FCC RADIO TEST REPORT

FCC ID	:	**QYLAX201NG**
Equipment	:	**WLAN Module**
Brand Name	:	**Getac**
Model Name	:	**AX201NGW**
Applicant	:	**Getac Technology Corporation. 5F., Building A, No. 209, Sec. 1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan, R.O.C.**
Standard	:	**FCC Part 15 Subpart E §15.407**

The product was received on Jan. 13, 2021 and testing was started from Feb. 01, 2021 and completed on Mar. 09, 2021. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FR111325D	01	Initial issue of report	Apr. 01, 2021

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.403(i)	26dB Bandwidth	-	See Note
-	2.1049	99% Occupied Bandwidth	-	See Note
3.1	15.407(a)	Maximum Conducted Output Power	Pass	-
-	15.407(a)	Power Spectral Density	-	See Note
3.2	15.407(b)	Unwanted Emissions	Pass	-
3.3	15.207	AC Conducted Emission	Pass	-
-	15.407(c)	Automatically Discontinue Transmission	-	See Note
3.4	15.203 15.407(a)	Antenna Requirement	Pass	-

Note: The module (Model: AX201NGW) makes no difference after verifying output power, this report reuses test data from the module report.

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

Reviewed by: Wii Chang

Report Producer: Yimin Ho

1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Sample 1	EUT with Host 1
Sample 2	EUT with Host 2
Sample 3	EUT with Host 3
Antenna Type	**WLAN:** <Main> PIFA Antenna <Aux.> PIFA Antenna **Bluetooth:** PIFA Antenna

Antenna information		
5150 MHz ~ 5250 MHz	Peak Gain (dBi)	Main: 2.86 Aux.: 3.01
5250 MHz ~ 5350 MHz	Peak Gain (dBi)	Main: 2.86 Aux.: 3.01
5470 MHz ~ 5725 MHz	Peak Gain (dBi)	Main: 3.57 Aux.: 1.21

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

The product was installed into Tablet (Brand Name: Getac, Model Name: F110, F110G6, F110-Ex, F110-621, F110-601) during test, and the host information was recorded in the following table.

Host Information	
Host 1	Host with SKU A
Host 2	Host with SKU B
Host 3	Host with SKU C

SKU	SKU A	SKU B	SKU C
CPU	i3-1115G7 (Non Vpro)	i5-1135G7 (Non Vpro)	i7-1165G7 (Vpro)
DDR	Kingston DDR4-3200 8GB	Kingston DDR4-3200 16GB	Kingston DDR4-3200 32GB
SSD	256GB	512GB	1TB
PANEL	Full HD AUO	Full HD AUO	Full HD AUO
DIGITIZER	EMRright Digitizer	N/A	EMRright Digitizer
OPTION BAY	Micro SD	2D Barcode Reader	RS232 + LAN
Expansion Bay	N/A	Smart Card	Smart Card
Right side option	Finger Print	NXP RFID(PN7462)	Finger Print
WLAN/BT	Intel AX201	Intel AX201	Intel AX201
WWAN(4G)	NA	EM7511	EM7511
GPS/GNS	GPS/GNSS (MC-1010- V2b)	EM7511	EM7511
Rear 8M Camera	Support	Support	Support
Webcam FHD	Support	Not Support	Not Support
IR Webcam	Not Support	Support	Support
USB3.2 Gen2 x 1 Type-A	Support	Support	Support
Type-C (thunder bolt)	Support	Support	Support
Audio/MIC	Support	Support	Support

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	TH05-HY, CO05-HY

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

Test Site	Sporton International Inc. 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.**
	03CH15-HY (TAF Code: 3786)
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

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

FCC designation No.: TW1190 and TW0007

1.4 Applicable Standards

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

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

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

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, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y Plane for Ant. 1, Z Plane for Ant. 2, and X Plane for MIMO Ant. 1+2) were recorded 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		

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

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

Frequency Band	Channel	Freq. (MHz)
5150-5350 MHz	50@	5250
5470-5725 MHz	114@	5570

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

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

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40 and 802.11ax HE40.
2. The above Frequency and Channel in "#" were 802.11ac VHT80 and 802.11ax HE80.
3. The above Frequency and Channel in "@" were 802.11ac VHT160 and 802.11ax HE160.

2.2 Test Mode

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

Single Mode

Modulation	Data Rate
802.11a	**6 Mbps**
802.11n HT20	**MCS0**
802.11n HT40	**MCS0**
802.11ac VHT20	**MCS0**
802.11ac VHT40	**MCS0**
802.11ac VHT80	**MCS0**
802.11ac VHT160	**MCS0**
802.11ax HE20	**MCS0**
802.11ax HE40	**MCS0**
802.11ax HE80	**MCS0**
802.11ax HE160	**MCS0**

MIMO Mode

Modulation	Data Rate
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0
802.11ac VHT160	MCS0
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0
802.11ax HE160	MCS0

Test Cases	
AC Conducted Emission	Mode 1 :WLAN (5GHz) Link + Bluetooth Link + H-Pattern + Earphone + Adapter for Sample 1 Mode 2 :WLAN (5GHz) Link + Bluetooth Link + H-Pattern + Earphone + Adapter for Sample 2 Mode 3 :WLAN (5GHz) Link + Bluetooth Link + H-Pattern + Earphone + Adapter for Sample 3

Remark:
1. The worst case of conducted emission is mode 3; only the test data of it was reported.
2. For Radiated Test Cases, the tests were performed with Adapter 1, Battery 2 and Sample 2.

Ch. #		Band III：5470-5725MHz
		802.11a
L	Low	-
M	Middle	-
H	High	140
Straddle		-

Ch. #		Band I：5150-5250 MHz
		802.11ax HE20
L	Low	36
M	Middle	-
H	High	-
Straddle		-

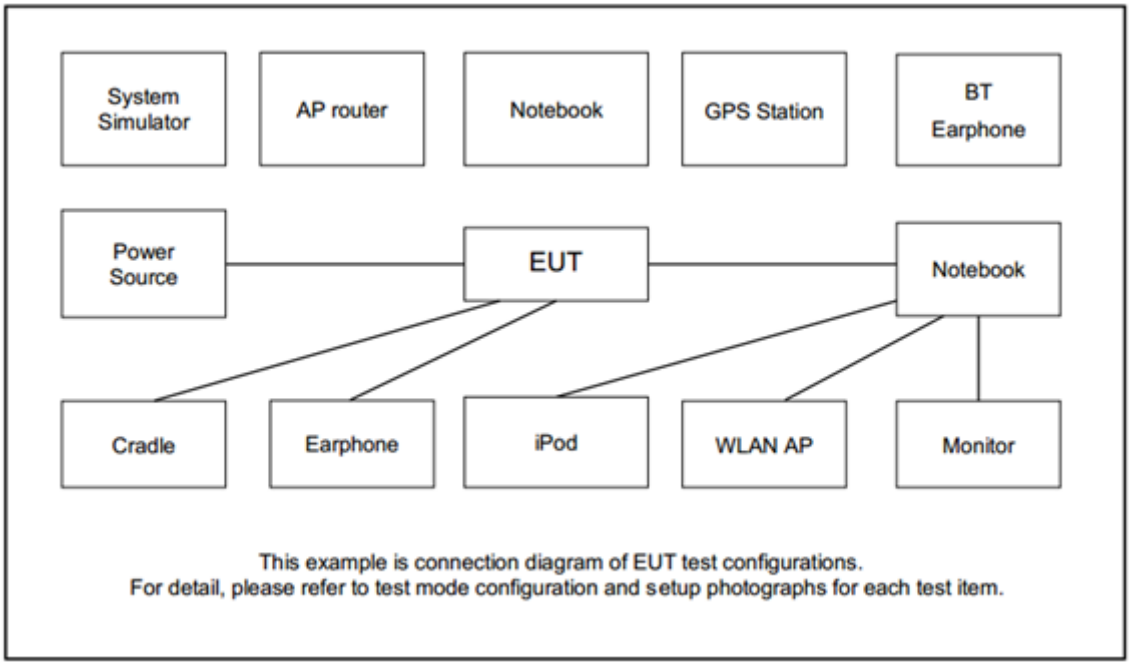
Ch. #		Band II：5250-5350 MHz	Band III：5470-5725MHz
		802.11ax HE40	802.11ac VHT40
L	Low	-	-
M	Middle	-	-
H	High	62	134
Straddle		-	-

Ch. #		Band III：5470-5725MHz
		802.11ax HE80
L	Low	-
M	Middle	-
H	High	122
Straddle		-

BW160		5150-5250 MHz
		802.11ax HE160
Ch. #		50

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

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
4.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “DRTU_Version 12.1947.0-10428” was installed in Tablet 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.

3 Test Result

3.1 Maximum Conducted Output Power Measurement

3.1.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For the 5.15–5.25 GHz bands:

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

For the 5.25–5.725 GHz bands:

■ The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz.

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

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

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

3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

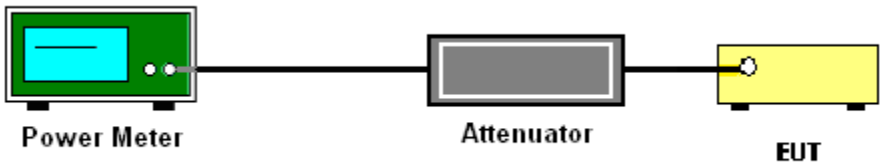
The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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.

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

3.1.4 Test Setup



3.1.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.2 Unwanted Emissions Measurement

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

3.2.1 Limit of Unwanted Emissions

(1) 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.

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

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

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

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

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

$$E=\frac{1000000\sqrt{30P}}{3}$$ 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.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

3.2.3 Test Procedures

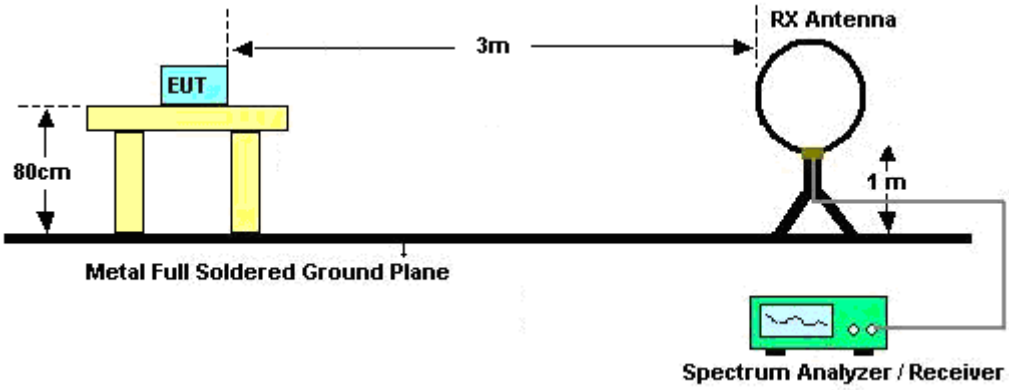
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.
   (1) Procedure for Unwanted Emissions Measurements Below 1000 MHz
   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

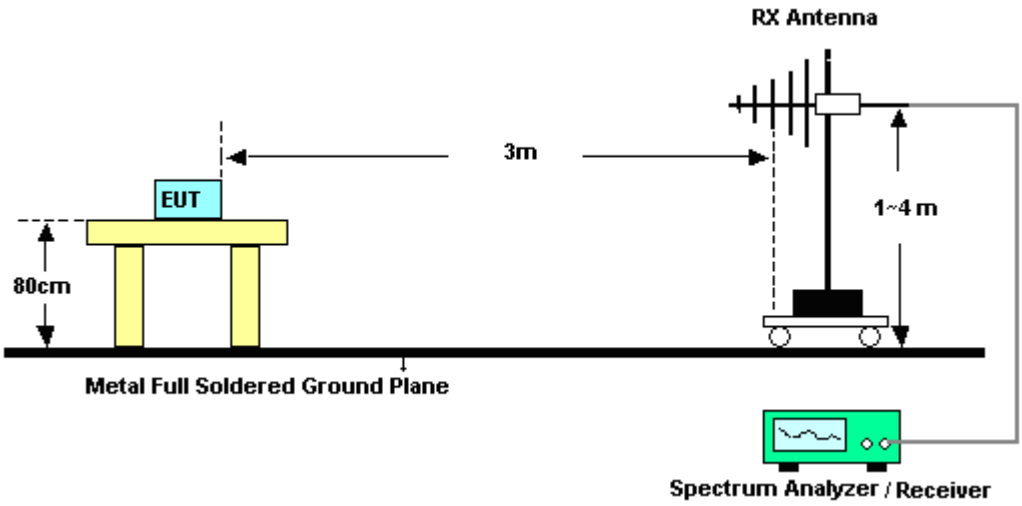
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000 MHz
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1 GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.2.4 Test Setup

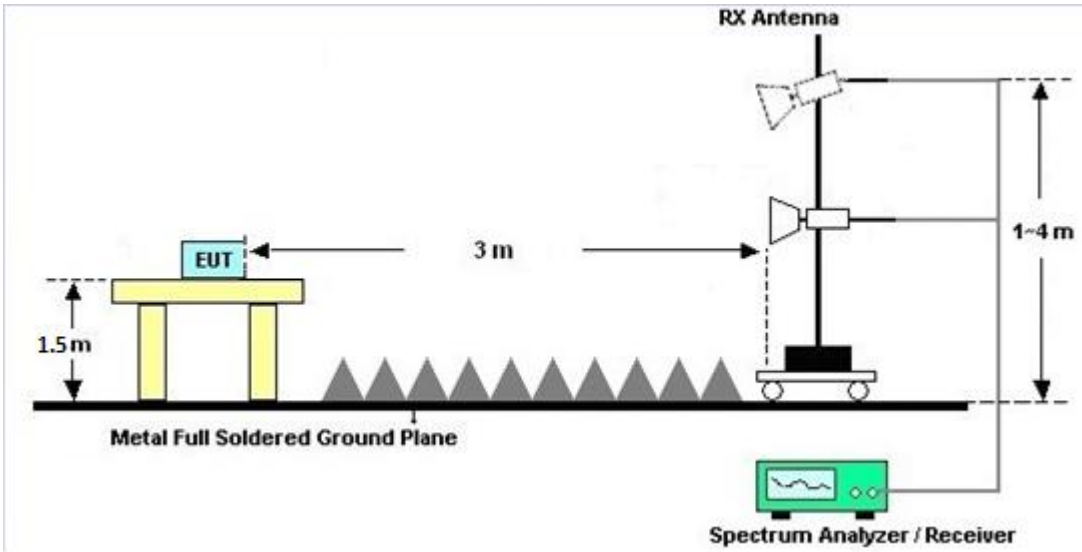
For radiated emissions below 30MHz



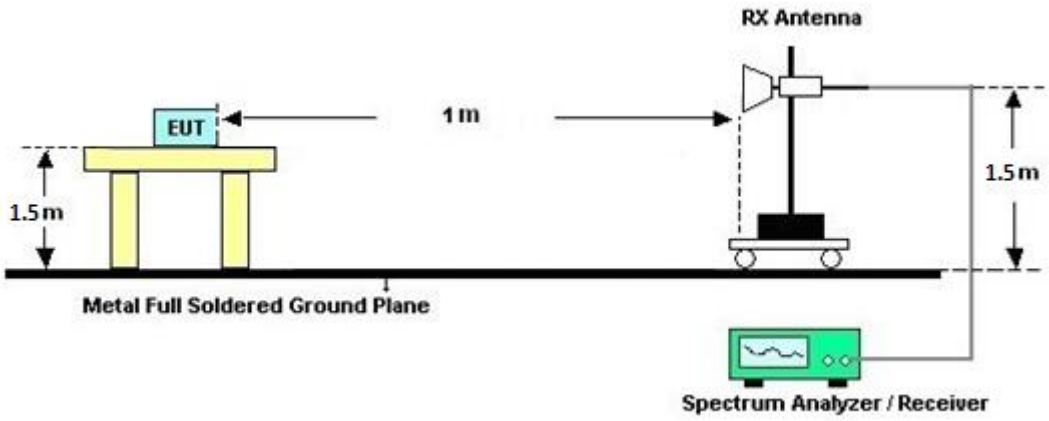
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



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

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

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.2.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.3 AC Conducted Emission Measurement

3.3.1 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.

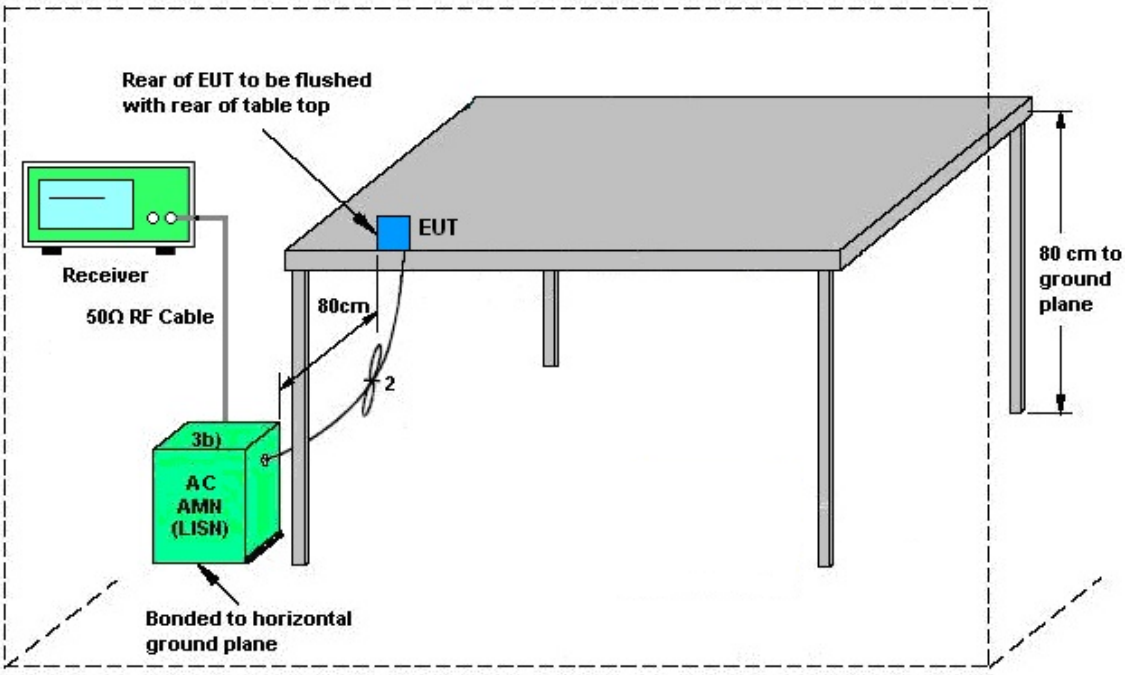
3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

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

3.3.4 Test Setup



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

3.3.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.4 Antenna Requirements

3.4.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.4.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jul. 14, 2020	Mar. 06, 2021~ Mar. 09, 2021	Jul. 13, 2021	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	41912 & 05	30MHz~1GHz	Feb. 08, 2021	Mar. 06, 2021~ Mar. 09, 2021	Feb. 07, 2022	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 28, 2020	Mar. 06, 2021~ Mar. 09, 2021	Dec. 27, 2021	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-01620	1GHz~18GHz	Nov. 03, 2020	Mar. 06, 2021~ Mar. 09, 2021	Nov. 02, 2021	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz~40GHz	Dec. 02, 2020	Mar. 06, 2021~ Mar. 09, 2021	Dec. 01, 2021	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055006	1GHz~18GHz	May 07, 2020	Mar. 06, 2021~ Mar. 09, 2021	May 06, 2021	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 21, 2020	Mar. 06, 2021~ Mar. 09, 2021	Aug. 20, 2021	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	0600789	18-40GHz	Oct. 27, 2020	Mar. 06, 2021~ Mar. 09, 2021	Oct. 26, 2021	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Nov. 02, 2020	Mar. 06, 2021~ Mar. 09, 2021	Nov. 01, 2021	Radiation (03CH15-HY
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	May 04, 2020	Mar. 06, 2021~ Mar. 09, 2021	May 03, 2021	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Mar. 06, 2021~ Mar. 09, 2021	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Mar. 06, 2021~ Mar. 09, 2021	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24 (k5)	RK-000451	N/A	N/A	Mar. 06, 2021~ Mar. 09, 2021	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY36980/4, MY9838/4PE, 508405/2E	30MHz~18G	Nov. 16, 2020	Mar. 06, 2021~ Mar. 09, 2021	Nov. 15, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz-40GHz	Feb. 22, 2021	Mar. 06, 2021~ Mar. 09, 2021	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz-40GHz	Feb. 22, 2021	Mar. 06, 2021~ Mar. 09, 2021	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 12, 2020	Mar. 06, 2021~ Mar. 09, 2021	Mar. 11, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WLJ4-1000-1530-6000-40ST	SN4	1.53GHz Low Pass Filter	Jul. 03, 2020	Mar. 06, 2021~ Mar. 09, 2021	Jul. 02, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN6	6.75GHz High Pass Filter	Jul. 01, 2020	Mar. 06, 2021~ Mar. 09, 2021	Jun. 30, 2021	Radiation (03CH15-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	Feb. 03, 2021	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 11, 2020	Feb. 03, 2021	Sep. 10, 2021	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 18, 2020	Feb. 03, 2021	Nov. 17, 2021	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 16, 2020	Feb. 03, 2021	Nov. 15, 2021	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Feb. 03, 2021	N/A	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 31, 2020	Feb. 03, 2021	Dec. 30, 2021	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	ESHVTSD 9561-F N3-Z2	109561-F N003730851	9kHz-200MHz	Nov. 02, 2020	Feb. 03, 2021	Nov. 01, 2021	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34893241	N/A	Mar. 02, 2020	Feb. 01, 2021 ~ Feb. 19, 2021	Mar. 01, 2021	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO12	10MHz~6GHz	Dec. 16, 2020	Feb. 01, 2021 ~ Feb. 19, 2021	Dec. 15, 2021	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz ~ 40GHz	Jul. 22, 2020	Feb. 01, 2021 ~ Feb. 19, 2021	Jul. 21, 2021	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jan. 21, 2021	Feb. 01, 2021 ~ Feb. 19, 2021	Jan. 20, 2022	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2020	Feb. 01, 2021 ~ Feb. 19, 2021	Mar. 16, 2021	Conducted (TH05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.3

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.7

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.3

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.9

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Kai Liao	Temperature:	23.7~25.1	°C
Test Date:	2021/02/01 ~ 2021/02/19	Relative Humidity:	56.3~58.9	%

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TEST RESULTS DATA
Average Power Table

FCC Band I single antenna													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)			Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	36	5180	13.90	14.00		24.00	24.00	3.01	2.86		Pass
11a	6Mbps	1	44	5220	14.00	13.90		24.00	24.00	3.01	2.86		Pass
11a	6Mbps	1	48	5240	14.10	14.10		24.00	24.00	3.01	2.86		Pass
HT20	MCS0	1	36	5180	13.80	13.90		24.00	24.00	3.01	2.86		Pass
HT20	MCS0	1	44	5220	14.00	13.80		24.00	24.00	3.01	2.86		Pass
HT20	MCS0	1	48	5240	14.00	14.00		24.00	24.00	3.01	2.86		Pass
HT40	MCS0	1	38	5190	14.00	14.10		24.00	24.00	3.01	2.86		Pass
HT40	MCS0	1	46	5230	14.10	14.10		24.00	24.00	3.01	2.86		Pass
VHT20	MCS0	1	36	5180	13.90	13.90		24.00	24.00	3.01	2.86		Pass
VHT20	MCS0	1	44	5220	14.00	13.80		24.00	24.00	3.01	2.86		Pass
VHT20	MCS0	1	48	5240	14.00	13.90		24.00	24.00	3.01	2.86		Pass
VHT40	MCS0	1	38	5190	14.00	14.00		24.00	24.00	3.01	2.86		Pass
VHT40	MCS0	1	46	5230	14.10	14.10		24.00	24.00	3.01	2.86		Pass
VHT80	MCS0	1	42	5210	13.90	13.70		24.00	24.00	3.01	2.86		Pass
VHT160	MCS0	1	50	5250	14.20	14.20		24.00	24.00	3.01	2.86		Pass

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 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HT20	MCS0	2	36	5180	15.40	15.80	18.61	24.00		3.01			Pass
HT20	MCS0	2	44	5220	17.40	17.30	20.36	24.00		3.01			Pass
HT20	MCS0	2	48	5240	17.90	17.90	20.91	24.00		3.01			Pass
HT40	MCS0	2	38	5190	15.10	14.80	17.96	24.00		3.01			Pass
HT40	MCS0	2	46	5230	17.20	16.90	20.06	24.00		3.01			Pass
VHT20	MCS0	2	36	5180	15.40	15.70	18.56	24.00		3.01			Pass
VHT20	MCS0	2	44	5220	17.40	17.40	20.41	24.00		3.01			Pass
VHT20	MCS0	2	48	5240	17.90	17.90	20.91	24.00		3.01			Pass
VHT40	MCS0	2	38	5190	14.90	14.80	17.86	24.00		3.01			Pass
VHT40	MCS0	2	46	5230	17.10	16.90	20.01	24.00		3.01			Pass
VHT80	MCS0	2	42	5210	15.20	14.90	18.06	24.00		3.01			Pass
VHT160	MCS0	2	50	5250	11.90	11.90	14.91	24.00		3.01			Pass

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TEST RESULTS DATA
Average Power Table

FCC Band II single antenna													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	52	5260	13.70	14.00		23.98	23.98	3.01	2.86	26.99	Pass
11a	6Mbps	1	60	5300	14.10	14.10		23.98	23.98	3.01	2.86	26.99	Pass
11a	6Mbps	1	64	5320	14.00	14.10		23.98	23.98	3.01	2.86	26.99	Pass
HT20	MCS0	1	52	5260	13.70	13.90		23.98	23.98	3.01	2.86	26.99	Pass
HT20	MCS0	1	60	5300	13.90	14.00		23.98	23.98	3.01	2.86	26.99	Pass
HT20	MCS0	1	64	5320	13.90	14.00		23.98	23.98	3.01	2.86	26.99	Pass
HT40	MCS0	1	54	5270	13.80	14.10		23.98	23.98	3.01	2.86	26.99	Pass
HT40	MCS0	1	62	5310	14.10	14.10		23.98	23.98	3.01	2.86	26.99	Pass
VHT20	MCS0	1	52	5260	13.70	13.80		23.98	23.98	3.01	2.86	26.99	Pass
VHT20	MCS0	1	60	5300	13.90	14.00		23.98	23.98	3.01	2.86	26.99	Pass
VHT20	MCS0	1	64	5320	13.90	14.00		23.98	23.98	3.01	2.86	26.99	Pass
VHT40	MCS0	1	54	5270	13.80	14.10		23.98	23.98	3.01	2.86	26.99	Pass
VHT40	MCS0	1	62	5310	14.10	14.10		23.98	23.98	3.01	2.86	26.99	Pass
VHT80	MCS0	1	58	5290	13.90	13.90		23.98	23.98	3.01	2.86	26.99	Pass

FCC Band II MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HT20	MCS0	2	52	5260	17.60	17.40	20.51	23.98		3.01		26.99	Pass
HT20	MCS0	2	60	5300	17.80	17.50	20.66	23.98		3.01		26.99	Pass
HT20	MCS0	2	64	5320	13.40	13.50	16.46	23.98		3.01		26.99	Pass
HT40	MCS0	2	54	5270	15.90	16.00	18.96	23.98		3.01		26.99	Pass
HT40	MCS0	2	62	5310	12.80	13.00	15.91	23.98		3.01		26.99	Pass
VHT20	MCS0	2	52	5260	17.50	17.50	20.51	23.98		3.01		26.99	Pass
VHT20	MCS0	2	60	5300	17.80	17.50	20.66	23.98		3.01		26.99	Pass
VHT20	MCS0	2	64	5320	13.30	13.40	16.36	23.98		3.01		26.99	Pass
VHT40	MCS0	2	54	5270	15.80	16.00	18.91	23.98		3.01		26.99	Pass
VHT40	MCS0	2	62	5310	12.50	12.90	15.71	23.98		3.01		26.99	Pass
VHT80	MCS0	2	58	5290	13.60	13.50	16.56	23.98		3.01		26.99	Pass

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TEST RESULTS DATA
Average Power Table

FCC Band III single antenna													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	100	5500	13.80	14.00		23.98	23.98	1.21	3.57	26.99	Pass
11a	6Mbps	1	116	5580	14.20	14.10		23.98	23.98	1.21	3.57	26.99	Pass
11a	6Mbps	1	140	5700	13.80	14.10		23.98	23.98	1.21	3.57	26.99	Pass
HT20	MCS0	1	100	5500	13.80	14.00		23.98	23.98	1.21	3.57	26.99	Pass
HT20	MCS0	1	116	5580	14.10	14.00		23.98	23.98	1.21	3.57	26.99	Pass
HT20	MCS0	1	140	5700	13.80	14.00		23.98	23.98	1.21	3.57	26.99	Pass
HT40	MCS0	1	102	5510	14.00	14.10		23.98	23.98	1.21	3.57	26.99	Pass
HT40	MCS0	1	110	5550	13.80	14.30		23.98	23.98	1.21	3.57	26.99	Pass
HT40	MCS0	1	134	5670	13.90	14.10		23.98	23.98	1.21	3.57	26.99	Pass
VHT20	MCS0	1	100	5500	13.80	13.90		23.98	23.98	1.21	3.57	26.99	Pass
VHT20	MCS0	1	116	5580	14.10	14.00		23.98	23.98	1.21	3.57	26.99	Pass
VHT20	MCS0	1	140	5700	14.00	14.00		23.98	23.98	1.21	3.57	26.99	Pass
VHT40	MCS0	1	102	5510	14.00	14.10		23.98	23.98	1.21	3.57	26.99	Pass
VHT40	MCS0	1	110	5550	13.80	14.30		23.98	23.98	1.21	3.57	26.99	Pass
VHT40	MCS0	1	134	5670	13.90	14.10		23.98	23.98	1.21	3.57	26.99	Pass
VHT80	MCS0	1	106	5530	14.00	13.90		23.98	23.98	1.21	3.57	26.99	Pass
VHT80	MCS0	1	122	5610	14.20	14.20		23.98	23.98	1.21	3.57	26.99	Pass
VHT160	MCS0	1	114	5570	14.30	14.40		23.98	23.98	1.21	3.57	26.99	Pass

FCC Band III MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HT20	MCS0	2	100	5500	13.70	13.80	16.76	23.98		3.57		26.99	Pass
HT20	MCS0	2	116	5580	18.10	18.00	21.06	23.98		3.57		26.99	Pass
HT20	MCS0	2	140	5700	14.30	14.10	17.21	23.98		3.57		26.99	Pass
HT40	MCS0	2	102	5510	14.00	13.90	16.96	23.98		3.57		26.99	Pass
HT40	MCS0	2	110	5550	17.30	17.20	20.26	23.98		3.57		26.99	Pass
HT40	MCS0	2	134	5670	17.10	17.00	20.06	23.98		3.57		26.99	Pass
VHT20	MCS0	2	100	5500	13.70	13.80	16.76	23.98		3.57		26.99	Pass
VHT20	MCS0	2	116	5580	18.00	18.00	21.01	23.98		3.57		26.99	Pass
VHT20	MCS0	2	140	5700	14.30	14.00	17.16	23.98		3.57		26.99	Pass
VHT40	MCS0	2	102	5510	13.80	13.90	16.86	23.98		3.57		26.99	Pass
VHT40	MCS0	2	110	5550	17.30	17.20	20.26	23.98		3.57		26.99	Pass
VHT40	MCS0	2	134	5670	17.10	17.00	20.06	23.98		3.57		26.99	Pass
VHT80	MCS0	2	106	5530	14.60	14.60	17.61	23.98		3.57		26.99	Pass
VHT80	MCS0	2	122	5610	18.20	18.10	21.16	23.98		3.57		26.99	Pass
VHT160	MCS0	2	114	5570	12.00	11.90	14.96	23.98		3.57		26.99	Pass

FCC Band III straddle channel single antenna													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	144	5720	19.30	19.20		23.98	23.98	1.21	3.57	26.99	Pass
HT20	MCS0	1	144	5720	13.80	14.20		23.98	23.98	1.21	3.57	26.99	Pass
HT40	MCS0	1	142	5710	14.00	13.90		23.98	23.98	1.21	3.57	26.99	Pass
VHT20	MCS0	1	144	5720	13.80	14.20		23.98	23.98	1.21	3.57	26.99	Pass
VHT40	MCS0	1	142	5710	13.90	13.90		23.98	23.98	1.21	3.57	26.99	Pass
VHT80	MCS0	1	138	5690	14.00	13.90		23.98	23.98	1.21	3.57	26.99	Pass

FCC Band III straddle channel MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HT20	MCS0	2	144	5720	16.80	16.80	19.81	23.98		3.57		26.99	Pass
HT40	MCS0	2	142	5710	17.60	17.30	20.46	23.98		3.57		26.99	Pass
VHT20	MCS0	2	144	5720	16.80	16.80	19.81	23.98		3.57		26.99	Pass
VHT40	MCS0	2	142	5710	17.50	17.30	20.41	23.98		3.57		26.99	Pass
VHT80	MCS0	2	138	5690	17.80	18.20	21.01	23.98		3.57		26.99	Pass

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TEST RESULTS DATA
Average Power Table

FCC Band I single antenna														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)			Pass/Fail
						Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	1	36	5180	Full	13.70	13.80		24.00	24.00	3.01	2.86		Pass
HE20	MCS0	1	36	5180	26/0	14.00	14.00		24.00	24.00	3.01	2.86		Pass
HE20	MCS0	1	44	5220	Full	13.80	14.10		24.00	24.00	3.01	2.86		Pass
HE20	MCS0	1	48	5240	Full	13.80	13.80		24.00	24.00	3.01	2.86		Pass
HE40	MCS0	1	38	5190	Full	13.80	13.90		24.00	24.00	3.01	2.86		Pass
HE40	MCS0	1	46	5230	Full	13.90	13.80		24.00	24.00	3.01	2.86		Pass
HE80	MCS0	1	42	5210	Full	14.10	14.00		24.00	24.00	3.01	2.86		Pass
HE160	MCS0	1	50	5250	Full	14.00	14.10		24.00	24.00	3.01	2.86		Pass

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 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	2	36	5180	Full	15.60	15.80	18.71	24.00		3.01			Pass
HE20	MCS0	2	36	5180	26/0	10.60	10.60	13.61	24.00		3.01			Pass
HE20	MCS0	2	44	5220	Full	18.00	17.90	20.96	24.00		3.01			Pass
HE20	MCS0	2	48	5240	Full	18.00	18.00	21.01	24.00		3.01			Pass
HE40	MCS0	2	38	5190	Full	17.10	17.00	20.06	24.00		3.01			Pass
HE40	MCS0	2	46	5230	Full	17.50	17.10	20.31	24.00		3.01			Pass
HE80	MCS0	2	42	5210	Full	15.30	15.00	18.16	24.00		3.01			Pass
HE160	MCS0	2	50	5250	Full	12.20	12.20	15.21	24.00		3.01			Pass

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TEST RESULTS DATA
Average Power Table

FCC Band II single antenna														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
						Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	1	52	5260	Full	14.00	14.10		23.98	23.98	3.01	2.86	26.99	Pass
HE20	MCS0	1	60	5300	Full	13.80	13.90		23.98	23.98	3.01	2.86	26.99	Pass
HE20	MCS0	1	64	5320	Full	14.10	13.90		23.98	23.98	3.01	2.86	26.99	Pass
HE20	MCS0	1	64	5320	26/8	14.10	13.60		23.98	23.98	3.01	2.86	26.99	Pass
HE40	MCS0	1	54	5270	Full	14.00	14.10		23.98	23.98	3.01	2.86	26.99	Pass
HE40	MCS0	1	62	5310	Full	13.80	14.00		23.98	23.98	3.01	2.86	26.99	Pass
HE80	MCS0	1	58	5290	Full	14.10	14.10		23.98	23.98	3.01	2.86	26.99	Pass

FCC Band II MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
						Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	2	52	5260	Full	17.70	17.50	20.61	23.98		3.01		26.99	Pass
HE20	MCS0	2	60	5300	Full	17.90	17.60	20.76	23.98		3.01		26.99	Pass
HE20	MCS0	2	64	5320	Full	16.30	16.50	19.41	23.98		3.01		26.99	Pass
HE20	MCS0	2	64	5320	26/8	10.60	10.40	13.51	23.98		3.01		26.99	Pass
HE40	MCS0	2	54	5270	Full	16.20	16.20	19.21	23.98		3.01		26.99	Pass
HE40	MCS0	2	62	5310	Full	14.90	14.90	17.91	23.98		3.01		26.99	Pass
HE80	MCS0	2	58	5290	Full	13.80	13.60	16.71	23.98		3.01		26.99	Pass

Report Number : FR111325D

TEST RESULTS DATA
Average Power Table

FCC Band III single antenna														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
						Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	1	100	5500	Full	14.10	14.10		23.98	23.98	1.21	3.57	26.99	Pass
HE20	MCS0	1	100	5500	26/0	13.90	14.00		23.98	23.98	1.21	3.57	26.99	Pass
HE20	MCS0	1	116	5580	Full	14.00	14.30		23.98	23.98	1.21	3.57	26.99	Pass
HE20	MCS0	1	140	5700	Full	14.10	14.30		23.98	23.98	1.21	3.57	26.99	Pass
HE20	MCS0	1	140	5700	26/8	14.00	14.20		23.98	23.98	1.21	3.57	26.99	Pass
HE40	MCS0	1	102	5510	Full	14.20	14.30		23.98	23.98	1.21	3.57	26.99	Pass
HE40	MCS0	1	110	5550	Full	14.00	14.10		23.98	23.98	1.21	3.57	26.99	Pass
HE40	MCS0	1	134	5670	Full	14.10	14.30		23.98	23.98	1.21	3.57	26.99	Pass
HE80	MCS0	1	106	5530	Full	13.80	13.70		23.98	23.98	1.21	3.57	26.99	Pass
HE80	MCS0	1	122	5610	Full	14.20	14.00		23.98	23.98	1.21	3.57	26.99	Pass
HE160	MCS0	1	114	5570	Full	14.20	14.20		23.98	23.98	1.21	3.57	26.99	Pass

FCC Band III MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
						Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	2	100	5500	Full	16.20	16.40	19.31	23.98		3.57		26.99	Pass
HE20	MCS0	2	100	5500	26/0	10.70	10.60	13.66	23.98		3.57		26.99	Pass
HE20	MCS0	2	116	5580	Full	18.10	18.10	21.11	23.98		3.57		26.99	Pass
HE20	MCS0	2	140	5700	Full	16.40	16.10	19.26	23.98		3.57		26.99	Pass
HE20	MCS0	2	140	5700	26/8	10.50	10.30	13.41	23.98		3.57		26.99	Pass
HE40	MCS0	2	102	5510	Full	16.20	16.30	19.26	23.98		3.57		26.99	Pass
HE40	MCS0	2	110	5550	Full	17.50	17.50	20.51	23.98		3.57		26.99	Pass
HE40	MCS0	2	134	5670	Full	17.90	18.10	21.01	23.98		3.57		26.99	Pass
HE80	MCS0	2	106	5530	Full	14.70	14.80	17.76	23.98		3.57		26.99	Pass
HE80	MCS0	2	122	5610	Full	18.40	18.30	21.36	23.98		3.57		26.99	Pass
HE160	MCS0	2	114	5570	Full	13.50	13.70	16.61	23.98		3.57		26.99	Pass

FCC Band III straddle channel single antenna														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
						Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	1	144	5720	Full	14.10	14.10		23.98	23.98	1.21	3.57	26.99	Pass
HE40	MCS0	1	142	5710	Full	14.10	14.10		23.98	23.98	1.21	3.57	26.99	Pass
HE80	MCS0	1	138	5690	Full	13.80	13.70		23.98	23.98	1.21	3.57	26.99	Pass

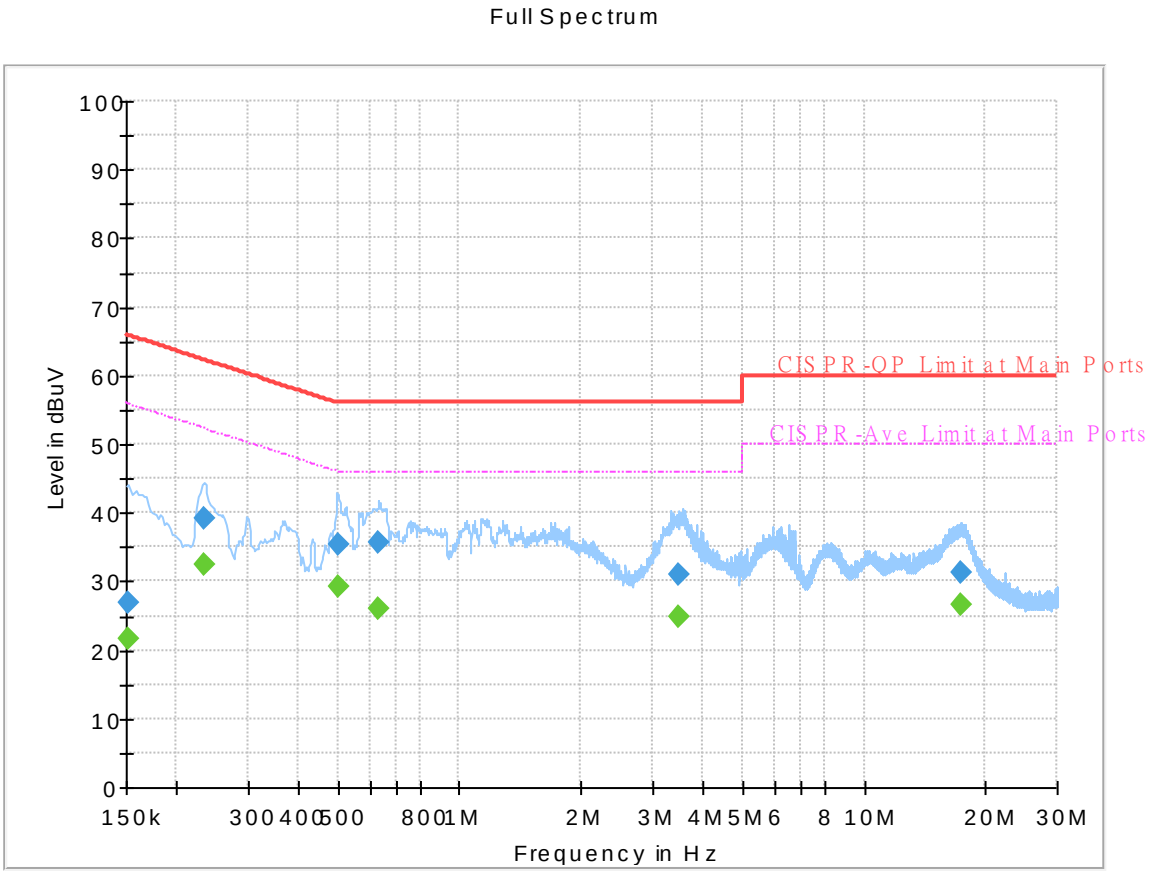
FCC Band III straddle channel MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
						Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	2	144	5720	Full	16.80	16.90	19.86	23.98		3.57		26.99	Pass
HE40	MCS0	2	142	5710	Full	17.70	17.60	20.66	23.98		3.57		26.99	Pass
HE80	MCS0	2	138	5690	Full	18.00	18.30	21.16	23.98		3.57		26.99	Pass

Appendix B. AC Conducted Emission Test Results

Test Engineer :	Howard Huang	**Temperature :**	23~26℃
		Relative Humidity :	40~50%

EUT Information

Report NO :	111325
Test Mode :	Mode 3
Test Voltage :	120Vac/60Hz
Phase :	Line

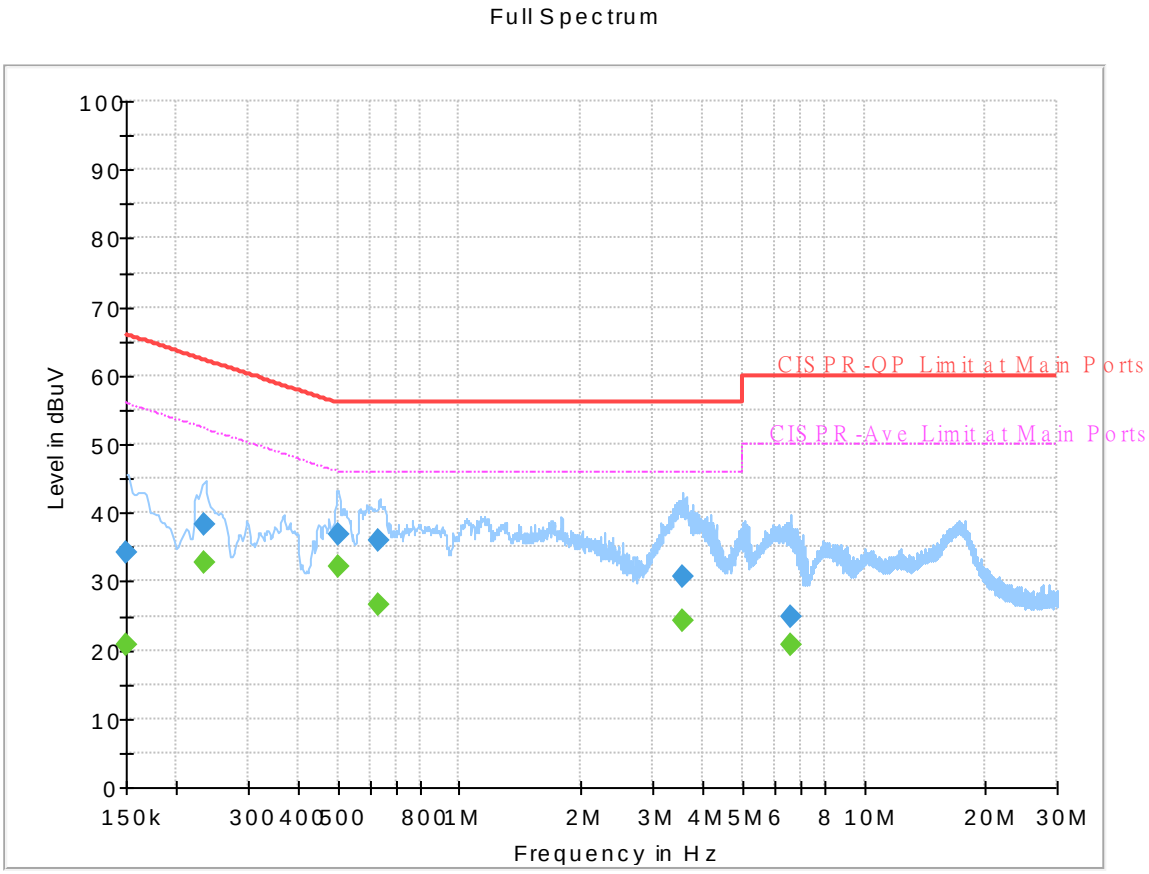


Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	21.63	55.88	34.25	L1	OFF	19.7
0.152250	26.91	---	65.88	38.97	L1	OFF	19.7
0.233250	---	32.34	52.33	19.99	L1	OFF	19.7
0.233250	39.07	---	62.33	23.26	L1	OFF	19.7
0.502530	---	29.19	46.00	16.81	L1	OFF	19.9
0.502530	35.46	---	56.00	20.54	L1	OFF	19.9
0.631680	---	25.93	46.00	20.07	L1	OFF	20.0
0.631680	35.65	---	56.00	20.35	L1	OFF	20.0
3.499170	---	24.86	46.00	21.14	L1	OFF	20.0
3.499170	31.09	---	56.00	24.91	L1	OFF	20.0
17.383830	---	26.58	50.00	23.42	L1	OFF	20.0
17.383830	31.41	---	60.00	28.59	L1	OFF	20.0

EUT Information

Report NO :	111325
Test Mode :	Mode 3
Test Voltage :	120Vac/60Hz
Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	20.88	56.00	35.12	N	OFF	19.7
0.150000	34.13	---	66.00	31.87	N	OFF	19.7
0.235230	---	32.88	52.26	19.38	N	OFF	19.7
0.235230	38.24	---	62.26	24.02	N	OFF	19.7
0.501540	---	32.04	46.00	13.96	N	OFF	19.9
0.501540	36.82	---	56.00	19.18	N	OFF	19.9
0.632040	---	26.57	46.00	19.43	N	OFF	20.0
0.632040	35.88	---	56.00	20.12	N	OFF	20.0
3.552270	---	24.19	46.00	21.81	N	OFF	20.0
3.552270	30.77	---	56.00	25.23	N	OFF	20.0
6.627750	---	20.83	50.00	29.17	N	OFF	20.0
6.627750	24.86	---	60.00	35.14	N	OFF	20.0

Appendix C. Radiated Spurious Emission

Test Engineer :	Leo Lee, Mancy Chou, and Bigshow Wang	Temperature :	22.8 ~ 23.2°C
		Relative Humidity :	44 ~ 50%

Band 1 - 5150~5250MHz

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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 36 5180MHz		5042.12	51.36	-22.64	74	39.86	31.64	9.88	30.02	300	320	P	H
		5150	41.31	-12.69	54	29.52	31.8	10	30.01	300	320	A	H
	*	5180	105.91	-	-	94.27	31.62	10.03	30.01	300	320	P	H
	*	5180	95.03	-	-	83.39	31.62	10.03	30.01	300	320	A	H
													H
													H
		5102.7	51.07	-22.93	74	39.33	31.8	9.95	30.01	100	217	P	V
		5149.76	41.39	-12.61	54	29.6	31.8	10	30.01	100	217	A	V
	*	5180	104.87	-	-	93.23	31.62	10.03	30.01	100	217	P	V
	*	5180	94.94	-	-	83.3	31.62	10.03	30.01	100	217	A	V
													V
													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. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 36 5180MHz		10360	47.64	-20.56	68.2	54.64	39.44	14.46	60.9	100	0	P	H
		15540	46.55	-27.45	74	54.15	37.82	17.29	62.71	100	0	P	H
		17989	59.63	-14.37	74	49.71	48.8	19.03	57.91	100	206	P	H
		17989	50.24	-3.76	54	40.32	48.8	19.03	57.91	100	206	A	H
		10360	48.6	-19.6	68.2	55.6	39.44	14.46	60.9	100	0	P	V
		15540	46.22	-27.78	74	53.82	37.82	17.29	62.71	100	0	P	V
		17989	60.03	-13.97	74	50.11	48.8	19.03	57.91	100	138	P	V
		17989	49.89	-4.11	54	39.97	48.8	19.03	57.91	100	138	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 140 5700MHz	*	5700	104.38	-	-	92.32	31.7	10.49	30.13	250	127	P	H
	*	5700	95.82	-	-	83.76	31.7	10.49	30.13	250	127	A	H
		5725.16	53.97	-14.23	68.2	41.85	31.75	10.52	30.15	250	127	P	H
													H
													H
													H
	*	5700	106.92	-	-	94.86	31.7	10.49	30.13	100	240	P	V
	*	5700	98.43	-	-	86.37	31.7	10.49	30.13	100	240	A	V
		5727.72	54.95	-13.25	68.2	42.82	31.76	10.52	30.15	100	240	P	V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 140 5700MHz		11400	48.45	-25.55	74	54.4	40	14.99	60.94	100	0	P	H
		17100	50.35	-17.85	68.2	50.35	40.6	18.38	58.98	100	0	P	H
		17967	59.06	-14.94	74	49.57	48.41	19.02	57.94	100	202	P	H
		17967	50.07	-3.93	54	40.58	48.41	19.02	57.94	100	202	A	H
		11400	47.91	-26.09	74	53.86	40	14.99	60.94	100	0	P	V
		17100	50.12	-18.08	68.2	50.12	40.6	18.38	58.98	100	0	P	V
		17989	59.18	-14.82	74	49.26	48.8	19.03	57.91	100	122	P	V
		17989	49.89	-4.11	54	39.97	48.8	19.03	57.91	100	122	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 HE20 Full (SHF @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full SHF		22312	40.04	-33.96	74	43.53	38.84	12.25	54.58	150	0	P	H
		35754	46.07	-22.13	68.2	44.11	42.05	18.61	58.7	150	0	P	H
													H
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													H
													H
		23544	40.49	-27.71	68.2	43.22	38.68	12.56	53.97	150	0	P	V
		33994	43.19	-25.01	68.2	41.37	41.79	17.92	57.89	150	0	P	V
													V
													V
													V
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													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Emission below 1GHz

WIFI 802.11ax HE20 Full (LF @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full LF		62.01	24.69	-15.31	40	44.42	11.74	1.07	32.54	-	-	P	H
		147.37	27.32	-16.18	43.5	40.9	17.19	1.73	32.5	-	-	P	H
		299.66	30.2	-15.8	46	41.16	19.13	2.4	32.49	-	-	P	H
		465.53	32.36	-13.64	46	38.44	23.46	2.92	32.46	-	-	P	H
		742.95	36.13	-9.87	46	37.06	27.82	3.7	32.45	-	-	P	H
		897.18	36.63	-9.37	46	35.24	28.88	4.15	31.64	100	0	P	H
													H
													H
													H
													H
													H
													H
		46.49	24.08	-15.92	40	39.82	15.99	0.86	32.59	-	-	P	V
		146.4	25.55	-17.95	43.5	39.13	17.19	1.73	32.5	-	-	P	V
		561.56	30.86	-15.14	46	34.12	26.09	3.25	32.6	-	-	P	V
		713.85	36.58	-9.42	46	38.81	26.6	3.62	32.45	-	-	P	V
		744.89	37.91	-8.09	46	38.78	27.87	3.71	32.45	100	0	P	V
		894.27	36.39	-9.61	46	35.04	28.86	4.15	31.66	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Band 2 - 5250~5350MHz

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

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE40 Full CH 62 5310MHz		5090.44	50.44	-23.56	74	38.74	31.78	9.93	30.01	100	347	P	H
		5104.04	40.52	-13.48	54	28.78	31.8	9.95	30.01	100	347	A	H
	*	5310	97.11	-	-	85.79	31.18	10.14	30	100	347	P	H
	*	5310	86.32	-	-	75	31.18	10.14	30	100	347	A	H
		5443.68	51.3	-22.7	74	39.47	31.57	10.25	29.99	100	347	P	H
		5350.08	40.92	-13.08	54	29.65	31.1	10.17	30	100	347	A	H
		5117.98	50.52	-23.48	74	38.77	31.8	9.96	30.01	200	277	P	V
		5146.54	40.71	-13.29	54	28.93	31.8	9.99	30.01	200	277	A	V
	*	5310	104.95	-	-	93.63	31.18	10.14	30	200	277	P	V
	*	5310	94.04	-	-	82.72	31.18	10.14	30	200	277	A	V
		5352.48	52.2	-21.8	74	40.92	31.11	10.17	30	200	277	P	V
		5350.08	44.2	-9.8	54	32.93	31.1	10.17	30	200	277	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

WIFI 802.11ax HE40 Full (Harmonic @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE40 Full CH 62 5310MHz		10620	48.05	-25.95	74	54.82	39.74	14.59	61.1	100	0	P	H
		15930	46.02	-27.98	74	52.1	37.23	17.53	60.84	100	0	P	H
		18000	58.92	-15.08	74	48.78	49	19.04	57.9	100	200	P	H
		18000	50.1	-3.9	54	39.96	49	19.04	57.9	100	200	A	H
		10620	48.56	-25.44	74	55.33	39.74	14.59	61.1	100	0	P	V
		15930	46.2	-27.8	74	52.28	37.23	17.53	60.84	100	0	P	V
		17989	58.84	-15.16	74	48.92	48.8	19.03	57.91	100	136	P	V
		17989	49.9	-4.1	54	39.98	48.8	19.03	57.91	100	136	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

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

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE80 Full CH 122 5610MHz		5439.52	50.84	-23.16	74	39.03	31.56	10.24	29.99	100	335	P	H
		5463.52	51.42	-16.78	68.2	39.55	31.6	10.26	29.99	100	335	P	H
		5459.68	41.01	-12.99	54	29.14	31.6	10.26	29.99	100	335	A	H
	*	5610	94.56	-	-	82.62	31.62	10.39	30.07	100	335	P	H
	*	5610	85.85	-	-	73.91	31.62	10.39	30.07	100	335	A	H
		5730.35	51.01	-17.19	68.2	38.89	31.76	10.52	30.16	100	335	P	H
		5459.2	52.44	-21.56	74	40.57	31.6	10.26	29.99	200	300	P	V
		5468.56	52.81	-15.39	68.2	40.93	31.6	10.27	29.99	200	300	P	V
		5459.92	42.12	-11.88	54	30.25	31.6	10.26	29.99	200	300	A	V
	*	5610	98.86	-	-	86.92	31.62	10.39	30.07	200	300	P	V
	*	5610	90.12	-	-	78.18	31.62	10.39	30.07	200	300	A	V
		5757.125	51.82	-16.38	68.2	39.65	31.8	10.55	30.18	200	300	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 5470~5725MHz

WIFI 802.11ax HE80 Full (Harmonic @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE80 Full CH 122 5610MHz		11220	48.55	-25.45	74	54.84	39.82	14.9	61.01	100	0	P	H
		16830	49.49	-18.71	68.2	50.18	40.33	18.18	59.2	100	0	P	H
		17978	58.76	-15.24	74	49.06	48.6	19.03	57.93	100	214	P	H
		17978	49.71	-4.29	54	40.01	48.6	19.03	57.93	100	214	A	H
		11220	47.69	-26.31	74	53.98	39.82	14.9	61.01	100	0	P	V
		16830	49.67	-18.53	68.2	50.36	40.33	18.18	59.2	100	0	P	V
		17989	58.63	-15.37	74	48.71	48.8	19.03	57.91	100	128	P	V
		17989	49.94	-4.06	54	40.02	48.8	19.03	57.91	100	128	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 HE160 Full (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE160 CH 50 5250MHz		5140.14	53.75	-20.25	74	41.97	31.8	9.99	30.01	100	6	P	H
		5147.42	43.84	-10.16	54	32.06	31.8	9.99	30.01	100	6	A	H
	*	5250	97.59	-	-	86.31	31.2	10.09	30.01	100	6	P	H
	*	5250	86.89	-	-	75.61	31.2	10.09	30.01	100	6	A	H
		5402.32	56.76	-17.24	74	45.14	31.41	10.21	30	100	6	P	H
		5401.48	45.14	-8.86	54	33.52	31.41	10.21	30	100	6	A	H
		5146.38	52.6	-21.4	74	40.82	31.8	9.99	30.01	261	185	P	V
		5148.98	44.03	-9.97	54	32.24	31.8	10	30.01	261	185	A	V
	*	5250	96.45	-	-	85.17	31.2	10.09	30.01	261	185	P	V
	*	5250	85.68	-	-	74.4	31.2	10.09	30.01	261	185	A	V
		5359.2	53.72	-20.28	74	42.38	31.16	10.18	30	261	185	P	V
		5363.4	43.94	-10.06	54	32.58	31.18	10.18	30	261	185	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 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE160 CH 50 5250MHz		10500	45.94	-22.26	68.2	52.81	39.7	14.53	61.1	100	0	P	H
		15750	46.28	-27.72	74	53.32	37.25	17.41	61.7	100	0	P	H
		17989	58.91	-15.09	74	48.99	48.8	19.03	57.91	100	206	P	H
		17989	49.92	-4.08	54	40	48.8	19.03	57.91	100	206	A	H
		10500	47.1	-21.1	68.2	53.97	39.7	14.53	61.1	100	0	P	V
		15750	46.65	-27.35	74	53.69	37.25	17.41	61.7	100	0	P	V
		17978	58.36	-15.64	74	48.66	48.6	19.03	57.93	100	132	P	V
		17978	49.62	-4.38	54	39.92	48.6	19.03	57.93	100	132	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

WIFI 802.11ac VHT40 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
02.11ac VHT40 CH 134 5670MHz		5401.1	51.26	-22.74	74	39.65	31.4	10.21	30	100	5	P	H
		5462.7	50.7	-17.5	68.2	38.83	31.6	10.26	29.99	100	5	P	H
		5459.9	40.92	-13.08	54	29.05	31.6	10.26	29.99	100	5	A	H
	*	5670	105.82	-	-	93.77	31.7	10.46	30.11	100	5	P	H
	*	5670	96.6	-	-	84.55	31.7	10.46	30.11	100	5	A	H
		5726.5	57.7	-10.5	68.2	45.58	31.75	10.52	30.15	100	5	P	H
		5432.6	51.53	-22.47	74	39.75	31.53	10.24	29.99	250	179	P	V
		5464.8	51.55	-16.65	68.2	39.67	31.6	10.27	29.99	250	179	P	V
		5459.9	40.66	-13.34	54	28.79	31.6	10.26	29.99	250	179	A	V
	*	5670	102.98	-	-	90.93	31.7	10.46	30.11	250	179	P	V
	*	5670	93.21	-	-	81.16	31.7	10.46	30.11	250	179	A	V
		5726.5	54.48	-13.72	68.2	42.36	31.75	10.52	30.15	250	179	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 134 5670MHz		11340	49.11	-24.89	74	55.17	39.94	14.96	60.96	100	0	P	H
		17010	49.72	-18.48	68.2	49.89	40.6	18.32	59.09	100	0	A	H
		18000	58.85	-15.15	74	48.71	49	19.04	57.9	100	222	P	H
		18000	50.04	-3.96	54	39.9	49	19.04	57.9	100	222	A	H
		11340	47.71	-26.29	74	53.77	39.94	14.96	60.96	100	0	P	V
		17010	49.67	-18.53	68.2	49.84	40.6	18.32	59.09	100	0	A	V
		18000	59.02	-14.98	74	48.88	49	19.04	57.9	100	96	P	V
		18000	50.06	-3.94	54	39.92	49	19.04	57.9	100	96	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Note symbol

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

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

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

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

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

Appendix D. Radiated Spurious Emission Plots

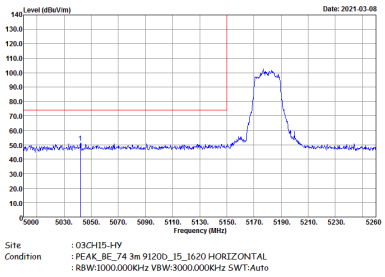
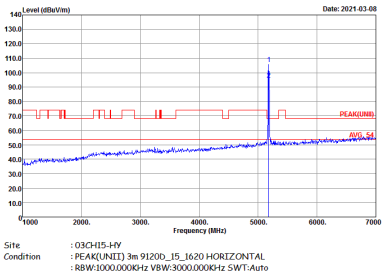
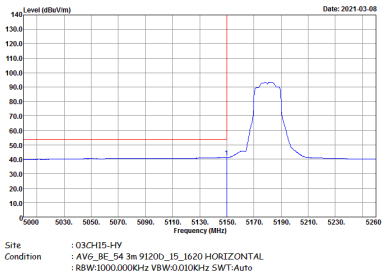
Test Engineer :	Leo Lee, Mancy Chou, and Bigshow Wang	**Temperature :**	22.8 ~ 23.2°C
		Relative Humidity :	44 ~ 50%

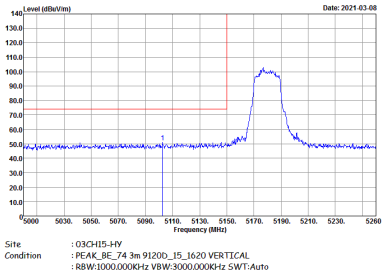
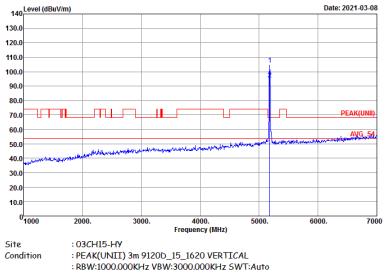
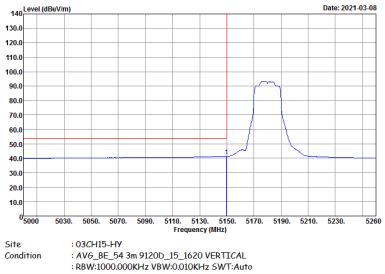
Note symbol

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

Band 1 - 5150~5250MHz

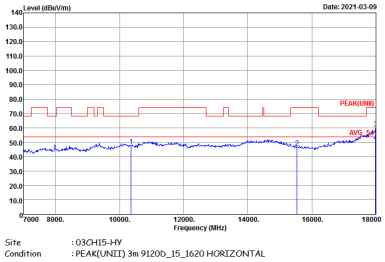
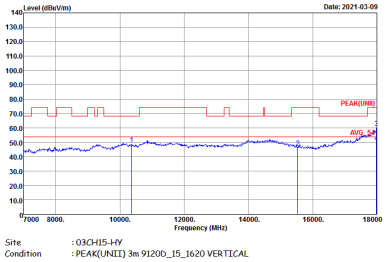
WIFI 802.11ax HE20 Full (Band Edge @ 3m)

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

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

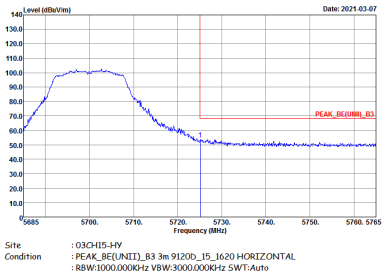
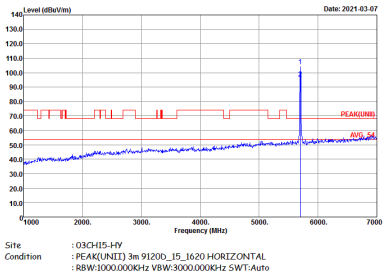
Band 1 - 5150~5250MHz

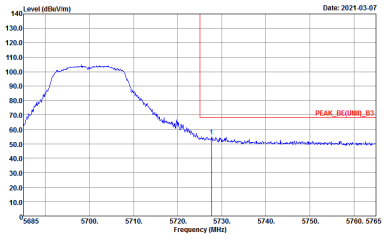
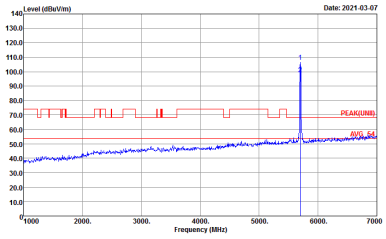
WIFI 802.11ax HE20 Full (Harmonic @ 3m)

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH36 5180MHz	
1	Horizontal	Vertical
Peak Avg.		

Band 3 - 5470~5725MHz

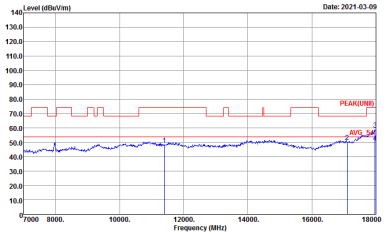
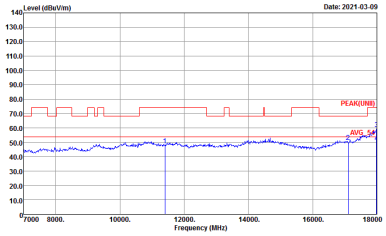
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11a CH140 5700MHz	
1	Horizontal	Fundamental
Peak		

WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11a CH140 5700MHz	
1	Vertical	Fundamental
Peak		

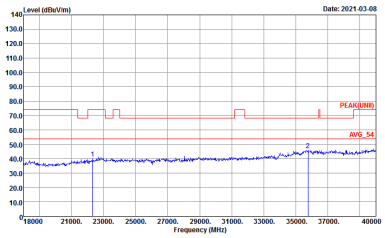
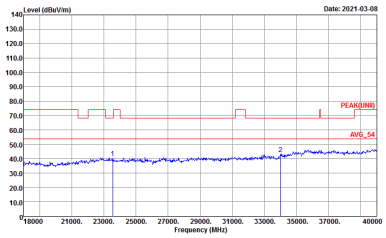
Band 3 - 5470~5725MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 3 5470~5725MHz Harmonic @ 3m	
ANT	802.11a CH140 5700MHz	
1	Horizontal	Vertical
Peak Avg.		

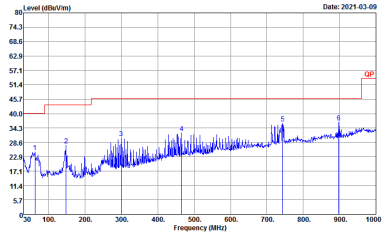
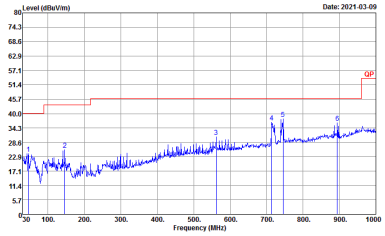
Emission above 18GHz

5GHz WIFI 802.11ax HE20 Full (SHF)

WIFI	5GHz WIFI	
ANT	802.11ax HE20 Full SHF	
1	Horizontal	Vertical
QP / Peak		

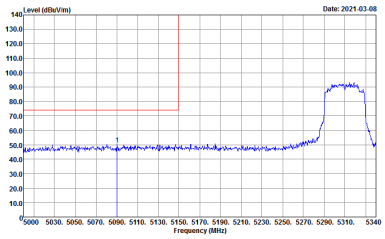
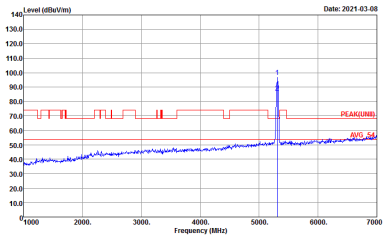
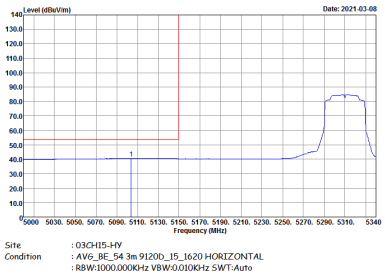
Emission below 1GHz

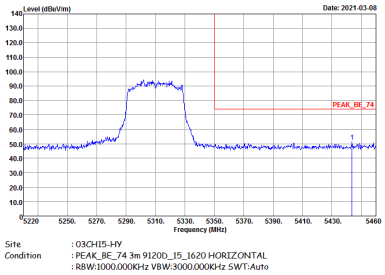
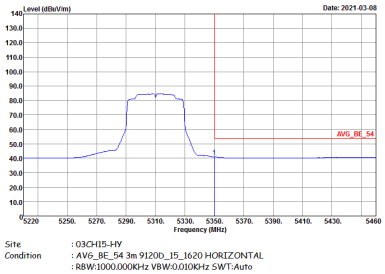
5GHz WIFI 802.11ax HE160 Full (LF)

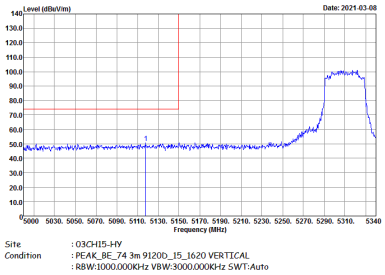
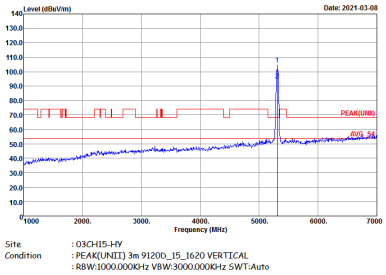
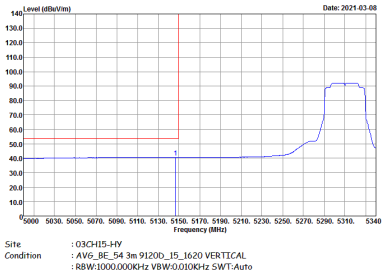
WIFI	5GHz WIFI	
ANT	802.11ax HE20 Full LF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH15-HY Condition : QP 3m BILOG_41912_20210208 HORIZONTAL	 Site : 03CH15-HY Condition : QP 3m BILOG_41912_20210208 VERTICAL

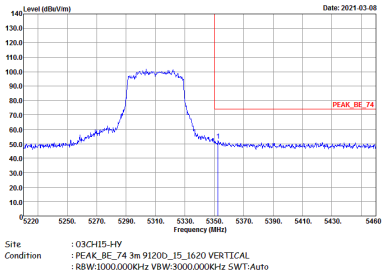
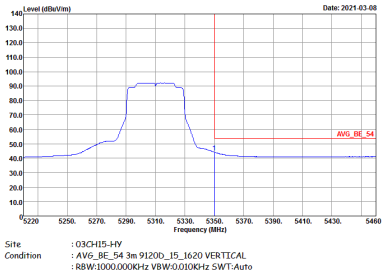
Band 2 - 5250~5350MHz

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

WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH62 5310 - L	
2	Horizontal	Fundamental
Peak		
Avg.		Left blank

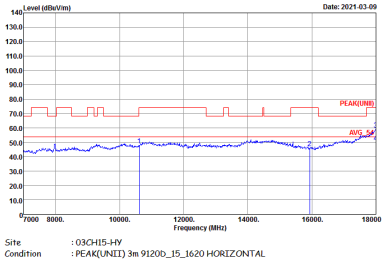
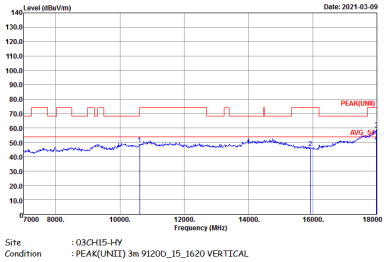
WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH62 5310 - R	
2	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH62 5310 - L	
2	Vertical	Fundamental
Peak		
Avg.		Left blank

WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH62 5310 - R	
2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

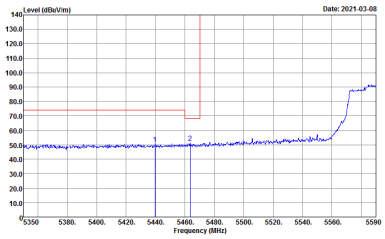
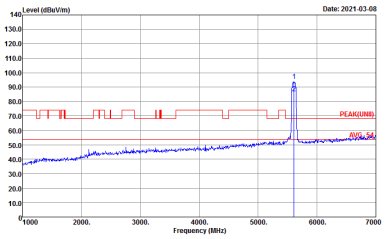
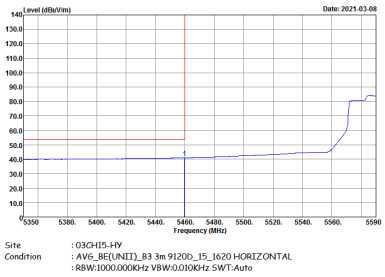
Band 2 - 5250~5350MHz

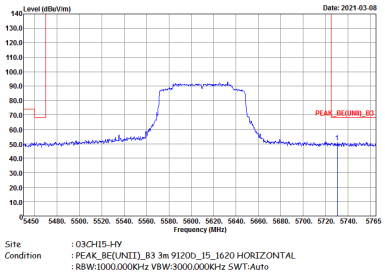
WIFI 802.11ax HE40 Full (Harmonic @ 3m)

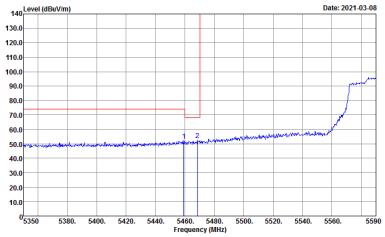
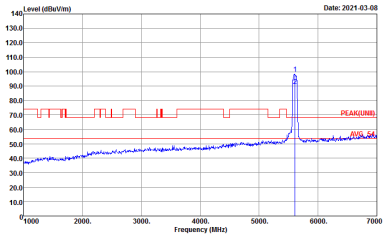
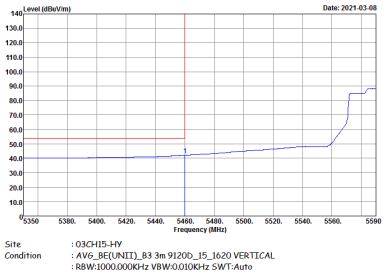
WIFI	Band 2 5250~5350MHz Harmonic @ 3m	
ANT	802.11ax HE40 Full CH62 5310	
2	Horizontal	Vertical
Peak Avg.		

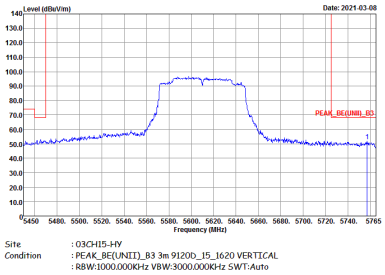
Band 3 - 5470~5725MHz

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

WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH122 5610MHz - L	
2	Horizontal	Fundamental
Peak		
Avg.		Left blank

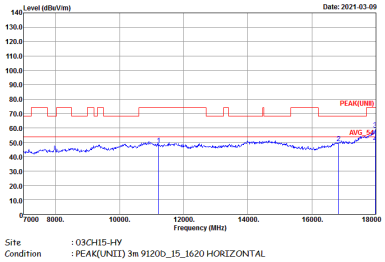
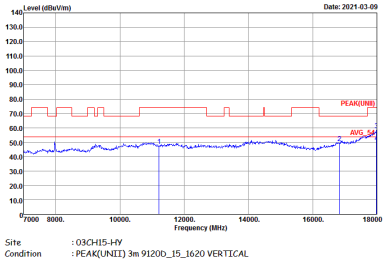
WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH122 5610MHz - R	
2	Horizontal	Fundamental
Peak		Left blank

WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH122 5610MHz - L	
2	Vertical	Fundamental
Peak		
Avg.		Left blank

WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH122 5610MHz - R	
2	Vertical	Fundamental
Peak		Left blank

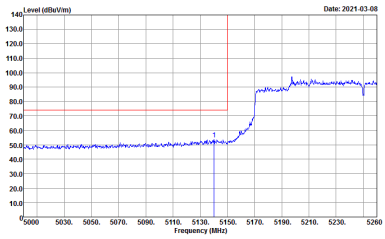
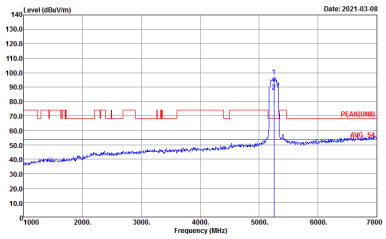
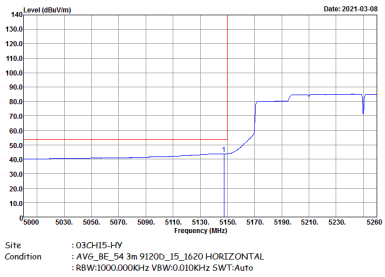
Band 3 - 5470~5725MHz

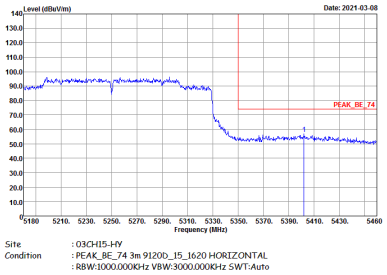
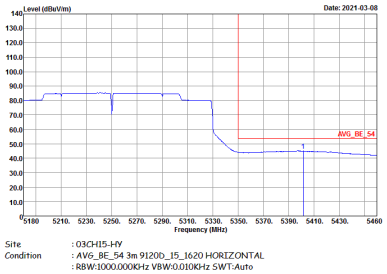
WIFI 802.11ax HE80 Full (Harmonic @ 3m)

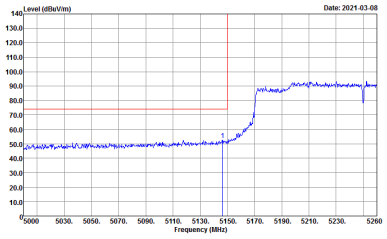
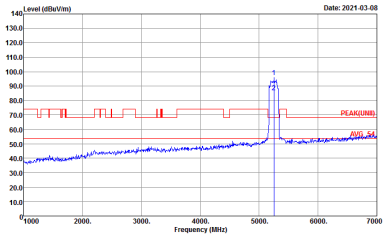
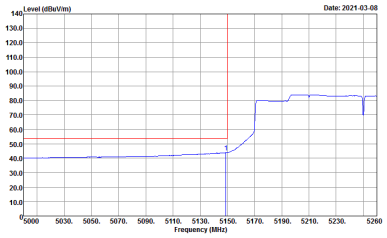
WIFI	Band 3 5470~5725MHz Harmonic @ 3m	
ANT	802.11ax HE80 Full CH122 5610MHz	
2	Horizontal	Vertical
Peak Avg.		

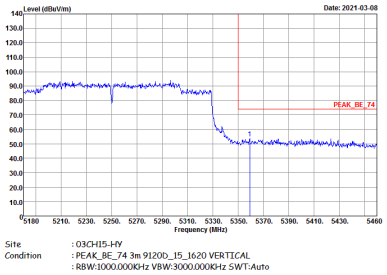
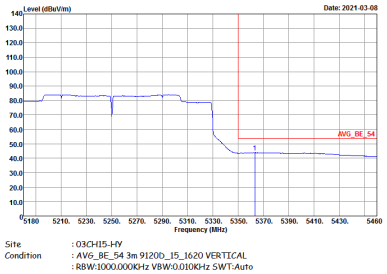
Band 1 - 5150~5250MHz

WIFI 802.11ax HE160 Full (Band Edge @ 3m)

WIFI	Band Edge @ 3m	
ANT	802.11ax HE160 CH50 5250MHz - L	
1+2	Horizontal	Fundamental
Peak		
Avg.		Left blank

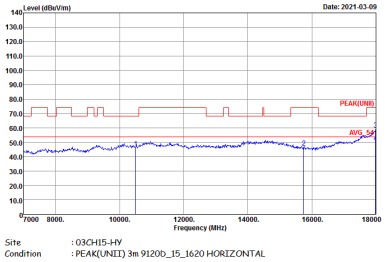
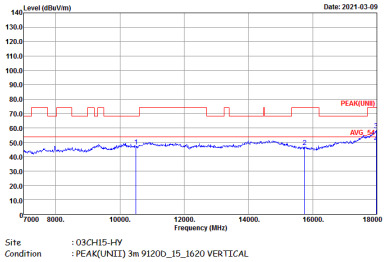
WIFI	Band Edge @ 3m	
ANT	802.11ax HE160 CH50 5250MHz - R	
1+2	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	Band Edge @ 3m	
ANT	802.11ax HE160 CH50 5250MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 9120D_I5_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_I5_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 9120D_I5_1620 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	Left blank

WIFI	Band Edge @ 3m	
ANT	802.11ax HE160 CH50 5250MHz - R	
1+2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

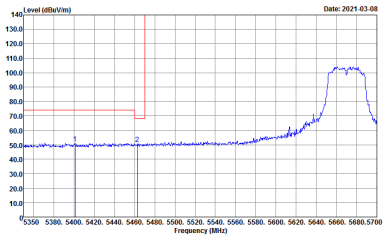
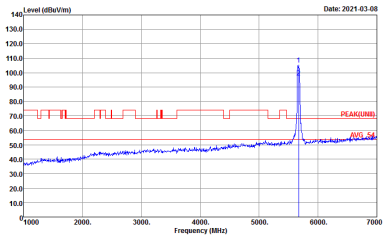
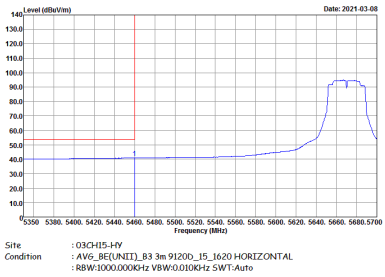
Band 1 - 5150~5250MHz

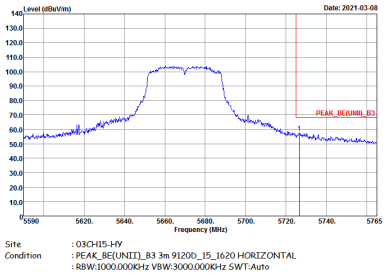
WIFI 802.11ax HE160 Full (Harmonic @ 3m)

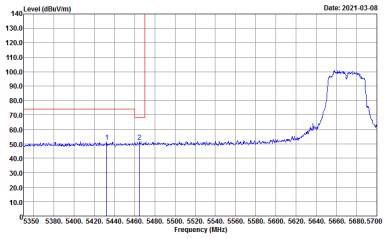
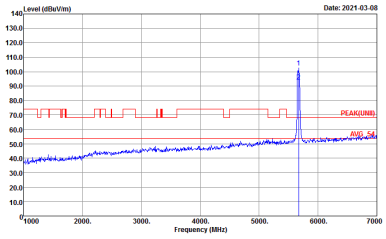
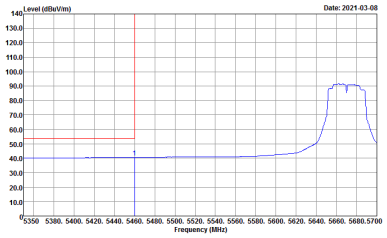
WIFI	Band 3 Straddle Channel Harmonic @ 3m	
ANT	802.11ax HE160 CH50 5250MHz	
1+2	Horizontal	Vertical
Peak Avg.		

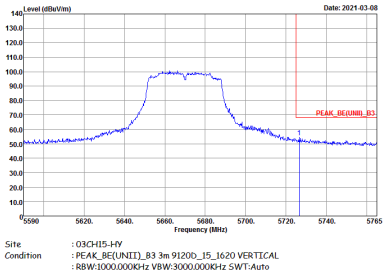
Band 3 - 5470~5725MHz

WIFI 802.11ac VHT40 (Band Edge @ 3m)

WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH134 5670MHz - L	
1+2	Horizontal	Fundamental
Peak		
Avg.		Left blank

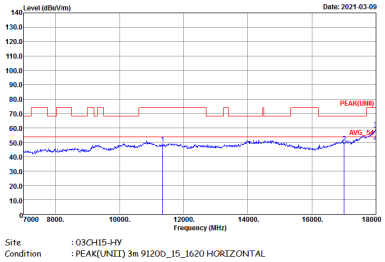
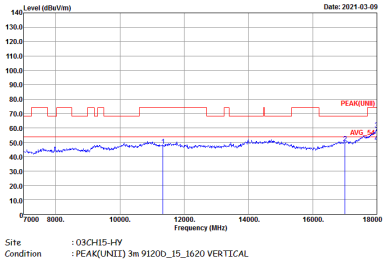
WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH134 5670MHz - R	
1+2	Horizontal	Fundamental
Peak		Left blank

WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH134 5670MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(UNII)_B3 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH15-HY Condition : AVG_BE(UNII)_B3 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	Left blank

WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH134 5670MHz - R	
1+2	Vertical	Fundamental
Peak		Left blank

Band 3 - 5470~5725MHz

WIFI 802.11ac VHT40 (Harmonic @ 3m)

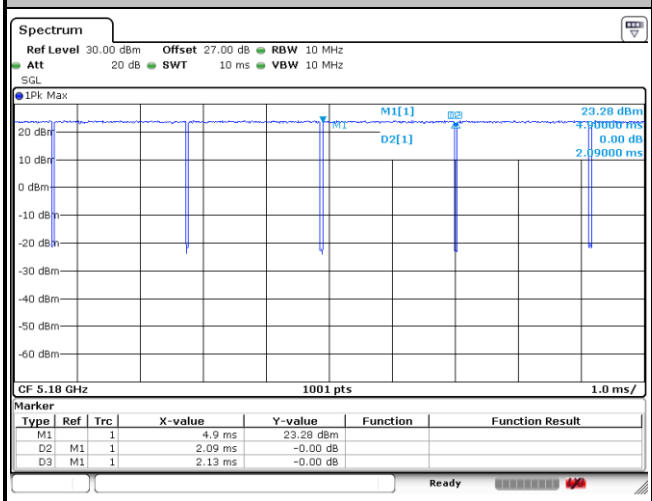
WIFI	Band 3 5470~5725MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH134 5670MHz	
1+2	Horizontal	Vertical
Peak Avg.		

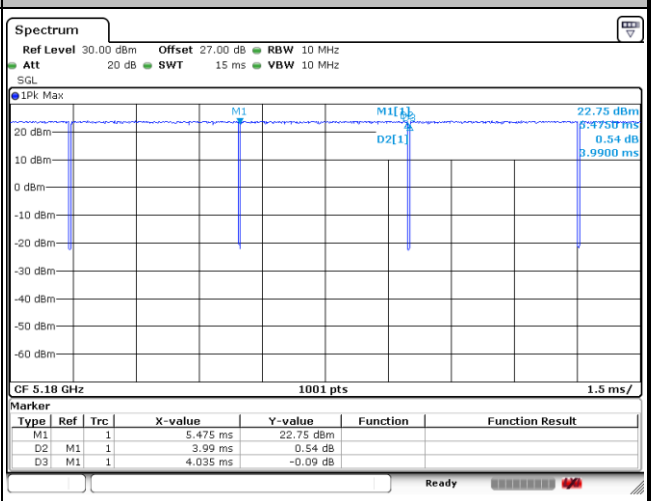
Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1	802.11a	98.12	-	-	10Hz	0.08
1+2	5GHz 802.11ac VHT40 for Ant. 1	99.62	-	-	10Hz	0.02
1+2	5GHz 802.11ac VHT40 for Ant. 2	99.62	-	-	10Hz	0.02
1	5GHz 802.11ax HE20	98.88	-	-	10Hz	0.05
2	5GHz 802.11ax HE40	98.88	-	-	10Hz	0.05
2	5GHz 802.11ax HE80	98.25	-	-	10Hz	0.08
1+2	5GHz 802.11ax HE160 for Ant. 1	98.99	-	-	10Hz	0.04
1+2	5GHz 802.11ax HE160 for Ant. 2	99.24	-	-	10Hz	0.03

<Ant. 1>

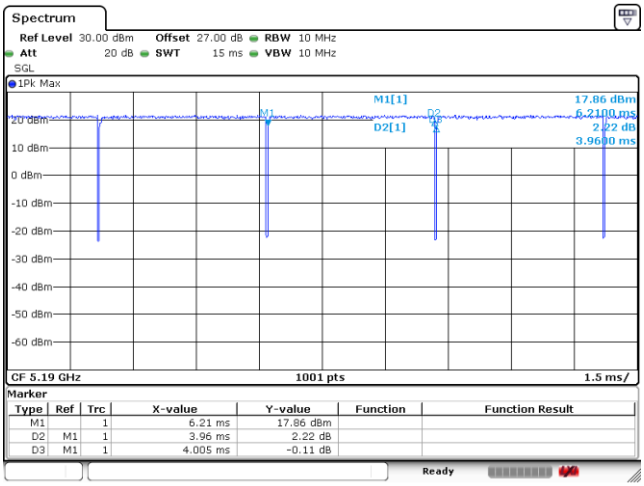
802.11a	802.11ax HE20

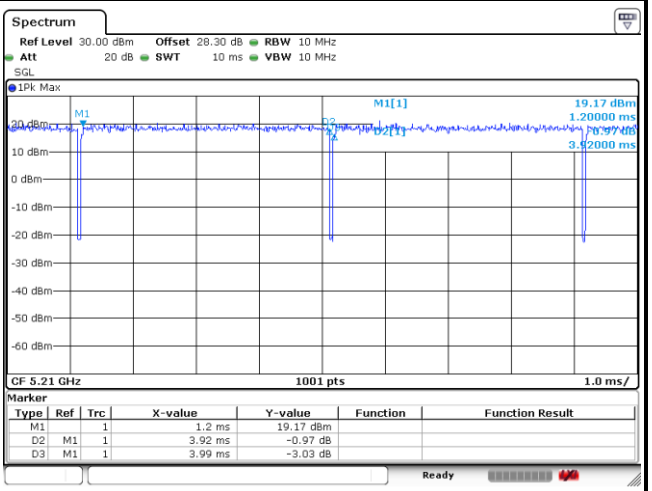




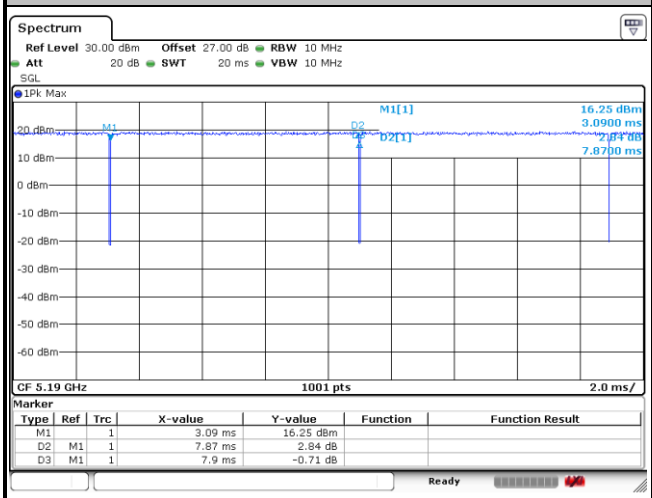
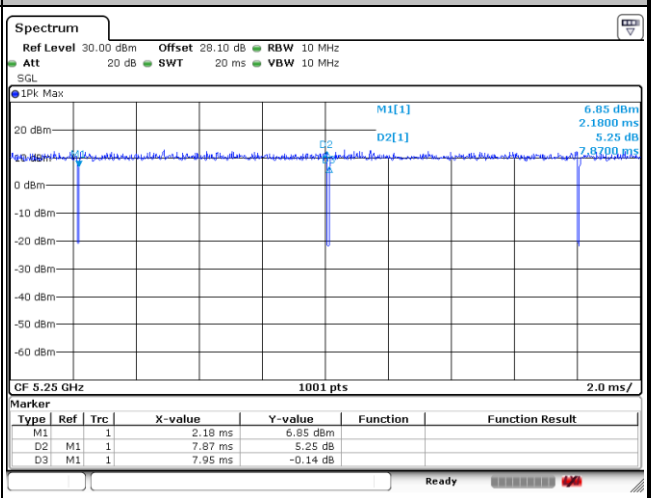
<Ant. 2>

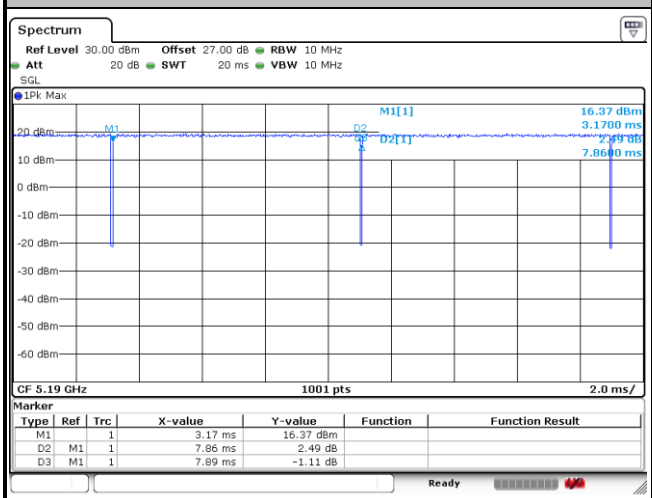
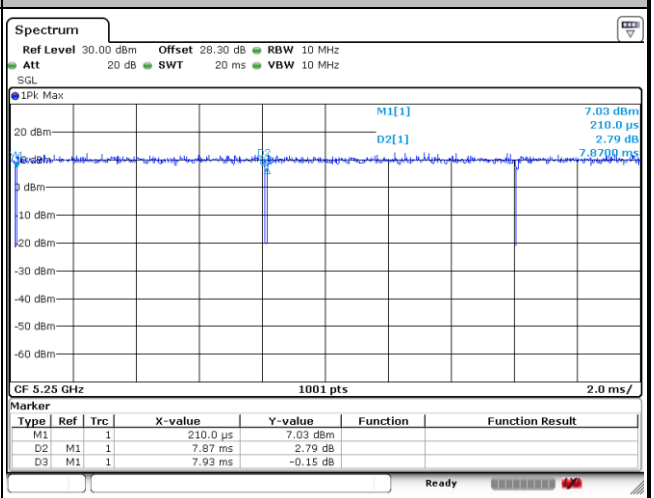
802.11ax HE40	802.11ax HE80





MIMO <Ant. 1>

802.11ac VHT40	802.11ax HE160
	

MIMO <Ant. 2>

802.11ac VHT40	802.11ax HE160