



FCC RADIO TEST REPORT

FCC ID : J9CQSIP7180P
Equipment : 7c Modular Platform
Brand Name : Qualcomm
Model Name : QSIP7180P
Applicant : Qualcomm Technologies, Inc.
5775 Morehouse Dr.San Diego, CA 92121-1714 (USA)
Manufacturer : Qualcomm Technologies, Inc.
5775 Morehouse Dr.San Diego, CA 92121-1714 (USA)
Standard : FCC Part 15 Subpart E §15.407

The product was received on Jun. 08, 2020 and testing was started from Jun. 11, 2020 and completed on Jul. 17, 2020. We, SPORTON INTERNATIONAL INC., EMC & Wireless Communications Laboratory, 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. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 Product Feature of Equipment Under Test.....	5
1.2 Modification of EUT	5
1.3 Testing Location	6
1.4 Applicable Standards.....	6
2 Test Configuration of Equipment Under Test	7
2.1 Carrier Frequency and Channel	7
2.2 Test Mode.....	7
2.3 Connection Diagram of Test System.....	8
2.4 Support Unit used in test configuration and system	8
2.5 EUT Operation Test Setup	8
2.6 Measurement Results Explanation Example.....	9
3 Test Result	10
3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement	10
3.2 Maximum Conducted Output Power Measurement	13
3.3 Power Spectral Density Measurement	14
3.4 Unwanted Emissions Measurement.....	17
3.5 Automatically Discontinue Transmission	21
3.6 Antenna Requirements.....	23
4 List of Measuring Equipment.....	24
5 Uncertainty of Evaluation	26
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	



History of this test report

Report No.	Version	Description	Issued Date
FR042002-06E	01	Initial issue of report	Sep. 17, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403 (i)	6dB & 26dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407 (a)	Maximum Conducted Output Power	Pass	-
3.3	15.407 (a)	Power Spectral Density	Pass	-
3.4	15.407(b)	Unwanted Emissions	Pass	Under limit 6.15 dB at 885.540 MHz
-	15.207	AC Conducted Emission	Not Required	-
3.5	15.407 (c)	Automatically Discontinue Transmission	Pass	-
3.6	15.203 & 15.407 (a)	Antenna Requirement	Pass	-

Note: Not required means after assessing, test items are not necessary to carry out.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang

Report Producer: Cindy Liu

1 General Description

1.1 Product Feature of Equipment Under Test

Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ac, Wi-Fi 5GHz 802.11a/n/ac.

Antenna Information								
Antenna No.	Brand	Model	Antenna Net gain	Frequency Range (MHz)	Cable Loss (dBi)	Ant. Type	Connector Type	Cable Length (mm)
1	WNC	81.EBJ15.005	3.00	2400-2500 MHz	1.15	PIFA	IPEX	300
			2.56	5150-5350 MHz	1.7			
			4.76	5470-5725MHz	1.74			
			4.76	5725-5825 MHz	1.79			
2	WNC	81.EBJ15.005	3.62	2400-2500 MHz	1.15	PIFA	IPEX	300
			3.08	5150-5350 MHz	1.7			
			3.31	5470-5725MHz	1.74			
			2.42	5725-5825 MHz	1.79			

Remark:

1. Above antenna gains of antenna are Total (H+V).
2. For Bluetooth mode was fixed transmission on Chain (0)
3. The maximum gain was chosen for test.

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH05-HY	DFS02-HY

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory	
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.	
	03CH15-HY	

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

FCC designation No.: TW1190 and TW0007

1.4 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 414788 D01 Radiated Test Site v01r01.
- ♦ 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. The TAF code is not including all the FCC KDB listed without accreditation.
3. 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: 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 two degree (0 and 90). The worst cases (Degree 0) 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

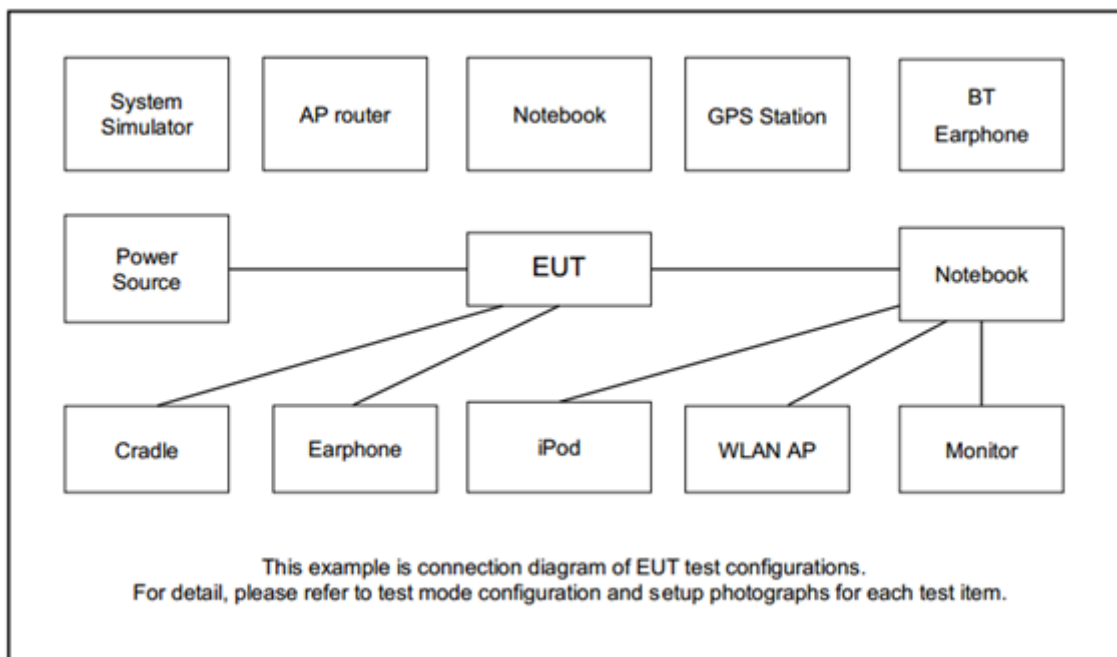
Final test modes are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20 (Covered by HT20)	MCS0
802.11ac VHT40 (Covered by HT40)	MCS0
802.11ac VHT80	MCS0

Ch. #		Band IV : 5725-5850 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

Remark: For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Bread Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	DELL	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Power Supply	GW Instek	GPE-2323	N/A	Unshielded, 1.0 m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility "QRCT v4.0.00156.0" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting 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.

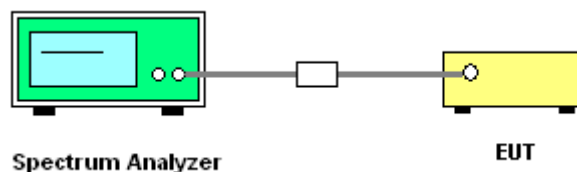
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

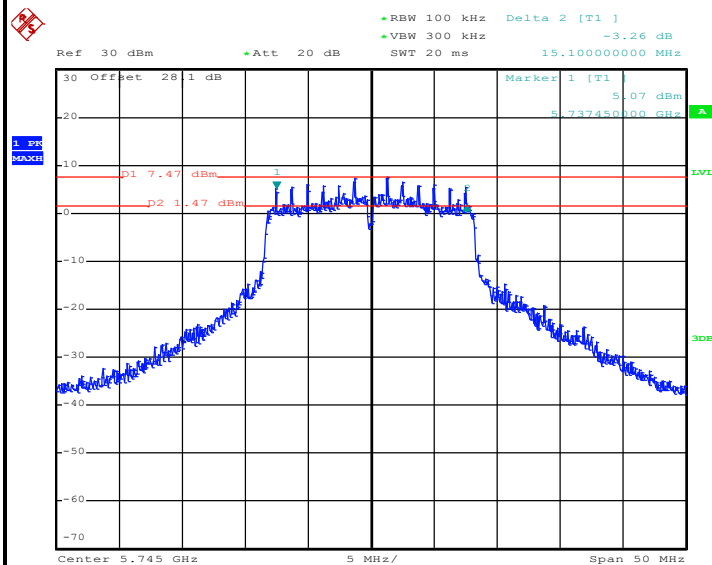
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

3.1.4 Test Setup

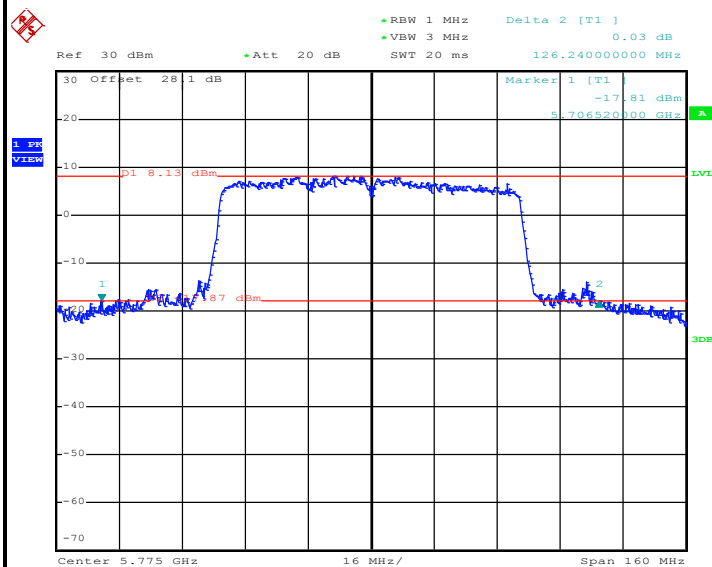


3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

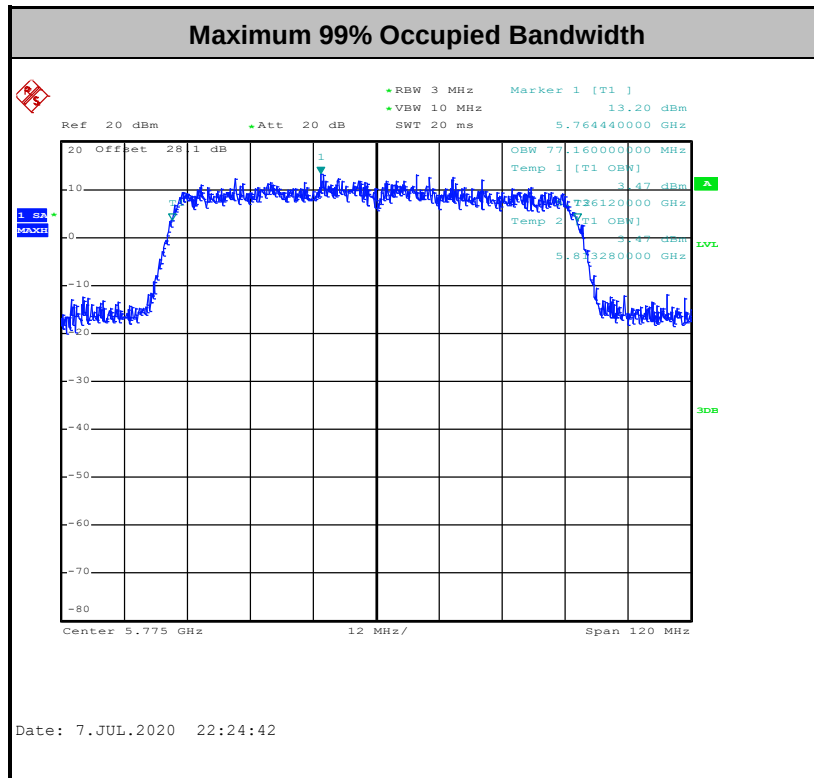
Please refer to Appendix A.

**Minimum 6dB Bandwidth**

Date: 7.JUL.2020 21:07:12

Maximum 26dB Bandwidth

Date: 7.JUL.2020 22:25:32



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

See list of measuring equipment of this test report.

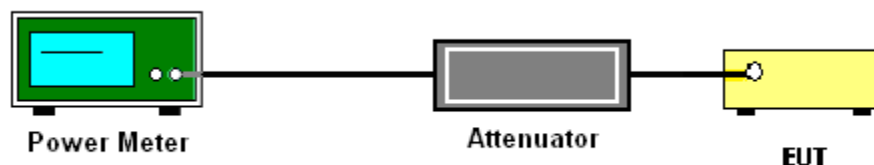
3.2.3 Test Procedures

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

Method PM-G (Measurement using a gated RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required

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

See list of measuring equipment of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section F) Maximum power spectral density.

Method SA-3

(power averaging (rms) detection with max hold):

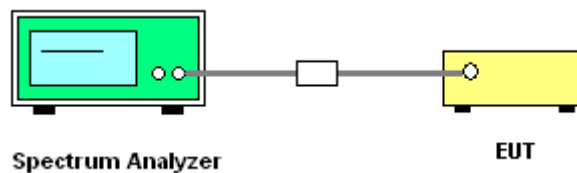
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW $\geq$ 1 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time $\leq$ (number of points in sweep) $\times$ T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
- Detector = power averaging (rms).
- Trace mode = max hold.
- Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

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 $10 \log(N_{\text{ANT}})$ 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 $10 \log(N_{\text{ANT}})$ dB is added to each spectrum value before comparing to the emission limit. The addition of $10 \log(N_{\text{ANT}})$ dB serves to apportion the emission limit among the N_{ANT} outputs so that each output is permitted to contribute no more than $1/N_{\text{ANT}}^{\text{th}}$ of the PSD limit.

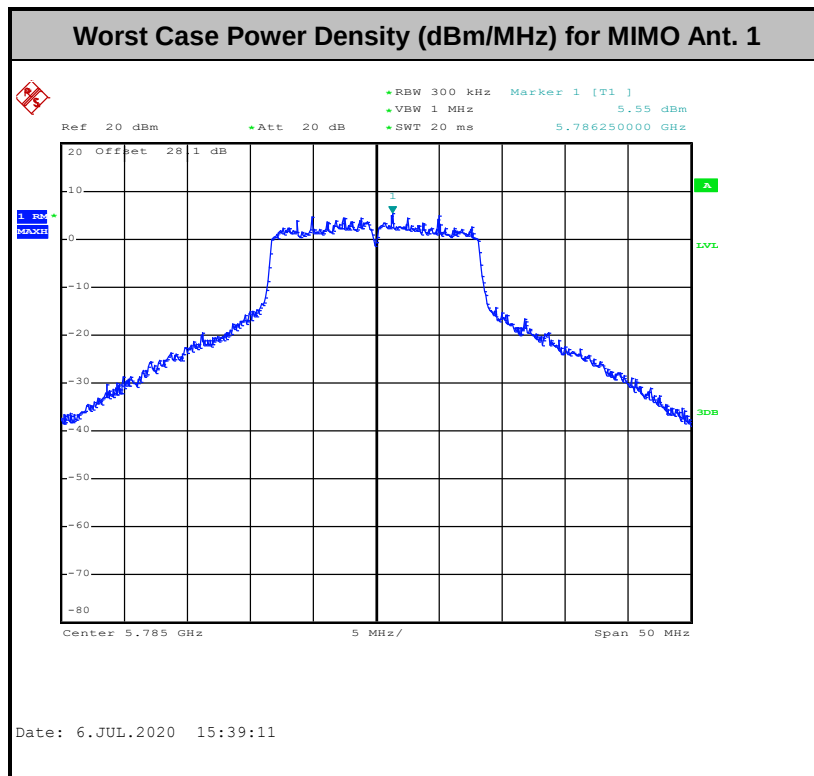
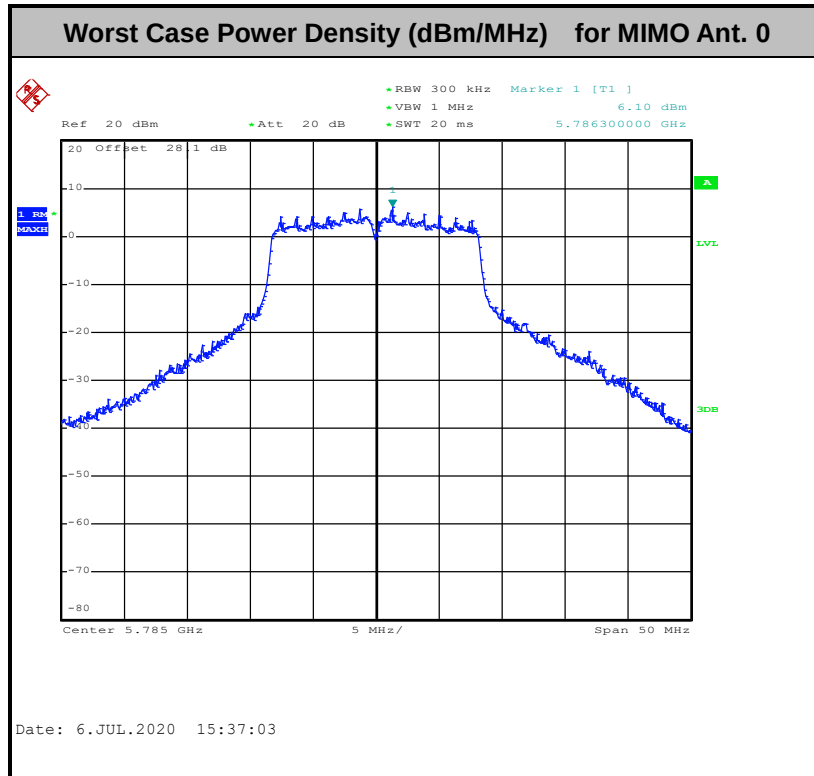
3.3.4 Test Setup





3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



3.4 Unwanted Emissions Measurement

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

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 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.

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

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

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

- (i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit 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.
- (ii) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are based on the use of a peak detector.

3.4.2 Measuring Instruments

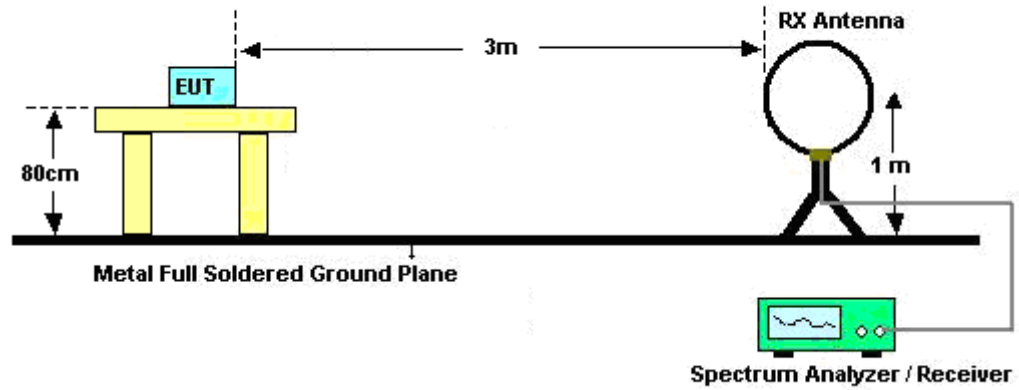
See list of measuring equipment of this test report.

3.4.3 Test Procedures

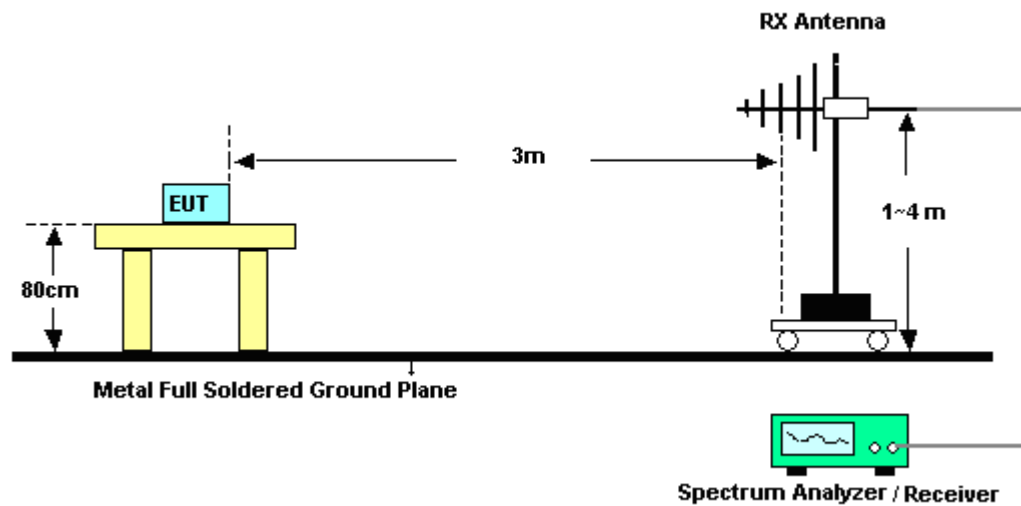
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
(1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
(2) Procedure for Peak Unwanted 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.

3.4.4 Test Setup

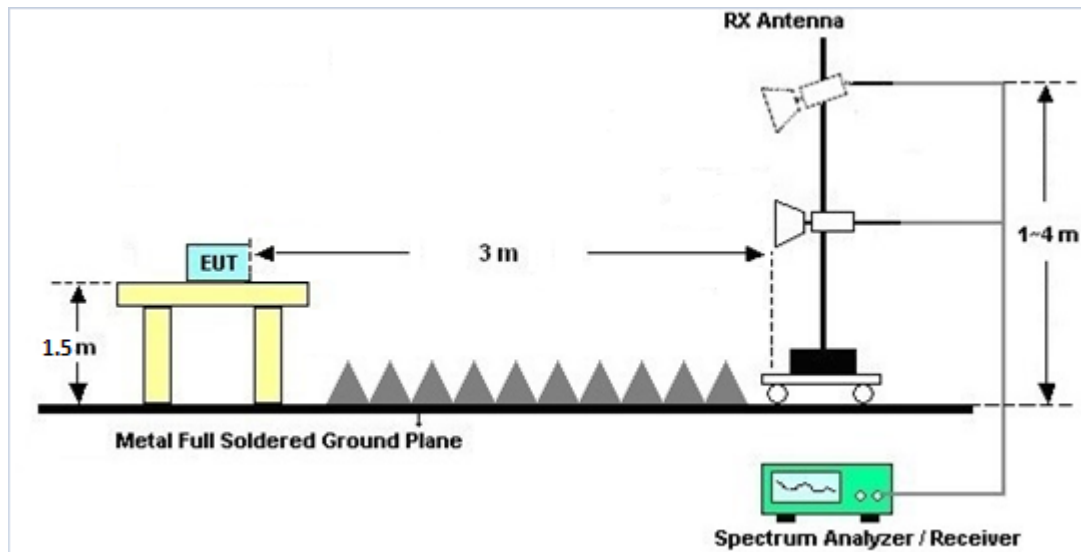
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 Test Results of Radiated 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 alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.5 Automatically Discontinue Transmission

3.5.1 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.

3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Result of Automatically Discontinue Transmission

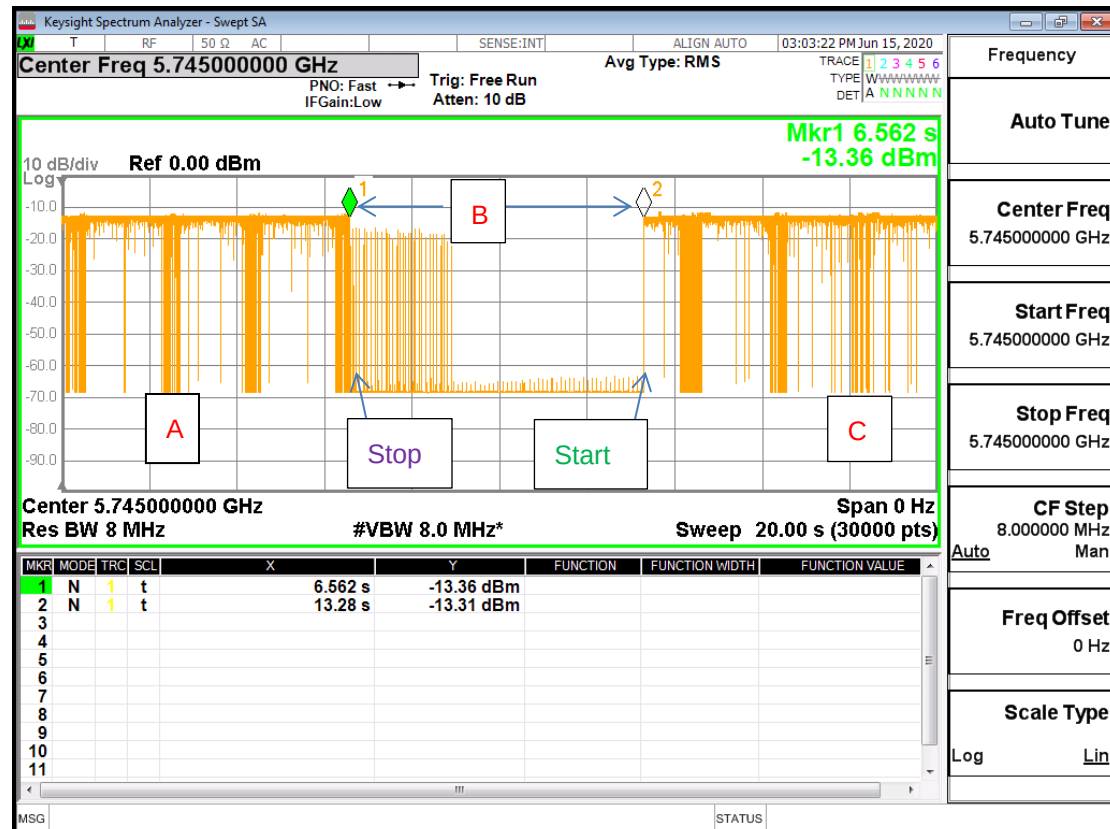
EUT is verified this characteristic during the function check of normal sample associated with an access point:

- A. Information start: make EUT supply information to the access point.
- B. Information stop: stop supplying information to the access point.

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving.

- C. Information start: make EUT supply information to the access point again.

The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

5745MHz


Note : The control / signalling information during the period B is precluded.

3.6 Antenna Requirements

3.6.1 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.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.6.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k/20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;
 G_k is the gain in dBi of the k th antenna.

The EUT supports beamforming for 802.11ac modes.

The directional gain calculation is following F)2)e)ii) of KDB 662911 D01 v02r01.

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

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

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant. 0	Ant. 1	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	4.76	4.76	7.77	7.77	1.77	1.77

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	608-H1	34893241	N/A	Mar. 02, 2020	Jun. 11, 2020~ Jul. 07, 2020	Mar. 01, 2021	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SN O10	10MHz~6GHz	Dec. 23, 2019	Jun. 11, 2020~ Jul. 07, 2020	Dec. 22, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Dec. 30, 2019	Jun. 11, 2020~ Jul. 07, 2020	Dec. 29, 2020	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1300484	N/A	Aug. 22, 2019	Jun. 11, 2020~ Jul. 07, 2020	Aug. 21, 2020	Conducted (TH05-HY)
Power Supply	GW Instek	SPS-606	GES842931	NA	Aug. 19, 2019	Jun. 11, 2020~ Jul. 07, 2020	Aug. 18, 2020	Conducted (TH05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 09, 2020	Jun. 27, 2020~ Jul. 17, 2020	Jan. 08, 2021	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL6111D& 00800N1D01 N-06	41912&05	30MHz to 1GHz	Feb. 09, 2020	Jun. 27, 2020~ Jul. 17, 2020	Feb. 08, 2021	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 27, 2019	Jun. 27, 2020~ Jul. 17, 2020	Dec. 26, 2020	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1620	1-18GHz	Oct. 28, 2019	Jun. 27, 2020~ Jul. 17, 2020	Oct. 27, 2020	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917058 4	18GHz- 40GHz	Dec. 10, 2019	Jun. 27, 2020~ Jul. 17, 2020	Dec. 09, 2020	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55- 303	17100018000 55006	1GHz~18GHz	May 07, 2020	Jun. 27, 2020~ Jul. 17, 2020	May 06, 2021	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 23, 2019	Jun. 27, 2020~ Jul. 17, 2020	Aug. 22, 2020	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 13, 2019	Jun. 27, 2020~ Jul. 17, 2020	Dec. 12, 2020	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MX E)	MY54130085	20MHz~8.4GHz	Nov. 01, 2019	Jun. 27, 2020~ Jul. 17, 2020	Oct. 31, 2020	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	May 04, 2020	Jun. 27, 2020~ Jul. 17, 2020	May 03, 2021	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jun. 27, 2020~ Jul. 17, 2020	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jun. 27, 2020~ Jul. 17, 2020	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24(k5)	RK-000451	N/A	N/A	Jun. 27, 2020~ Jul. 17, 2020	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY36980/4	30M-18G	Apr. 14, 2020	Jun. 27, 2020~ Jul. 17, 2020	Apr. 13, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9838/4PE	30M-18G	Apr. 14, 2020	Jun. 27, 2020~ Jul. 17, 2020	Apr. 13, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY37710/4	30M-18G	Apr. 17, 2020	Jun. 27, 2020~ Jul. 17, 2020	Apr. 16, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz-40GHz	Feb. 25, 2020	Jun. 27, 2020~ Jul. 17, 2020	Feb. 24, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz-40GHz	Feb. 25, 2020	Jun. 27, 2020~ Jul. 17, 2020	Feb. 24, 2021	Radiation (03CH15-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN4	1.53G Low Pass	Jul. 04, 2019	Jun. 27, 2020~ Jul. 02, 2020	Jul. 03, 2020	Radiation (03CH15-HY)
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN4	1.53G Low Pass	Jul. 03, 2020	Jul. 03, 2020~ Jul. 17, 2020	Jul. 02, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN6	6.75GHz High Pass Filter	Jul. 04, 2019	Jun. 27, 2020~ Jul. 02, 2020	Jul. 03, 2020	Radiation (03CH15-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN6	6.75GHz High Pass Filter	Jul. 03, 2020	Jul. 03, 2020~ Jul. 17, 2020	Jul. 02, 2021	Radiation (03CH15-HY)
Spectrum Analyzer	Keysight	N9010A	MY56070412	10Hz~7GHz	Aug. 27, 2019	Jun. 15, 2020	Aug. 26, 2020	DFS (DFS02-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0
--	-----

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.4
--	-----

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0
--	-----

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Kai Liao/Shiming Liu	Temperature:	23.2~24.1	°C
Test Date:	2020/6/11~2020/7/7	Relative Humidity:	52.5~53.8	%

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

Band IV MIMO												
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1		
11a	6Mbps	2	149	5745	16.85	17.35	26.35	32.20	15.10	15.90	0.5	Pass
11a	6Mbps	2	157	5785	16.95	17.30	27.70	32.60	15.10	15.75	0.5	Pass
11a	6Mbps	2	165	5825	16.95	17.15	27.60	32.10	15.10	15.10	0.5	Pass
HT20	MCS0	2	149	5745	18.10	18.45	28.80	33.10	15.50	15.95	0.5	Pass
HT20	MCS0	2	157	5785	18.05	18.35	29.05	31.90	16.00	15.95	0.5	Pass
HT20	MCS0	2	165	5825	18.25	18.45	29.50	33.05	16.00	15.10	0.5	Pass
HT40	MCS0	2	151	5755	36.70	36.90	41.88	51.84	35.09	35.07	0.5	Pass
HT40	MCS0	2	159	5795	36.70	37.00	50.04	54.54	35.10	35.12	0.5	Pass
VHT80	MCS0	2	155	5775	76.56	77.16	96.32	126.24	75.20	74.96	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	2	149	5745	18.20	17.40	20.83	28.23		7.77		Pass
11a	6Mbps	2	157	5785	18.30	17.50	20.93	28.23		7.77		Pass
11a	6Mbps	2	165	5825	18.20	17.30	20.78	28.23		7.77		Pass
HT20	MCS0	2	149	5745	18.40	17.50	20.98	28.23		7.77		Pass
HT20	MCS0	2	157	5785	18.10	17.50	20.82	28.23		7.77		Pass
HT20	MCS0	2	165	5825	18.40	17.50	20.98	28.23		7.77		Pass
HT40	MCS0	2	151	5755	18.10	17.40	20.77	28.23		7.77		Pass
HT40	MCS0	2	159	5795	18.30	17.40	20.88	28.23		7.77		Pass
VHT20	MCS0	2	149	5745	18.30	17.40	20.88	28.23		7.77		Pass
VHT20	MCS0	2	157	5785	18.00	17.40	20.72	28.23		7.77		Pass
VHT20	MCS0	2	165	5825	18.40	17.40	20.94	28.23		7.77		Pass
VHT40	MCS0	2	151	5755	18.00	17.00	20.54	28.23		7.77		Pass
VHT40	MCS0	2	159	5795	18.20	17.30	20.78	28.23		7.77		Pass
VHT80	MCS0	2	155	5775	18.20	17.30	20.78	28.23		7.77		Pass

TEST RESULTS DATA
Power Spectral Density

Band IV MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 0	Ant 1	Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	2	149	5745	2.22		8.00	7.51	11.01	28.23		7.77		Pass
11a	6Mbps	2	157	5785	2.22		8.32	7.77	11.33	28.23		7.77		Pass
11a	6Mbps	2	165	5825	2.22		7.88	7.41	10.89	28.23		7.77		Pass
HT20	MCS0	2	149	5745	2.22		8.08	7.34	11.09	28.23		7.77		Pass
HT20	MCS0	2	157	5785	2.22		7.73	7.41	10.74	28.23		7.77		Pass
HT20	MCS0	2	165	5825	2.22		8.04	7.46	11.05	28.23		7.77		Pass
HT40	MCS0	2	151	5755	2.22		3.80	2.95	6.81	28.23		7.77		Pass
HT40	MCS0	2	159	5795	2.22		3.99	3.15	7.00	28.23		7.77		Pass
VHT80	MCS0	2	155	5775	2.22		2.53	1.77	5.54	28.23		7.77		Pass

Note: PSD Sum = Max PSD(Ant. 0, Ant. 1) + 10 log (n)



Appendix B. Radiated Spurious Emission

Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	21.4~22.9°C
		Relative Humidity :	52~61%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preampl Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5602	53.66	-14.54	68.2	41.35	31.9	10.9	30.49	100	37	P	H
		5698	59.14	-44.59	103.73	46.83	31.99	10.87	30.55	100	37	P	H
		5715.8	67.54	-42.09	109.63	55.23	32	10.87	30.56	100	37	P	H
		5723.2	71.81	-46.29	118.1	59.51	32	10.87	30.57	100	37	P	H
	*	5745	112.95	-	-	100.67	32	10.86	30.58	100	37	P	H
	*	5745	105.03	-	-	92.75	32	10.86	30.58	100	37	A	H
													H
													H
		5620.8	52.97	-15.23	68.2	40.72	31.86	10.89	30.5	395	311	P	V
		5698.8	54.63	-49.69	104.32	42.31	32	10.87	30.55	395	311	P	V
		5720	62.61	-48.19	110.8	50.31	32	10.87	30.57	395	311	P	V
		5725	73.01	-49.19	122.2	60.71	32	10.87	30.57	395	311	P	V
	*	5745	109.63	-	-	97.35	32	10.86	30.58	395	311	P	V
	*	5745	102.14	-	-	89.86	32	10.86	30.58	395	311	A	V
													V
													V



WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		5627	52.95	-15.25	68.2	40.72	31.85	10.89	30.51	100	35	P	H
		5679.8	52.75	-37.54	90.29	40.49	31.92	10.88	30.54	100	35	P	H
		5716.6	54.3	-55.55	109.85	41.99	32	10.87	30.56	100	35	P	H
		5721.6	55.85	-58.6	114.45	43.55	32	10.87	30.57	100	35	P	H
	*	5785	113.29	-	-	100.91	32.14	10.85	30.61	100	35	P	H
	*	5785	105.73	-	-	93.35	32.14	10.85	30.61	100	35	A	H
		5854	53.56	-59.52	113.08	41	32.22	10.99	30.65	100	35	P	H
		5868	53.59	-53.57	107.16	40.96	32.27	11.02	30.66	100	35	P	H
		5885.6	54.08	-43.25	97.33	41.34	32.34	11.07	30.67	100	35	P	H
		5931.6	54.01	-14.19	68.2	41.07	32.46	11.18	30.7	100	35	P	H
													H
													H
		5603	52.86	-15.34	68.2	40.56	31.89	10.9	30.49	400	91	P	V
		5658.2	52.36	-21.93	74.29	40.18	31.83	10.88	30.53	400	91	P	V
		5719	52.49	-58.03	110.52	40.19	32	10.87	30.57	400	91	P	V
		5723	51.51	-66.13	117.64	39.21	32	10.87	30.57	400	91	P	V
	*	5785	107.82	-	-	95.44	32.14	10.85	30.61	400	91	P	V
	*	5785	100.62	-	-	88.24	32.14	10.85	30.61	400	91	A	V
		5852.2	52.4	-64.78	117.18	39.86	32.21	10.98	30.65	400	91	P	V
		5856	52.55	-57.97	110.52	39.99	32.22	10.99	30.65	400	91	P	V
		5876.2	52.83	-51.48	104.31	40.15	32.3	11.04	30.66	400	91	P	V
		5949.6	53.57	-14.63	68.2	40.55	32.5	11.23	30.71	400	91	P	V
													V
													V



WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz	*	5825	112.43	-	-	99.95	32.2	10.91	30.63	100	35	P	H
	*	5825	104.88	-	-	92.4	32.2	10.91	30.63	100	35	A	H
		5853.6	61.33	-52.66	113.99	48.78	32.21	10.99	30.65	100	35	P	H
		5864.4	59.73	-48.44	108.17	47.12	32.26	11.01	30.66	100	35	P	H
		5876.6	56.66	-47.35	104.01	43.97	32.31	11.04	30.66	100	35	P	H
		5927	53.14	-15.06	68.2	40.21	32.45	11.17	30.69	100	35	P	H
													H
													H
	*	5825	109.38	-	-	96.9	32.2	10.91	30.63	400	309	P	V
	*	5825	102.38	-	-	89.9	32.2	10.91	30.63	400	309	A	V
		5850	61.11	-61.09	122.2	48.58	32.2	10.98	30.65	400	309	P	V
		5862.8	56.24	-52.37	108.61	43.63	32.25	11.01	30.65	400	309	P	V
		5877.2	54.69	-48.88	103.57	42	32.31	11.04	30.66	400	309	P	V
		5928.8	52.9	-15.3	68.2	39.97	32.46	11.17	30.7	400	309	P	V
													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. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	50.01	-23.99	74	55.54	40.48	14.89	60.9	100	0	P	H
		17235	49.77	-18.43	68.2	48.68	40.94	18.97	58.82	100	0	P	H
													H
													H
		11490	57.05	-16.95	74	62.58	40.48	14.89	60.9	286	56	P	V
		11490	46.91	-7.09	54	52.44	40.48	14.89	60.9	286	56	A	V
		17235	51.96	-16.24	68.2	50.87	40.94	18.97	58.82	100	0	P	V
													V
802.11a CH 157 5785MHz		11570	52.86	-21.14	74	58.57	40.29	14.98	60.98	400	282	P	H
		11570	43.71	-10.29	54	49.42	40.29	14.98	60.98	400	282	A	H
		17355	52.45	-15.75	68.2	50.26	41.75	19.11	58.67	100	0	P	H
													H
		11570	57.65	-16.35	74	63.36	40.29	14.98	60.98	313	51	P	V
		11570	47.71	-6.29	54	53.42	40.29	14.98	60.98	313	51	A	V
		17355	54.52	-13.68	68.2	52.33	41.75	19.11	58.67	100	0	P	V
													V
802.11a CH 165 5825MHz		11650	49.85	-24.15	74	56.02	39.85	15.06	61.08	100	0	P	H
		17475	52.35	-15.85	68.2	49.14	42.5	19.24	58.53	100	0	P	H
													H
													H
		11650	56.37	-17.63	74	62.54	39.85	15.06	61.08	274	51	P	V
		11650	46.95	-7.05	54	53.12	39.85	15.06	61.08	274	51	A	V
		17475	51.9	-16.3	68.2	48.69	42.5	19.24	58.53	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

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

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		5635.2	53.39	-14.81	68.2	41.18	31.83	10.89	30.51	100	37	P	H
		5696.2	58.23	-44.17	102.4	45.93	31.98	10.87	30.55	100	37	P	H
		5720	69.29	-41.51	110.8	56.99	32	10.87	30.57	100	37	P	H
		5725	79.62	-42.58	122.2	67.32	32	10.87	30.57	100	37	P	H
	*	5746	113.89	-	-	101.61	32	10.86	30.58	100	37	P	H
	*	5746	105.61	-	-	93.33	32	10.86	30.58	100	37	A	H
													H
													H
		5612.8	52.82	-15.38	68.2	40.56	31.87	10.89	30.5	400	311	P	V
		5699.2	56.41	-48.2	104.61	44.09	32	10.87	30.55	400	311	P	V
		5715.6	63.96	-45.61	109.57	51.65	32	10.87	30.56	400	311	P	V
		5725	66.33	-55.87	122.2	54.03	32	10.87	30.57	400	311	P	V
	*	5745	109.17	-	-	96.89	32	10.86	30.58	400	311	P	V
	*	5745	101.89	-	-	89.61	32	10.86	30.58	400	311	A	V
													V
													V



WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 157 5785MHz		5631.6	53.86	-14.34	68.2	41.64	31.84	10.89	30.51	100	106	P	H
		5697.8	53.26	-50.32	103.58	40.95	31.99	10.87	30.55	100	106	P	H
		5719.4	53.87	-56.76	110.63	41.57	32	10.87	30.57	100	106	P	H
		5721.2	53.63	-59.91	113.54	41.33	32	10.87	30.57	100	106	P	H
	*	5785	112.69	-	-	100.31	32.14	10.85	30.61	100	106	P	H
	*	5785	105.08	-	-	92.7	32.14	10.85	30.61	100	106	A	H
		5851.2	54	-65.46	119.46	41.47	32.2	10.98	30.65	100	106	P	H
		5858.2	53.27	-56.63	109.9	40.69	32.23	11	30.65	100	106	P	H
		5880.4	53.61	-47.58	101.19	40.91	32.32	11.05	30.67	100	106	P	H
		5938.8	52.83	-15.37	68.2	39.85	32.48	11.2	30.7	100	106	P	H
													H
													H
		5601.4	52.48	-15.72	68.2	40.17	31.9	10.9	30.49	400	91	P	V
		5681.4	52.41	-39.06	91.47	40.14	31.93	10.88	30.54	400	91	P	V
		5719.8	52.09	-58.65	110.74	39.79	32	10.87	30.57	400	91	P	V
		5724.4	52.3	-68.53	120.83	40	32	10.87	30.57	400	91	P	V
	*	5785	107.47	-	-	95.09	32.14	10.85	30.61	400	91	P	V
	*	5785	99.83	-	-	87.45	32.14	10.85	30.61	400	91	A	V
		5855	51.65	-59.15	110.8	39.09	32.22	10.99	30.65	400	91	P	V
		5866	52.18	-55.54	107.72	39.56	32.26	11.02	30.66	400	91	P	V
		5877.6	52.84	-50.43	103.27	40.14	32.31	11.05	30.66	400	91	P	V
		5933.2	52.87	-15.33	68.2	39.92	32.47	11.18	30.7	400	91	P	V
													V
													V



WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path 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	111.59	-	-	99.11	32.2	10.91	30.63	100	107	P	H
	*	5825	104.12	-	-	91.64	32.2	10.91	30.63	100	107	A	H
		5850.2	65.06	-56.68	121.74	52.53	32.2	10.98	30.65	100	107	P	H
		5858	57.6	-52.36	109.96	45.02	32.23	11	30.65	100	107	P	H
		5880.6	54.49	-46.55	101.04	41.79	32.32	11.05	30.67	100	107	P	H
		5941	53.01	-15.19	68.2	40.03	32.48	11.2	30.7	100	107	P	H
													H
													H
	*	5825	110.57	-	-	98.09	32.2	10.91	30.63	400	309	P	V
	*	5825	102.88	-	-	90.4	32.2	10.91	30.63	400	309	A	V
		5850	68.91	-53.29	122.2	56.38	32.2	10.98	30.65	400	309	P	V
		5855	57.67	-53.13	110.8	45.11	32.22	10.99	30.65	400	309	P	V
		5881.4	53.68	-46.77	100.45	40.97	32.33	11.05	30.67	400	309	P	V
		5934.6	52.71	-15.49	68.2	39.75	32.47	11.19	30.7	400	309	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. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path 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	50.6	-23.4	74	56.13	40.48	14.89	60.9	100	0	P	H
		17235	50.19	-18.01	68.2	49.1	40.94	18.97	58.82	100	0	P	H
													H
													H
		11490	56.84	-17.16	74	62.37	40.48	14.89	60.9	335	48	P	V
		11490	46.53	-7.47	54	52.06	40.48	14.89	60.9	335	48	A	V
		17235	53.56	-14.64	68.2	52.47	40.94	18.97	58.82	100	0	P	V
													V
802.11n HT20 CH 157 5785MHz		11570	52.56	-21.44	74	58.27	40.29	14.98	60.98	397	282	P	H
		11570	43.39	-10.61	54	49.1	40.29	14.98	60.98	397	282	A	H
		17357.4	51.79	-16.41	68.2	49.58	41.77	19.11	58.67	100	0	P	H
													H
		11570	57.59	-16.41	74	63.3	40.29	14.98	60.98	335	52	P	V
		11570	47.6	-6.4	54	53.31	40.29	14.98	60.98	335	52	A	V
		17357.4	53.48	-14.72	68.2	51.27	41.77	19.11	58.67	100	0	P	V
													V
802.11n HT20 CH 165 5825MHz		11650	53.04	-20.96	74	59.21	39.85	15.06	61.08	400	205	P	H
		11650	42.72	-11.28	54	48.89	39.85	15.06	61.08	400	205	A	H
		17475	52.6	-15.6	68.2	49.39	42.5	19.24	58.53	100	0	P	H
													H
		11650	58.37	-15.63	74	64.54	39.85	15.06	61.08	279	51	P	V
		11650	47.39	-6.61	54	53.56	39.85	15.06	61.08	279	51	A	V
		17475	54.48	-13.72	68.2	51.27	42.5	19.24	58.53	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 151 5755MHz		5643.2	54.54	-13.66	68.2	42.36	31.81	10.89	30.52	100	37	P	H
		5698.6	61.19	-42.98	104.17	48.88	31.99	10.87	30.55	100	37	P	H
		5719	77.58	-32.94	110.52	65.28	32	10.87	30.57	100	37	P	H
		5723.2	77.47	-40.63	118.1	65.17	32	10.87	30.57	100	37	P	H
	*	5755	110.13	-	-	97.84	32.02	10.86	30.59	100	37	P	H
	*	5755	102.48	-	-	90.19	32.02	10.86	30.59	100	37	A	H
		5850	52.48	-69.72	122.2	39.95	32.2	10.98	30.65	100	37	P	H
		5864.2	53.07	-55.15	108.22	40.46	32.26	11.01	30.66	100	37	P	H
		5921.4	52.58	-18.27	70.85	39.67	32.44	11.16	30.69	100	37	P	H
		5949	51.67	-16.53	68.2	38.66	32.5	11.22	30.71	100	37	P	H
													H
													H
		5646.4	51.59	-16.61	68.2	39.41	31.81	10.89	30.52	353	245	P	V
		5698.4	58.15	-45.87	104.02	45.84	31.99	10.87	30.55	353	245	P	V
		5719.2	72.62	-37.96	110.58	60.32	32	10.87	30.57	353	245	P	V
		5725	75.5	-46.7	122.2	63.2	32	10.87	30.57	353	245	P	V
	*	5755	107.49	-	-	95.2	32.02	10.86	30.59	353	245	P	V
	*	5755	99.67	-	-	87.38	32.02	10.86	30.59	353	245	A	V
		5853.2	51.67	-63.23	114.9	39.13	32.21	10.98	30.65	353	245	P	V
		5868.8	52.44	-54.49	106.93	39.8	32.28	11.02	30.66	353	245	P	V
		5888.4	51.93	-43.32	95.25	39.18	32.35	11.07	30.67	353	245	P	V
		5942.8	52.03	-16.17	68.2	39.03	32.49	11.21	30.7	353	245	P	V
													V
													V



WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 159 5795MHz		5647	52.95	-15.25	68.2	40.77	31.81	10.89	30.52	116	35	P	H
		5693.8	52.91	-47.72	100.63	40.6	31.98	10.88	30.55	116	35	P	H
		5718	55.5	-54.74	110.24	43.2	32	10.87	30.57	116	35	P	H
		5722.2	56.46	-59.36	115.82	44.16	32	10.87	30.57	116	35	P	H
	*	5795	110.65	-	-	98.23	32.18	10.85	30.61	116	35	P	H
	*	5795	103.03	-	-	90.61	32.18	10.85	30.61	116	35	A	H
		5851.6	61.17	-57.38	118.55	48.63	32.21	10.98	30.65	116	35	P	H
		5857.8	58.92	-51.09	110.01	46.34	32.23	11	30.65	116	35	P	H
		5877.2	54.05	-49.52	103.57	41.36	32.31	11.04	30.66	116	35	P	H
		5927.8	52.05	-16.15	68.2	39.12	32.46	11.17	30.7	116	35	P	H
													H
													H
		5605.6	52.61	-15.59	68.2	40.32	31.89	10.9	30.5	369	313	P	V
		5694	52.19	-48.59	100.78	39.88	31.98	10.88	30.55	369	313	P	V
		5715.4	52.24	-57.27	109.51	39.93	32	10.87	30.56	369	313	P	V
		5724.4	51.13	-69.7	120.83	38.83	32	10.87	30.57	369	313	P	V
	*	5795	107.58	-	-	95.16	32.18	10.85	30.61	369	313	P	V
	*	5795	99.78	-	-	87.36	32.18	10.85	30.61	369	313	A	V
		5850	54.66	-67.54	122.2	42.13	32.2	10.98	30.65	369	313	P	V
		5857	53.74	-56.5	110.24	41.17	32.23	10.99	30.65	369	313	P	V
		5875.2	52.09	-52.96	105.05	39.41	32.3	11.04	30.66	369	313	P	V
		5945	52.11	-16.09	68.2	39.12	32.49	11.21	30.71	369	313	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. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path 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	49.63	-24.37	74	55.16	40.47	14.91	60.91	100	0	P	H
		17265	50.04	-18.16	68.2	48.76	41.06	19	58.78	100	0	P	H
													H
													H
		11510	54.1	-19.9	74	59.63	40.47	14.91	60.91	338	52	P	V
		11510	45.95	-8.05	54	51.48	40.47	14.91	60.91	338	52	A	V
		17265	50.96	-17.24	68.2	49.68	41.06	19	58.78	100	0	P	V
													V
802.11n HT40 CH 159 5795MHz		11590	50.01	-23.99	74	55.79	40.23	15	61.01	100	0	P	H
		17385	51.84	-16.36	68.2	49.29	42.05	19.14	58.64	100	0	P	H
													H
													H
		11590	53.99	-20.01	74	59.77	40.23	15	61.01	335	52	P	V
		11590	45.66	-8.34	54	51.44	40.23	15	61.01	335	52	A	V
		17385	54.05	-14.15	68.2	51.5	42.05	19.14	58.64	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 155 5775MHz		5639.2	54.89	-13.31	68.2	42.7	31.82	10.89	30.52	100	36	P	H
		5695.4	74.16	-27.65	101.81	61.85	31.98	10.88	30.55	100	36	P	H
		5720	79.56	-31.24	110.8	67.26	32	10.87	30.57	100	36	P	H
		5720	79.56	-31.24	110.8	67.26	32	10.87	30.57	100	36	P	H
	*	5775	107.45	-	-	95.09	32.1	10.86	30.6	100	36	P	H
	*	5775	99.82	-	-	87.46	32.1	10.86	30.6	100	36	A	H
		5851.4	76.34	-42.67	119.01	63.8	32.21	10.98	30.65	100	36	P	H
		5856	75.57	-34.95	110.52	63.01	32.22	10.99	30.65	100	36	P	H
		5875.6	69.78	-34.97	104.75	57.1	32.3	11.04	30.66	100	36	P	H
		5935	53.11	-15.09	68.2	40.15	32.47	11.19	30.7	100	36	P	H
													H
													H
		5649.4	53.41	-14.79	68.2	41.24	31.8	10.89	30.52	349	245	P	V
		5688.8	67.38	-29.56	96.94	55.09	31.96	10.88	30.55	349	245	P	V
		5718	72.92	-37.32	110.24	60.62	32	10.87	30.57	349	245	P	V
		5723	74.48	-43.16	117.64	62.18	32	10.87	30.57	349	245	P	V
	*	5775	103.39	-	-	91.03	32.1	10.86	30.6	349	245	P	V
	*	5775	95.83	-	-	83.47	32.1	10.86	30.6	349	245	A	V
		5852	71.96	-45.68	117.64	59.42	32.21	10.98	30.65	349	245	P	V
		5869	67.61	-39.27	106.88	54.97	32.28	11.02	30.66	349	245	P	V
		5875	59.98	-45.22	105.2	47.3	32.3	11.04	30.66	349	245	P	V
		5931.4	51.32	-16.88	68.2	38.38	32.46	11.18	30.7	349	245	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. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path 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	49.33	-24.67	74	54.98	40.35	14.96	60.96	100	0	P	H
		17325	50.69	-17.51	68.2	48.87	41.45	19.08	58.71	100	0	P	H
													H
													H
		11550	49.69	-24.31	74	55.34	40.35	14.96	60.96	100	0	P	V
		17325	52.16	-16.04	68.2	50.34	41.45	19.08	58.71	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	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11a LF		71.71	25.91	-14.09	40	44.74	12.65	1.11	32.59	-	-	P	H
		95.96	32.62	-10.88	43.5	47.94	15.64	1.33	32.29	-	-	P	H
		353.98	35.8	-10.2	46	45.36	20.29	2.57	32.42	-	-	P	H
		359.8	36.94	-9.06	46	46.25	20.48	2.59	32.38	-	-	P	H
		440.31	33.84	-12.16	46	40.78	22.72	2.84	32.5	-	-	P	H
		885.54	39.33	-6.67	46	38.44	28.55	4.25	31.91	100	0	P	H
													H
													H
													H
													H
													H
													H
		56.19	30.9	-9.1	40	49.7	12.71	0.98	32.49	-	-	P	V
		191.99	34.26	-9.24	43.5	49.66	15.01	1.97	32.38	-	-	P	V
		288.02	33.27	-12.73	46	44.59	18.82	2.35	32.49	-	-	P	V
		359.8	36.2	-9.8	46	45.51	20.48	2.59	32.38	-	-	P	V
		431.58	33.81	-12.19	46	40.73	22.68	2.82	32.42	-	-	P	V
		885.54	39.85	-6.15	46	38.96	28.55	4.25	31.91	100	0	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	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+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

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

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

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



Appendix C. Radiated Spurious Emission Plots

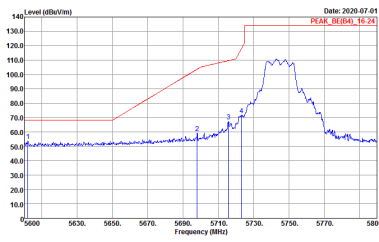
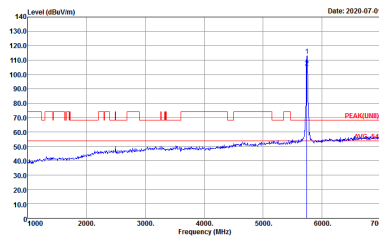
Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	21.4~22.9°C
		Relative Humidity :	52~61%

Note symbol

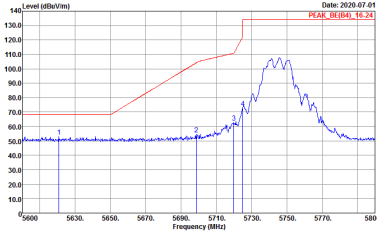
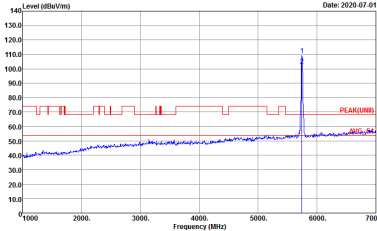
-L	Low channel location
-R	High channel location

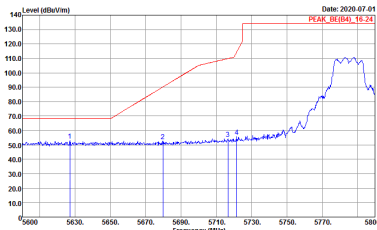
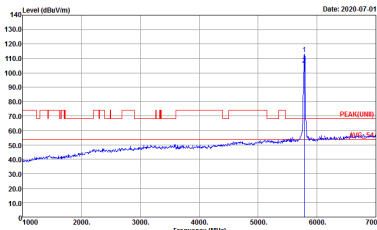
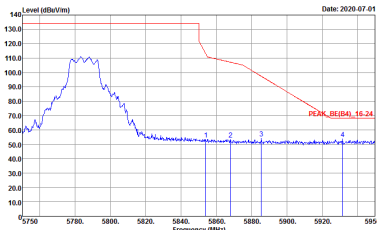


Band 4 - 5725~5850MHz
WIFI 802.11a (Band Edge @ 3m)

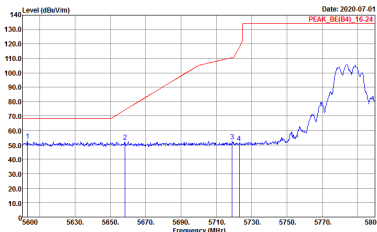
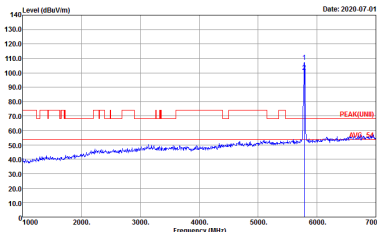
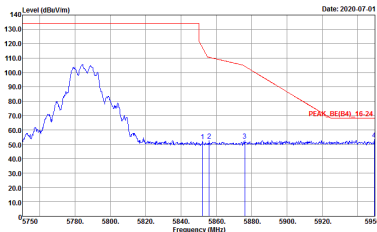
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE[84]_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(FUND) 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



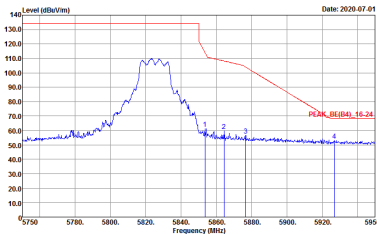
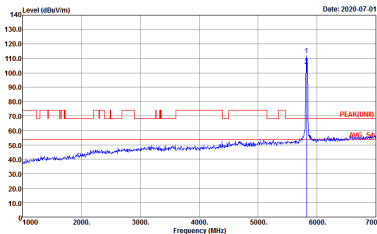
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_95[84]_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK[UNIT] 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank

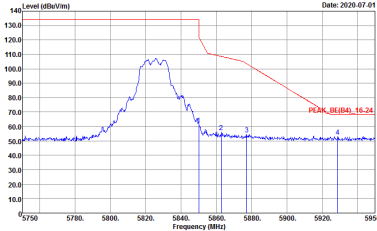
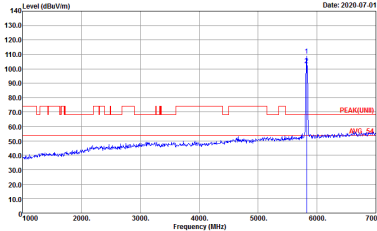


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



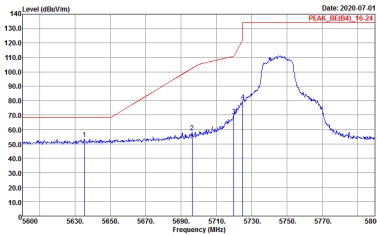
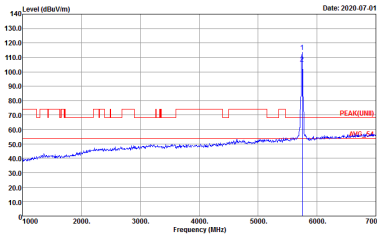
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_05(B4)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_05(B4)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto



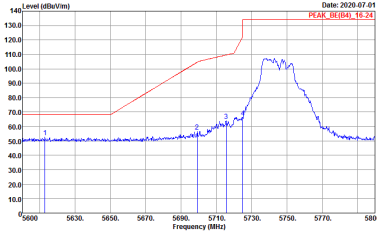
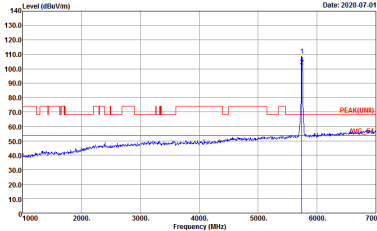
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_95[84]_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK[UNIT] 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto

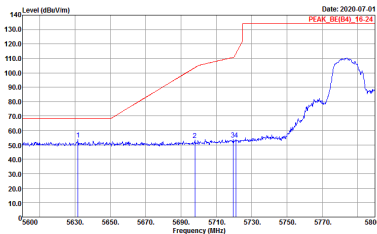
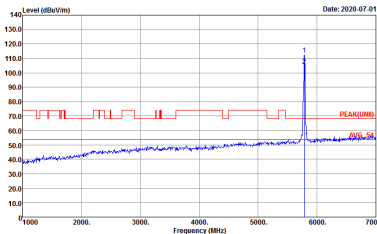
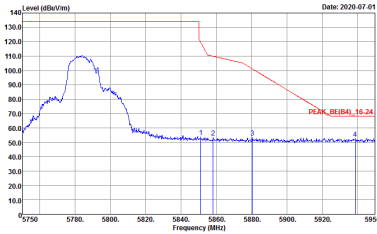


Band 4 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

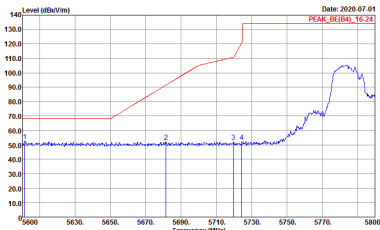
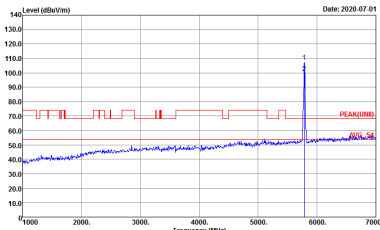
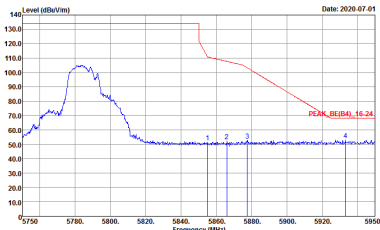
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_95[84]_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK[UNIT] 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank

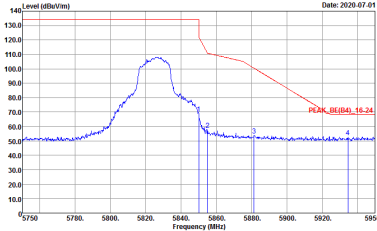
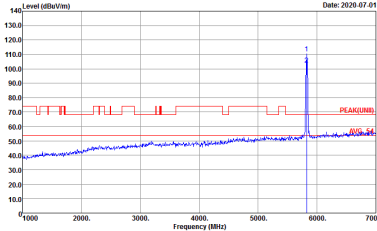


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

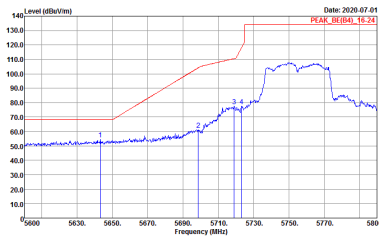
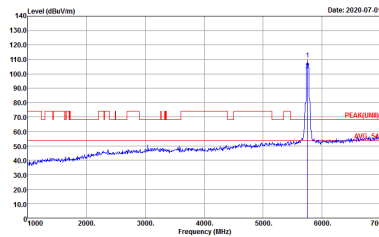
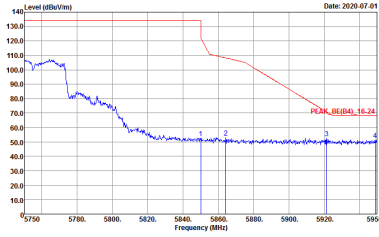


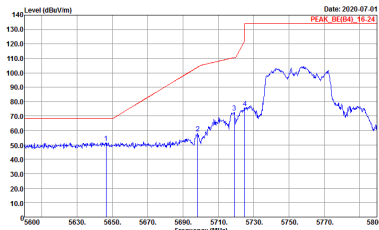
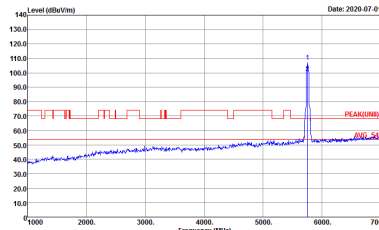
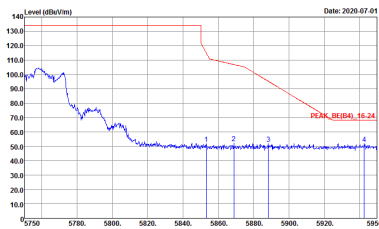
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
0+1	Horizontal	Fundamental
Peak	Site : 03CH15-HY Condition : PEAK_05(04)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH15-HY Condition : PEAK_05(04)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

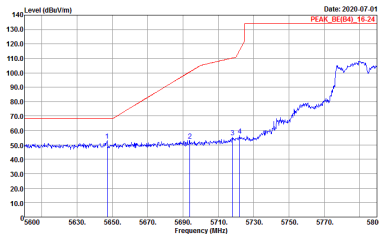
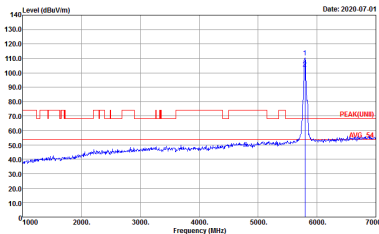
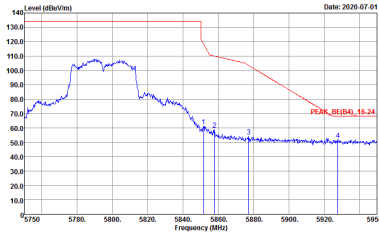


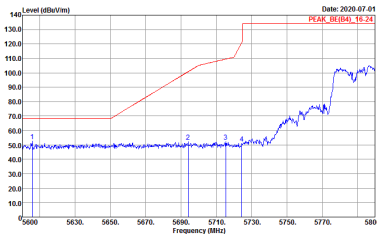
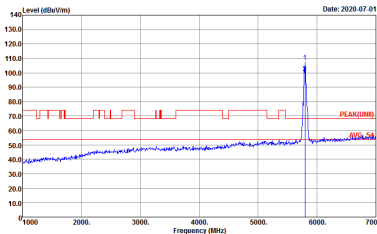
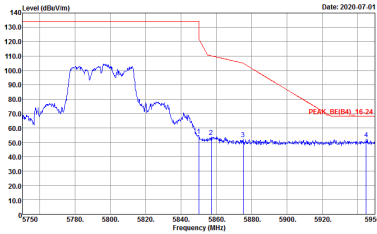
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_95[84]_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK[UNIT] 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VSW:3000.000KHz SWT:Auto

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	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HV Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HV Condition : PEAK(UNB) 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH15-HV Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

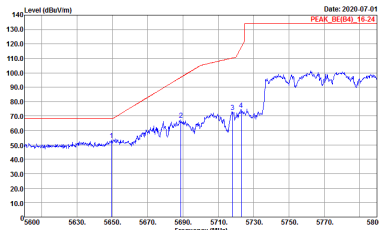
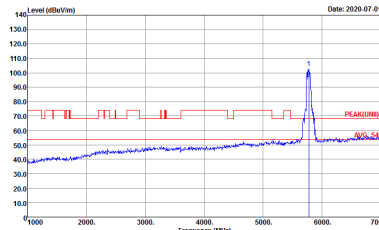
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(LINE) 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



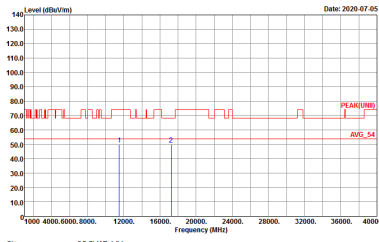
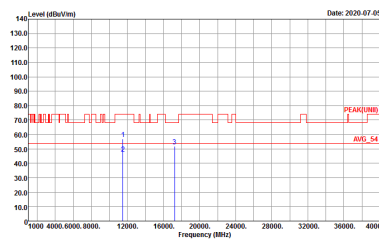
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
0+1	Horizontal	Fundamental
Peak	Site : 03CH15-HV Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH15-HV Condition : PEAK(UB) 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	Site : 03CH15-HV Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

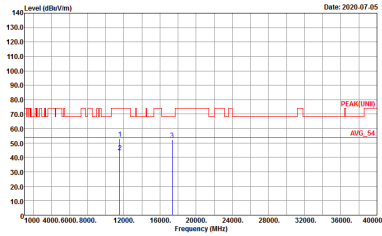
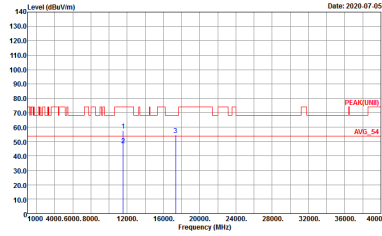
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(LINE1) 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



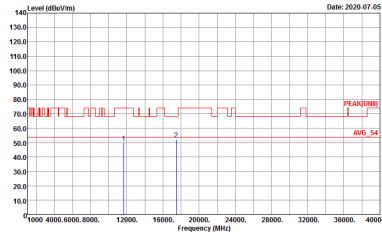
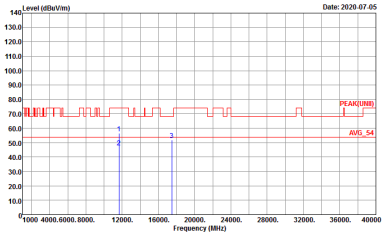
Band 4 - 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HV Condition : PEAK(UNIT) 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-HV Condition : PEAK(UNIT) 3m 91200_15_1620 VERTICAL



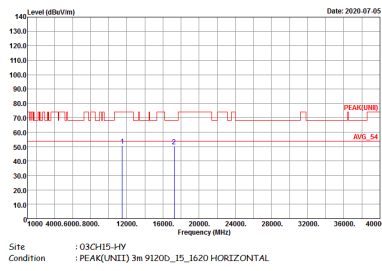
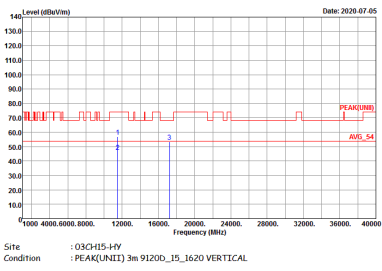
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 VERTICAL



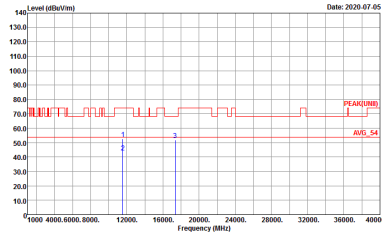
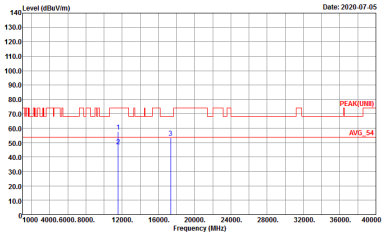
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-19Y Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-19Y Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL



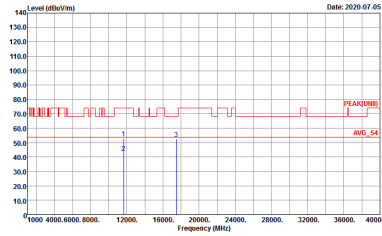
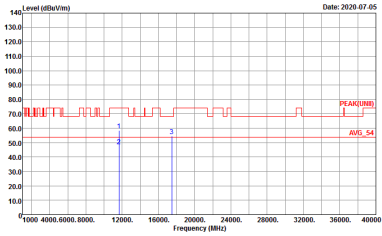
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 VERTICAL



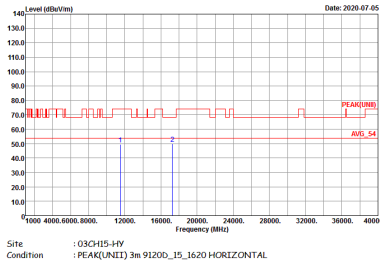
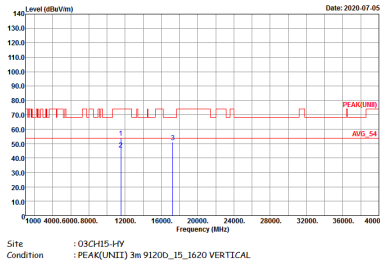
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-19Y Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-19Y Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL



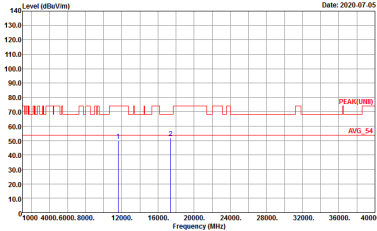
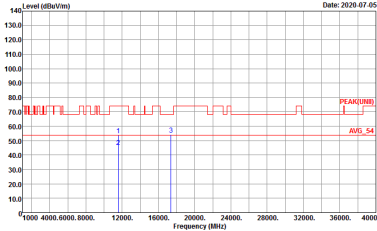
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-19Y Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-19Y Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL



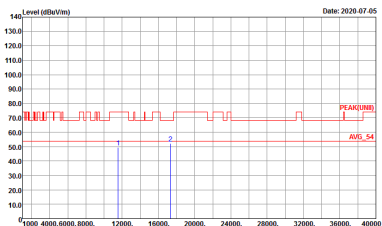
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 VERTICAL

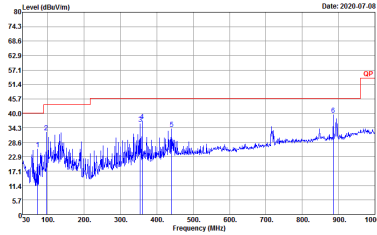
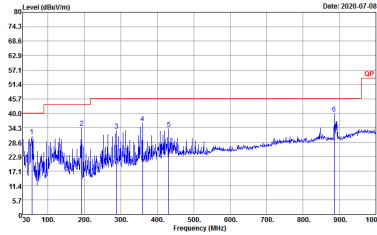


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-19Y Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-19Y Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL

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

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 VERTICAL

Emission below 1GHz
5GHz WIFI 802.11a (LF)

WIFI	5GHz 5725~5850MHz	
ANT	802.11a LF	
0+1	Horizontal	Vertical
QP / Peak	 Site : 03CH15-HY Condition : QP 3m B1L06_15_41912 HORIZONTAL	 Site : 03CH15-HY Condition : QP 3m B1L06_15_41912 VERTICAL



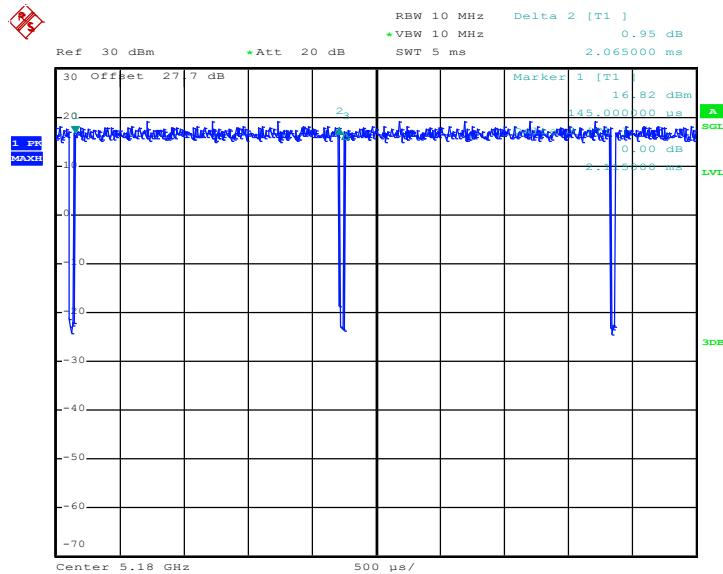
Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
0+1	802.11a for Ant. 0	97.64	2065	0.48	1kHz	0.10
0+1	802.11a for Ant. 1	97.87	2070	0.48	1kHz	0.09
0+1	5GHz 802.11n HT20 for Ant. 0	97.97	1935	0.52	1kHz	0.09
0+1	5GHz 802.11n HT20 for Ant. 1	97.97	1935	0.52	1kHz	0.09
0+1	5GHz 802.11n HT40 for Ant. 0	95.97	952	1.05	3kHz	0.18
0+1	5GHz 802.11n HT40 for Ant. 1	95.21	935	1.07	3kHz	0.21
0+1	5GHz 802.11ac VHT80 for Ant. 0	92.00	460	2.17	3kHz	0.36
0+1	5GHz 802.11ac VHT80 for Ant. 1	92.06	464	2.16	3kHz	0.36



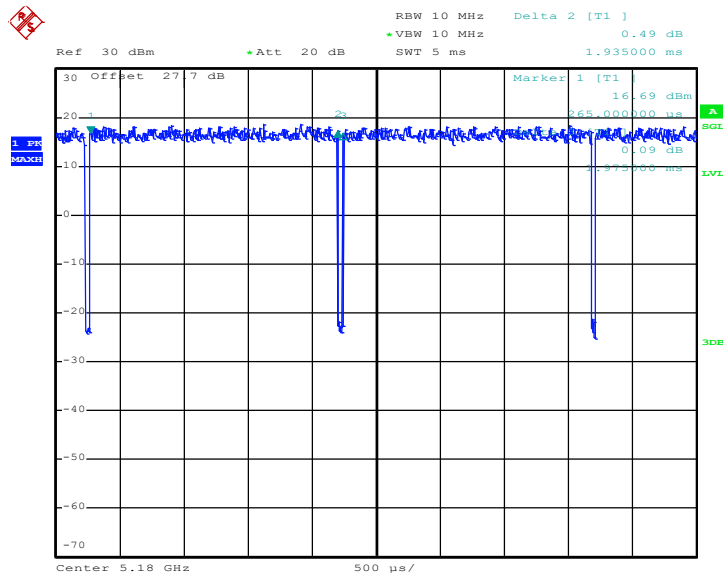
MIMO <Ant. 0>

802.11a

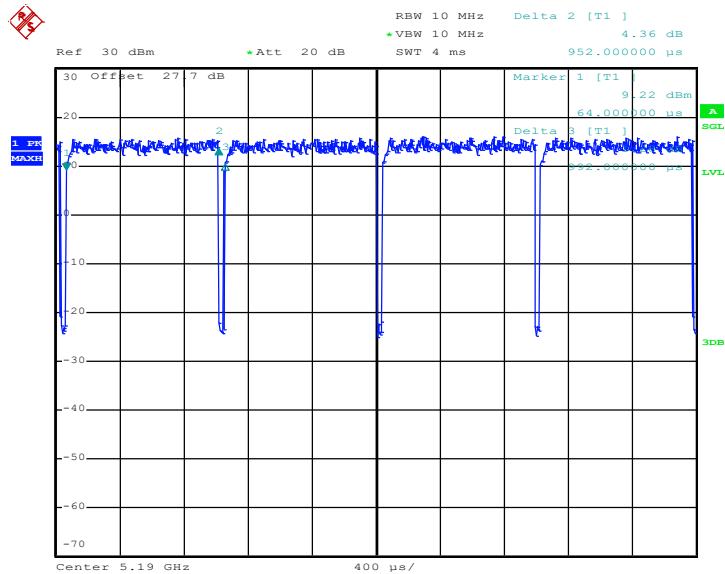


Date: 11.JUN.2020 15:45:04

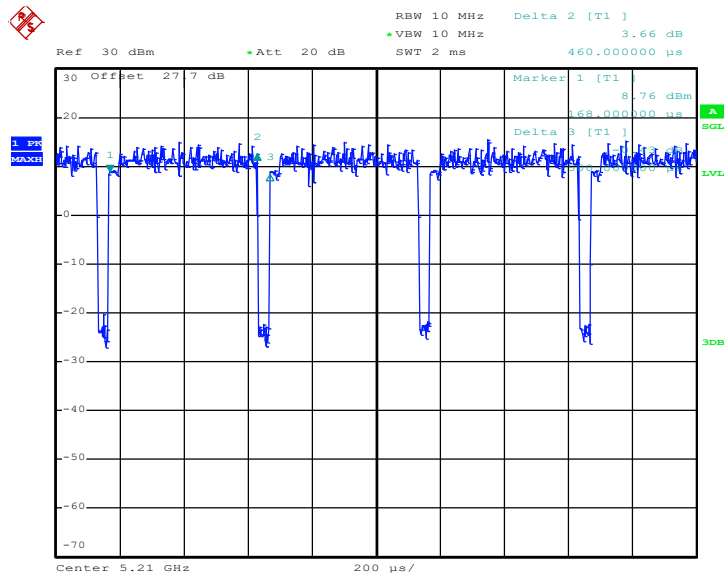
802.11n HT20



Date: 11.JUN.2020 15:48:36

802.11n HT40


Date: 11.JUN.2020 15:53:05

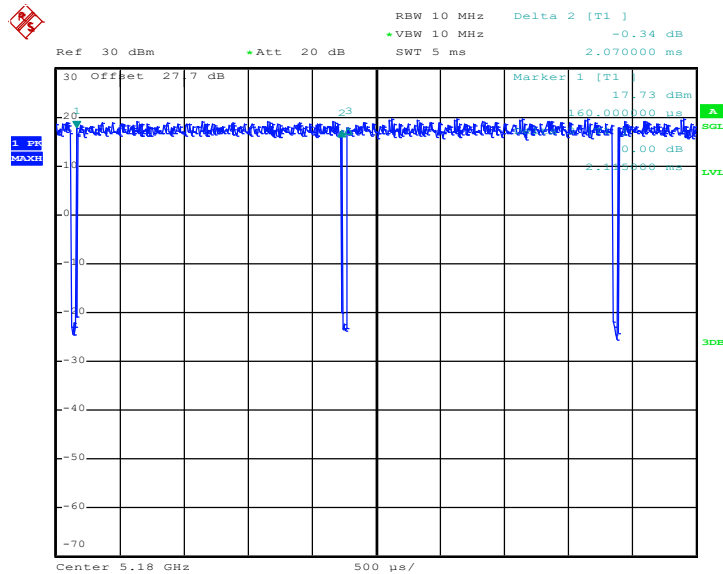
802.11ac VHT80


Date: 11.JUN.2020 15:59:43



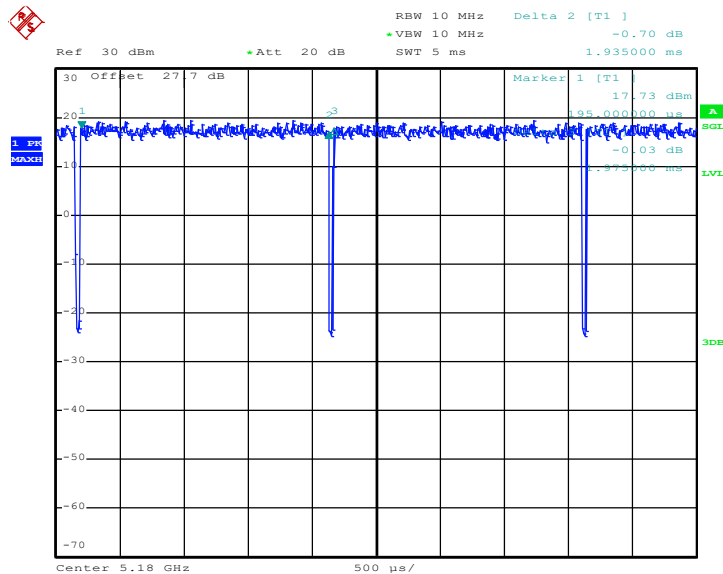
MIMO <Ant. 1>

802.11a



Date: 11.JUN.2020 15:46:58

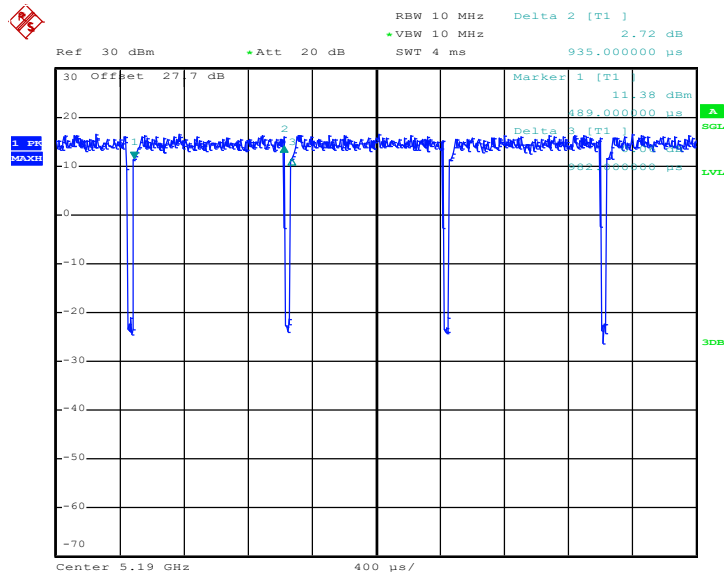
802.11n HT20



Date: 11.JUN.2020 15:50:01

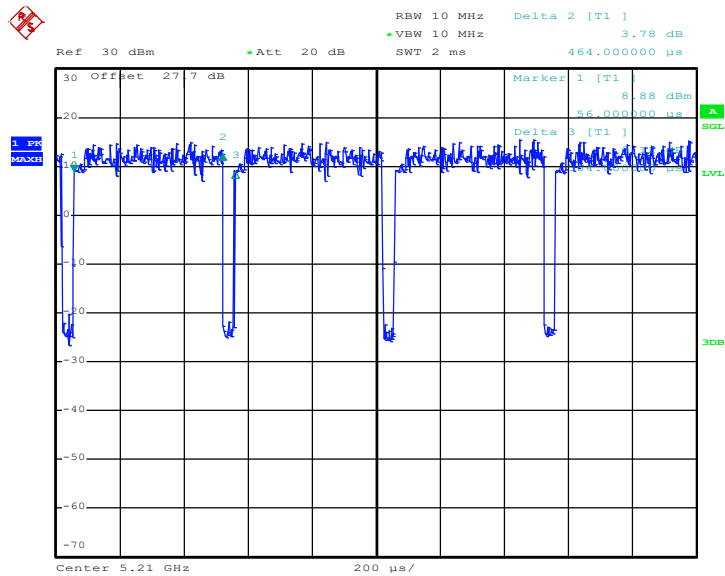


802.11n HT40



Date: 11.JUN.2020 15:54:10

802.11ac VHT80



Date: 11.JUN.2020 16:00:24