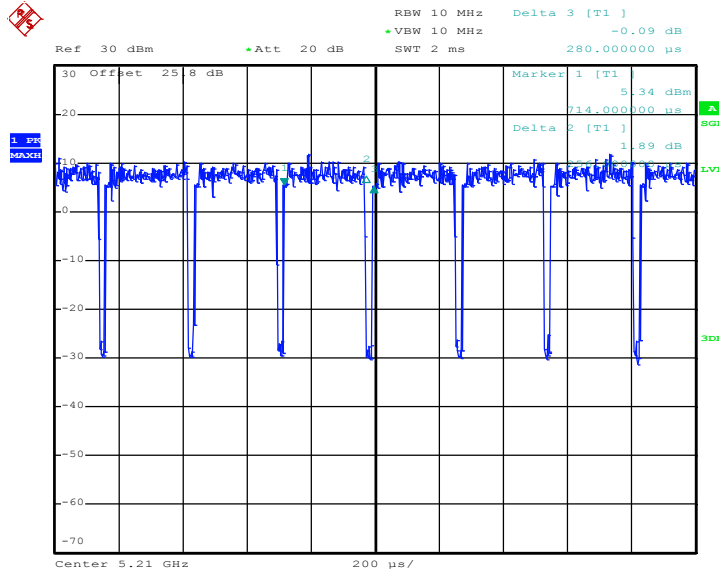
802.11n HT40



Date: 13.DEC.2016 22:24:53



802.11ac VHT80



Date: 13.DEC.2016 21:21:44