FCC RADIO TEST REPORT

FCC ID	:	**PKRISGM3000B**
Equipment	:	**M3000B**
Brand Name	:	**Inseego**
Model Name	:	**M3000B**
Marketing Name	:	**M3000**
Applicant	:	**Inseego Corp.** **9710 Scranton Road Suite 200, San Diego,, CA 92121**
Manufacturer	:	**Inseego Corp.** **9710 Scranton Road Suite 200, San Diego,, CA 92121**
Standard	:	**FCC Part 15 Subpart E §15.407**

The product was received on Aug. 10, 2022 and testing was performed from Aug. 19, 2022 to Sep. 27, 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 from 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
FR1D2409B	01	Initial issue of report	Sep. 29, 2022

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403(i)	26dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407(a)	Maximum Conducted Output Power	Pass	-
3.3	15.407(a)	Power Spectral Density	Pass	-
3.4	15.407(b)	Unwanted Emissions	Pass	2.29 dB under the limit at 5148.460 MHz
3.5	15.207	AC Conducted Emission	Pass	9.45 dB under the limit at 10.907 MHz
3.6	15.203	Antenna Requirement	Pass	-

Declaration of Conformity:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
   It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Uncertainty of Evaluation".

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: Avis Chuang

Report Producer: Michelle Chen

1 General Description

1.1 Product Feature of Equipment Under Test

3G-WCDMA, 4G-LTE, 5G-FR1, Wi-Fi 2.4GHz 802.11b/g/n/ax, Wi-Fi 5GHz 802.11a/n/ac/ax and GNSS.

Product Feature	
Antenna Type	WWAN: Internal Antenna WLAN <Ant. 0>: Internal Antenna <Ant. 1>: Internal Antenna GPS / Glonass / BDS / Galileo: Internal Antenna

Antenna information		
5150 MHz ~ 5250 MHz	Peak Gain (dBi)	Ant. 0: 3.1 Ant. 1: 4.5

Remark: The EUT's information above is declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.1.1 Antenna Gain

<For CDD Mode>

Follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)ii)

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

For power measurements on IEEE 802.11 devices,

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.

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

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.

The directional gain “DG” is calculated as following table.

			DG for Power	DG for PSD	Power Limit Reduction	PSD Limit Reduction
	Ant 0 (dBi)	Ant 1 (dBi)	(dBi)	(dBi)	(dB)	(dB)
Band I	3.10	4.50	4.50	6.84	0.00	0.84

Calculation example:

If a device has two antenna, G_{ANT1}= 3.10dBi; G_{ANT2}=4.5dBi

Directional gain of power measurement = max(3.10, 4.5) + 0 = 4.5 dBi

Directional gain of PSD derived from formula which is

10 x log { { [10^ (3.10 dBi / 20) + 10^ (4.50 dBi / 20)] ^ 2 } / 2 }

= 6.84 dBi

Power and PSD limit reduction = Composite gain – 6dBi, (min = 0)

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 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.

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, 03CH13-HY

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

FCC designation No.: TW1190 and TW3786

1.4 Applicable Standards

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

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

Remark:

1. All 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 adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.

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

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5150-5250 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	42#	5210		

Note:

1. The above Frequency and Channel with "*" are 802.11n HT40 and 802.11ac VHT40 and 802.11ax HE40.
2. The above Frequency and Channel with "#" are 802.11ac VHT80 and 802.11ax HE80.

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 Oct. 2018.

The 802.11ax mode is investigated among different tones, full resource units (RU), partial resource units. The partial RU has no higher power than full RU's, thus the full RU is chosen as main test configuration.

The SISO mode conducted power is covered by MIMO mode per chain, so only the MIMO mode is tested.

The power for 802.11n and 802.11ac mode is smaller than 802.11ax mode, so all other conducted and radiated test is covered by 802.11ax mode.

The final test modes include the worst data rates for each modulation shown in the table below.

MIMO Mode

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20 (Covered by HE20)	MCS0
802.11n HT40 (Covered by HE40)	MCS0
802.11ac VHT20 (Covered by HE20)	MCS0
802.11ac VHT40 (Covered by HE40)	MCS0
802.11ac VHT80 (Covered by HE80)	MCS0
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0

Remark: The conducted power level of each chain in MIMO mode is equal or higher than SISO mode.

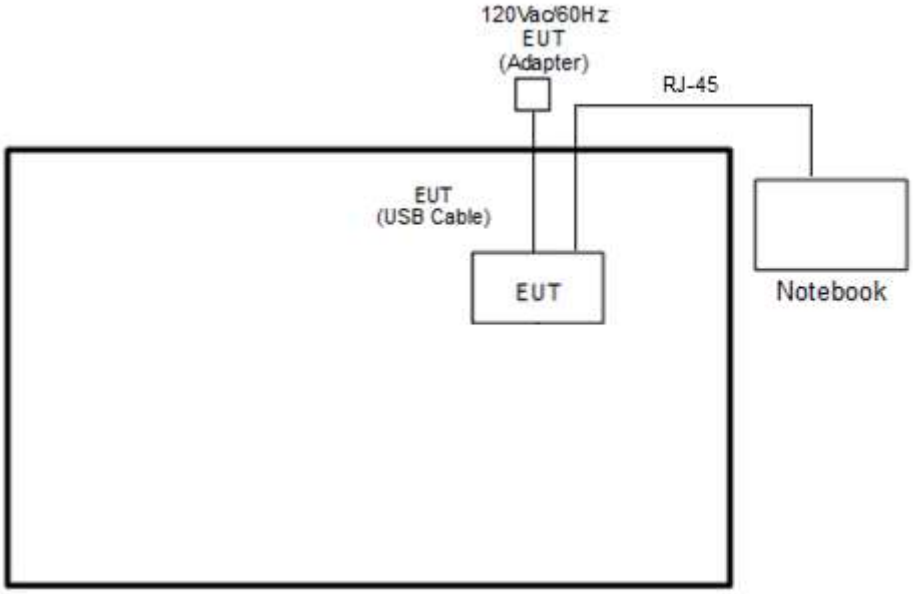
Test Cases	
AC Conducted Emission	Mode 1 : WLAN (5GHz) Link + LAN Link + USB Cable (Charging from Adapter)

Ch. #		Band I : 5150-5250 MHz			
		802.11a	802.11ax HE20	802.11ax HE40	802.11ax HE80
L	Low	36	36	38	-
M	Middle	44	44	-	42
H	High	48	48	46	-

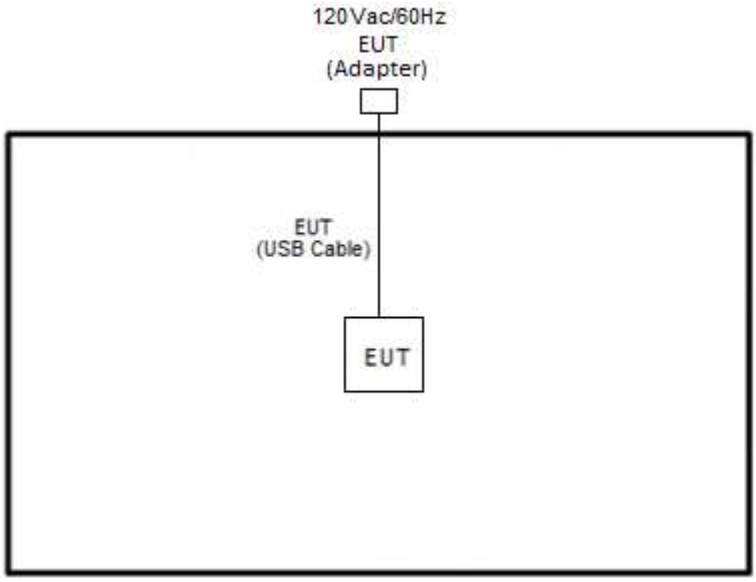
Remark: For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.

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.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Notebook	Acer	N18Q13	PD9AX201NG	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 “QRCT 4.0.00195.0” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

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

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Description of 26dB & 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

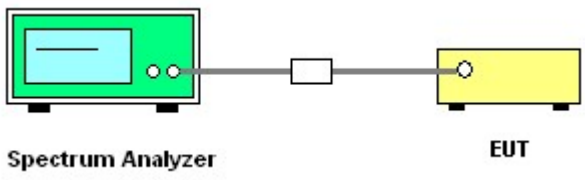
3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
8. Measure and record the results in the test report.

3.1.4 Test Setup

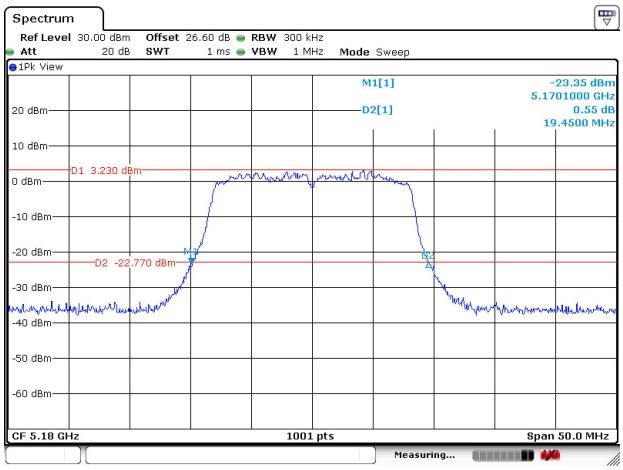
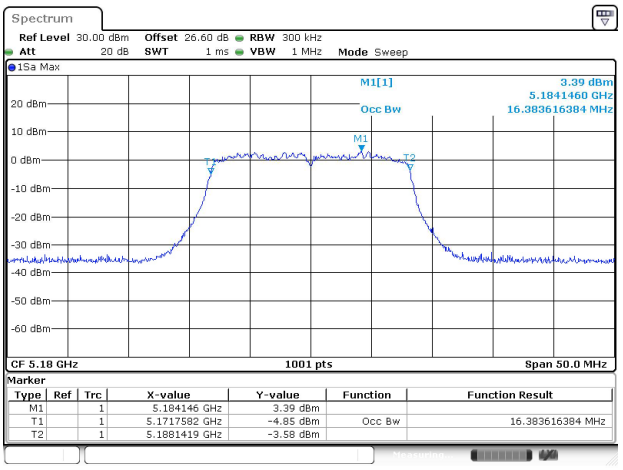


3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

Please refer to Appendix A.

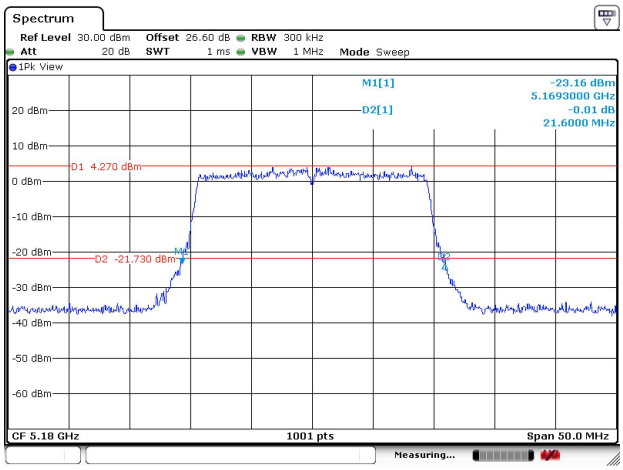
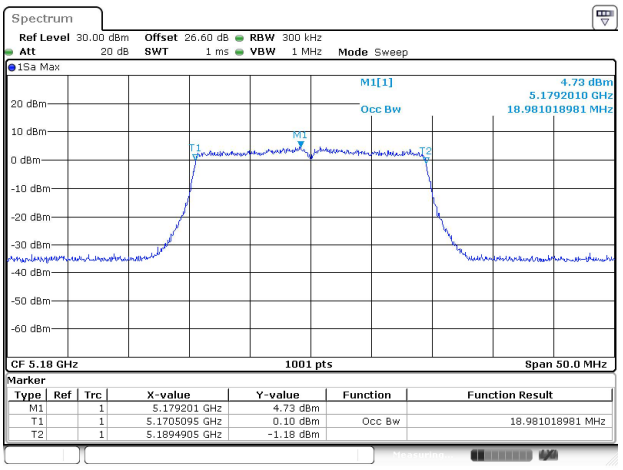
MIMO <Ant. 0+1>

<802.11a>

26dB Bandwidth	99% Occupied Bandwidth
	

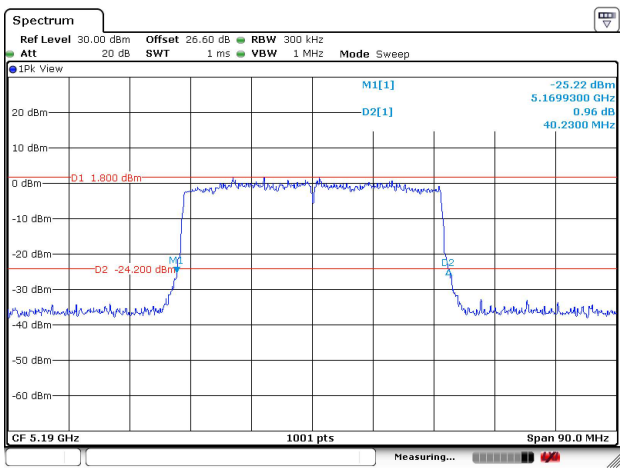
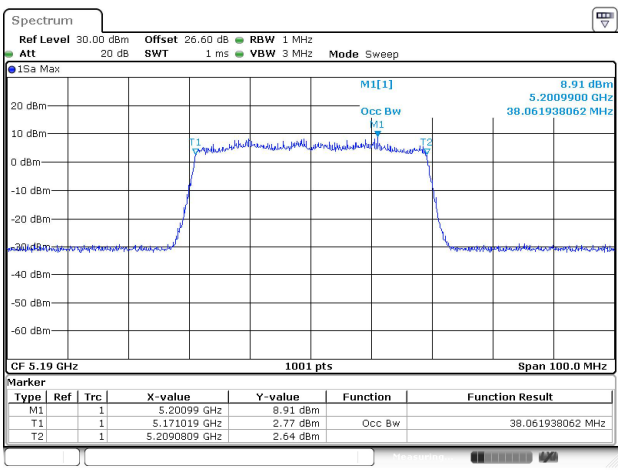
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<802.11ax HE20>

26dB Bandwidth	99% Occupied Bandwidth
	

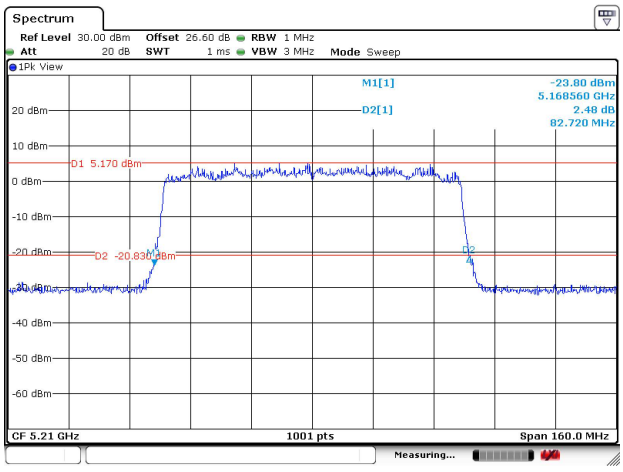
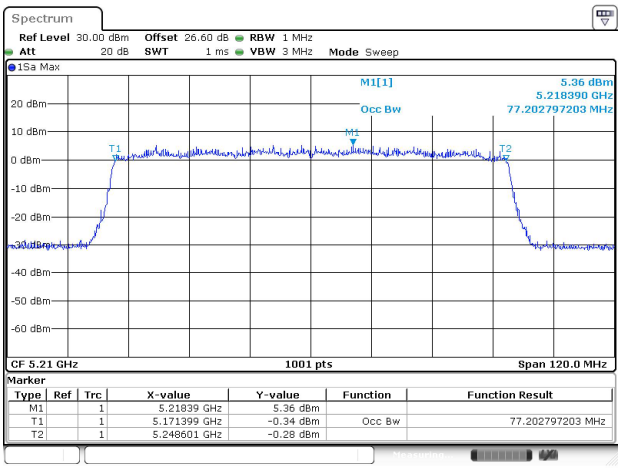
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<802.11ax HE40>

26dB Bandwidth	99% Occupied Bandwidth
	

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

<802.11ax HE80>

26dB Bandwidth	99% Occupied Bandwidth
	

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

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For the 5.15–5.25 GHz bands:

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

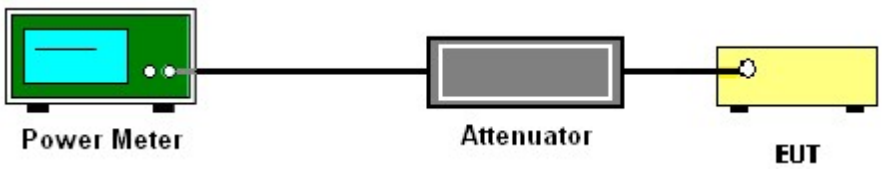
3.2.3 Test Procedures

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

<FCC 14-30 CFR 15.407>

For the 5.15–5.25 GHz bands:

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.3.3 Test Procedures

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

Section F) Maximum power spectral density.

 # Method SA-3 #

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

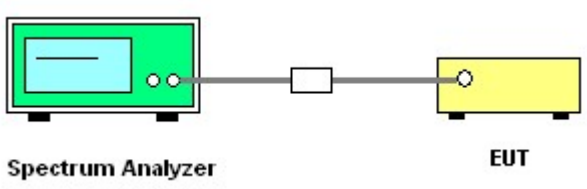
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time ≤ (number of points in sweep) × T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
  Detector = power averaging (rms).
- Trace mode = max hold.
- Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

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

   Method (a): Measure and sum the spectra across the outputs.

   The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points; the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

3.3.4 Test Setup

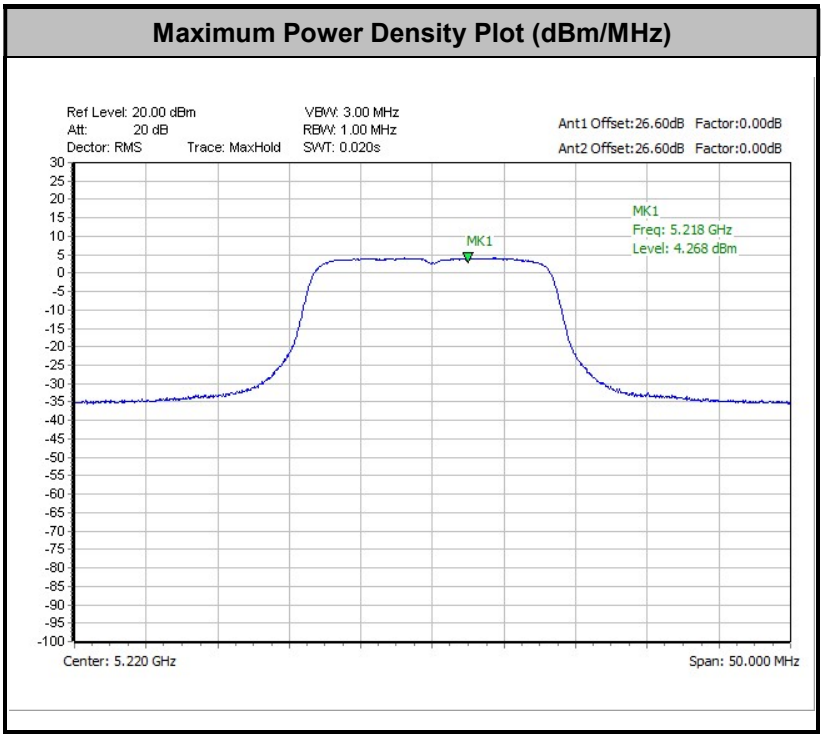


3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

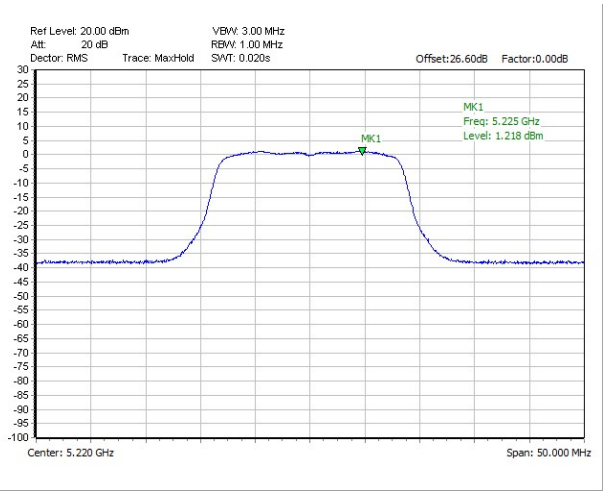
<802.11a>

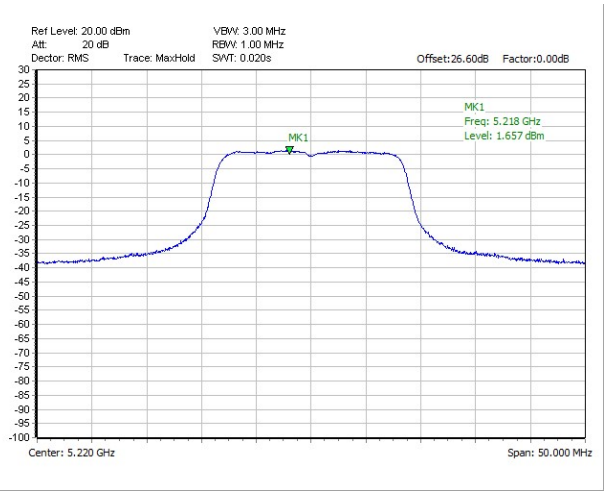
Maximum Power Density Plot (dBm/MHz)



Remark: The test plot is showing a bin by bin combined result mathematically adds two traces.

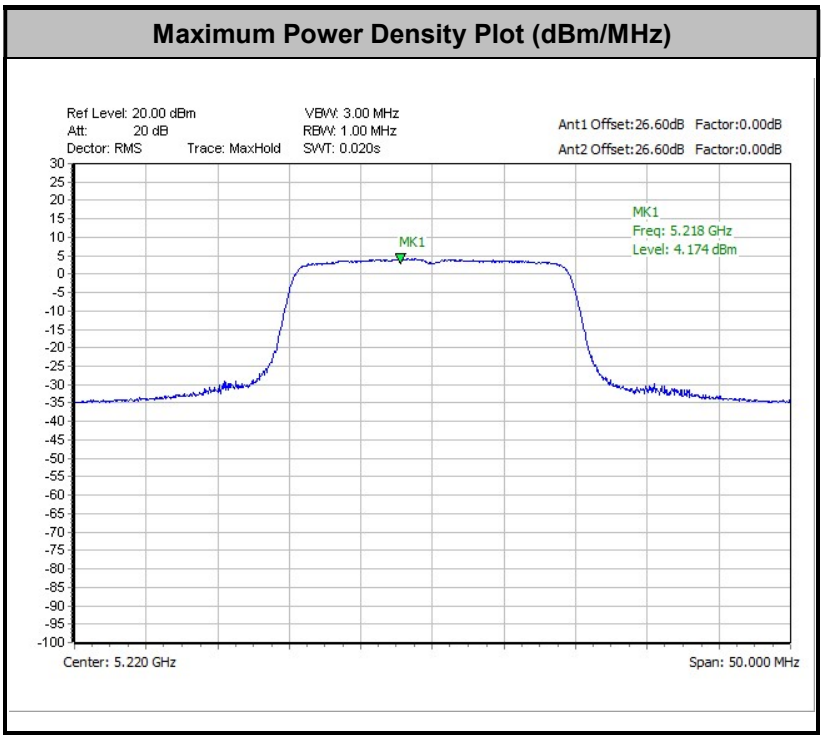
Maximum Power Density Plot Trace 1 (Ant 0)	Maximum Power Density Plot Trace 2 (Ant 1)



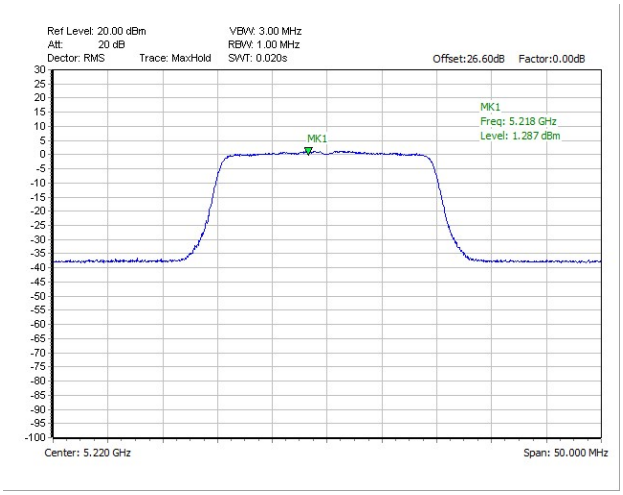
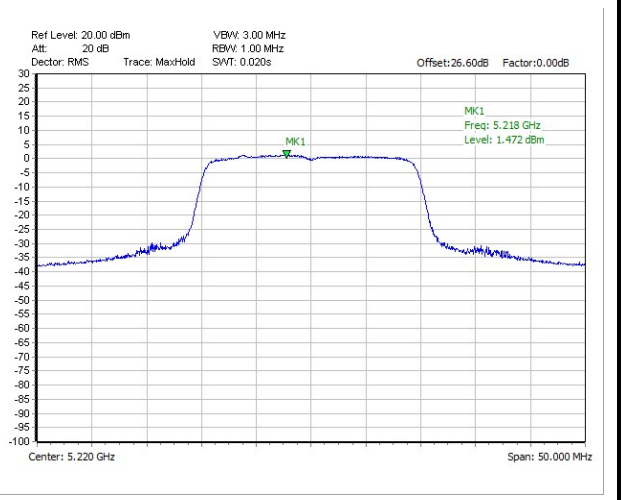


<802.11ax HE20>

Maximum Power Density Plot (dBm/MHz)

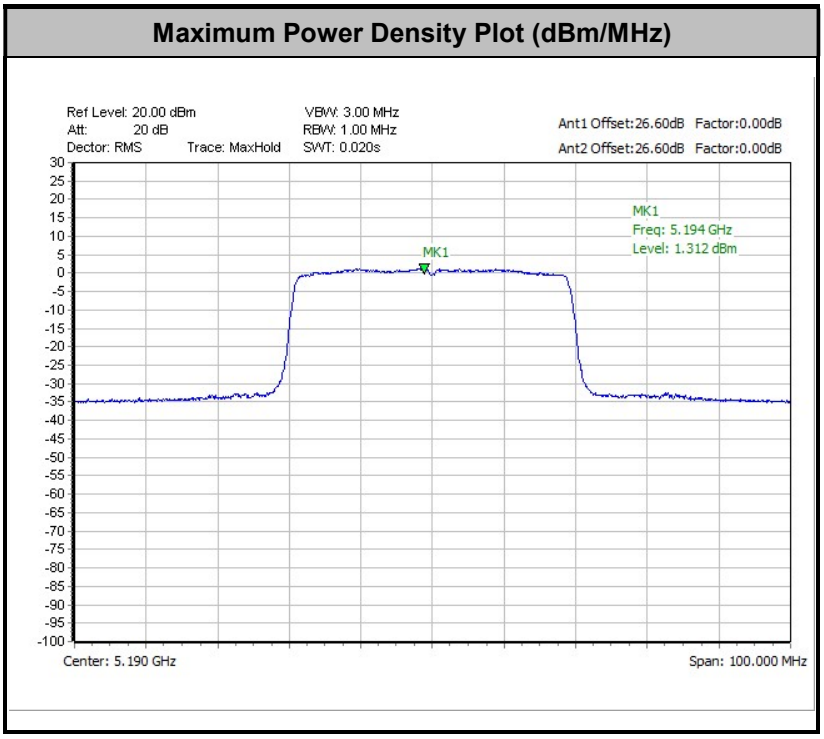


Remark: The test plot is showing a bin by bin combined result mathematically adds two traces.

Maximum Power Density Plot Trace 1 (Ant 0)	Maximum Power Density Plot Trace 2 (Ant 1)
	

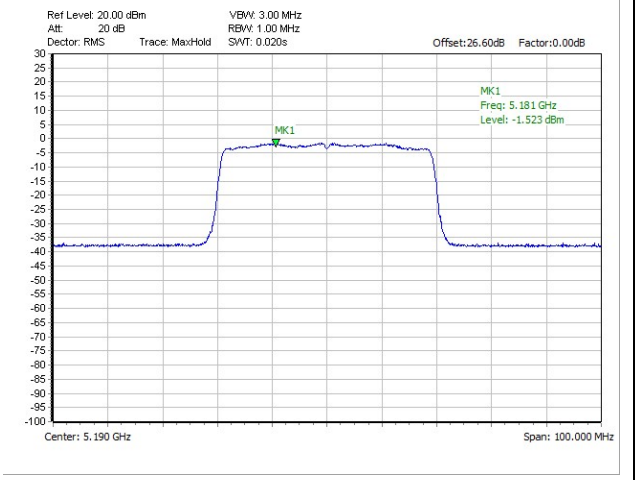
<802.11ax HE40>

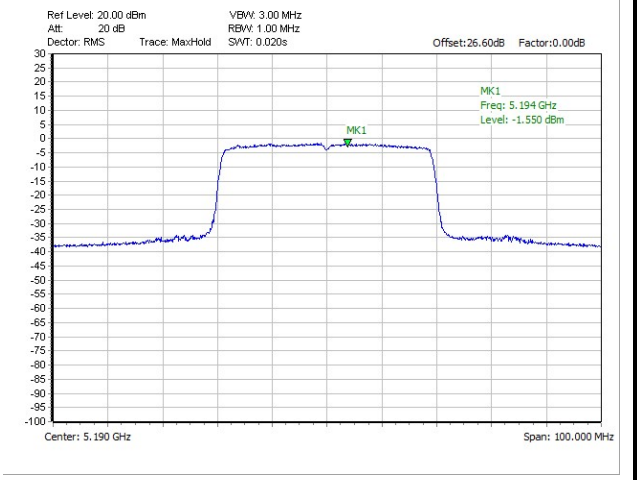
Maximum Power Density Plot (dBm/MHz)



Remark: The test plot is showing a bin by bin combined result mathematically adds two traces.

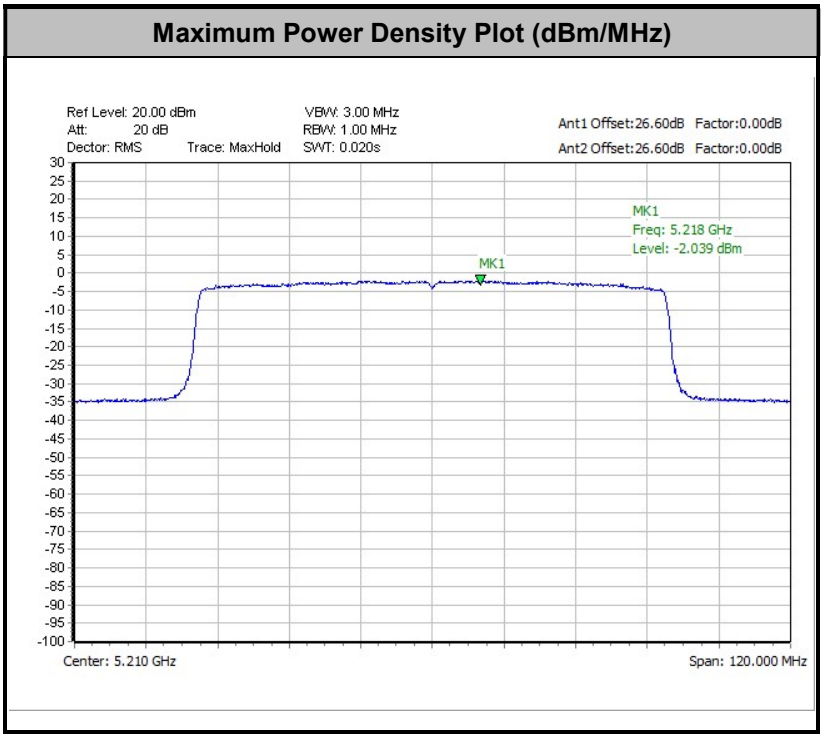
Maximum Power Density Plot Trace 1 (Ant 0)	Maximum Power Density Plot Trace 2 (Ant 1)



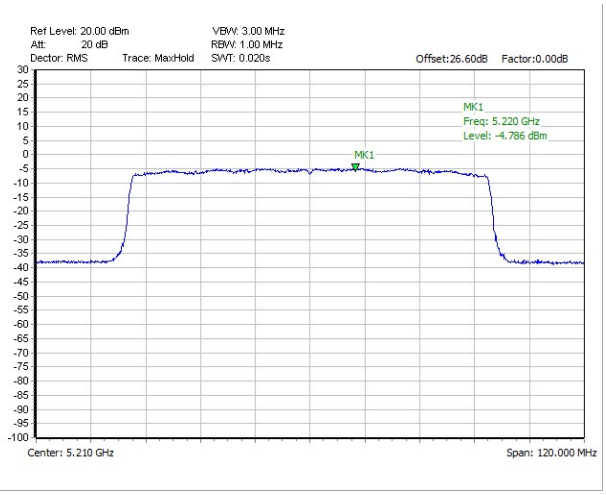
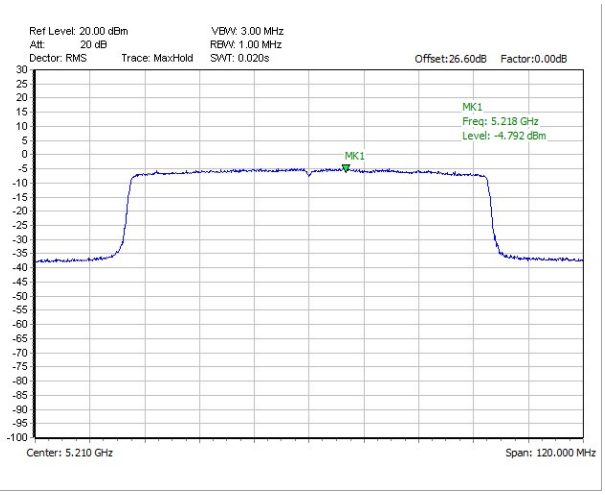


<802.11ax HE80>

Maximum Power Density Plot (dBm/MHz)



Remark: The test plot is showing a bin by bin combined result mathematically adds two traces.

Maximum Power Density Plot Trace 1 (Ant 0)	Maximum Power Density Plot Trace 2 (Ant 1)
	

3.4 Unwanted Emissions Measurement

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

3.4.1 Limit of Unwanted Emissions

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

(2) Unwanted spurious emissions falls in restricted bands shall comply with the general field strength limits as below table:

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

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

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

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

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

(i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of −27 dBm/MHz.

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

3.4.2 Measuring Instruments

Please refer to the measuring equipment list in 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.

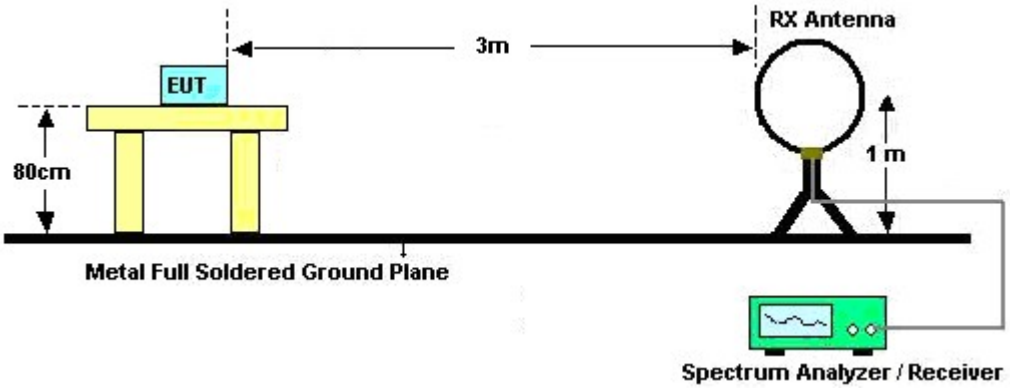
   (1) Procedure for Unwanted Emissions Measurements Below 1000 MHz
   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (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

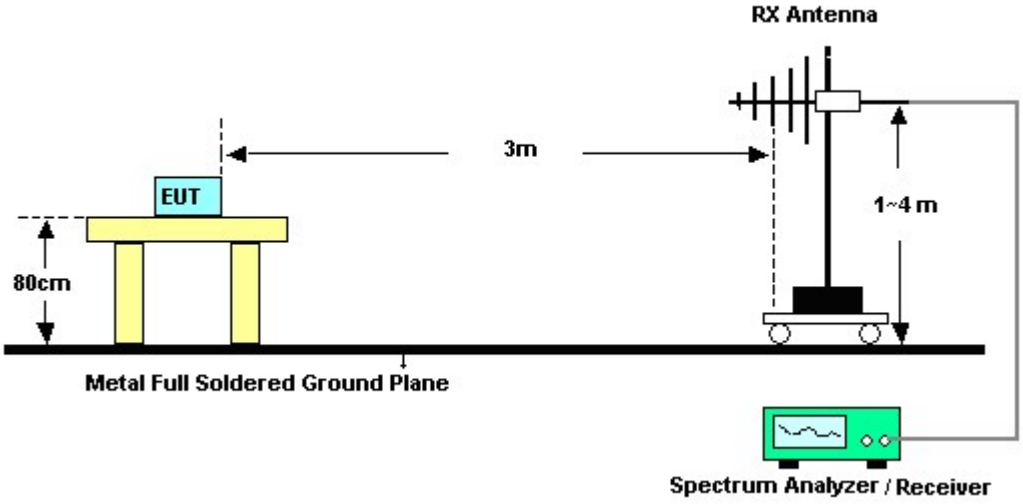
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000 MHz
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT is 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 is set 3 meters away from the receiving antenna which is mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT is 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 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-“.
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees 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 6 dB margin against average limit line, the position is marked as “-“.

3.4.4 Test Setup

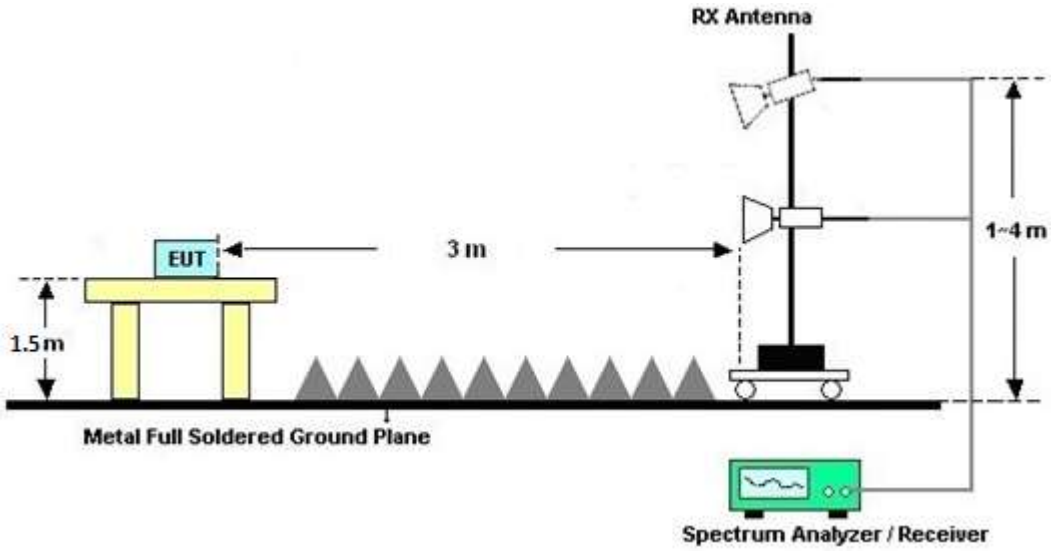
For radiated emissions below 30MHz



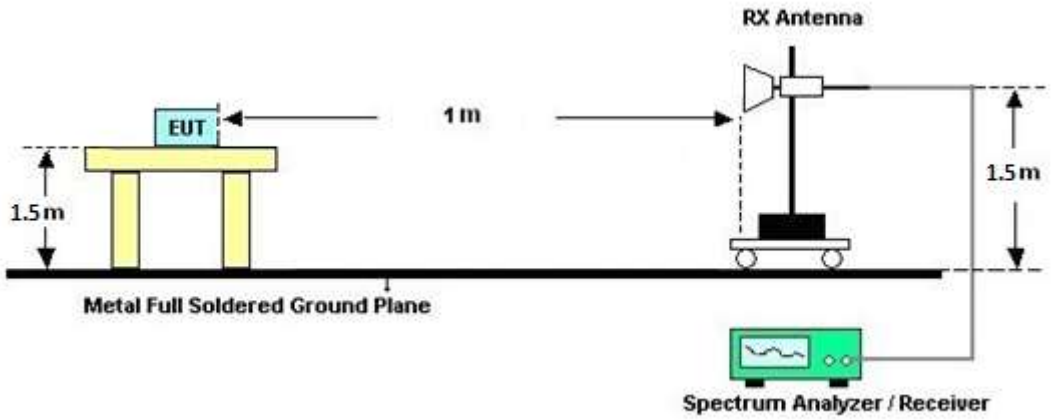
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



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

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is 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 Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

3.4.8 Test Result of Radiated Spurious Emissions (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.

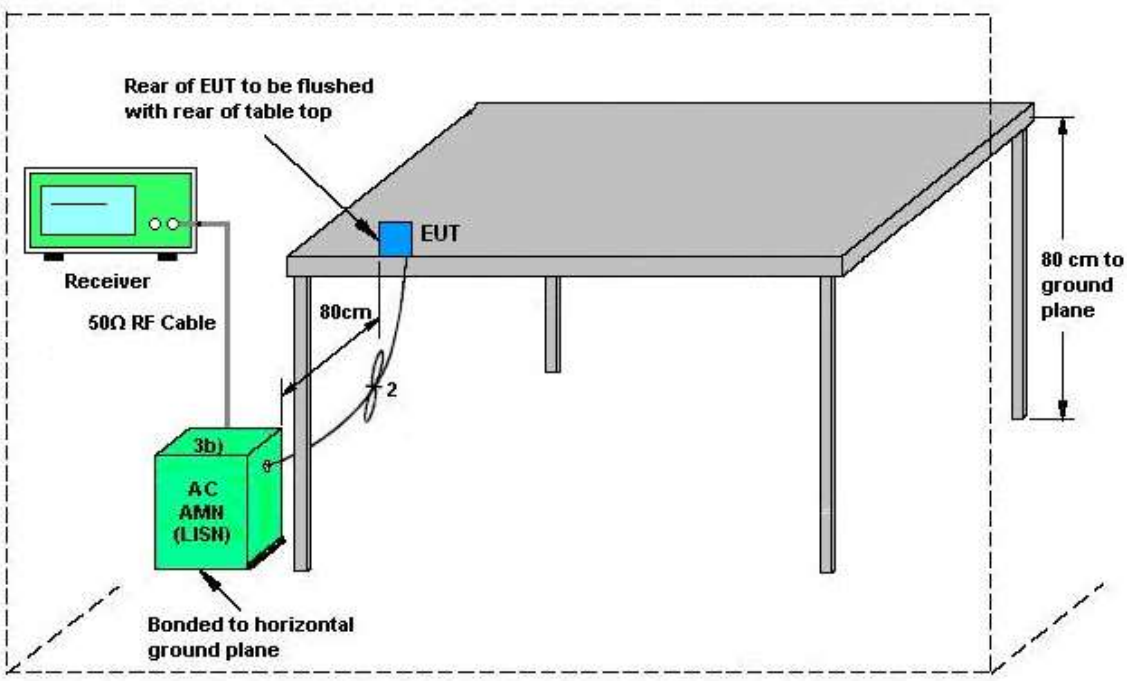
3.5.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is 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 Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



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

3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Antenna Requirements

3.6.1 Standard Applicable

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

4 List of Measuring Equipment

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	Aug. 19, 2022~ Sep. 27, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15I00041SNO 10 (NO:248)	10MHz~6GHz	Dec. 29, 2021	Aug. 19, 2022~ Sep. 27, 2022	Dec. 28, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz (amp)	Aug. 03, 2022	Aug. 19, 2022~ Sep. 27, 2022	Aug. 02, 2023	Conducted (TH05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	May 13, 2022	Aug. 31, 2022~ Sep. 09, 2022	May 12, 2023	Radiation (03CH13-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 24, 2021	Aug. 31, 2022~ Sep. 09, 2022	Dec. 23, 2022	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz-40GHz	Nov. 30, 2021	Aug. 31, 2022~ Sep. 09, 2022	Nov. 29, 2022	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 21, 2022	Aug. 31, 2022~ Sep. 09, 2022	Feb. 20, 2023	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz~40GHz	May 14, 2022	Aug. 31, 2022~ Sep. 09, 2022	May 13, 2023	Radiation (03CH13-HY)
Amplifier	SONOMA	310N	187282	9kHz~1GHz	Dec. 15, 2021	Aug. 31, 2022~ Sep. 09, 2022	Dec. 14, 2022	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	40103 & 07	30MHz~1GHz	Apr. 24, 2022	Aug. 31, 2022~ Sep. 09, 2022	Apr. 23, 2023	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	41912 & 05	30MHz~1GHz	Feb. 06, 2022	Aug. 31, 2022~ Sep. 09, 2022	Feb. 05, 2023	Radiation (03CH13-HY)
Hygrometer	TECPEL	DTM-303B	TP200889	N/A	Sep. 30, 2021	Aug. 31, 2022~ Sep. 09, 2022	Sep. 29, 2022	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590074	1GHz~18GHz	May 17, 2022	Aug. 31, 2022~ Sep. 09, 2022	May 16, 2023	Radiation (03CH13-HY)
Preamplifier	Keysight	83017A	MY53270147	1GHz~26.5GHz	Oct. 26, 2021	Aug. 31, 2022~ Sep. 09, 2022	Oct. 25, 2022	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY55370526	10Hz~44GHz	Mar. 18, 2022	Aug. 31, 2022~ Sep. 09, 2022	Mar. 17, 2023	Radiation (03CH13-HY)
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN12	1.53GHz Low Pass Filter	Sep. 14, 2021	Aug. 31, 2022~ Sep. 09, 2022	Sep. 13, 2022	Radiation (03CH13-HY)
Filter	Wainwright	WHKX12-1080 -1200-15000-60SS	SN3	1.2GHz High Pass Filter	Jun. 30, 2022	Aug. 31, 2022~ Sep. 09, 2022	Jun. 29, 2023	Radiation (03CH13-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-60SS	SN2	3GHz High Pass Filter	Jul. 12, 2022	Aug. 31, 2022~ Sep. 09, 2022	Jul. 11, 2023	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30MHz~18GHz	Feb. 09, 2022	Aug. 31, 2022~ Sep. 09, 2022	Feb. 08, 2023	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	804793/4	30MHz~18GHz	Feb. 09, 2022	Aug. 31, 2022~ Sep. 09, 2022	Feb. 08, 2023	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9 kHz~30 MHz	Mar. 10, 2022	Aug. 31, 2022~ Sep. 09, 2022	Mar. 09, 2023	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24961/4	30MHz~18GHz	Feb. 09, 2022	Aug. 31, 2022~ Sep. 09, 2022	Feb. 08, 2023	Radiation (03CH13-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Aug. 31, 2022~ Sep. 09, 2022	N/A	Radiation (03CH13-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Aug. 31, 2022~ Sep. 09, 2022	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Aug. 31, 2022~ Sep. 09, 2022	N/A	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1241	1-18GHz	Jul. 25, 2022	Aug. 31, 2022~ Sep. 09, 2022	Jul. 24, 2023	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1212	1GHz~18GHz	Mar. 10, 2022	Aug. 31, 2022~ Sep. 09, 2022	Mar. 09, 2023	Radiation (03CH13-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Aug. 26, 2022	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2021	Aug. 26, 2022	Nov. 30, 2022	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2021	Aug. 26, 2022	Nov. 16, 2022	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 03, 2021	Aug. 26, 2022	Dec. 02, 2022	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Aug. 26, 2022	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Aug. 01, 2022	Aug. 26, 2022	Jul. 31, 2023	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 30, 2021	Aug. 26, 2022	Dec. 29, 2022	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))	**6.0 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))	**5.9 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Eason Huang	Temperature:	21~25	°C
Test Date:	2022/08/19~2022/09/27	Relative Humidity:	51~54	%

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TEST RESULTS DATA
26dB and 99% OBW

Band I MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)			Note
					Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1		
11a	6Mbps	2	36	5180	16.38	16.43	19.45	19.65	-		22.14			
11a	6Mbps	2	44	5220	16.38	16.43	19.45	19.80	-		22.14			
11a	6Mbps	2	48	5240	16.38	16.43	19.60	19.45	-		22.14			

TEST RESULTS DATA
Average Power Table

FCC Band I MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	2	36	5180	11.80	11.70	14.76	16.50		4.50		Pass
11a	6Mbps	2	44	5220	11.90	11.80	14.86	16.50		4.50		Pass
11a	6Mbps	2	48	5240	12.00	11.40	14.72	16.50		4.50		Pass
HT20	MCS0	2	36	5180	11.60	11.60	14.61	16.50		4.50		Pass
HT20	MCS0	2	44	5220	11.70	11.70	14.71	16.50		4.50		Pass
HT20	MCS0	2	48	5240	11.90	11.20	14.57	16.50		4.50		Pass
HT40	MCS0	2	38	5190	11.70	11.70	14.71	16.50		4.50		Pass
HT40	MCS0	2	46	5230	11.50	11.50	14.51	16.50		4.50		Pass
VHT20	MCS0	2	36	5180	11.60	11.60	14.61	16.50		4.50		Pass
VHT20	MCS0	2	44	5220	11.70	11.70	14.71	16.50		4.50		Pass
VHT20	MCS0	2	48	5240	11.90	11.20	14.57	16.50		4.50		Pass
VHT40	MCS0	2	38	5190	11.70	11.70	14.71	16.50		4.50		Pass
VHT40	MCS0	2	46	5230	11.50	11.50	14.51	16.50		4.50		Pass
VHT80	MCS0	2	42	5210	11.80	11.50	14.66	16.50		4.50		Pass

TEST RESULTS DATA
Power Spectral Density

FCC Band I MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
					Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	2	36	5180			4.04	16.16		6.84		Pass
11a	6Mbps	2	44	5220			4.27	16.16		6.84		Pass
11a	6Mbps	2	48	5240			4.05	16.16		6.84		Pass

TEST RESULTS DATA
26dB and 99% OBW

Band I MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)			Note
						Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1		
HE20	MCS0	2	36	5180	Full	18.98	18.93	21.60	21.30	-		22.77			
HE20	MCS0	2	44	5220	Full	18.98	18.98	21.35	21.55	-		22.78			
HE20	MCS0	2	48	5240	Full	19.03	18.93	21.55	21.40	-		22.77			
HE40	MCS0	2	38	5190	Full	38.06	37.96	40.23	40.50	-		23.01			
HE40	MCS0	2	46	5230	Full	37.96	37.96	40.41	40.32	-		23.01			
HE80	MCS0	2	42	5210	Full	77.20	77.32	82.72	83.04	-		23.01			

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TEST RESULTS DATA
Average Power Table

FCC Band I MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)			Pass/Fail
						Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1		
HE20	MCS0	2	36	5180	Full	11.70	11.70	14.71	16.50		4.50			Pass
HE20	MCS0	2	36	5180	26/0	3.10	2.60	5.87	16.50		4.50			Pass
HE20	MCS0	2	36	5180	52/37	5.60	5.80	8.71	16.50		4.50			Pass
HE20	MCS0	2	36	5180	106/53	8.50	8.80	11.66	16.50		4.50			Pass
HE20	MCS0	2	36	5180	242/61	11.60	11.60	14.61	16.50		4.50			Pass
HE20	MCS0	2	44	5220	Full	11.80	11.80	14.81	16.50		4.50			Pass
HE20	MCS0	2	44	5220	26/4	4.40	4.10	7.26	16.50		4.50			Pass
HE20	MCS0	2	44	5220	52/39	6.00	5.80	8.91	16.50		4.50			Pass
HE20	MCS0	2	44	5220	106/53	9.00	9.50	12.27	16.50		4.50			Pass
HE20	MCS0	2	44	5220	242/61	11.60	11.70	14.66	16.50		4.50			Pass
HE20	MCS0	2	48	5240	Full	12.00	11.30	14.67	16.50		4.50			Pass
HE20	MCS0	2	48	5240	26/8	2.90	2.50	5.71	16.50		4.50			Pass
HE20	MCS0	2	48	5240	52/40	5.40	5.30	8.36	16.50		4.50			Pass
HE20	MCS0	2	48	5240	106/54	8.60	8.70	11.66	16.50		4.50			Pass
HE20	MCS0	2	48	5240	242.6	11.90	11.30	14.62	16.50		4.50			Pass
HE40	MCS0	2	38	5190	Full	11.80	11.80	14.81	16.50		4.50			Pass
HE40	MCS0	2	38	5190	484/65	11.70	11.70	14.71	16.50		4.50			Pass
HE40	MCS0	2	46	5230	Full	11.60	11.60	14.61	16.50		4.50			Pass
HE40	MCS0	2	46	5230	484/65	11.70	11.70	14.71	16.50		4.50			Pass
HE80	MCS0	2	42	5210	Full	11.90	11.60	14.76	16.50		4.50			Pass
HE80	MCS0	2	42	5210	996/67	11.90	11.70	14.81	16.50		4.50			Pass

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TEST RESULTS DATA
Power Spectral Density

FCC Band I MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
						Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
HE20	MCS0	2	36	5180	Full			3.81	16.16		6.84		Pass
HE20	MCS0	2	36	5180	26/0			3.44	16.16		6.84		Pass
HE20	MCS0	2	36	5180	52/37			3.45	16.16		6.84		Pass
HE20	MCS0	2	36	5180	106/53			3.54	16.16		6.84		Pass
HE20	MCS0	2	36	5180	242/61			3.34	16.16		6.84		Pass
HE20	MCS0	2	44	5220	Full			4.17	16.16		6.84		Pass
HE20	MCS0	2	44	5220	26/4			4.08	16.16		6.84		Pass
HE20	MCS0	2	44	5220	52/39			3.85	16.16		6.84		Pass
HE20	MCS0	2	44	5220	106/53			4.15	16.16		6.84		Pass
HE20	MCS0	2	44	5220	242/61			3.21	16.16		6.84		Pass
HE20	MCS0	2	48	5240	Full			3.89	16.16		6.84		Pass
HE20	MCS0	2	48	5240	26/8			3.60	16.16		6.84		Pass
HE20	MCS0	2	48	5240	52/40			3.46	16.16		6.84		Pass
HE20	MCS0	2	48	5240	106/54			3.57	16.16		6.84		Pass
HE20	MCS0	2	48	5240	242.6			2.98	16.16		6.84		Pass
HE40	MCS0	2	38	5190	Full			1.31	16.16		6.84		Pass
HE40	MCS0	2	38	5190	484/65			0.37	16.16		6.84		Pass
HE40	MCS0	2	46	5230	Full			1.07	16.16		6.84		Pass
HE40	MCS0	2	46	5230	484/65			0.02	16.16		6.84		Pass
HE80	MCS0	2	42	5210	Full			-2.04	16.16		6.84		Pass
HE80	MCS0	2	42	5210	996/67			-2.89	16.16		6.84		Pass

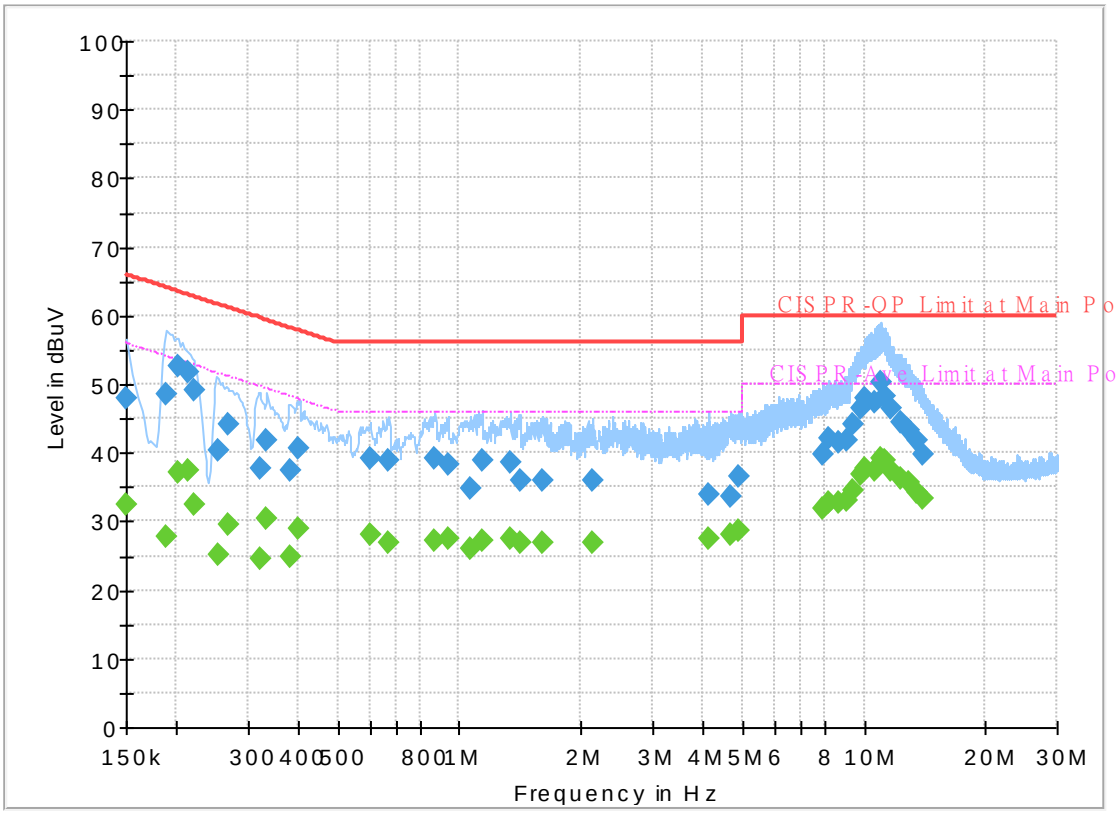
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Calvin Wang	**Temperature :**	23~26℃
		Relative Humidity :	45~55%

EUT Information

Report NO :	1D2409
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum



Final_Result

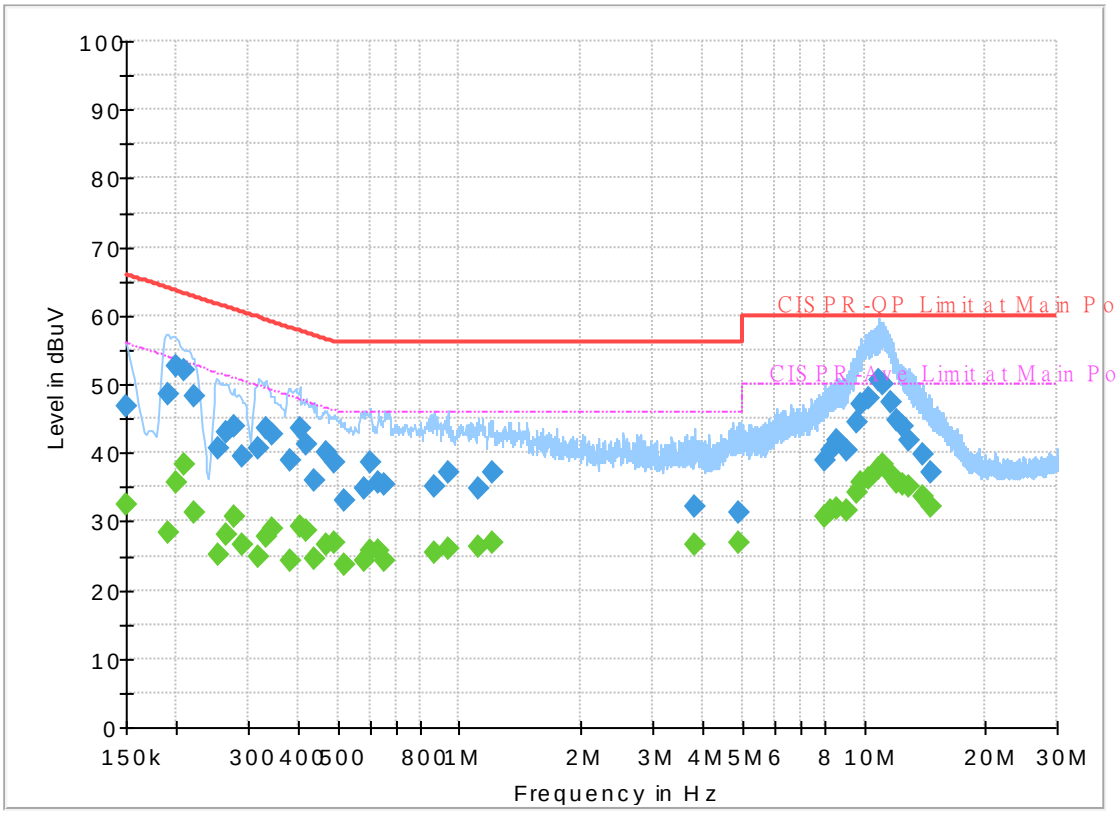
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	32.45	56.00	23.55	L1	OFF	19.8
0.150000	48.07	---	66.00	17.93	L1	OFF	19.8
0.188250	---	27.71	54.11	26.40	L1	OFF	19.8
0.188250	48.53	---	64.11	15.58	L1	OFF	19.8
0.201750	---	37.01	53.54	16.53	L1	OFF	19.8
0.201750	52.57	---	63.54	10.97	L1	OFF	19.8
0.213000	---	37.42	53.09	15.67	L1	OFF	19.8
0.213000	51.63	---	63.09	11.46	L1	OFF	19.8
0.219750	---	32.33	52.83	20.50	L1	OFF	19.8
0.219750	48.99	---	62.83	13.84	L1	OFF	19.8
0.253500	---	25.27	51.64	26.37	L1	OFF	19.8
0.253500	40.24	---	61.64	21.40	L1	OFF	19.8
0.269250	---	29.67	51.14	21.47	L1	OFF	19.8
0.269250	44.12	---	61.14	17.02	L1	OFF	19.8
0.321000	---	24.64	49.68	25.04	L1	OFF	19.8
0.321000	37.80	---	59.68	21.88	L1	OFF	19.8
0.334500	---	30.31	49.34	19.03	L1	OFF	19.8
0.334500	41.67	---	59.34	17.67	L1	OFF	19.8
0.384000	---	24.72	48.19	23.47	L1	OFF	19.8
0.384000	37.42	---	58.19	20.77	L1	OFF	19.8
0.399750	---	28.92	47.86	18.94	L1	OFF	19.8

0.399750	40.59	---	57.86	17.27	L1	OFF	19.8
0.602250	---	27.93	46.00	18.07	L1	OFF	19.9
0.602250	39.11	---	56.00	16.89	L1	OFF	19.9
0.669750	---	26.96	46.00	19.04	L1	OFF	19.9
0.669750	38.79	---	56.00	17.21	L1	OFF	19.9
0.870000	---	27.18	46.00	18.82	L1	OFF	19.9
0.870000	39.06	---	56.00	16.94	L1	OFF	19.9
0.937500	---	27.52	46.00	18.48	L1	OFF	19.9
0.937500	38.21	---	56.00	17.79	L1	OFF	19.9
1.061250	---	26.07	46.00	19.93	L1	OFF	19.9
1.061250	34.79	---	56.00	21.21	L1	OFF	19.9
1.137750	---	27.27	46.00	18.73	L1	OFF	19.9
1.137750	38.95	---	56.00	17.05	L1	OFF	19.9
1.338000	---	27.45	46.00	18.55	L1	OFF	19.9
1.338000	38.51	---	56.00	17.49	L1	OFF	19.9
1.407750	---	27.03	46.00	18.97	L1	OFF	19.9
1.407750	35.85	---	56.00	20.15	L1	OFF	19.9
1.601250	---	26.89	46.00	19.11	L1	OFF	19.9
1.601250	36.11	---	56.00	19.89	L1	OFF	19.9
2.141250	---	27.01	46.00	18.99	L1	OFF	19.9
2.141250	35.98	---	56.00	20.02	L1	OFF	19.9
4.146000	---	27.45	46.00	18.55	L1	OFF	20.0
4.146000	34.01	---	56.00	21.99	L1	OFF	20.0
4.679250	---	28.14	46.00	17.86	L1	OFF	20.0
4.679250	33.71	---	56.00	22.29	L1	OFF	20.0
4.881750	---	28.60	46.00	17.40	L1	OFF	20.0
4.881750	36.52	---	56.00	19.48	L1	OFF	20.0
7.903500	---	31.82	50.00	18.18	L1	OFF	20.2
7.903500	39.71	---	60.00	20.29	L1	OFF	20.2
8.162250	---	32.86	50.00	17.14	L1	OFF	20.2
8.162250	42.21	---	60.00	17.79	L1	OFF	20.2
8.702250	---	32.84	50.00	17.16	L1	OFF	20.2
8.702250	41.58	---	60.00	18.42	L1	OFF	20.2
9.096000	---	32.96	50.00	17.04	L1	OFF	20.2
9.096000	41.72	---	60.00	18.28	L1	OFF	20.2
9.368250	---	34.62	50.00	15.38	L1	OFF	20.2
9.368250	44.09	---	60.00	15.91	L1	OFF	20.2
9.771000	---	36.78	50.00	13.22	L1	OFF	20.3
9.771000	46.48	---	60.00	13.52	L1	OFF	20.3
10.038750	---	37.74	50.00	12.26	L1	OFF	20.3
10.038750	47.93	---	60.00	12.07	L1	OFF	20.3
10.637250	---	37.31	50.00	12.69	L1	OFF	20.3
10.637250	47.47	---	60.00	12.53	L1	OFF	20.3
10.974750	---	39.08	50.00	10.92	L1	OFF	20.3
10.974750	50.18	---	60.00	9.82	L1	OFF	20.3
11.296500	---	38.82	50.00	11.18	L1	OFF	20.3
11.296500	48.30	---	60.00	11.70	L1	OFF	20.3
11.703750	---	37.45	50.00	12.55	L1	OFF	20.3
11.703750	46.59	---	60.00	13.41	L1	OFF	20.3
12.288750	---	36.34	50.00	13.66	L1	OFF	20.4
12.288750	44.37	---	60.00	15.63	L1	OFF	20.4
12.860250	---	35.70	50.00	14.30	L1	OFF	20.4
12.860250	43.24	---	60.00	16.76	L1	OFF	20.4
13.508250	---	34.24	50.00	15.76	L1	OFF	20.4
13.508250	41.72	---	60.00	18.28	L1	OFF	20.4
14.019000	---	33.26	50.00	16.74	L1	OFF	20.4
14.019000	39.90	---	60.00	20.10	L1	OFF	20.4

EUT Information

Report NO :	1D2409
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)
0.150000	---	32.32	56.00	23.68	N	OFF	19.8
0.150000	46.73	---	66.00	19.27	N	OFF	19.8
0.190500	---	28.28	54.02	25.74	N	OFF	19.8
0.190500	48.51	---	64.02	15.51	N	OFF	19.8
0.199500	---	35.67	53.63	17.96	N	OFF	19.8
0.199500	52.55	---	63.63	11.08	N	OFF	19.8
0.208500	---	38.25	53.27	15.02	N	OFF	19.8
0.208500	52.12	---	63.27	11.15	N	OFF	19.8
0.219750	---	31.36	52.83	21.47	N	OFF	19.8
0.219750	48.11	---	62.83	14.72	N	OFF	19.8
0.253500	---	25.21	51.64	26.43	N	OFF	19.8
0.253500	40.54	---	61.64	21.10	N	OFF	19.8
0.264750	---	28.09	51.28	23.19	N	OFF	19.8
0.264750	42.95	---	61.28	18.33	N	OFF	19.8
0.276000	---	30.67	50.94	20.27	N	OFF	19.8
0.276000	43.95	---	60.94	16.99	N	OFF	19.8
0.291750	---	26.50	50.47	23.97	N	OFF	19.8
0.291750	39.52	---	60.47	20.95	N	OFF	19.8
0.318750	---	24.85	49.74	24.89	N	OFF	19.8
0.318750	40.57	---	59.74	19.17	N	OFF	19.8
0.332250	---	27.89	49.40	21.51	N	OFF	19.8

0.332250	43.57	---	59.40	15.83	N	OFF	19.8
0.345750	---	29.07	49.06	19.99	N	OFF	19.8
0.345750	42.58	---	59.06	16.48	N	OFF	19.8
0.381750	---	24.24	48.24	24.00	N	OFF	19.8
0.381750	38.77	---	58.24	19.47	N	OFF	19.8
0.402000	---	29.15	47.81	18.66	N	OFF	19.8
0.402000	43.62	---	57.81	14.19	N	OFF	19.8
0.417750	---	28.65	47.49	18.84	N	OFF	19.8
0.417750	41.36	---	57.49	16.13	N	OFF	19.8
0.440250	---	24.52	47.06	22.54	N	OFF	19.8
0.440250	36.02	---	57.06	21.04	N	OFF	19.8
0.467250	---	26.62	46.56	19.94	N	OFF	19.8
0.467250	40.07	---	56.56	16.49	N	OFF	19.8
0.492000	---	26.84	46.13	19.29	N	OFF	19.8
0.492000	38.60	---	56.13	17.53	N	OFF	19.8
0.519000	---	23.80	46.00	22.20	N	OFF	19.8
0.519000	33.01	---	56.00	22.99	N	OFF	19.8
0.584250	---	24.19	46.00	21.81	N	OFF	19.8
0.584250	34.89	---	56.00	21.11	N	OFF	19.8
0.602250	---	25.62	46.00	20.38	N	OFF	19.8
0.602250	38.54	---	56.00	17.46	N	OFF	19.8
0.629250	---	25.70	46.00	20.30	N	OFF	19.8
0.629250	35.60	---	56.00	20.40	N	OFF	19.8
0.654000	---	24.33	46.00	21.67	N	OFF	19.8
0.654000	35.25	---	56.00	20.75	N	OFF	19.8
0.863250	---	25.48	46.00	20.52	N	OFF	19.9
0.863250	35.16	---	56.00	20.84	N	OFF	19.9
0.935250	---	26.01	46.00	19.99	N	OFF	19.9
0.935250	37.10	---	56.00	18.90	N	OFF	19.9
1.110750	---	26.30	46.00	19.70	N	OFF	19.9
1.110750	34.85	---	56.00	21.15	N	OFF	19.9
1.203000	---	26.90	46.00	19.10	N	OFF	19.9
1.203000	37.08	---	56.00	18.92	N	OFF	19.9
3.815250	---	26.49	46.00	19.51	N	OFF	20.0
3.815250	32.20	---	56.00	23.80	N	OFF	20.0
4.906500	---	26.81	46.00	19.19	N	OFF	20.0
4.906500	31.23	---	56.00	24.77	N	OFF	20.0
7.962000	---	30.59	50.00	19.41	N	OFF	20.2
7.962000	38.91	---	60.00	21.09	N	OFF	20.2
8.297250	---	31.43	50.00	18.57	N	OFF	20.2
8.297250	40.34	---	60.00	19.66	N	OFF	20.2
8.565000	---	31.89	50.00	18.11	N	OFF	20.2
8.565000	41.71	---	60.00	18.29	N	OFF	20.2
9.087000	---	31.50	50.00	18.50	N	OFF	20.2
9.087000	40.27	---	60.00	19.73	N	OFF	20.2
9.566250	---	34.28	50.00	15.72	N	OFF	20.2
9.566250	44.52	---	60.00	15.48	N	OFF	20.2
9.836250	---	35.73	50.00	14.27	N	OFF	20.3
9.836250	46.94	---	60.00	13.06	N	OFF	20.3
10.304250	---	36.30	50.00	13.70	N	OFF	20.3
10.304250	47.93	---	60.00	12.07	N	OFF	20.3
10.907250	---	37.70	50.00	12.30	N	OFF	20.3
10.907250	50.55	---	60.00	9.45	N	OFF	20.3
11.175000	---	38.31	50.00	11.69	N	OFF	20.3
11.175000	50.00	---	60.00	10.00	N	OFF	20.3
11.649750	---	36.84	50.00	13.16	N	OFF	20.3
11.649750	47.31	---	60.00	12.69	N	OFF	20.3
12.108750	---	35.55	50.00	14.45	N	OFF	20.4
12.108750	44.73	---	60.00	15.27	N	OFF	20.4
12.513750	---	35.47	50.00	14.53	N	OFF	20.4
12.513750	43.74	---	60.00	16.26	N	OFF	20.4
12.891750	---	35.06	50.00	14.94	N	OFF	20.4
12.891750	41.88	---	60.00	18.12	N	OFF	20.4
13.913250	---	33.61	50.00	16.39	N	OFF	20.4
13.913250	39.85	---	60.00	20.15	N	OFF	20.4
14.597250	---	32.22	50.00	17.78	N	OFF	20.5
14.597250	37.19	---	60.00	22.81	N	OFF	20.5

Appendix C. Radiated Spurious Emission

Test Engineer :	Mancy Chou, Jacky Hong and Rain Lee	Temperature :	20~25°C
		Relative Humidity :	50~60%

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz		5095.16	54.38	-19.62	74	42.64	32.09	6.15	26.5	100	160	P	H
		5049.4	43.68	-10.32	54	32.08	32	6.1	26.5	100	160	A	H
	*	5180	106.68	-	-	94.97	31.98	6.25	26.52	100	160	P	H
	*	5180	99.69	-	-	87.98	31.98	6.25	26.52	100	160	A	H
		5098.02	54.59	-19.41	74	42.83	32.1	6.16	26.5	301	277	P	V
		5059.02	43.32	-10.68	54	31.69	32.02	6.11	26.5	301	277	A	V
	*	5180	107.36	-	-	95.65	31.98	6.25	26.52	301	277	P	V
	*	5180	99.81	-	-	88.1	31.98	6.25	26.52	301	277	A	V
802.11a CH 44 5220MHz		5078	54	-20	74	42.3	32.06	6.14	26.5	100	279	P	H
		5063.18	43.23	-10.77	54	31.58	32.03	6.12	26.5	100	279	A	H
	*	5220	106.68	-	-	95.1	31.82	6.28	26.52	100	279	P	H
	*	5220	98.97	-	-	87.39	31.82	6.28	26.52	100	279	A	H
		5460	51.47	-22.53	74	39.64	32.02	6.36	26.55	100	279	P	H
		5456.92	41.98	-12.02	54	30.16	32.01	6.36	26.55	100	279	A	H
		5011.44	53.67	-20.33	74	42.18	31.92	6.06	26.49	277	279	P	V
		5071.76	43.34	-10.66	54	31.67	32.04	6.13	26.5	277	279	A	V
	*	5220	106.34	-	-	94.76	31.82	6.28	26.52	277	279	P	V
	*	5220	99.43	-	-	87.85	31.82	6.28	26.52	277	279	A	V
		5449.36	51.5	-22.5	74	39.69	32	6.36	26.55	277	279	P	V
		5455.52	41.83	-12.17	54	30.01	32.01	6.36	26.55	277	279	A	V

802.11a CH 48 5240MHz		5025.22	53.55	-20.45	74	42.01	31.95	6.08	26.49	100	279	P	H
		5067.08	43.04	-10.96	54	31.39	32.03	6.12	26.5	100	279	A	H
	*	5240	106.78	-	-	95.28	31.74	6.28	26.52	100	279	P	H
	*	5240	98.98	-	-	87.48	31.74	6.28	26.52	100	279	A	H
		5391.68	51.86	-22.14	74	40.32	31.75	6.33	26.54	100	279	P	H
		5459.72	41.62	-12.38	54	29.79	32.02	6.36	26.55	100	279	A	H
		5049.4	54	-20	74	42.4	32	6.1	26.5	204	276	P	V
		5067.86	43.07	-10.93	54	31.41	32.04	6.12	26.5	204	276	A	V
	*	5240	104.39	-	-	92.89	31.74	6.28	26.52	204	276	P	V
	*	5240	98.19	-	-	86.69	31.74	6.28	26.52	204	276	A	V
		5451.32	51.72	-22.28	74	39.91	32	6.36	26.55	204	276	P	V
		5458.32	41.47	-12.53	54	29.64	32.02	6.36	26.55	204	276	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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 36 5180MHz		10360	46.64	-21.56	68.2	53.33	40.1	9.78	56.57	-	-	P	H
		15540	42.78	-31.22	74	48.24	39.02	12.05	56.53	-	-	P	H
		10360	46.55	-21.65	68.2	53.24	40.1	9.78	56.57	-	-	P	V
		15540	43.62	-30.38	74	49.08	39.02	12.05	56.53	-	-	P	V

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		10440	45.73	-22.47	68.2	52.08	40.3	9.82	56.47	-	-	P	H
		15660	43.26	-30.74	74	48.99	38.6	12.04	56.37	-	-	P	H
802.11a CH 44 5220MHz		10440	45.7	-22.5	68.2	52.05	40.3	9.82	56.47	-	-	P	V
		15660	43.7	-30.3	74	49.43	38.6	12.04	56.37	-	-	P	V

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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 48 5240MHz		10480	46.64	-21.56	68.2	52.91	40.3	9.85	56.42	-	-	P	H
		15720	43.71	-30.29	74	49.35	38.6	12.05	56.29	-	-	P	H
		10480	46.13	-22.07	68.2	52.4	40.3	9.85	56.42	-	-	P	V
		15720	43.66	-30.34	74	49.3	38.6	12.05	56.29	-	-	P	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.

Band 1 5150~5250MHz

WIFI 802.11ax HE20 Full (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		5087.62	54.72	-19.28	74	42.99	32.08	6.15	26.5	100	154	P	H
		5067.86	43.61	-10.39	54	31.95	32.04	6.12	26.5	100	154	A	H
	*	5180	107.57	-	-	95.86	31.98	6.25	26.52	100	154	P	H
	*	5180	99.21	-	-	87.5	31.98	6.25	26.52	100	154	A	H
802.11ax													
HE20 Full													
CH 36		5046.02	53.38	-20.62	74	41.79	31.99	6.1	26.5	301	275	P	V
5180MHz		5150	43.31	-10.69	54	31.5	32.1	6.22	26.51	301	275	A	V
	*	5180	107.98	-	-	96.27	31.98	6.25	26.52	301	275	P	V
	*	5180	99.18	-	-	87.47	31.98	6.25	26.52	301	275	A	V
		5098.28	53.29	-20.71	74	41.53	32.1	6.16	26.5	104	280	P	H
		5070.2	43.2	-10.8	54	31.53	32.04	6.13	26.5	104	280	A	H
	*	5220	106.59	-	-	95.01	31.82	6.28	26.52	104	280	P	H
	*	5220	98.81	-	-	87.23	31.82	6.28	26.52	104	280	A	H
802.11ax		5364.52	51.08	-22.92	74	39.71	31.59	6.32	26.54	104	280	P	H
HE20 Full		5453.28	42	-12	54	30.18	32.01	6.36	26.55	104	280	A	H
CH 44		5020.28	53.33	-20.67	74	41.81	31.94	6.07	26.49	277	277	P	V
5220MHz		5070.46	43.39	-10.61	54	31.72	32.04	6.13	26.5	277	277	A	V
	*	5220	109.13	-	-	97.55	31.82	6.28	26.52	277	277	P	V
	*	5220	99.27	-	-	87.69	31.82	6.28	26.52	277	277	A	V
		5435.64	51.02	-22.98	74	39.28	31.94	6.35	26.55	277	277	P	V
		5459.72	41.86	-12.14	54	30.03	32.02	6.36	26.55	277	277	A	V

		5058.5	52.62	-21.38	74	40.99	32.02	6.11	26.5	100	280	P	H
		5069.94	43.17	-10.83	54	31.5	32.04	6.13	26.5	100	280	A	H
	*	5240	107.91	-	-	96.41	31.74	6.28	26.52	100	280	P	H
	*	5240	99.06	-	-	87.56	31.74	6.28	26.52	100	280	A	H
802.11ax		5456.92	51.64	-22.36	74	39.82	32.01	6.36	26.55	100	280	P	H
HE20 Full		5459.44	41.9	-12.1	54	30.07	32.02	6.36	26.55	100	280	A	H
CH 48		5098.54	53.23	-20.77	74	41.47	32.1	6.16	26.5	312	271	P	V
5240MHz		5067.08	43.3	-10.7	54	31.65	32.03	6.12	26.5	312	271	A	V
	*	5240	106.07	-	-	94.57	31.74	6.28	26.52	312	271	P	V
	*	5240	98.56	-	-	87.06	31.74	6.28	26.52	312	271	A	V
		5429.48	52.14	-21.86	74	40.42	31.92	6.35	26.55	312	271	P	V
		5459.44	41.81	-12.19	54	29.98	32.02	6.36	26.55	312	271	A	V

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

Band 1 5150~5250MHz

WIFI 802.11ax HE20 Full (Harmonic @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		10360	46.04	-22.16	68.2	52.73	40.1	9.78	56.57	-	-	P	H
		15540	43.96	-30.04	74	49.42	39.02	12.05	56.53	-	-	P	H
802.11ax													
HE20 Full													
CH 36		10360	46.74	-21.46	68.2	53.43	40.1	9.78	56.57	-	-	P	V
5180MHz		15540	43.98	-30.02	74	49.44	39.02	12.05	56.53	-	-	P	V

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		10440	46.57	-21.63	68.2	52.92	40.3	9.82	56.47	-	-	P	H
		15660	43.04	-30.96	74	48.77	38.6	12.04	56.37	-	-	P	H
802.11ax													
HE20 Full													
CH 44		10440	45.88	-22.32	68.2	52.23	40.3	9.82	56.47	-	-	P	V
5220MHz		15660	44.01	-29.99	74	49.74	38.6	12.04	56.37	-	-	P	V

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		10480	46.06	-22.14	68.2	52.33	40.3	9.85	56.42	-	-	P	H
		15720	43.49	-30.51	74	49.13	38.6	12.05	56.29	-	-	P	H
802.11ax													
HE20 Full													
CH 48		10480	47.7	-20.5	68.2	53.97	40.3	9.85	56.42	-	-	P	V
5240MHz		15720	43.67	-30.33	74	49.31	38.6	12.05	56.29	-	-	P	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.

Band 1 5150~5250MHz

WIFI 802.11ax HE20 Partial 242 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
		5150	56.64	-17.36	74	44.83	32.1	6.22	26.51	352	307	P	H
		5150	44.25	-9.75	54	32.44	32.1	6.22	26.51	352	307	A	H
	*	5180	104.71	-	-	93	31.98	6.25	26.52	352	307	P	H
802.11ax	*	5180	95.68	-	-	83.97	31.98	6.25	26.52	352	307	A	H
HE20													
Partial													
242/61		5147.68	56.45	-17.55	74	44.65	32.1	6.21	26.51	100	260	P	V
CH 36		5149.76	44.41	-9.59	54	32.61	32.1	6.21	26.51	100	260	A	V
5180MHz	*	5180	106.35	-	-	94.64	31.98	6.25	26.52	100	260	P	V
	*	5180	97.67	-	-	85.96	31.98	6.25	26.52	100	260	A	V

Remark

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

Band 1 5150~5250MHz

WIFI 802.11ax HE40 Full (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		5052	53.95	-20.05	74	42.34	32	6.11	26.5	100	155	P	H
		5150	44.88	-9.12	54	33.07	32.1	6.22	26.51	100	155	A	H
	*	5190	104.77	-	-	93.09	31.94	6.26	26.52	100	155	P	H
	*	5190	96.48	-	-	84.8	31.94	6.26	26.52	100	155	A	H
802.11ax		5414.08	51.89	-22.11	74	40.24	31.86	6.34	26.55	100	155	P	H
HE40 Full		5460	41.87	-12.13	54	30.04	32.02	6.36	26.55	100	155	A	H
CH 38		5145.86	55.72	-18.28	74	43.92	32.1	6.21	26.51	298	268	P	V
5190MHz		5150	45.63	-8.37	54	33.82	32.1	6.22	26.51	298	268	A	V
	*	5190	104.81	-	-	93.13	31.94	6.26	26.52	298	268	P	V
	*	5190	97.28	-	-	85.6	31.94	6.26	26.52	298	268	A	V
		5428.92	52.86	-21.14	74	41.14	31.92	6.35	26.55	298	268	P	V
		5456.92	41.78	-12.22	54	29.96	32.01	6.36	26.55	298	268	A	V
		5090.74	53.31	-20.69	74	41.58	32.08	6.15	26.5	107	281	P	H
		5069.16	43.24	-10.76	54	31.57	32.04	6.13	26.5	107	281	A	H
	*	5230	104.51	-	-	92.97	31.78	6.28	26.52	107	281	P	H
	*	5230	95.96	-	-	84.42	31.78	6.28	26.52	107	281	A	H
802.11ax		5406.8	51.22	-22.78	74	39.61	31.83	6.33	26.55	107	281	P	H
HE40 Full		5453	42.03	-11.97	54	30.21	32.01	6.36	26.55	107	281	A	H
CH 46		5079.04	53.12	-20.88	74	41.42	32.06	6.14	26.5	293	277	P	V
5230MHz		5106.6	43.38	-10.62	54	31.61	32.1	6.17	26.5	293	277	A	V
	*	5230	104.34	-	-	92.8	31.78	6.28	26.52	293	277	P	V
	*	5230	95.71	-	-	84.17	31.78	6.28	26.52	293	277	A	V
		5419.96	51.72	-22.28	74	40.05	31.88	6.34	26.55	293	277	P	V
		5458.04	41.84	-12.16	54	30.01	32.02	6.36	26.55	293	277	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11ax HE40 Partial 484 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
802.11ax HE40 Partial 484/65 CH 38 5190MHz		5148.46	63.73	-10.27	74	51.93	32.1	6.21	26.51	344	306	P	H
		5150	50.22	-3.78	54	38.41	32.1	6.22	26.51	344	306	A	H
	*	5190	101.36	-	-	89.68	31.94	6.26	26.52	344	306	P	H
	*	5190	92.77	-	-	81.09	31.94	6.26	26.52	344	306	A	H
		5438.16	52.48	-21.52	74	40.73	31.95	6.35	26.55	344	306	P	H
		5459.16	41.47	-12.53	54	29.64	32.02	6.36	26.55	344	306	A	H
		5148.72	66.23	-7.77	74	54.43	32.1	6.21	26.51	100	249	P	V
		5148.46	51.71	-2.29	54	39.91	32.1	6.21	26.51	100	249	A	V
	*	5190	103.91	-	-	92.23	31.94	6.26	26.52	100	249	P	V
	*	5190	96	-	-	84.32	31.94	6.26	26.52	100	249	A	V
		5444.32	51.82	-22.18	74	40.04	31.98	6.35	26.55	100	249	P	V
		5460	41.47	-12.53	54	29.64	32.02	6.36	26.55	100	249	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11ax HE80 Full (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
802.11ax HE80 Full CH 42 5210MHz		5148.46	55.51	-18.49	74	43.71	32.1	6.21	26.51	100	280	P	H
		5147.68	47.17	-6.83	54	35.37	32.1	6.21	26.51	100	280	A	H
	*	5210	100.82	-	-	89.21	31.86	6.27	26.52	100	280	P	H
	*	5210	92.81	-	-	81.2	31.86	6.27	26.52	100	280	A	H
		5436.48	51.54	-22.46	74	39.79	31.95	6.35	26.55	100	280	P	H
		5453.28	42.01	-11.99	54	30.19	32.01	6.36	26.55	100	280	A	H
		5149.5	58.23	-15.77	74	46.43	32.1	6.21	26.51	281	280	P	V
		5150	47.73	-6.27	54	35.92	32.1	6.22	26.51	281	280	A	V
	*	5210	102.39	-	-	90.78	31.86	6.27	26.52	281	280	P	V
	*	5210	93.58	-	-	81.97	31.86	6.27	26.52	281	280	A	V
		5378.52	50.86	-23.14	74	39.41	31.67	6.32	26.54	281	280	P	V
		5455.52	41.8	-12.2	54	29.98	32.01	6.36	26.55	281	280	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11ax HE80 Partial 996 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
802.11ax HE80 Partial 996/67 CH 42 5210MHz		5149.5	65.06	-8.94	74	53.26	32.1	6.21	26.51	103	13	P	H
		5145.6	49.93	-4.07	54	38.13	32.1	6.21	26.51	103	13	A	H
	*	5210	101.35	-	-	89.74	31.86	6.27	26.52	103	13	P	H
	*	5210	92.4	-	-	80.79	31.86	6.27	26.52	103	13	A	H
		5409.32	51.36	-22.64	74	39.73	31.84	6.34	26.55	103	13	P	H
		5458.04	41.52	-12.48	54	29.69	32.02	6.36	26.55	103	13	A	H
		5150	65.11	-8.89	74	53.3	32.1	6.22	26.51	100	249	P	V
		5149.76	51.48	-2.52	54	39.68	32.1	6.21	26.51	100	249	A	V
	*	5210	101.45	-	-	89.84	31.86	6.27	26.52	100	249	P	V
	*	5210	92.36	-	-	80.75	31.86	6.27	26.52	100	249	A	V
		5443.2	52.2	-21.8	74	40.43	31.97	6.35	26.55	100	249	P	V
		5458.6	41.5	-12.5	54	29.67	32.02	6.36	26.55	100	249	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission above 18GHz

WIFI 802.11ax HE80 Full (SHF @ 1m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE80 Full SHF		26460	41.44	-26.76	68.2	57.37	39.44	-2.09	53.28	-	-	P	H
		39217	46.3	-27.7	74	58.98	44.35	-0.5	56.53	-	-	P	H
		26388	41.03	-27.17	68.2	57.15	39.32	-2.18	53.26	-	-	P	V
		39392.5	45.94	-28.06	74	58.2	44.61	-0.48	56.39	-	-	P	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 with sufficient margin against limit line or noise floor only.

Emission below 1GHz

WIFI 802.11ax HE80 Full (LF @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE80 Full LF		75.59	33.57	-6.43	40	51.9	13.05	0.93	32.31	-	-	P	H
		175.5	28.44	-15.06	43.5	44.09	15.36	1.26	32.27	-	-	P	H
		212.36	22.64	-20.86	43.5	38.57	14.94	1.39	32.26	-	-	P	H
		409.27	22.92	-23.08	46	30.86	22.34	1.91	32.19	-	-	P	H
		576.11	26.35	-19.65	46	30.65	25.82	2.14	32.26	-	-	P	H
		855.47	30.55	-15.45	46	30.47	29.23	2.6	31.75	-	-	P	H
		75.59	33.04	-6.96	40	51.37	13.05	0.93	32.31	-	-	P	V
		172.59	20.36	-23.14	43.5	35.9	15.49	1.25	32.28	-	-	P	V
		262.8	18.84	-27.16	46	29.52	20.04	1.5	32.22	-	-	P	V
		436.43	23.64	-22.36	46	30.83	23.07	1.92	32.18	-	-	P	V
		644.01	26.73	-19.27	46	30.29	26.4	2.26	32.22	-	-	P	V
		854.5	30.78	-15.22	46	30.72	29.22	2.6	31.76	-	-	P	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	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz		5150	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		5150	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. Margin(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 5150MHz:

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. Margin(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 5150MHz:

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. Margin(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

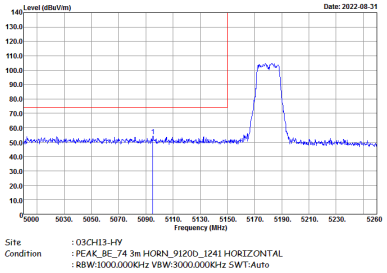
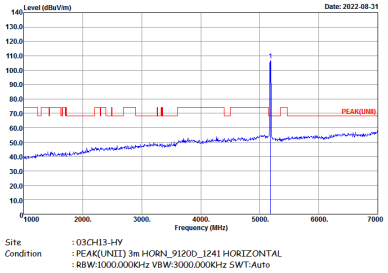
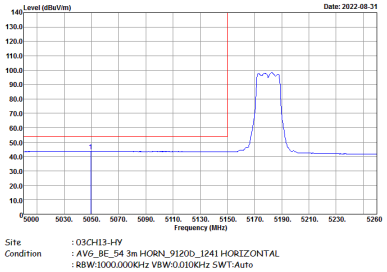
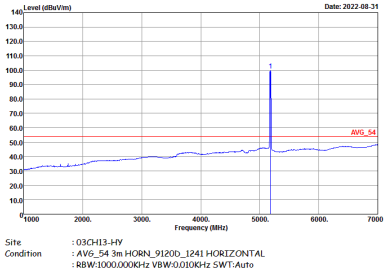
Test Engineer :	Mancy Chou, Jacky Hong and Rain Lee	**Temperature :**	20~25°C
		Relative Humidity :	50~60%

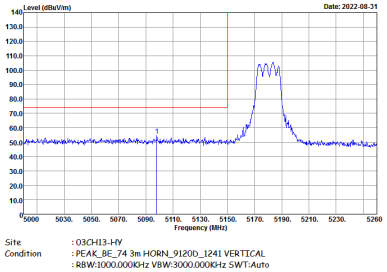
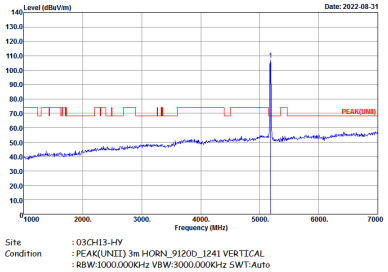
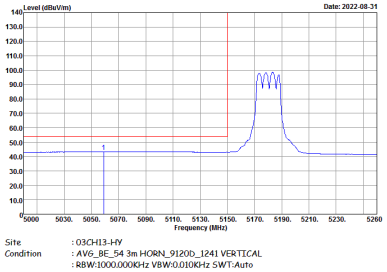
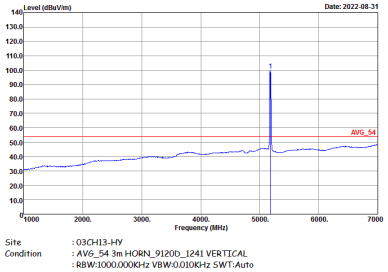
Note symbol

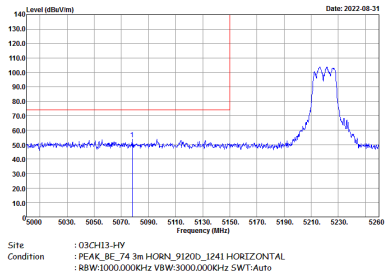
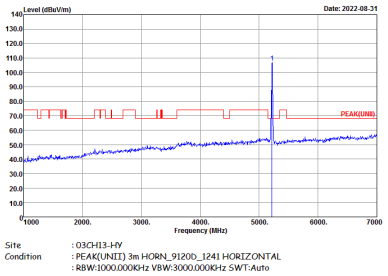
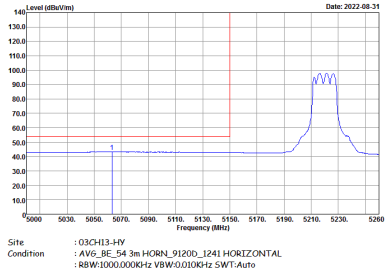
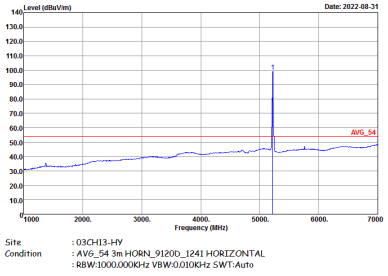
-L	**Low channel location**
-R	**High channel location**

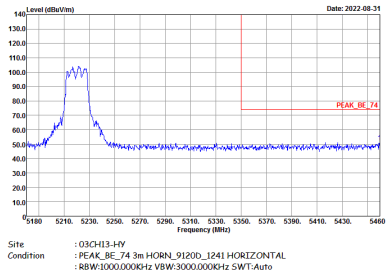
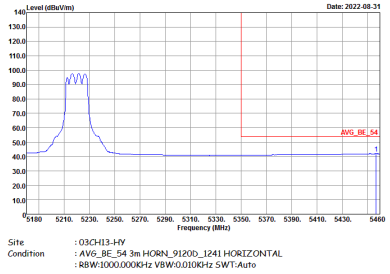
Band 1 - 5150~5250MHz

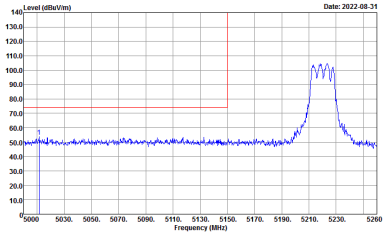
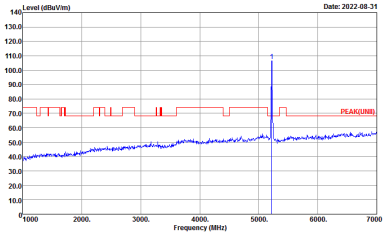
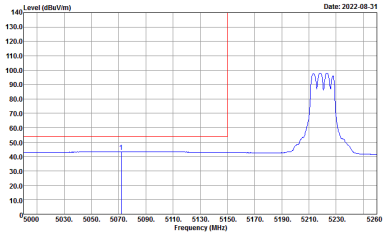
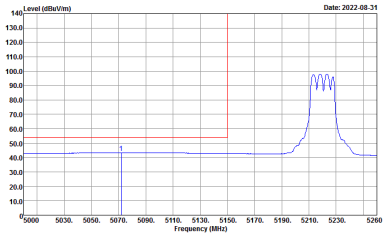
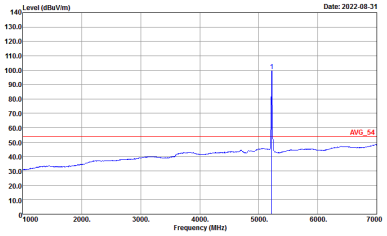
WIFI 802.11a (Band Edge @ 3m)

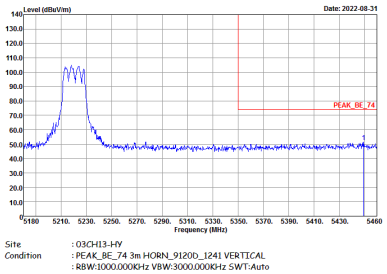
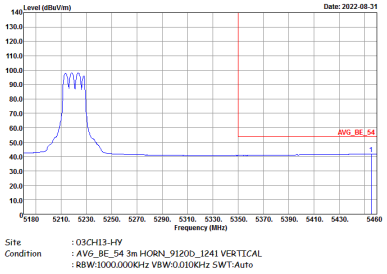
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH36 5180MHz	
0+1	Horizontal	Fundamental
Peak		
Avg.		

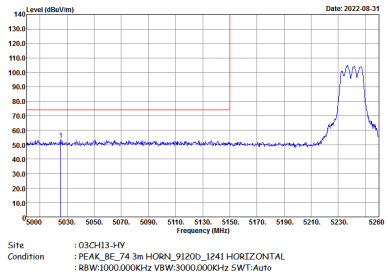
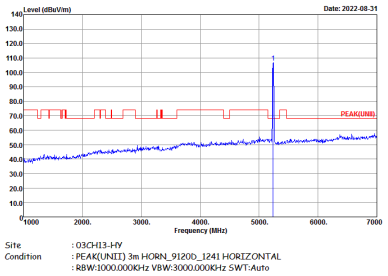
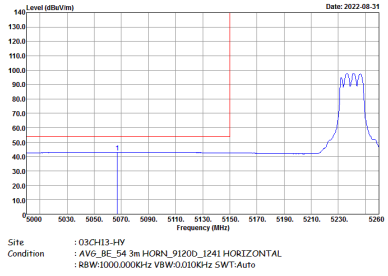
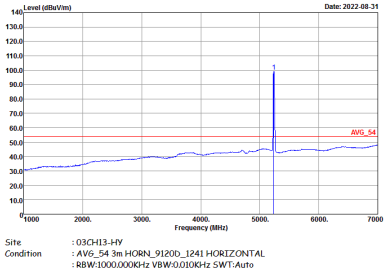
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH36 5180MHz	
0+1	Vertical	Fundamental
Peak		
Avg.		

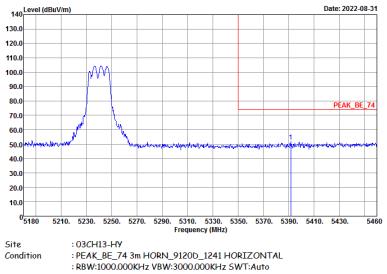
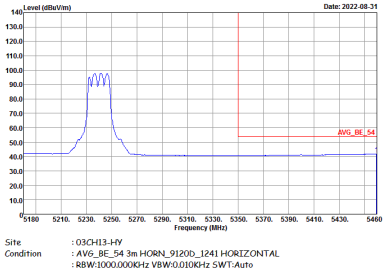
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - L	
0+1	Horizontal	Fundamental
Peak		
Avg.		

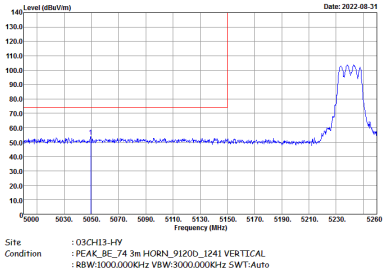
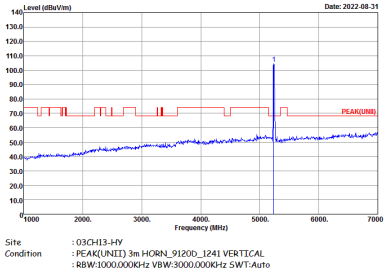
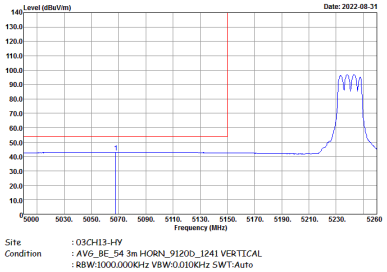
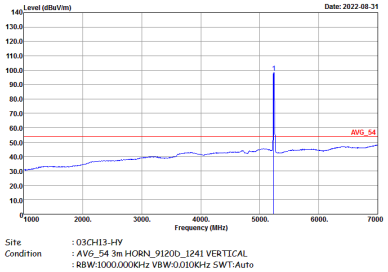
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - R	
0+1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

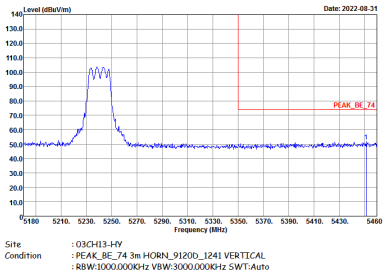
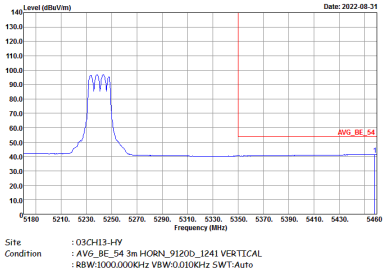
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - L	
0+1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto  Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - R	
0+1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

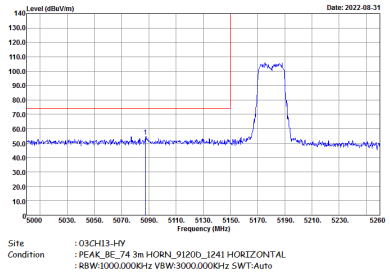
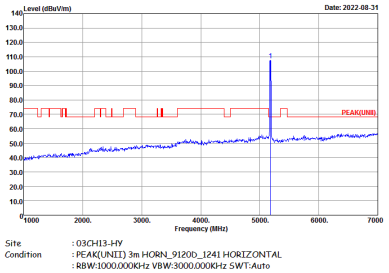
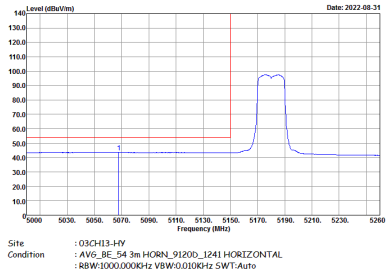
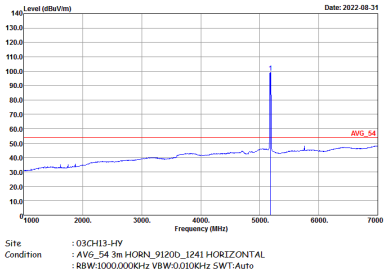
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz - L	
0+1	Horizontal	Fundamental
Peak		
Avg.		

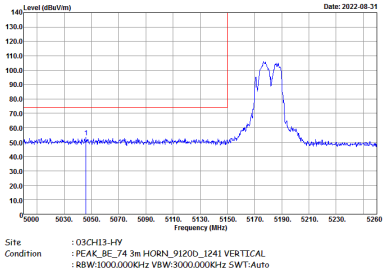
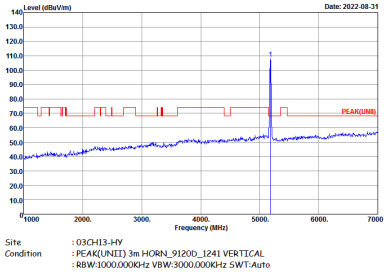
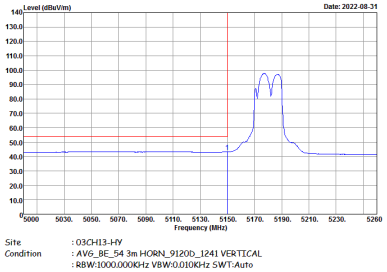
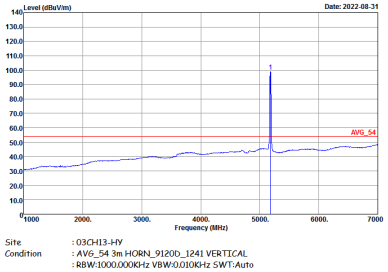
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz - R	
0+1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

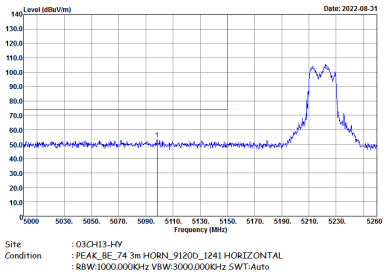
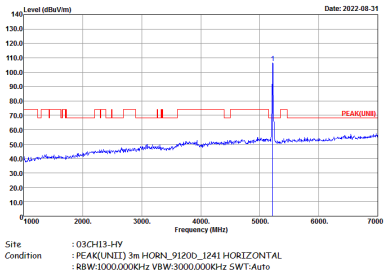
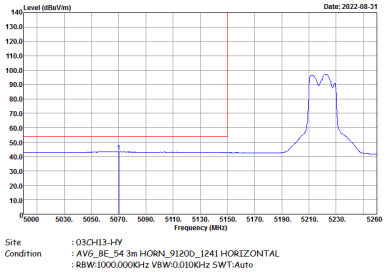
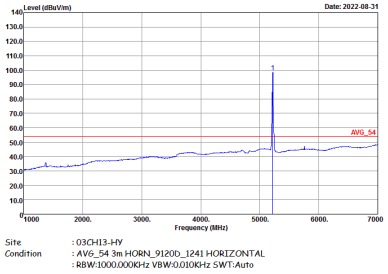
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz - L	
0+1	Vertical	Fundamental
Peak		
Avg.		

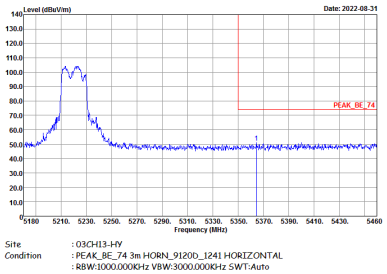
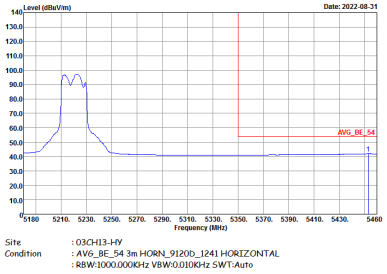
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz - R	
0+1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

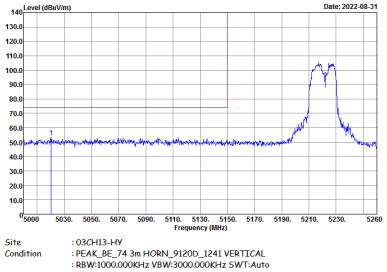
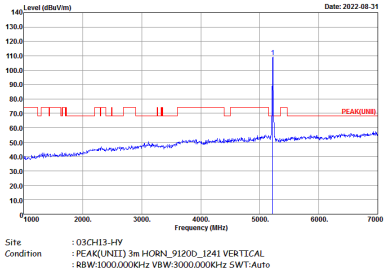
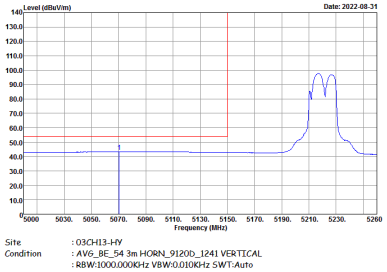
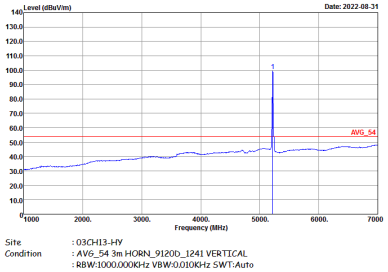
Band 1 5150~5250MHz
WIFI 802.11ax HE20 Full (Band Edge @ 3m)

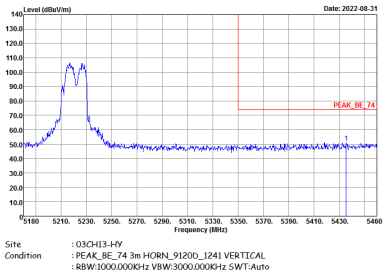
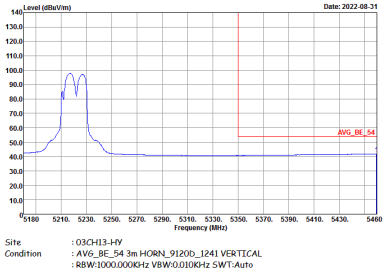
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH36 5180MHz	
0+1	Horizontal	Fundamental
Peak		
Avg.		

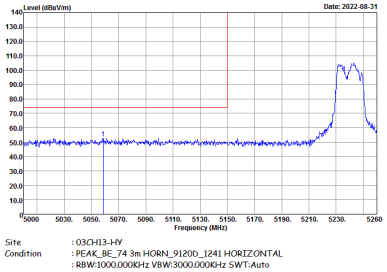
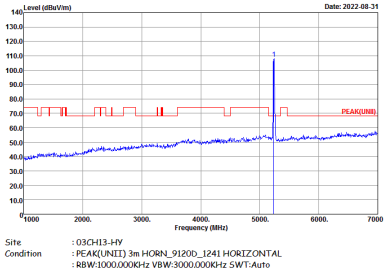
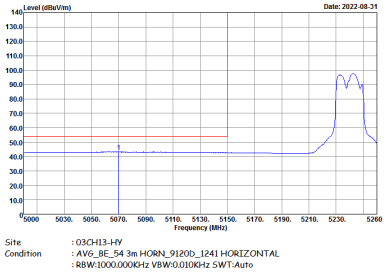
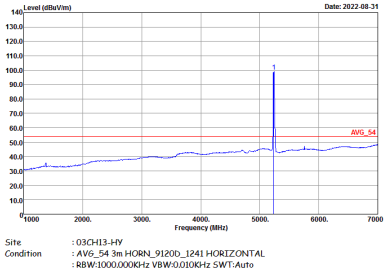
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH36 5180MHz	
0+1	Vertical	Fundamental
Peak		
Avg.		

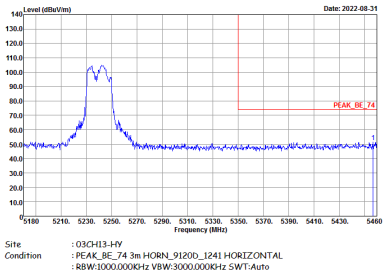
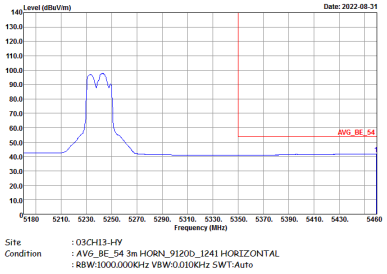
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH44 5220MHz - L	
0+1	Horizontal	Fundamental
Peak		
Avg.		

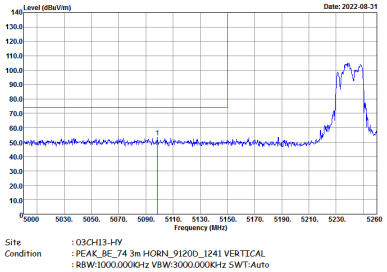
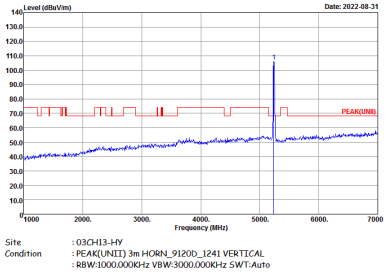
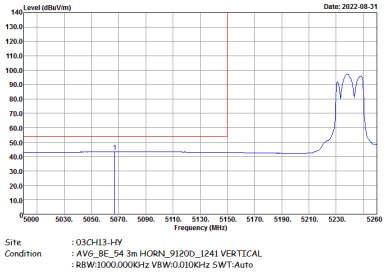
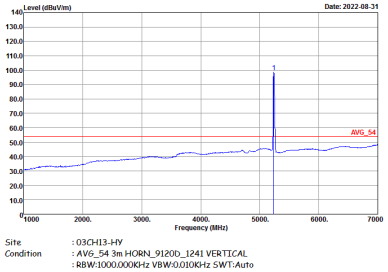
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH44 5220MHz - R	
0+1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

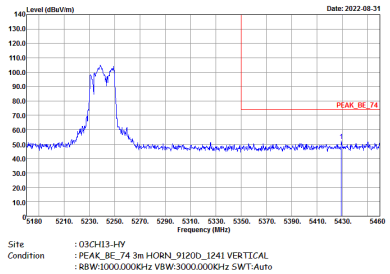
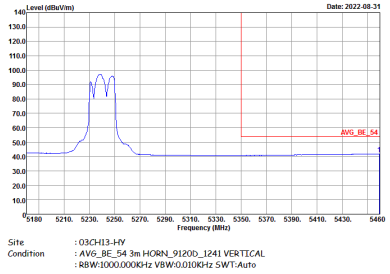
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH44 5220MHz - L	
0+1	Vertical	Fundamental
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH44 5220MHz - R	
0+1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH48 5240MHz - L	
0+1	Horizontal	Fundamental
Peak		
Avg.		

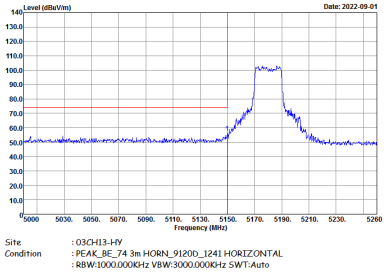
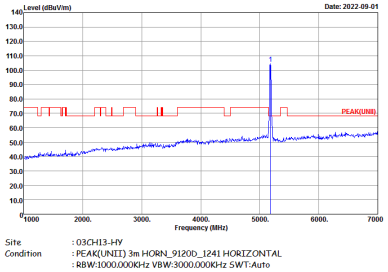
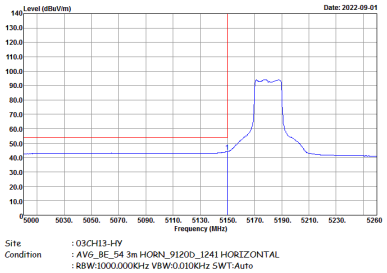
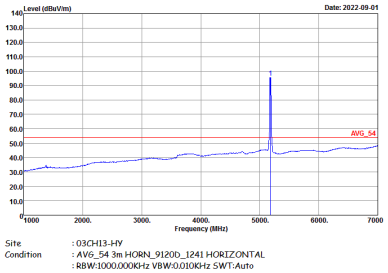
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH48 5240MHz - R	
0+1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

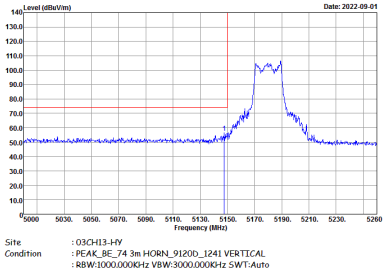
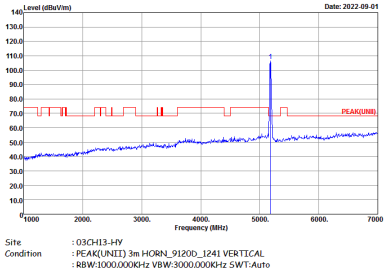
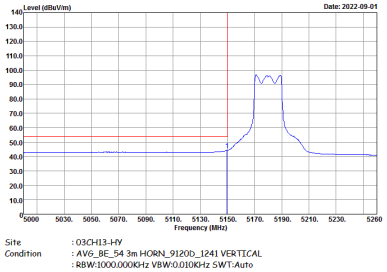
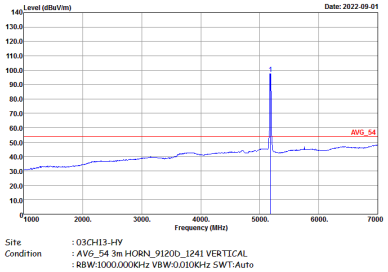
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH48 5240MHz - L	
0+1	Vertical	Fundamental
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH48 5240MHz - R	
0+1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

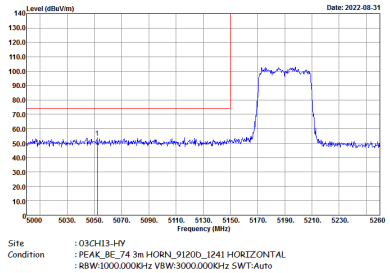
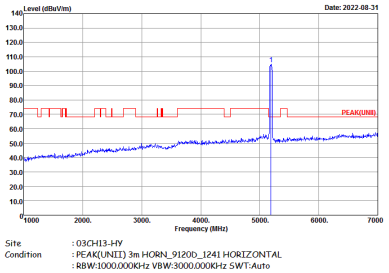
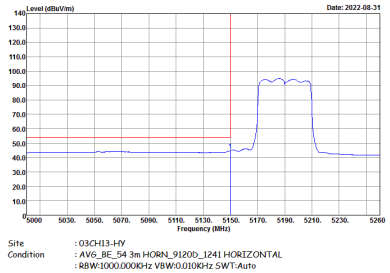
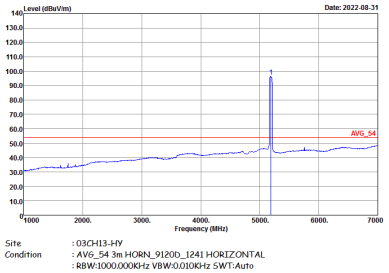
Band 1 5150~5250MHz

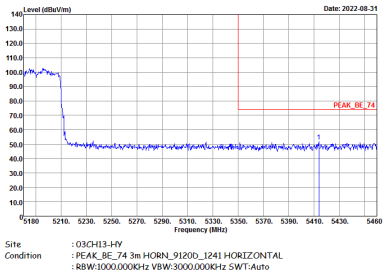
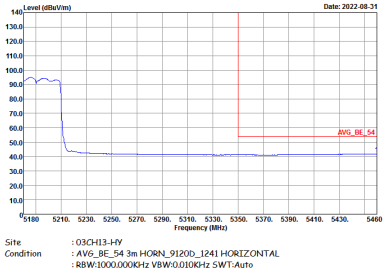
WIFI 802.11ax HE20 Partial 242 (Band Edge @ 3m)

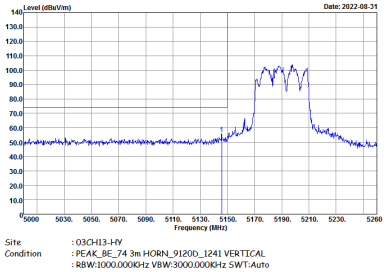
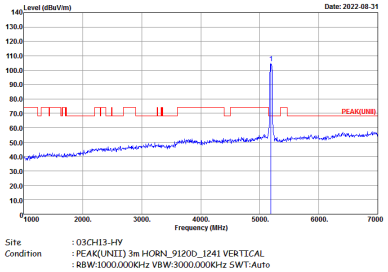
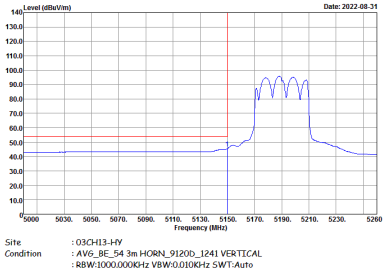
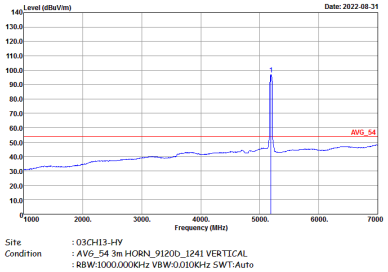
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 242/61 CH36 5180MHz	
0+1	Horizontal	Fundamental
Peak		
Avg.		

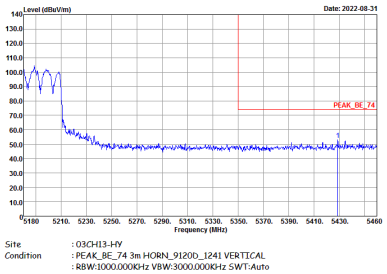
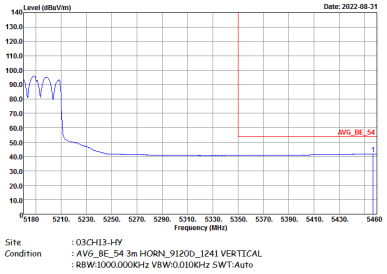
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 242/61 CH36 5180MHz	
0+1	Vertical	Fundamental
Peak		
Avg.		

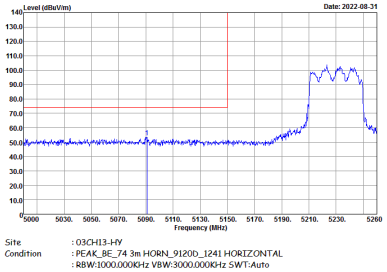
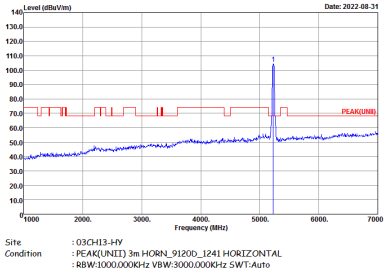
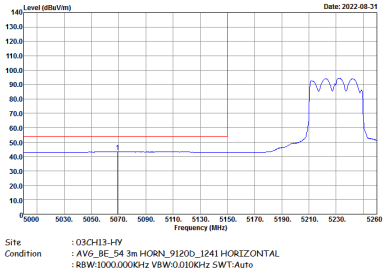
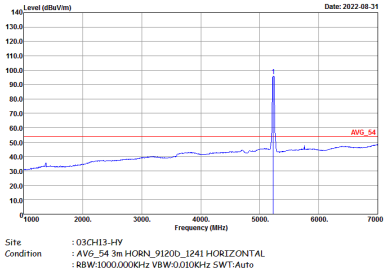
Band 1 5150~5250MHz
WIFI 802.11ax HE40 Full (Band Edge @ 3m)

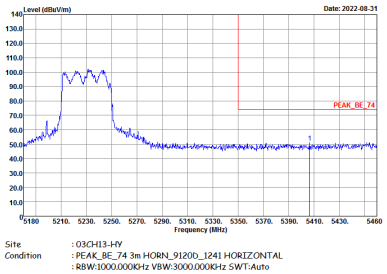
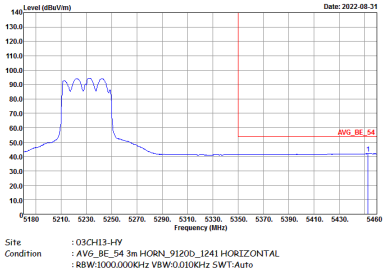
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH38 5190MHz - L	
0+1	Horizontal	Fundamental
Peak		
Avg.		

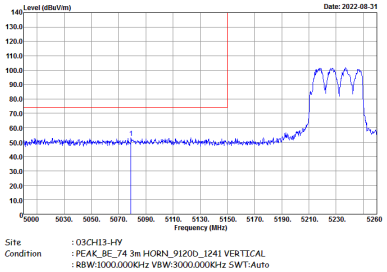
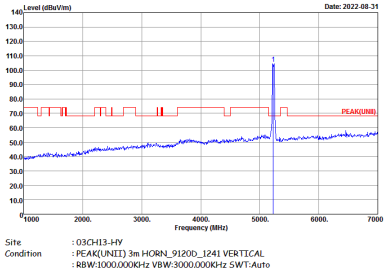
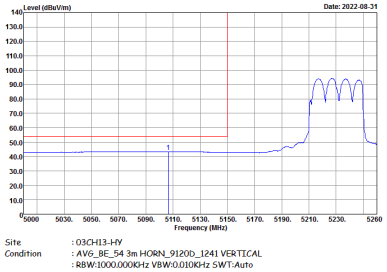
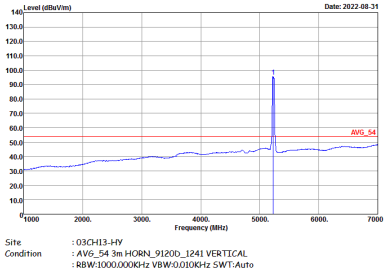
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH38 5190MHz - R	
0+1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

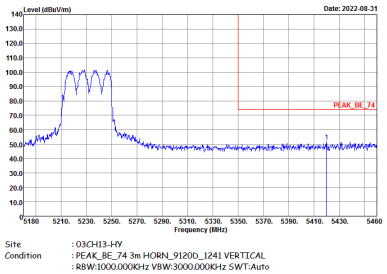
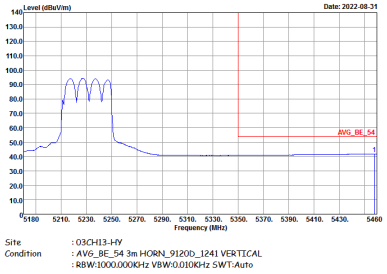
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH38 5190MHz - L	
0+1	Vertical	Fundamental
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH38 5190MHz - R	
0+1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH46 5230MHz - L	
0+1	Horizontal	Fundamental
Peak		
Avg.		

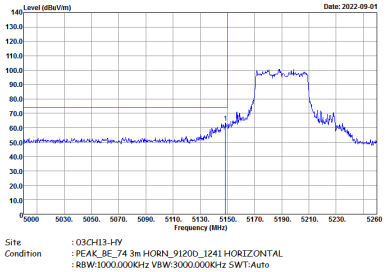
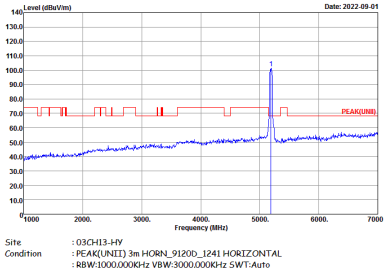
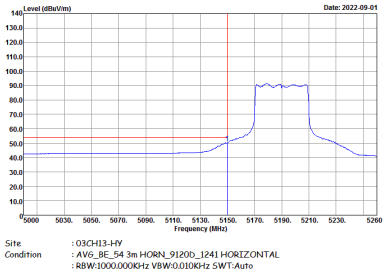
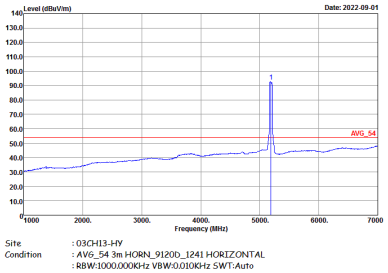
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH46 5230MHz - R	
0+1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

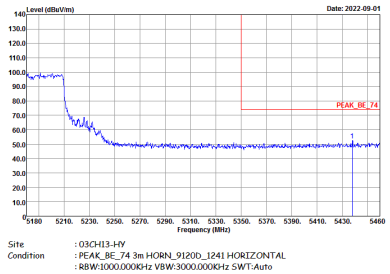
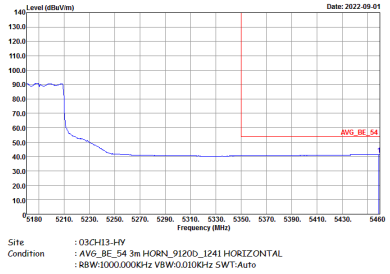
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH46 5230MHz - L	
0+1	Vertical	Fundamental
Peak		
Avg.		

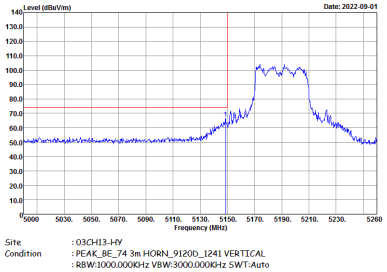
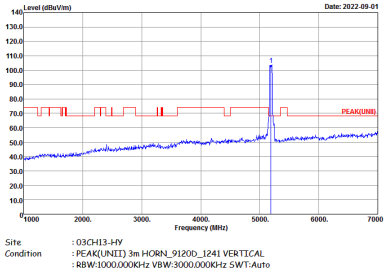
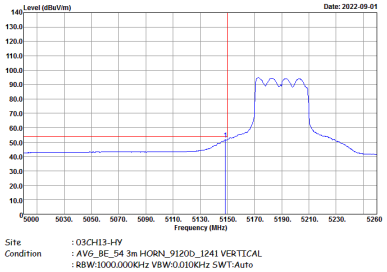
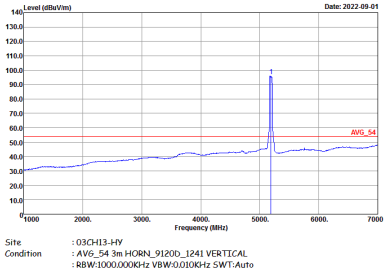
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH46 5230MHz - R	
0+1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

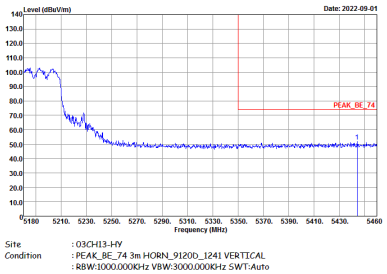
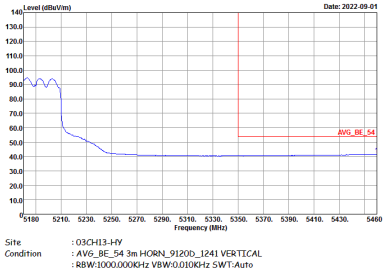
Band 1 5150~5250MHz

WIFI 802.11ax HE40 Partial 484 (Band Edge @ 3m)

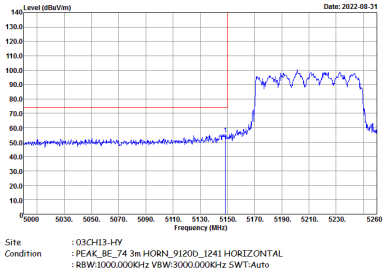
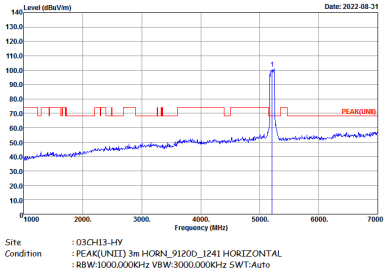
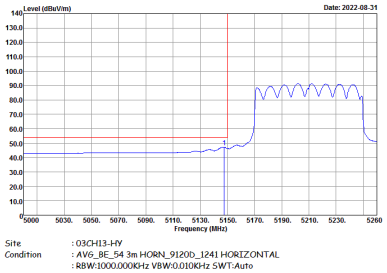
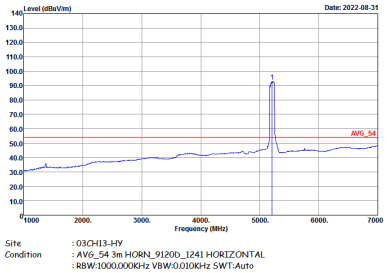
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH38 5190MHz - L	
0+1	Horizontal	Fundamental
Peak		
Avg.		

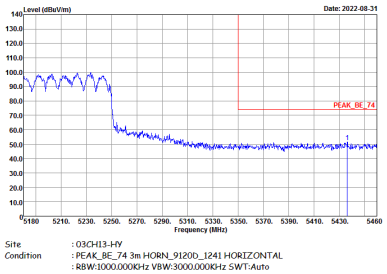
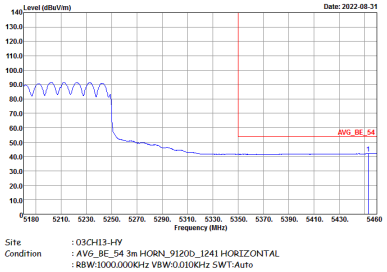
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH38 5190MHz - R	
0+1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

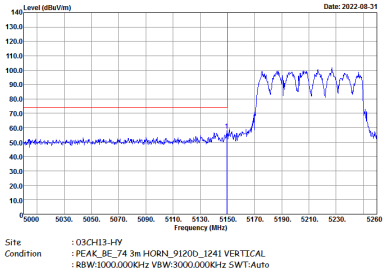
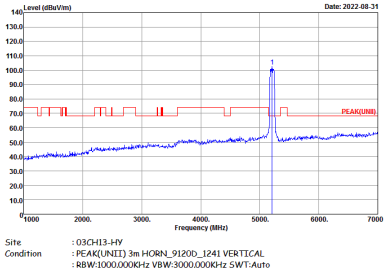
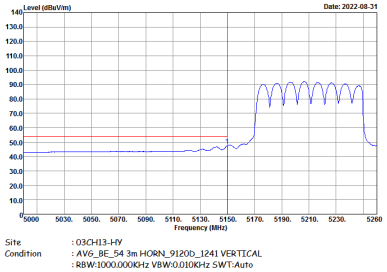
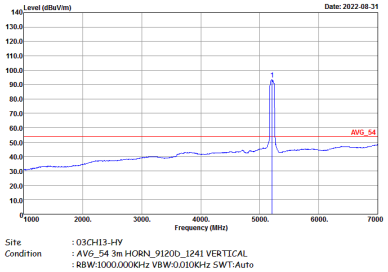
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH38 5190MHz - L	
0+1	Vertical	Fundamental
Peak		
Avg.		

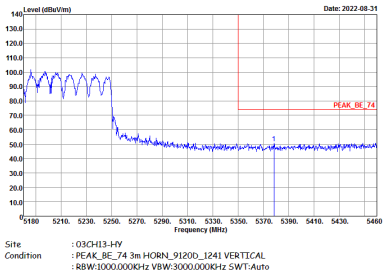
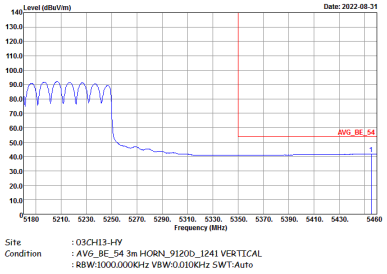
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH38 5190MHz - R	
0+1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

Band 1 5150~5250MHz
WIFI 802.11ax HE80 Full (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH42 5210MHz - L	
0+1	Horizontal	Fundamental
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH42 5210MHz - R	
0+1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH42 5210MHz - L	
0+1	Vertical	Fundamental
Peak		
Avg.		

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH42 5210MHz - R	
0+1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank