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 Feb. 10, 2023 and testing was performed from Feb. 17, 2023 to Mar. 08, 2023. 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 variant 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
FR111325-04B	01	Initial issue of report	Mar. 29, 2023
FR111325-04B	02	Revise appendix A This report is an updated version, replacing the report issued on Mar. 29, 2023.	Apr. 07, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)
-	15.403(i)	26dB Bandwidth	Not Required
-	2.1049	99% Occupied Bandwidth	Not Required
3.1	15.407(a)	Maximum Conducted Output Power	Pass
-	15.407(a)	Power Spectral Density	Not Required
3.2	15.407(b)	Unwanted Emissions	Pass
-	15.207	AC Conducted Emission	Not Required
3.3	15.203	Antenna Requirement	Pass

Note:

1. Not required means after assessing, test items are not necessary to carry out.
2. This is a variant report by changing WLAN Main antenna position and adding AC Adapter 3. All the test cases were performed on original report which can be referred to Sporton Report Number FR111325D. Based on the original report, the test cases were verified.

Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. Please refer to the section ” Uncertainty of Evaluation ” for measurement uncertainty.
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Yun Huang

Report Producer: Clio Lo

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 Feature	
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: 2.67 Aux.: 1.46
5250 MHz ~ 5350 MHz	Peak Gain (dBi)	Main: 2.52 Aux.: 1.04
5470 MHz ~ 5725 MHz	Peak Gain (dBi)	Main: 3.49 Aux.: 1.17

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

The product was installed into Tablet (Brand Name: Getac, Model Name: F110, F110G6, F110-Exc, 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-G)	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

1.1.1 Antenna Directional 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 $N_{ANT} \leq 4$.

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.

	Ant 1 (dBi)	Ant 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
Band I	1.46	2.67	2.67	5.10	0.00	0.00
Band II	1.04	2.52	2.52	4.82	0.00	0.00
Band III	1.17	3.49	3.49	5.42	0.00	0.00

Calculation example:

If a device has two antenna, G_{ANT1}= 1.46dBi; G_{ANT2}=2.67dBi

Directional gain of power measurement = max(1.46, 2.67) + 0 = 2.67 dBi

Directional gain of PSD derived from formula which is

10 x log { { [10^ (1.46 dBi / 20) + 10^ (2.67 dBi / 20)] ^ 2 } / 2 }

= 5.10 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. 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, 03CH15-HY

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

FCC designation No.: 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: 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.

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 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.
3. The above Frequency and Channel with "@" are 802.11ac VHT160 and 802.11ax HE160.

2.2 Test Mode

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

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**
802.11ax 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
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0
802.11ax HE160	MCS0

<Ant. 2>

Ch. #		Band II：5250-5350 MHz
		802.11ax HE40
L	Low	-
M	Middle	-
H	High	62

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

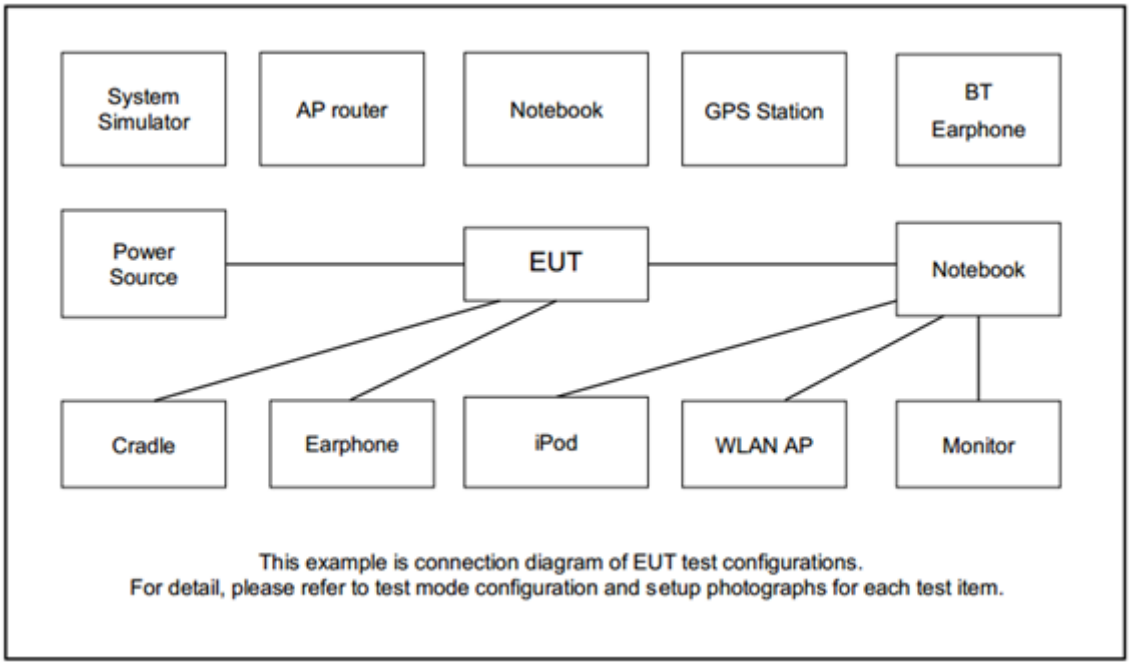
MIMO <Ant. 1+2>

BW160	5150-5350 MHz
	802.11ax HE160
Ch. #	50

Remark:

1. For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.
2. For Radiated Test Cases, the tests were performed with Adapter 3, Battery 2 and Sample 2

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.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “DRTU v.01346.22.140.0” 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.

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

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

3.1.3 Test Procedures

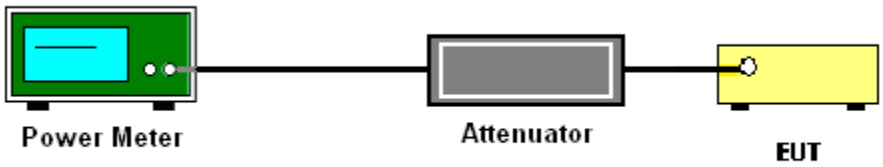
The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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

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 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.

3.2.2 Measuring Instruments

Please refer to the measuring equipment list in 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

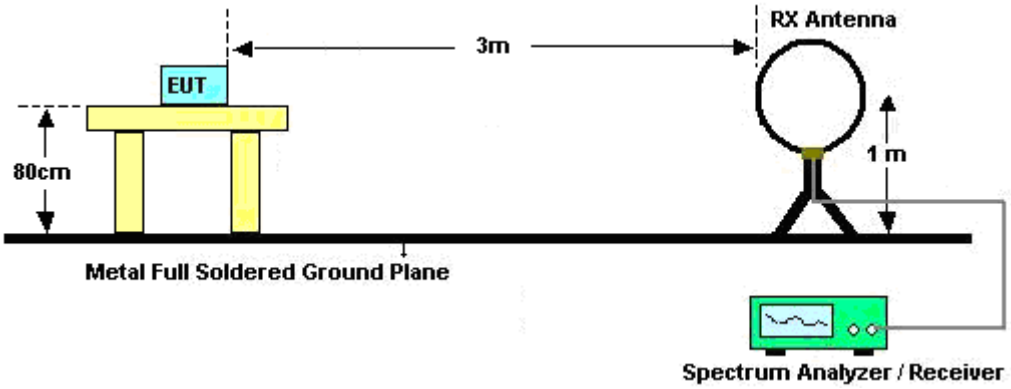
(3) Procedures for Average Unwanted Emissions Measurements Above 1000 MHz

- 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.

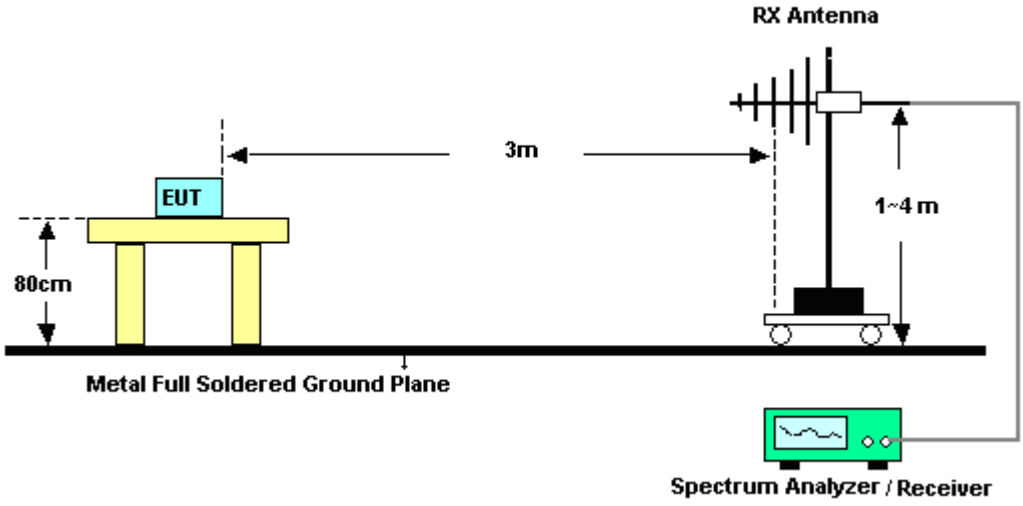
2. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT is set 3 meters away from the receiving antenna which is mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna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

3.2.4 Test Setup

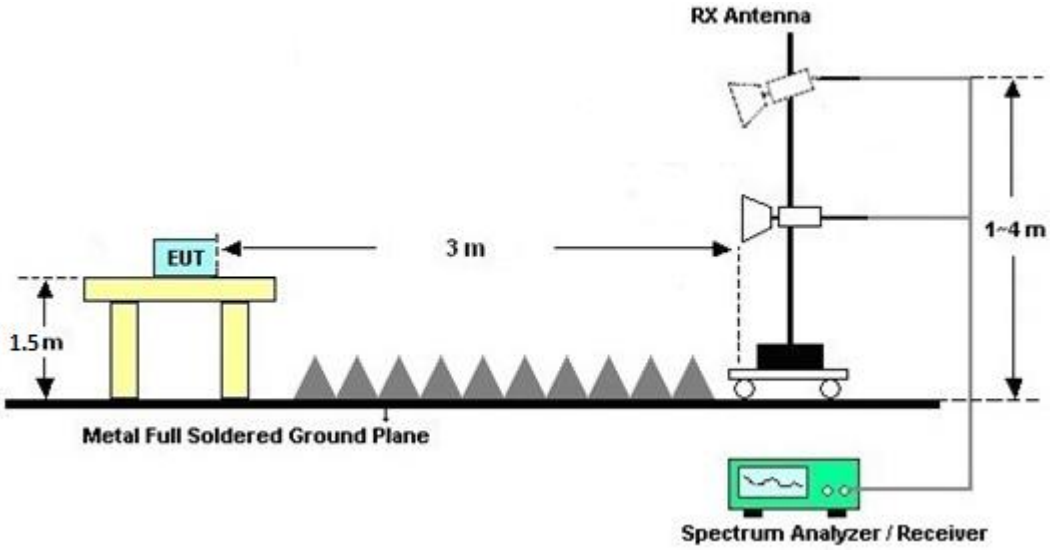
For radiated emissions below 30MHz



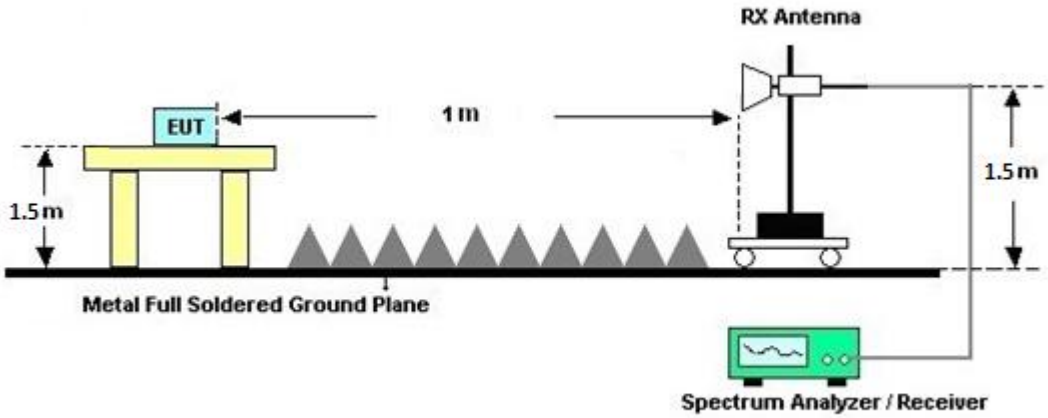
For radiated emissions from 30MHz to 1GHz



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 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.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.2.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

3.3 Antenna Requirements

3.3.1 Standard Applicable

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.

3.3.2 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
Loop Antenna	TESEQ	HLA 6120	31244	9 kHz~30 MHz	Mar. 18, 2022	Mar. 03, 2023~ Mar. 06, 2023	Mar. 17, 2023	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	0103 & 07	30MHz~1GHz	Apr. 24, 2022	Mar. 03, 2023~ Mar. 06, 2023	Apr. 23, 2023	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 26, 2022	Mar. 03, 2023~ Mar. 06, 2023	Dec. 25, 2023	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02294	1GHz~18GHz	Jun. 23, 2022	Mar. 03, 2023~ Mar. 06, 2023	Jun. 22, 2023	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz~40GHz	May 14, 2022	Mar. 03, 2023~ Mar. 06, 2023	May 13, 2023	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-303K	17100018000 54002	1GHz~18GHz	Sep. 28, 2022	Mar. 03, 2023~ Mar. 06, 2023	Sep. 27, 2023	Radiation (03CH15-HY)
Preamplifier	EM Electronics	EM01G18G	060802	1GHz-18GHz	Mar. 08, 2022	Mar. 03, 2023~ Mar. 06, 2023	Mar. 07, 2023	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Oct. 18, 2022	Mar. 03, 2023~ Mar. 06, 2023	Oct. 17, 2023	Radiation (03CH15-HY
Spectrum Analyzer	Keysight	N9010	MY54200485	10Hz~44GHz	May 07, 2022	Mar. 03, 2023~ Mar. 06, 2023	May 06, 2023	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Mar. 03, 2023~ Mar. 06, 2023	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Mar. 03, 2023~ Mar. 06, 2023	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24 (k5)	RK-000451	N/A	N/A	Mar. 03, 2023~ Mar. 06, 2023	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY582185/4, MY9838/4PE, 519228/2	30MHz~18G	Jun. 21, 2022	Mar. 03, 2023~ Mar. 06, 2023	Jun. 20, 2023	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2,804 012/2	30MHz-40GHz	Jan. 03, 2023	Mar. 03, 2023~ Mar. 06, 2023	Jan. 02, 2024	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 10, 2022	Mar. 03, 2023~ Mar. 06, 2023	Mar. 09, 2023	Radiation (03CH15-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 17. 2022	Feb. 17, 2023~ Mar. 08, 2023	Nov. 16. 2023	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 12 (NO:113)	10MHz~6GHz	Dec. 13, 2022	Feb. 17, 2023~ Mar. 08, 2023	Dec. 12, 2023	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz(amp)	Aug. 03, 2022	Feb. 17, 2023~ Mar. 08, 2023	Aug. 02, 2023	Conducted (TH05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.3 dB**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.2 dB**

Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

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

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

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

Appendix A. Test Result of Conducted Test Items

Test Engineer:	River Tsai	Temperature:	21~25	°C
Test Date:	2023/02/17~2023/03/08	Relative Humidity:	51~54	%

TEST RESULTS DATA
Average Power Table

FCC U-NII-1 single antenna													
Mod.	Data Rate	N_{TX}	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	11.60	13.20		24.00	24.00	1.46	2.67		Pass
11a	6Mbps	1	44	5220	11.80	13.10		24.00	24.00	1.46	2.67		Pass
11a	6Mbps	1	48	5240	11.80	13.20		24.00	24.00	1.46	2.67		Pass
HT20	MCS0	1	36	5180	11.50	13.10		24.00	24.00	1.46	2.67		Pass
HT20	MCS0	1	44	5220	11.60	13.10		24.00	24.00	1.46	2.67		Pass
HT20	MCS0	1	48	5240	11.60	13.10		24.00	24.00	1.46	2.67		Pass
HT40	MCS0	1	38	5190	11.60	13.10		24.00	24.00	1.46	2.67		Pass
HT40	MCS0	1	46	5230	11.60	13.10	-	24.00	24.00	1.46	2.67	-	Pass
VHT20	MCS0	1	36	5180	11.60	13.20		24.00	24.00	1.46	2.67		Pass
VHT20	MCS0	1	44	5220	11.70	13.20		24.00	24.00	1.46	2.67		Pass
VHT20	MCS0	1	48	5240	11.70	13.20		24.00	24.00	1.46	2.67		Pass
VHT40	MCS0	1	38	5190	11.70	13.20		24.00	24.00	1.46	2.67		Pass
VHT40	MCS0	1	46	5230	11.70	13.20		24.00	24.00	1.46	2.67		Pass
VHT80	MCS0	1	42	5210	11.60	13.20		24.00	24.00	1.46	2.67		Pass
VHT160	MCS0	1	50	5250	11.60	13.20		24.00	24.00	1.46	2.67		Pass

FCC U-NII-1 MIMO													
Mod.	Data Rate	N_{TX}	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	11.10	11.70	14.42	24.00		2.67			Pass
HT20	MCS0	2	44	5220	11.20	11.70	14.47	24.00		2.67			Pass
HT20	MCS0	2	48	5240	11.20	11.70	14.47	24.00		2.67			Pass
HT40	MCS0	2	38	5190	11.20	11.50	14.36	24.00		2.67			Pass
HT40	MCS0	2	46	5230	11.20	11.50	14.36	24.00		2.67			Pass
VHT20	MCS0	2	36	5180	11.20	11.50	14.36	24.00		2.67			Pass
VHT20	MCS0	2	44	5220	11.30	11.50	14.41	24.00		2.67		-	Pass
VHT20	MCS0	2	48	5240	11.30	11.50	14.41	24.00		2.67			Pass
VHT40	MCS0	2	38	5190	11.30	11.60	14.46	24.00		2.67			Pass
VHT40	MCS0	2	46	5230	11.30	11.60	14.46	24.00		2.67			Pass
VHT80	MCS0	2	42	5210	11.20	11.60	14.41	24.00		2.67			Pass
VHT160	MCS0	2	50	5250	11.20	11.50	14.36	24.00		2.67			Pass

TEST RESULTS DATA
Average Power Table

FCC U-NII-2A single antenna													
Mod.	Data Rate	N_{TX}	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	11.70	13.30	-	23.98	23.98	1.04	2.52	26.99	Pass
11a	6Mbps	1	60	5300	11.70	13.20		23.98	23.98	1.04	2.52	26.99	Pass
11a	6Mbps	1	64	5320	11.60	13.20		23.98	23.98	1.04	2.52	26.99	Pass
HT20	MCS0	1	52	5260	11.60	13.10		23.98	23.98	1.04	2.52	26.99	Pass
HT20	MCS0	1	60	5300	11.50	13.10		23.98	23.98	1.04	2.52	26.99	Pass
HT20	MCS0	1	64	5320	11.50	13.10		23.98	23.98	1.04	2.52	26.99	Pass
HT40	MCS0	1	54	5270	11.50	13.10		23.98	23.98	1.04	2.52	26.99	Pass
HT40	MCS0	1	62	5310	11.50	13.00		23.98	23.98	1.04	2.52	26.99	Pass
VHT20	MCS0	1	52	5260	11.70	13.20		23.98	23.98	1.04	2.52	26.99	Pass
VHT20	MCS0	1	60	5300	11.60	13.20		23.98	23.98	1.04	2.52	26.99	Pass
VHT20	MCS0	1	64	5320	11.60	13.20		23.98	23.98	1.04	2.52	26.99	Pass
VHT40	MCS0	1	54	5270	11.60	13.20		23.98	23.98	1.04	2.52	26.99	Pass
VHT40	MCS0	1	62	5310	11.60	13.10		23.98	23.98	1.04	2.52	26.99	Pass
VHT80	MCS0	1	58	5290	11.70	13.20		23.98	23.98	1.04	2.52	26.99	Pass

FCC U-NII-2A MIMO													
Mod.	Data Rate	N_{TX}	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	11.20	11.60	14.41	23.98		2.52		26.99	Pass
HT20	MCS0	2	60	5300	11.10	11.70	14.42	23.98		2.52		26.99	Pass
HT20	MCS0	2	64	5320	11.10	11.60	14.37	23.98		2.52		26.99	Pass
HT40	MCS0	2	54	5270	11.10	11.50	14.31	23.98		2.52		26.99	Pass
HT40	MCS0	2	62	5310	11.10	11.40	14.26	23.98		2.52		26.99	Pass
VHT20	MCS0	2	52	5260	11.30	11.40	14.36	23.98		2.52		26.99	Pass
VHT20	MCS0	2	60	5300	11.20	11.50	14.36	23.98		2.52		26.99	Pass
VHT20	MCS0	2	64	5320	11.20	11.40	14.31	23.98		2.52		26.99	Pass
VHT40	MCS0	2	54	5270	11.20	11.60	14.41	23.98		2.52		26.99	Pass
VHT40	MCS0	2	62	5310	11.20	11.50	14.36	23.98		2.52		26.99	Pass
VHT80	MCS0	2	58	5290	11.30	11.60	14.46	23.98		2.52		26.99	Pass

TEST RESULTS DATA
Average Power Table

FCC U-NII-2C single antenna													
Mod.	Data Rate	N_{TX}	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	11.80	13.70		23.98	23.98	1.17	3.49	26.99	Pass
11a	6Mbps	1	116	5580	11.60	13.60		23.98	23.98	1.17	3.49	26.99	Pass
11a	6Mbps	1	140	5700	11.70	13.60		23.98	23.98	1.17	3.49	26.99	Pass
HT20	MCS0	1	100	5500	11.60	13.60		23.98	23.98	1.17	3.49	26.99	Pass
HT20	MCS0	1	116	5580	11.60	13.60		23.98	23.98	1.17	3.49	26.99	Pass
HT20	MCS0	1	140	5700	11.50	13.50		23.98	23.98	1.17	3.49	26.99	Pass
HT40	MCS0	1	102	5510	11.60	13.60		23.98	23.98	1.17	3.49	26.99	Pass
HT40	MCS0	1	110	5550	11.60	13.60		23.98	23.98	1.17	3.49	26.99	Pass
HT40	MCS0	1	134	5670	11.50	13.60		23.98	23.98	1.17	3.49	26.99	Pass
VHT20	MCS0	1	100	5500	11.70	13.70	-	23.98	23.98	1.17	3.49	26.99	Pass
VHT20	MCS0	1	116	5580	11.70	13.70		23.98	23.98	1.17	3.49	26.99	Pass
VHT20	MCS0	1	140	5700	11.60	13.60		23.98	23.98	1.17	3.49	26.99	Pass
VHT40	MCS0	1	102	5510	11.70	13.70		23.98	23.98	1.17	3.49	26.99	Pass
VHT40	MCS0	1	110	5550	11.70	13.70		23.98	23.98	1.17	3.49	26.99	Pass
VHT40	MCS0	1	134	5670	11.60	13.70		23.98	23.98	1.17	3.49	26.99	Pass
VHT80	MCS0	1	106	5530	11.60	13.60		23.98	23.98	1.17	3.49	26.99	Pass
VHT80	MCS0	1	122	5610	11.60	13.70		23.98	23.98	1.17	3.49	26.99	Pass
VHT160	MCS0	1	114	5570	11.50	13.70		23.98	23.98	1.17	3.49	26.99	Pass

FCC U-NII-2C MIMO													
Mod.	Data Rate	N_{TX}	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	11.20	11.60	14.41	23.98		3.49		26.99	Pass
HT20	MCS0	2	116	5580	11.20	11.70	14.47	23.98		3.49		26.99	Pass
HT20	MCS0	2	140	5700	11.10	11.70	14.42	23.98		3.49		26.99	Pass
HT40	MCS0	2	102	5510	11.20	11.40	14.31	23.98		3.49		26.99	Pass
HT40	MCS0	2	110	5550	11.20	11.50	14.36	23.98		3.49		26.99	Pass
HT40	MCS0	2	134	5670	11.10	11.50	14.31	23.98		3.49		26.99	Pass
VHT20	MCS0	2	100	5500	11.30	11.40	14.36	23.98		3.49		26.99	Pass
VHT20	MCS0	2	116	5580	11.30	11.50	14.41	23.98		3.49		26.99	Pass
VHT20	MCS0	2	140	5700	11.20	11.50	14.36	23.98		3.49		26.99	Pass
VHT40	MCS0	2	102	5510	11.30	11.50	14.41	23.98		3.49		26.99	Pass
VHT40	MCS0	2	110	5550	11.30	11.60	14.46	23.98		3.49		26.99	Pass
VHT40	MCS0	2	134	5670	11.20	11.60	14.41	23.98		3.49		26.99	Pass
VHT80	MCS0	2	106	5530	11.20	11.50	14.36	23.98		3.49		26.99	Pass
VHT80	MCS0	2	122	5610	11.20	11.40	14.31	23.98		3.49		26.99	Pass
VHT160	MCS0	2	114	5570	11.10	11.50	14.31	23.98		3.49		26.99	Pass

FCC U-NII-2C straddle channel single antenna														
Mod.	Data Rate	N_{TX}	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	11.90	13.60	-	23.98	23.98	1.17	3.49	26.99	Pass
HT20	MCS0	1	144	5720	11.60	13.50		23.98	23.98	1.17	3.49	26.99	Pass
HT40	MCS0	1	142	5710	11.70	13.60		23.98	23.98	1.17	3.49	26.99	Pass
VHT20	MCS0	1	144	5720	11.70	13.60		23.98	23.98	1.17	3.49	26.99	Pass
VHT40	MCS0	1	142	5710	11.80	13.70		23.98	23.98	1.17	3.49	26.99	Pass
VHT80	MCS0	1	138	5690	11.70	13.70		23.98	23.98	1.17	3.49	26.99	Pass

FCC U-NII-2C straddle channel MIMO													
Mod.	Data Rate	N_{TX}	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	11.20	11.60	14.41	23.98		3.49		26.99	Pass
HT40	MCS0	2	142	5710	11.30	11.30	14.31	23.98		3.49		26.99	Pass
VHT20	MCS0	2	144	5720	11.30	11.40	14.36	23.98		3.49		26.99	Pass
VHT40	MCS0	2	142	5710	11.40	11.40	14.41	23.98		3.49		26.99	Pass
VHT80	MCS0	2	138	5690	11.30	11.40	14.36	23.98		3.49		26.99	Pass

TEST RESULTS DATA
Average Power Table

FCC U-NII-1 single antenna														
Mod.	Data Rate	N_{TX}	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	11.70	13.30	-	24.00	24.00	1.46	2.67	-	Pass
HE20	MCS0	1	36	5180	26/0	11.70	13.30		24.00	24.00	1.46	2.67		Pass
HE20	MCS0	1	44	5220	Full	11.80	13.30		24.00	24.00	1.46	2.67		Pass
HE20	MCS0	1	48	5240	Full	11.80	13.30		24.00	24.00	1.46	2.67		Pass
HE40	MCS0	1	38	5190	Full	11.80	13.30		24.00	24.00	1.46	2.67		Pass
HE40	MCS0	1	46	5230	Full	11.80	13.30		24.00	24.00	1.46	2.67		Pass
HE80	MCS0	1	42	5210	Full	11.70	13.30		24.00	24.00	1.46	2.67		Pass
HE160	MCS0	1	50	5250	Full	11.70	13.30		24.00	24.00	1.46	2.67		Pass

FCC U-NII-1 MIMO														
Mod.	Data Rate	N_{TX}	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	11.30	11.40	14.36	24.00		2.67		-	Pass
HE20	MCS0	2	36	5180	26/0	10.70	10.70	13.71	24.00		2.67			Pass
HE20	MCS0	2	44	5220	Full	11.40	11.40	14.41	24.00		2.67			Pass
HE20	MCS0	2	48	5240	Full	11.40	11.40	14.41	24.00		2.67			Pass
HE40	MCS0	2	38	5190	Full	11.40	11.50	14.46	24.00		2.67			Pass
HE40	MCS0	2	46	5230	Full	11.40	11.50	14.46	24.00		2.67			Pass
HE80	MCS0	2	42	5210	Full	11.20	11.70	14.47	24.00		2.67			Pass
HE160	MCS0	2	50	5250	Full	11.30	11.60	14.46	24.00		2.67			Pass

TEST RESULTS DATA
Average Power Table

FCC U-NII-2A single antenna														
Mod.	Data Rate	N_{TX}	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	11.80	13.30		23.98	23.98	1.04	2.52	26.99	Pass
HE20	MCS0	1	60	5300	Full	11.70	13.30		23.98	23.98	1.04	2.52	26.99	Pass
HE20	MCS0	1	64	5320	Full	11.70	13.30		23.98	23.98	1.04	2.52	26.99	Pass
HE20	MCS0	1	64	5320	26/8	11.60	13.30	-	23.98	23.98	1.04	2.52	26.99	Pass
HE40	MCS0	1	54	5270	Full	11.70	13.30		23.98	23.98	1.04	2.52	26.99	Pass
HE40	MCS0	1	62	5310	Full	11.70	13.20		23.98	23.98	1.04	2.52	26.99	Pass
HE80	MCS0	1	58	5290	Full	11.80	13.30		23.98	23.98	1.04	2.52	26.99	Pass

FCC U-NII-2A MIMO														
Mod.	Data Rate	N_{TX}	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	11.40	11.30	14.36	23.98		2.52		26.99	Pass
HE20	MCS0	2	60	5300	Full	11.30	11.40	14.36	23.98		2.52		26.99	Pass
HE20	MCS0	2	64	5320	Full	11.30	11.30	14.31	23.98		2.52		26.99	Pass
HE20	MCS0	2	64	5320	26/8	11.20	11.20	14.21	23.98		2.52		26.99	Pass
HE40	MCS0	2	54	5270	Full	11.30	11.50	14.41	23.98		2.52		26.99	Pass
HE40	MCS0	2	62	5310	Full	11.30	11.40	14.36	23.98		2.52		26.99	Pass
HE80	MCS0	2	58	5290	Full	11.20	11.70	14.47	23.98		2.52		26.99	Pass

TEST RESULTS DATA
Average Power Table

FCC U-NII-2C single antenna														
Mod.	Data Rate	N_{TX}	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	11.80	13.80		23.98	23.98	1.17	3.49	26.99	Pass
HE20	MCS0	1	100	5500	26/0	11.80	13.80		23.98	23.98	1.17	3.49	26.99	Pass
HE20	MCS0	1	116	5580	Full	11.80	13.80		23.98	23.98	1.17	3.49	26.99	Pass
HE20	MCS0	1	140	5700	Full	11.70	13.70		23.98	23.98	1.17	3.49	26.99	Pass
HE20	MCS0	1	140	5700	26/8	11.70	13.70		23.98	23.98	1.17	3.49	26.99	Pass
HE40	MCS0	1	102	5510	Full	11.80	13.80	-	23.98	23.98	1.17	3.49	26.99	Pass
HE40	MCS0	1	110	5550	Full	11.80	13.80		23.98	23.98	1.17	3.49	26.99	Pass
HE40	MCS0	1	134	5670	Full	11.70	13.80		23.98	23.98	1.17	3.49	26.99	Pass
HE80	MCS0	1	106	5530	Full	11.70	13.70		23.98	23.98	1.17	3.49	26.99	Pass
HE80	MCS0	1	122	5610	Full	11.70	13.80		23.98	23.98	1.17	3.49	26.99	Pass
HE160	MCS0	1	114	5570	Full	11.60	13.80		23.98	23.98	1.17	3.49	26.99	Pass

FCC U-NII-2C MIMO														
Mod.	Data Rate	N_{TX}	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	11.40	11.30	14.36	23.98		3.49		26.99	Pass
HE20	MCS0	2	100	5500	26/0	11.40	11.40	14.41	23.98		3.49		26.99	Pass
HE20	MCS0	2	116	5580	Full	11.40	11.40	14.41	23.98		3.49		26.99	Pass
HE20	MCS0	2	140	5700	Full	11.30	11.40	14.36	23.98		3.49		26.99	Pass
HE20	MCS0	2	140	5700	26/8	11.20	11.30	14.26	23.98		3.49		26.99	Pass
HE40	MCS0	2	102	5510	Full	11.40	11.40	14.41	23.98		3.49		26.99	Pass
HE40	MCS0	2	110	5550	Full	11.40	11.50	14.46	23.98		3.49		26.99	Pass
HE40	MCS0	2	134	5670	Full	11.30	11.50	14.41	23.98		3.49		26.99	Pass
HE80	MCS0	2	106	5530	Full	11.30	11.60	14.46	23.98		3.49		26.99	Pass
HE80	MCS0	2	122	5610	Full	11.30	11.50	14.41	23.98		3.49		26.99	Pass
HE160	MCS0	2	114	5570	Full	11.20	11.60	14.41	23.98		3.49		26.99	Pass

FCC U-NII-2C straddle channel single antenna														
Mod.	Data Rate	N_{TX}	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	11.80	13.70		23.98	23.98	1.17	3.49	26.99	Pass
HE40	MCS0	1	142	5710	Full	11.90	13.80	-	23.98	23.98	1.17	3.49	26.99	Pass
HE80	MCS0	1	138	5690	Full	11.80	13.80		23.98	23.98	1.17	3.49	26.99	Pass

FCC U-NII-2C straddle channel MIMO														
Mod.	Data Rate	N_{TX}	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	11.40	11.30	14.36	23.98		3.49		26.99	Pass
HE40	MCS0	2	142	5710	Full	11.50	11.30	14.41	23.98		3.49		26.99	Pass
HE80	MCS0	2	138	5690	Full	11.40	11.50	14.46	23.98		3.49		26.99	Pass

Appendix B. Radiated Spurious Emission

Test Engineer :	Eric Shou, Quentin Liu and Bigshow Wang	**Temperature :**	21.5~22.5°C
		Relative Humidity :	50~55%

Band 2 - 5250~5350MHz

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

WIFI Ant. 2	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)
		5073.78	49.3	-24.7	74	43.88	33.2	8.95	36.73	296	25	P	H
		5149.94	37.7	-16.3	54	32.13	33.2	9.1	36.73	296	25	A	H
	*	5310	101.84	-	-	96.41	32.82	9.33	36.72	296	25	P	H
	*	5310	94.06	-	-	88.63	32.82	9.33	36.72	296	25	A	H
802.11ax		5350.92	49.87	-24.13	74	44.32	32.9	9.37	36.72	296	25	P	H
HE40 Full		5350.02	39.83	-14.17	54	34.28	32.9	9.37	36.72	296	25	A	H
CH 62		5112.88	47.95	-26.05	74	42.45	33.2	9.03	36.73	298	82	P	V
5310MHz		5149.94	37.21	-16.79	54	31.64	33.2	9.1	36.73	298	82	A	V
	*	5310	98.92	-	-	93.49	32.82	9.33	36.72	298	82	P	V
	*	5310	90.59	-	-	85.16	32.82	9.33	36.72	298	82	A	V
		5366.76	49.24	-24.76	74	43.64	32.93	9.39	36.72	298	82	P	V
		5350.38	38.67	-15.33	54	33.12	32.9	9.37	36.72	298	82	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)	Margin 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	49.84	-24.16	74	52.52	39.02	13.03	54.73	-	-	P	H
		10620	41.05	-12.95	54	43.73	39.02	13.03	54.73	-	-	A	H
		15930	51.13	-22.87	74	53.06	37.5	15.71	55.14	-	-	P	H
		15930	42.34	-11.66	54	44.27	37.5	15.71	55.14	-	-	A	H
		10620	50.92	-23.08	74	53.6	39.02	13.03	54.73	-	-	P	V
		10620	42.13	-11.87	54	44.81	39.02	13.03	54.73	-	-	A	V
		15930	50.77	-23.23	74	52.7	37.5	15.71	55.14	-	-	P	V
		15930	41.98	-12.02	54	43.91	37.5	15.71	55.14	-	-	A	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 3 - 5470~5725MHz

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

WIFI Ant. 2	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)
		5404.6	49.13	-24.87	74	43.42	33	9.43	36.72	300	20	P	H
		5466.1	48.6	-19.6	68.2	42.86	33	9.46	36.72	300	20	P	H
		5447.2	38.36	-15.64	54	32.63	33	9.45	36.72	300	20	A	H
	*	5610	99.36	-	-	93.54	33.02	9.52	36.72	300	20	P	H
802.11ax	*	5610	90.41	-	-	84.59	33.02	9.52	36.72	300	20	A	H
HE80 Full		5757.125	49.81	-18.39	68.2	42.9	34.03	9.59	36.71	300	20	P	H
CH 122		5442.1	49.17	-24.83	74	43.44	33	9.45	36.72	300	76	P	V
5610MHz		5464.3	46.59	-21.61	68.2	40.85	33	9.46	36.72	300	76	P	V
		5459.8	37.52	-16.48	54	31.78	33	9.46	36.72	300	76	A	V
	*	5610	96.86	-	-	91.04	33.02	9.52	36.72	300	76	P	V
	*	5610	87.22	-	-	81.4	33.02	9.52	36.72	300	76	A	V
		5730.35	49.27	-18.93	68.2	42.53	33.88	9.58	36.72	300	76	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)	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)
		11220	49.93	-24.07	74	51.38	38.92	13.35	53.72	-	-	P	H
		11220	40.92	-13.08	54	42.37	38.92	13.35	53.72	-	-	P	H
802.11ax		16830	52.48	-15.72	68.2	54.24	37.94	16.27	55.97	-	-	A	H
HE80 Full													H
CH 122		11220	50.19	-23.81	74	51.64	38.92	13.35	53.72	-	-	P	V
5610MHz		11220	41.24	-12.76	54	42.69	38.92	13.35	53.72	-	-	P	V
		16830	52.52	-15.68	68.2	54.28	37.94	16.27	55.97	-	-	A	V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Band 3 - 5470~5725MHz

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

WIFI Ant. 1+2	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)
		5149.26	48.29	-25.71	74	42.72	33.2	9.1	36.73	359	317	P	H
		5149.6	39.35	-14.65	54	33.78	33.2	9.1	36.73	359	317	A	H
	*	5250	91.52	-	-	86.08	32.9	9.26	36.72	359	317	P	H
	*	5250	82.25	-	-	76.81	32.9	9.26	36.72	359	317	A	H
802.11ax		5441.4	48.35	-25.65	74	42.62	33	9.45	36.72	359	317	P	H
HE160		5350.2	37.77	-16.23	54	32.22	32.9	9.37	36.72	359	317	A	H
CH 50		5137.7	50.48	-23.52	74	44.93	33.2	9.08	36.73	100	212	P	V
5250MHz		5123.42	39.19	-14.81	54	33.67	33.2	9.05	36.73	100	212	A	V
	*	5250	94.33	-	-	88.89	32.9	9.26	36.72	100	212	P	V
	*	5250	85.25	-	-	79.81	32.9	9.26	36.72	100	212	A	V
		5367.9	51.76	-22.24	74	46.15	32.94	9.39	36.72	100	212	P	V
		5357.1	40.83	-13.17	54	35.26	32.91	9.38	36.72	100	212	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI 802.11ax HE160 Full (Harmonic @ 3m)

WIFI Ant. 1+2	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)
		10500	49.94	-18.26	68.2	53.08	38.8	12.96	54.9	-	-	P	H
		15750	51.38	-22.62	74	53.03	37.7	15.65	55	-	-	P	H
802.11ax		15750	42.59	-11.41	54	44.24	37.7	15.65	55	-	-	A	H
HE160													H
CH 50		10500	49.58	-18.62	68.2	52.72	38.8	12.96	54.9	-	-	P	V
5250MHz		15750	51.35	-22.65	74	53	37.7	15.65	55	-	-	P	V
		15750	42.56	-11.44	54	44.21	37.7	15.65	55	-	-	A	V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Emission above 18GHz

WIFI 802.11ax HE80 Full (SHF @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE160 Full SHF		33312	53.29	-14.91	68.2	71.26	40.8	-1.35	57.42	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		33246	53.54	-14.66	68.2	71.46	40.8	-1.32	57.4	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Emission below 1GHz

WIFI 802.11ax HE160 Full (LF @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE160 Full LF		30	22.99	-17.01	40	30.21	24.53	0.64	32.39	-	-	P	H
		244.37	20.97	-25.03	46	33.64	17.79	1.95	32.41	-	-	P	H
		298.69	27.13	-18.87	46	37.94	19.41	2.1	32.32	-	-	P	H
		630.43	27.77	-18.23	46	30.76	26.35	3.07	32.41	-	-	P	H
		765.26	30.25	-15.75	46	30.99	28.07	3.36	32.17	-	-	P	H
		903.97	40.5	-5.5	46	39.06	29.16	3.7	31.42	-	-	P	H
													H
													H
													H
													H
													H
													H
		30.97	22.63	-17.37	40	30.11	24.24	0.67	32.39	-	-	P	V
		120.21	21.82	-21.68	43.5	35.66	17.31	1.31	32.46	-	-	P	V
		359.8	26.11	-19.89	46	35.33	20.91	2.26	32.39	-	-	P	V
		575.14	27.35	-18.65	46	31.06	25.79	2.93	32.43	-	-	P	V
		674.08	28.51	-17.49	46	31.34	26.38	3.15	32.36	-	-	P	V
		960.23	37.15	-16.85	54	33.33	30.9	3.85	30.93	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

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

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **Margin** 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.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE160 CH 50 5250MHz		5149.26	48.29	-25.71	74	42.72	33.2	9.1	36.73	359	317	P	H
		5149.6	39.35	-14.65	54	33.78	33.2	9.1	36.73	359	317	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 @ 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. Margin(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. 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 C. Radiated Spurious Emission Plots

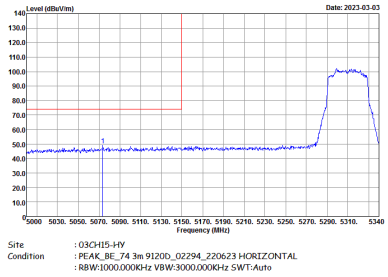
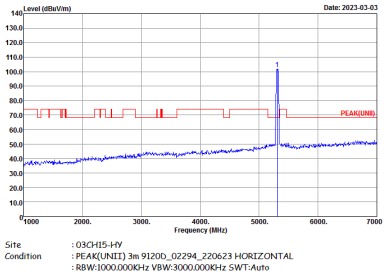
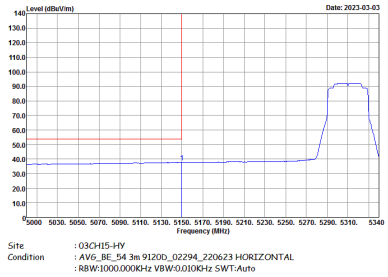
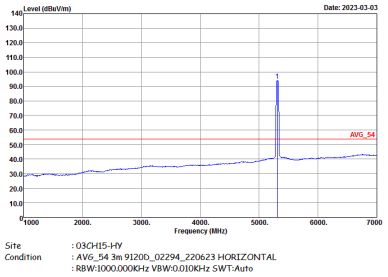
Test Engineer :	Eric Shou, Quentin Liu and Bigshow Wang	**Temperature :**	21.5~22.5°C
		Relative Humidity :	50~55%

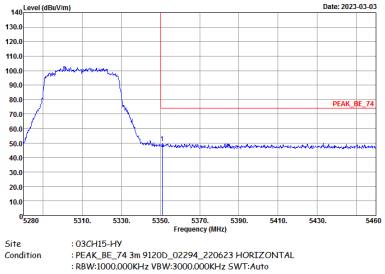
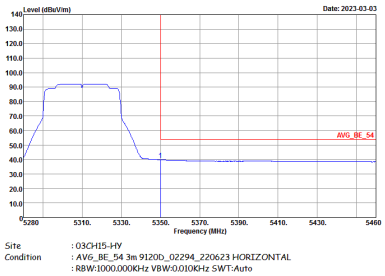
Note symbol

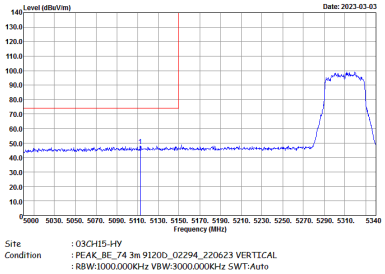
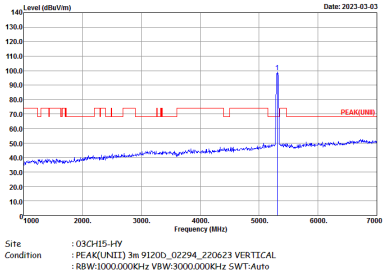
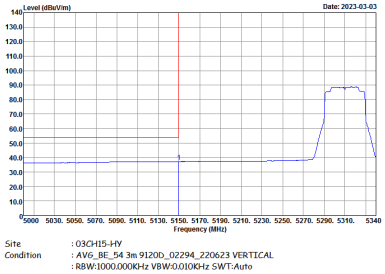
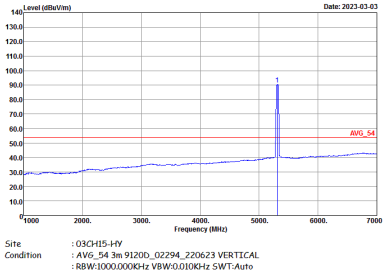
-L	**Low channel location**
-R	**High channel location**

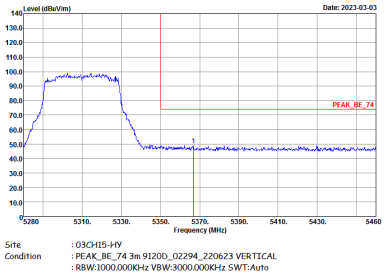
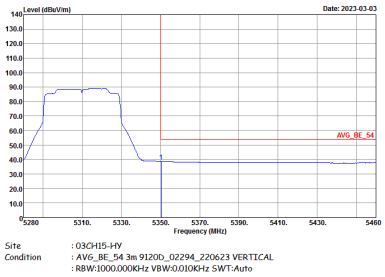
Band 2 - 5250~5350MHz

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.		

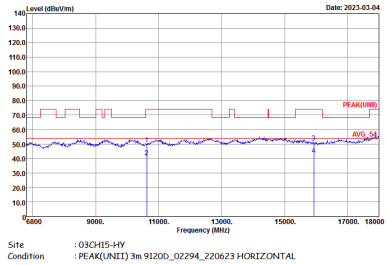
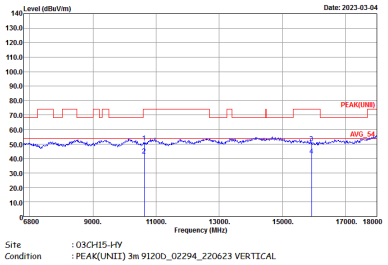
WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH62 5310 - R	
2	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

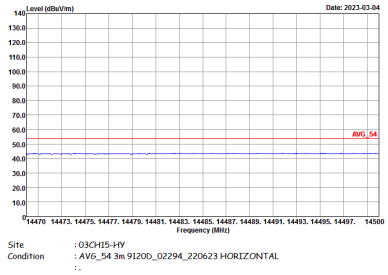
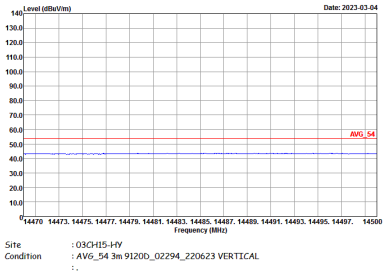
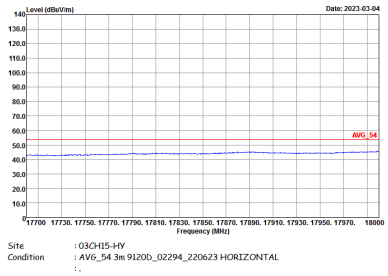
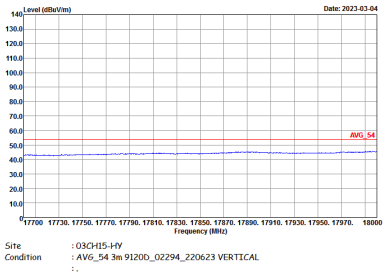
WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH62 5310 - L	
2	Vertical	Fundamental
Peak	 Site : 03CH15-HV Condition : PEAK_BE_74 3m 9120D_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HV Condition : PEAK(UNII) 3m 9120D_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH15-HV Condition : AVG_BE_54 3m 9120D_02294_220623 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH15-HV Condition : AVG_54 3m 9120D_02294_220623 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

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

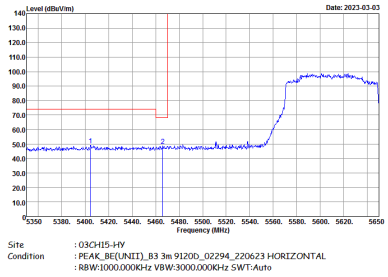
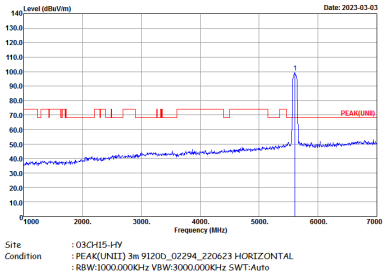
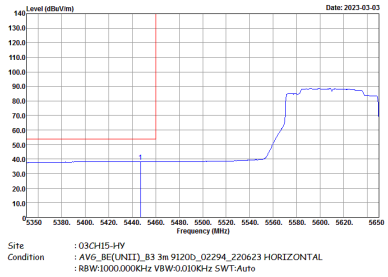
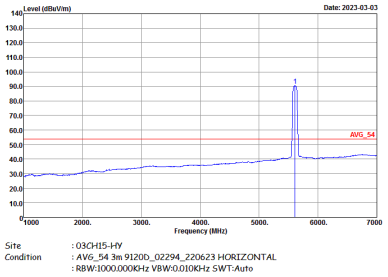
WIFI 802.11ax HE40 Full (Harmonic @ 3m)

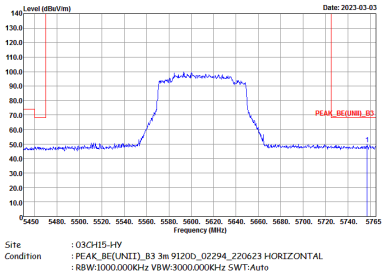
WIFI	Band 2 5250~5350MHz Harmonic @ 3m	
ANT	802.11ax HE40 Full CH62 5310	
2	Horizontal	Vertical
Peak Avg.		

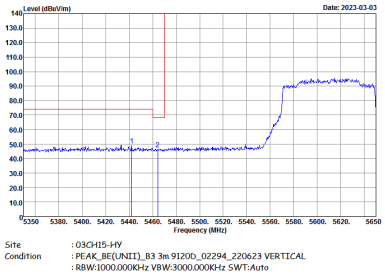
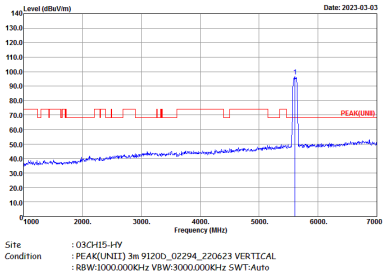
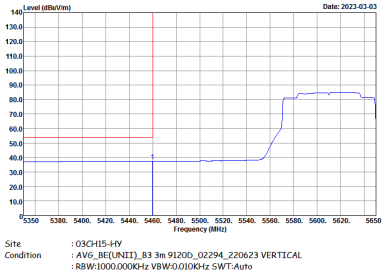
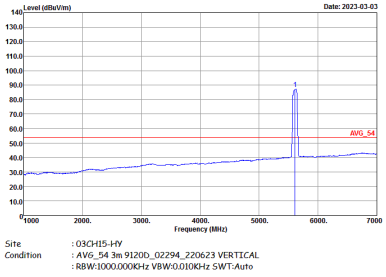
WIFI	Band 2 5250~5350MHz Harmonic @ 3m	
ANT	802.11ax HE40 Full CH62 5310	
2	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		

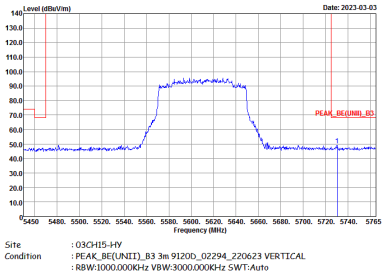
Band 3 - 5470~5725MHz

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.		

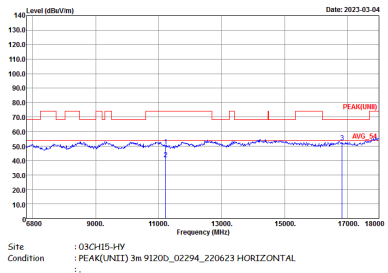
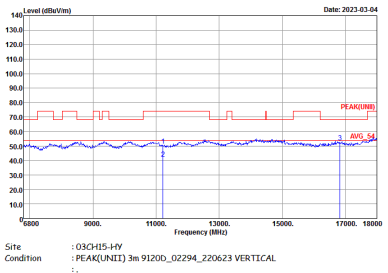
WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH122 5610MHz - R	
2	Horizontal	Fundamental
Peak		Left blank

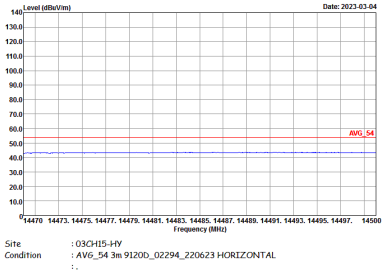
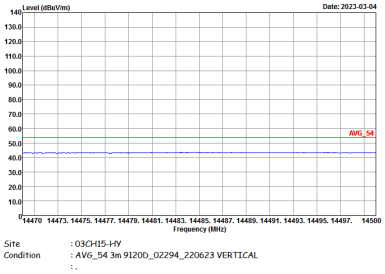
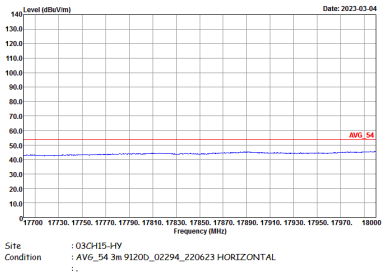
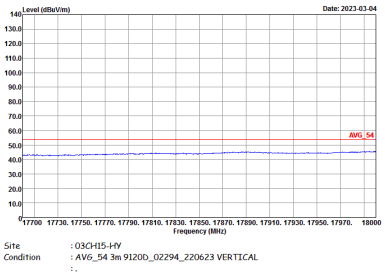
WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH122 5610MHz - L	
2	Vertical	Fundamental
Peak		
Avg.		

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.		

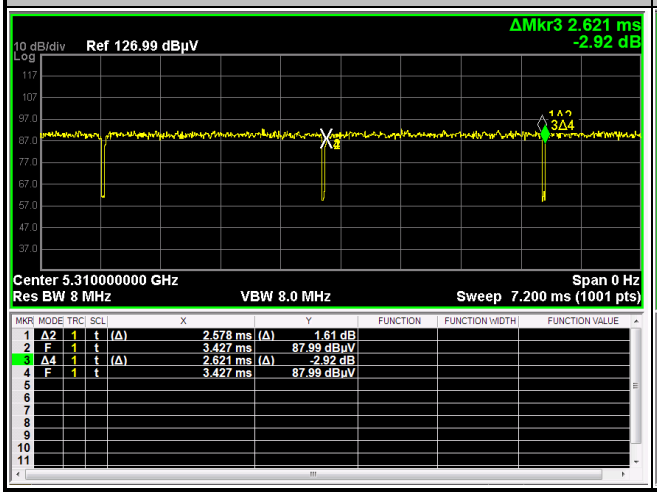
WIFI	Band 3 5470~5725MHz Harmonic @ 3m	
ANT	802.11ax HE80 Full CH122 5610MHz	
2	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		

Appendix D. Duty Cycle Plots

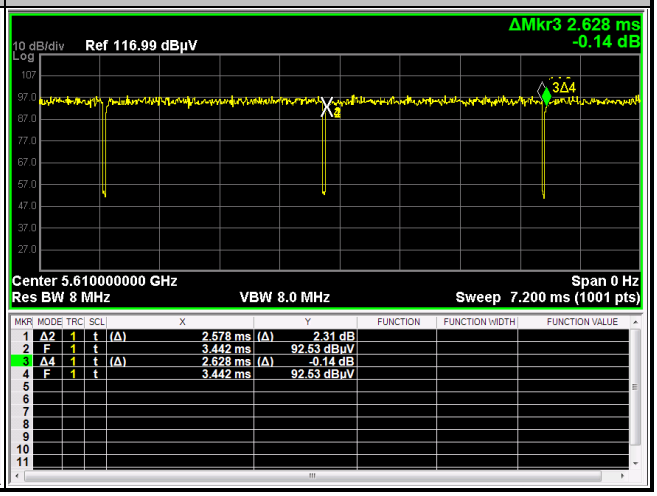
Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
2	5GHz 802.11ax HE40	98.36	-	-	10Hz
2	5GHz 802.11ax HE80	98.10	-	-	10Hz
1+2	5GHz 802.11ax HE160	98.28	-	-	10Hz

<Ant. 2>

802.11ax HE40

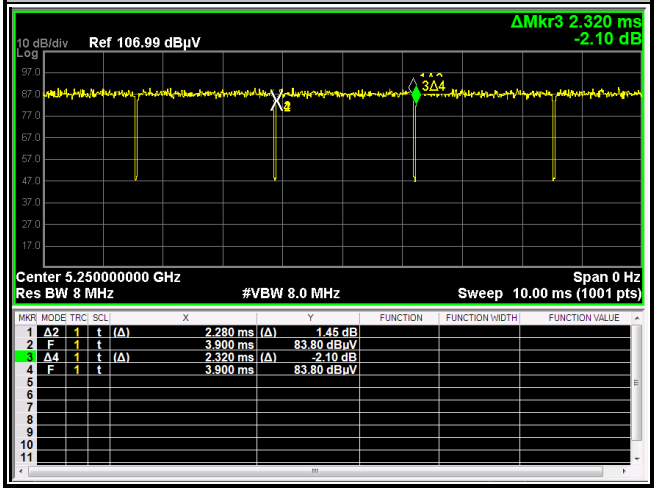


802.11ax HE80



MIMO <Ant. 1+2>

802.11ax HE160

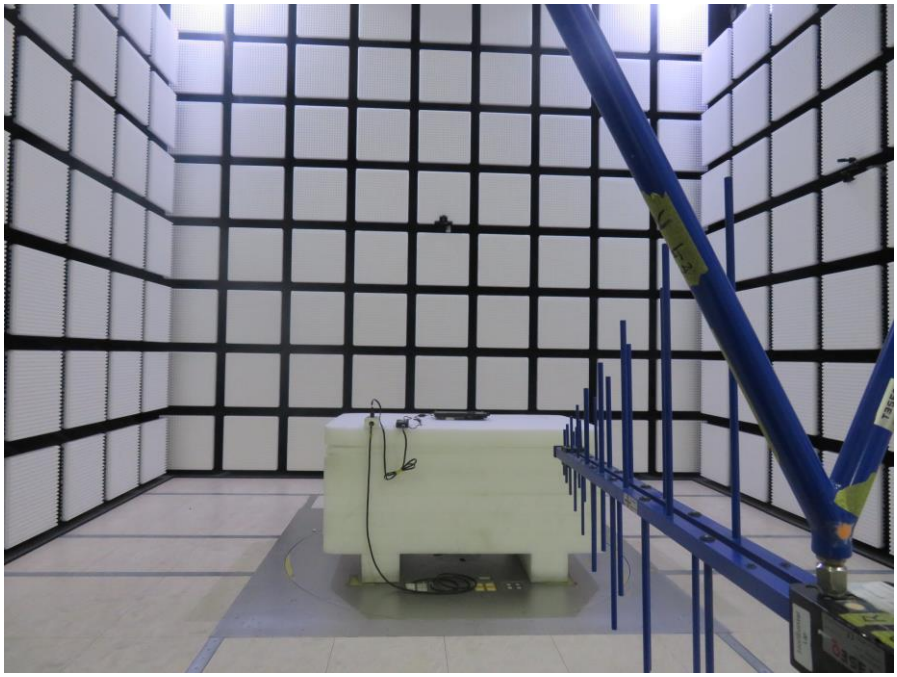


Appendix E. Setup Photographs

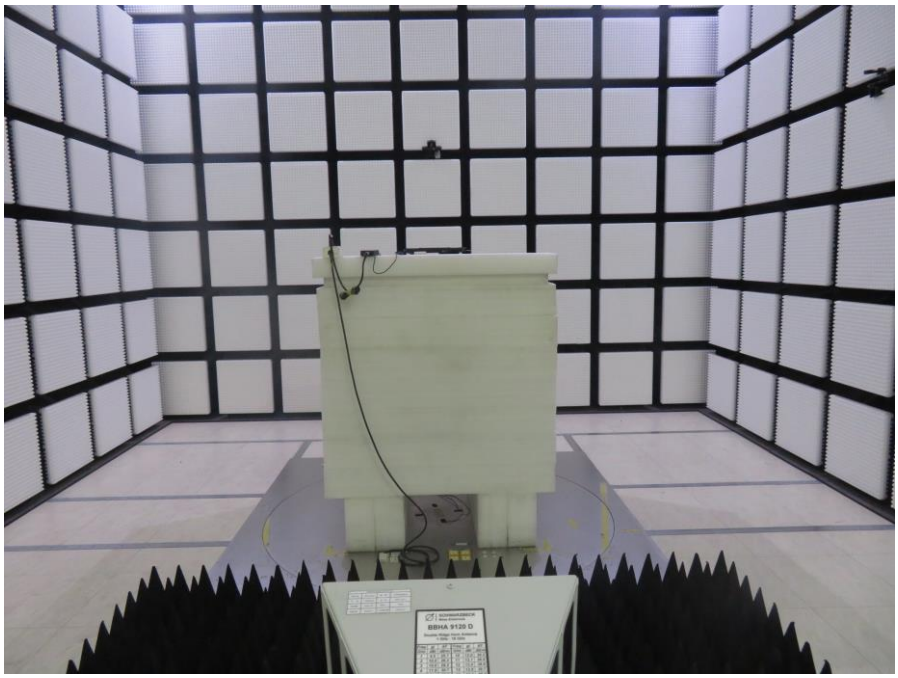
<Radiated Emission>

X Plane

LF



HF

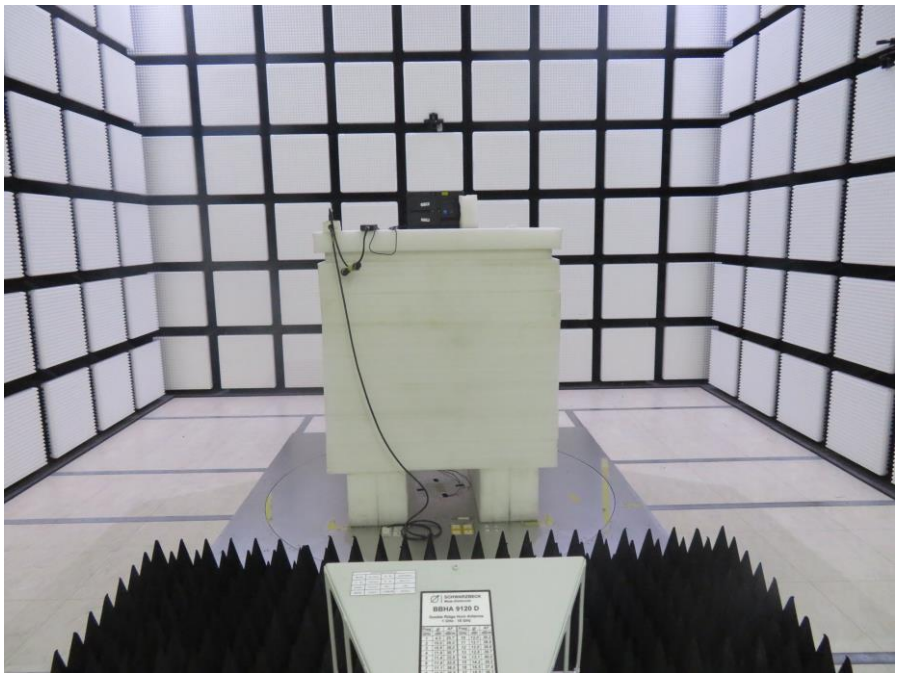


SHF

Y Plane

LF

HF



SHF

———THE END———