FCC RADIO TEST REPORT

FCC ID	**:**	**A4RGB62Z**
Equipment	**:**	**Phone**
Model Name	**:**	**GB62Z**
Applicant	**:**	**Google LLC** **1600 Amphitheatre Parkway,** **Mountain View, California, 94043 USA**
Standard	**:**	**FCC Part 15 Subpart E §15.407**

The product was received on Nov. 11, 2021 and testing was started from Nov. 12, 2021 and completed on Jan. 06, 2022. We, Sporton International Inc. Wensan 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. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory
No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C)

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History of this test report

Report No.	Version	Description	Issue Date
FR161608-03I	01	Initial issue of report	Jan. 14, 2022
FR161608-03I	02	1. Revise Connection Diagram of Test System, Support Unit used in test configuration and system, Appendix A and Appendix C 2. Revise description typo in Chapter 3	Feb. 15, 2022
FR161608-03I	03	Revise description in section 3.4.1 and 3.4.6	Feb. 21, 2022

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.407(e)	6dB & 26dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407(a)	Maximum E.I.R.P Output Power	Pass	-
3.3	15.407(a)	Power Spectral Density	Pass	-
3.4	15.407(b)	Unwanted Emissions	Pass	1.66 dB under the limit at 5951.500 MHz
3.5	15.207	AC Conducted Emission	Pass	10.78 dB under the limit at 0.184 MHz
3.6	15.203 15.407(a)	Antenna Requirement	Pass	-

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 product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: William Chen

Report Producer: Lucy Wu

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Phone
Model Name	GB62Z
FCC ID	A4RGB62Z
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/5G NR/NFC/GNSS WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80/VHT160 WLAN 11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE

Remark: The above EUT's information was declared by manufacturer.

EUT Information List	
S/N	Performed Test Item
1A261FQGR00043	Conducted Measurement
1B011FQGR00008	Radiated Spurious Emission
1B011FQGR00006	Conducted Emission

1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard	
Tx/Rx Frequency Range	5850 MHz ~ 5895 MHz
Maximum Output Power	**MIMO <Ant. 4+3>** 802.11a: 22.76 dBm / 0.1888 W 802.11n HT20: 22.91 dBm / 0.1954 W 802.11n HT40: 21.96 dBm / 0.1570 W 802.11ac VHT20: 22.81 dBm / 0.1910 W 802.11ac VHT40: 21.86 dBm / 0.1535 W 802.11ac VHT80: 21.71 dBm / 0.1483 W 802.11ac VHT160: 22.01 dBm / 0.1589 W 802.11ax HE20: 22.71 dBm / 0.1483 W 802.11ax HE40: 21.76 dBm / 0.1500 W 802.11ax HE80: 21.61 dBm / 0.1449 W 802.11ax HE160: 21.91 dBm / 0.1552 W
99% Occupied Bandwidth	**MIMO <Ant. 4>** 802.11a: 19.68 MHz 802.11n HT20: 20.23 MHz 802.11n HT40: 37.86 MHz 802.11ac VHT80: 76.00 MHz 802.11ax HE160: 156.80 MHz **MIMO <Ant. 3>** 802.11a: 18.53 MHz 802.11n HT20: 19.48 MHz 802.11n HT40: 37.36 MHz 802.11ac VHT80: 76.00 MHz 802.11ax HE160: 156.56 MHz
Antenna Type / Gain	**<Ant. 4>:** IFA Antenna with gain -1.4 dBi **<Ant. 3>:** IFA Antenna with gain -2.6 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) 802.11ax : OFDMA (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM)
Antenna Function Description	<table><tr><td></td><td>Ant. 4</td><td>Ant. 3</td></tr><tr><td>802.11 a/n/ac/ax MIMO</td><td>V</td><td>V</td></tr></table>

Remark:

1. MIMO Ant. 4+3 Directional Gain is a calculated result from MIMO Ant. 4 and MIMO Ant. 3. The formula used in calculation is documented in section 3.6.
2. Power of MIMO Ant. 4 + Ant. 3 is a calculated result from sum of the power MIMO Ant. 4 and MIMO Ant. 3.
3. The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.3 Modification of EUT

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

1.4 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	CO05-HY (TAF Code: 1190)
Remark	The Conducted Emission test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

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

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	TH05-HY, 03CH16-HY

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

FCC designation No.: TW1190 and TW3786

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 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- FCC KDB 291074 D02 EMC Measurement v01(Draft)
- ANSI C63.10-2013

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
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

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: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape) and accessory (Adapter or Earphone), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find Y plane with Adapter as worst plane.

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Bandwidth	Channel	Frequency (MHz)	Note
5850-5895 MHz (U-NII-4)	20 MHz	169	5845	Straddle
		173	5865	
		177	5885	
	40 MHz	167	5835	Straddle
		175	5875	
	80 MHz	171	5855	Straddle
	160 MHz	163	5815	Straddle

Note: The channel noted with “straddle” spans 5.725-5.850 GHz and 5.850-5.895 GHz.

2.2 Test Mode

This device support 26/52/106/242/484/996-tone RU but does not support 2x996-tone RU on 160MHz channel.

The PSD of partial RU is reduced to be smaller than full RU according to TCB workshop interim guidance.

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

Specification	MCS index /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
802.11ac VHT160 (Covered by HE160)	MCS0
802.11ax HE20 (Covered by HT20)	MCS0
802.11ax HE40 (Covered by HT40)	MCS0
802.11ax HE80 (Covered by VHT80)	MCS0
802.11ax HE160	MCS0

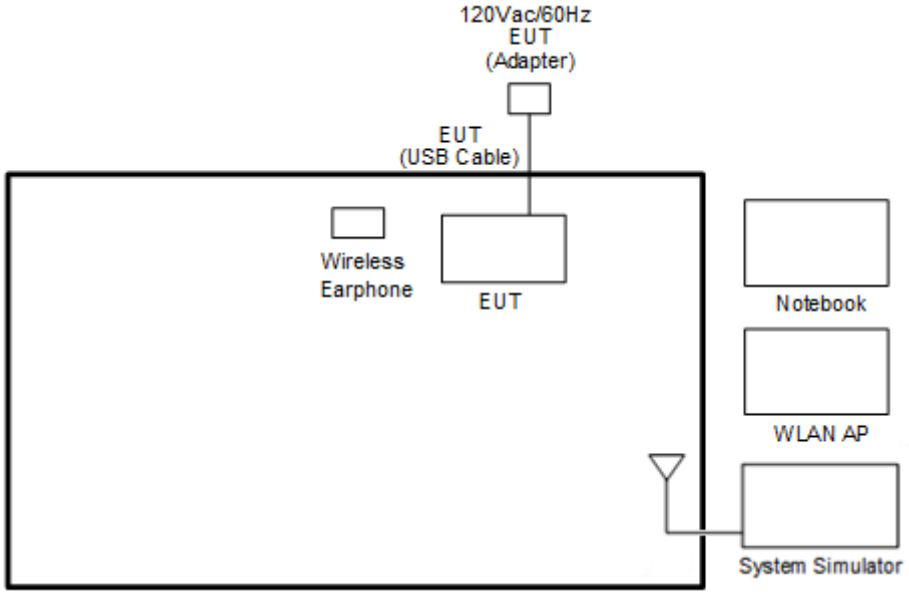
Test Cases	
AC Conducted Emission	Mode 1 : GSM850 Idle + WLAN (5GHz) Link + Bluetooth Link + USB Cable 2 (Charging from Adapter 1)
Remark: For Radiated Test Cases, the tests were performed with Adapter 1 and USB Cable 2	

Ch. #		RF test channel of UNII-4 and UNII-3 &-4 span channels				
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80	802.11ax HE160
L	Low	169	169	167	-	-
M	Middle	173	173	-	171	163
H	High	177	177	175	-	-

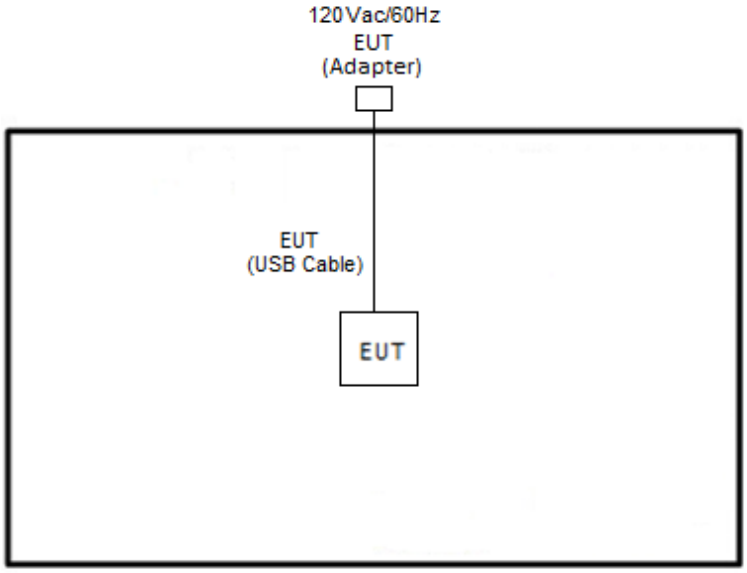
Remark: For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.

2.3 Connection Diagram of Test System

<AC Conducted Emission Mode>



<WLAN Tx Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Wireless Earphone	Google	G1007/G1008	A4RG1007/ A4RG1008	N/A	N/A
3.	WLAN AP	NETGEAR64	RAXE500	N/A	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “Command v10.0.17134.134” 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 10 dB attenuator.

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

= 4.2 + 10 = 14.2 (dB)

3 Test Result

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

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

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

26dB and 99% Occupied bandwidth are reporting only.

3.1.2 Measuring Instruments

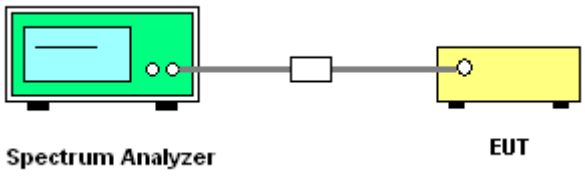
See list of measuring equipment of this test report.

3.1.3 Test Procedures

The testing follows FCC KDB 291074 D02 EMC Measurement v01 (Draft) Section 2.11 Minimum Emission bandwidth

1. Set RBW = 100 kHz.
2. Set the VBW ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold
5. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
6. Measure and record the results in the test report.

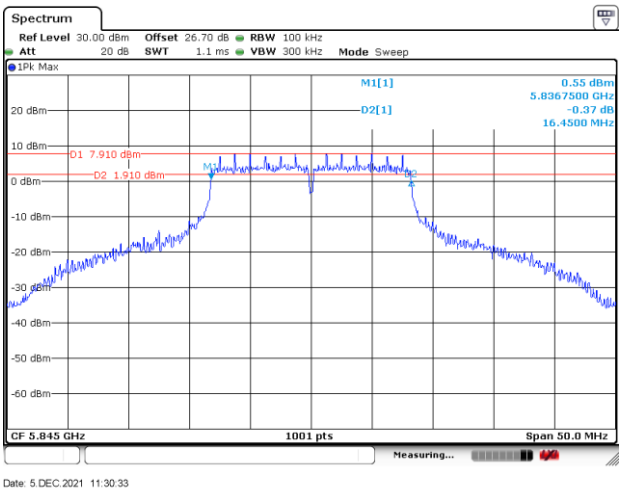
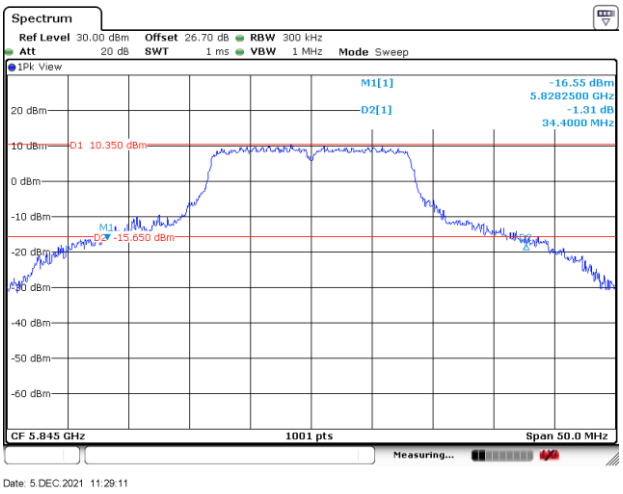
3.1.4 Test Setup



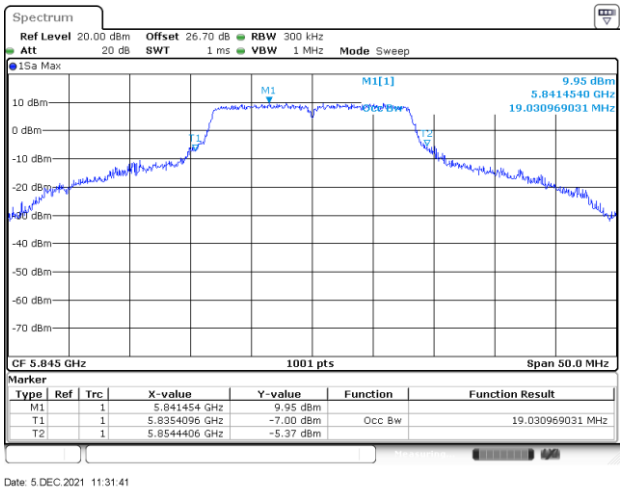
3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.

<802.11a Mode>

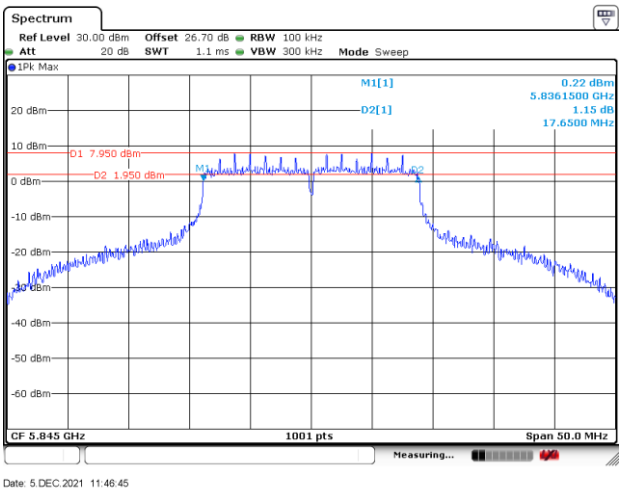
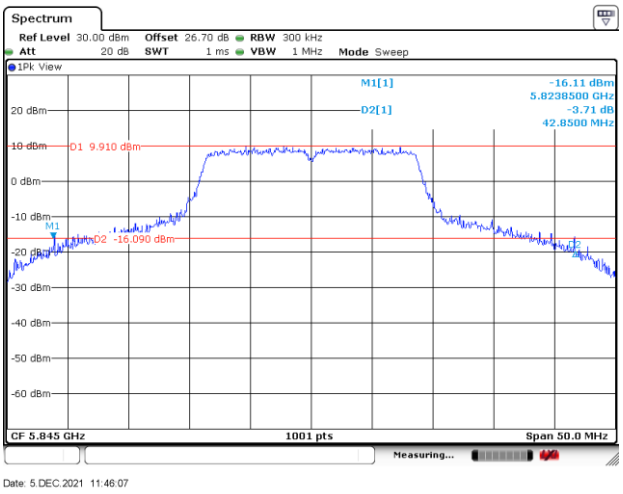
6dB Bandwidth	26dB Bandwidth
	

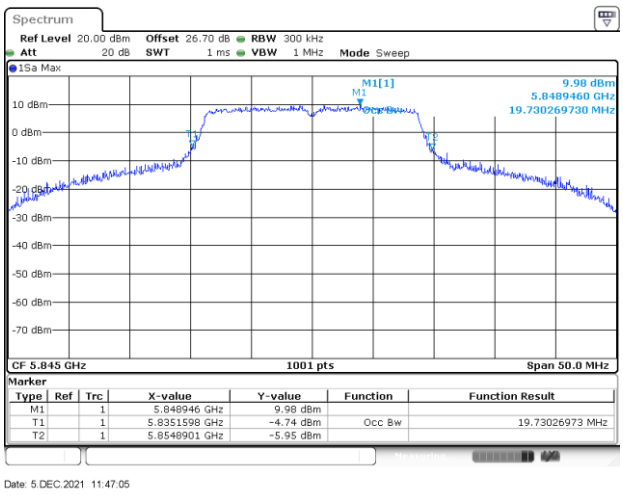
Occupied Bandwidth



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

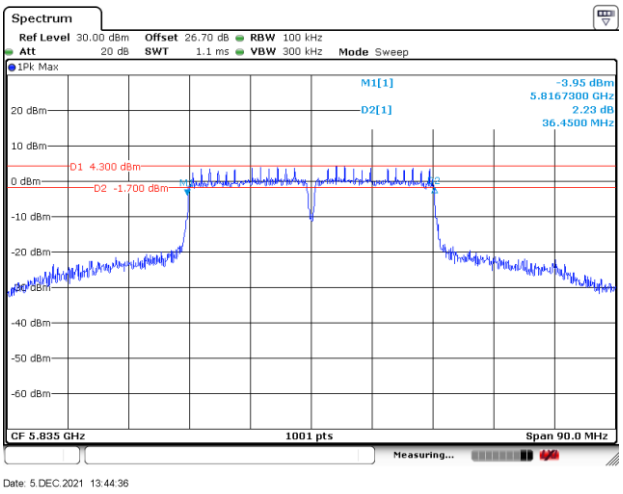
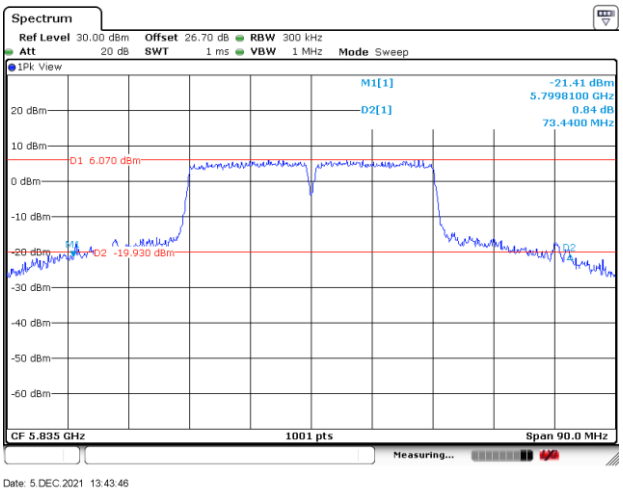
<802.11n HT20 Mode>

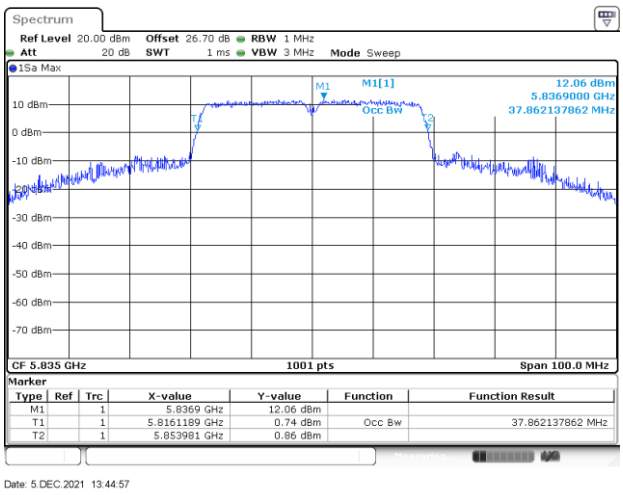
6dB Bandwidth	26dB Bandwidth
	

Occupied Bandwidth


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

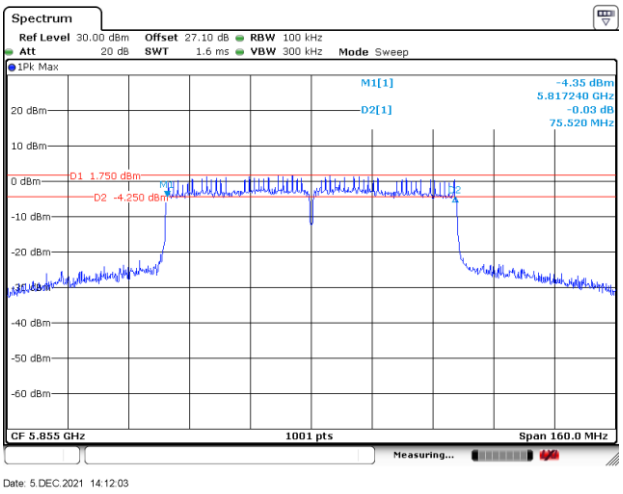
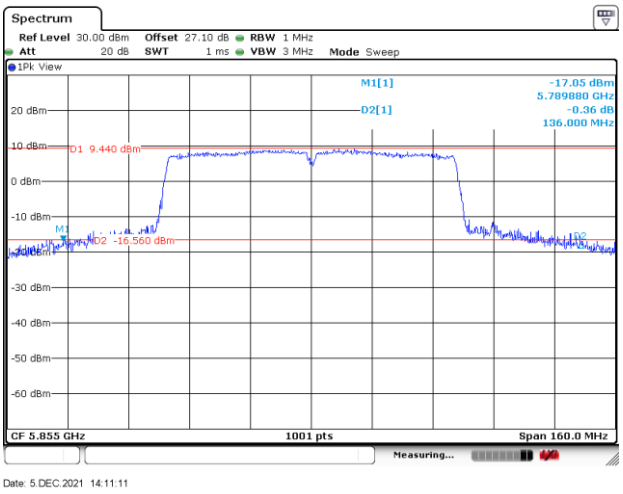
<802.11n HT40 Mode>

6dB Bandwidth	26dB Bandwidth
	

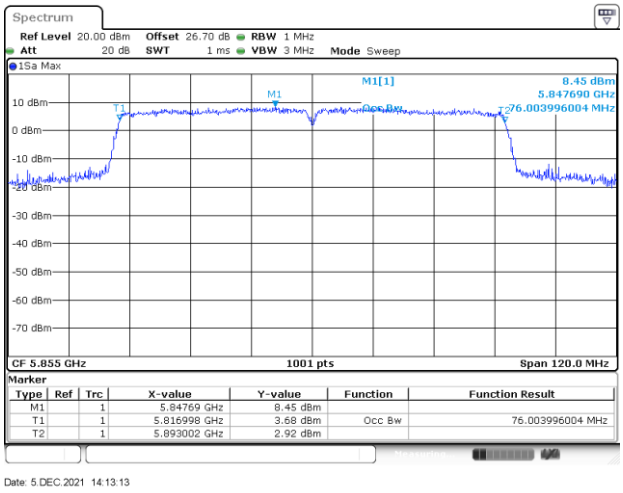
Occupied Bandwidth


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

<802.11ac VHT80 Mode>

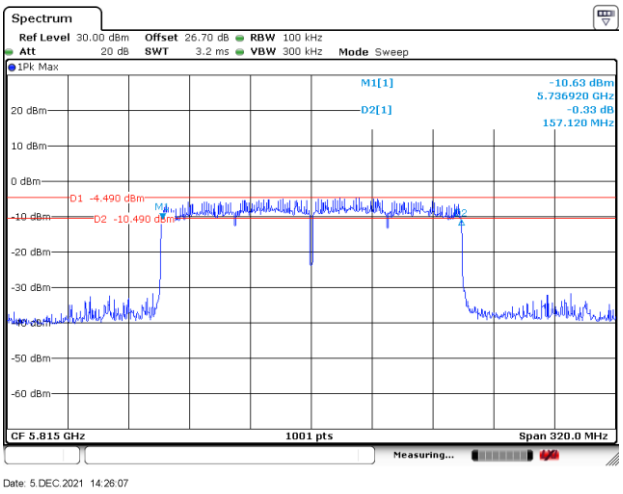
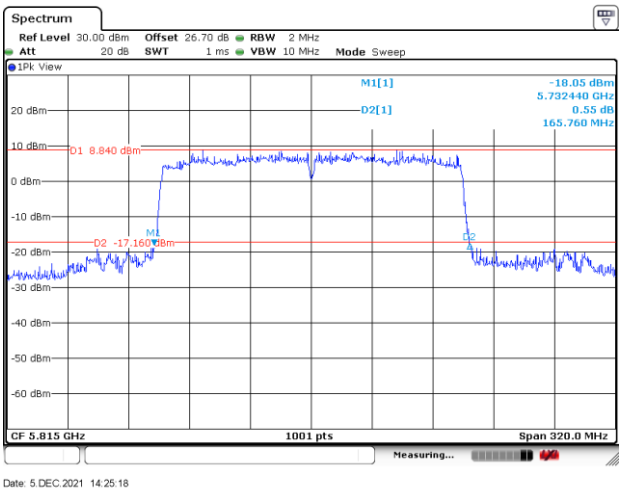
6dB Bandwidth	26dB Bandwidth
	

Occupied Bandwidth

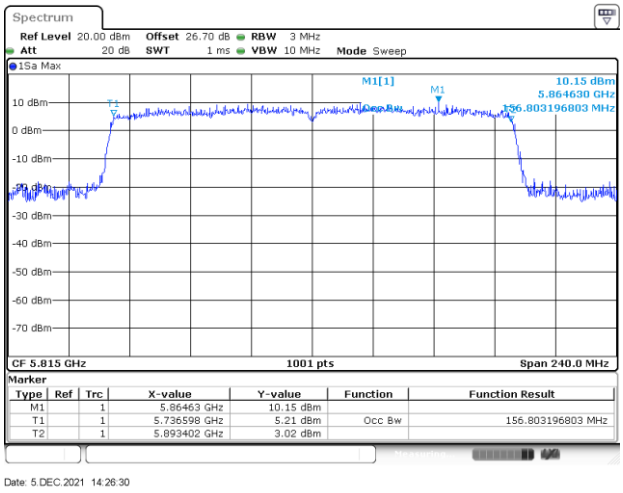


Note: The occupied channel bandwidth is maintained within the band of operation.

<802.11ax HE160 Mode>

6dB Bandwidth	26dB Bandwidth
	

Occupied Bandwidth



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

3.2 Maximum E.I.R.P Output Power Measurement

3.2.1 Limit of Maximum E.I.R.P Output Power

For client devices operating under the control of an indoor access point in the 5.850-5.895 GHz band, the maximum power spectral density must not exceed 14 dBm e.i.r.p. in any 1-megahertz band, and the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm. Client devices operating on a channel that spans the 5.725-5.850 GHz and 5.850-5.895 GHz bands must not exceed an e.i.r.p. of 30 dBm.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

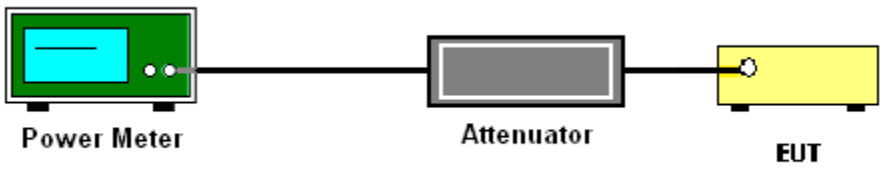
3.2.3 Test Procedures

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.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

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 client devices operating under the control of an indoor access point in the 5.850-5.895 GHz band, the maximum power spectral density must not exceed 14 dBm e.i.r.p. in any 1-megahertz band.

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.

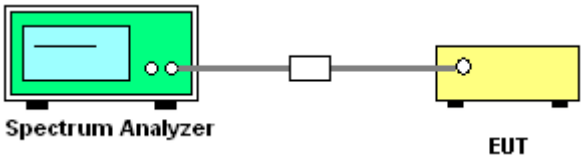
 # Method SA-2 #

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

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. The PSD result should be added with 10*log(1 MHz/RBW) and recorded on the report.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
   Method (c): Measure and add 10 log(N_{ANT}) dB.
   With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity 10 log(N_{ANT}) dB is added to each spectrum value before comparing to the emission limit.

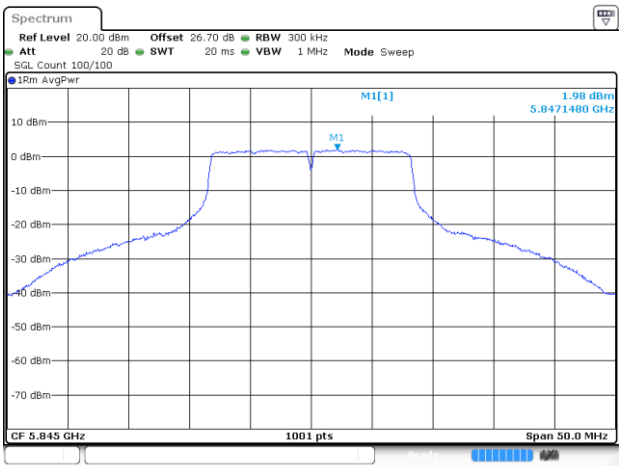
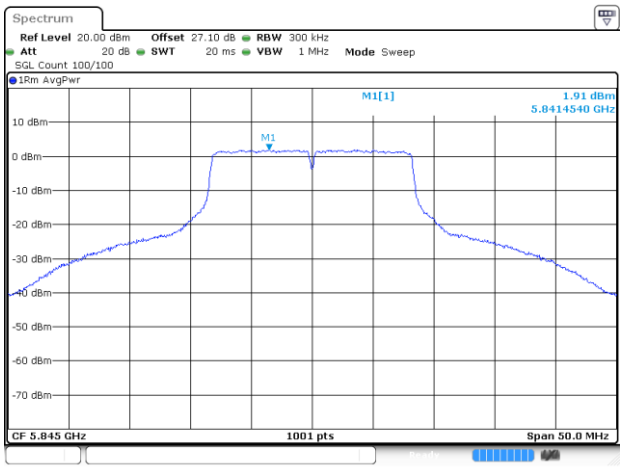
3.3.4 Test Setup



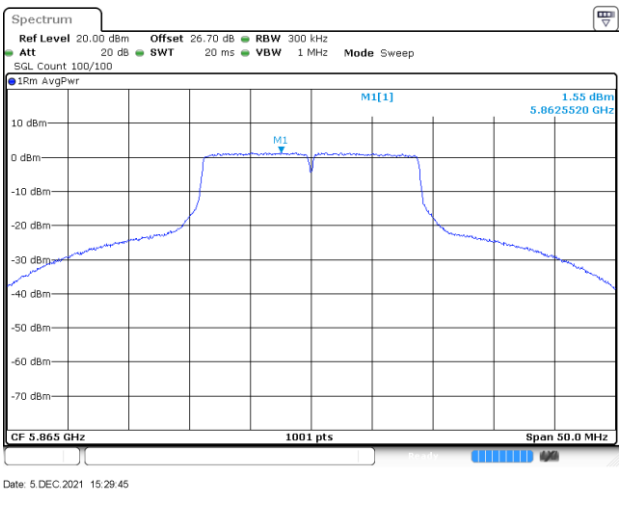
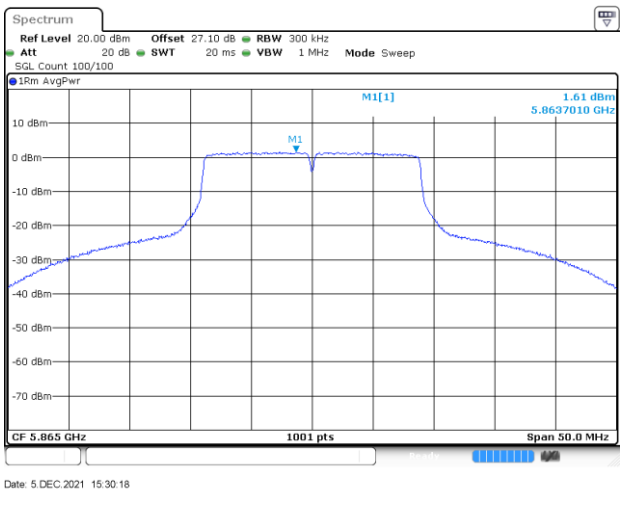
3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

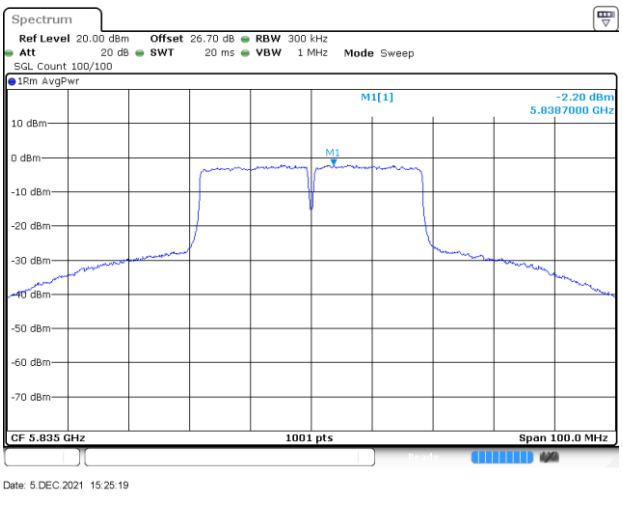
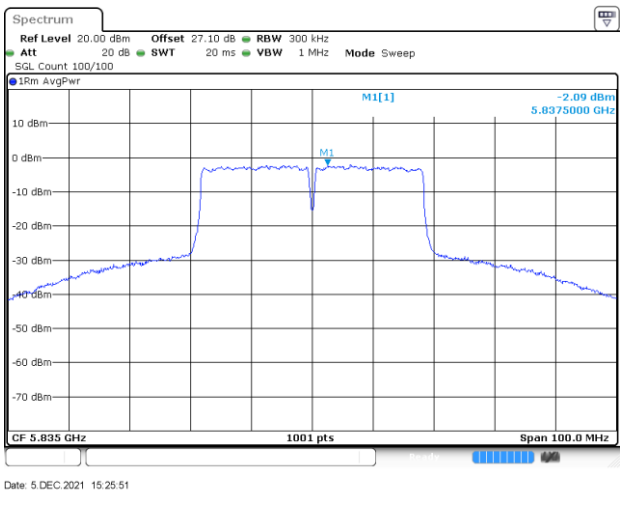
<802.11a Mode>

Worst Case Power Density (dBm/MHz)	
MIMO Ant. 4	**MIMO Ant. 3**
	

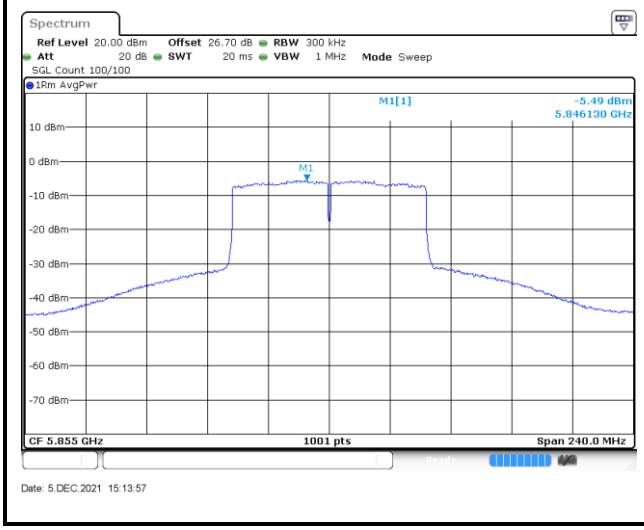
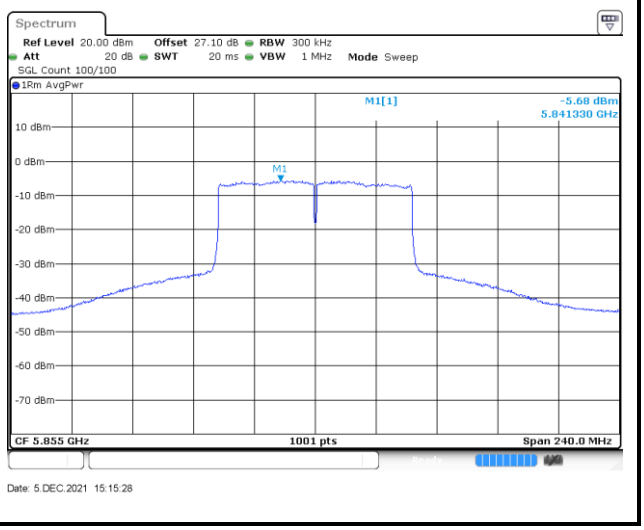
<802.11n HT20 Mode>

Worst Case Power Density (dBm/MHz)	
MIMO Ant. 4	MIMO Ant. 3
	

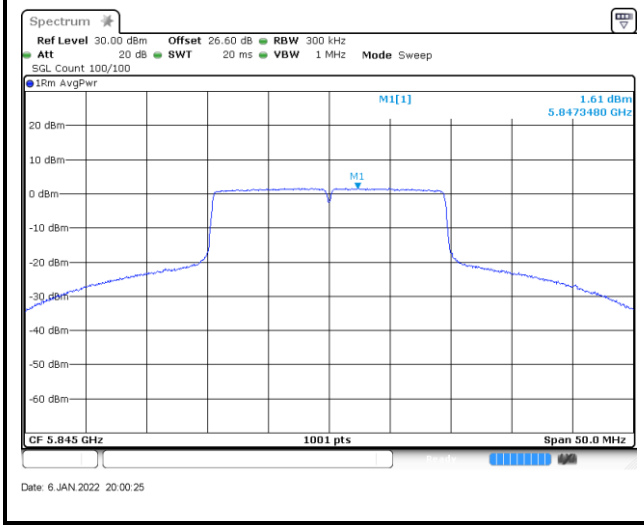
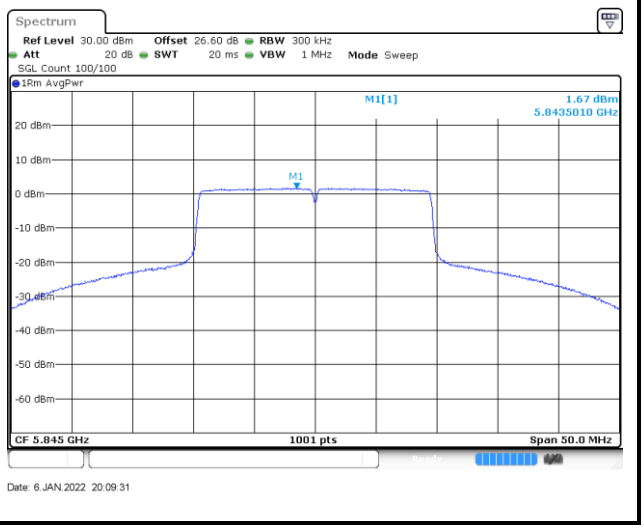
<802.11n HT40 Mode>

Worst Case Power Density (dBm/MHz)	
MIMO Ant. 4	MIMO Ant. 3
	

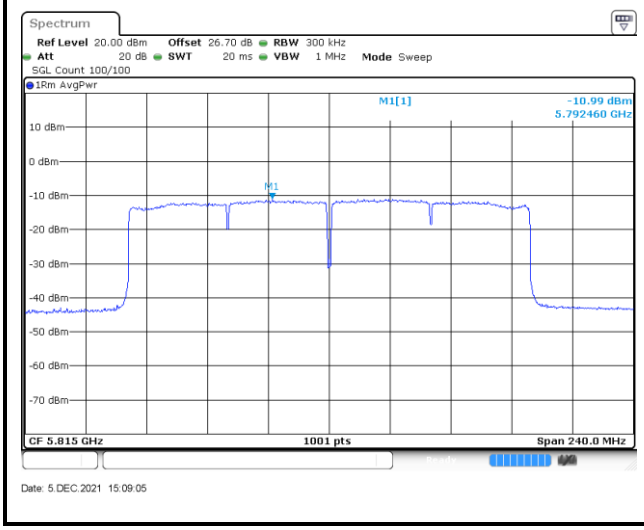
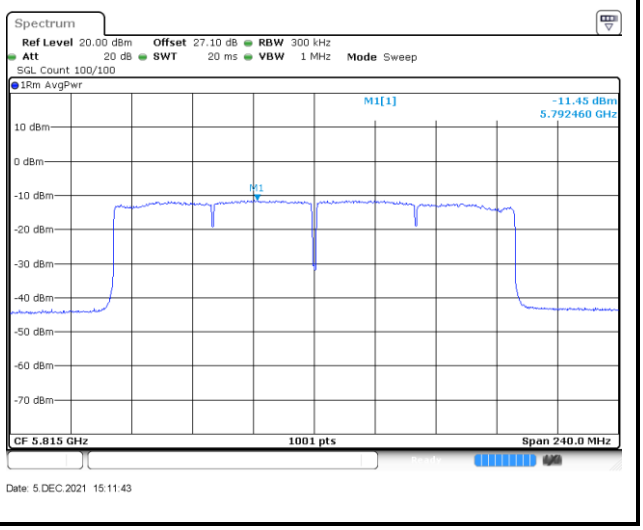
<802.11ac VHT80 Mode>

Worst Case Power Density (dBm/MHz)	
MIMO Ant. 4	MIMO Ant. 3
	

<802.11ax HE20 Mode>

Worst Case Power Density (dBm/MHz)	
MIMO Ant. 4	MIMO Ant. 3
	

<802.11ax HE160 Mode>

Worst Case Power Density (dBm/MHz)	
MIMO Ant. 4	**MIMO Ant. 3**
	

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) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as the following table:

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

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

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

(2) For transmitters operating solely in the 5.850-5.895 GHz band or operating on a channel that spans across 5.725-5.895 GHz:

15.407(b)(5)(ii), all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of −5 dBm/MHz and shall decrease linearly to an e.i.r.p. of −27 dBm/MHz at or above 5.925 GHz.

All emissions below 5.725 GHz shall not exceed an e.i.r.p. of −27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.

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

Use guidance in KDB Publication 789033 for all measurements. Unwanted emissions outside of restricted bands are measured with an RMS detector. In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit.

Unwanted band-edge emissions may be measured using the integration method as described in KDB Publication 789033 3. d) (ii). Emissions below 5725 MHz should be measured using peak-detection while emission above 5895 MHz should be measured using average.

Frequency(GHz)	EIRP (dBm)	Field Strength @3m distance (dBuV/m)	Note
Below 5.65	-27dBm/MHz	68.2	Peak
5.7	10dBm/MHz	105.2	Peak
5.72	15.6dBm/MHz	110.8	Peak
5.725	27dBm/MHz	122.2	Peak
5.895	-5dBm/MHz	90.2	Average
5.895	15dBm/MHz	110.2	Peak
Above 5.925	-27dBm/MHz	68.2	Average
Above 5.925	-7dBm/MHz	88.2	Peak

Note: Field strength at 3 m distance is converted to EIRP as the following equation:

$$EIRP[dBm] = E[dB\mu V/m] - 95.2$$

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 1000 MHz

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

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

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

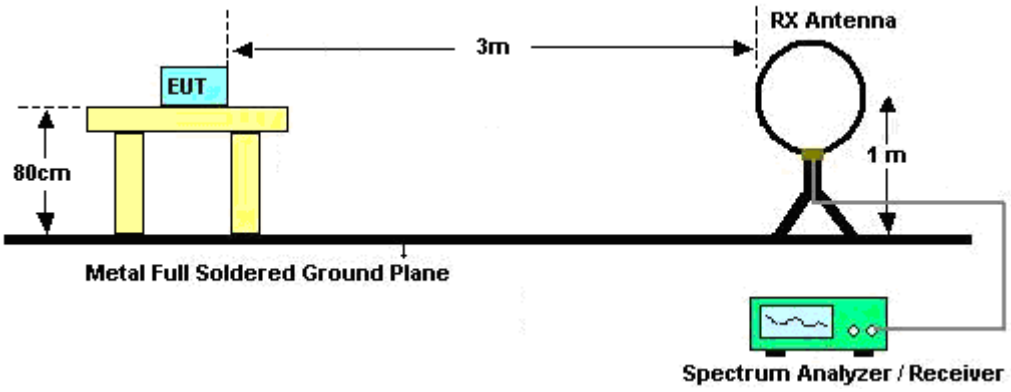
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000 MHz

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

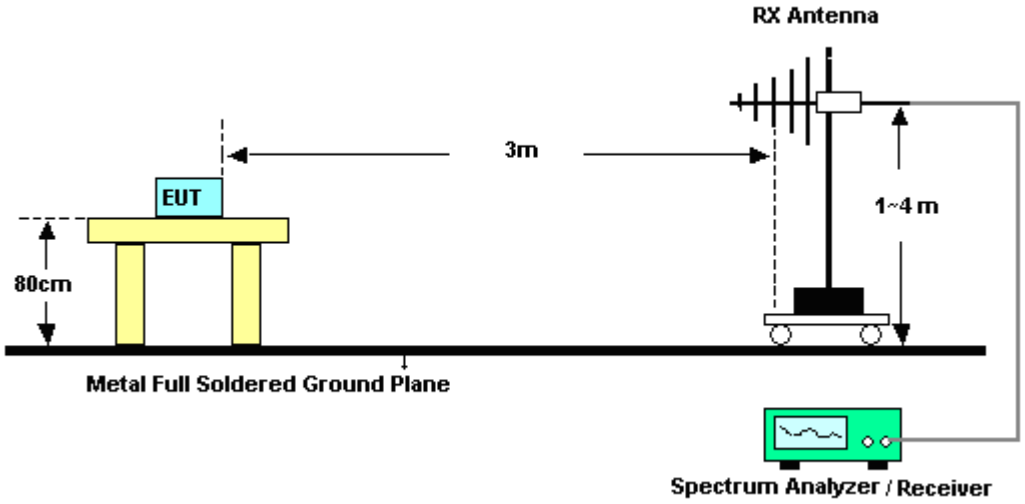
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT was placed at distance 3 meter from measurement antenna which was mounted on the top of a variable height antenna tower.
4. The measurement antenna 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.
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. Radiated testing below 1GHz was performed by adjusting the antenna tower from 1m to 4m and by rotating the turn table from 0 degree to 360 degree to find the peak maximum hold reading.
   When there is no suspected emission found and the emission level is with at least 6dB margin against QP limit line, the position is marked as "-".
7. Radiated testing above 1GHz was performed by adjusting the antenna tower from 1m to 4m and by rotating the turn table from 0 degree to 360 degree to find the peak maximum hold reading for scanning all frequencies.
   When there is no suspected emission found and the harmonic emission level is with at least 6dB margin against average limit line, the position is marked as "-".

3.4.4 Test Setup

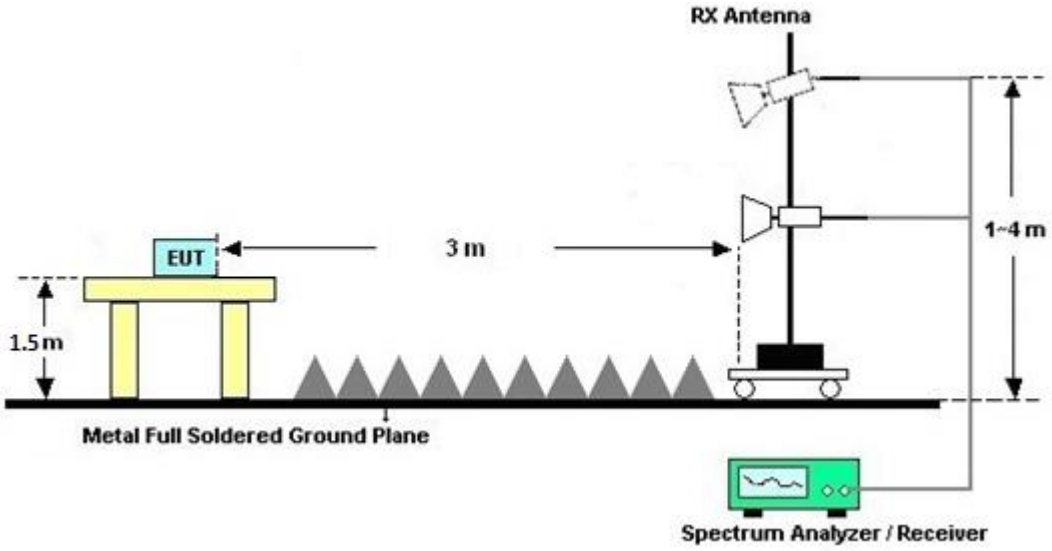
For radiated emissions below 30MHz



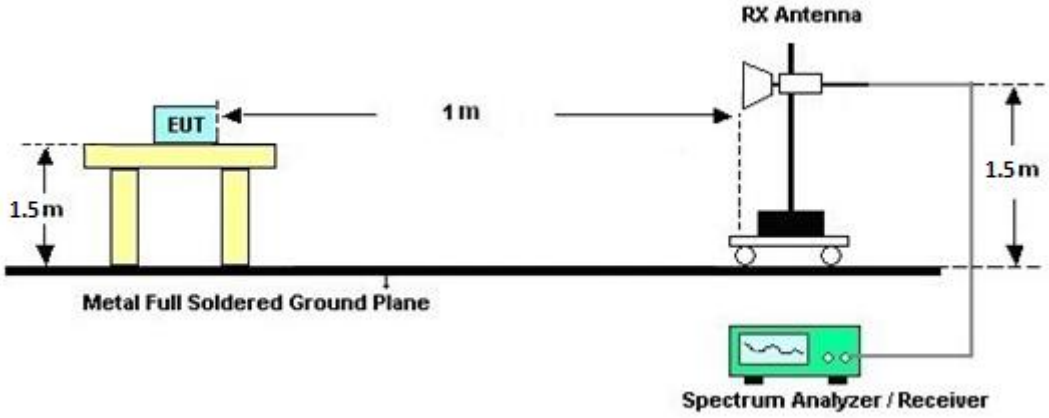
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



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 adequate comparison measurement 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 Results of Radiated Spurious Emissions (above 18 GHz)

For frequency above 18GHz, the pre-scanned result is 20dB lower than the limit line is not reported.

3.4.7 Test Result of Radiated Band Edges

Please refer to Appendix C and D.

3.4.8 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

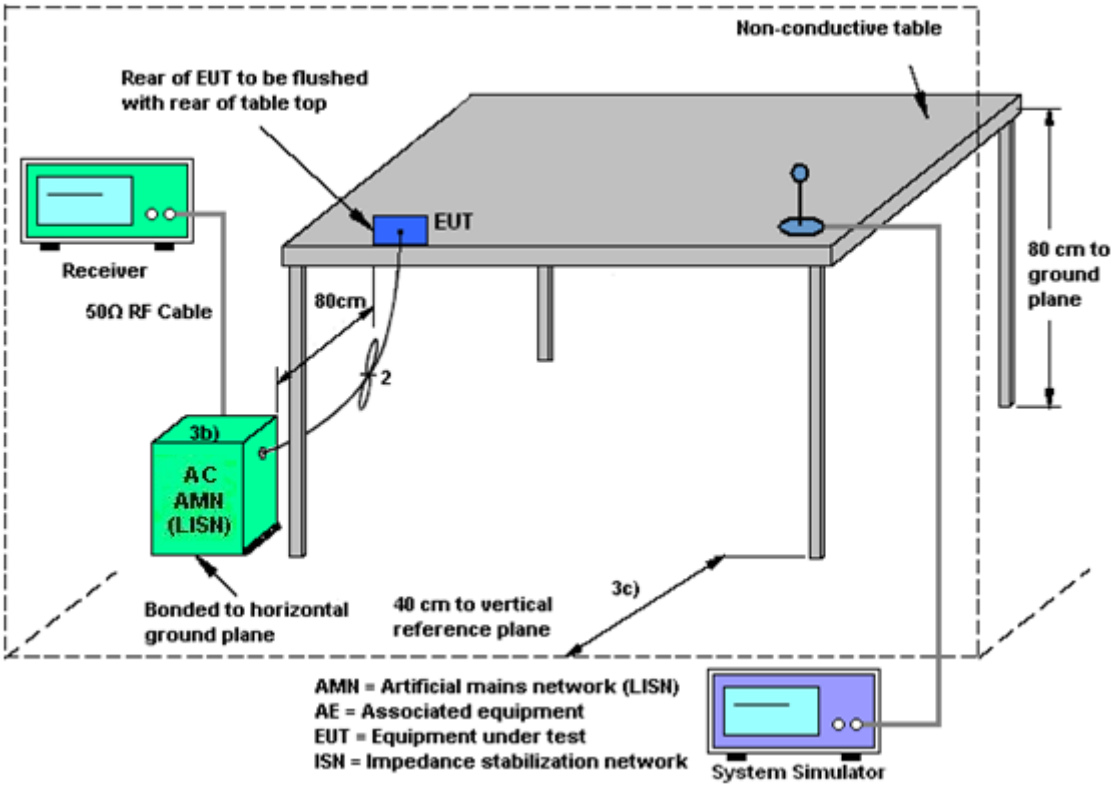
3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

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

Refer to FCC KDB 662911 D01 Multiple Transmitter Output v02r01

<CDD Modes>

For power measurements on IEEE 802.11 devices,

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

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

G_{ANT} is set equal to the gain of the antenna having the highest gain.

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

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

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 kth antenna is being fed by spatial stream j, or zero if it is not;
G_k is the gain in dBi of the kth antenna.

As minimum N_{SS}=1 is supported by EUT, the formula can be simplified as:

Directional gain = $10*\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi

Where G1, G2….GN denote single antenna gain.

For example: If a device has two antenna, G_{ANT1}= 3.6dBi; G_{ANT2}=4.2dBi

Directional gain of power measurement = max(3.6, 4.2) + 0 = 4.2 dBi

Directional gain of PSD measurement = $10 * \log[(10^{3.6/20} + 10^{4.2/20})^2 / 2]$ = 6.92 dBi

The directional gain of EUT is listed in the following table.

UNII-4	Ant 4 (dBi)	Ant 3 (dBi)	DG for Power (dBi)	DG for PSD (dBi)
	-1.40	-2.60	-1.40	1.03

Calculation example:

The DG for PSD is derived from formula is

10 x log { { [10^ (-1.4dBi / 20) + 10^ (-2.6 dBi / 20)] ^ 2 } / 2 }

= 1.03 dBi

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 07, 2021	Nov. 12, 2021~ Dec. 15, 2021	Sep. 06, 2022	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00802N1D01N -06	47020 & 06	30MHz to 1GHz	Oct. 09, 2021	Nov. 12, 2021~ Dec. 15, 2021	Oct. 08, 2022	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1G~18GHz	Oct. 12, 2021	Nov. 12, 2021~ Dec. 15, 2021	Oct. 11, 2022	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	00991	18GHz ~40GHz	May 12, 2021	Nov. 12, 2021~ Dec. 15, 2021	May 11, 2022	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1G	Jul. 05, 2021	Nov. 12, 2021~ Dec. 15, 2021	Jul. 04, 2022	Radiation (03CH16-HY)
Preamplifier	Jet-Power	JPA0118-55-303	171000180005 4001	1-18GHz	Jun. 16, 2021	Nov. 12, 2021~ Dec. 15, 2021	Jun. 15, 2022	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY53270264	1GHz~26.5GHz	Dec. 10, 2020	Nov. 12, 2021~ Dec. 08, 2021	Dec. 09, 2021	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY53270264	1GHz~26.5GHz	Dec. 09, 2021	Dec. 09, 2021~ Dec. 15, 2021	Dec. 08, 2022	Radiation (03CH16-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 22, 2021	Nov. 12, 2021~ Dec. 15, 2021	Jun. 21, 2022	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY57290111	3Hz~26.5GHz	Dec. 11, 2020	Nov. 12, 2021~ Dec. 09, 2021	Dec. 10, 2021	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY59053012	3Hz~26.5GHz	Nov. 18, 2021	Nov. 19, 2021~ Dec. 15, 2021	Nov. 17, 2022	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9010A	MY54200485	3Hz ~40GHz	Mar. 05, 2021	Nov. 12, 2021~ Dec. 15, 2021	Mar. 04, 2022	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11680/4PE	NA	Aug. 28, 2021	Nov. 12, 2021~ Dec. 15, 2021	Aug. 27, 2022	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11688/4PE	NA	Aug. 28, 2021	Nov. 12, 2021~ Dec. 15, 2021	Aug. 27, 2022	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	EC-A5-300-5757	NA	Aug. 28, 2021	Nov. 12, 2021~ Dec. 15, 2021	Aug. 27, 2022	Radiation (03CH16-HY)
Hygrometer	TECPEL	DTM-303B	TP200881	QA-3-031	Sep. 30, 2021	Nov. 12, 2021~ Dec. 15, 2021	Sep. 29, 2022	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Nov. 12, 2021~ Dec. 15, 2021	N/A	Radiation (03CH16-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Nov. 12, 2021~ Dec. 15, 2021	N/A	Radiation (03CH16-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Nov. 12, 2021~ Dec. 15, 2021	N/A	Radiation (03CH16-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Nov. 12, 2021~ Dec. 15, 2021	N/A	Radiation (03CH16-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Nov. 20, 2021~ Jan. 06, 2022	Nov. 15, 2022	Conducted (TH05-HY)
USB Power Meter	Raditeq	RPR3006W #010	RPR6W-2101 001 (NO:206)	10MHz~8GHz	Feb. 03, 2021	Nov. 20, 2021~ Jan. 06, 2022	Feb. 02, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 30, 2021	Nov. 20, 2021~ Jan. 06, 2022	Aug. 29, 2022	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302 (BOX9)	N/A	Mar. 17, 2021	Nov. 20, 2021~ Jan. 06, 2022	Mar. 16, 2022	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Nov. 15, 2021	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 30, 2020	Nov. 15, 2021	Nov. 29, 2021	Conduction (CO05-HY)
Hygrometer	TECPEL	DTM-303A	TP201973	N/A	Oct. 22, 2021	Nov. 15, 2021	Oct. 21, 2022	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 01, 2020	Nov. 15, 2021	Nov. 30, 2021	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Nov. 15, 2021	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Jul. 28, 2021	Nov. 15, 2021	Jul. 27, 2022	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 31, 2020	Nov. 15, 2021	Dec. 30, 2021	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.1 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.8 dB**

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.8 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Benny Ku	Temperature:	21~25	°C
Test Date:	2021/11/20~2022/1/6	Relative Humidity:	51~54	%

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

Band IV MIMO												
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 4	Ant 3	Ant 4	Ant 3	Ant 4	Ant 3		
11a	6Mbps	2	169	5845	19.03	18.38	34.40	34.35	16.45	16.45	0.5	Pass
11a	6Mbps	2	173	5865	19.18	18.23	35.00	34.00	16.45	16.45	0.5	Pass
11a	6Mbps	2	177	5885	19.68	18.53	36.50	34.35	16.45	16.40	0.5	Pass
HT20	MCS0	2	169	5845	19.73	18.98	42.85	37.85	17.65	17.70	0.5	Pass
HT20	MCS0	2	173	5865	19.78	19.03	38.30	39.00	17.65	17.70	0.5	Pass
HT20	MCS0	2	177	5885	20.23	19.48	41.85	37.85	17.65	17.70	0.5	Pass
HT40	MCS0	2	167	5835	37.86	37.26	73.44	71.91	36.45	36.45	0.5	Pass
HT40	MCS0	2	175	5875	37.86	37.36	75.33	71.73	36.54	36.54	0.5	Pass
VHT80	MCS0	2	171	5855	76.00	76.00	136.00	124.48	75.52	76.16	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 4	Ant 3	SUM	Ant 4	Ant 3	Ant 4	Ant 3	
11a	6Mbps	2	169	5845	19.50	19.90	22.71	30.00		-1.40		Pass
11a	6Mbps	2	173	5865	19.60	19.90	22.76	30.00		-1.40		Pass
11a	6Mbps	2	177	5885	19.50	19.90	22.71	30.00		-1.40		Pass
HT20	MCS0	2	169	5845	19.90	19.90	22.91	30.00		-1.40		Pass
HT20	MCS0	2	173	5865	19.60	19.90	22.76	30.00		-1.40		Pass
HT20	MCS0	2	177	5885	19.50	19.80	22.66	30.00		-1.40		Pass
HT40	MCS0	2	167	5835	18.90	19.00	21.96	30.00		-1.40		Pass
HT40	MCS0	2	175	5875	18.70	19.00	21.86	30.00		-1.40		Pass
VHT20	MCS0	2	169	5845	19.80	19.80	22.81	30.00		-1.40		Pass
VHT20	MCS0	2	173	5865	19.50	19.80	22.66	30.00		-1.40		Pass
VHT20	MCS0	2	177	5885	19.40	19.70	22.56	30.00		-1.40		Pass
VHT40	MCS0	2	167	5835	18.80	18.90	21.86	30.00		-1.40		Pass
VHT40	MCS0	2	175	5875	18.60	18.90	21.76	30.00		-1.40		Pass
VHT80	MCS0	2	171	5855	18.60	18.80	21.71	30.00		-1.40		Pass
VHT160	MCS0	2	163	5815	19.00	19.00	22.01	30.00		-1.40		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 with Duty Factor (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 4	Ant 3	Ant 4	Ant 3	SUM	Ant 4	Ant 3	Ant 4	Ant 3	
11a	6Mbps	2	169	5845	2.22		4.49	4.42	7.50	30.00		1.03		Pass
11a	6Mbps	2	173	5865	2.22		4.16	4.29	7.30	30.00		1.03		Pass
11a	6Mbps	2	177	5885	2.22		4.19	4.40	7.41	30.00		1.03		Pass
HT20	MCS0	2	169	5845	2.22		4.04	4.10	7.11	30.00		1.03		Pass
HT20	MCS0	2	173	5865	2.22		4.08	4.14	7.15	30.00		1.03		Pass
HT20	MCS0	2	177	5885	2.22		3.56	3.91	6.92	30.00		1.03		Pass
HT40	MCS0	2	167	5835	2.22		0.63	0.74	3.75	30.00		1.03		Pass
HT40	MCS0	2	175	5875	2.22		0.46	0.43	3.47	30.00		1.03		Pass
VHT80	MCS0	2	171	5855	2.22		-2.72	-2.91	0.29	30.00		1.03		Pass

Note: PSD Sum = Max PSD(Ant. 4, Ant. 3) + 10 log (n)

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

Band IV MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
						Ant 4	Ant 3	Ant 4	Ant 3	Ant 4	Ant 3		
HE160	MCS0	2	163	5815	Full	156.80	156.56	165.76	166.08	157.12	157.76	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
						Ant 4	Ant 3	SUM	Ant 4	Ant 3	Ant 4	Ant 3	
HE20	MCS0	2	169	5845	Full	19.70	19.70	22.71	30.00		-1.40		Pass
HE20	MCS0	2	169	5845	26/0	9.90	9.70	12.81	30.00		-1.40		Pass
HE20	MCS0	2	169	5845	52/37	12.70	12.40	15.56	30.00		-1.40		Pass
HE20	MCS0	2	169	5845	106/53	16.20	16.10	19.16	30.00		-1.40		Pass
HE20	MCS0	2	173	5865	Full	19.40	19.70	22.56	30.00		-1.40		Pass
HE20	MCS0	2	173	5865	26/4	10.00	9.60	12.81	30.00		-1.40		Pass
HE20	MCS0	2	173	5865	52/38	13.20	12.70	15.97	30.00		-1.40		Pass
HE20	MCS0	2	173	5865	106/53	16.20	16.00	19.11	30.00		-1.40		Pass
HE20	MCS0	2	177	5885	Full	19.30	19.60	22.46	30.00		-1.40		Pass
HE20	MCS0	2	177	5885	26/8	9.30	9.00	12.16	30.00		-1.40		Pass
HE20	MCS0	2	177	5885	52/40	12.90	12.80	15.86	30.00		-1.40		Pass
HE20	MCS0	2	177	5885	106/54	15.70	15.70	18.71	30.00		-1.40		Pass
HE40	MCS0	2	167	5835	Full	18.70	18.80	21.76	30.00		-1.40		Pass
HE40	MCS0	2	175	5875	Full	18.50	18.80	21.66	30.00		-1.40		Pass
HE80	MCS0	2	171	5855	Full	18.50	18.70	21.61	30.00		-1.40		Pass
HE160	MCS0	2	163	5815	Full	18.90	18.90	21.91	30.00		-1.40		Pass

TEST RESULTS DATA
Power Spectral Density

Band IV MIMO															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	10log (500kHz /RBW) Factor (dB)		Average Power Density with Duty Factor (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
						Ant 4	Ant 3	Ant 4	Ant 3	SUM	Ant 4	Ant 3	Ant 4	Ant 3	
HE20	MCS0	2	169	5845	Full	2.22		4.14	4.20	7.21	30.00		1.03		Pass
HE20	MCS0	2	169	5845	26/0	2.22		3.62	3.80	6.81	30.00		1.03		Pass
HE20	MCS0	2	169	5845	52/37	2.22		3.78	3.62	6.79	30.00		1.03		Pass
HE20	MCS0	2	169	5845	106/53	2.22		3.95	4.09	7.10	30.00		1.03		Pass
HE20	MCS0	2	173	5865	Full	2.22		4.08	4.07	7.09	30.00		1.03		Pass
HE20	MCS0	2	173	5865	26/4	2.22		4.04	3.73	7.05	30.00		1.03		Pass
HE20	MCS0	2	173	5865	52/38	2.22		4.07	3.74	7.08	30.00		1.03		Pass
HE20	MCS0	2	173	5865	106/53	2.22		3.84	4.05	7.06	30.00		1.03		Pass
HE20	MCS0	2	177	5885	Full	2.22		3.66	3.73	6.74	30.00		1.03		Pass
HE20	MCS0	2	177	5885	26/8	2.22		3.23	3.45	6.46	30.00		1.03		Pass
HE20	MCS0	2	177	5885	52/40	2.22		3.52	3.72	6.73	30.00		1.03		Pass
HE20	MCS0	2	177	5885	106/54	2.22		3.36	3.70	6.71	30.00		1.03		Pass
HE160	MCS0	2	163	5815	Full	2.22		-8.13	-8.59	-5.12	30.00		1.03		Pass

Note: PSD Sum = Max PSD(Ant. 4, Ant. 3) + 10 log (n)

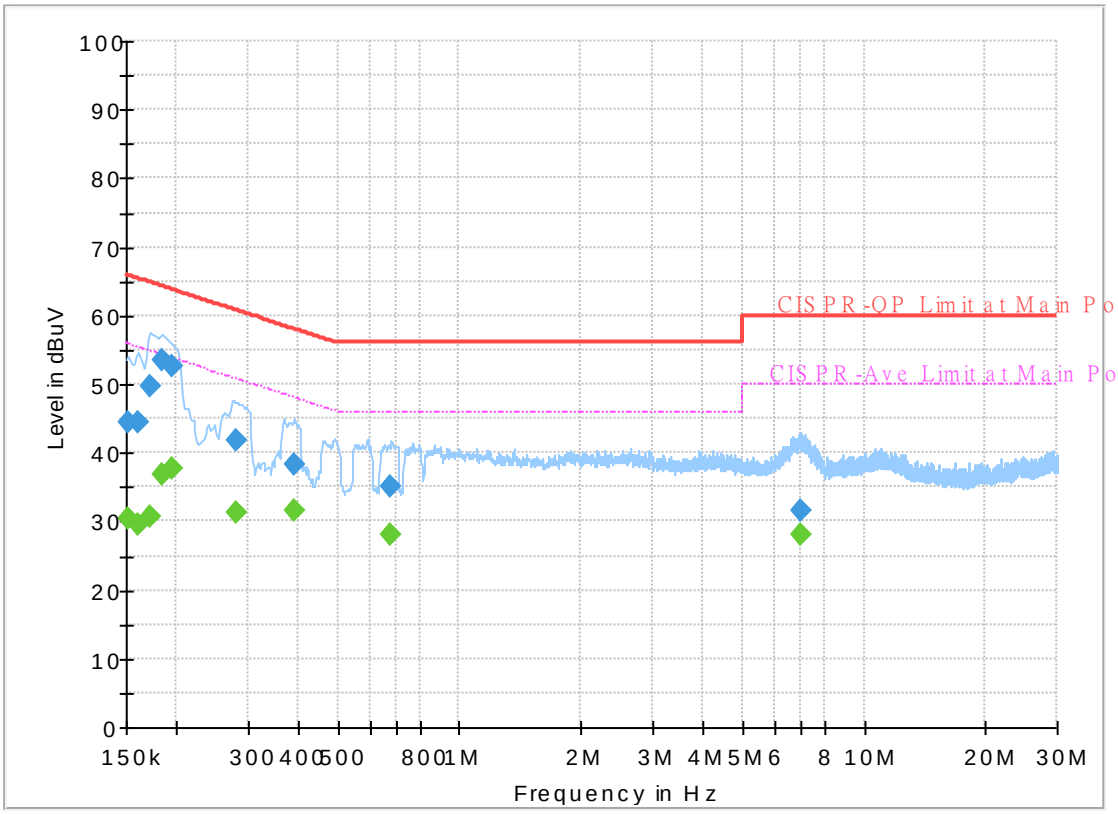
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Tom Lee	**Temperature :**	23~26℃
		Relative Humidity :	45~55%

EUT Information

Report NO :	161608-03
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum



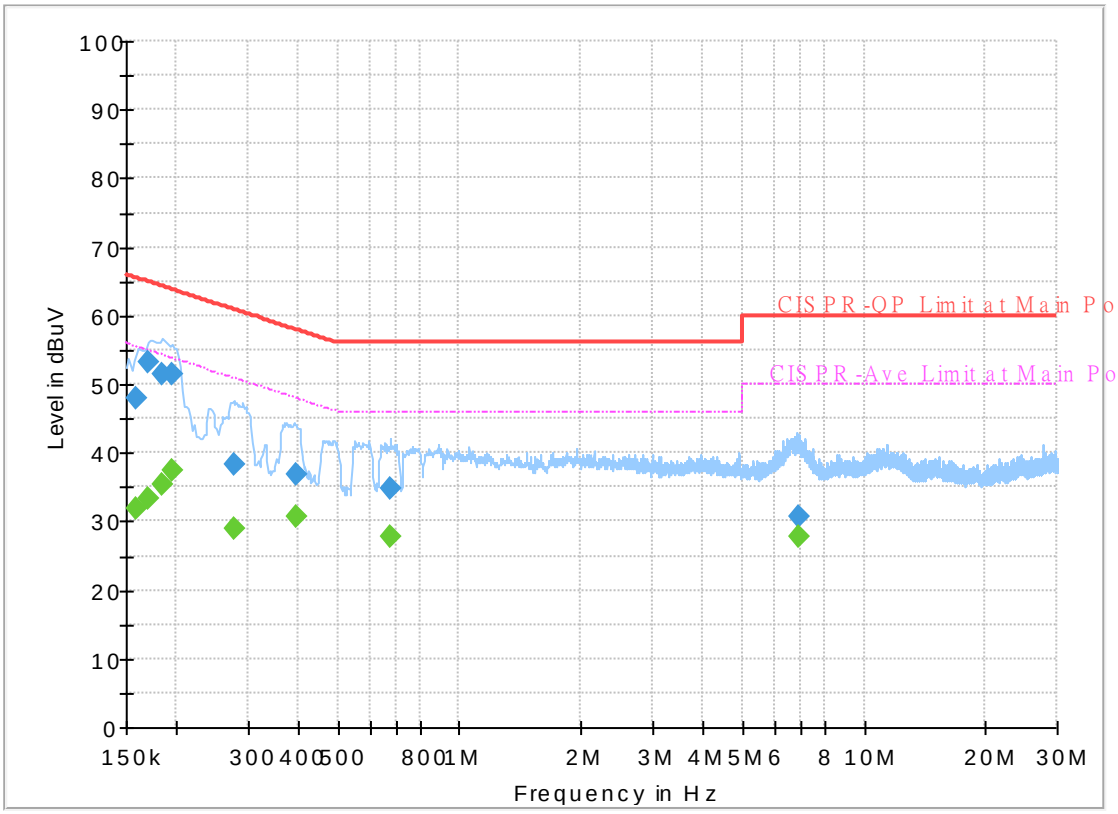
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	30.50	55.88	25.38	L1	OFF	19.7
0.152250	44.40	---	65.88	21.48	L1	OFF	19.7
0.161250	---	29.54	55.40	25.86	L1	OFF	19.7
0.161250	44.30	---	65.40	21.10	L1	OFF	19.7
0.172500	---	30.78	54.84	24.06	L1	OFF	19.7
0.172500	49.64	---	64.84	15.20	L1	OFF	19.7
0.183750	---	36.70	54.31	17.61	L1	OFF	19.7
0.183750	53.53	---	64.31	10.78	L1	OFF	19.7
0.195000	---	37.72	53.82	16.10	L1	OFF	19.7
0.195000	52.63	---	63.82	11.19	L1	OFF	19.7
0.280500	---	31.28	50.80	19.52	L1	OFF	19.7
0.280500	41.90	---	60.80	18.90	L1	OFF	19.7
0.388500	---	31.50	48.10	16.60	L1	OFF	19.7
0.388500	38.42	---	58.10	19.68	L1	OFF	19.7
0.678750	---	28.15	46.00	17.85	L1	OFF	20.0
0.678750	35.14	---	56.00	20.86	L1	OFF	20.0
7.014750	---	28.20	50.00	21.80	L1	OFF	20.1
7.014750	31.72	---	60.00	28.28	L1	OFF	20.1

EUT Information

Report NO :	161608-03
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.159000	---	31.73	55.52	23.79	N	OFF	19.7
0.159000	47.84	---	65.52	17.68	N	OFF	19.7
0.170250	---	33.37	54.95	21.58	N	OFF	19.7
0.170250	53.16	---	64.95	11.79	N	OFF	19.7
0.183750	---	35.49	54.31	18.82	N	OFF	19.7
0.183750	51.60	---	64.31	12.71	N	OFF	19.7
0.195000	---	37.39	53.82	16.43	N	OFF	19.7
0.195000	51.55	---	63.82	12.27	N	OFF	19.7
0.276000	---	28.97	50.94	21.97	N	OFF	19.7
0.276000	38.42	---	60.94	22.52	N	OFF	19.7
0.393000	---	30.68	48.00	17.32	N	OFF	19.7
0.393000	36.98	---	58.00	21.02	N	OFF	19.7
0.676500	---	27.82	46.00	18.18	N	OFF	20.0
0.676500	34.77	---	56.00	21.23	N	OFF	20.0
6.868500	---	27.75	50.00	22.25	N	OFF	20.1
6.868500	30.64	---	60.00	29.36	N	OFF	20.1

Appendix C. Radiated Spurious Emission

Test Engineer :	Karl Hou and Andy Yang	Temperature :	20~25°C
		Relative Humidity :	50~60%

UNII-4 - 5735~5895MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
4+3		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 169 5845MHz		5621.24	53.77	-14.43	68.2	38.9	31.76	12.89	29.78	143	294	P	H
		5668.44	55.18	-26.7	81.88	40.31	31.74	12.92	29.79	143	294	P	H
		5714.755	59.25	-50.08	109.33	44.26	31.86	12.94	29.81	143	294	P	H
		5720.655	59.61	-52.68	112.29	44.59	31.88	12.95	29.81	143	294	P	H
	*	5845	114.88	-	-	99.72	32.18	12.84	29.86	143	294	P	H
	*	5845	106.56	-	-	91.4	32.18	12.84	29.86	143	294	A	H
		5896.25	65.54	-43.74	109.28	50.54	32.2	12.68	29.88	143	294	P	H
		5926.5	59.33	-28.87	88.2	44.28	32.36	12.58	29.89	143	294	P	H
		5895.75	46.16	-43.49	89.65	31.16	32.2	12.68	29.88	143	294	A	H
		5932	44.71	-23.49	68.2	29.65	32.39	12.56	29.89	143	294	A	H
		5605.9	54.27	-13.93	68.2	39.37	31.79	12.88	29.77	344	359	P	V
		5680.83	52.28	-38.77	91.05	37.4	31.76	12.92	29.8	344	359	P	V
		5719.77	52.12	-58.62	110.74	37.1	31.88	12.95	29.81	344	359	P	V
		5724.195	51.8	-68.56	120.36	36.77	31.9	12.95	29.82	344	359	P	V
	*	5845	107.66	-	-	92.5	32.18	12.84	29.86	344	359	P	V
	*	5845	100.69	-	-	85.53	32.18	12.84	29.86	344	359	A	V
		5916.75	54.15	-40.09	94.24	39.13	32.3	12.61	29.89	344	359	P	V
		5968	53.64	-34.56	88.2	38.68	32.43	12.44	29.91	344	359	P	V
		5896	43.7	-45.76	89.46	28.7	32.2	12.68	29.88	344	359	A	V
		5948.75	43.35	-24.85	68.2	28.25	32.49	12.51	29.9	344	359	A	V

WIFI Ant. 4+3	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)
		5643.955	54.9	-13.3	68.2	40.07	31.71	12.9	29.78	147	299	P	H
		5690.27	56.16	-41.87	98.03	41.25	31.78	12.93	29.8	147	299	P	H
		5702.955	55.06	-50.97	106.03	40.12	31.81	12.94	29.81	147	299	P	H
		5725.08	53.04	-81.16	134.2	38.01	31.9	12.95	29.82	147	299	P	H
	*	5865	113.71	-	-	98.6	32.2	12.78	29.87	147	299	P	H
	*	5865	106.28	-	-	91.17	32.2	12.78	29.87	147	299	A	H
		5895.5	69.94	-39.89	109.83	54.94	32.2	12.68	29.88	147	299	P	H
		5925.5	63.7	-24.5	88.2	48.66	32.35	12.58	29.89	147	299	P	H
		5896.25	51.57	-37.71	89.28	36.57	32.2	12.68	29.88	147	299	A	H
		5926	45.16	-23.04	68.2	30.11	32.36	12.58	29.89	147	299	A	H
													H
802.11a CH 173 5865MHz													H
		5605.31	52.43	-15.77	68.2	37.53	31.79	12.88	29.77	358	1	P	V
		5681.125	52.09	-39.18	91.27	37.21	31.76	12.92	29.8	358	1	P	V
		5701.48	52.11	-53.51	105.62	37.17	31.81	12.94	29.81	358	1	P	V
		5723.31	52.63	-65.72	118.35	37.6	31.89	12.95	29.81	358	1	P	V
	*	5865	108.26	-	-	93.15	32.2	12.78	29.87	358	1	P	V
	*	5865	99.82	-	-	84.71	32.2	12.78	29.87	358	1	A	V
		5897.25	60.11	-48.44	108.55	45.12	32.2	12.67	29.88	358	1	P	V
		5936.75	54.15	-34.05	88.2	39.08	32.42	12.55	29.9	358	1	P	V
		5895.5	47.21	-42.62	89.83	32.21	32.2	12.68	29.88	358	1	A	V
		5951.5	43.38	-24.82	68.2	28.29	32.49	12.5	29.9	358	1	A	V
													V
													V

WIFI Ant. 4+3	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 177 5885MHz		5609.735	52.68	-15.52	68.2	37.78	31.78	12.89	29.77	144	298	P	H
		5668.735	53.63	-28.47	82.1	38.76	31.74	12.92	29.79	144	298	P	H
		5708.265	56.53	-50.99	107.52	41.57	31.83	12.94	29.81	144	298	P	H
		5723.605	53.05	-65.97	119.02	38.02	31.89	12.95	29.81	144	298	P	H
	*	5885	113.83	-	-	98.8	32.2	12.71	29.88	144	298	P	H
	*	5885	105.86	-	-	90.83	32.2	12.71	29.88	144	298	A	H
		5895.25	93.11	-16.91	110.02	78.11	32.2	12.68	29.88	144	298	P	H
		5926	66.31	-21.89	88.2	51.26	32.36	12.58	29.89	144	298	P	H
		5895.25	79.82	-10.2	90.02	64.82	32.2	12.68	29.88	144	298	A	H
		5925.75	46.66	-21.54	68.2	31.62	32.35	12.58	29.89	144	298	A	H
		5645.725	52.59	-15.61	68.2	37.76	31.71	12.91	29.79	355	2	P	V
		5651.92	53.28	-16.35	69.63	38.46	31.7	12.91	29.79	355	2	P	V
		5712.69	52.63	-56.13	108.76	37.65	31.85	12.94	29.81	355	2	P	V
		5725.08	53.51	-80.69	134.2	38.48	31.9	12.95	29.82	355	2	P	V
	*	5885	108.02	-	-	92.99	32.2	12.71	29.88	355	2	P	V
	*	5885	99.9	-	-	84.87	32.2	12.71	29.88	355	2	A	V
		5895.25	82.09	-27.93	110.02	67.09	32.2	12.68	29.88	355	2	P	V
		5927.5	58.01	-30.19	88.2	42.95	32.37	12.58	29.89	355	2	P	V
		5895.25	74.01	-16.01	90.02	59.01	32.2	12.68	29.88	355	2	A	V
		5928.75	43.63	-24.57	68.2	28.58	32.37	12.57	29.89	355	2	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

UNII-4 - 5735~5895MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 4+3	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)
		10883	51.65	-22.35	74	53.87	40.35	18.99	61.56	-	-	P	H
		10883	41.74	-12.26	54	43.96	40.35	18.99	61.56	-	-	A	H
		11690	54.66	-19.34	74	56.6	39.44	19.33	60.71	279	2	P	H
		11690	43.62	-10.38	54	45.56	39.44	19.33	60.71	279	2	A	H
		14491	52.07	-21.93	74	49.13	42	21.75	60.81	-	-	P	H
		14491	42.18	-11.82	54	39.24	42	21.75	60.81	-	-	A	H
		17535	55.5	-12.7	68.2	45.07	42.54	25.25	57.36	-	-	P	H
		17978	61.86	-12.14	74	44.53	48.69	25.47	56.83	-	-	P	H
		17978	47.71	-6.29	54	30.38	48.69	25.47	56.83	-	-	A	H
													H
													H
802.11a CH 169 5845MHz													H
		10880	51.3	-22.7	74	53.54	40.34	18.99	61.57	-	-	P	V
		10880	42.27	-11.73	54	44.51	40.34	18.99	61.57	-	-	A	V
		11690	51.53	-22.47	74	53.47	39.44	19.33	60.71	226	331	P	V
		11690	42.23	-11.77	54	44.17	39.44	19.33	60.71	226	331	A	V
		14491	52.19	-21.81	74	49.25	42	21.75	60.81	-	-	P	V
		14491	42.62	-11.38	54	39.68	42	21.75	60.81	-	-	A	V
		17535	57.23	-10.97	68.2	46.8	42.54	25.25	57.36	-	-	P	V
		17967	62.07	-11.93	74	45.01	48.44	25.46	56.84	-	-	P	V
		17967	47.65	-6.35	54	30.59	48.44	25.46	56.84	-	-	A	V
													V
													V
													V

WIFI Ant. 4+3	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)
		10839	53.39	-20.61	74	55.82	40.22	18.98	61.63	-	-	P	H
		10839	41.13	-12.87	54	43.56	40.22	18.98	61.63	-	-	A	H
		11730	53.99	-20.01	74	56.11	39.28	19.34	60.74	206	50	P	H
		11730	44.11	-9.89	54	46.23	39.28	19.34	60.74	206	50	A	H
		14471	54.15	-19.85	74	51.25	42	21.73	60.83	-	-	P	H
		14471	43.05	-10.95	54	40.15	42	21.73	60.83	-	-	A	H
		17595	56.81	-11.39	68.2	45.85	42.97	25.28	57.29	-	-	P	H
		17989	62.77	-11.23	74	45.15	48.95	25.48	56.81	-	-	P	H
		17989	47.74	-6.26	54	30.12	48.95	25.48	56.81	-	-	A	H
													H
													H
802.11a													H
CH 173		10751	53.51	-20.49	74	56.35	39.95	18.96	61.75	-	-	P	V
5865MHz		10751	42.15	-11.85	54	44.99	39.95	18.96	61.75	-	-	A	V
		11730	50.76	-23.24	74	52.88	39.28	19.34	60.74	212	326	P	V
		11730	41.8	-12.2	54	43.92	39.28	19.34	60.74	212	326	A	V
		14471	54.08	-19.92	74	51.18	42	21.73	60.83	-	-	P	V
		14471	43.41	-10.59	54	40.51	42	21.73	60.83	-	-	A	V
		17595	56.67	-11.53	68.2	45.71	42.97	25.28	57.29	-	-	P	V
		17989	63.07	-10.93	74	45.45	48.95	25.48	56.81	-	-	P	V
		17989	47.99	-6.01	54	30.37	48.95	25.48	56.81	-	-	A	V
													V
													V
													V

WIFI Ant. 4+3	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 177 5885MHz		10839	52.63	-21.37	74	55.06	40.22	18.98	61.63	-	-	P	H
		10839	41.71	-12.29	54	44.14	40.22	18.98	61.63	-	-	A	H
		11770	52.44	-21.56	74	54.72	39.12	19.36	60.76	200	49	P	H
		11770	44.09	-9.91	54	46.37	39.12	19.36	60.76	200	49	A	H
		14480	53.58	-20.42	74	50.66	42	21.74	60.82	-	-	P	H
		14480	43.39	-10.61	54	40.47	42	21.74	60.82	-	-	A	H
		17655	57.21	-10.99	68.2	45.61	43.5	25.31	57.21	-	-	P	H
		18000	62.11	-11.89	74	44.23	49.2	25.48	56.8	-	-	P	H
		18000	47.99	-6.01	54	30.11	49.2	25.48	56.8	-	-	A	H
													H
													H
													H
		10663	52.51	-21.49	74	55.56	39.87	18.95	61.87	-	-	P	V
		10663	41.27	-12.73	54	44.32	39.87	18.95	61.87	-	-	A	V
		11770	51.9	-22.1	74	54.18	39.12	19.36	60.76	200	336	P	V
		11770	43.31	-10.69	54	45.59	39.12	19.36	60.76	200	336	A	V
		14471	53.27	-20.73	74	50.37	42	21.73	60.83	-	-	P	V
		14471	43.44	-10.56	54	40.54	42	21.73	60.83	-	-	A	V
		17655	57.57	-10.63	68.2	45.97	43.5	25.31	57.21	-	-	P	V
		17967	62.13	-11.87	74	45.07	48.44	25.46	56.84	-	-	P	V
		17967	47.66	-6.34	54	30.6	48.44	25.46	56.84	-	-	A	V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

UNII-4 - 5735~5895MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 4+3	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)
		5615.34	54.71	-13.49	68.2	39.82	31.77	12.89	29.77	148	299	P	H
		5682.895	55.73	-36.85	92.58	40.83	31.77	12.93	29.8	148	299	P	H
		5716.82	54.86	-55.05	109.91	39.86	31.87	12.94	29.81	148	299	P	H
		5720.95	58.48	-54.49	112.97	43.46	31.88	12.95	29.81	148	299	P	H
	*	5845	113.99	-	-	98.83	32.18	12.84	29.86	148	299	P	H
	*	5845	105.63	-	-	90.47	32.18	12.84	29.86	148	299	A	H
		5901.75	65.05	-40.19	105.24	50.06	32.21	12.66	29.88	148	299	P	H
		5973	59.25	-28.95	88.2	44.32	32.41	12.43	29.91	148	299	P	H
802.11n		5895.25	46.05	-43.97	90.02	31.05	32.2	12.68	29.88	148	299	A	H
HT20		5925.25	44.44	-23.76	68.2	29.4	32.35	12.58	29.89	148	299	A	H
CH 169		5625.37	52.65	-15.55	68.2	37.79	31.75	12.89	29.78	344	3	P	V
5845MHz		5665.195	52.79	-26.69	79.48	37.93	31.73	12.92	29.79	344	3	P	V
		5716.82	52.79	-57.12	109.91	37.79	31.87	12.94	29.81	344	3	P	V
		5723.605	51.9	-67.12	119.02	36.87	31.89	12.95	29.81	344	3	P	V
	*	5845	106.87	-	-	91.71	32.18	12.84	29.86	344	3	P	V
	*	5845	99.44	-	-	84.28	32.18	12.84	29.86	344	3	A	V
		5895.25	57.74	-52.28	110.02	42.74	32.2	12.68	29.88	344	3	P	V
		5960.5	53.93	-34.27	88.2	38.9	32.46	12.47	29.9	344	3	P	V
		5896	43.86	-45.6	89.46	28.86	32.2	12.68	29.88	344	3	A	V
		5948.75	43.4	-24.8	68.2	28.3	32.49	12.51	29.9	344	3	A	V

WIFI Ant. 4+3	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)
		5628.615	52.93	-15.27	68.2	38.07	31.74	12.9	29.78	146	299	P	H
		5689.09	55.57	-41.58	97.15	40.66	31.78	12.93	29.8	146	299	P	H
		5702.955	53.7	-52.33	106.03	38.76	31.81	12.94	29.81	146	299	P	H
		5721.54	53.3	-61.01	114.31	38.27	31.89	12.95	29.81	146	299	P	H
	*	5865	113.8	-	-	98.69	32.2	12.78	29.87	146	299	P	H
	*	5865	105.67	-	-	90.56	32.2	12.78	29.87	146	299	A	H
		5897.5	69.76	-38.6	108.36	54.77	32.2	12.67	29.88	146	299	P	H
		5929.75	63.95	-24.25	88.2	48.89	32.38	12.57	29.89	146	299	P	H
		5895.5	54.68	-35.15	89.83	39.68	32.2	12.68	29.88	146	299	A	H
		5926.25	45.63	-22.57	68.2	30.58	32.36	12.58	29.89	146	299	A	H
802.11n													H
HT20													H
CH 173		5620.65	52.43	-15.77	68.2	37.56	31.76	12.89	29.78	357	1	P	V
5865MHz		5663.72	53.28	-25.11	78.39	38.42	31.73	12.92	29.79	357	1	P	V
		5701.185	52.79	-52.74	105.53	37.86	31.8	12.94	29.81	357	1	P	V
		5722.13	50.9	-64.76	115.66	35.87	31.89	12.95	29.81	357	1	P	V
	*	5865	107.12	-	-	92.01	32.2	12.78	29.87	357	1	P	V
	*	5865	99.23	-	-	84.12	32.2	12.78	29.87	357	1	A	V
		5897	62.01	-46.72	108.73	47.02	32.2	12.67	29.88	357	1	P	V
		5967	54.26	-33.94	88.2	39.29	32.43	12.45	29.91	357	1	P	V
		5895.25	49.32	-40.7	90.02	34.32	32.2	12.68	29.88	357	1	A	V
		5933	43.59	-24.61	68.2	28.52	32.4	12.56	29.89	357	1	A	V
													V
													V

WIFI Ant. 4+3	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 177 5885MHz		5608.26	52.69	-15.51	68.2	37.8	31.78	12.88	29.77	151	300	P	H
		5656.64	55.44	-17.69	73.13	40.61	31.71	12.91	29.79	151	300	P	H
		5702.365	54.62	-51.24	105.86	39.68	31.81	12.94	29.81	151	300	P	H
		5722.13	54.79	-60.87	115.66	39.76	31.89	12.95	29.81	151	300	P	H
	*	5885	113.4	-	-	98.37	32.2	12.71	29.88	151	300	P	H
	*	5885	105.63	-	-	90.6	32.2	12.71	29.88	151	300	A	H
		5895.5	92.81	-17.02	109.83	77.81	32.2	12.68	29.88	151	300	P	H
		5928.5	66.18	-22.02	88.2	51.13	32.37	12.57	29.89	151	300	P	H
		5895.25	83.5	-6.52	90.02	68.5	32.2	12.68	29.88	151	300	A	H
		5925.25	49.08	-19.12	68.2	34.04	32.35	12.58	29.89	151	300	A	H
		5625.96	54.2	-14	68.2	39.34	31.75	12.89	29.78	353	0	P	V
		5656.05	51.82	-20.87	72.69	36.99	31.71	12.91	29.79	353	0	P	V
		5712.395	52.59	-56.08	108.67	37.61	31.85	12.94	29.81	353	0	P	V
		5724.49	51.64	-69.4	121.04	36.61	31.9	12.95	29.82	353	0	P	V
	*	5885	107.4	-	-	92.37	32.2	12.71	29.88	353	0	P	V
	*	5885	99.65	-	-	84.62	32.2	12.71	29.88	353	0	A	V
		5895.25	85.65	-24.37	110.02	70.65	32.2	12.68	29.88	353	0	P	V
		5925.5	58.7	-29.5	88.2	43.66	32.35	12.58	29.89	353	0	P	V
		5895.25	76.55	-13.47	90.02	61.55	32.2	12.68	29.88	353	0	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

UNII-4 - 5735~5895MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 4+3	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)
		10718	52.44	-21.56	74	55.41	39.85	18.97	61.79	-	-	P	H
		10718	41.62	-12.38	54	44.59	39.85	18.97	61.79	-	-	A	H
		11690	53.25	-20.75	74	55.19	39.44	19.33	60.71	147	50	P	H
		11690	43.82	-10.18	54	45.76	39.44	19.33	60.71	147	50	A	H
		14471	53.91	-20.09	74	51.01	42	21.73	60.83	-	-	P	H
		14471	43.62	-10.38	54	40.72	42	21.73	60.83	-	-	A	H
		17353	52.57	-15.63	68.2	44.11	41.23	25.16	57.93	-	-	P	H
		17967	62.17	-11.83	74	45.11	48.44	25.46	56.84	-	-	P	H
		17967	47.39	-6.61	54	30.33	48.44	25.46	56.84	-	-	A	H
													H
802.11n													H
HT20													H
CH 169		10850	52.87	-21.13	74	55.25	40.25	18.98	61.61	-	-	P	V
5845MHz		10850	42.25	-11.75	54	44.63	40.25	18.98	61.61	-	-	A	V
		11690	50.83	-23.17	74	52.77	39.44	19.33	60.71	185	326	P	V
		11690	41.91	-12.09	54	43.85	39.44	19.33	60.71	185	326	A	V
		14472	53.59	-20.41	74	50.69	42	21.73	60.83	-	-	P	V
		14472	43.54	-10.46	54	40.64	42	21.73	60.83	-	-	A	V
		17353	52.89	-15.31	68.2	44.43	41.23	25.16	57.93	-	-	P	V
		17978	62.11	-11.89	74	44.78	48.69	25.47	56.83	-	-	P	V
		17978	47.92	-6.08	54	30.59	48.69	25.47	56.83	-	-	A	V
													V
													V
													V

WIFI Ant. 4+3	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)
		10883	52.48	-21.52	74	54.7	40.35	18.99	61.56	-	-	P	H
		10883	42.59	-11.41	54	44.81	40.35	18.99	61.56	-	-	A	H
		11730	53.5	-20.5	74	55.62	39.28	19.34	60.74	208	51	P	H
		11730	43.87	-10.13	54	45.99	39.28	19.34	60.74	208	51	A	H
		14480	53.08	-20.92	74	50.16	42	21.74	60.82	-	-	P	H
		14480	43.35	-10.65	54	40.43	42	21.74	60.82	-	-	A	H
		17595	57.06	-11.14	68.2	46.1	42.97	25.28	57.29	-	-	P	H
		17978	61.74	-12.26	74	44.41	48.69	25.47	56.83	-	-	P	H
		17978	47.99	-6.01	54	30.66	48.69	25.47	56.83	-	-	A	H
													H
802.11n													H
HT20													H
CH 173		10927	52.48	-21.52	74	54.59	40.4	18.99	61.5	-	-	P	V
5865MHz		10927	42.61	-11.39	54	44.72	40.4	18.99	61.5	-	-	A	V
		11730	51.18	-22.82	74	53.3	39.28	19.34	60.74	200	330	P	V
		11730	41.91	-12.09	54	44.03	39.28	19.34	60.74	200	330	A	V
		14491	53.37	-20.63	74	50.43	42	21.75	60.81	-	-	P	V
		14491	43.6	-10.4	54	40.66	42	21.75	60.81	-	-	A	V
		17595	56.74	-11.46	68.2	45.78	42.97	25.28	57.29	-	-	P	V
		17956	63.1	-10.9	74	46.3	48.19	25.46	56.85	-	-	P	V
		17956	47.56	-6.44	54	30.76	48.19	25.46	56.85	-	-	A	V
													V
													V
													V

WIFI Ant. 4+3	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)
		10718	52.44	-21.56	74	55.41	39.85	18.97	61.79	-	-	P	H
		10718	41.56	-12.44	54	44.53	39.85	18.97	61.79	-	-	A	H
		11770	54.18	-19.82	74	56.46	39.12	19.36	60.76	148	49	P	H
		11770	44.08	-9.92	54	46.36	39.12	19.36	60.76	148	49	A	H
		14491	53.35	-20.65	74	50.41	42	21.75	60.81	-	-	P	H
		14491	43.58	-10.42	54	40.64	42	21.75	60.81	-	-	A	H
		17655	56.3	-11.9	68.2	44.7	43.5	25.31	57.21	-	-	P	H
		17978	61.95	-12.05	74	44.62	48.69	25.47	56.83	-	-	P	H
		17978	47.78	-6.22	54	30.45	48.69	25.47	56.83	-	-	A	H
													H
802.11n													H
HT20													H
CH 177		10740	52.37	-21.63	74	55.24	39.92	18.97	61.76	-	-	P	V
5885MHz		10740	41.93	-12.07	54	44.8	39.92	18.97	61.76	-	-	A	V
		11770	51.39	-22.61	74	53.67	39.12	19.36	60.76	200	341	P	V
		11770	42.13	-11.87	54	44.41	39.12	19.36	60.76	200	341	A	V
		14472	53.28	-20.72	74	50.38	42	21.73	60.83	-	-	P	V
		14472	43.42	-10.58	54	40.52	42	21.73	60.83	-	-	A	V
		17655	56.67	-11.53	68.2	45.07	43.5	25.31	57.21	-	-	P	V
		17956	61.57	-12.43	74	44.77	48.19	25.46	56.85	-	-	P	V
		17956	47.67	-6.33	54	30.87	48.19	25.46	56.85	-	-	A	V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

UNII-4 - 5735~5895MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 4+3	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)
		5607.67	55.03	-13.17	68.2	40.14	31.78	12.88	29.77	148	298	P	H
		5656.935	57.83	-15.52	73.35	43	31.71	12.91	29.79	148	298	P	H
		5706.79	53.28	-53.82	107.1	38.32	31.83	12.94	29.81	148	298	P	H
		5720.95	52.44	-60.53	112.97	37.42	31.88	12.95	29.81	148	298	P	H
	*	5835	109.76	-	-	94.6	32.14	12.88	29.86	148	298	P	H
	*	5835	102.11	-	-	86.95	32.14	12.88	29.86	148	298	A	H
		5907.25	63.99	-37.21	101.2	48.99	32.24	12.64	29.88	148	298	P	H
		5961	57.86	-30.34	88.2	42.84	32.46	12.47	29.91	148	298	P	H
		5895.5	50.01	-39.82	89.83	35.01	32.2	12.68	29.88	148	298	A	H
		5928.5	45.03	-23.17	68.2	29.98	32.37	12.57	29.89	148	298	A	H
802.11n													H
HT40													H
CH 167		5615.045	51.93	-16.27	68.2	37.04	31.77	12.89	29.77	399	2	P	V
5835MHz		5661.655	53.96	-22.89	76.85	39.12	31.72	12.91	29.79	399	2	P	V
		5718.59	52.27	-58.14	110.41	37.26	31.87	12.95	29.81	399	2	P	V
		5723.605	52.15	-66.87	119.02	37.12	31.89	12.95	29.81	399	2	P	V
	*	5835	103.09	-	-	87.93	32.14	12.88	29.86	399	2	P	V
	*	5835	95.88	-	-	80.72	32.14	12.88	29.86	399	2	A	V
		5897.25	55.42	-53.13	108.55	40.43	32.2	12.67	29.88	399	2	P	V
		5981.75	53.68	-34.52	88.2	38.82	32.37	12.4	29.91	399	2	P	V
		5897.25	45.05	-43.5	88.55	30.06	32.2	12.67	29.88	399	2	A	V
		5926.75	43.45	-24.75	68.2	28.4	32.36	12.58	29.89	399	2	A	V
													V
													V

WIFI Ant. 4+3	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)
		5602.95	54.74	-13.46	68.2	39.84	31.79	12.88	29.77	148	300	P	H
		5661.065	53.58	-22.84	76.42	38.74	31.72	12.91	29.79	148	300	P	H
		5710.33	53.45	-54.64	108.09	38.48	31.84	12.94	29.81	148	300	P	H
		5723.31	52.29	-66.06	118.35	37.26	31.89	12.95	29.81	148	300	P	H
	*	5875	109.43	-	-	94.35	32.2	12.75	29.87	148	300	P	H
	*	5875	101.82	-	-	86.74	32.2	12.75	29.87	148	300	A	H
		5895.75	86.43	-23.22	109.65	71.43	32.2	12.68	29.88	148	300	P	H
		5925	66.58	-21.62	88.2	51.54	32.35	12.58	29.89	148	300	P	H
		5895.5	72.31	-17.52	89.83	57.31	32.2	12.68	29.88	148	300	A	H
		5925.25	56.55	-11.65	68.2	41.51	32.35	12.58	29.89	148	300	A	H
802.11n													H
HT40													H
CH 175		5633.925	52.49	-15.71	68.2	37.64	31.73	12.9	29.78	357	4	P	V
5875MHz		5682.6	52.96	-39.4	92.36	38.06	31.77	12.93	29.8	357	4	P	V
		5714.165	52.87	-56.3	109.17	37.88	31.86	12.94	29.81	357	4	P	V
		5724.785	53	-68.71	121.71	37.97	31.9	12.95	29.82	357	4	P	V
	*	5875	103.93	-	-	88.85	32.2	12.75	29.87	357	4	P	V
	*	5875	96.42	-	-	81.34	32.2	12.75	29.87	357	4	A	V
		5895.25	75	-35.02	110.02	60	32.2	12.68	29.88	357	4	P	V
		5925.5	62.5	-25.7	88.2	47.46	32.35	12.58	29.89	357	4	P	V
		5895.25	67.06	-22.96	90.02	52.06	32.2	12.68	29.88	357	4	A	V
		5925	50.6	-17.6	68.2	35.56	32.35	12.58	29.89	357	4	A	V
													V
													V

Remark

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

UNII-4 - 5735~5895MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 4+3	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)
		10872	52.92	-21.08	74	55.2	40.32	18.98	61.58	-	-	P	H
		10872	42.57	-11.43	54	44.85	40.32	18.98	61.58	-	-	A	H
		11670	51.4	-22.6	74	53.27	39.52	19.31	60.7	200	47	P	H
		11670	41.65	-12.35	54	43.52	39.52	19.31	60.7	200	47	A	H
		14480	52.98	-21.02	74	50.06	42	21.74	60.82	-	-	P	H
		14480	43.49	-10.51	54	40.57	42	21.74	60.82	-	-	A	H
		17505	55.35	-12.85	68.2	45.18	42.33	25.23	57.39	-	-	P	H
		17956	61.61	-12.39	74	44.81	48.19	25.46	56.85	-	-	P	H
		17956	47.79	-6.21	54	30.99	48.19	25.46	56.85	-	-	A	H
													H
802.11n													H
HT40													H
CH 167		10751	52.55	-21.45	74	55.39	39.95	18.96	61.75	-	-	P	V
5835MHz		10751	40.87	-13.13	54	43.71	39.95	18.96	61.75	-	-	A	V
		11670	50.62	-23.38	74	52.49	39.52	19.31	60.7	200	349	P	V
		11670	41.02	-12.98	54	42.89	39.52	19.31	60.7	200	349	A	V
		14472	53.98	-20.02	74	51.08	42	21.73	60.83	-	-	P	V
		14472	43.14	-10.86	54	40.24	42	21.73	60.83	-	-	A	V
		17505	53.97	-14.23	68.2	43.8	42.33	25.23	57.39	-	-	P	V
		17956	61.49	-12.51	74	44.69	48.19	25.46	56.85	-	-	P	V
		17956	47.79	-6.21	54	30.99	48.19	25.46	56.85	-	-	A	V
													V
													V
													V

WIFI Ant. 4+3	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)
		10894	52.76	-21.24	74	54.93	40.38	19	61.55	-	-	P	H
		10894	42.54	-11.46	54	44.71	40.38	19	61.55	-	-	A	H
		11750	52.03	-21.97	74	54.24	39.2	19.34	60.75	145	50	P	H
		11750	42.22	-11.78	54	44.43	39.2	19.34	60.75	145	50	A	H
		14480	52.98	-21.02	74	50.06	42	21.74	60.82	-	-	P	H
		14480	43.28	-10.72	54	40.36	42	21.74	60.82	-	-	A	H
		17625	55.93	-12.27	68.2	44.67	43.22	25.29	57.25	-	-	P	H
		17967	61.91	-12.09	74	44.85	48.44	25.46	56.84	-	-	P	H
		17967	47.91	-6.09	54	30.85	48.44	25.46	56.84	-	-	A	H
													H
802.11n													H
HT40													H
CH 175		10872	52.56	-21.44	74	54.84	40.32	18.98	61.58	-	-	P	V
5875MHz		10872	42.29	-11.71	54	44.57	40.32	18.98	61.58	-	-	A	V
		11750	50.21	-23.79	74	52.42	39.2	19.34	60.75	200	351	P	V
		11750	41	-13	54	43.21	39.2	19.34	60.75	200	351	A	V
		14491	53.61	-20.39	74	50.67	42	21.75	60.81	-	-	P	V
		14491	43.3	-10.7	54	40.36	42	21.75	60.81	-	-	A	V
		17625	55.19	-13.01	68.2	43.93	43.22	25.29	57.25	-	-	P	V
		18000	62.77	-11.23	74	44.89	49.2	25.48	56.8	-	-	P	V
		18000	47.99	-6.01	54	30.11	49.2	25.48	56.8	-	-	A	V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

UNII-4 - 5735~5895MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 4+3	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)
		5640.5	54.37	-13.83	68.2	39.53	31.72	12.9	29.78	151	296	P	H
		5671.75	54.79	-29.55	84.34	39.93	31.74	12.92	29.8	151	296	P	H
		5700.25	54.83	-50.44	105.27	39.9	31.8	12.94	29.81	151	296	P	H
		5725	55.37	-66.83	122.2	40.34	31.9	12.95	29.82	151	296	P	H
	*	5855	106.42	-	-	91.27	32.2	12.81	29.86	151	296	P	H
	*	5855	98.26	-	-	83.11	32.2	12.81	29.86	151	296	A	H
		5902.5	74.83	-29.86	104.69	59.83	32.22	12.66	29.88	151	296	P	H
		5929.25	70.83	-17.37	88.2	55.77	32.38	12.57	29.89	151	296	P	H
		5900.25	66.57	-19.77	86.34	51.59	32.2	12.66	29.88	151	296	A	H
		5927	61.11	-7.09	68.2	46.06	32.36	12.58	29.89	151	296	A	H
802.11ac													H
VHT80													H
CH 171		5643	52.96	-15.24	68.2	38.13	31.71	12.9	29.78	345	358	P	V
5855MHz		5691.75	51.98	-47.14	99.12	37.07	31.78	12.93	29.8	345	358	P	V
		5705	53.25	-53.35	106.6	38.3	31.82	12.94	29.81	345	358	P	V
		5724	53.07	-66.85	119.92	38.04	31.9	12.95	29.82	345	358	P	V
	*	5855	100.26	-	-	85.11	32.2	12.81	29.86	345	358	P	V
	*	5855	92.16	-	-	77.01	32.2	12.81	29.86	345	358	A	V
		5904.5	71.31	-31.91	103.22	56.31	32.23	12.65	29.88	345	358	P	V
		5927.25	65.12	-23.08	88.2	50.07	32.36	12.58	29.89	345	358	P	V
		5901	61.26	-24.53	85.79	46.27	32.21	12.66	29.88	345	358	A	V
		5928	56.6	-11.6	68.2	41.55	32.37	12.57	29.89	345	358	A	V
													V
													V

Remark

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

UNII-4 - 5735~5895MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 4+3	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)
		10784	52.26	-21.74	74	54.94	40.05	18.97	61.7	-	-	P	H
		10784	42.29	-11.71	54	44.97	40.05	18.97	61.7	-	-	A	H
		11710	49.68	-24.32	74	51.72	39.36	19.33	60.73	200	50	P	H
		11710	40.49	-13.51	54	42.53	39.36	19.33	60.73	200	50	A	H
		14471	53.1	-20.9	74	50.2	42	21.73	60.83	-	-	P	H
		14471	43.5	-10.5	54	40.6	42	21.73	60.83	-	-	A	H
		17565	55.53	-12.67	68.2	44.83	42.76	25.26	57.32	-	-	P	H
		18000	61.65	-12.35	74	43.77	49.2	25.48	56.8	-	-	P	H
		18000	47.99	-6.01	54	30.11	49.2	25.48	56.8	-	-	A	H
													H
802.11ac													H
VHT80													H
CH 171		10993	52.97	-21.03	74	54.97	40.4	19.01	61.41	-	-	P	V
5855MHz		10993	43.04	-10.96	54	45.04	40.4	19.01	61.41	-	-	A	V
		11710	50.72	-23.28	74	52.76	39.36	19.33	60.73	200	350	P	V
		11710	39.66	-14.34	54	41.7	39.36	19.33	60.73	200	350	A	V
		14480	52.56	-21.44	74	49.64	42	21.74	60.82	-	-	P	V
		14480	43.51	-10.49	54	40.59	42	21.74	60.82	-	-	A	V
		17565	54.48	-13.72	68.2	43.78	42.76	25.26	57.32	-	-	P	V
		17956	61.52	-12.48	74	44.72	48.19	25.46	56.85	-	-	P	V
		17956	47.43	-6.57	54	30.63	48.19	25.46	56.85	-	-	A	V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

UNII-4 - 5735~5895MHz

WIFI 802.11ax HE160_Full (Band Edge @ 3m)

WIFI Ant. 4+3	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)
		5638.5	65.14	-2.06	68.2	50.11	31.72	12.9	29.59	191	295	P	H
		5697.75	73.61	-29.93	103.54	58.49	31.8	12.93	29.61	191	295	P	H
		5711.75	75.59	-32.9	108.49	60.41	31.85	12.94	29.61	191	295	P	H
		5722	73.94	-41.42	115.36	58.71	31.89	12.95	29.61	191	295	P	H
	*	5815	105.28	-	-	89.91	32.06	12.94	29.63	191	295	P	H
	*	5815	95.84	-	-	80.47	32.06	12.94	29.63	191	295	A	H
		5895.5	82.46	-27.37	109.83	67.22	32.2	12.68	29.64	191	295	P	H
		5946.75	77.63	-10.57	88.2	62.29	32.48	12.51	29.65	191	295	P	H
		5895.25	69.71	-20.31	90.02	54.47	32.2	12.68	29.64	191	295	A	H
		5951.5	66.24	-1.66	68.2	50.9	32.49	12.5	29.65	191	295	A	H
802.11ax													H
HE160 Full													H
CH 163		5648.75	54.03	-14.17	68.2	39.02	31.7	12.91	29.6	366	0	P	V
5815MHz		5700	64.02	-41.18	105.2	48.9	31.8	12.93	29.61	366	0	P	V
		5706	64.22	-42.66	106.88	49.07	31.82	12.94	29.61	366	0	P	V
		5720.75	63.33	-49.18	112.51	48.11	31.88	12.95	29.61	366	0	P	V
	*	5815	98.39	-	-	83.02	32.06	12.94	29.63	366	0	P	V
	*	5815	89.61	-	-	74.24	32.06	12.94	29.63	366	0	A	V
		5895.75	77.54	-32.11	109.65	62.3	32.2	12.68	29.64	366	0	P	V
		5938.75	72.77	-15.43	88.2	57.45	32.43	12.54	29.65	366	0	P	V
		5895.25	62.31	-27.71	90.02	47.07	32.2	12.68	29.64	366	0	A	V
		5938.75	61.53	-6.67	68.2	46.21	32.43	12.54	29.65	366	0	A	V
													V
													V

Remark

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

UNII-4 - 5735~5895MHz

WIFI 802.11ax HE160_Full (Harmonic @ 3m)

WIFI Ant. 4+3	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)
		10674	52.12	-21.88	74	55.18	39.85	18.95	61.86	-	-	P	H
		10674	41.66	-12.34	54	44.72	39.85	18.95	61.86	-	-	A	H
		11630	50.51	-23.49	74	52.21	39.68	19.3	60.68	200	50	P	H
		11630	40.55	-13.45	54	42.25	39.68	19.3	60.68	200	50	A	H
		14472	52.62	-21.38	74	49.72	42	21.73	60.83	-	-	P	H
		14472	43.25	-10.75	54	40.35	42	21.73	60.83	-	-	A	H
		17445	54.16	-14.04	68.2	44.59	41.97	25.2	57.6	-	-	P	H
		17989	61.51	-12.49	74	43.89	48.95	25.48	56.81	-	-	P	H
		17989	47.92	-6.08	54	30.3	48.95	25.48	56.81	-	-	A	H
													H
802.11ax													H
HE160 Full													H
CH 163		10795	52.43	-21.57	74	55.06	40.08	18.98	61.69	-	-	P	V
5815MHz		10795	41.99	-12.01	54	44.62	40.08	18.98	61.69	-	-	A	V
		11630	50.3	-23.7	74	52	39.68	19.3	60.68	200	349	P	V
		11630	40.34	-13.66	54	42.04	39.68	19.3	60.68	200	349	A	V
		14472	52.69	-21.31	74	49.79	42	21.73	60.83	-	-	P	V
		14472	43.11	-10.89	54	40.21	42	21.73	60.83	-	-	A	V
		17445	53.24	-14.96	68.2	43.67	41.97	25.2	57.6	-	-	P	V
		18000	61.86	-12.14	74	43.98	49.2	25.48	56.8	-	-	P	V
		18000	47.99	-6.01	54	30.11	49.2	25.48	56.8	-	-	A	V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

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.	
4+3		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a LF		95.96	31.25	-12.25	43.5	46.38	15.41	1.77	32.31	-	-	P	H
		158.04	26.72	-16.78	43.5	39.91	16.76	2.3	32.25	-	-	P	H
		514.03	26.31	-19.69	46	30.62	24.03	4.02	32.36	-	-	P	H
		713.85	30.72	-15.28	46	31.63	26.83	4.64	32.38	-	-	P	H
		858.38	33.44	-12.56	46	31.12	29.05	5.15	31.88	-	-	P	H
		952.47	34.44	-11.56	46	29.54	30.62	5.46	31.18	-	-	P	H
													H
													H
													H
													H
													H
													H
		33.88	30.16	-9.84	40	38.8	22.77	0.9	32.31	-	-	P	V
		95.96	27.68	-15.82	43.5	42.81	15.41	1.77	32.31	-	-	P	V
		186.17	24.88	-18.62	43.5	39.78	14.86	2.47	32.23	-	-	P	V
		762.35	31.23	-14.77	46	30.61	28.13	4.81	32.32	-	-	P	V
		877.78	32.87	-13.13	46	30.48	28.9	5.21	31.72	-	-	P	V
		936.95	34.82	-11.18	46	30.59	30.11	5.41	31.29	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.

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	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
4+3		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. 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 D. Radiated Spurious Emission Plots

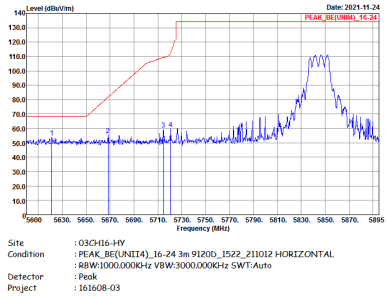
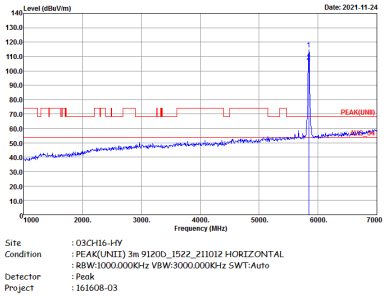
Test Engineer :	Karl Hou and Andy Yang	**Temperature :**	20~25°C
		Relative Humidity :	50~60%

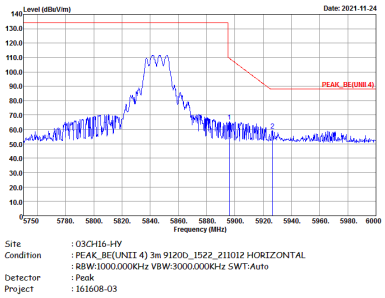
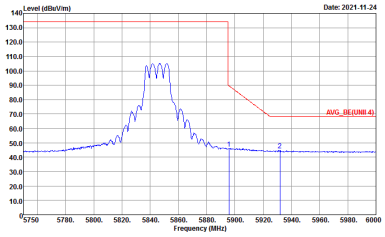
Note symbol

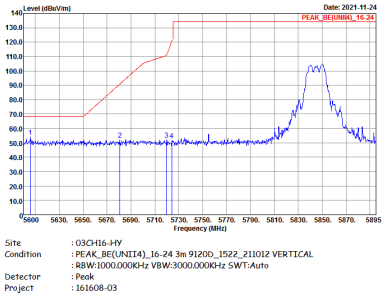
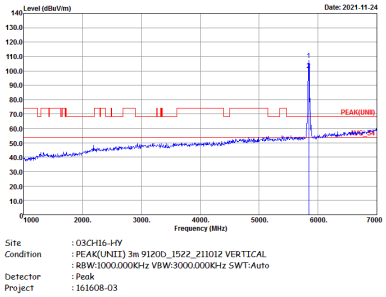
-L	**Low channel location**
-R	**High channel location**

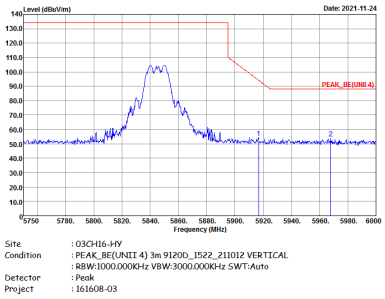
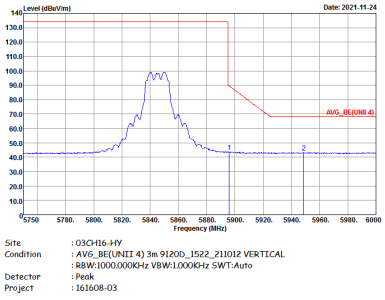
UNII-4 - 5735~5895MHz

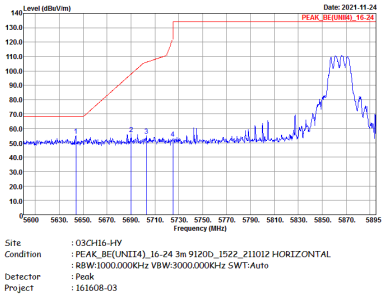
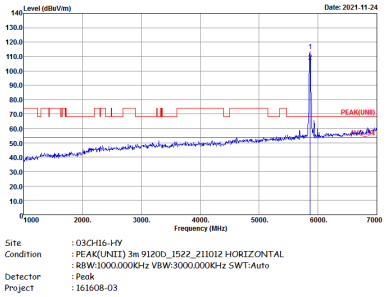
WIFI 802.11a (Band Edge @ 3m)

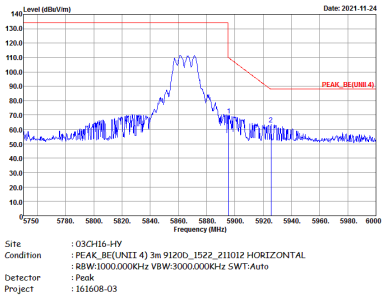
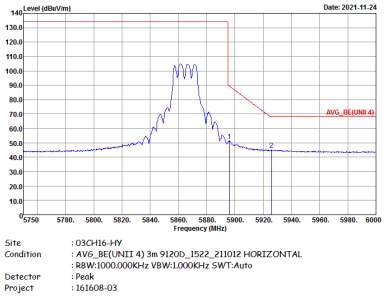
WIFI	**UNII-4 5735~5895MHz Band Edge @ 3m**	
ANT	**802.11a CH169 5845MHz - L**	
4+3	**Horizontal**	**Fundamental**
Peak		

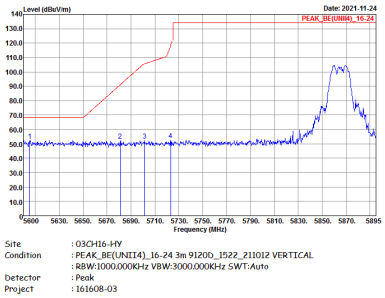
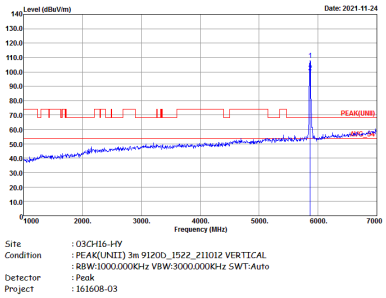
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH169 5845MHz - R	
4+3	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(UNII 4) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE(UNII 4) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank

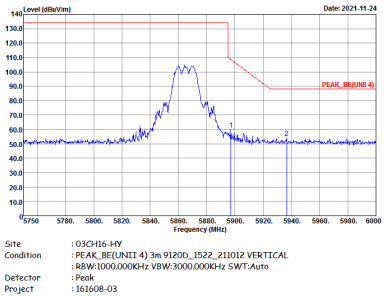
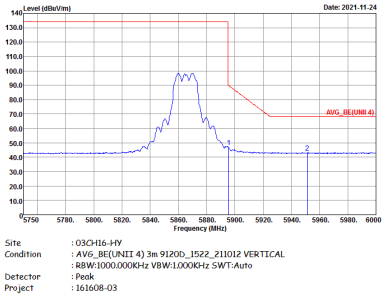
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH169 5845MHz - L	
4+3	Vertical	Fundamental
Peak		

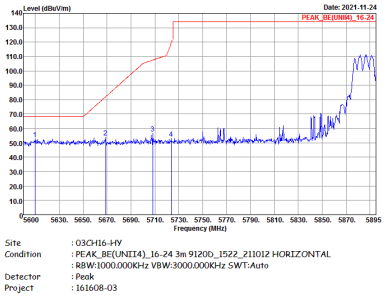
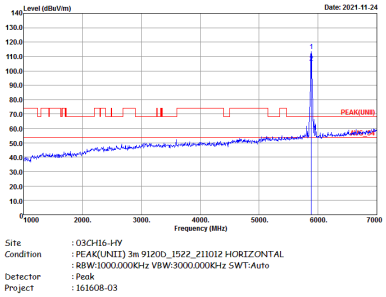
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH169 5845MHz - R	
4+3	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

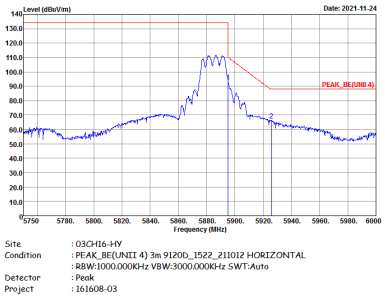
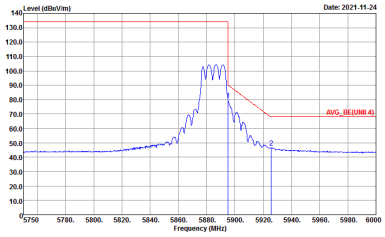
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH173 5865MHz - L	
4+3	Horizontal	Fundamental
Peak		

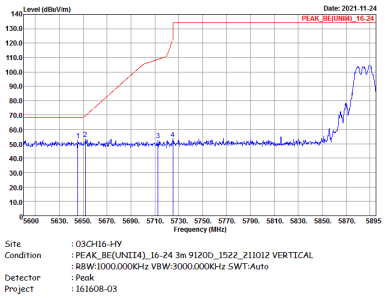
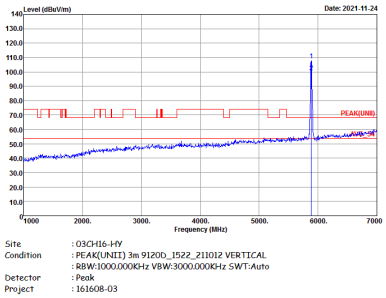
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH173 5865MHz - R	
4+3	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

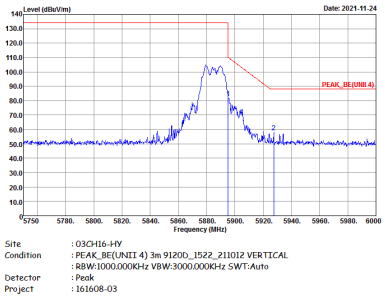
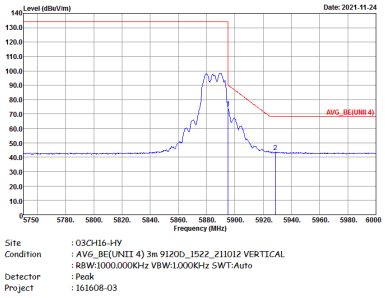
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH173 5865MHz - L	
4+3	Vertical	Fundamental
Peak		

WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH173 5865MHz - R	
4+3	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

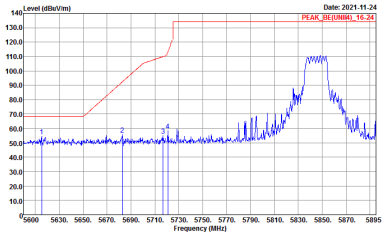
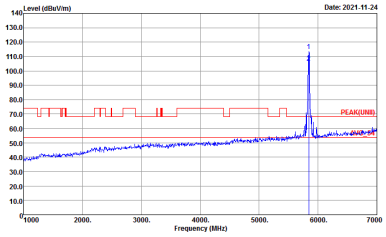
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH177 5885MHz - L	
4+3	Horizontal	Fundamental
Peak		

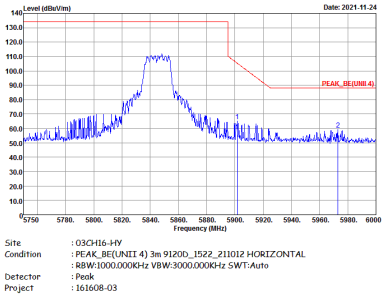
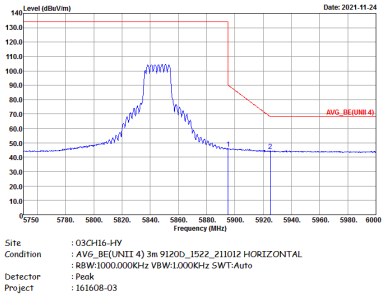
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH177 5885MHz - R	
4+3	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(UNII 4) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE(UNII 4) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank

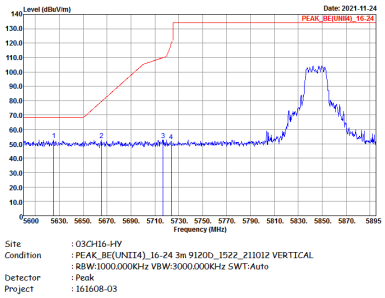
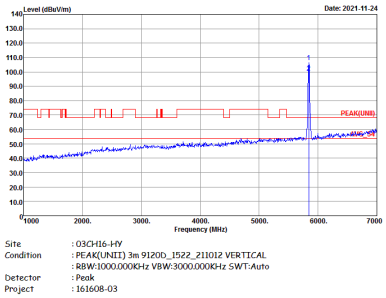
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH177 5885MHz - L	
4+3	Vertical	Fundamental
Peak		

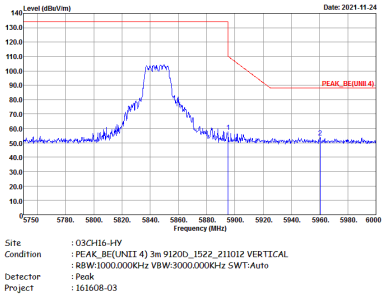
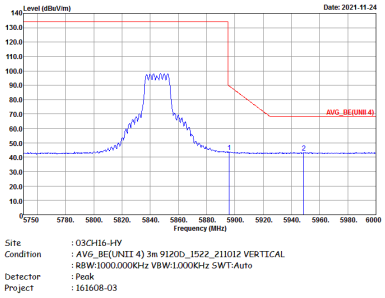
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11a CH177 5885MHz - R	
4+3	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

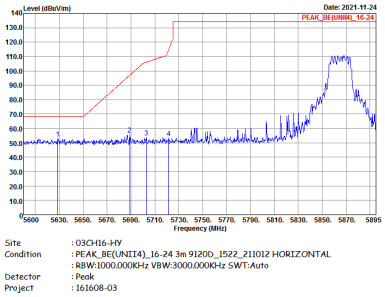
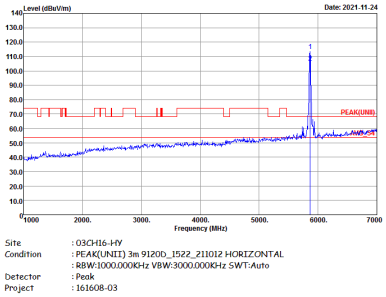
UNII-4 - 5735~5895MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

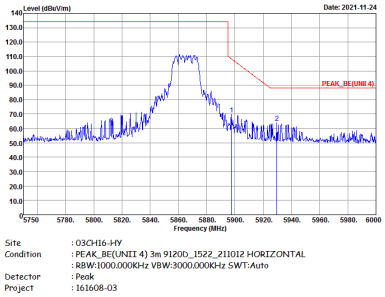
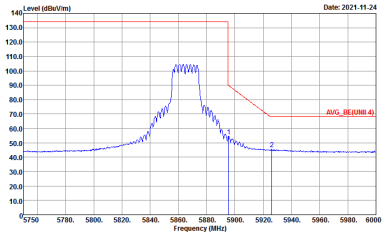
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH169 5845MHz - L	
4+3	Horizontal	Fundamental
Peak		

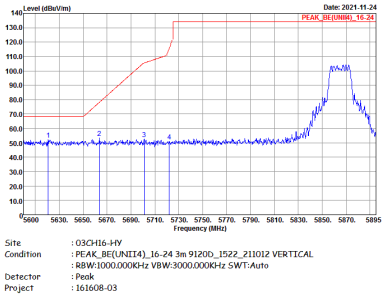
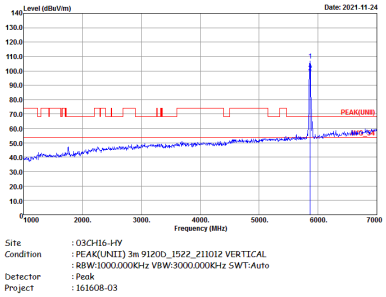
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH169 5845MHz - R	
4+3	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

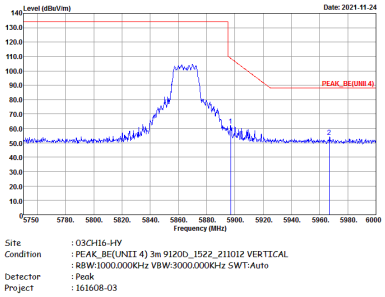
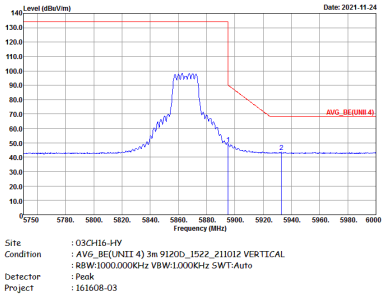
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH169 5845MHz - L	
4+3	Vertical	Fundamental
Peak		

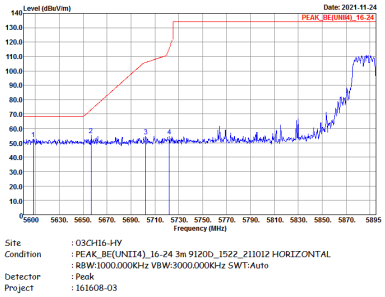
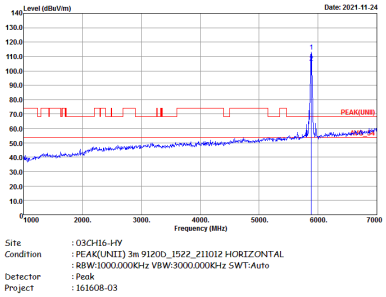
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH169 5845MHz - R	
4+3	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

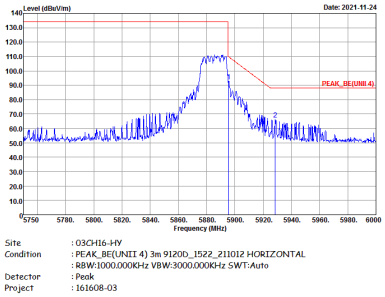
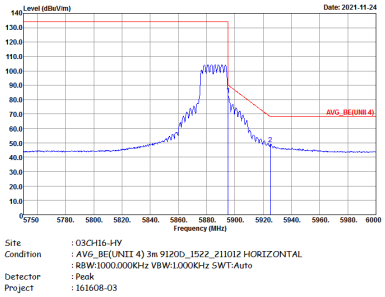
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH173 5865MHz - L	
4+3	Horizontal	Fundamental
Peak		

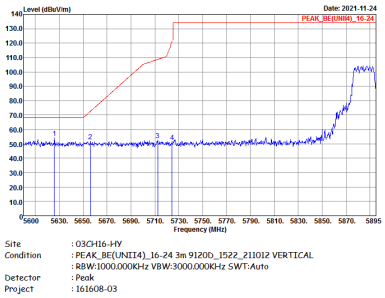
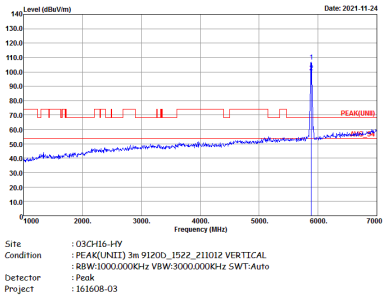
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH173 5865MHz - R	
4+3	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(UNII 4) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE(UNII 4) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank

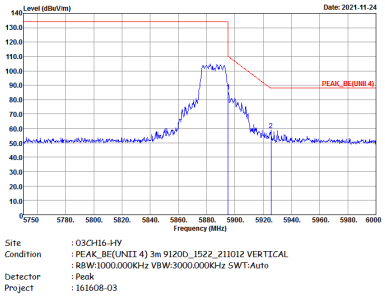
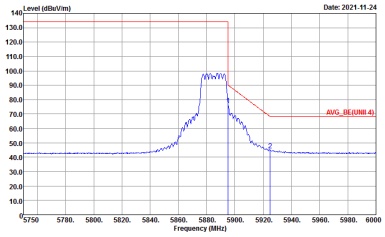
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH173 5865MHz - L	
4+3	Vertical	Fundamental
Peak		

WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH173 5865MHz - R	
4+3	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

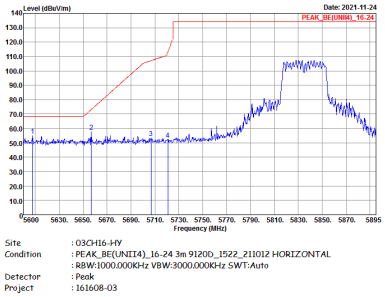
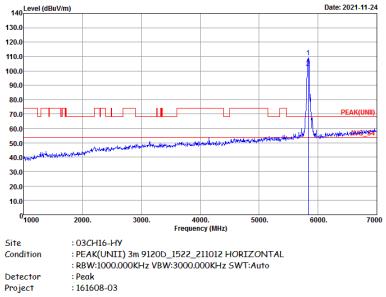
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH177 5885MHz - L	
4+3	Horizontal	Fundamental
Peak		

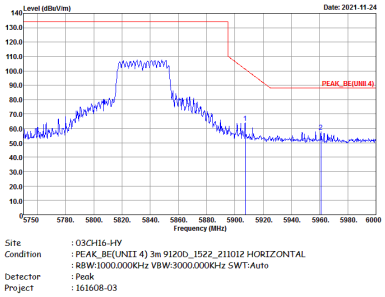
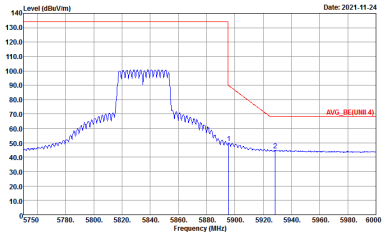
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH177 5885MHz - R	
4+3	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

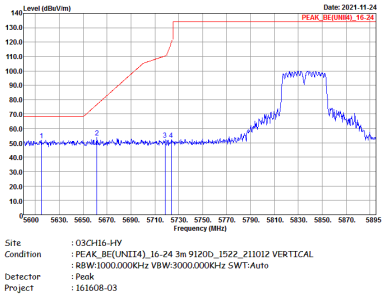
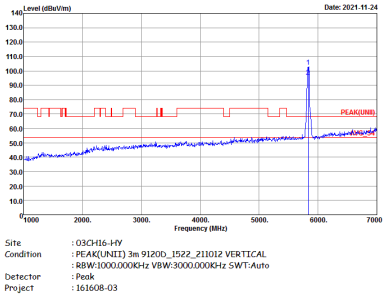
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH177 5885MHz - L	
4+3	Vertical	Fundamental
Peak		

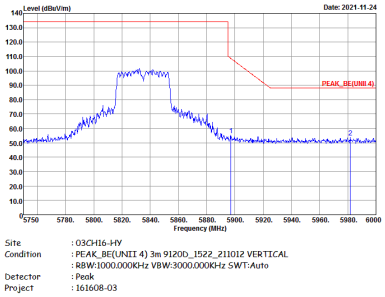
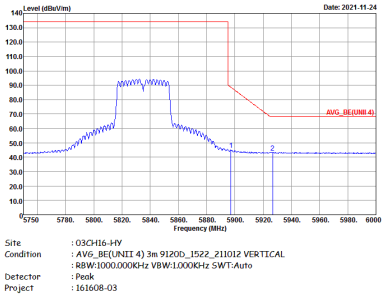
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT20 CH177 5885MHz - R	
4+3	Vertical	Fundamental
Peak	 Site : 03CH16-HV Condition : PEAK_BE(UNII 4) 3m 9120D_1522_211012 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank
Avg.	 Site : 03CH16-HV Condition : AVG_BE(UNII 4) 3m 9120D_1522_211012 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank

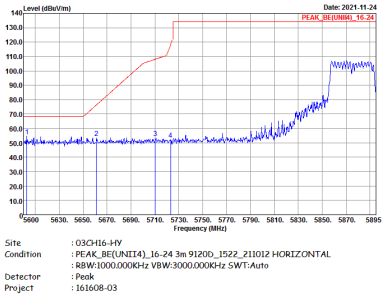
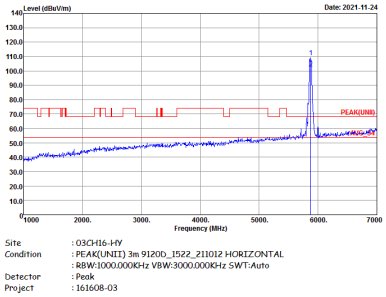
UNII-4 - 5735~5895MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

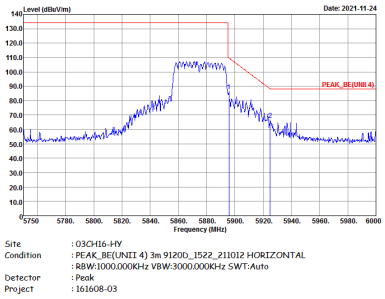
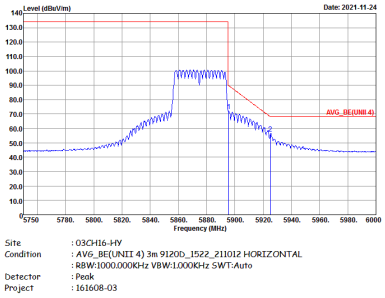
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT40 CH167 5835MHz - L	
4+3	Horizontal	Fundamental
Peak		

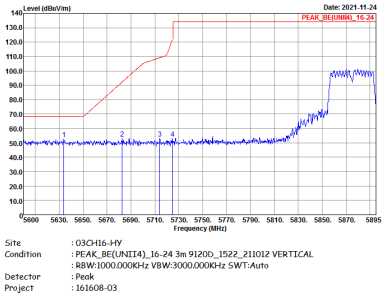
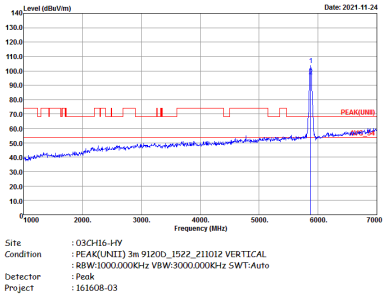
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT40 CH167 5835MHz - R	
4+3	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(UNII 4) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE(UNII 4) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank

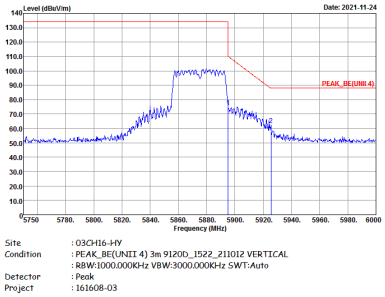
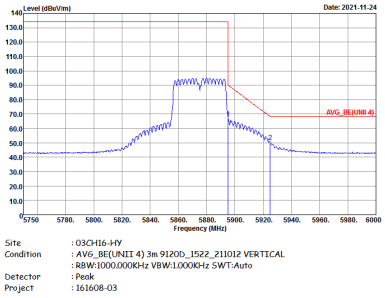
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT40 CH167 5835MHz - L	
4+3	Vertical	Fundamental
Peak		

WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT40 CH167 5835MHz - R	
4+3	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

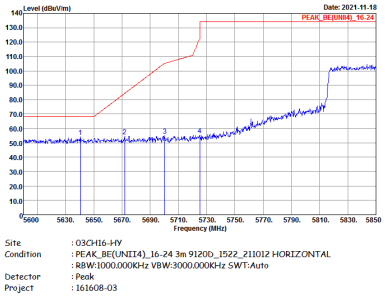
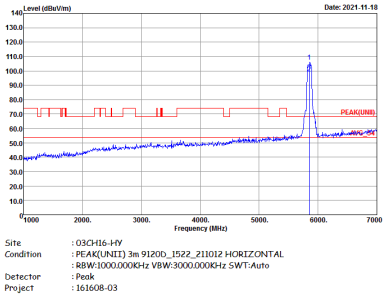
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT40 CH175 5875MHz - L	
4+3	Horizontal	Fundamental
Peak		

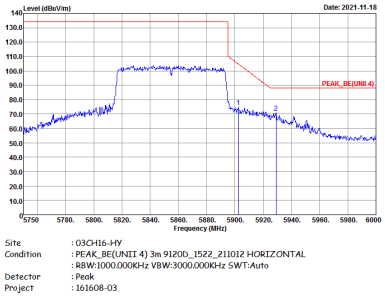
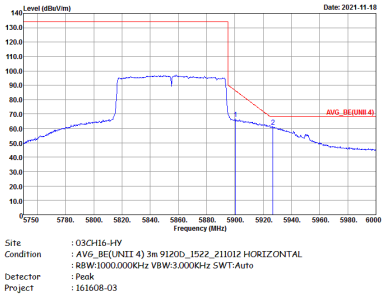
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT40 CH175 5875MHz - R	
4+3	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

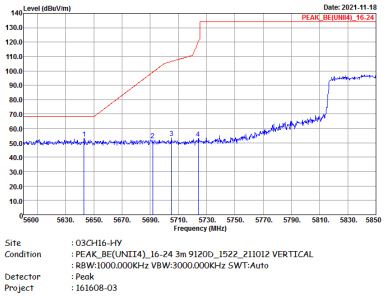
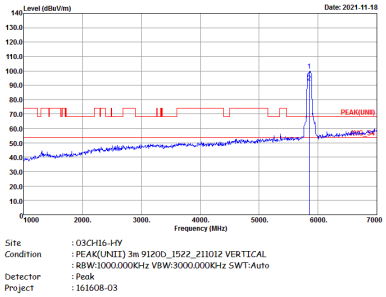
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT40 CH175 5875MHz - L	
4+3	Vertical	Fundamental
Peak		

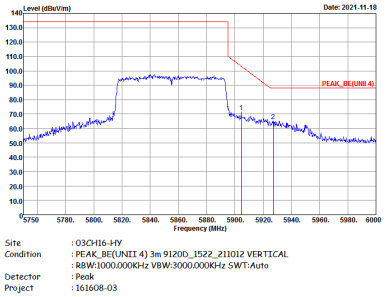
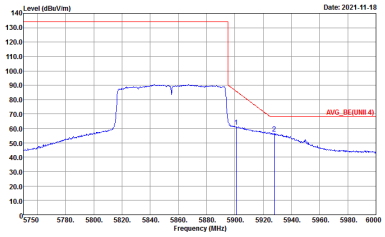
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11n HT40 CH175 5875MHz - R	
4+3	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

UNII-4 - 5735~5895MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

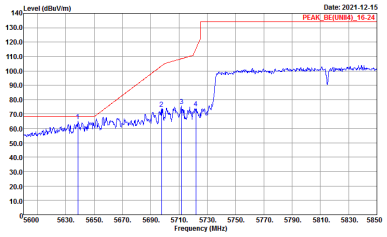
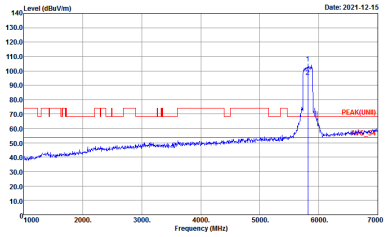
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH171 5855MHz - L	
4+3	Horizontal	Fundamental
Peak		

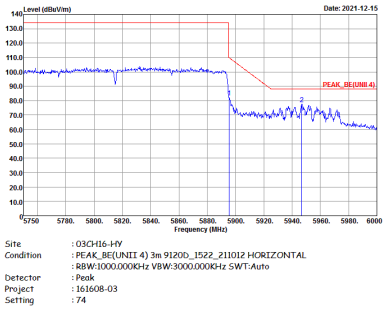
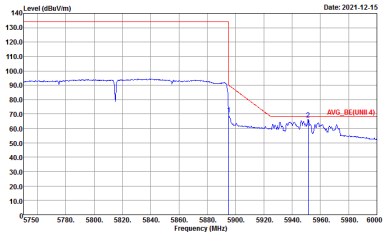
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH171 5855MHz - R	
4+3	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

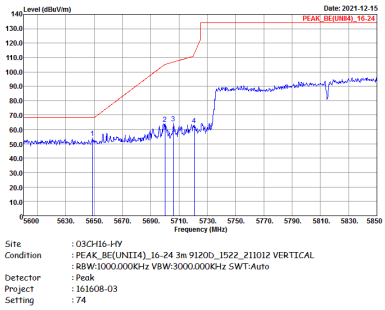
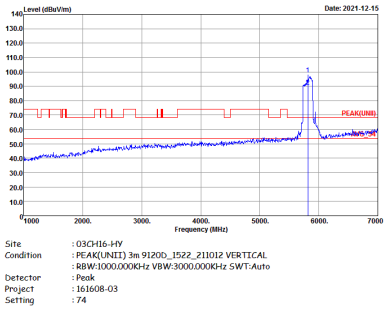
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH171 5855MHz - L	
4+3	Vertical	Fundamental
Peak		

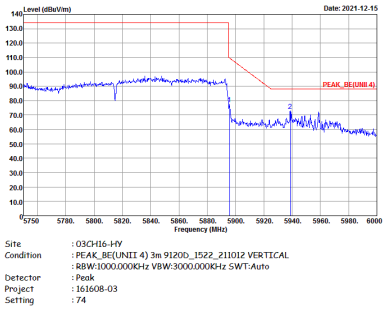
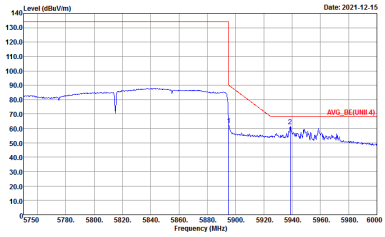
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH171 5855MHz - R	
4+3	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(UNII 4) 3m 9120D_1522_211012 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE(UNII 4) 3m 9120D_1522_211012 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 161608-03	Left blank

UNII-4 - 5735~5895MHz
WIFI 802.11ax HE160 Full (Band Edge @ 3m)

WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11ax HE160 Full CH163 5815MHz - L	
4+3	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(UNII4)_16-24 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 161608-03 Setting : 74	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 161608-03 Setting : 74

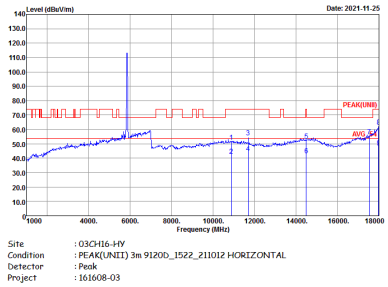
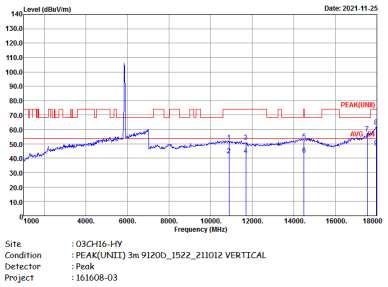
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11ax HE160 Full CH163 5815MHz - R	
4+3	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(UNII 4) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 161608-03 Setting : 74	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE(UNII 4) 3m 9120D_1522_211012 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 161608-03 Setting : 74	Left blank

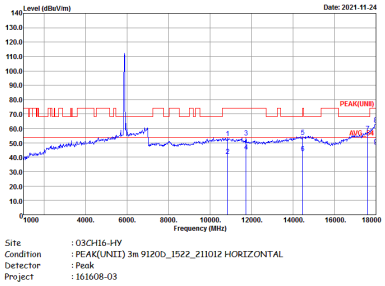
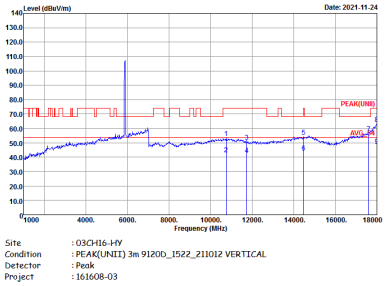
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11ax HE160 Full CH163 5815MHz - L	
4+3	Vertical	Fundamental
Peak		

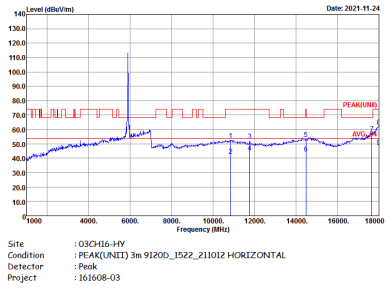
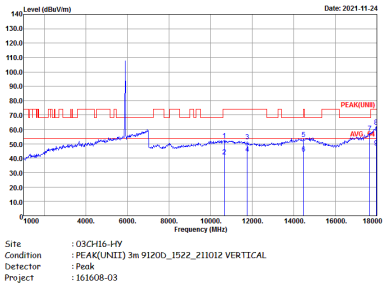
WIFI	UNII-4 5735~5895MHz Band Edge @ 3m	
ANT	802.11ax HE160 Full CH163 5815MHz - R	
4+3	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(UNII 4) 3m 9120D_1522_211012 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 161608-03 Setting : 74	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE(UNII 4) 3m 9120D_1522_211012 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 161608-03 Setting : 74	Left blank

UNII-4 - 5735~5895MHz

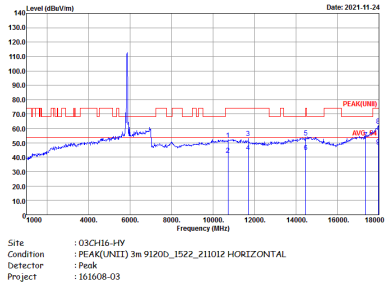
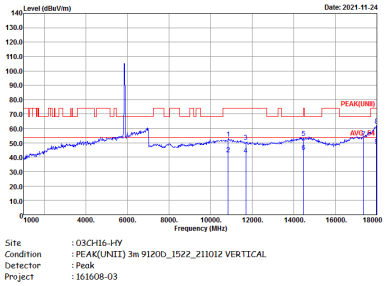
WIFI 802.11a (Harmonic @ 3m)

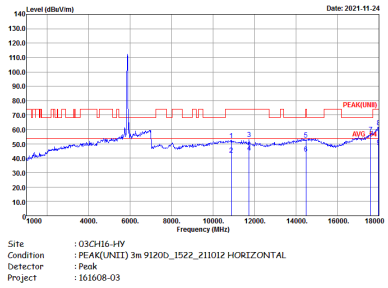
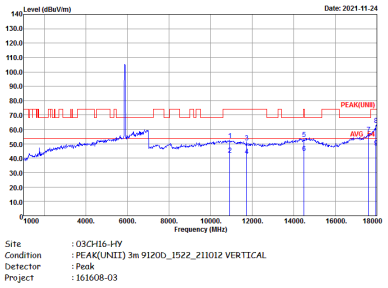
WIFI	UNII-4 5735~5895MHz Harmonic @ 3m	
ANT	802.11a CH169 5845MHz	
4+3	Horizontal	Vertical
Peak Avg.		

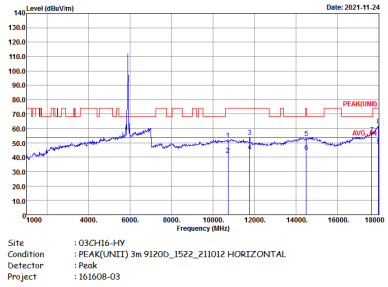
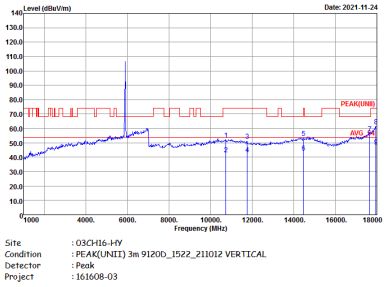
WIFI	UNII-4 5735~5895MHz Harmonic @ 3m	
ANT	802.11a CH173 5865MHz	
4+3	Horizontal	Vertical
Peak Avg.		

WIFI	UNII-4 5735~5895MHz Harmonic @ 3m	
ANT	802.11a CH177 5885MHz	
4+3	Horizontal	Vertical
Peak Avg.		

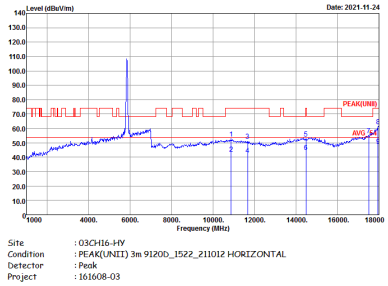
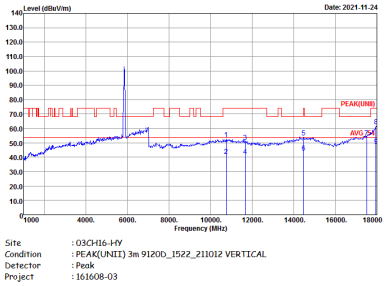
UNII-4 - 5735~5895MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

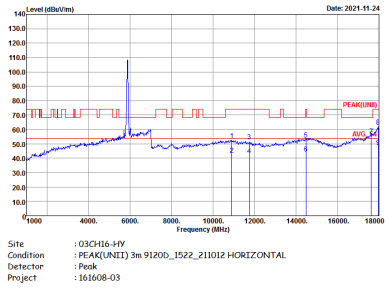
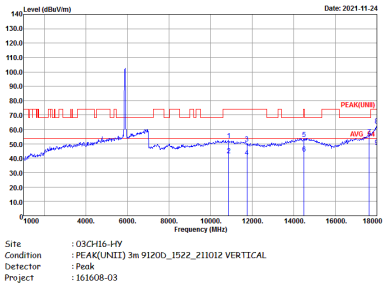
WIFI	UNII-4 5735~5895MHz Harmonic @ 3m	
ANT	802.11n HT20 CH169 5845MHz	
4+3	Horizontal	Vertical
Peak Avg.		

WIFI	UNII-4 5735~5895MHz Harmonic @ 3m	
ANT	802.11n HT20 CH173 5865MHz	
4+3	Horizontal	Vertical
Peak Avg.		

WIFI	UNII-4 5735~5895MHz Harmonic @ 3m	
ANT	802.11n HT20 CH177 5885MHz	
4+3	Horizontal	Vertical
Peak Avg.		

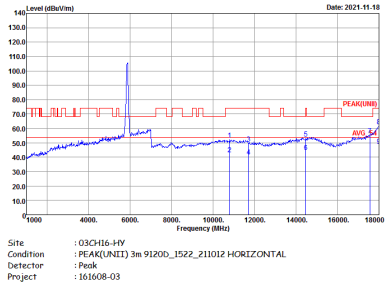
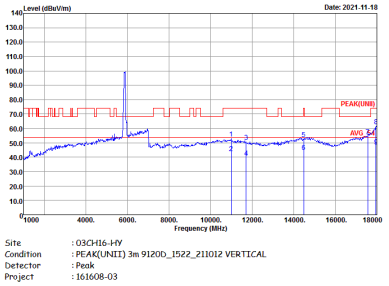
UNII-4 - 5735~5895MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	UNII-4 5735~5895MHz Harmonic @ 3m	
ANT	802.11n HT40 CH167 5835MHz	
4+3	Horizontal	Vertical
Peak Avg.		

WIFI	UNII-4 5735~5895MHz Harmonic @ 3m	
ANT	802.11n HT40 CH175 5875MHz	
4+3	Horizontal	Vertical
Peak Avg.	 	

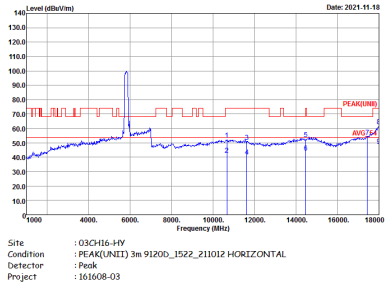
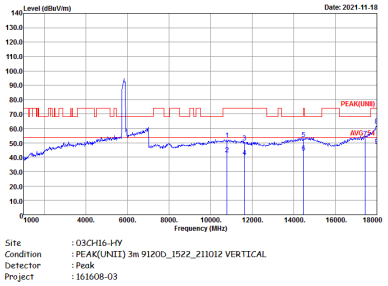
UNII-4 - 5735~5895MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	UNII-4 5735~5895MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH171 5855MHz	
4+3	Horizontal	Vertical
Peak Avg.		

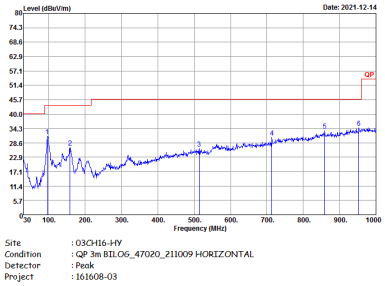
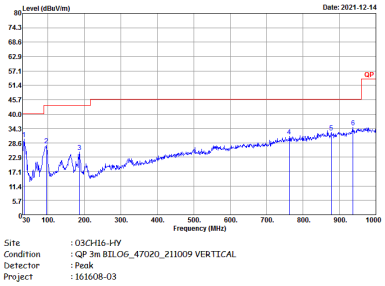
UNII-4 - 5735~5895MHz

WIFI 802.11ax HE160 Full (Harmonic @ 3m)

WIFI	UNII-4 5735~5895MHz Harmonic @ 3m	
ANT	802.11ax HE160 Full CH163 5815MHz	
4+3	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

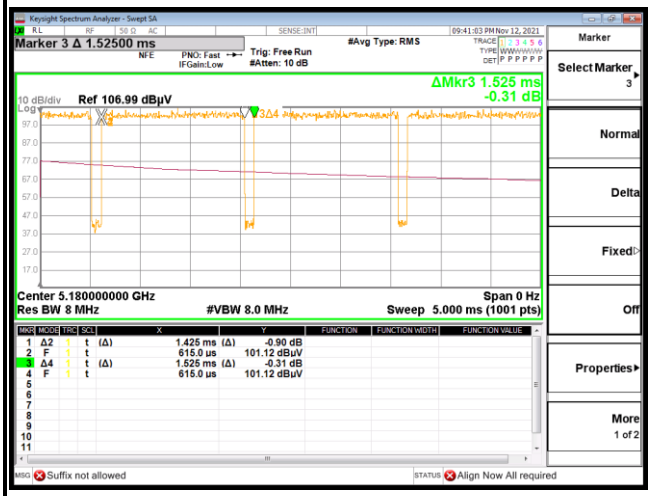
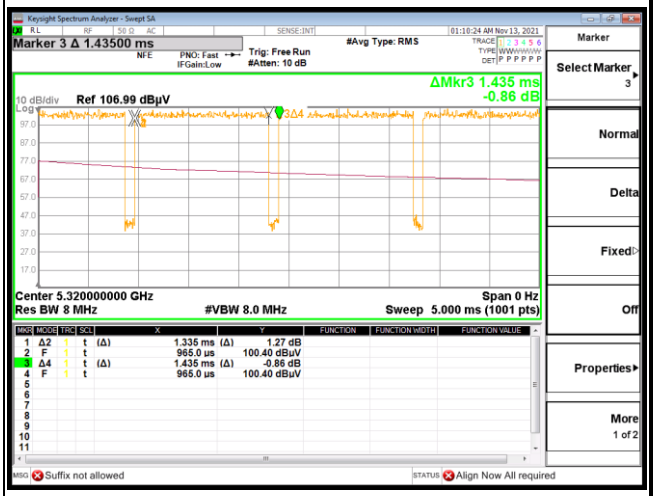
5GHz WIFI 802.11a (LF @ 3m)

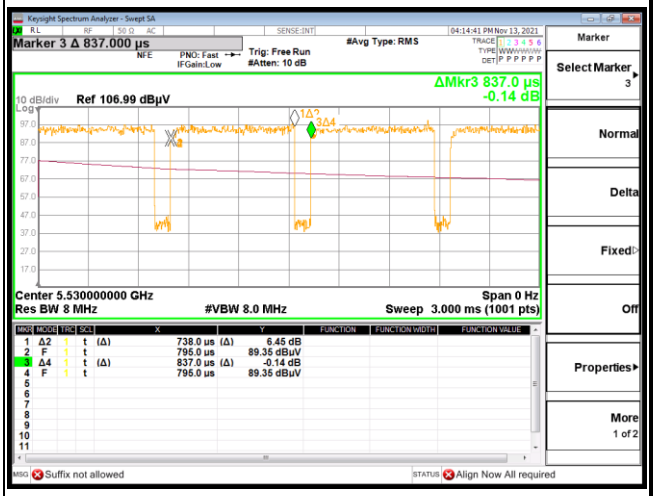
WIFI	5GHz WIFI	
ANT	802.11a LF	
4+3	Horizontal	Vertical
QP / Peak		

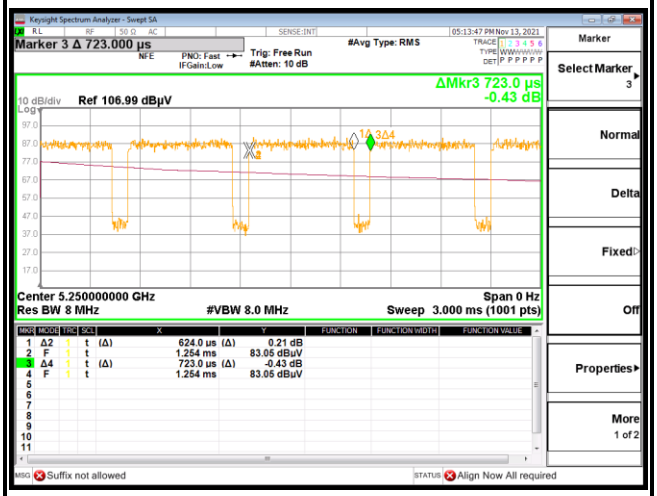
Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
4+3	5GHz 802.11a	93.44	1425	0.70	1kHz
4+3	5GHz 802.11n HT20	93.03	1335	0.75	1kHz
4+3	5GHz 802.11n HT40	96.79	3020	0.33	1kHz
4+3	5GHz 802.11ac VHT80	88.17	738	1.36	3kHz
4+3	5GHz 802.11ax HE160 Full RU	86.31	624	1.60	3kHz

MIMO <Ant. 4+3>

5GHz 802.11a	5GHz 802.11n HT20
	

5GHz 802.11n HT40	5GHz 802.11ac VHT80
	

5GHz 802.11ax HE160 Full RU


THE END