



FCC RF Test Report

APPLICANT : Getac Technology Corporation.
EQUIPMENT : WLAN module
BRAND NAME : Getac
MODEL NAME : 8265NGW
FCC ID : QYL8265NG
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

This is a partial report. The product was received on Dec. 13, 2017 and testing was completed on Jan. 02, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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

SPORTON INTERNATIONAL INC.

TEL : 886-3-327-3456

FAX : 886-3-328-4978

FCC ID : QYL8265NG

Page Number : 1 of 21

Report Issued Date : Feb. 07, 2018

Report Version : Rev. 01

Report Template No.: BU5-FR15EWLAC MA Version 2.0



TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Product Feature of Equipment Under Test.....	5
1.3 Modification of EUT	6
1.4 Testing Location	7
1.5 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.....	10
2.4 Support Unit used in test configuration and system	10
2.5 EUT Operation Test Setup	10
3 TEST RESULT	11
3.1 Maximum Conducted Output Power Measurement	11
3.2 Unwanted Emissions Measurement	13
3.3 Antenna Requirements.....	19
4 LIST OF MEASURING EQUIPMENT	20
5 UNCERTAINTY OF EVALUATION	21
APPENDIX A. CONDUCTED TEST RESULTS	
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
FR391803-34D	Rev. 01	Initial issue of report	Feb. 07, 2018



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.407(a)	Maximum Conducted Output Power	≤ 24 dBm	Pass	-
3.2	15.407(b)	Unwanted Emissions	15.407(b) & 15.209(a)	Pass	Under limit 3.36 dB at 311.900 MHz
3.3	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-
Remark: Except Unwanted Emissions is carrying out, FR391803-34D report reuses test data from the FR391803-21D report.					



1 General Description

1.1 Applicant

Getac Technology Corporation.

5F., Building A, No. 209, Sec.1, Nangang Rd.,Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

1.2 Product Feature of Equipment Under Test

WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, NFC, GNSS and Digitizer.

Product Specification subjective to this standard	
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna GPS: PATCH Antenna NFC: Loop Antenna Digitizer: Loop Antenna

The product was installed into Tablet (Brand Name: Getac, Model Name: RC11) during test, and all tests were performed with Sample 1.

Sample 1	Tablet with SKU A
Sample 2	Tablet with SKU B

SKU Table		
RC11 SKU		
	SKU A	SKU B
CPU	i3-7100U	i3-7100U
DDR	8G	8G
SSD	64GB	256GB
Panel	AUO HD B116XAN05.0	AUO HD B116XAN05.0
Digitizer	Getac	Not Support
Option Bay	BCR	NA(MSR)
Expansion Bay	RFID	NA
WLAN/BT	Support	Support
WWAN	Support	Support
GPS	Support	Support
Webcam FHD	Support	Support
IR Webcam	Support	Support
RFID	Support	Not Support

1.3 Modification of EUT

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

1.4 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 and TW0007 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.
	TH02-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., Kwei-Shan District, Tao Yuan 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.

1.5 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 v02r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

Remark:

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

2 Test Configuration of Equipment Under Test

- a. 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: radiation 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 MIMO 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)
5150-5250 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	42 [#]	5210		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5250-5350 MHz Band 2 (U-NII-2A)	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	58 [#]	5290		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5470-5725 MHz Band 3 (U-NII-2C)	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	106 [#]	5530	134*	5670
	108	5540	136	5680
	110*	5550	140	5700

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
TDWR Channel	118*	5590	124	5620
	120	5600	126*	5630
	122 [#]	5610	128	5640

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
Straddle Channel	138 [#]	5690	144	5720
	142*	5710		

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 modes are considering the modulation and worse data rates as below table.

Single Antenna

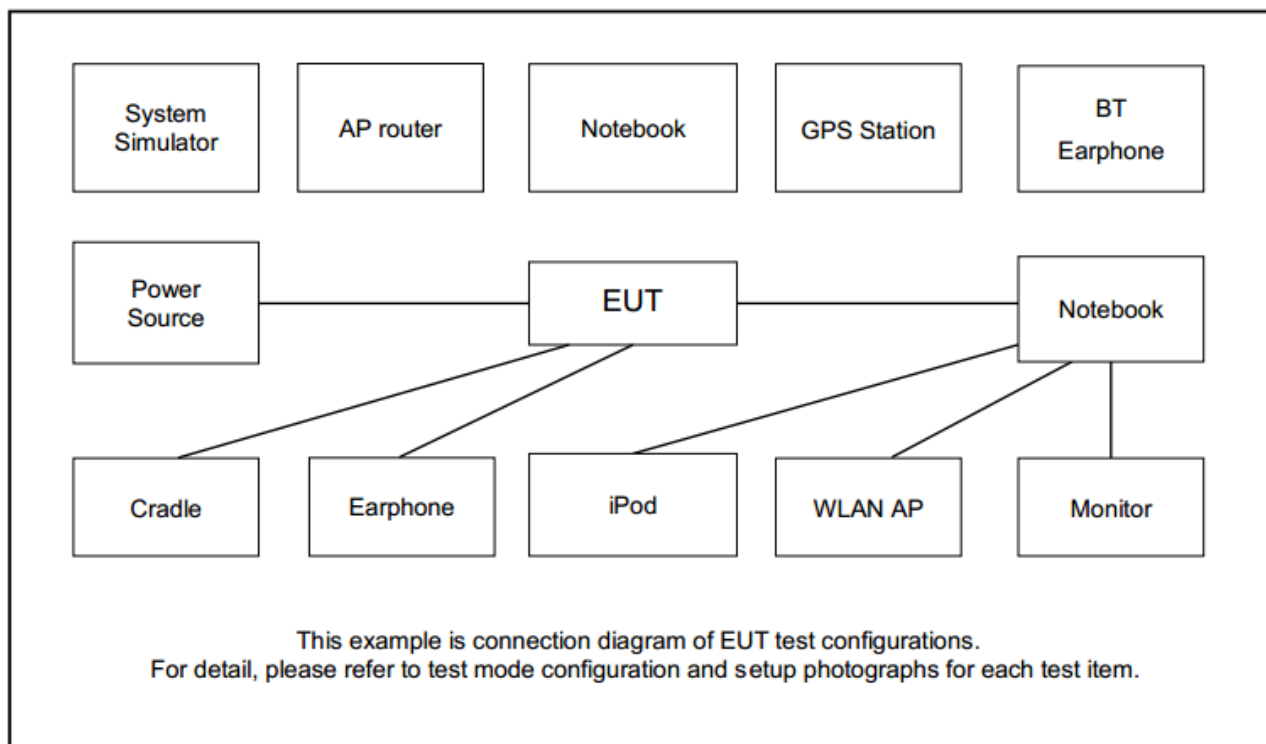
Modulation	Data Rate
802.11n HT20	MCS0
802.11ac VHT80	MCS0

MIMO Antenna

Modulation	Data Rate
802.11n HT20	MCS0
802.11ac VHT80	MCS0

Ch. #		Band II : 5250-5350 MHz	Band III : 5470-5725MHz
		802.11n HT20	802.11ac VHT80
L	Low	-	-
M	Middle	-	-
H	High	64	-
Straddle		-	138

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	iPod Earphone	Apple	A1285	Verification	Unshielded, 1.0 m	N/A

2.5 EUT Operation Test Setup

The RF test items, programmed RF utility, "DRTU" installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting signals.



3 Test Result

3.1 Maximum Conducted Output Power Measurement

3.1.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

For the 5.25–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

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

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

3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

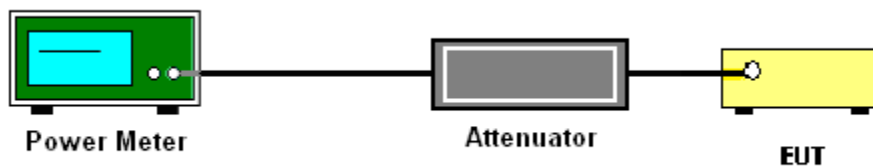
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

3.1.4 Test Setup



3.1.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.2 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.2.1 Limit of Unwanted Emissions

- (1) the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits 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.

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

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

(3) KDB789033 D02 v02r01 G)2)c)

- (i) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.³
- (ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.⁴

Note 3: An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.

Note 4: Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

3.2.2 Measuring Instruments

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



3.2.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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 $\geq$ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

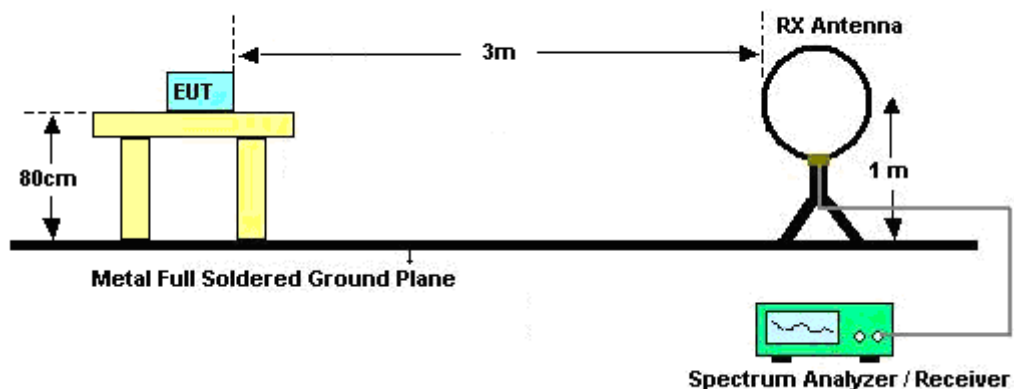
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

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

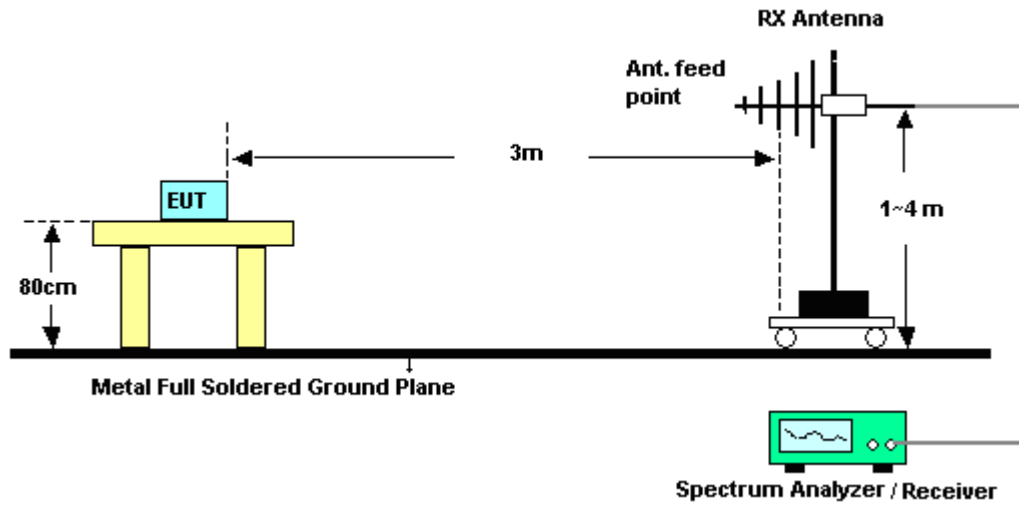
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband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

3.2.4 Test Setup

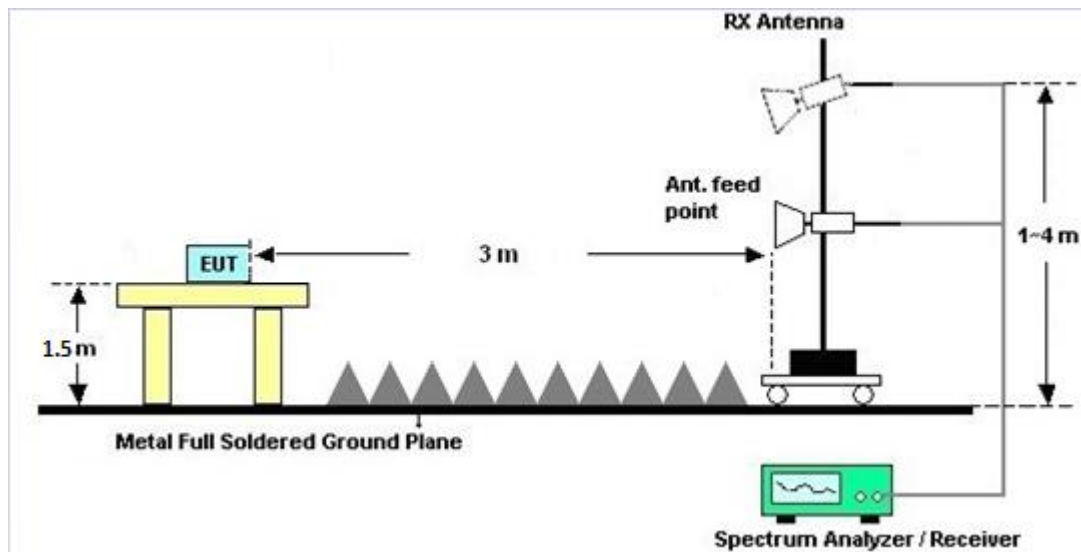
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





3.2.5 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 was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.2.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

3.3 Antenna Requirements

3.3.1 Standard Applicable

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.

3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.3.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

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

Array Gain = $10 \log(\text{NANT}/\text{NSS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

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

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

The EUT supports CDD mode.

For power, the directional gain GANT 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.

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant. 1	Ant. 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band I	3.55	0.58	3.55	3.55	0.00	0.00
Band II	3.47	0.58	3.47	3.47	0.00	0.00
Band III	3.14	0.80	3.14	3.14	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	1132003	N/A	Aug. 04, 2016	Jun. 13, 2017 ~ Jun. 15, 2017	Aug. 03, 2017	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1126017	300MHz~40GHz	Aug. 04, 2016	Jun. 13, 2017 ~ Jun. 15, 2017	Aug. 03, 2017	Conducted (TH02-HY)
AC Power Source	AC POWER	AFC-500W	F104070011	50Hz~60Hz	Dec. 01, 2016	Jun. 13, 2017 ~ Jun. 15, 2017	Nov. 30, 2018	Conducted (TH02-HY)
Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 18, 2017	Dec. 28, 2017~ Jan. 02, 2018	Jul. 17, 2018	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 10, 2016	Dec. 28, 2017~ Jan. 02, 2018	Nov. 09, 2018	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-06	35414&AT-N 0602	30MHz~1GHz	Oct. 14, 2017	Dec. 28, 2017~ Jan. 02, 2018	Oct. 13, 2018	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 16, 2017	Dec. 28, 2017~ Jan. 02, 2018	Oct. 15, 2018	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Nov. 23, 2017	Dec. 28, 2017~ Jan. 02, 2018	Nov. 22, 2019	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 10, 2016	Dec. 28, 2017~ Jan. 02, 2018	Nov. 09, 2018	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Oct. 19, 2017	Dec. 28, 2017~ Jan. 02, 2018	Oct. 18, 2018	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Dec. 28, 2017~ Jan. 02, 2018	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Dec. 28, 2017~ Jan. 02, 2018	N/A	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA91705 84	18GHz- 40GHz	Nov. 27, 2017	Dec. 28, 2017~ Jan. 02, 2018	Nov. 26, 2018	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800 054001	1GHz~18GHz	Dec. 07, 2017	Dec. 28, 2017~ Jan. 02, 2018	Dec. 06, 2018	Radiation (03CH11-HY)



5 Uncertainty of Evaluation

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.50
--	------

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

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

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Kai Liao	Temperature:	21~25	°C
Test Date:	2017/6/13~2017/6/15	Relative Humidity:	51~54	%

TEST RESULTS DATA
Average Power Table

FCC Band I														
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	36	5180	0.09	0.06	13.39	13.46		24.00	24.00	3.55	0.58	Pass
11a	6Mbps	1	44	5220	0.09	0.06	13.29	13.44		24.00	24.00	3.55	0.58	Pass
11a	6Mbps	1	48	5240	0.09	0.06	13.48	13.21		24.00	24.00	3.55	0.58	Pass
HT20	MCS0	1	36	5180	0.07	0.08	13.36	13.48		24.00	24.00	3.55	0.58	Pass
HT20	MCS0	1	44	5220	0.07	0.08	13.20	13.25		24.00	24.00	3.55	0.58	Pass
HT20	MCS0	1	48	5240	0.07	0.08	13.17	13.13		24.00	24.00	3.55	0.58	Pass
HT40	MCS0	1	38	5190	0.15	0.14	13.39	13.39		24.00	24.00	3.55	0.58	Pass
HT40	MCS0	1	46	5230	0.15	0.14	13.25	13.33		24.00	24.00	3.55	0.58	Pass
VHT20	MCS0	1	36	5180	0.07	0.07	13.49	13.46		24.00	24.00	3.55	0.58	Pass
VHT20	MCS0	1	44	5220	0.07	0.07	13.47	13.49		24.00	24.00	3.55	0.58	Pass
VHT20	MCS0	1	48	5240	0.07	0.07	13.35	13.37		24.00	24.00	3.55	0.58	Pass
VHT40	MCS0	1	38	5190	0.14	0.14	13.46	13.41		24.00	24.00	3.55	0.58	Pass
VHT40	MCS0	1	46	5230	0.14	0.14	13.26	13.33		24.00	24.00	3.55	0.58	Pass
VHT80	MCS0	1	42	5210	0.30	0.27	13.46	13.49		24.00	24.00	3.55	0.58	Pass
HT20	MCS 8	2	36	5180	0.18	0.18	10.52	10.28	13.42	24.00		3.55		Pass
HT20	MCS 8	2	44	5220	0.18	0.18	10.66	10.13	13.42	24.00		3.55		Pass
HT20	MCS 8	2	48	5240	0.18	0.18	10.55	10.02	13.31	24.00		3.55		Pass
HT40	MCS 8	2	38	5190	0.31	0.31	10.57	10.15	13.37	24.00		3.55		Pass
HT40	MCS 8	2	46	5230	0.31	0.31	10.70	9.88	13.32	24.00		3.55		Pass
VHT20	MCS0	2	36	5180	0.18	0.16	10.38	10.12	13.26	24.00		3.55		Pass
VHT20	MCS0	2	44	5220	0.18	0.16	10.61	10.04	13.34	24.00		3.55		Pass
VHT20	MCS0	2	48	5240	0.18	0.16	10.53	10.03	13.30	24.00		3.55		Pass
VHT40	MCS0	2	38	5190	0.30	0.33	10.46	10.20	13.34	24.00		3.55		Pass
VHT40	MCS0	2	46	5230	0.30	0.33	10.68	10.03	13.38	24.00		3.55		Pass
VHT80	MCS0	2	42	5210	0.61	0.61	10.69	10.03	13.38	24.00		3.55		Pass

TEST RESULTS DATA
Average Power Table

FCC Band II															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	52	5260	0.09	0.06	13.35	13.21		23.98	23.98	3.47	0.58	26.99	Pass
11a	6Mbps	1	60	5300	0.09	0.06	13.40	13.49		23.98	23.98	3.47	0.58	26.99	Pass
11a	6Mbps	1	64	5320	0.09	0.06	13.43	13.41		23.98	23.98	3.47	0.58	26.99	Pass
HT20	MCS0	1	52	5260	0.07	0.08	13.29	13.35		23.98	23.98	3.47	0.58	26.99	Pass
HT20	MCS0	1	60	5300	0.07	0.08	13.38	13.37		23.98	23.98	3.47	0.58	26.99	Pass
HT20	MCS0	1	64	5320	0.07	0.08	13.40	13.48		23.98	23.98	3.47	0.58	26.99	Pass
HT40	MCS0	1	54	5270	0.15	0.14	13.29	13.28		23.98	23.98	3.47	0.58	26.99	Pass
HT40	MCS0	1	62	5310	0.15	0.14	13.44	13.45		23.98	23.98	3.47	0.58	26.99	Pass
VHT20	MCS0	1	52	5260	0.07	0.07	13.43	13.37		23.98	23.98	3.47	0.58	26.99	Pass
VHT20	MCS0	1	60	5300	0.07	0.07	13.37	13.47		23.98	23.98	3.47	0.58	26.99	Pass
VHT20	MCS0	1	64	5320	0.07	0.07	13.48	13.38		23.98	23.98	3.47	0.58	26.99	Pass
VHT40	MCS0	1	54	5270	0.14	0.14	13.41	13.49		23.98	23.98	3.47	0.58	26.99	Pass
VHT40	MCS0	1	62	5310	0.14	0.14	13.44	13.48		23.98	23.98	3.47	0.58	26.99	Pass
VHT80	MCS0	1	58	5290	0.30	0.27	13.33	13.40		23.98	23.98	3.47	0.58	26.99	Pass
HT20	MCS 8	2	52	5260	0.18	0.18	10.71	9.95	13.36	23.98		3.47		26.99	Pass
HT20	MCS 8	2	60	5300	0.18	0.18	10.54	9.97	13.28	23.98		3.47		26.99	Pass
HT20	MCS 8	2	64	5320	0.18	0.18	10.54	10.18	13.38	23.98		3.47		26.99	Pass
HT40	MCS 8	2	54	5270	0.31	0.31	10.76	9.86	13.34	23.98		3.47		26.99	Pass
HT40	MCS 8	2	62	5310	0.31	0.31	10.80	10.05	13.45	23.98		3.47		26.99	Pass
VHT20	MCS0	2	52	5260	0.18	0.16	10.71	9.86	13.32	23.98		3.47		26.99	Pass
VHT20	MCS0	2	60	5300	0.18	0.16	10.53	9.98	13.27	23.98		3.47		26.99	Pass
VHT20	MCS0	2	64	5320	0.18	0.16	10.54	10.17	13.37	23.98		3.47		26.99	Pass
VHT40	MCS0	2	54	5270	0.30	0.33	10.78	10.02	13.43	23.98		3.47		26.99	Pass
VHT40	MCS0	2	62	5310	0.30	0.33	10.65	9.94	13.32	23.98		3.47		26.99	Pass
VHT80	MCS0	2	58	5290	0.61	0.61	10.87	10.06	13.49	23.98		3.47		26.99	Pass

TEST RESULTS DATA
Average Power Table

FCC Band III															
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	100	5500	0.09	0.06	13.19	13.30		23.98	23.98	3.14	0.80	26.99	Pass
11a	6Mbps	1	116	5580	0.09	0.06	13.36	13.32		23.98	23.98	3.14	0.80	26.99	Pass
11a	6Mbps	1	140	5700	0.09	0.06	13.17	13.25		23.98	23.98	3.14	0.80	26.99	Pass
11a	6Mbps	1	144	5720	0.09	0.06	13.22	13.23		23.98	23.98	3.14	0.80	26.99	Pass
HT20	MCS0	1	100	5500	0.07	0.08	13.25	13.37		23.98	23.98	3.14	0.80	26.99	Pass
HT20	MCS0	1	116	5580	0.07	0.08	13.43	13.38		23.98	23.98	3.14	0.80	26.99	Pass
HT20	MCS0	1	140	5700	0.07	0.08	13.09	13.46		23.98	23.98	3.14	0.80	26.99	Pass
HT20	MCS0	1	144	5720	0.07	0.08	13.25	13.41		23.98	23.98	3.14	0.80	26.99	Pass
HT40	MCS0	1	102	5510	0.15	0.14	13.23	13.35		23.98	23.98	3.14	0.80	26.99	Pass
HT40	MCS0	1	110	5550	0.15	0.14	13.48	13.42		23.98	23.98	3.14	0.80	26.99	Pass
HT40	MCS0	1	134	5670	0.15	0.14	13.21	13.39		23.98	23.98	3.14	0.80	26.99	Pass
HT40	MCS0	1	142	5710	0.15	0.14	13.17	13.41		23.98	23.98	3.14	0.80	26.99	Pass
VHT20	MCS0	1	100	5500	0.07	0.07	13.39	13.43		23.98	23.98	3.14	0.80	26.99	Pass
VHT20	MCS0	1	116	5580	0.07	0.07	13.33	13.19		23.98	23.98	3.14	0.80	26.99	Pass
VHT20	MCS0	1	140	5700	0.07	0.07	13.12	13.43		23.98	23.98	3.14	0.80	26.99	Pass
VHT20	MCS0	1	144	5720	0.07	0.07	13.16	13.33		23.98	23.98	3.14	0.80	26.99	Pass
VHT40	MCS0	1	102	5510	0.14	0.14	13.29	13.37		23.98	23.98	3.14	0.80	26.99	Pass
VHT40	MCS0	1	110	5550	0.14	0.14	13.28	13.28		23.98	23.98	3.14	0.80	26.99	Pass
VHT40	MCS0	1	134	5670	0.14	0.14	13.43	13.32		23.98	23.98	3.14	0.80	26.99	Pass
VHT40	MCS0	1	142	5710	0.14	0.14	13.39	13.20		23.98	23.98	3.14	0.80	26.99	Pass
VHT80	MCS0	1	106	5530	0.30	0.27	13.20	13.48		23.98	23.98	3.14	0.80	26.99	Pass
VHT80	MCS0	1	122	5610	0.30	0.27	13.19	13.28		23.98	23.98	3.14	0.80	26.99	Pass
VHT80	MCS0	1	138	5690	0.30	0.27	13.09	13.15		23.98	23.98	3.14	0.80	26.99	Pass
HT20	MCS 8	2	100	5500	0.18	0.18	10.22	10.40	13.32	23.98		3.14		26.99	Pass
HT20	MCS 8	2	116	5580	0.18	0.18	10.44	10.13	13.30	23.98		3.14		26.99	Pass
HT20	MCS 8	2	140	5700	0.18	0.18	10.15	10.07	13.12	23.98		3.14		26.99	Pass
HT20	MCS 8	2	144	5720	0.18	0.18	10.18	10.08	13.14	23.98		3.14		26.99	Pass
HT40	MCS 8	2	102	5510	0.31	0.31	10.41	10.49	13.46	23.98		3.14		26.99	Pass
HT40	MCS 8	2	110	5550	0.31	0.31	10.37	10.18	13.28	23.98		3.14		26.99	Pass
HT40	MCS 8	2	134	5670	0.31	0.31	10.50	10.11	13.32	23.98		3.14		26.99	Pass
HT40	MCS 8	2	142	5710	0.31	0.31	10.51	10.46	13.49	23.98		3.14		26.99	Pass
VHT20	MCS0	2	100	5500	0.18	0.16	10.33	10.53	13.44	23.98		3.14		26.99	Pass
VHT20	MCS0	2	116	5580	0.18	0.16	10.55	10.18	13.38	23.98		3.14		26.99	Pass
VHT20	MCS0	2	140	5700	0.18	0.16	10.25	10.10	13.18	23.98		3.14		26.99	Pass
VHT20	MCS0	2	144	5720	0.18	0.16	10.32	10.09	13.22	23.98		3.14		26.99	Pass
VHT40	MCS0	2	102	5510	0.30	0.33	10.35	10.60	13.49	23.98		3.14		26.99	Pass
VHT40	MCS0	2	110	5550	0.30	0.33	10.38	10.23	13.32	23.98		3.14		26.99	Pass
VHT40	MCS0	2	134	5670	0.30	0.33	10.56	10.18	13.39	23.98		3.14		26.99	Pass
VHT40	MCS0	2	142	5710	0.30	0.33	10.45	10.41	13.44	23.98		3.14		26.99	Pass
VHT80	MCS0	2	106	5530	0.61	0.61	10.34	10.35	13.35	23.98		3.14		26.99	Pass
VHT80	MCS0	2	122	5610	0.61	0.61	10.51	10.10	13.32	23.98		3.14		26.99	Pass
VHT80	MCS0	2	138	5690	0.61	0.61	10.65	10.31	13.49	23.98		3.14		26.99	Pass



Appendix B. Radiated Spurious Emission

Test Engineer :	Hao Hsu, Jacky Hung, and Ken Wu	Temperature :	24~27°C
		Relative Humidity :	52~57%

Band 2 - 5250~5350MHz

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 64 5320MHz	*	5320	103.56	-	-	95.5	31.92	9.17	33.03	202	177	P	H
	*	5320	95.85	-	-	87.79	31.92	9.17	33.03	202	177	A	H
		5352.8	50.53	-23.47	74	42.42	31.95	9.19	33.03	202	177	P	H
		5350.08	41.73	-12.27	54	33.62	31.95	9.19	33.03	202	177	A	H
													H
													H
	*	5320	108.87	-	-	100.81	31.92	9.17	33.03	224	141	P	V
	*	5320	100.77	-	-	92.71	31.92	9.17	33.03	224	141	A	V
		5354.72	55.2	-18.8	74	47.09	31.95	9.19	33.03	224	141	P	V
		5350.08	45.2	-8.8	54	37.09	31.95	9.19	33.03	224	141	A	V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz
WIFI 802.11n HT20 (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)
802.11n HT20 CH 64 5320MHz		10640	43.88	-30.12	74	50.09	39.81	14.82	61.14	100	0	P	H
		15960	45.19	-28.81	74	50.26	36.8	18.3	60.43	100	0	P	H
													H
													H
		5002	56.93	-17.07	74	49.44	31.6	8.93	33.04	224	141	P	V
		5002	48.37	-5.63	54	40.88	31.6	8.93	33.04	224	141	A	V
		5086	58.08	-15.92	74	50.43	31.68	9.01	33.04	224	141	P	V
		5086	48.22	-5.78	54	40.57	31.68	9.01	33.04	224	141	A	V
		10640	43.76	-30.24	74	49.97	39.81	14.82	61.14	100	0	P	V
		15960	46.59	-27.41	74	51.66	36.8	18.3	60.43	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - Straddle Channel

WIFI 802.11ac VHT80 (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)
802.11ac VHT80 CH 138 5690MHz	*	5690	99.55	-	-	90.48	32.44	9.75	33.12	205	137	P	H
	*	5690	91.65	-	-	82.58	32.44	9.75	33.12	205	137	A	H
													H
													H
													H
													H
	*	5690	102.34	-	-	93.27	32.44	9.75	33.12	214	124	P	V
	*	5690	94.22	-	-	85.15	32.44	9.75	33.12	214	124	A	V
													V
													V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



Band 3 - Straddle Channel
WIFI 802.11ac VHT80 (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)
802.11ac VHT80 CH 138 5690MHz		11380	46.58	-27.42	74	52.33	40.02	15.36	61.42	100	0	P	H
		17070	47.9	-20.3	68.2	46.67	39.94	19.17	58.23	100	0	P	H
													H
													H
		11380	45.82	-28.18	74	51.57	40.02	15.36	61.42	100	0	P	V
		17070	47.46	-20.74	68.2	46.23	39.94	19.17	58.23	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

WIFI 802.11n HT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 LF		40.8	21.74	-18.26	40	34.72	18.68	0.82	32.49			P	H
		200.1	30.26	-13.24	43.5	46	14.87	1.72	32.39			P	H
		264.09	26.84	-19.16	46	37.48	19.57	2.09	32.38			P	H
		311.9	42.64	-3.36	46	53.44	19.17	2.31	32.37	100	0	P	H
		533.1	28.61	-17.39	46	34.09	23.94	2.91	32.41			P	H
		738.9	32.47	-13.53	46	33.62	27.68	3.4	32.36			P	H
													H
													H
													H
													H
													H
													H
													H
		40.8	32.37	-7.63	40	45.35	18.68	0.82	32.49	100	0	P	V
		98.31	25.16	-18.34	43.5	40.68	15.55	1.39	32.48			P	V
		234.12	21.83	-24.17	46	35.78	16.41	1.95	32.38			P	V
		311.9	34.01	-11.99	46	44.81	19.17	2.31	32.37			P	V
		531	31.24	-14.76	46	36.76	23.9	2.91	32.4			P	V
		881	32.19	-13.81	46	30.96	29.1	3.73	31.76			P	V
													V
												V	
												V	
												V	
												V	
												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Band 2 - 5250~5350MHz

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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 64 5320MHz	*	5320	100.2	-	-	92.14	31.92	9.17	33.03	100	176	P	H
	*	5320	93.73	-	-	85.67	31.92	9.17	33.03	100	176	A	H
		5355.84	50.64	-23.36	74	42.53	31.95	9.19	33.03	100	176	P	H
		5350.08	40.31	-13.69	54	32.2	31.95	9.19	33.03	100	176	A	H
													H
													H
	*	5320	106.74	-	-	98.68	31.92	9.17	33.03	228	109	P	V
	*	5320	100.04	-	-	91.98	31.92	9.17	33.03	228	109	A	V
		5353.28	53.39	-20.61	74	45.28	31.95	9.19	33.03	228	109	P	V
		5350.08	44.36	-9.64	54	36.25	31.95	9.19	33.03	228	109	A	V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 64 5320MHz		10640	42.97	-31.03	74	49.18	39.81	14.82	61.14	100	0	P	H
		15960	43.27	-30.73	74	48.34	36.8	18.3	60.43	100	0	P	H
													H
													H
		10640	42.73	-31.27	74	48.94	39.81	14.82	61.14	100	0	P	V
		15960	43.51	-30.49	74	48.58	36.8	18.3	60.43	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - Straddle Channel

WIFI 802.11ac VHT80 (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)
802.11ac VHT80 CH 138 5690MHz	*	5690	100.01	-	-	90.94	32.44	9.75	33.12	170	98	P	H
	*	5690	92.14	-	-	83.07	32.44	9.75	33.12	170	98	A	H
													H
													H
													H
													H
	*	5690	101.19	-	-	92.12	32.44	9.75	33.12	209	148	P	V
	*	5690	92.7	-	-	83.63	32.44	9.75	33.12	209	148	A	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



Band 3 - Straddle Channel
WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 138 5690MHz		11380	45.63	-28.37	74	51.38	40.02	15.36	61.42	100	0	P	H
		17070	45.57	-22.63	68.2	44.34	39.94	19.17	58.23	100	0	P	H
													H
													H
		11380	45.22	-28.78	74	50.97	40.02	15.36	61.42	100	0	P	V
		17070	46.65	-21.55	68.2	45.42	39.94	19.17	58.23	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

WIFI 802.11n HT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 LF		40.8	22.2	-17.8	40	35.18	18.68	0.82	32.49			P	H
		133.41	17.56	-25.94	43.5	31.26	17.19	1.51	32.45			P	H
		257.88	19.92	-26.08	46	30.62	19.52	2.09	32.38			P	H
		484.1	26.13	-19.87	46	32.18	23.5	2.77	32.37			P	H
		739.6	36.49	-9.51	46	37.59	27.72	3.4	32.35	100	0	P	H
		886.6	31.85	-14.15	46	30.63	29.06	3.73	31.73			P	H
													H
													H
													H
													H
													H
													H
		40.8	33.42	-6.58	40	46.4	18.68	0.82	32.49	100	0	P	V
		98.31	25.29	-18.21	43.5	40.81	15.55	1.39	32.48			P	V
		258.15	20.28	-25.72	46	30.98	19.52	2.09	32.38			P	V
		407.8	26.5	-19.5	46	34.14	22	2.63	32.33			P	V
		503.7	29.24	-16.76	46	35.02	23.71	2.84	32.38			P	V
		890.8	31.62	-14.38	46	30.4	29.04	3.73	31.71			P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Band 2 - 5250~5350MHz

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 64 5320MHz	*	5320	107.37	-	-	99.31	31.92	9.17	33.03	242	171	P	H
	*	5320	99.45	-	-	91.39	31.92	9.17	33.03	242	171	A	H
		5353.28	50.7	-23.3	74	42.59	31.95	9.19	33.03	242	171	P	H
		5350.24	42.87	-11.13	54	34.76	31.95	9.19	33.03	242	171	A	H
													H
													H
	*	5320	107.44	-	-	99.38	31.92	9.17	33.03	225	146	P	V
	*	5320	99.51	-	-	91.45	31.92	9.17	33.03	225	146	A	V
		5390.24	50.98	-23.02	74	42.82	31.98	9.2	33.02	225	146	P	V
		5350.08	44.94	-9.06	54	36.83	31.95	9.19	33.03	225	146	A	V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz
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 64 5320MHz		10640	42.83	-31.17	74	49.04	39.81	14.82	61.14	100	0	P	H
		15960	42.59	-31.41	74	47.66	36.8	18.3	60.43	100	0	P	H
													H
													H
		10640	42.28	-31.72	74	48.49	39.81	14.82	61.14	100	0	P	V
		15960	44.24	-29.76	74	49.31	36.8	18.3	60.43	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - Straddle Channel

WIFI 802.11ac VHT80 (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)
802.11ac VHT80 CH 138 5690MHz	*	5690	99.56	-	-	90.49	32.44	9.75	33.12	195	175	P	H
	*	5690	93.46	-	-	84.39	32.44	9.75	33.12	195	175	A	H
													H
													H
													H
													H
	*	5690	101.26	-	-	92.19	32.44	9.75	33.12	231	140	P	V
	*	5690	94.49	-	-	85.42	32.44	9.75	33.12	231	140	A	V
													V
													V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



Band 3 - Straddle Channel
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 138 5690MHz		11380	44.34	-29.66	74	50.09	40.02	15.36	61.42	100	0	P	H
		17070	45.99	-22.21	68.2	44.76	39.94	19.17	58.23	100	0	P	H
													H
													H
		11380	45.86	-28.14	74	51.61	40.02	15.36	61.42	100	0	P	V
		17070	47.36	-20.84	68.2	46.13	39.94	19.17	58.23	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

WIFI 802.11n HT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 LF		72.12	23.23	-16.77	40	42.32	12.16	1.22	32.49			P	H
		144.21	31.44	-12.06	43.5	45.35	16.95	1.51	32.44			P	H
		264.09	25.19	-20.81	46	35.83	19.57	2.09	32.38			P	H
		311.9	42.23	-3.77	46	53.03	19.17	2.31	32.37	100	0	P	H
		532.4	28.45	-17.55	46	33.95	23.92	2.91	32.41			P	H
		738.9	32.12	-13.88	46	33.27	27.68	3.4	32.36			P	H
													H
													H
													H
													H
													H
													H
		40.8	32.34	-7.66	40	45.32	18.68	0.82	32.49	100	0	P	V
		129.9	34.66	-8.84	43.5	48.18	17.37	1.51	32.45			P	V
		223.05	21.12	-24.88	46	36.36	15.37	1.72	32.39			P	V
		311.9	33.76	-12.24	46	44.56	19.17	2.31	32.37			P	V
		503.7	30.07	-15.93	46	35.85	23.71	2.84	32.38			P	V
		739.6	31.6	-14.4	46	32.7	27.72	3.4	32.35			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	P eak or A verage
H/V	H orizontal or V ertical



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		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

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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



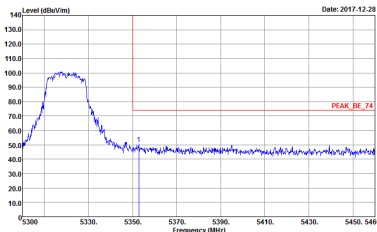
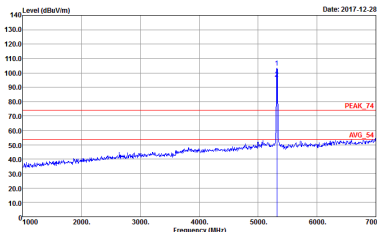
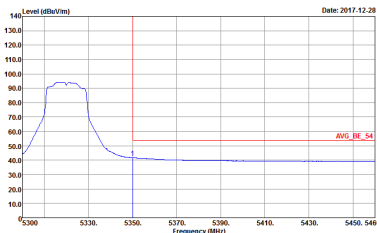
Appendix C. Radiated Spurious Emission

Test Engineer :	Hao Hsu, Jacky Hung, and Ken Wu	Temperature :	24~27°C
		Relative Humidity :	52~57%

Note symbol

-L	Low channel location
-R	High channel location

Band 2 - 5250~5350MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

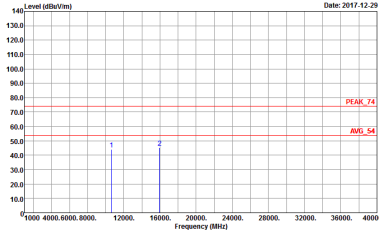
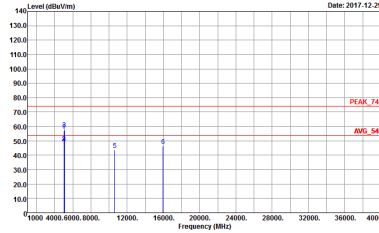
WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT20 CH64 5320MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 391803-34	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 391803-34
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 391803-34	Left blank



WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT20 CH64 5320MHz	
1	Vertical	Fundamental
Peak	Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 391803-34	Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 391803-34
Avg.	Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 391803-34	Left blank

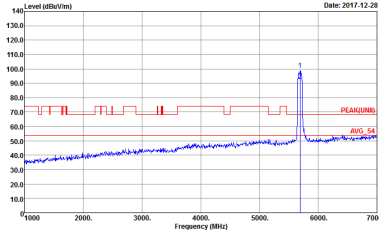
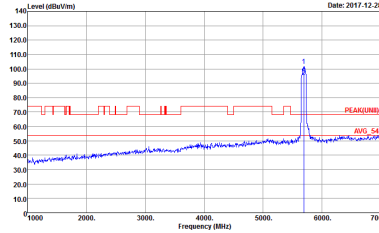


Band 2 - 5250~5350MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 2 5250~5350MHz Harmonic @ 3m	
ANT	802.11n HT20 CH64 5320MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Project : 391803-34	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Project : 391803-34

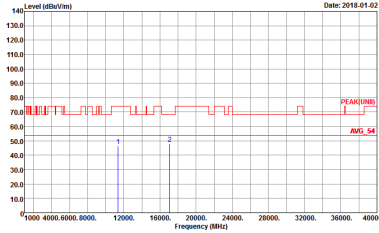
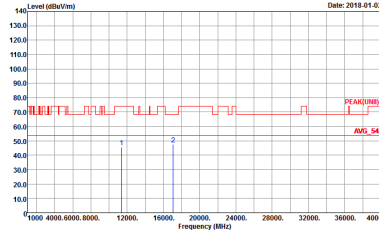


Band 3 - Straddle Channel
WIFI 802.11ac VHT80 (Fundamental @ 3m)

WIFI	Band 3 Straddle Channel Fundamental @ 3m	
ANT	802.11ac VHT80 CH138 5690MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-4 FY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 391803-34	 Site : 03CH11-4 FY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 391803-34

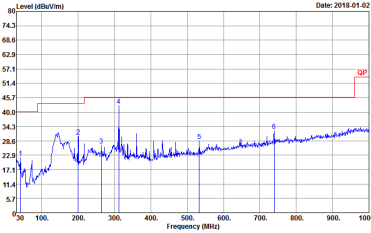
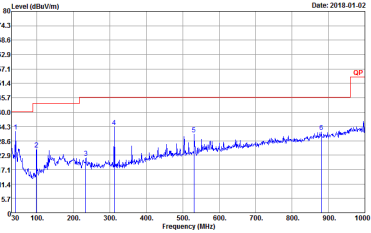


Band 3 - Straddle Channel
WIFI 802.11ac VHT80 (Harmonic @ 3m)

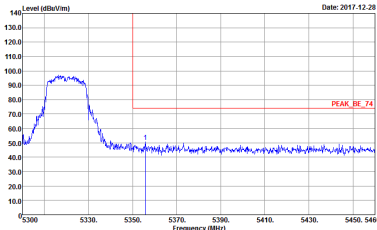
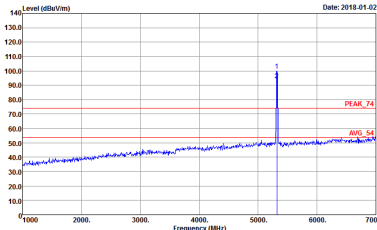
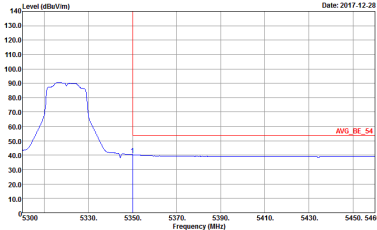
WIFI	Band 3 Straddle Channel Harmonic @ 3m	
ANT	802.11ac VHT80 CH138 5690MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Project : 391803-34	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Project : 391803-34



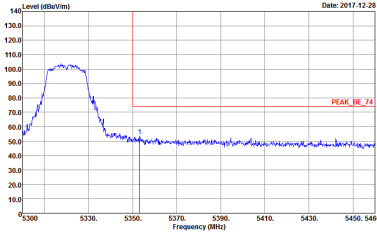
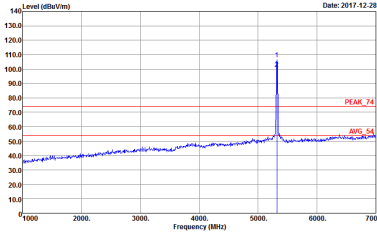
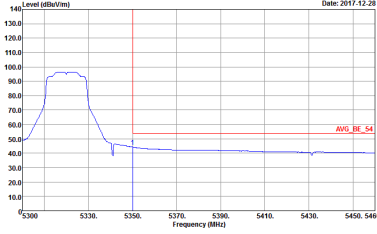
Emission below 1GHz
5GHz WIFI 802.11n HT20 (LF)

WIFI	5GHz WIFI	
ANT	802.11n HT20 LF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH11-4HY Condition : QP 3m BT-LOG 6111D-LF_ETC HORIZONTAL Detector : Peak Project : 391803-34	 Site : 03CH11-4HY Condition : QP 3m BT-LOG 6111D-LF_ETC VERTICAL Detector : Peak Project : 391803-34

Band 2 - 5250~5350MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT20 CH64 5320MHz	
2	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 391803-34	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 391803-34
	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 391803-34	Left blank



WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT20 CH64 5320MHz	
2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 391803-34	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 391803-34
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 391803-34	Left blank

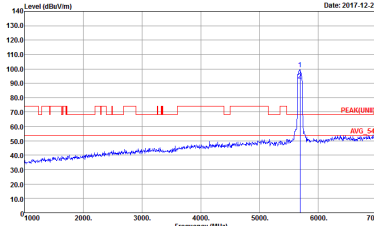
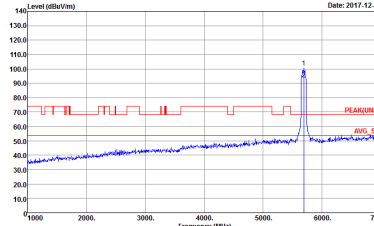


Band 2 - 5250~5350MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 2 5250~5350MHz Harmonic @ 3m	
ANT	802.11n HT20 CH64 5320MHz	
2	Horizontal	Vertical
Peak Avg.	Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Project : 391803-34	Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Project : 391803-34

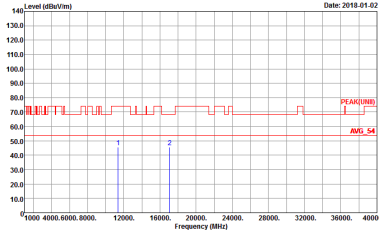
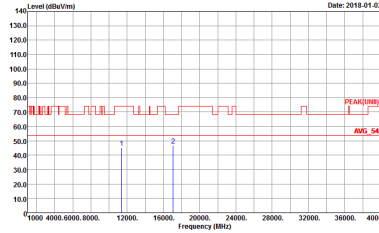


Band 3 - Straddle Channel
WIFI 802.11ac VHT80 (Fundamental @ 3m)

WIFI	Band 3 Straddle Channel Fundamental @ 3m	
ANT	802.11ac VHT80 CH138 5690MHz	
2	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-4 FY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 391803-34	 Site : 03CH11-4 FY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 391803-34

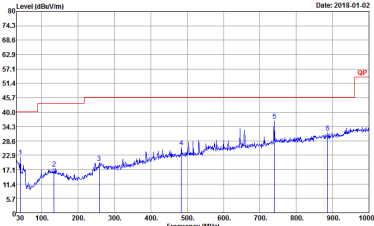
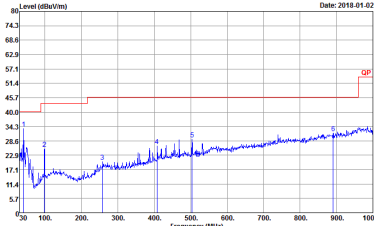


Band 3 - Straddle Channel
WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Band 3 Straddle Channel Harmonic @ 3m	
ANT	802.11ac VHT80 CH138 5690MHz	
2	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Project : 391803-34	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Project : 391803-34



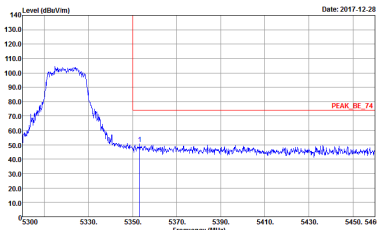
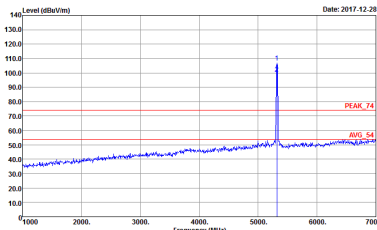
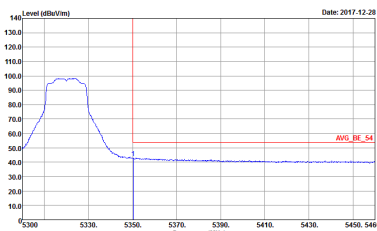
Emission below 1GHz
5GHz WIFI 802.11n HT20 (LF)

WIFI	5GHz WIFI	
ANT	802.11n HT20 LF	
2	Horizontal	Vertical
QP / Peak	 Site : 03CH11-4-FY Condition : QP 3m BT-LOG 6111D-LF_ETC HORIZONTAL Detector : Peak Project : 391803-34	 Site : 03CH11-4-FY Condition : QP 3m BT-LOG 6111D-LF_ETC VERTICAL Detector : Peak Project : 391803-34



Band 2 - 5250~5350MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT20 CH64 5320MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 391803-34	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 391803-34
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 391803-34	Left blank



WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT20 CH64 5320MHz	
1+2	Vertical	Fundamental
Peak	Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 391803-34	Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 391803-34
Avg.	Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 391803-34	Left blank

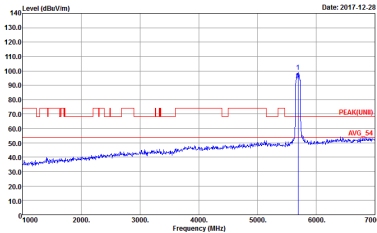
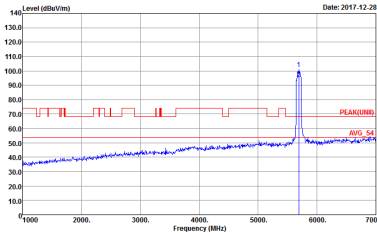


Band 2 - 5250~5350MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 2 5250~5350MHz Harmonic @ 3m	
ANT	802.11n HT20 CH64 5320MHz	
1+2	Horizontal	Vertical
Peak Avg.	Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Project : 391803-34	Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Project : 391803-34

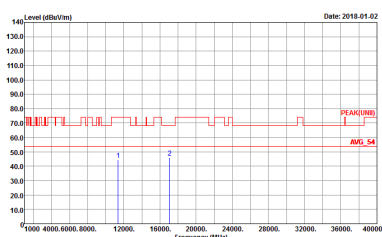
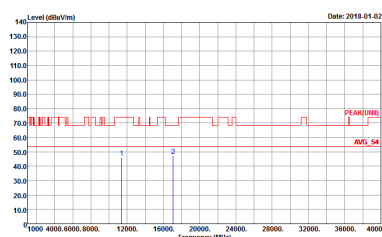


Band 3 - Straddle Channel
WIFI 802.11ac VHT80 (Fundamental @ 3m)

WIFI	Band 3 Straddle Channel Fundamental @ 3m	
ANT	802.11ac VHT80 CH138 5690MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-4 FY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 391803-34	 Site : 03CH11-4 FY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 391803-34

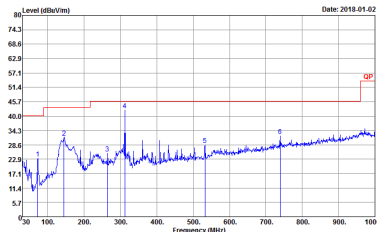
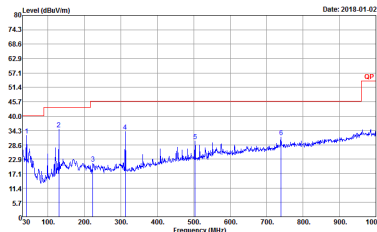


Band 3 - Straddle Channel
WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Band 3 Straddle Channel Harmonic @ 3m	
ANT	802.11ac VHT80 CH138 5690MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Project : 391803-34	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Project : 391803-34



Emission below 1GHz
5GHz WIFI 802.11n HT20 (LF)

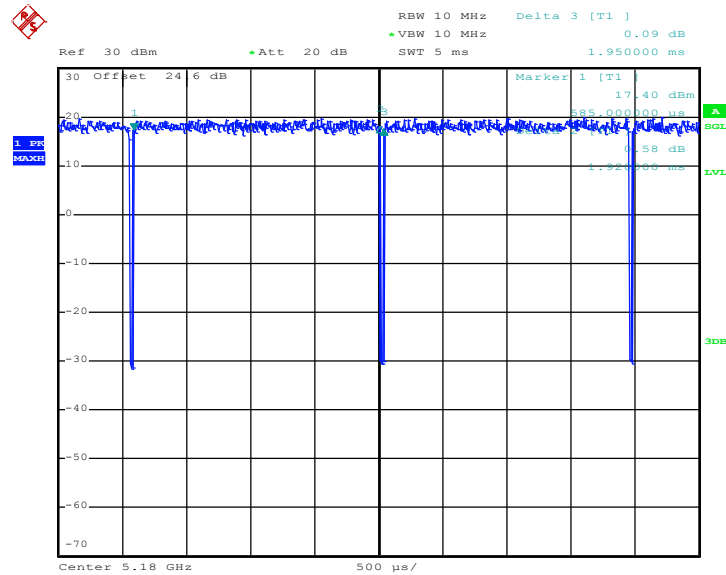
WIFI	5GHz WIFI	
ANT	802.11n HT20 LF	
1+2	Horizontal	Vertical
QP / Peak	 Site : 03CH11-HY Condition : QP 3m BT-LOG 6111D-LF_ETC HORIZONTAL Detector : Peak Project : 391803-34	 Site : 03CH11-HY Condition : QP 3m BT-LOG 6111D-LF_ETC VERTICAL Detector : Peak Project : 391803-34

Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	5GHz 802.11n HT20	98.46	-	-	10Hz
2	5GHz 802.11n HT20	98.46	-	-	10Hz
1+2	5GHz 802.11n HT20 for Ant. 1	95.86	972	1.03	3kHz
1+2	5GHz 802.11n HT20 for Ant. 2	95.86	972	1.03	3kHz
1	5GHz 802.11ac VHT80	93.29	459	2.18	3kHz
2	5GHz 802.11ac VHT80	93.87	459	2.18	3kHz
1+2	5GHz 802.11ac VHT80 for Ant. 1	86.99	254	3.94	10kHz
1+2	5GHz 802.11ac VHT80 for Ant. 2	86.99	254	3.94	10kHz

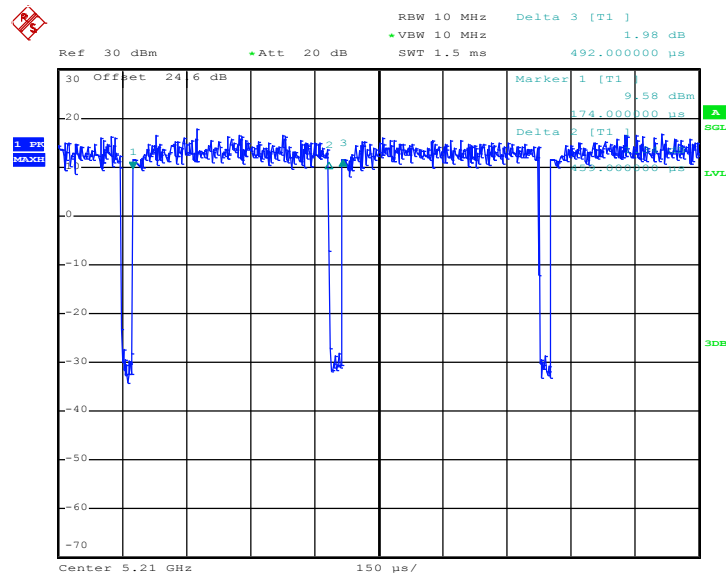
<Ant. 1>

802.11n HT20



Date: 13.JUN.2017 15:25:17

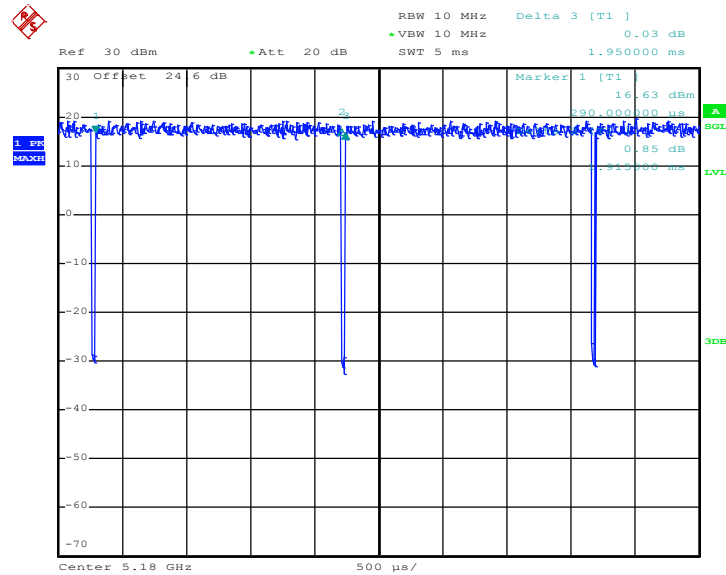
802.11ac VHT80



Date: 13.JUN.2017 15:56:47

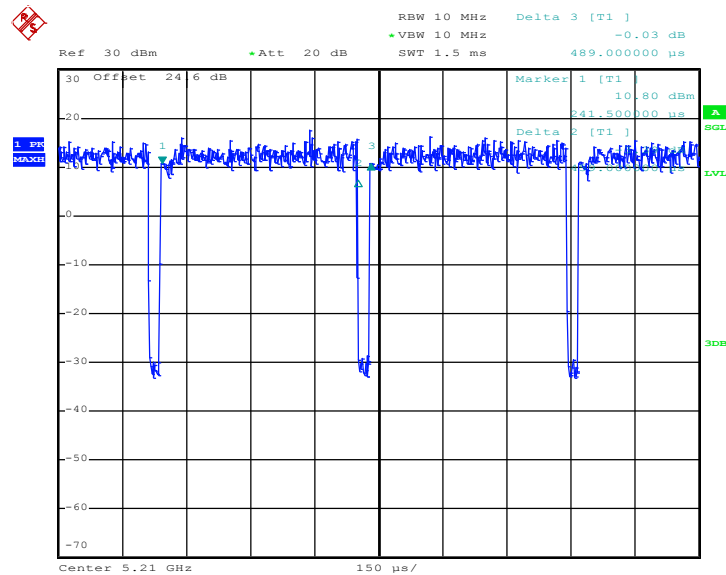
<Ant. 2>

802.11n HT20

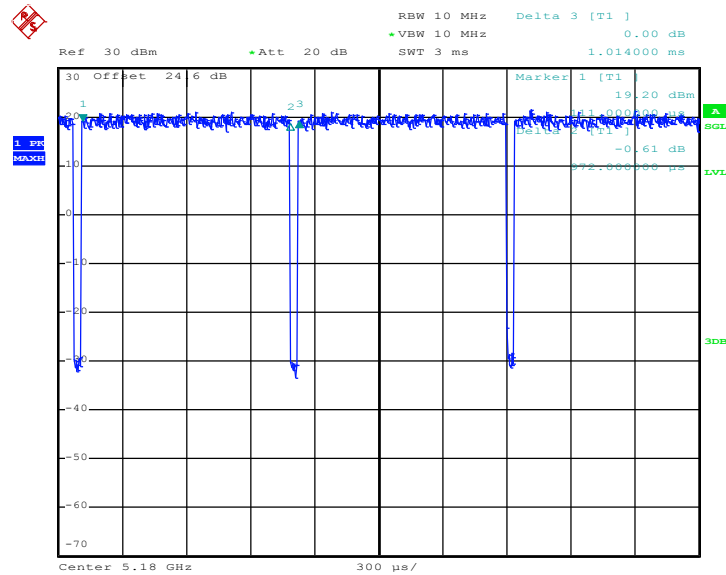


Date: 13.JUN.2017 15:31:00

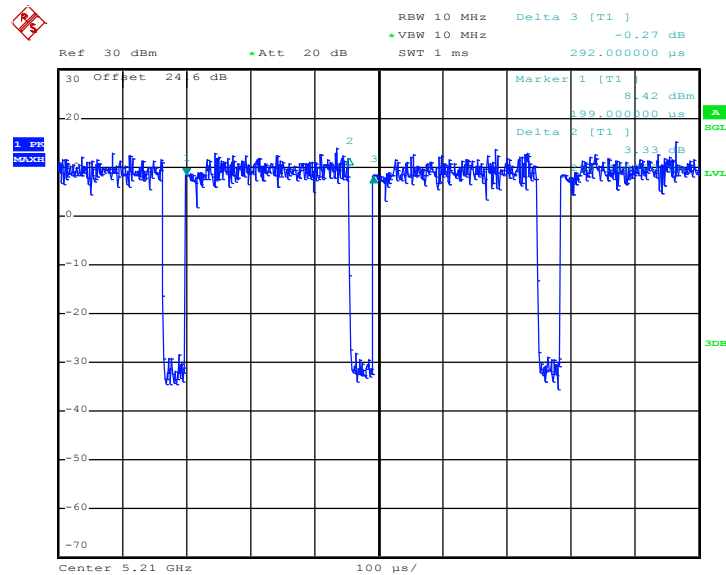
802.11ac VHT80



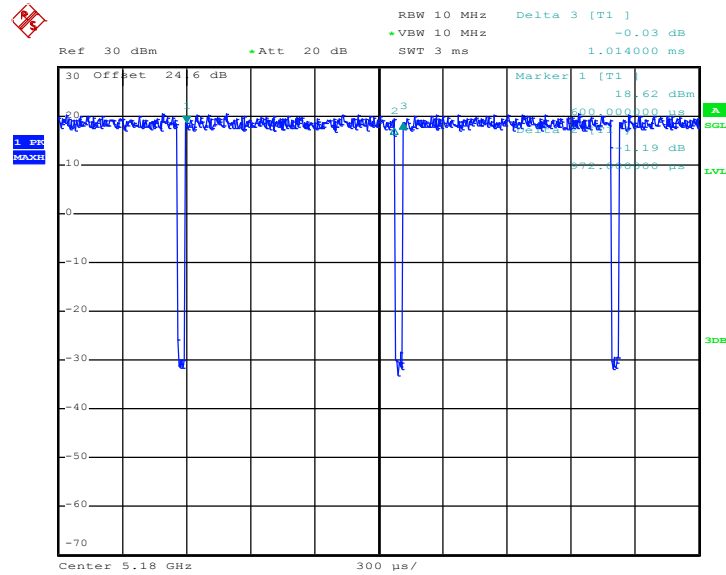
Date: 13.JUN.2017 15:57:56

<MIMO Ant. 1>
802.11n HT20


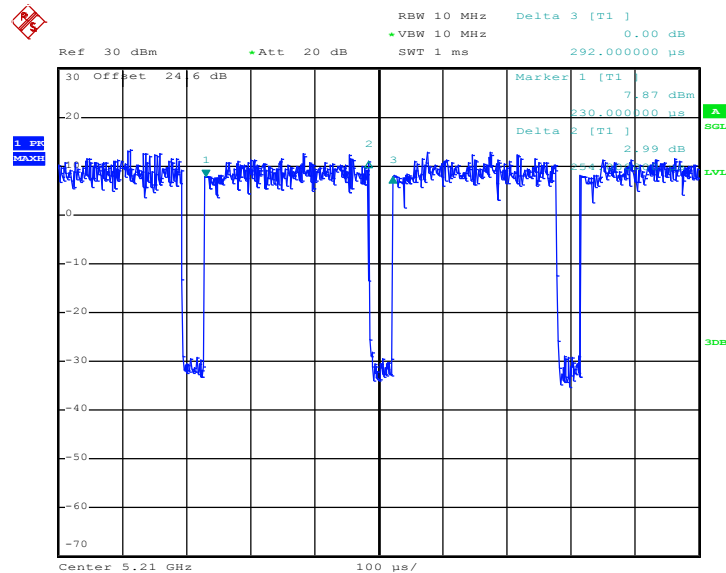
Date: 13.JUN.2017 15:33:06

802.11ac VHT80


Date: 13.JUN.2017 16:14:49

<MIMO Ant. 2>
802.11n HT20


Date: 13.JUN.2017 15:34:25

802.11ac VHT80


Date: 13.JUN.2017 16:15:43