



FCC RADIO TEST REPORT

FCC ID : E2K-P152G006
Equipment : Portable Computer
Brand Name : DELL
Model Name : P152G
Applicant : DELL Inc.
One Dell Way, Round Rock, TX 78682, USA
Manufacturer : DELL Inc.
One Dell Way, Round Rock, TX 78682, USA
Standard : FCC Part 15 Subpart E §15.407

The product was received on Aug. 23, 2022 and testing was performed from Sep. 01, 2022 to Sep. 30, 2022. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.



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
FR270404E	01	Initial issue of report	Oct. 14, 2022

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403(i)	6dB & 26dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407(a)	Maximum Conducted Output Power	Pass	-
3.3	15.407(a)	Power Spectral Density	Pass	-
3.4	15.407(b)	Unwanted Emissions	Pass	6.31 dB under the limit at 32.910 MHz
3.5	15.207	AC Conducted Emission	Pass	10.13 dB under the limit at 0.170 MHz
3.6	15.203	Antenna Requirement	Pass	-

Declaration of Conformity:

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

Comments and Explanations:

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

Reviewed by: Sheng Kuo

Report Producer: Ming Chen

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 AWAN Antenna
Sample 2	EUT with Hong-Bo Antenna
Antenna Type	WLAN <Main>: PIFA Antenna <Aux.>: PIFA Antenna Bluetooth: PIFA Antenna

Antenna Information			
Vendor 1	Manufacturer	Hong-Bo	
	Antenna Type	PIFA Antenna	
	Part Number	260-24414 (DC33002QK0L)	260-24414 (DC33002QK0L)
	Peak gain (dBi)	Main Antenna :	Aux. Antenna :
		WLAN (5GHz B4): 2.86	WLAN (5GHz B4): 2.74
Vendor 2	Manufacturer	AWAN	
	Antenna Type	PIFA Antenna	
	Part Number	AYP6Y-200052 (DC33002QR0L)	AYP6Y-200052 (DC33002QR0L)
	Peak gain (dBi)	Main Antenna :	Aux. Antenna :
		WLAN (5GHz B4): 2.81	WLAN (5GHz B4): 2.44

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

1.1.1 Antenna Gain

<For CDD Mode>

Follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01 F2)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.

Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

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

where

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

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

N_{ANT} = the total number of antennas

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

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

Directional gain = $10 \cdot \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}]$ dBi

Where $G_1, G_2, \dots, G_N$ denote single antenna gain.

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

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant 1	Ant 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	2.86	2.81	2.86	5.85	0.00	0.00

Calculation example:

If a device has two antenna, $G_{ANT1} = 2.86\text{dBi}$; $G_{ANT2} = 2.81\text{dBi}$

Directional gain of power measurement = $\max(3.0, 3.2) + 0 = 3.2\text{ dBi}$

Directional gain of PSD derived from formula which is

$$10 \times \log \left\{ \left[10^{\frac{2.86\text{ dBi}}{20}} + 10^{\frac{2.81\text{ dBi}}{20}} \right]^2 \right\} / 2$$

$$= 5.85\text{ dBi}$$

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

Remark: Ant. 1 means Aux. Antenna and Ant. 2 means Main Antenna.

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

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

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

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. TH05-HY, 03CH20-HY

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

FCC designation No.: TW1190 and TW3786

1.4 Applicable Standards

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

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

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.



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).
- 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)
5725-5850 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155#	5775	165	5825

Note:

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



2.2 Test Mode

This device support 26/52/106/242/484/996-tone RU.

The PSD of partial RU is reduced to be smaller than full RU according to TCB workshop interim guidance Oct. 2018.

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

The 242-tone RU is covered by 20MHz channel and 484-tone RU is covered by 40MHz channel and 996-tone RU is covered by 80MHz channel.

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

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

Single Mode

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

MIMO Mode

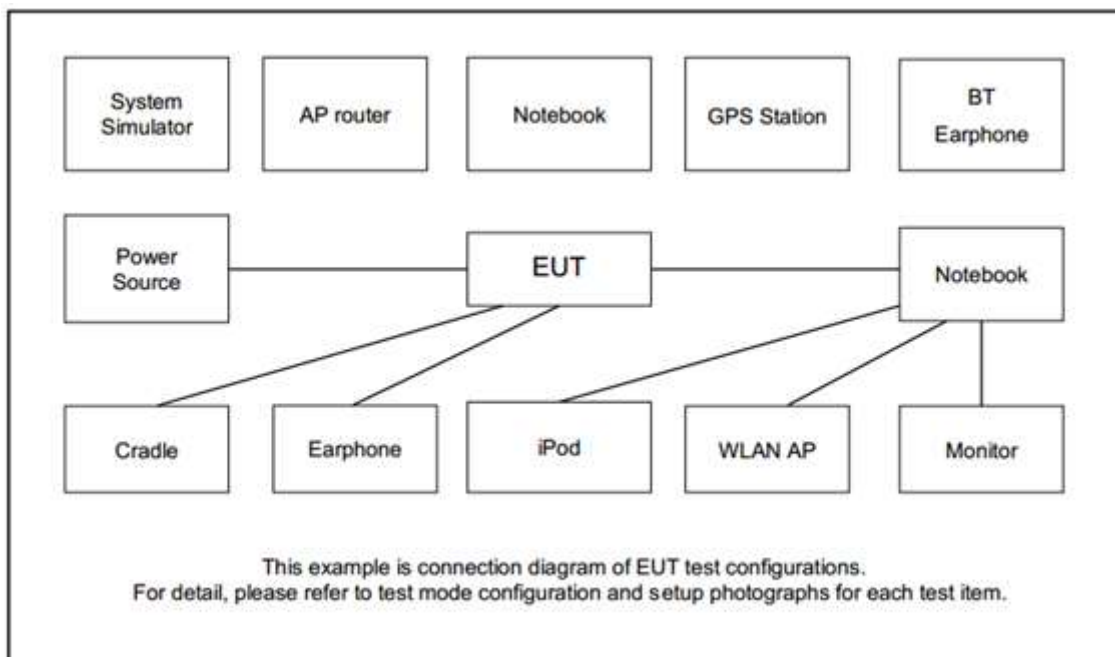
Modulation	Data Rate
802.11n HT20 (Covered by HE20)	MCS0
802.11n HT40 (Covered by HE40)	MCS0
802.11ac VHT20 (Covered by HE20)	MCS0
802.11ac VHT40 (Covered by HE40)	MCS0
802.11ac VHT80 (Covered by HE80)	MCS0
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN (5GHz) Link + Adapter + USB HD*2 + Earphone for Sample 1

Ch. #		Band IV : 5725-5850 MHz			
		802.11a	802.11ax HE20	802.11ax HE40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

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

2.3 Connection Diagram of Test System



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.	Notebook	DELL	Latitude5310	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
5.	USB HD	ADATA	HV620S-1T	FCC DoC	Shielded, 1.0 m	N/A
6.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A



2.5 EUT Operation Test Setup

The RF test items, utility “QRCT 4.0.00206.0” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.2 + 10 = 14.2 \text{ (dB)}\end{aligned}$$

3 Test Result

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

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

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

26dB and 99% Occupied bandwidth are reporting only.

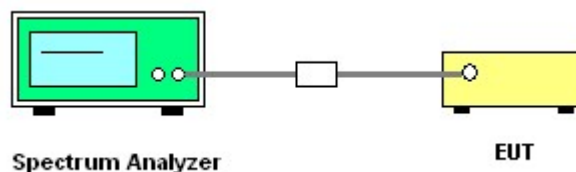
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup

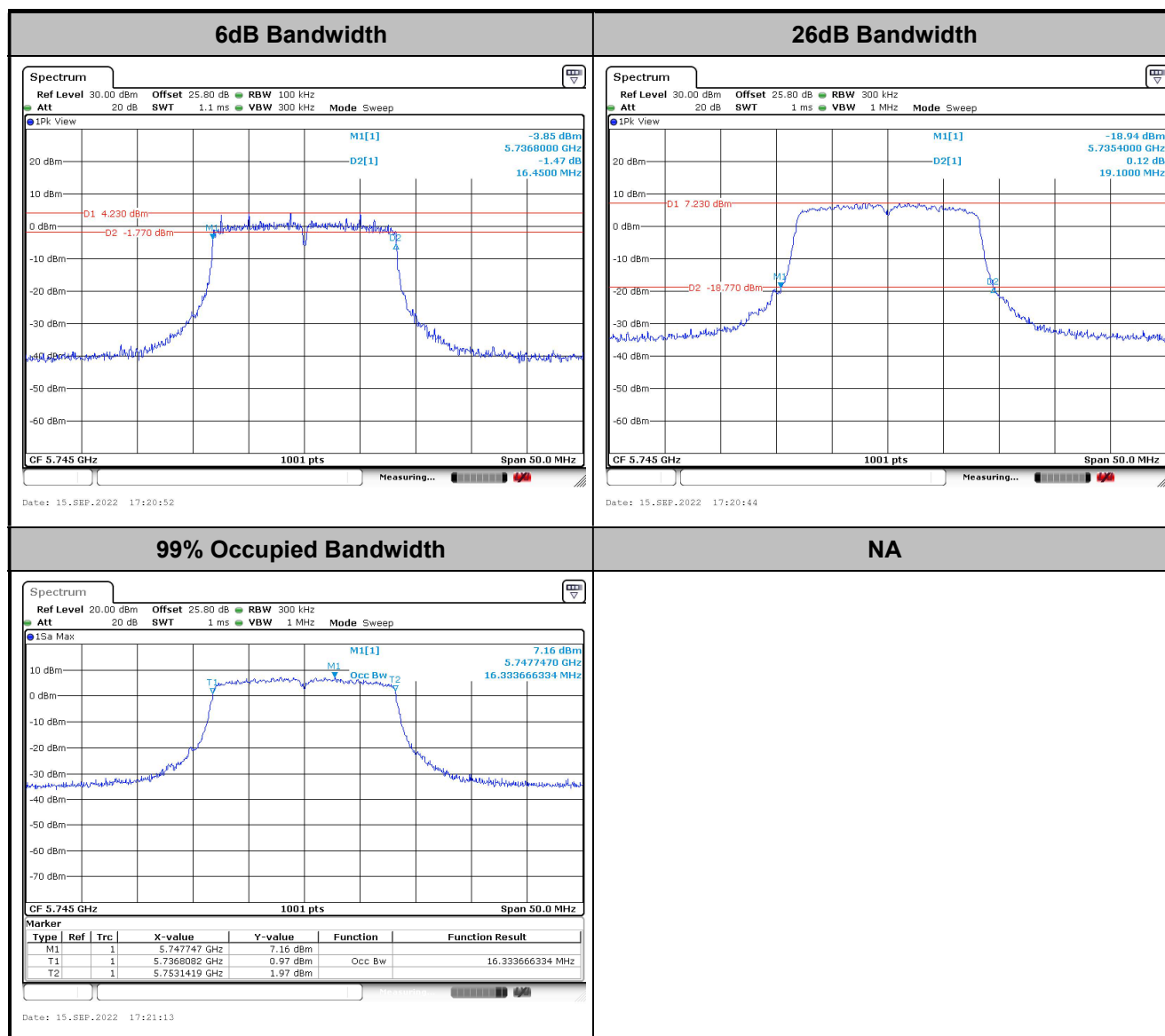


3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.



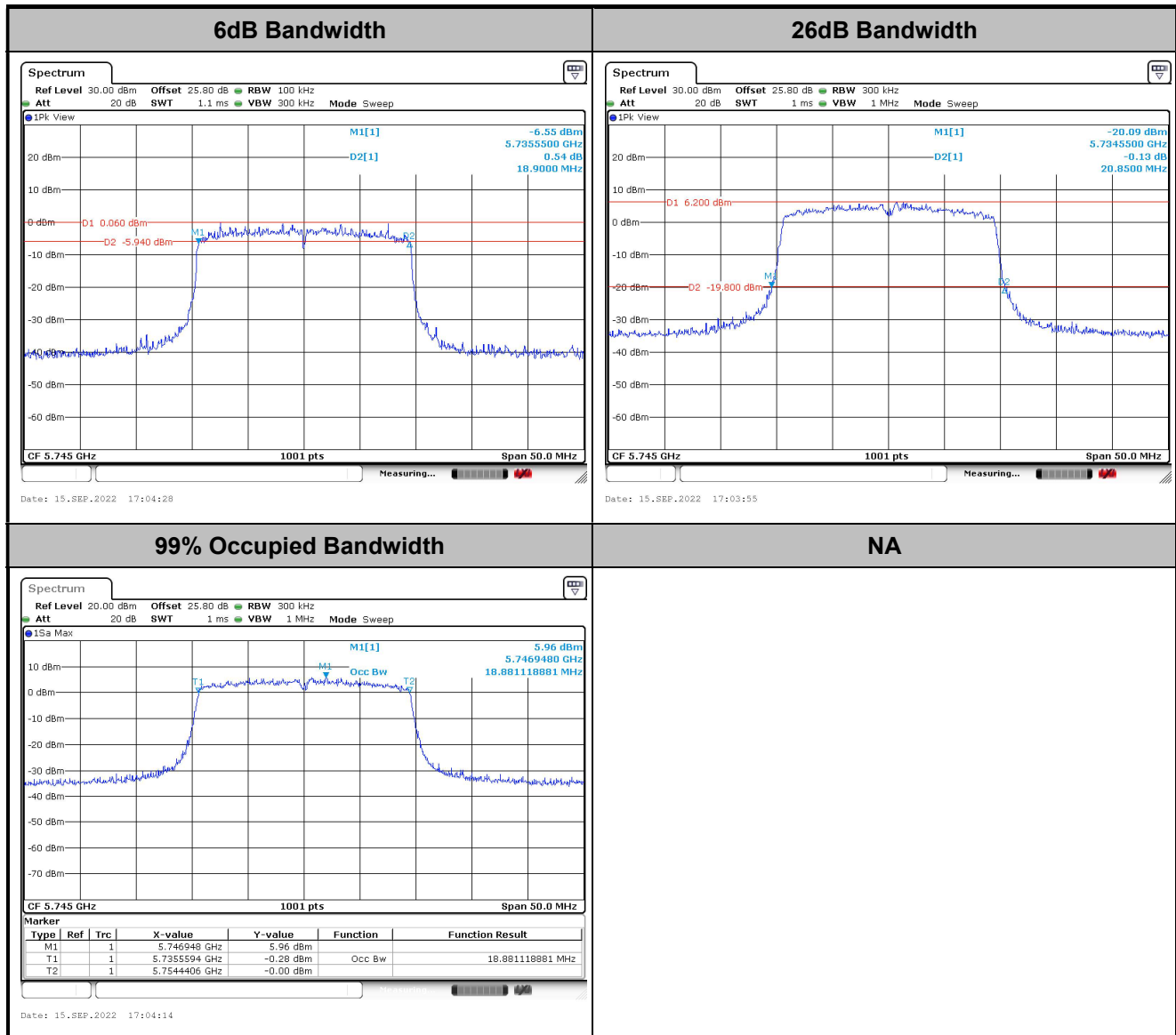
<802.11a>



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



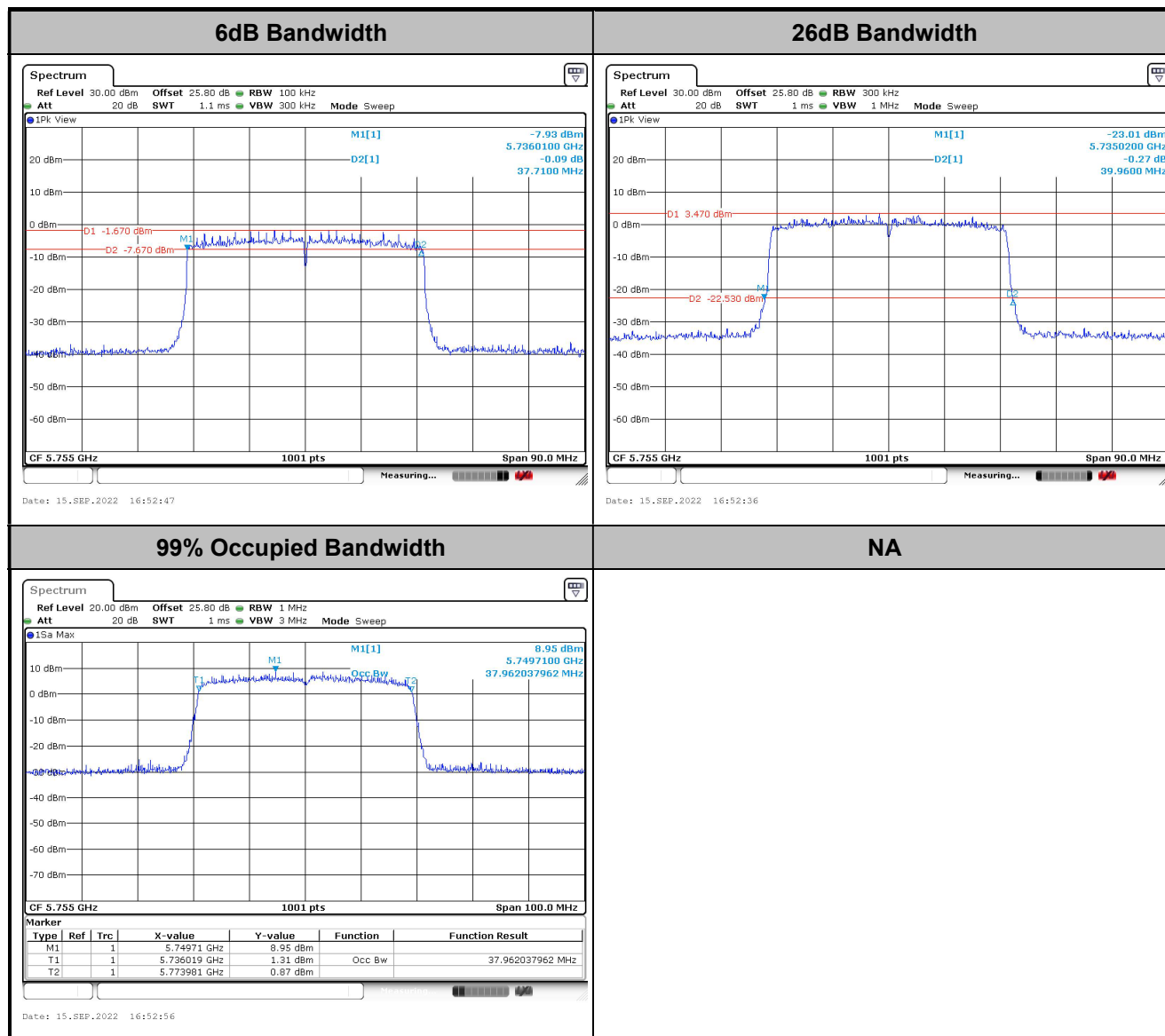
<802.11ax HE20>



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



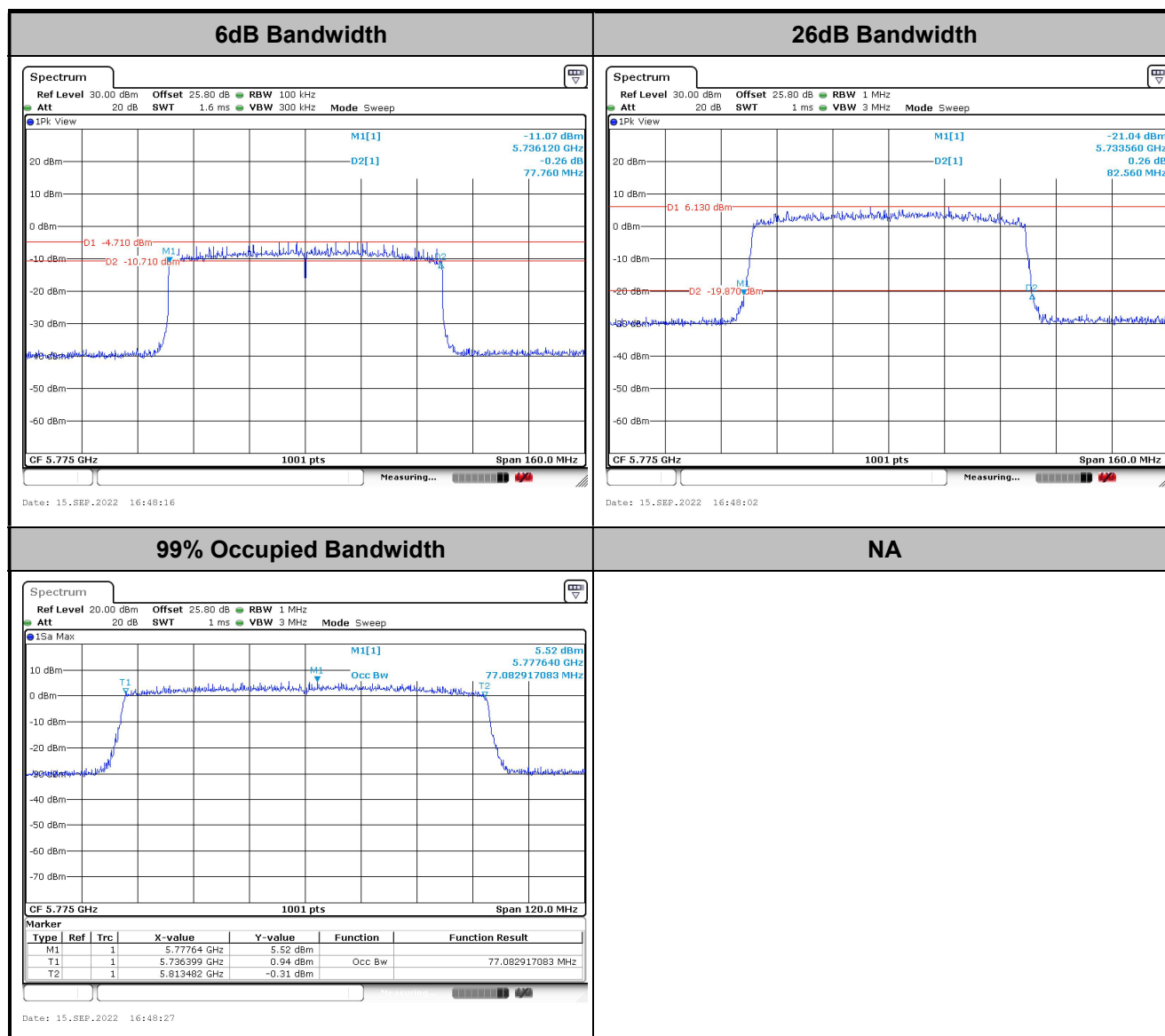
<802.11ax HE40>



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



<802.11ax HE80>



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

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

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

3.2.2 Measuring Instruments

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

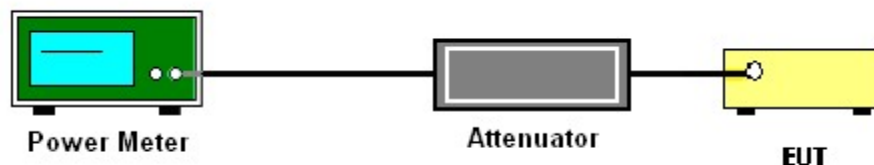
3.2.3 Test Procedures

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

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

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter.
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

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

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

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

Method SA-3

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

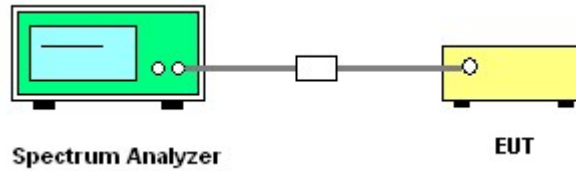
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 300 kHz.
 - Set VBW $\geq$ 1 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - Add $10 \log(500 \text{ kHz/RBW})$ to the measured result, whereas RBW ($<500 \text{ kHz}$) is the reduced resolution bandwidth of the spectrum analyzer set during measurement
 - Sweep time $\leq$ (number of points in sweep) $\times$ T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Detector = power averaging (rms).
 - Trace mode = max hold.
 - Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
1. The RF output of EUT is connected to the spectrum analyzer by a low loss cable.
 2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
 3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Method (c): Measure and add $10 \log(N_{\text{ANT}})$ dB.

With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity $10 \log(N_{\text{ANT}})$ dB is added to each spectrum value before comparing to the emission limit. The addition of $10 \log(N_{\text{ANT}})$ dB serves to apportion the emission limit among the N_{ANT} outputs so

that each output is permitted to contribute no more than $1/N_{\text{ANT}}^{\text{th}}$ of the PSD limit.

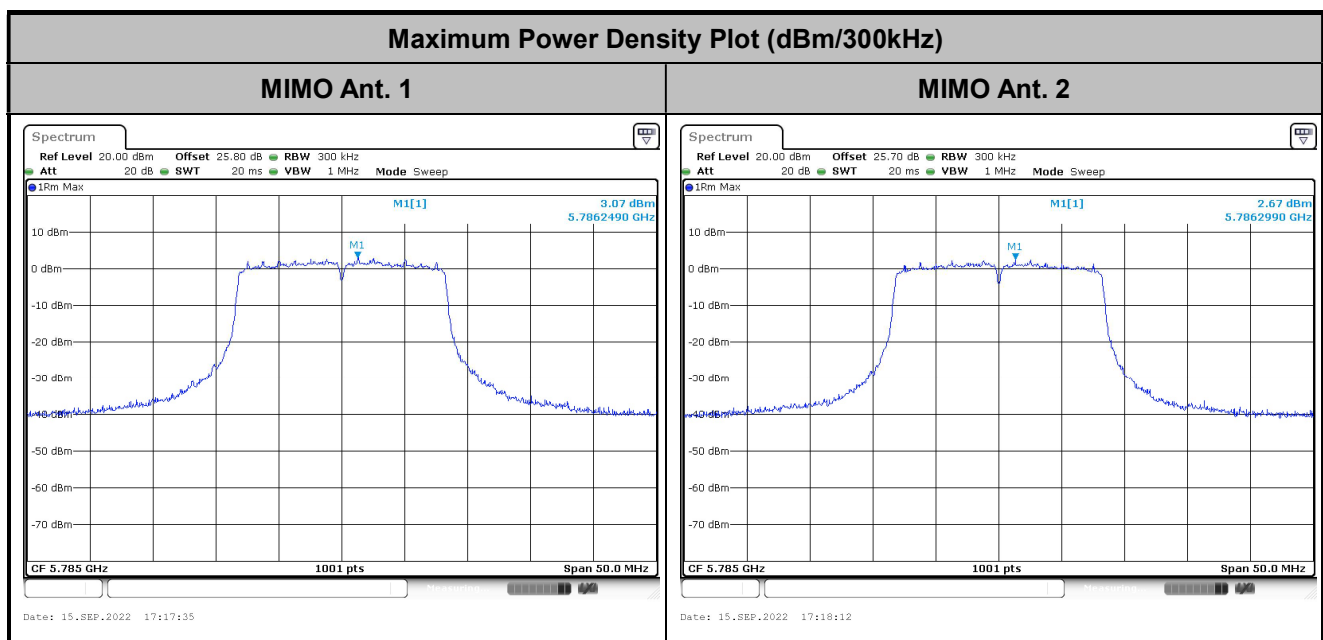
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

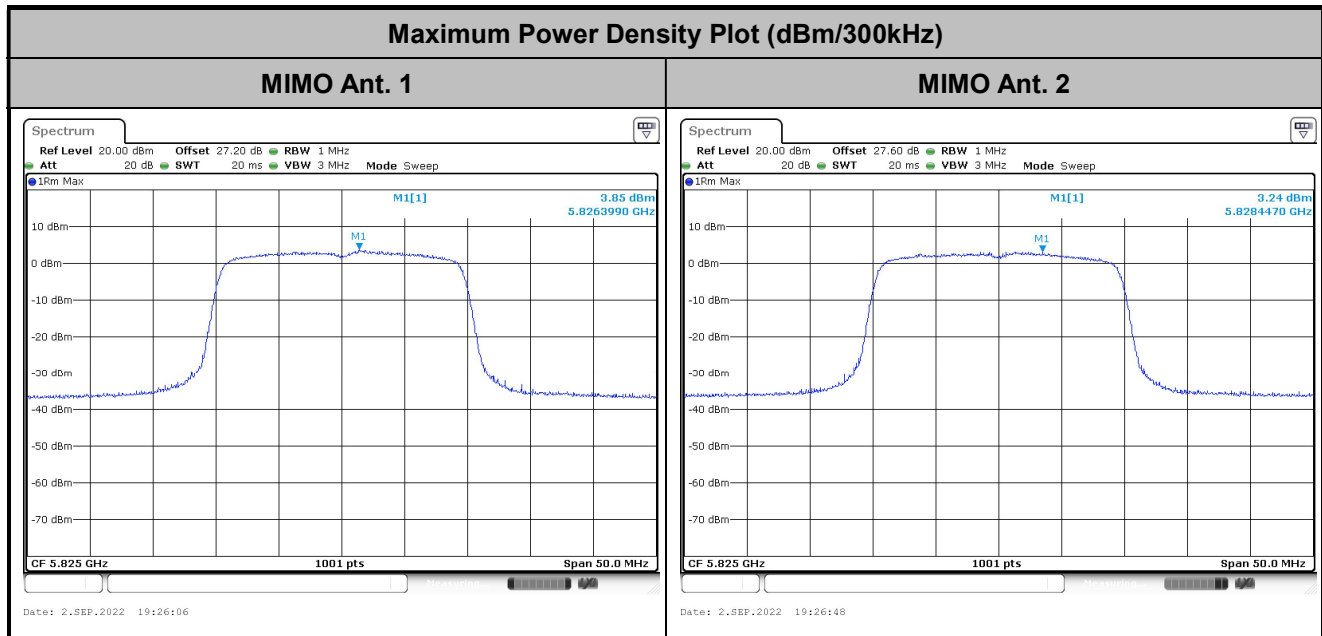
Please refer to Appendix A.

<802.11a>

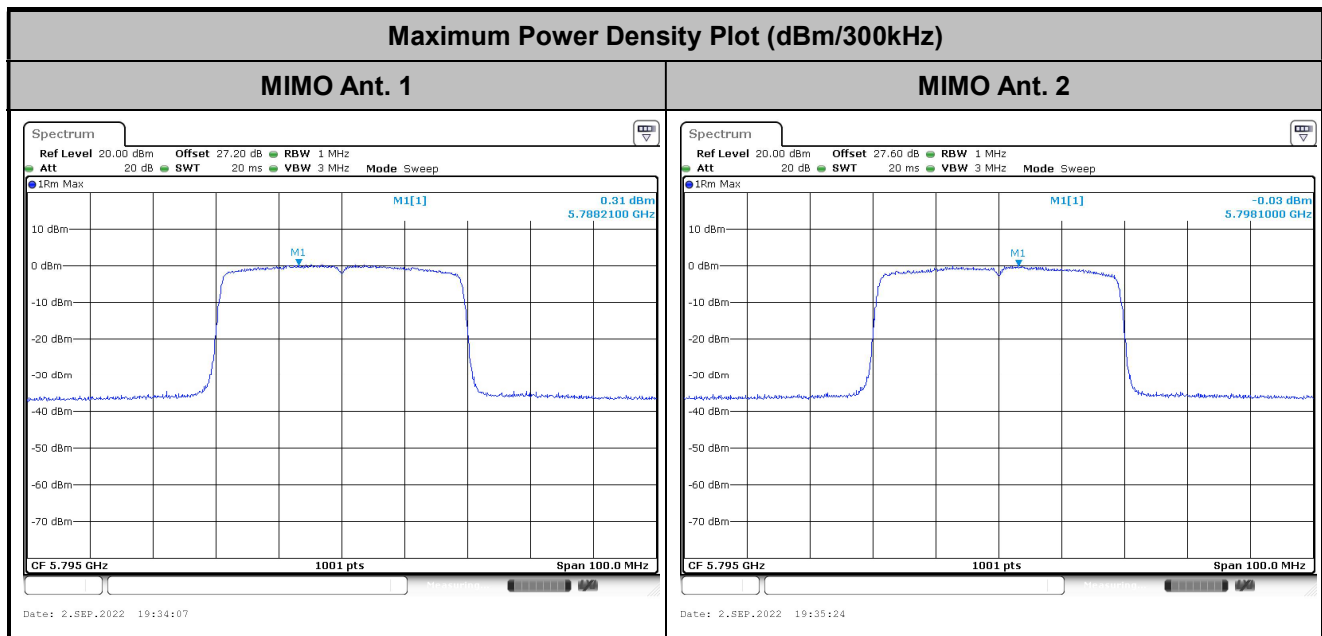




<802.11ax HE20>

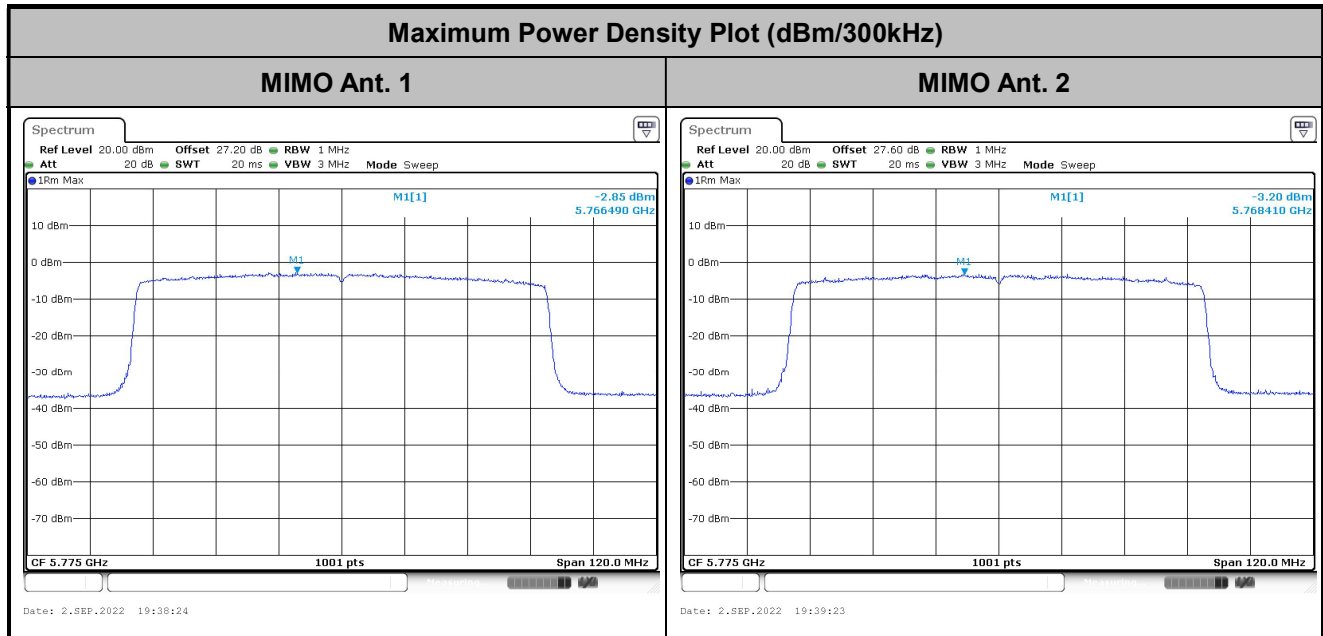


<802.11ax HE40>





<802.11ax HE80>



3.4 Unwanted Emissions Measurement

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

3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

- (2) Unwanted spurious emissions 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.

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

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

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

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

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

3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
(1) Procedure for Unwanted Emissions Measurements Below 1000 MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW $\geq$ 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 $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT is set 3 meters away from the receiving antenna which is mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT is arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading.
When there is no suspected emission found and the emission level is with at least 6 dB margin

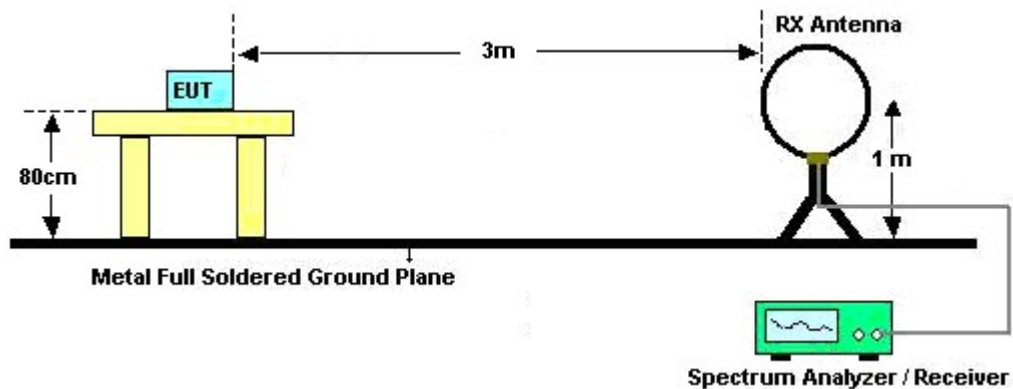
against QP limit line, the position is marked as “-“.

7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies.

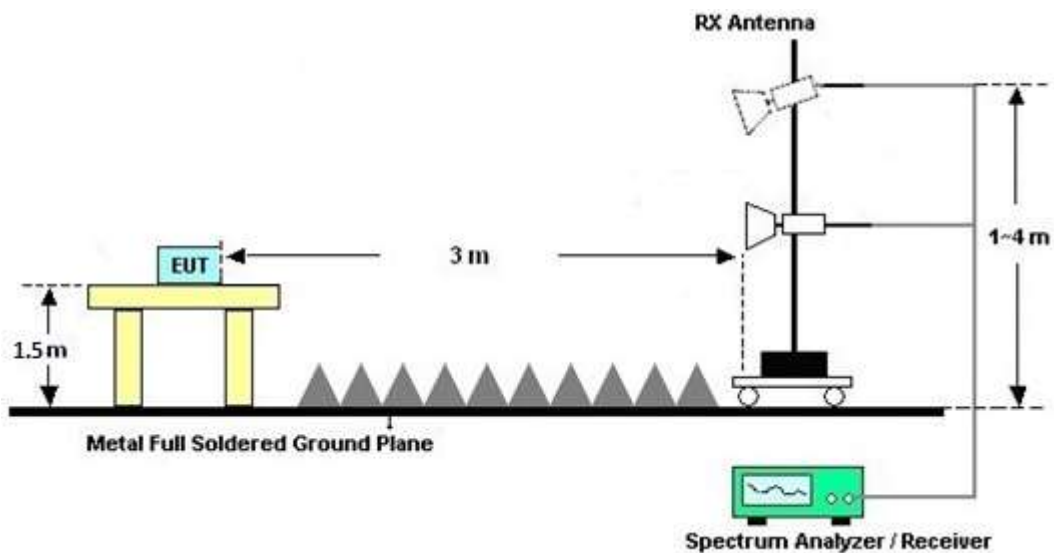
When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-“.

3.4.4 Test Setup

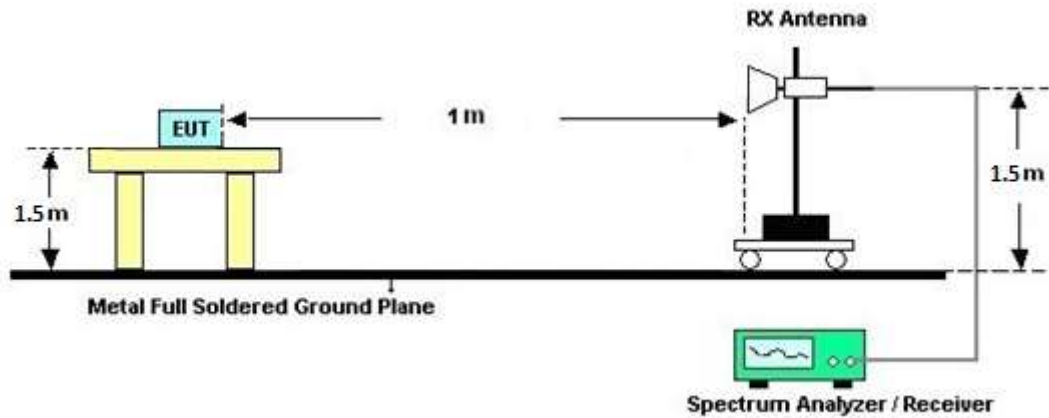
For radiated emissions below 30MHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



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

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

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

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

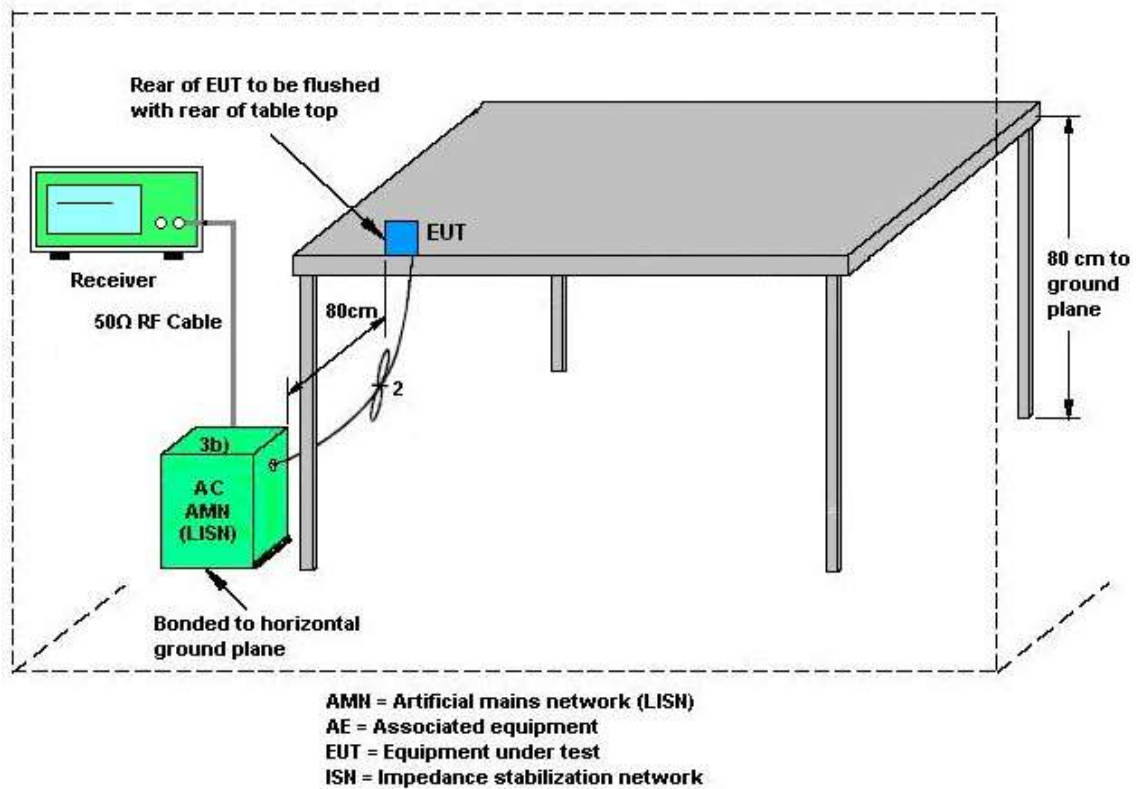
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

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

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.6 Antenna Requirements

3.6.1 Standard Applicable

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

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9010B	MY60240520	10Hz~44GHz	Dec. 23, 2021	Sep. 23, 2022~ Sep. 30, 2022	Dec. 22, 2022	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz~1000MHz	Jan. 03, 2022	Sep. 23, 2022~ Sep. 30, 2022	Jan. 02, 2023	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45SE	980792	N/A	Nov. 15, 2021	Sep. 23, 2022~ Sep. 30, 2022	Nov. 14, 2022	Radiation (03CH20-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 28, 2022	Sep. 23, 2022~ Sep. 30, 2022	Jun. 27, 2023	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 07, 2022	Sep. 23, 2022~ Sep. 30, 2022	Jan. 06, 2023	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802N 1D01N-06	55606 & 08	30MHz~1GHz	Oct. 17, 2021	Sep. 23, 2022~ Sep. 30, 2022	Oct. 16, 2022	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	02360	1GHz~18GHz	Nov. 02, 2021	Sep. 23, 2022~ Sep. 30, 2022	Nov. 01, 2022	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00994	18GHz~40GHz	Nov. 04, 2021	Sep. 23, 2022~ Sep. 30, 2022	Nov. 03, 2022	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303B	TP140325	N/A	Aug. 15, 2022	Sep. 23, 2022~ Sep. 30, 2022	Aug. 14, 2023	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,8040 15/2,804027/2	N/A	Jan. 19, 2022	Sep. 23, 2022~ Sep. 30, 2022	Jan. 18, 2023	Radiation (03CH20-HY)
Software	Audix	E3 6.2009-8-24	RK-002156	N/A	N/A	Sep. 23, 2022~ Sep. 30, 2022	N/A	Radiation (03CH20-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Sep. 23, 2022~ Sep. 30, 2022	N/A	Radiation (03CH20-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Sep. 23, 2022~ Sep. 30, 2022	N/A	Radiation (03CH20-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Sep. 23, 2022~ Sep. 30, 2022	N/A	Radiation (03CH20-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Sep. 07, 2022	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2021	Sep. 07, 2022	Nov. 30, 2022	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2021	Sep. 07, 2022	Nov. 16, 2022	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 16, 2021	Sep. 07, 2022	Nov. 15, 2022	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Sep. 07, 2022	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Aug. 01, 2022	Sep. 07, 2022	Jul. 31, 2023	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 30, 2021	Sep. 07, 2022	Dec. 29, 2022	Conduction (CO05-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Sep. 01, 2022~ Sep. 19, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15100041SNO 10 (NO:248)	10MHz~6GHz	Dec. 29, 2021	Sep. 01, 2022~ Sep. 19, 2022	Dec. 28, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz	Aug. 03, 2022	Sep. 01, 2022~ Sep. 19, 2022	Aug. 02, 2023	Conducted (TH05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.10 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.90 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.20 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.70 dB
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	ERIC WU	Temperature:	21~25	°C
Test Date:	2022/9/1~2022/09/19	Relative Humidity:	51~54	%

Remark: For Conducted Test Items, Ant. 1 means Aux. Antenna and Ant. 2 means Main Antenna.

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

U-NII-3 single antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	149	5745	16.33	16.38	19.10	19.00	16.45	16.40	0.5	Pass
11a	6Mbps	1	157	5785	16.38	16.33	19.10	19.25	16.15	16.35	0.5	Pass
11a	6Mbps	1	165	5825	16.33	16.33	19.05	19.00	16.40	16.45	0.5	Pass

TEST RESULTS DATA
Average Power Table

U-NII-3 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	149	5745	16.40	16.20		30.00	30.00	2.74	2.86	Pass
11a	6Mbps	1	157	5785	16.50	16.40		30.00	30.00	2.74	2.86	Pass
11a	6Mbps	1	165	5825	16.50	16.40		30.00	30.00	2.74	2.86	Pass
HT20	MCS0	1	149	5745	13.10	12.60		30.00	30.00	2.74	2.86	Pass
HT20	MCS0	1	157	5785	13.10	12.80		30.00	30.00	2.74	2.86	Pass
HT20	MCS0	1	165	5825	13.20	12.90		30.00	30.00	2.74	2.86	Pass
HT40	MCS0	1	151	5755	13.10	12.40		30.00	30.00	2.74	2.86	Pass
HT40	MCS0	1	159	5795	13.20	12.80		30.00	30.00	2.74	2.86	Pass
VHT20	MCS0	1	149	5745	13.10	12.60		30.00	30.00	2.74	2.86	Pass
VHT20	MCS0	1	157	5785	13.10	12.80		30.00	30.00	2.74	2.86	Pass
VHT20	MCS0	1	165	5825	13.20	12.90		30.00	30.00	2.74	2.86	Pass
VHT40	MCS0	1	151	5755	13.10	12.40		30.00	30.00	2.74	2.86	Pass
VHT40	MCS0	1	159	5795	13.20	12.80		30.00	30.00	2.74	2.86	Pass
VHT80	MCS0	1	155	5775	13.00	12.60		30.00	30.00	2.74	2.86	Pass

U-NII-3 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	149	5745	13.20	13.00	16.11	30.00		2.86		Pass
HT20	MCS0	2	157	5785	13.20	13.00	16.11	30.00		2.86		Pass
HT20	MCS0	2	165	5825	13.10	12.80	15.96	30.00		2.86		Pass
HT40	MCS0	2	151	5755	13.30	12.60	15.97	30.00		2.86		Pass
HT40	MCS0	2	159	5795	13.40	13.00	16.21	30.00		2.86		Pass
VHT20	MCS0	2	149	5745	13.40	12.80	16.12	30.00		2.86		Pass
VHT20	MCS0	2	157	5785	13.40	12.80	16.12	30.00		2.86		Pass
VHT20	MCS0	2	165	5825	13.30	12.60	15.97	30.00		2.86		Pass
VHT40	MCS0	2	151	5755	13.30	12.60	15.97	30.00		2.86		Pass
VHT40	MCS0	2	159	5795	13.40	13.00	16.21	30.00		2.86		Pass
VHT80	MCS0	2	155	5775	13.20	12.80	16.01	30.00		2.86		Pass

TEST RESULTS DATA
Power Spectral Density

U-NII-3 single antenna														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	2.22	2.22	4.75	4.84		30.00	30.00	2.74	2.86	Pass
11a	6Mbps	1	157	5785	2.22	2.22	5.29	4.89		30.00	30.00	2.74	2.86	Pass
11a	6Mbps	1	165	5825	2.22	2.22	4.80	4.55		30.00	30.00	2.74	2.86	Pass

Note: PSD Sum = Max PSD(Ant. 1, Ant. 2) + 10 log (n)

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

U-NII-3 single antenna													
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	RU Config	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
						Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	1	149	5745	Full	-	-	-	-	-	-	0.5	Pass
HE20	MCS0	1	149	5745	26/0	-	-	-	-	-	-	0.5	Pass

U-NII-3 MIMO													
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	RU Config	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
						Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	2	149	5745	Full	18.88	18.83	20.85	21.05	18.90	18.95	0.5	Pass
HE20	MCS0	2	157	5785	Full	18.88	18.83	20.80	20.75	18.50	17.85	0.5	Pass
HE20	MCS0	2	165	5825	Full	18.88	18.88	20.90	21.10	18.90	17.90	0.5	Pass
HE40	MCS0	2	151	5755	Full	37.96	37.86	39.96	39.96	37.71	36.90	0.5	Pass
HE40	MCS0	2	159	5795	Full	37.76	37.86	40.05	40.14	37.44	36.54	0.5	Pass
HE80	MCS0	2	155	5775	Full	77.08	77.20	82.56	82.56	77.76	77.44	0.5	Pass

TEST RESULTS DATA
Average Power Table

U-NII-3 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	149	5745	Full	13.20	12.70		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	149	5745	26/0	5.20	4.60		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	149	5745	52/37	5.10	4.60		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	149	5745	106/53	5.20	4.80		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	157	5785	Full	13.20	12.90		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	157	5785	26/4	6.20	5.60		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	157	5785	52/38	6.30	5.70		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	157	5785	106/53	6.40	5.80		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	165	5825	Full	13.30	13.00		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	165	5825	26/8	5.10	4.80		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	165	5825	52/40	5.20	4.80		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	165	5825	106/54	5.20	4.90		30.00	30.00	2.74	2.86	Pass
HE40	MCS0	1	151	5755	Full	13.20	12.50		30.00	30.00	2.74	2.86	Pass
HE40	MCS0	1	151	5755	242/61	11.10	10.50		30.00	30.00	2.74	2.86	Pass
HE40	MCS0	1	159	5795	Full	13.30	12.90		30.00	30.00	2.74	2.86	Pass
HE40	MCS0	1	159	5795	242/62	10.90	10.70		30.00	30.00	2.74	2.86	Pass
HE80	MCS0	1	155	5775	Full	13.10	12.70		30.00	30.00	2.74	2.86	Pass
HE80	MCS0	1	155	5775	484/65	8.20	7.60		30.00	30.00	2.74	2.86	Pass
HE80	MCS0	1	155	5775	484/66	7.80	7.60		30.00	30.00	2.74	2.86	Pass

U-NII-3 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	149	5745	Full	13.50	13.00	16.27	30.00		2.86		Pass
HE20	MCS0	2	149	5745	26/0	5.30	4.70	8.02	30.00		2.86		Pass
HE20	MCS0	2	149	5745	52/37	5.40	4.80	8.12	30.00		2.86		Pass
HE20	MCS0	2	149	5745	106/53	5.50	4.90	8.22	30.00		2.86		Pass
HE20	MCS0	2	157	5785	Full	13.50	13.20	16.36	30.00		2.86		Pass
HE20	MCS0	2	157	5785	26/4	6.30	5.70	9.02	30.00		2.86		Pass
HE20	MCS0	2	157	5785	52/38	6.50	5.90	9.22	30.00		2.86		Pass
HE20	MCS0	2	157	5785	106/53	6.60	6.00	9.32	30.00		2.86		Pass
HE20	MCS0	2	165	5825	Full	13.50	13.20	16.36	30.00		2.86		Pass
HE20	MCS0	2	165	5825	26/8	5.20	4.90	8.06	30.00		2.86		Pass
HE20	MCS0	2	165	5825	52/40	5.40	5.00	8.21	30.00		2.86		Pass
HE20	MCS0	2	165	5825	106/54	5.50	5.10	8.31	30.00		2.86		Pass
HE40	MCS0	2	151	5755	Full	13.40	12.70	16.07	30.00		2.86		Pass
HE40	MCS0	2	151	5755	242/61	11.30	10.60	13.97	30.00		2.86		Pass
HE40	MCS0	2	159	5795	Full	13.50	13.10	16.31	30.00		2.86		Pass
HE40	MCS0	2	159	5795	242/62	11.00	10.80	13.91	30.00		2.86		Pass
HE80	MCS0	2	155	5775	Full	13.30	12.90	16.11	30.00		2.86		Pass
HE80	MCS0	2	155	5775	484/65	8.50	7.70	11.13	30.00		2.86		Pass
HE80	MCS0	2	155	5775	484/66	7.90	7.70	10.81	30.00		2.86		Pass

TEST RESULTS DATA
Power Spectral Density

U-NII-3 single antenna															
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	RU Config	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
						Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
HE20	MCS0	1	149	5745	Full	-	-	-	-		30.00	30.00	2.74	2.86	Pass
HE20	MCS0	1	149	5745	26/0	-	-	-	-		30.00	30.00	2.74	2.86	Pass

U-NII-3 MIMO															
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	RU Config	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
						Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
HE20	MCS0	2	149	5745	Full	2.22		5.71	5.13	8.72	30.00		5.81		Pass
HE20	MCS0	2	149	5745	26/0	2.22		5.30	4.85	8.31	30.00		5.81		Pass
HE20	MCS0	2	157	5785	Full	2.22		5.89	5.35	8.90	30.00		5.81		Pass
HE20	MCS0	2	157	5785	26/4	2.22		5.45	4.75	8.46	30.00		5.81		Pass
HE20	MCS0	2	165	5825	Full	2.22		6.07	5.46	9.08	30.00		5.81		Pass
HE20	MCS0	2	165	5825	26/8	2.22		5.34	5.17	8.35	30.00		5.81		Pass
HE40	MCS0	2	151	5755	Full	2.22		2.30	1.58	5.31	30.00		5.81		Pass
HE40	MCS0	2	151	5755	242/61	2.22		1.82	1.37	4.83	30.00		5.81		Pass
HE40	MCS0	2	159	5795	Full	2.22		2.53	2.19	5.54	30.00		5.81		Pass
HE40	MCS0	2	159	5795	242/62	2.22		1.78	1.76	4.79	30.00		5.81		Pass
HE80	MCS0	2	155	5775	Full	2.22		-0.63	-0.98	2.38	30.00		5.81		Pass
HE80	MCS0	2	155	5775	484/65	2.22		-1.15	-1.88	1.86	30.00		5.81		Pass
HE80	MCS0	2	155	5775	484/66	2.22		-1.24	-1.30	1.77	30.00		5.81		Pass

Note: PSD Sum = Max PSD(Ant. 1, Ant. 2) + 10 log (n)



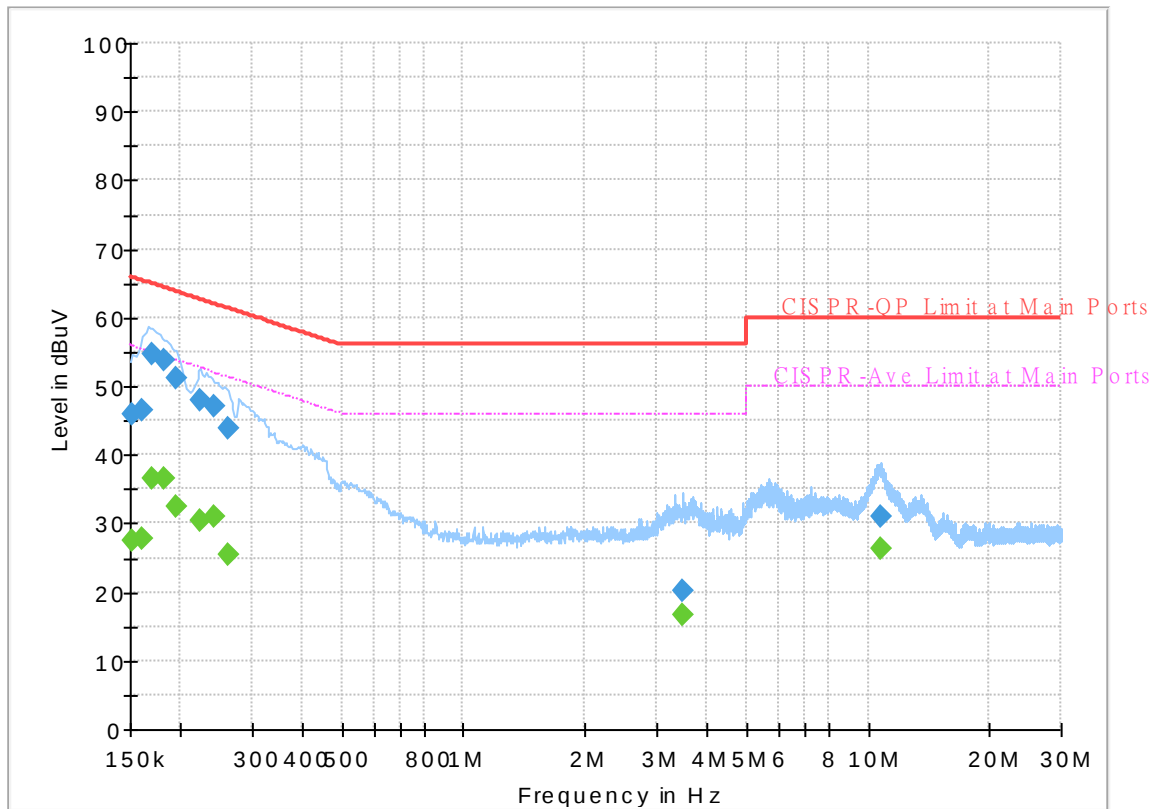
Appendix B. AC Conducted Emission Test Results

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

EUT Information

Report NO : 270404
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



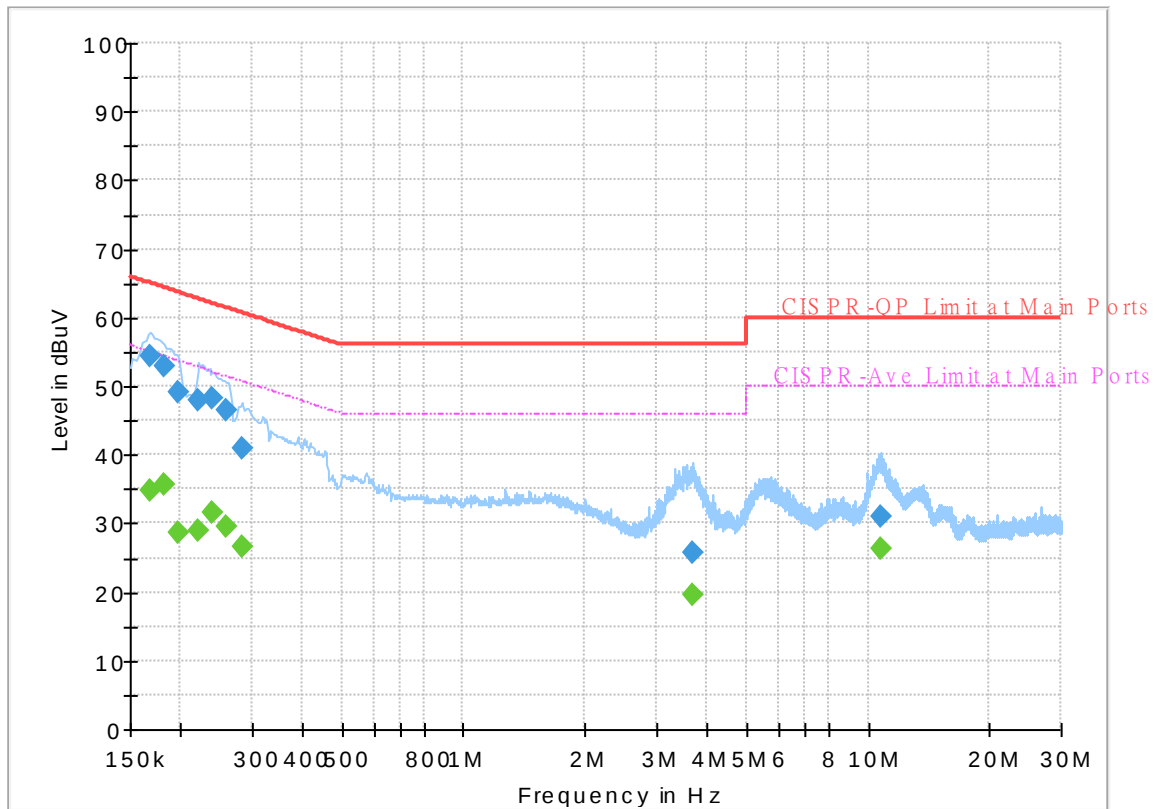
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	27.35	55.88	28.53	L1	OFF	19.8
0.152250	45.85	---	65.88	20.03	L1	OFF	19.8
0.161250	---	27.88	55.40	27.52	L1	OFF	19.8
0.161250	46.38	---	65.40	19.02	L1	OFF	19.8
0.170250	---	36.69	54.95	18.26	L1	OFF	19.8
0.170250	54.82	---	64.95	10.13	L1	OFF	19.8
0.181500	---	36.45	54.42	17.97	L1	OFF	19.8
0.181500	53.91	---	64.42	10.51	L1	OFF	19.8
0.195000	---	32.33	53.82	21.49	L1	OFF	19.8
0.195000	51.32	---	63.82	12.50	L1	OFF	19.8
0.224250	---	30.45	52.66	22.21	L1	OFF	19.8
0.224250	47.91	---	62.66	14.75	L1	OFF	19.8
0.242250	---	30.87	52.02	21.15	L1	OFF	19.8
0.242250	47.01	---	62.02	15.01	L1	OFF	19.8
0.262500	---	25.38	51.35	25.97	L1	OFF	19.8
0.262500	43.93	---	61.35	17.42	L1	OFF	19.8
3.498000	---	16.66	46.00	29.34	L1	OFF	19.8
3.498000	20.26	---	56.00	35.74	L1	OFF	19.8
10.806000	---	26.21	50.00	23.79	L1	OFF	20.0
10.806000	30.86	---	60.00	29.14	L1	OFF	20.0

EUT Information

Report NO : 270404
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.168000	---	34.84	55.06	20.22	N	OFF	19.8
0.168000	54.24	---	65.06	10.82	N	OFF	19.8
0.181500	---	35.76	54.42	18.66	N	OFF	19.8
0.181500	53.01	---	64.42	11.41	N	OFF	19.8
0.197250	---	28.68	53.73	25.05	N	OFF	19.8
0.197250	49.11	---	63.73	14.62	N	OFF	19.8
0.222000	---	28.93	52.74	23.81	N	OFF	19.8
0.222000	47.82	---	62.74	14.92	N	OFF	19.8
0.240000	---	31.56	52.10	20.54	N	OFF	19.8
0.240000	48.23	---	62.10	13.87	N	OFF	19.8
0.258000	---	29.42	51.50	22.08	N	OFF	19.8
0.258000	46.37	---	61.50	15.13	N	OFF	19.8
0.282750	---	26.60	50.74	24.14	N	OFF	19.8
0.282750	40.95	---	60.74	19.79	N	OFF	19.8
3.675750	---	19.65	46.00	26.35	N	OFF	19.8
3.675750	25.60	---	56.00	30.40	N	OFF	19.8
10.774500	---	26.30	50.00	23.70	N	OFF	20.0
10.774500	31.13	---	60.00	28.87	N	OFF	20.0



Appendix C. Radiated Spurious Emission

Test Engineer :	JC Liang and Leo Li	Temperature :	18~20°C
		Relative Humidity :	66~70%



<Sample 1>

Band 4 - 5725~5850MHz

WIFI 802.11ax HE20_Full (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE20 Full CH 149 5745MHz		5630.825	48.66	-19.54	68.2	39.83	33.2	13.53	37.9	100	210	P	H
		5650.625	48.98	-19.68	68.66	40.14	33.2	13.54	37.9	100	210	P	H
		5713.175	52.66	-56.23	108.89	43.5	33.51	13.57	37.92	100	210	P	H
		5724.425	58.47	-62.42	120.89	49.22	33.6	13.57	37.92	100	210	P	H
	*	5745	111.45	-	-	102.03	33.76	13.58	37.92	100	210	P	H
	*	5745	103.35	-	-	93.93	33.76	13.58	37.92	100	210	A	H
													H
													H
		5637.125	49.05	-19.15	68.2	40.22	33.2	13.53	37.9	350	169	P	V
		5674.925	48.59	-38.1	86.69	39.65	33.3	13.55	37.91	350	169	P	V
		5715.2	54.87	-54.59	109.46	45.7	33.52	13.57	37.92	350	169	P	V
		5724.875	57.4	-64.52	121.92	48.15	33.6	13.57	37.92	350	169	P	V
	*	5745	113.06	-	-	103.64	33.76	13.58	37.92	350	169	P	V
	*	5745	105.51	-	-	96.09	33.76	13.58	37.92	350	169	A	V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11ax HE20 Full (Harmonic @ 3m)

[illegible]



<Sample 2>

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

WIFI Ant.	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5637.35	48.92	-19.28	68.2	40.09	33.2	13.53	37.9	150	202	P	H
		5662.325	48.48	-28.87	77.35	39.6	33.25	13.54	37.91	150	202	P	H
		5719.025	49.65	-60.88	110.53	40.45	33.55	13.57	37.92	150	202	P	H
		5723.75	55.02	-64.33	119.35	45.78	33.59	13.57	37.92	150	202	P	H
	*	5745	107.44	-	-	98.02	33.76	13.58	37.92	150	202	P	H
	*	5745	100.86	-	-	91.44	33.76	13.58	37.92	150	202	A	H
													H
													H
		5634.65	49.46	-18.74	68.2	40.63	33.2	13.53	37.9	348	147	P	V
		5657.375	47.91	-25.77	73.68	39.04	33.23	13.54	37.9	348	147	P	V
		5716.55	51.61	-58.23	109.84	42.43	33.53	13.57	37.92	348	147	P	V
		5724.2	54.66	-65.72	120.38	45.42	33.59	13.57	37.92	348	147	P	V
	*	5745	112.31	-	-	102.89	33.76	13.58	37.92	348	147	P	V
	*	5745	104.84	-	-	95.42	33.76	13.58	37.92	348	147	A	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		5633	50.11	-18.09	68.2	41.28	33.2	13.53	37.9	146	204	P	H
		5651.25	49.11	-20.02	69.13	40.26	33.21	13.54	37.9	146	204	P	H
		5709.25	49.25	-58.54	107.79	40.14	33.47	13.56	37.92	146	204	P	H
		5720.75	48.34	-64.17	112.51	39.12	33.57	13.57	37.92	146	204	P	H
	*	5785	108.16	-	-	98.56	33.94	13.59	37.93	146	204	P	H
	*	5785	100.46	-	-	90.86	33.94	13.59	37.93	146	204	A	H
		5854.75	47.6	-63.77	111.37	37.56	34.3	13.69	37.95	146	204	P	H
		5870.25	48.39	-58.14	106.53	38.33	34.3	13.71	37.95	146	204	P	H
		5911.75	50.23	-27.74	77.97	40.11	34.3	13.78	37.96	146	204	P	H
		5927.75	49.39	-18.81	68.2	39.25	34.3	13.8	37.96	146	204	P	H
													H
													H
		5640	50.11	-18.09	68.2	41.27	33.2	13.54	37.9	344	145	P	V
		5651	49.98	-18.96	68.94	41.14	33.2	13.54	37.9	344	145	P	V
		5707.75	50.86	-56.51	107.37	41.76	33.46	13.56	37.92	344	145	P	V
		5724.75	49.05	-72.58	121.63	39.8	33.6	13.57	37.92	344	145	P	V
	*	5785	113.29	-	-	103.69	33.94	13.59	37.93	344	145	P	V
	*	5785	104.95	-	-	95.35	33.94	13.59	37.93	344	145	A	V
		5853.75	48.31	-65.34	113.65	38.27	34.3	13.69	37.95	344	145	P	V
		5864.25	50.26	-57.95	108.21	40.21	34.3	13.7	37.95	344	145	P	V
		5905	50.04	-32.92	82.96	39.93	34.3	13.77	37.96	344	145	P	V
		5944	50.65	-17.55	68.2	40.49	34.3	13.83	37.97	344	145	P	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz	*	5825	106.6	-	-	96.75	34.15	13.64	37.94	170	204	P	H
	*	5825	100.03	-	-	90.18	34.15	13.64	37.94	170	204	A	H
		5853.8	48.22	-65.32	113.54	38.18	34.3	13.69	37.95	170	204	P	H
		5870.4	47.96	-58.53	106.49	37.9	34.3	13.71	37.95	170	204	P	H
		5912.8	47.61	-29.59	77.2	37.49	34.3	13.78	37.96	170	204	P	H
		5942.6	48.72	-19.48	68.2	38.56	34.3	13.83	37.97	170	204	P	H
													H
													H
	*	5825	110.65	-	-	100.8	34.15	13.64	37.94	357	144	P	V
	*	5825	104.07	-	-	94.22	34.15	13.64	37.94	357	144	A	V
		5851	52.03	-67.89	119.92	42	34.3	13.68	37.95	357	144	P	V
		5860.6	50	-59.23	109.23	39.95	34.3	13.7	37.95	357	144	P	V
		5892.4	48.07	-44.22	92.29	37.98	34.3	13.75	37.96	357	144	P	V
		5927.8	49.35	-18.85	68.2	39.21	34.3	13.8	37.96	357	144	P	V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	51.23	-22.77	74	34.8	39.13	19.94	42.64	100	238	P	H
		11490	41.75	-12.25	54	25.32	39.13	19.94	42.64	100	238	A	H
		17235	51.19	-17.01	68.2	33.76	37.97	24.2	44.74	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		11490	50.64	-23.36	74	34.21	39.13	19.94	42.64	102	328	P	V
		11490	41.89	-12.11	54	25.46	39.13	19.94	42.64	102	328	A	V
		17235	51.81	-16.39	68.2	34.38	37.97	24.2	44.74	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		11570	50.78	-23.22	74	34.46	39.03	20	42.71	100	158	P	H
		11570	41.69	-12.31	54	25.37	39.03	20	42.71	100	158	A	H
		17355	51.92	-16.28	68.2	34.35	38.21	24.27	44.91	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		11570	50.29	-23.71	74	33.97	39.03	20	42.71	100	317	P	V
		11570	41.86	-12.14	54	25.54	39.03	20	42.71	100	317	A	V
		17355	51.1	-17.1	68.2	33.53	38.21	24.27	44.91	-	-	P	V
													V
													V
													V
													V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz		11650	50.68	-23.32	74	34.44	38.95	20.06	42.77	100	235	P	H
		11650	41.51	-12.49	54	25.27	38.95	20.06	42.77	100	235	A	H
		17475	52.05	-16.15	68.2	34.33	38.45	24.35	45.08	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		11650	51.84	-22.16	74	35.6	38.95	20.06	42.77	100	349	P	V
		11650	41.91	-12.09	54	25.67	38.95	20.06	42.77	100	349	A	V
		17475	52.01	-16.19	68.2	34.29	38.45	24.35	45.08	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												
	3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												



Band 4 - 5725~5850MHz

WIFI 802.11ax HE20_Full (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE20 Full CH 149 5745MHz		5639.15	48.35	-19.85	68.2	39.51	33.2	13.54	37.9	182	162	P	H
		5672.45	47.56	-37.29	84.85	38.63	33.29	13.55	37.91	182	162	P	H
		5717.675	53.47	-56.68	110.15	44.28	33.54	13.57	37.92	182	162	P	H
		5722.625	55.6	-61.19	116.79	46.37	33.58	13.57	37.92	182	162	P	H
	*	5745	109.36	-	-	99.94	33.76	13.58	37.92	182	162	P	H
	*	5745	102.1	-	-	92.68	33.76	13.58	37.92	182	162	A	H
													H
													H
		5613.275	47.93	-20.27	68.2	39.09	33.2	13.53	37.89	297	146	P	V
		5651.075	48	-21	69	39.16	33.2	13.54	37.9	297	146	P	V
		5718.575	51.26	-59.14	110.4	42.06	33.55	13.57	37.92	297	146	P	V
		5723.3	58.23	-60.09	118.32	48.99	33.59	13.57	37.92	297	146	P	V
	*	5745	109.45	-	-	100.03	33.76	13.58	37.92	297	146	P	V
	*	5745	103.26	-	-	93.84	33.76	13.58	37.92	297	146	A	V
													V
													V



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)
802.11ax HE20 Full CH 157 5785MHz		5605.75	47.83	-20.37	68.2	39	33.2	13.52	37.89	100	212	P	H
		5668	46.91	-34.65	81.56	38	33.27	13.55	37.91	100	212	P	H
		5707.25	47.85	-59.38	107.23	38.75	33.46	13.56	37.92	100	212	P	H
		5720	46.79	-64.01	110.8	37.58	33.56	13.57	37.92	100	212	P	H
	*	5785	110.25	-	-	100.65	33.94	13.59	37.93	100	212	P	H
	*	5785	102.45	-	-	92.85	33.94	13.59	37.93	100	212	A	H
		5852	47.39	-70.25	117.64	37.36	34.3	13.68	37.95	100	212	P	H
		5874.25	48.66	-56.75	105.41	38.59	34.3	13.72	37.95	100	212	P	H
		5887.75	49.6	-46.14	95.74	39.52	34.3	13.74	37.96	100	212	P	H
		5932.5	49.66	-18.54	68.2	39.52	34.3	13.81	37.97	100	212	P	H
													H
													H
		5623.25	47.26	-20.94	68.2	38.43	33.2	13.53	37.9	306	145	P	V
		5692	47.5	-51.8	99.3	38.48	33.37	13.56	37.91	306	145	P	V
		5703.25	48.58	-57.53	106.11	39.5	33.43	13.56	37.91	306	145	P	V
		5722	45.85	-69.51	115.36	36.62	33.58	13.57	37.92	306	145	P	V
	*	5785	110.45	-	-	100.85	33.94	13.59	37.93	306	145	P	V
	*	5785	103.76	-	-	94.16	33.94	13.59	37.93	306	145	A	V
		5853	46.37	-68.99	115.36	36.34	34.3	13.68	37.95	306	145	P	V
		5857.25	48.33	-61.84	110.17	38.29	34.3	13.69	37.95	306	145	P	V
		5925	49.78	-18.42	68.2	39.64	34.3	13.8	37.96	306	145	P	V
		5925.25	49.88	-18.32	68.2	39.74	34.3	13.8	37.96	306	145	P	V
													V
													V



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)
802.11ax HE20 Full CH 165 5825MHz	*	5825	108.08	-	-	98.23	34.15	13.64	37.94	301	162	P	H
	*	5825	101.57	-	-	91.72	34.15	13.64	37.94	301	162	A	H
		5852.6	49.06	-67.21	116.27	39.03	34.3	13.68	37.95	301	162	P	H
		5861.2	48.84	-60.22	109.06	38.79	34.3	13.7	37.95	301	162	P	H
		5917	47.99	-26.11	74.1	37.86	34.3	13.79	37.96	301	162	P	H
		5929.8	47.6	-20.6	68.2	37.45	34.3	13.81	37.96	301	162	P	H
													H
													H
	*	5825	110.23	-	-	100.38	34.15	13.64	37.94	303	145	P	V
	*	5825	103.87	-	-	94.02	34.15	13.64	37.94	303	145	A	V
		5852	51.97	-65.67	117.64	41.94	34.3	13.68	37.95	303	145	P	V
		5863.2	49.61	-58.89	108.5	39.56	34.3	13.7	37.95	303	145	P	V
		5910.6	48.87	-29.95	78.82	38.75	34.3	13.78	37.96	303	145	P	V
		5950	47.55	-20.65	68.2	37.38	34.3	13.84	37.97	303	145	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**Band 4 5725~5850MHz****WIFI 802.11ax HE20 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)
802.11ax HE20 Full CH 149 5745MHz		11490	51.28	-22.72	74	34.85	39.13	19.94	42.64	100	228	P	H
		11490	42	-12	54	25.57	39.13	19.94	42.64	100	228	A	H
		17235	51.54	-16.66	68.2	34.11	37.97	24.2	44.74	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		11490	51.76	-22.24	74	35.33	39.13	19.94	42.64	100	337	P	V
		11490	41.66	-12.34	54	25.23	39.13	19.94	42.64	100	337	A	V
		17235	51.25	-16.95	68.2	33.82	37.97	24.2	44.74	-	-	P	V
													V
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													V



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)
802.11ax HE20 Full CH 157 5785MHz		11570	50.6	-23.4	74	34.28	39.03	20	42.71	100	247	P	H
		11570	41.58	-12.42	54	25.26	39.03	20	42.71	100	247	A	H
		17355	51.08	-17.12	68.2	33.51	38.21	24.27	44.91	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		11570	51.1	-22.9	74	34.78	39.03	20	42.71	100	328	P	V
		11570	41.72	-12.28	54	25.4	39.03	20	42.71	100	328	A	V
		17355	52.2	-16	68.2	34.63	38.21	24.27	44.91	-	-	P	V
													V
													V
													V
													V
													V
													V

[illegible]



Band 4 5725~5850MHz

WIFI 802.11ax HE20_Partial 26 (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)
802.11ax HE20 Partial 26/8 CH 165 5825MHz	*	5825	107.78	-	-	97.93	34.15	13.64	37.94	183	201	P	H
	*	5825	101.79	-	-	91.94	34.15	13.64	37.94	183	201	A	H
		5854	46.61	-66.47	113.08	36.57	34.3	13.69	37.95	183	201	P	H
		5861.2	48.03	-61.03	109.06	37.98	34.3	13.7	37.95	183	201	P	H
		5893.6	48.11	-43.29	91.4	38.02	34.3	13.75	37.96	183	201	P	H
		5927	48.43	-19.77	68.2	38.29	34.3	13.8	37.96	183	201	P	H
													H
													H
	*	5825	110.78	-	-	100.93	34.15	13.64	37.94	376	168	P	V
	*	5825	103.72	-	-	93.87	34.15	13.64	37.94	376	168	A	V
		5850.6	47.06	-73.77	120.83	37.03	34.3	13.68	37.95	376	168	P	V
		5856.6	47.25	-63.1	110.35	37.21	34.3	13.69	37.95	376	168	P	V
		5915	47.82	-27.75	75.57	37.7	34.3	13.78	37.96	376	168	P	V
		5940.8	48.22	-19.98	68.2	38.06	34.3	13.83	37.97	376	168	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11ax HE20_Partial 26 (Harmonic @ 3m)

[illegible]



Band 4 5725~5850MHz

WIFI 802.11ax HE40_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)
802.11ax HE40 Full CH 151 5755MHz		5644.25	48.07	-20.13	68.2	39.23	33.2	13.54	37.9	100	211	P	H
		5689.5	50.24	-47.22	97.46	41.23	33.36	13.56	37.91	100	211	P	H
		5719.25	55.92	-54.67	110.59	46.72	33.55	13.57	37.92	100	211	P	H
		5721	58.73	-54.35	113.08	49.51	33.57	13.57	37.92	100	211	P	H
	*	5755	106.65	-	-	97.18	33.82	13.58	37.93	100	211	P	H
	*	5755	99.56	-	-	90.09	33.82	13.58	37.93	100	211	A	H
		5850.5	46.55	-74.51	121.06	36.52	34.3	13.68	37.95	100	211	P	H
		5873.25	47.73	-57.96	105.69	37.66	34.3	13.72	37.95	100	211	P	H
		5913.25	47.95	-28.92	76.87	37.83	34.3	13.78	37.96	100	211	P	H
		5936.25	47.48	-20.72	68.2	37.33	34.3	13.82	37.97	100	211	P	H
													H
													H
		5613.25	47.37	-20.83	68.2	38.53	33.2	13.53	37.89	282	152	P	V
		5655.5	46.83	-25.46	72.29	37.97	33.22	13.54	37.9	282	152	P	V
		5715.25	50.02	-59.45	109.47	40.85	33.52	13.57	37.92	282	152	P	V
		5723.25	53.01	-65.2	118.21	43.77	33.59	13.57	37.92	282	152	P	V
	*	5755	102.68	-	-	93.21	33.82	13.58	37.93	282	152	P	V
	*	5755	93.98	-	-	84.51	33.82	13.58	37.93	282	152	A	V
		5853.5	46.05	-68.17	114.22	36.01	34.3	13.69	37.95	282	152	P	V
		5859	47.51	-62.17	109.68	37.47	34.3	13.69	37.95	282	152	P	V
		5878.25	49.27	-53.52	102.79	39.19	34.3	13.73	37.95	282	152	P	V
		5927.75	48.92	-19.28	68.2	38.78	34.3	13.8	37.96	282	152	P	V
													V
													V



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)
802.11ax HE40 Full CH 159 5795MHz		5640.5	47.66	-20.54	68.2	38.82	33.2	13.54	37.9	100	209	P	H
		5675	48.32	-38.42	86.74	39.38	33.3	13.55	37.91	100	209	P	H
		5702	47.02	-58.74	105.76	37.95	33.42	13.56	37.91	100	209	P	H
		5724.25	47.67	-72.82	120.49	38.43	33.59	13.57	37.92	100	209	P	H
	*	5795	106.25	-	-	96.6	33.98	13.6	37.93	100	209	P	H
	*	5795	99.86	-	-	90.21	33.98	13.6	37.93	100	209	A	H
		5853.75	50.61	-63.04	113.65	40.57	34.3	13.69	37.95	100	209	P	H
		5866.5	49.02	-58.56	107.58	38.96	34.3	13.71	37.95	100	209	P	H
		5907.75	48.51	-32.42	80.93	38.4	34.3	13.77	37.96	100	209	P	H
		5938.25	50.01	-18.19	68.2	39.86	34.3	13.82	37.97	100	209	P	H
													H
													H
		5633	48.64	-19.56	68.2	39.81	33.2	13.53	37.9	309	145	P	V
		5682.75	48.52	-43.95	92.47	39.55	33.33	13.55	37.91	309	145	P	V
		5701.5	48.38	-57.24	105.62	39.32	33.41	13.56	37.91	309	145	P	V
		5724.25	48.23	-72.26	120.49	38.99	33.59	13.57	37.92	309	145	P	V
	*	5795	107.35	-	-	97.7	33.98	13.6	37.93	309	145	P	V
	*	5795	101.16	-	-	91.51	33.98	13.6	37.93	309	145	A	V
		5853	51.68	-63.68	115.36	41.65	34.3	13.68	37.95	309	145	P	V
		5862.75	50.49	-58.14	108.63	40.44	34.3	13.7	37.95	309	145	P	V
		5924.75	48.9	-19.48	68.38	38.76	34.3	13.8	37.96	309	145	P	V
		5926.5	49.4	-18.8	68.2	39.26	34.3	13.8	37.96	309	145	P	V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11ax HE40_Full (Harmonic @ 3m)

[illegible]

[illegible]



Band 4 5725~5850MHz

WIFI 802.11ax HE80_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)
802.11ax HE80 Full CH 155 5775MHz		5648.75	49.6	-18.6	68.2	40.76	33.2	13.54	37.9	100	211	P	H
		5695.5	57.24	-44.64	101.88	48.21	33.38	13.56	37.91	100	211	P	H
		5717.5	61.7	-48.4	110.1	52.51	33.54	13.57	37.92	100	211	P	H
		5720.25	57.32	-54.05	111.37	48.11	33.56	13.57	37.92	100	211	P	H
	*	5775	104.21	-	-	94.65	33.9	13.59	37.93	100	211	P	H
	*	5775	96.59	-	-	87.03	33.9	13.59	37.93	100	211	A	H
		5850	56.9	-65.3	122.2	46.87	34.3	13.68	37.95	100	211	P	H
		5862.5	54.89	-53.81	108.7	44.84	34.3	13.7	37.95	100	211	P	H
		5875	50.17	-55.03	105.2	40.1	34.3	13.72	37.95	100	211	P	H
		5935	49.45	-18.75	68.2	39.3	34.3	13.82	37.97	100	211	P	H
													H
													H
		5638.25	47.19	-21.01	68.2	38.35	33.2	13.54	37.9	302	160	P	V
		5699.75	55.08	-49.94	105.02	46.03	33.4	13.56	37.91	302	160	P	V
		5712.75	59.05	-49.72	108.77	49.9	33.5	13.57	37.92	302	160	P	V
		5723.75	61.23	-58.12	119.35	51.99	33.59	13.57	37.92	302	160	P	V
	*	5775	105.8	-	-	96.24	33.9	13.59	37.93	302	160	P	V
	*	5775	97.28	-	-	87.72	33.9	13.59	37.93	302	160	A	V
		5855	54.18	-56.62	110.8	44.14	34.3	13.69	37.95	302	160	P	V
		5856.75	54.69	-55.62	110.31	44.65	34.3	13.69	37.95	302	160	P	V
		5878.75	50.61	-51.8	102.41	40.53	34.3	13.73	37.95	302	160	P	V
		5932	48.46	-19.74	68.2	38.32	34.3	13.81	37.97	302	160	P	V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11ax HE80_Full (Harmonic @ 3m)

[illegible]

Band 4 5725~5850MHz

Emission below 1GHz

5GHz WIFI 802.11ax HE20 Full (SHF @ 1m)

WIFI Ant.	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE20 Full SHF		39538	51.96	-22.04	74	38.15	43.95	26.21	56.35	-	-	P	H
		39538	41.18	-12.82	54	27.37	43.95	26.21	56.35	-	-	A	H
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Emission below 1GHz

5GHz WIFI 802.11ax HE20 Full (LF @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE20 Full LF		30.97	23.37	-16.63	40	33.81	23.9	1.32	35.66	-	-	P	H
		119.24	21.7	-21.8	43.5	37.56	17.45	2.21	35.52	-	-	P	H
		193.93	23.34	-20.16	43.5	41.17	14.81	2.75	35.39	-	-	P	H
		259.89	25.04	-20.96	46	37.06	20.09	3.15	35.26	-	-	P	H
		722.58	35.52	-10.48	46	37.4	26.91	5.06	33.85	-	-	P	H
		782.72	34.85	-11.15	46	35.51	27.74	5.31	33.71	-	-	P	H
													H
													H
													H
													H
													H
													H
		32.91	33.69	-6.31	40	45.16	22.84	1.34	35.65	-	-	P	V
		91.11	25.81	-17.69	43.5	44.75	14.64	2	35.58	-	-	P	V
		194.9	20.92	-22.58	43.5	38.73	14.82	2.76	35.39	-	-	P	V
		289.96	26.35	-19.65	46	39.02	19.2	3.32	35.19	-	-	P	V
		405.39	28.8	-17.2	46	37.6	22.13	3.9	34.83	-	-	P	V
		711.91	36.62	-9.38	46	38.98	26.5	5.03	33.89	-	-	P	V
													V
													V
												V	
												V	
												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.												



Note symbol

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



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)
802.11a CH 149 5745MHz		5650	55.45	-12.75	68.2	54.51	32.22	4.58	35.86	103	308	P	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. Margin (dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 68.2(dBμV/m)
= -12.75 (dB)

Peak measured complies with the limit line, so test result is “PASS”.



Appendix D. Radiated Spurious Emission Plots

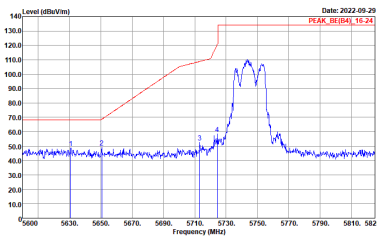
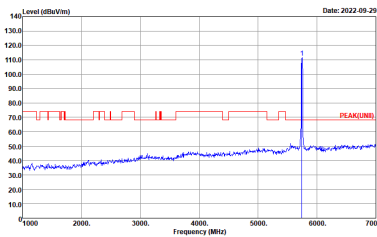
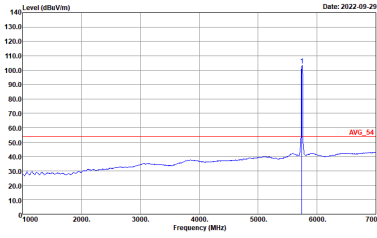
Test Engineer :	JC Liang and Leo Li	Temperature :	18~20°C
		Relative Humidity :	66~70%



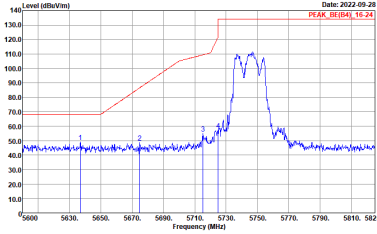
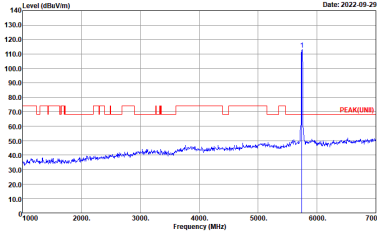
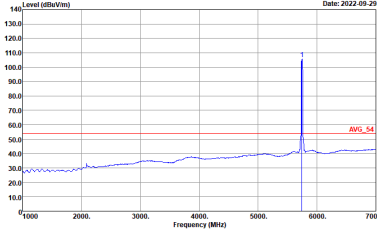
<Sample 1>

Band 4 - 5725~5850MHz

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

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_RE[64]_16-24 3m 91200_02360_211102 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_LIN[3]_3m 91200_02360_211102 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg	Left blank	 Site : 03CH20-HY Condition : AVG_54 3m 91200_02360_211102 HORIZONTAL RBW:1000.000kHz VBW:0.010kHz SWT:Auto



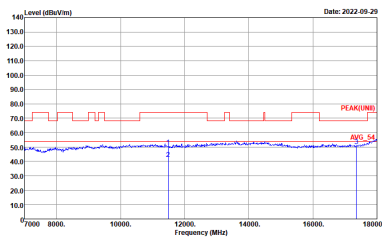
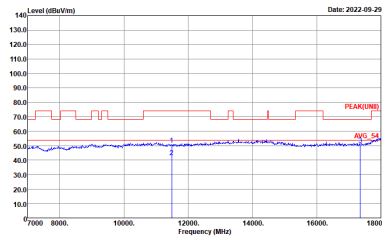
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_85(B4)_16-24 3m 91200_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK(LIN) 3m 91200_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	Left blank	 Site : 03CH20-HY Condition : AVG_54 3m 91200_02360_211102 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto



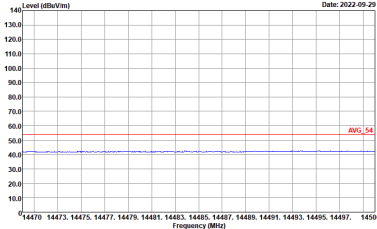
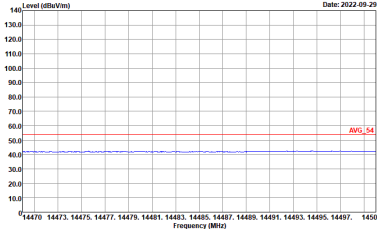
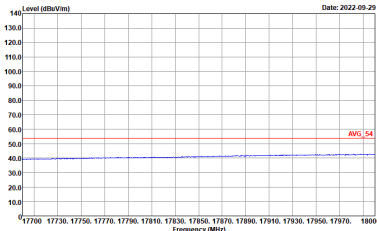
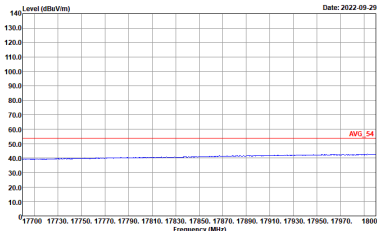
Band 4 5725~5850MHz

Band 4 - 5725~5850MHz

WIFI 802.11ax HE20 Full (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-HY Condition : PEAK(UNIT) 3m 91200_02360_211102 HORIZONTAL	 Site : 03CH20-HY Condition : PEAK(UNIT) 3m 91200_02360_211102 VERTICAL



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
1+2	Horizontal	Vertical
14.47G ~14.5G Avg.	 Site : 03CH20-HY Condition : AV6_54 3m 91200_02360_211102 HORIZONTAL	 Site : 03CH20-HY Condition : AV6_54 3m 91200_02360_211102 VERTICAL
	 Site : 03CH20-HY Condition : AV6_54 3m 91200_02360_211102 HORIZONTAL	 Site : 03CH20-HY Condition : AV6_54 3m 91200_02360_211102 VERTICAL