



FCC RADIO TEST REPORT

FCC ID : UZ7TC78A1
Equipment : Touch Computer
Brand Name : Zebra
Model Name : TC78A1
Applicant : Zebra Technologies Corporation
1 Zebra Plaza, Holtsville, NY 11742
Manufacturer : Zebra Technologies Corporation
1 Zebra Plaza, Holtsville, NY 11742
Standard : FCC Part 15 Subpart E §15.407

The product was received on Jul. 15, 2022 and testing was performed from Aug. 08, 2022 to Oct. 11, 2022. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

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



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History of this test report

Report No.	Version	Description	Issue Date
FR271554F	01	Initial issue of report	Oct. 21, 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	1.26 dB under the limit at 5649.000 MHz
3.5	15.207	AC Conducted Emission	Pass	18.92 dB under the limit at 0.182 MHz
3.6	15.203	Antenna Requirement	Pass	-

Declaration of Conformity:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Uncertainty of Evaluation".
Comments and Explanations:
The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Wei Chen
Report Producer: Dewi Huang



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Touch Computer
Brand Name	Zebra
Model Name	TC78A1
FCC ID	UZ7TC78A1
Sample 1	SE5500 + Premium config
Sample 2	SE4770 + Base config
Sample 3	SE5500 + Base config
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/5G NR/NFC/GNSS WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80/VHT160 WLAN 11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE
HW Version	EV2
SW Version	athena_A11_userdebug_GMS_RelKey_2022-07-14-1733_product_SE
FW Version	FUSION_QA_4_1.2.0.001_R
MFD	11JUN22
EUT Stage	Identical Prototype

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

Specification of Accessories				
Adapter	Brand Name	Zebra	Part Number	PWR-WUA5V12W0US
Battery 1X	Brand Name	Zebra	Part Number	BT-000442-0020
Battery 1.5X	Brand Name	Zebra	Part Number	BT-000442-0820
Wireless Battery	Brand Name	Zebra	Part Number	BT-000442-002A
USB TYPE A to TYPE C cable	Brand Name	Zebra	Part Number	CBL-TC5X-USBC2A-01
USB TYPE C to 3.5mm audio connector	Brand Name	Zebra	Part Number	ADP-USBC-35MM1-01
3.5mm Earphone	Brand Name	Zebra	Part Number	HDST-35MM-PTVP-01
USB TYPE C Earphone	Brand Name	Zebra	Part Number	HPST-USBC-PTT1-01
Trigger Handle	Brand Name	Zebra	Part Number	TRG-NGTC5-ELEC-01
Soft Holster	Brand Name	Zebra	Part Number	SG-NGTC5TC7-HLSTR-01
TC53/TC58 RUGGED BOOT	Brand Name	Zebra	Part Number	SG-NGTC5EXO1-01

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.

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

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:

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

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 9	Ant 8	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	2.50	-0.13	2.50	4.29	0.00	0.00

Calculation example:

If a device has two antenna, $G_{ANT1} = 2.50\text{dBi}$; $G_{ANT2} = -0.13\text{dBi}$

Directional gain of power measurement = $\max(2.50, -0.13) + 0 = 2.50 \text{ dBi}$

Directional gain of PSD derived from formula which is

$$10 \times \log \left\{ \left[10^{(2.50 \text{ dBi} / 20)} + 10^{(-0.13 \text{ dBi} / 20)} \right]^2 / 2 \right\}$$

$$= 4.29 \text{ dBi}$$

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



< For TXBF Modes >

The EUT supports beamforming modes , then

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

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

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.

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

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant 9	Ant 8	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	2.50	-0.13	4.29	4.29	0.00	0.00

Calculation example:

Directional gain is derived from formula which is

$$10 \times \log \left\{ \left[10^{(2.50\text{dBi} / 20)} + 10^{(-0.13 \text{ dBi} / 20)} \right]^2 / 2 \right\}$$

$$= 4.29 \text{ dBi}$$

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



1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard	
Tx/Rx Frequency Range	5745 MHz ~ 5825 MHz
Maximum Output Power to Antenna <CDD Mode>	MIMO <Ant. 9+8> 802.11a: 19.96 dBm / 0.0991 W 802.11n HT20: 20.16 dBm / 0.1038 W 802.11n HT40: 19.06 dBm / 0.0805 W 802.11ac VHT20: 20.16 dBm / 0.1038 W 802.11ac VHT40: 19.06 dBm / 0.0805 W 802.11ac VHT80: 17.23 dBm / 0.0528 W 802.11ax HE20: 19.87 dBm / 0.0971 W 802.11ax HE40: 19.16 dBm / 0.0824 W 802.11ax HE80: 17.33 dBm / 0.0541 W
Maximum Output Power to Antenna <TXBF Mode>	MIMO <Ant. 9+8> 802.11ax HE20: 19.70 dBm / 0.0933 W 802.11ax HE40: 18.93 dBm / 0.0782 W 802.11ax HE80: 16.98 dBm / 0.0499 W
99% Occupied Bandwidth <CDD Mode>	MIMO<Ant. 9> 802.11a: 25.52 MHz 802.11ax HE20: 20.28 MHz 802.11ac HE40: 38.26 MHz 802.11ac HE80: 77.32 MHz MIMO<Ant. 8> 802.11a: 24.38 MHz 802.11ax HE20: 21.33 MHz 802.11ac HE40: 38.06 MHz 802.11ac HE80: 77.32 MHz
99% Occupied Bandwidth <TXBF Mode>	MIMO <Ant. 9> 802.11ax HE20: 19.43 MHz 802.11ax HE40: 39.56 MHz 802.11ax HE80: 78.04 MHz MIMO <Ant. 8> 802.11ax HE20: 19.53 MHz 802.11ax HE40: 40.56 MHz 802.11ax HE80: 78.04 MHz
Antenna Type / Gain	<Ant. 9> : PIFA Antenna with gain 2.50 dBi <Ant. 8> : PIFA Antenna with gain -0.13 dBi
Type of Modulation	802.11a/n: OFDM (BPSK/QPSK/16QAM/64QAM) 802.11ac: OFDM (BPSK/QPSK/16QAM/64QAM/256QAM) 802.11ax: OFDMA (BPSK/QPSK/16QAM/64QAM/256QAM/ 1024QAM)



Product Specification is subject to this standard			
Antenna Function Description		Ant. 9	Ant. 8
	802.11 a/n/ac/ax MIMO	V	V
	802.11 n/ac/ax TXBF	V	V

Note:

1. MIMO Ant. 9+8 Directional Gain is a calculated result from MIMO Ant. 9 and MIMO Ant. 8. The formula used in calculation is documented in section 1.1.1.
2. Power of MIMO Ant. 9 + Ant. 8 is a calculated result from sum of the power MIMO Ant. 9 and MIMO Ant. 8.
3. The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.3 Modification of EUT

No modifications made to the EUT during the testing.



1.4 Testing Location

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

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

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

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

FCC designation No.: TW1190 and TW3786

1.5 Applicable Standards

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

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

Remark:

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



2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
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-tone RU but does not support 2x996-tone RU on 160MHz channel.

The 996-tone RU is covered by 80MHz channel.

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

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

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

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

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

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

CDD Mode

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

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

TXBF Mode

Modulation	Data Rate
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0

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



Test Cases	
AC Conducted Emission	Mode 1: WCDMA Band V Link + Bluetooth Link + WLAN (5GHz) Link + GPS RX + USB TYPE A to TYPE C cable (Charging with Adapter) + Battery 1X for Sample 1
Remark: For Radiated Test Cases, the tests were performed with Battery 1X	

<CDD Mode>

<Sample 1>

Ch. #		Band IV : 5725-5850 MHz			
		802.11a	802.11ax HE20	802.11ax HE40	802.11ax HE80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

<Sample 2>

Ch. #		Band IV : 5725-5850 MHz			
		802.11ax HE80			
L	Low	-			
M	Middle	-			
H	High	155			

<TXBF Mode>

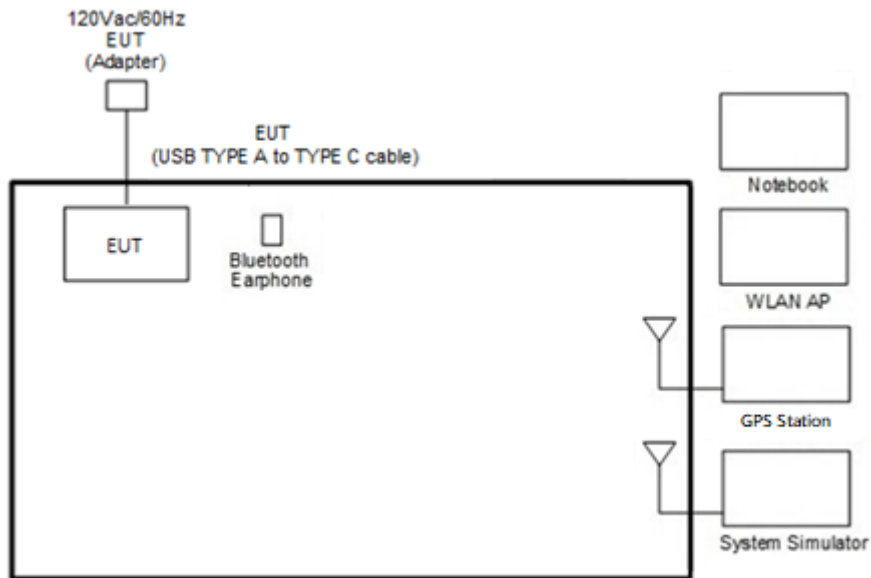
<Sample 1>

Ch. #		Band IV : 5725-5850 MHz		
		802.11ax HE20	802.11ax HE40	802.11ax HE80
L	Low	149	151	-
M	Middle	157	-	155
H	High	165	159	-

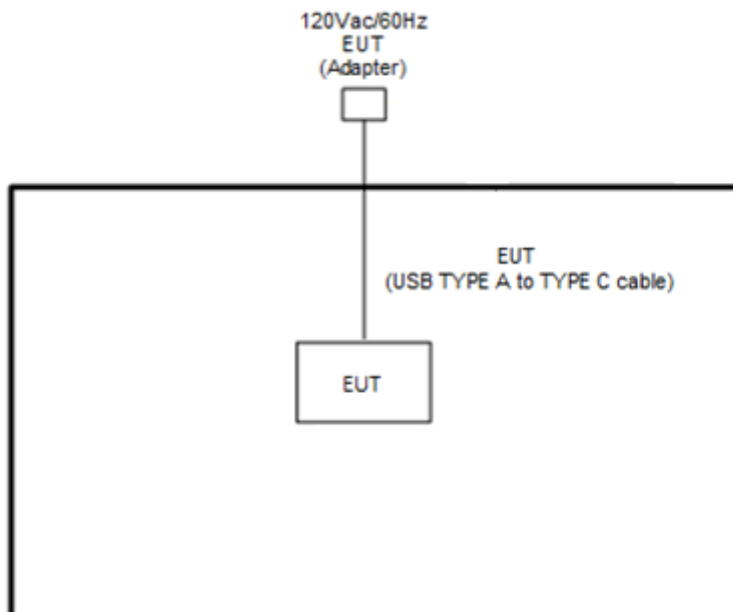
Remark: For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.

2.3 Connection Diagram of Test System

<AC Conducted Emission Mode>



<WLAN Tx Mode>





2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony	SBH20	PY7-RD0010	N/A	N/A
3.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
4.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
5.	Notebook	DELL	Latitude 3420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility "QRCT 4.0.00197.0" 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.

For TXBF mode, the modulation modes and data rates manipulated by the command lines in the engineering program made the EUT link to another EUT by power under the normal operation. The "iperf-3.1.3-win64 / Command v10.0.17134.1304" software tool was used to enable the EUT to transmit signals continuously.

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.

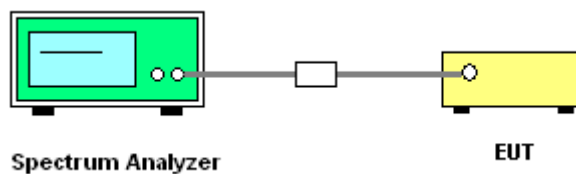
3.1.2 Measuring Instruments

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

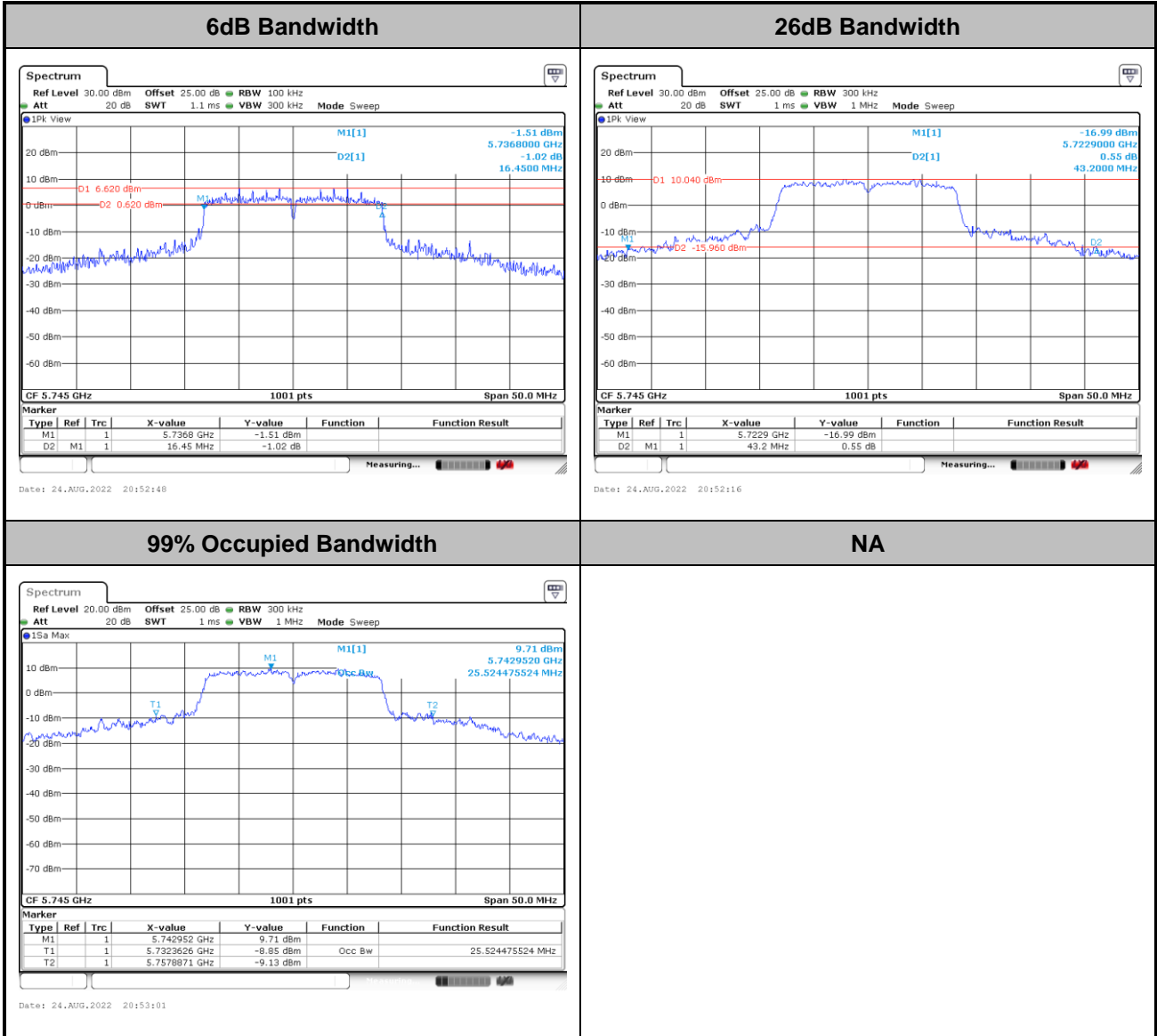
Please refer to Appendix A.



<CDD Modes>

MIMO <Ant. 9+8>

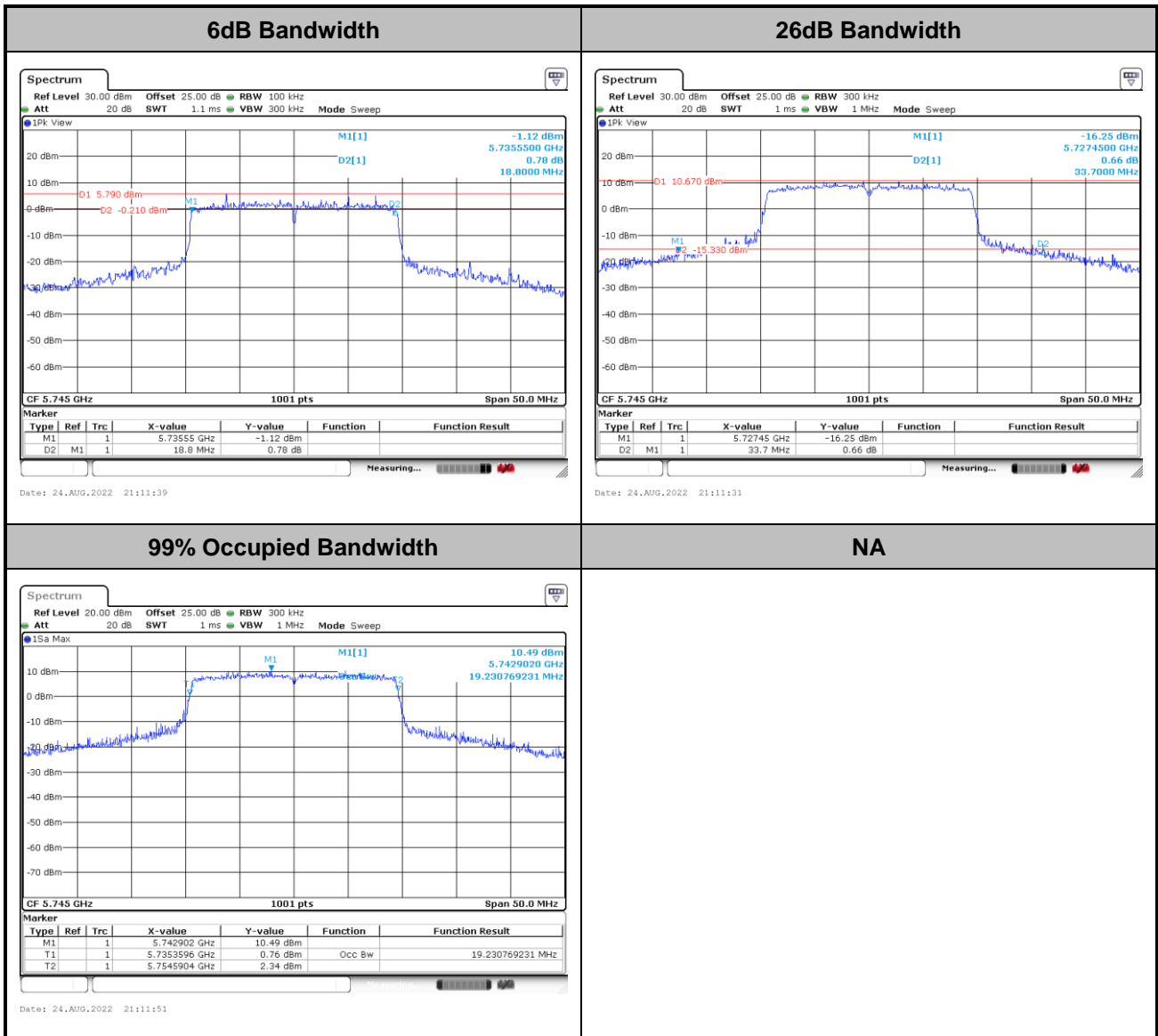
<802.11a>



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



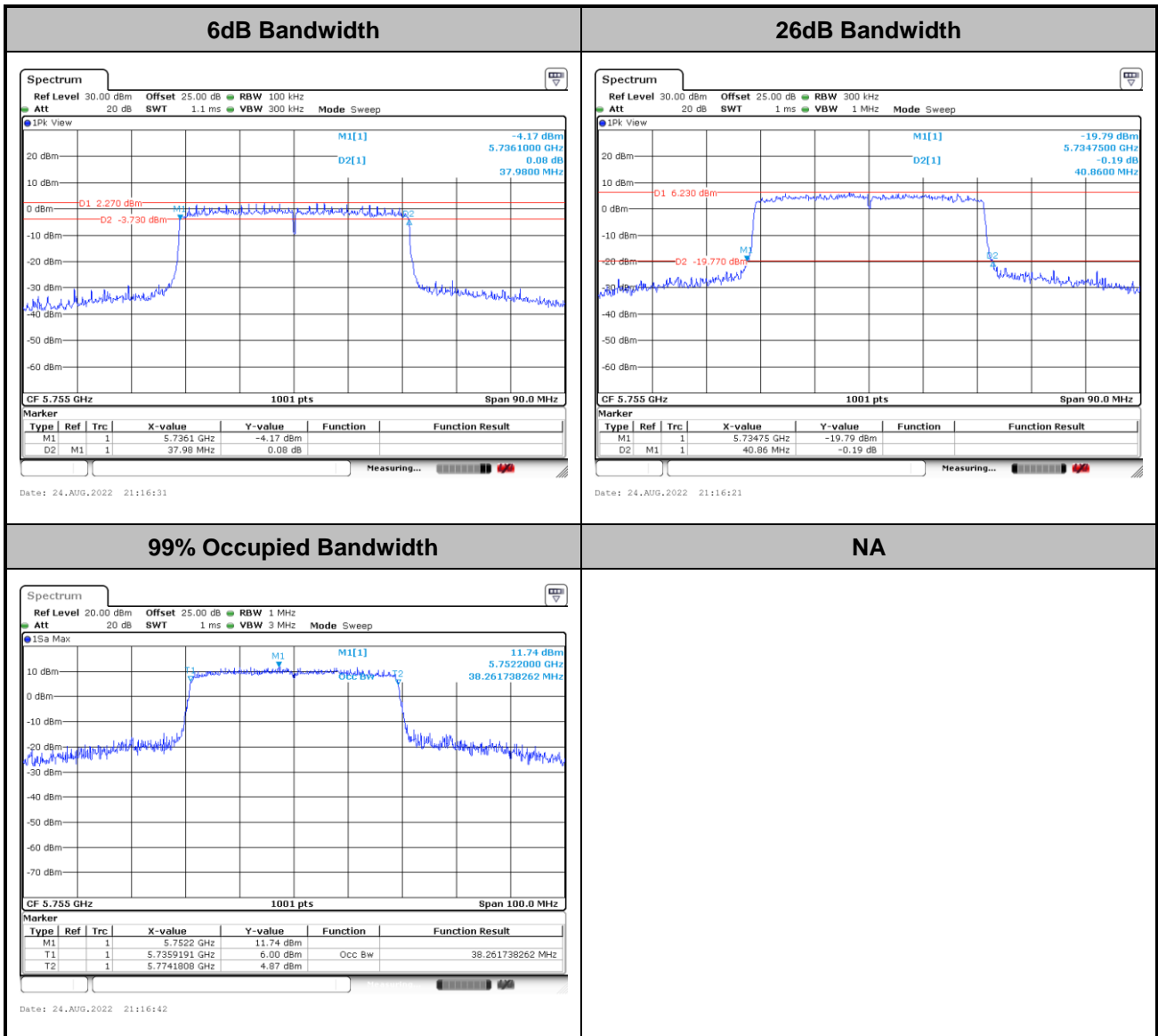
<802.11ax HE20>



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



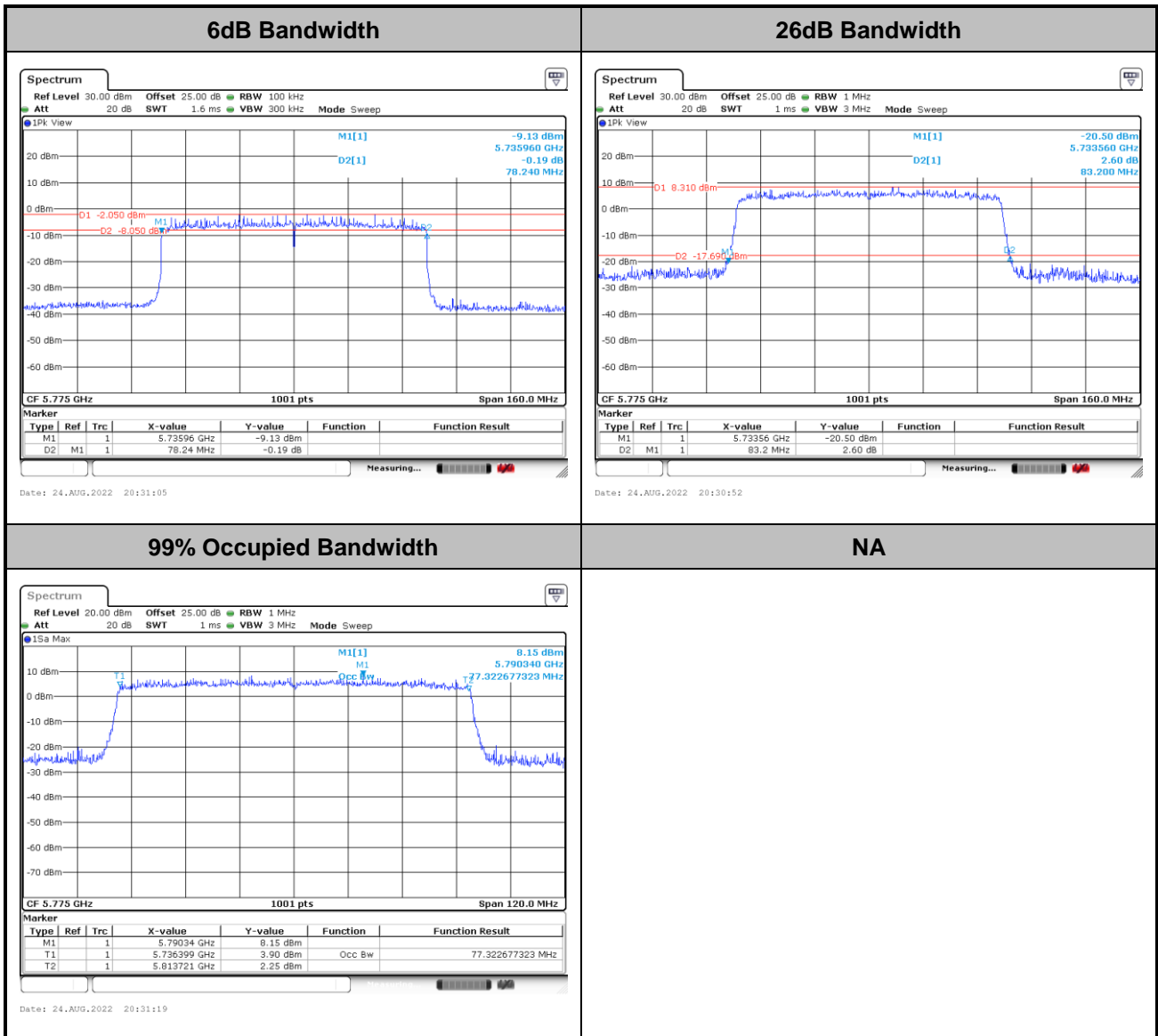
<802.11ax HE40>



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



<802.11ax HE80>



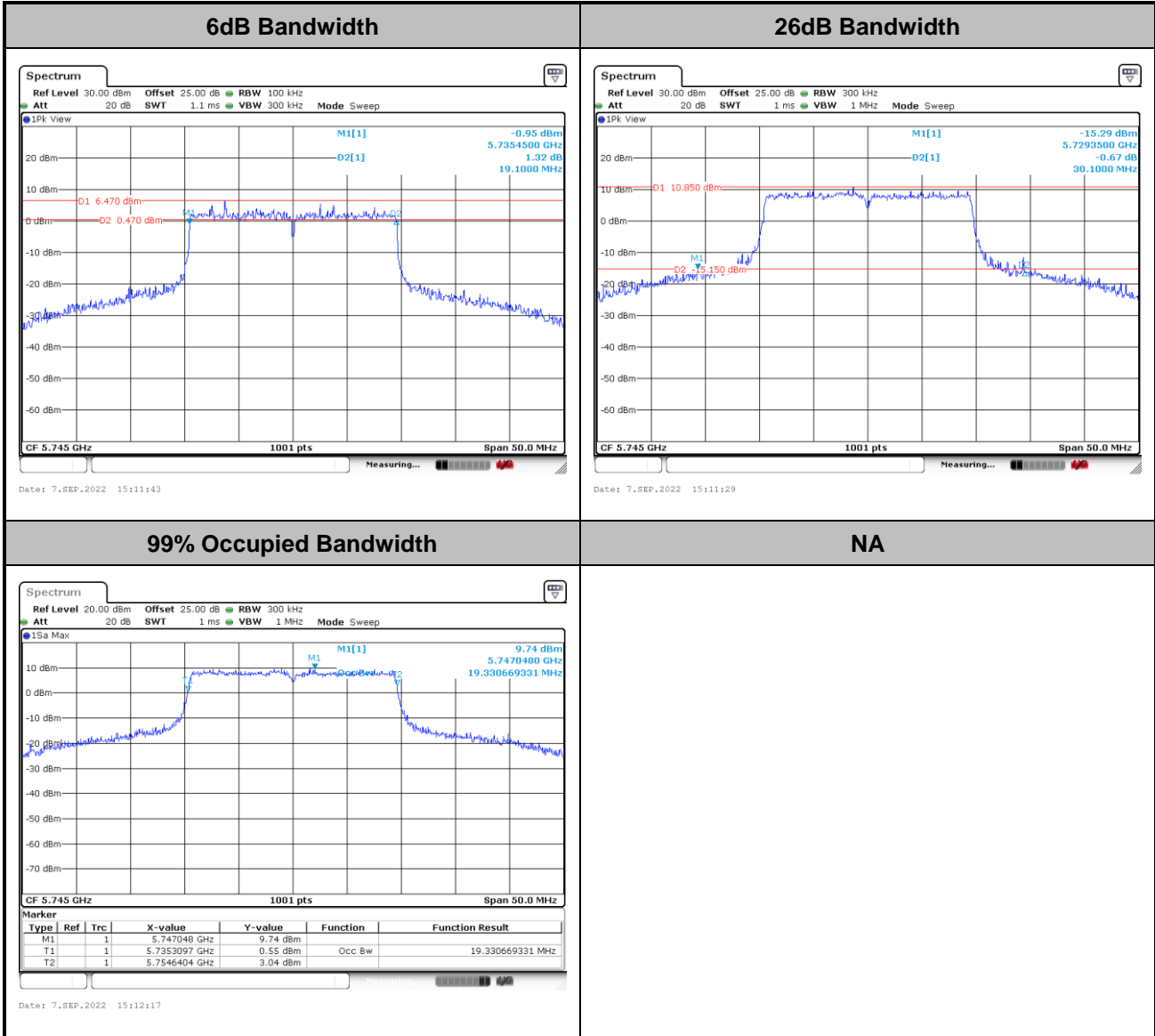
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



<TXBF Modes>

MIMO <Ant. 9+8>

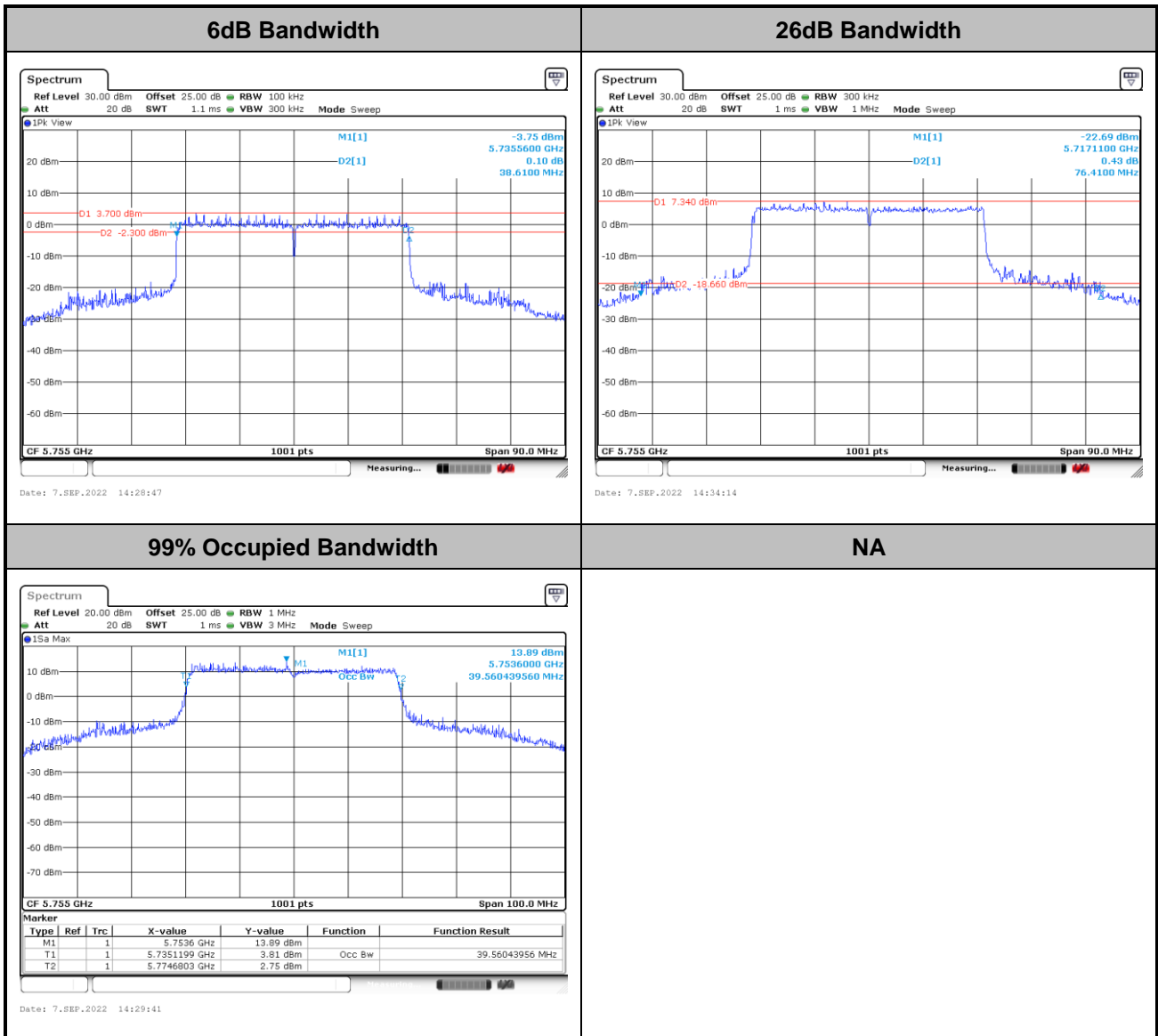
<802.11ax HE20>



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



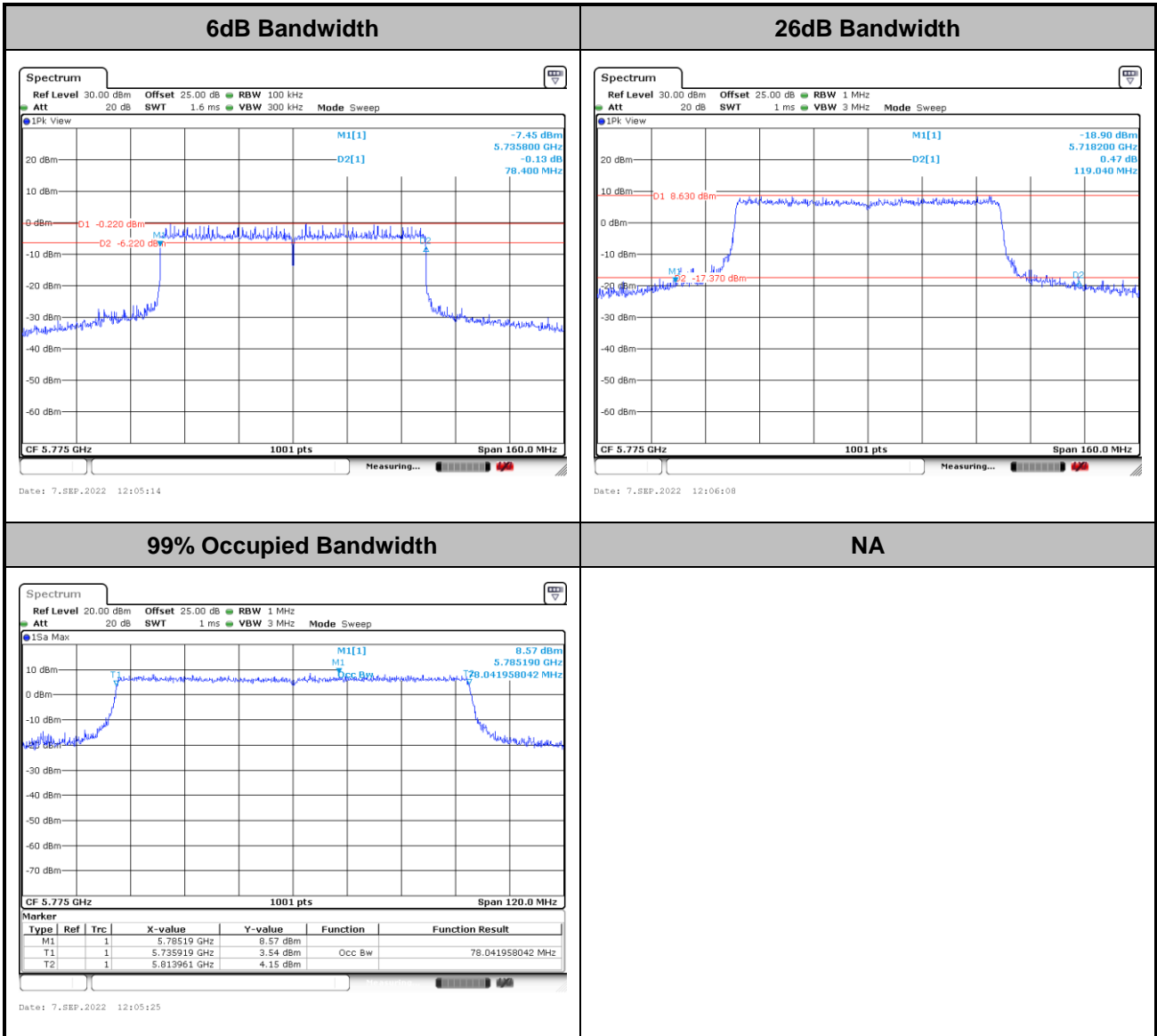
<802.11ax HE40>



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

<CDD Modes>

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

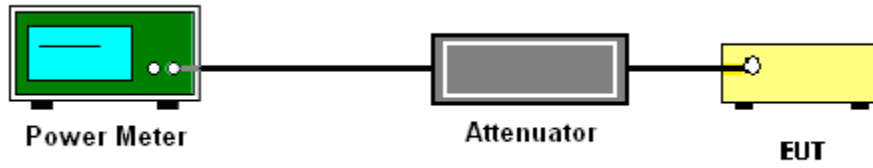
<TXBF Modes>

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

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.

<CDD Modes>

Method SA-2

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

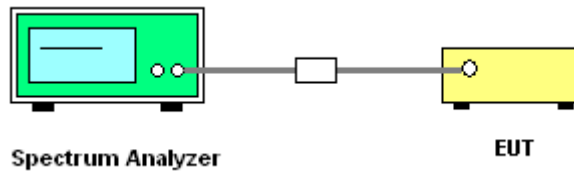
- Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 300kHz.
 - Set VBW \geq 1 MHz.
 - Add $10 \log(500 \text{ kHz}/\text{RBW})$ to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement
 - Number of points in sweep $\geq 2 \text{ Span} / \text{RBW}$.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 - Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6 \text{ dB}$ if the duty cycle is 25 percent.
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.

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

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

With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity $10 \log(N_{ANT})$ dB is added to each spectrum value before comparing to the emission limit. The addition of $10 \log(N_{ANT})$ dB serves to apportion the emission limit among the N_{ANT} outputs so that each output is permitted to contribute no more than $1/N_{ANT}^{th}$ of the PSD limit.

3.3.4 Test Setup

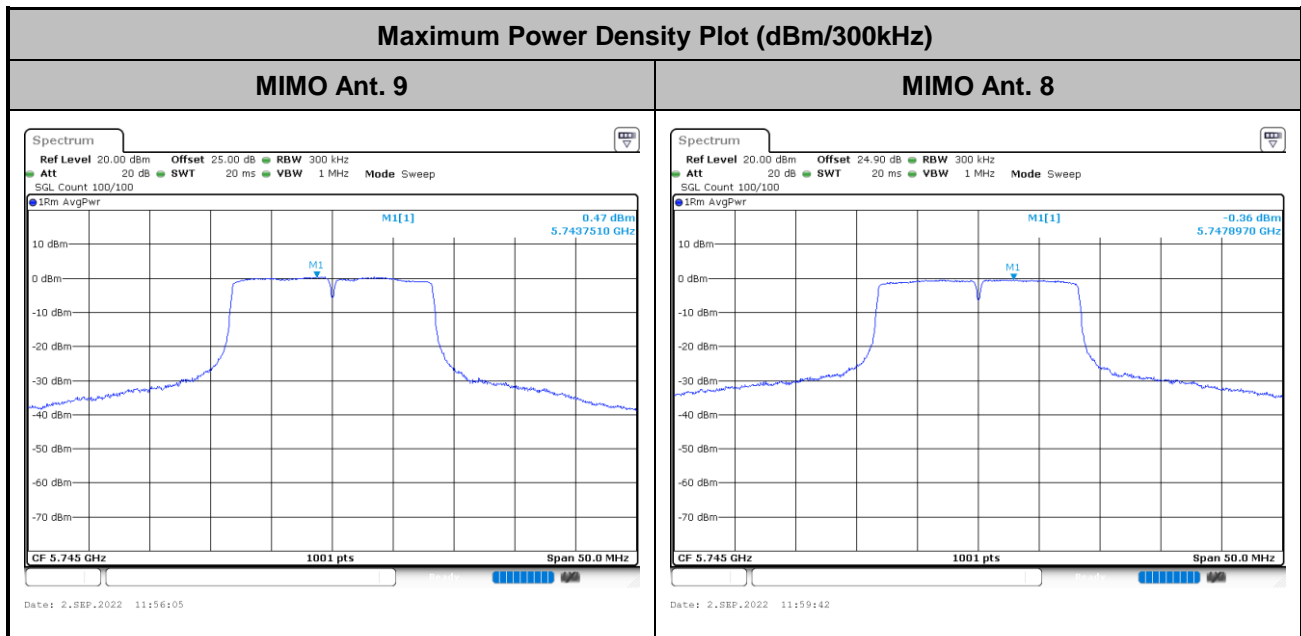


3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

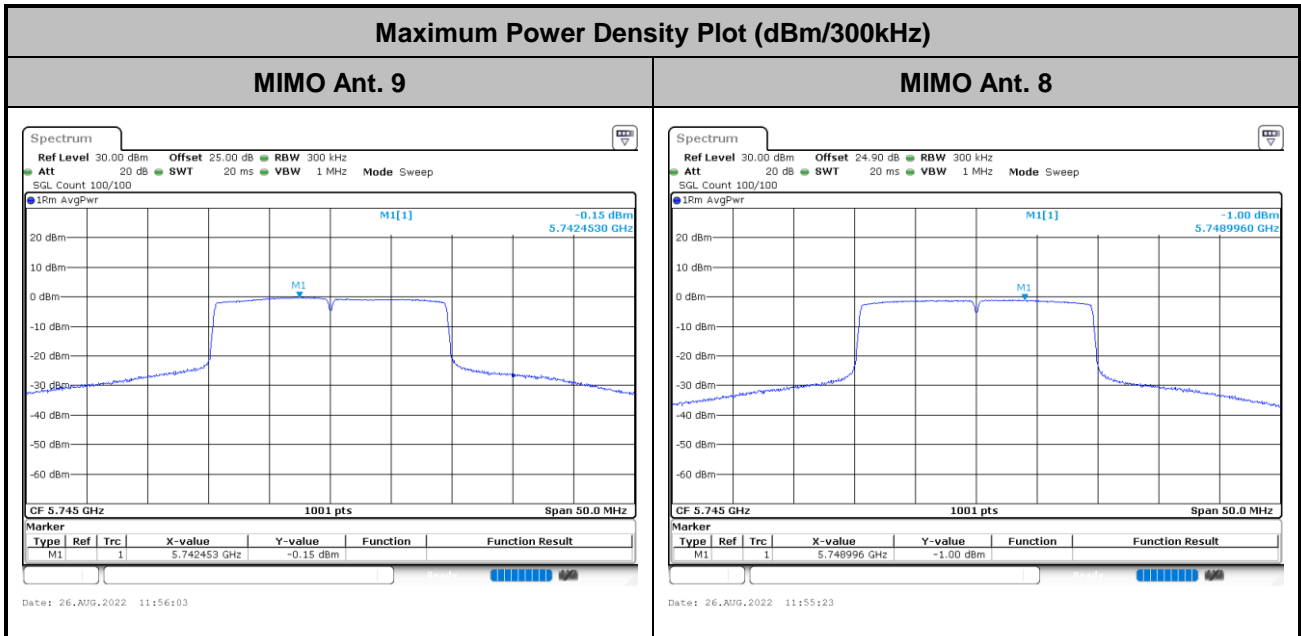
<CDD Modes>

<802.11a>

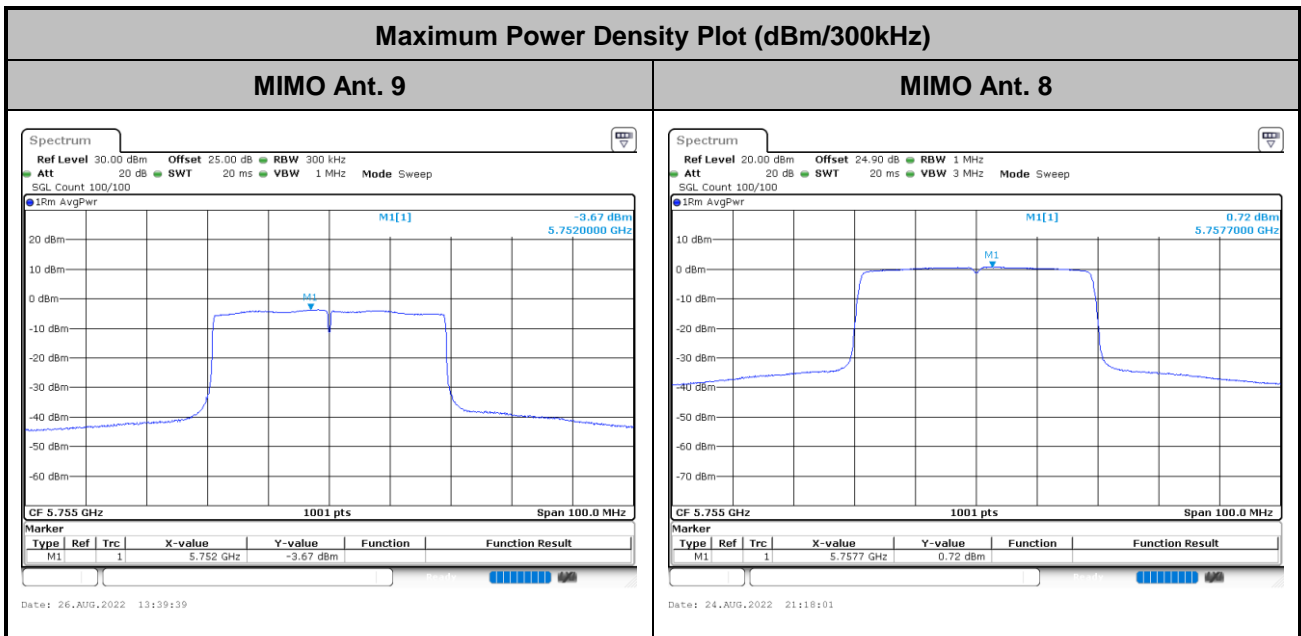




<802.11ax HE20>

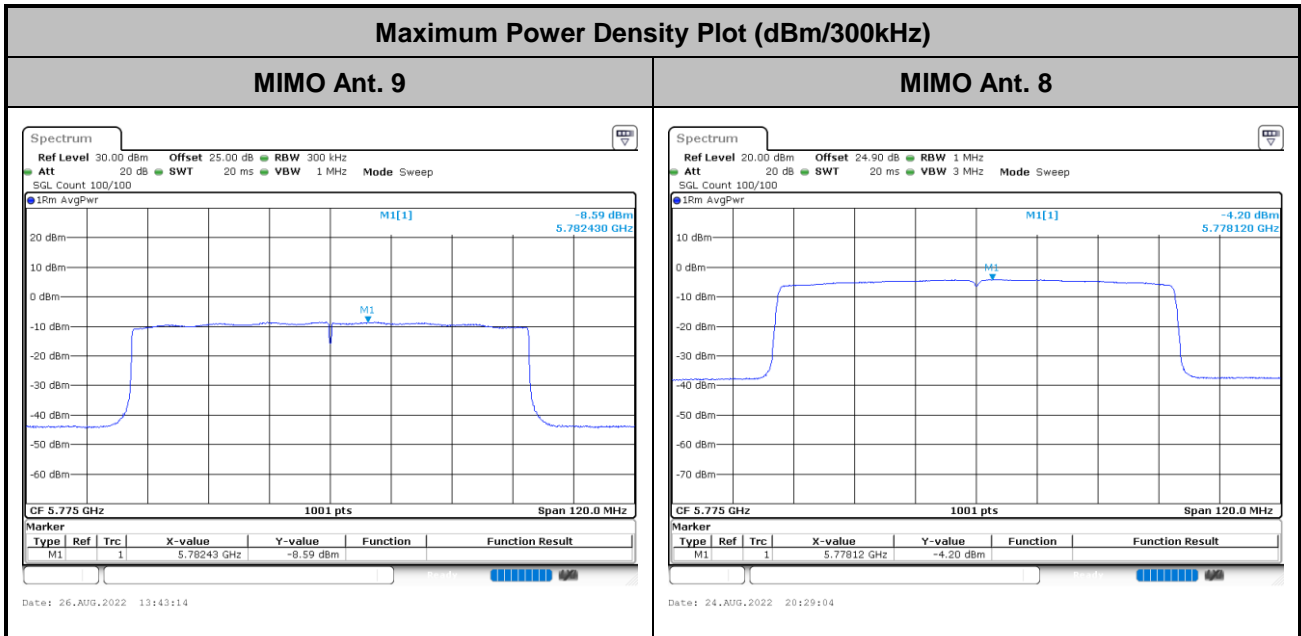


<802.11ax HE40>





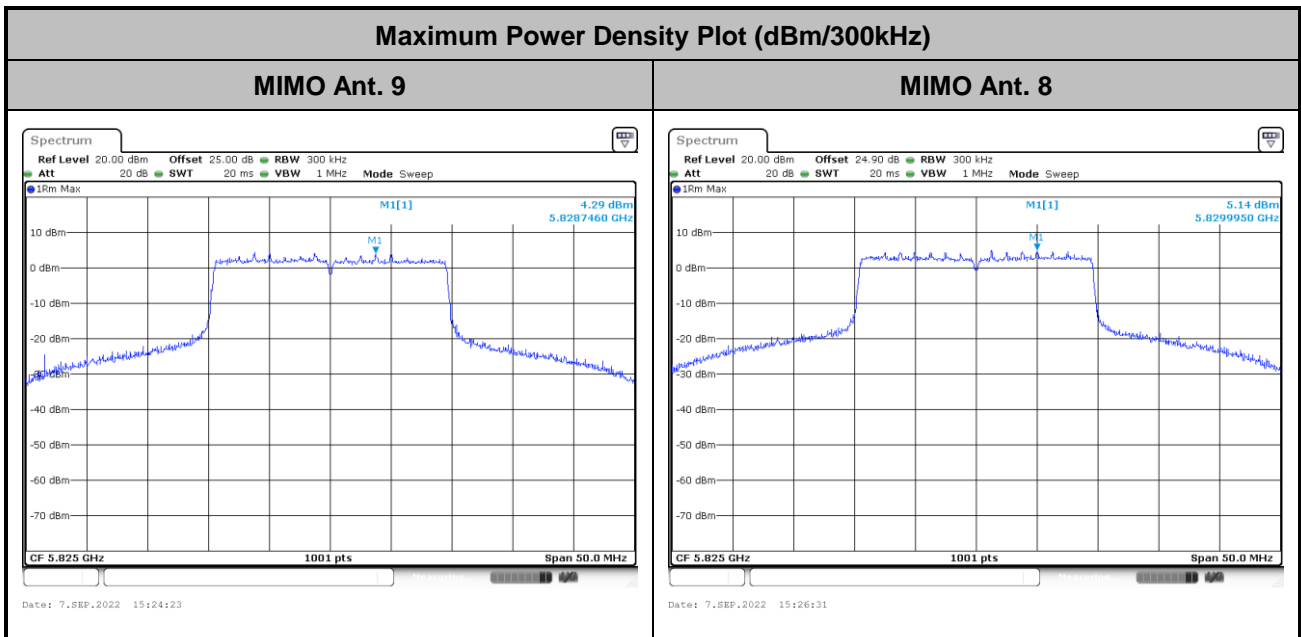
<802.11ax HE80>



Note: Average Power Density (dB) = Measured value+ Duty Factor

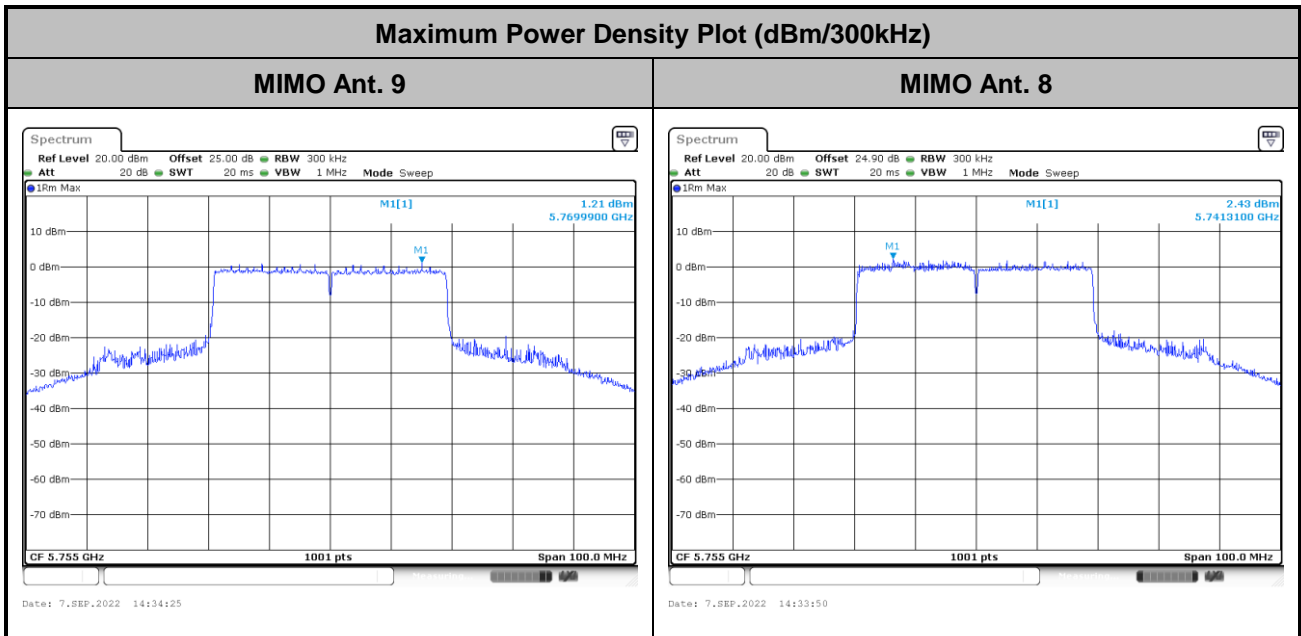
<TXBF Modes>

<802.11ax HE20>

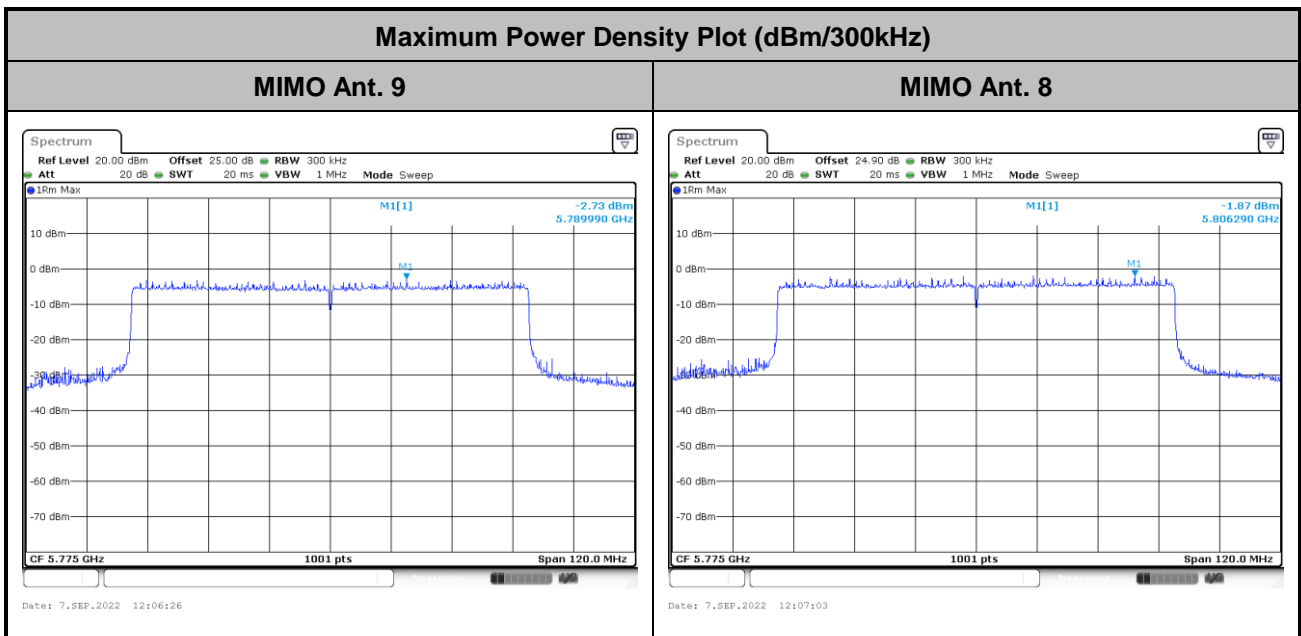




<802.11ax HE40>



<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.

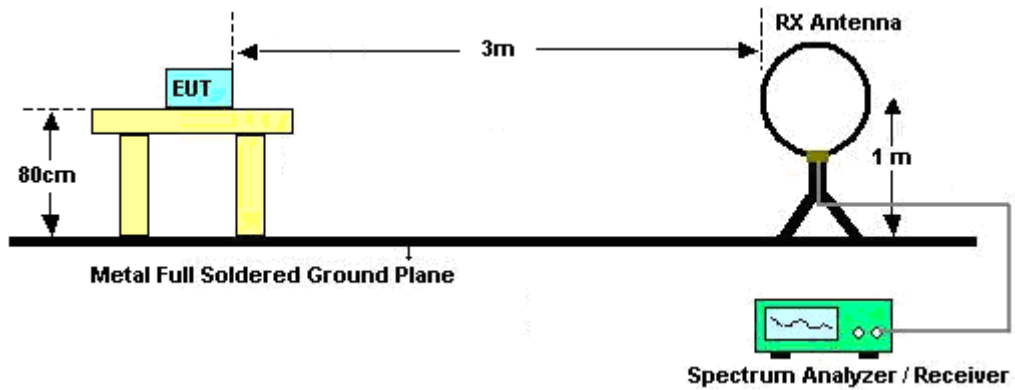
3.4.3 Test Procedures

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 “-“.

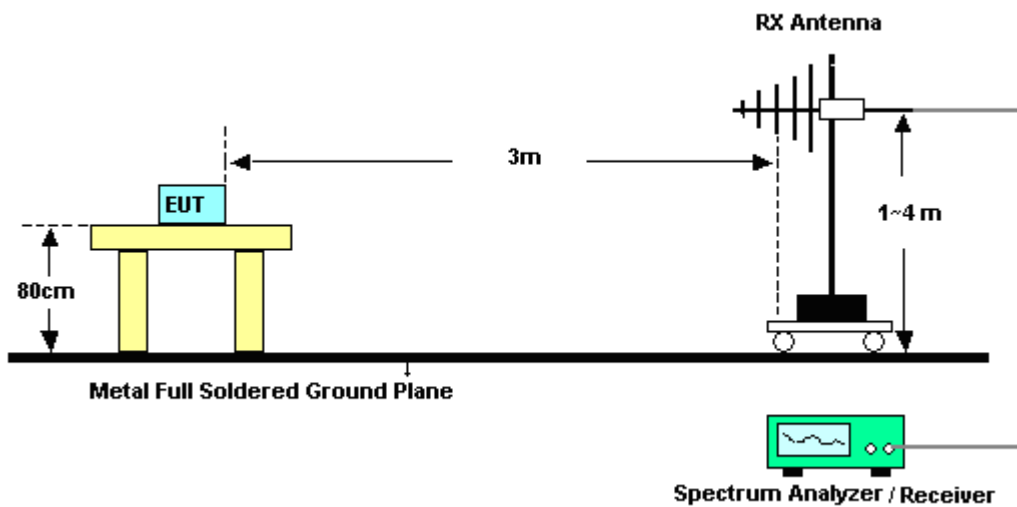
3.4.4 Test Setup

For radiated emissions below 30MHz

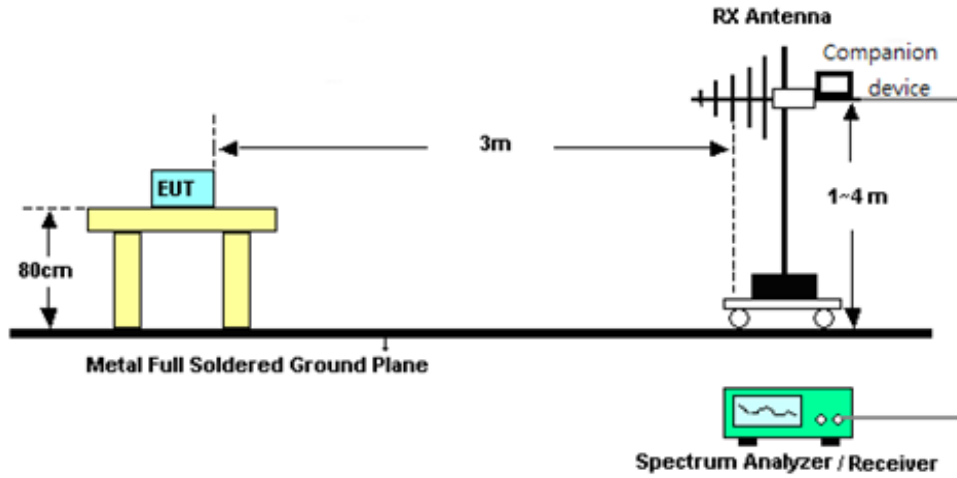


For radiated emissions from 30MHz to 1GHz

<CDD Mode>

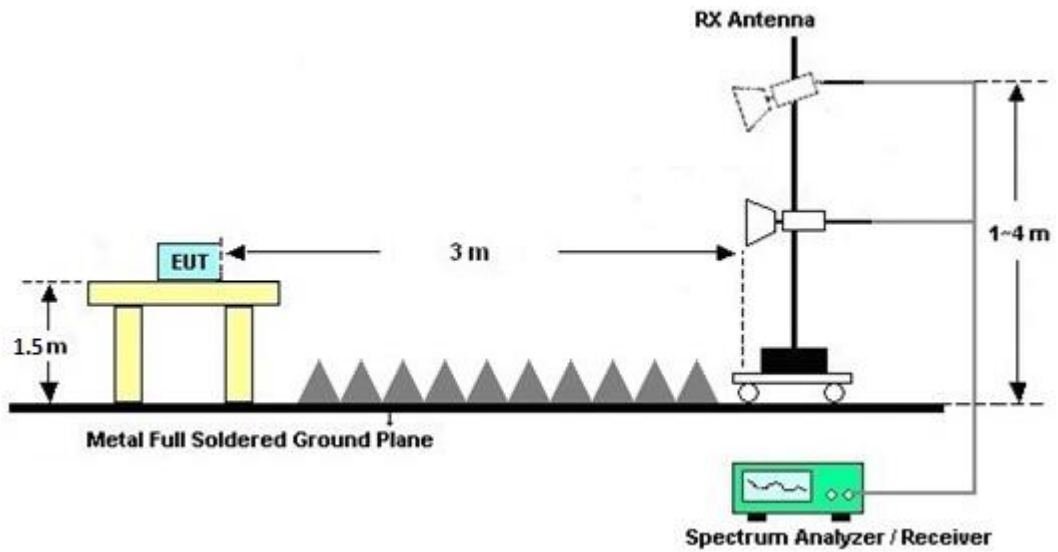


<TXBF Modes>

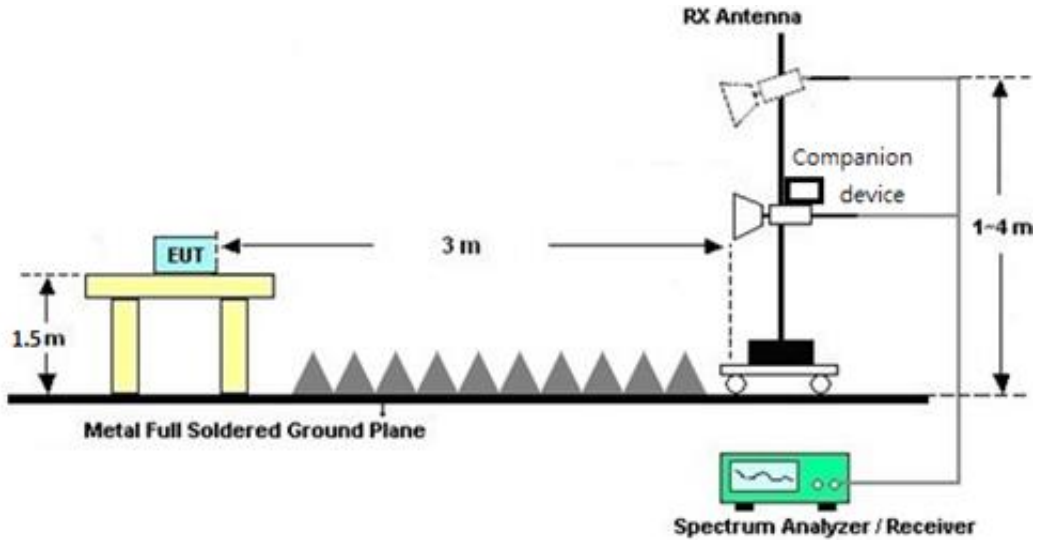


For radiated test from 1GHz to 18GHz

<CDD Mode>

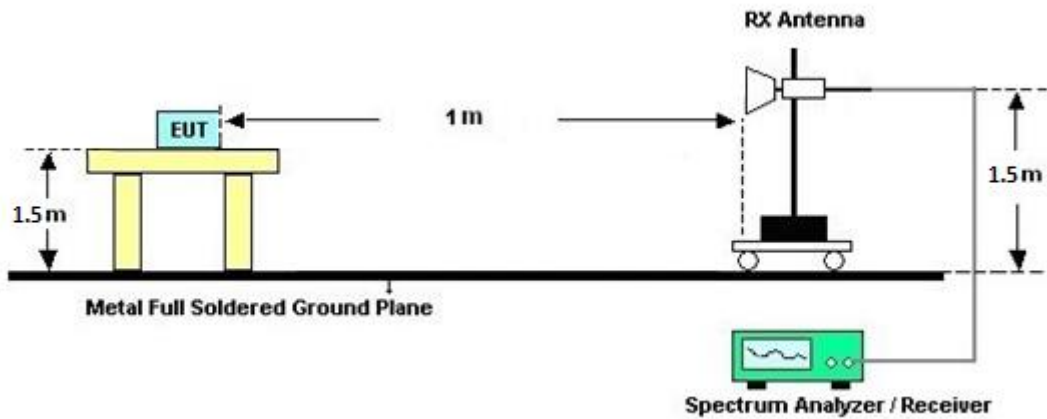


<TXBF Modes>

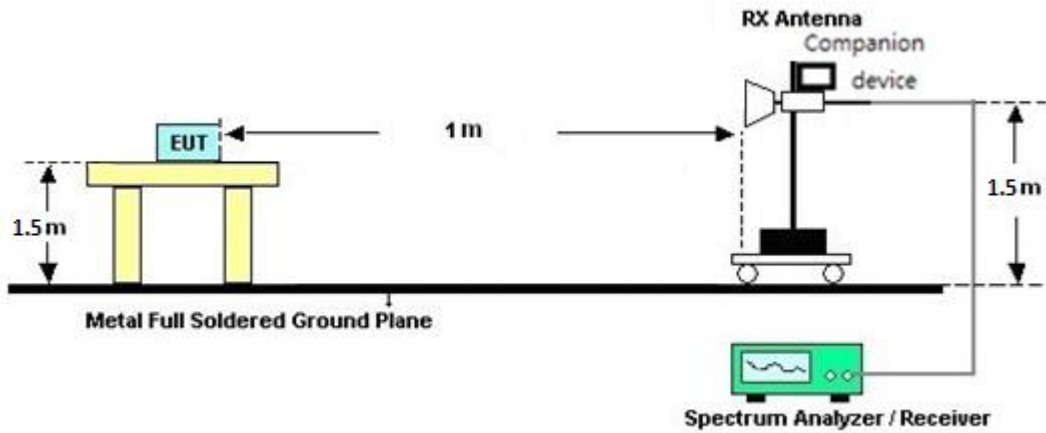


For radiated test above 18GHz

<CDD Mode>



<TXBF Modes>



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.

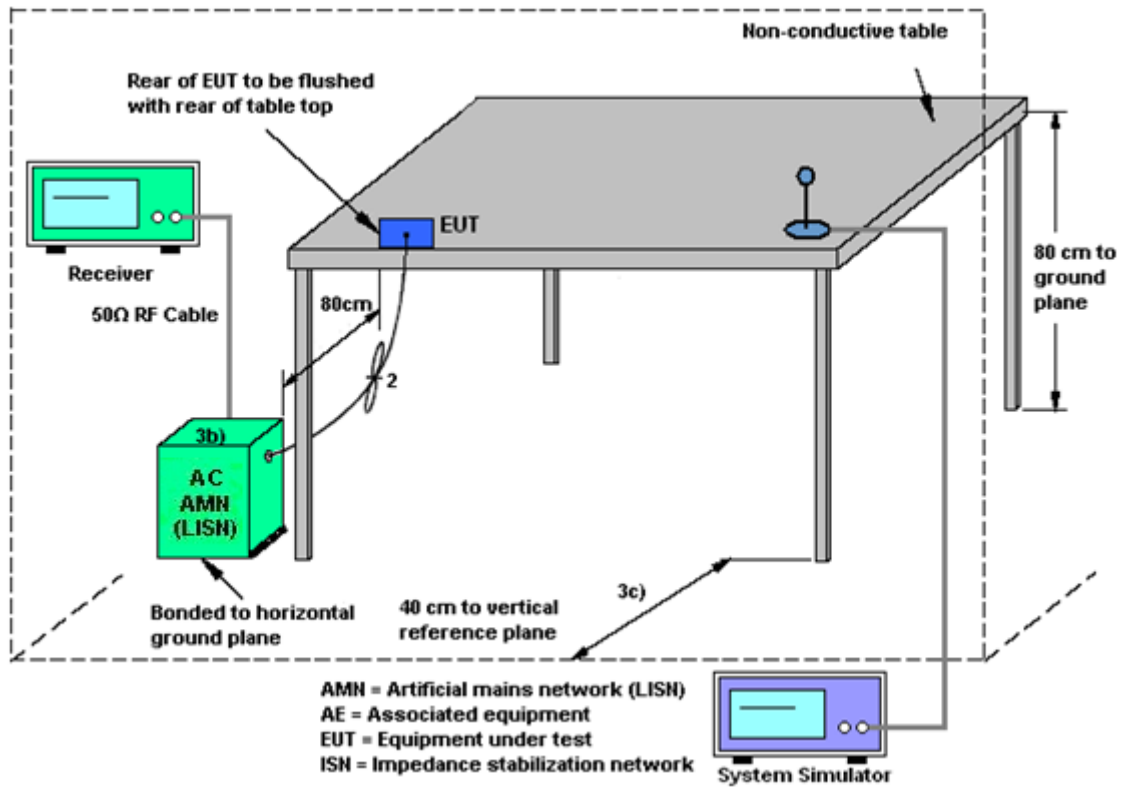
3.5.2 Measuring Instruments

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
Hygrometer	TECEPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Aug. 08, 2022~ Oct. 11, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15100041SNO 10 (NO:248)	10MHz~6GHz	Dec. 29, 2021	Aug. 08, 2022~ Oct. 11, 2022	Dec. 28, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz	Aug. 03, 2022	Aug. 08, 2022~ Oct. 11, 2022	Aug. 02, 2023	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Aug. 15, 2022	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2021	Aug. 15, 2022	Nov. 30, 2022	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2021	Aug. 15, 2022	Nov. 16, 2022	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 03, 2021	Aug. 15, 2022	Dec. 02, 2022	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Aug. 15, 2022	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Aug. 01, 2022	Aug. 15, 2022	Jul. 31, 2023	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 30, 2021	Aug. 15, 2022	Dec. 29, 2022	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	May 13, 2022	Aug. 10, 2022~ Sep. 07, 2022	May 12, 2023	Radiation (03CH16-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 24, 2021	Aug. 10, 2022~ Sep. 07, 2022	Dec. 23, 2022	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz-40GHz	Nov. 30, 2021	Aug. 10, 2022~ Sep. 07, 2022	Nov. 29, 2022	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1GHz	Jul. 04, 2022	Aug. 10, 2022~ Sep. 07, 2022	Jul. 03, 2023	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00802N1D01N-06	47020 & 06	30MHz~1GHz	Oct. 09, 2021	Aug. 10, 2022~ Sep. 07, 2022	Oct. 08, 2022	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY57290111	3Hz~26.5GHz	Dec. 15, 2021	Aug. 10, 2022~ Sep. 07, 2022	Dec. 14, 2022	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1GHz~18GHz	Mar. 10, 2022	Aug. 10, 2022~ Sep. 07, 2022	Mar. 09, 2023	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY53270264	1GHz~26.5GHz	Dec. 09, 2021	Aug. 10, 2022~ Sep. 07, 2022	Dec. 08, 2022	Radiation (03CH16-HY)
Preamplifier	EMEC	EM1G18G	060812	1GHz~18GHz	Dec. 27, 2021	Aug. 10, 2022~ Sep. 07, 2022	Dec. 26, 2022	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	805935/4	N/A	Aug. 09, 2022	Aug. 10, 2022~ Sep. 07, 2022	Aug. 08, 2023	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	802434/4	N/A	Aug. 09, 2022	Aug. 10, 2022~ Sep. 07, 2022	Aug. 08, 2023	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	EC-A5-300-5 757	N/A	Aug. 09, 2022	Aug. 10, 2022~ Sep. 07, 2022	Aug. 08, 2023	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Aug. 10, 2022~ Sep. 07, 2022	N/A	Radiation (03CH16-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Aug. 10, 2022~ Sep. 07, 2022	N/A	Radiation (03CH16-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Aug. 10, 2022~ Sep. 07, 2022	N/A	Radiation (03CH16-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Aug. 10, 2022~ Sep. 07, 2022	N/A	Radiation (03CH16-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.1 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

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

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

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

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

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

Appendix A. Test Result of Conducted Test Items

<CDD Mode>

Test Engineer:	Ching Chen	Temperature:	21~25	°C
Test Date:	2022/08/08-2022/10/11	Relative Humidity:	51~54	%

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

U-NII-3 MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 9	Ant 8	Ant 9	Ant 8	Ant 9	Ant 8		
11a	6Mbps	2	149	5745	25.52	24.38	43.20	47.65	16.45	16.45	0.5	Pass
11a	6Mbps	2	157	5785	21.48	22.63	43.55	41.75	16.40	16.40	0.5	Pass
11a	6Mbps	2	165	5825	24.18	22.08	42.20	39.65	16.45	16.40	0.5	Pass

TEST RESULTS DATA
Average Power Table

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 9	Ant 8	SUM	Ant 9	Ant 8	Ant 9	Ant 8	
11a	6Mbps	2	149	5745	17.10	16.60	19.87	30.00		2.50		Pass
11a	6Mbps	2	157	5785	17.00	16.90	19.96	30.00		2.50		Pass
11a	6Mbps	2	165	5825	16.90	16.60	19.76	30.00		2.50		Pass
HT20	MCS0	2	149	5745	17.00	16.50	19.77	30.00		2.50		Pass
HT20	MCS0	2	157	5785	17.30	17.00	20.16	30.00		2.50		Pass
HT20	MCS0	2	165	5825	17.20	16.80	20.01	30.00		2.50		Pass
HT40	MCS0	2	151	5755	16.20	15.90	19.06	30.00		2.50		Pass
HT40	MCS0	2	159	5795	16.20	15.80	19.01	30.00		2.50		Pass
VHT20	MCS0	2	149	5745	17.00	16.50	19.77	30.00		2.50		Pass
VHT20	MCS0	2	157	5785	17.30	17.00	20.16	30.00		2.50		Pass
VHT20	MCS0	2	165	5825	17.20	16.80	20.01	30.00		2.50		Pass
VHT40	MCS0	2	151	5755	16.20	15.90	19.06	30.00		2.50		Pass
VHT40	MCS0	2	159	5795	16.20	15.80	19.01	30.00		2.50		Pass
VHT80	MCS0	2	155	5775	14.60	13.80	17.23	30.00		2.50		Pass

Power Setting	
Ant 9	Ant 8
17.5	17.5
17.5	17.5
17.5	17.5
17.5	17.5
18	18
18	18
16.5	16.5
16.5	16.5
17.5	17.5
18	18
18	18
16.5	16.5
16.5	16.5
14.5	14.5

TEST RESULTS DATA
Power Spectral Density

U-NII-3 MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		10log (500kHz /RBW) Factor (dB)		Average Power Density with Duty Factor (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 9	Ant 8	Ant 9	Ant 8	Ant 9	Ant 8	SUM	Ant 9	Ant 8	Ant 9	Ant 8	
11a	6Mbps	2	149	5745	0.00	0.00	2.22	2.69	1.86	5.70	30.00	4.29	4.29	Pass		
11a	6Mbps	2	157	5785	0.00	0.00	2.22	2.43	2.17	5.44	30.00	4.29	4.29	Pass		
11a	6Mbps	2	165	5825	0.00	0.00	2.22	2.55	1.89	5.56	30.00	4.29	4.29	Pass		

Note: PSD Sum = Max PSD(Ant. 9, Ant. 8) + 10 log (n)

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

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 9	Ant 8	Ant 9	Ant 8	Ant 9	Ant 8		
HE20	MCS0	2	149	5745	Full	19.23	19.23	33.70	29.30	18.80	19.15	0.5	Pass
HE20	MCS0	2	157	5785	Full	19.53	19.58	36.35	39.45	19.00	18.85	0.5	Pass
HE20	MCS0	2	165	5825	Full	20.28	21.33	40.90	35.05	19.05	19.05	0.5	Pass
HE40	MCS0	2	151	5755	Full	38.26	38.06	40.86	40.41	37.98	37.98	0.5	Pass
HE40	MCS0	2	159	5795	Full	38.16	38.06	40.59	40.32	38.16	38.07	0.5	Pass
HE80	MCS0	2	155	5775	Full	77.32	77.32	83.20	82.56	78.24	77.28	0.5	Pass

TEST RESULTS DATA
Average Power Table

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 9	Ant 8	SUM	Ant 9	Ant 8	Ant 9	Ant 8	
HE20	MCS0	2	149	5745	Full	17.10	16.60	19.87	30.00		2.50		Pass
HE20	MCS0	2	149	5745	26/0	8.00	7.50	10.77	30.00		2.50		Pass
HE20	MCS0	2	149	5745	52/37	11.20	10.60	13.92	30.00		2.50		Pass
HE20	MCS0	2	149	5745	106/53	13.90	13.10	16.53	30.00		2.50		Pass
HE20	MCS0	2	157	5785	Full	16.90	16.80	19.86	30.00		2.50		Pass
HE20	MCS0	2	157	5785	26/4	7.70	7.40	10.56	30.00		2.50		Pass
HE20	MCS0	2	157	5785	52/38	10.90	10.50	13.71	30.00		2.50		Pass
HE20	MCS0	2	157	5785	106/53	13.70	13.10	16.42	30.00		2.50		Pass
HE20	MCS0	2	165	5825	Full	16.80	16.60	19.71	30.00		2.50		Pass
HE20	MCS0	2	165	5825	26/8	7.80	7.30	10.57	30.00		2.50		Pass
HE20	MCS0	2	165	5825	52/40	10.70	9.60	13.20	30.00		2.50		Pass
HE20	MCS0	2	165	5825	106/54	13.50	13.30	16.41	30.00		2.50		Pass
HE40	MCS0	2	151	5755	Full	16.30	16.00	19.16	30.00		2.50		Pass
HE40	MCS0	2	151	5755	242/61	14.00	13.00	16.54	30.00		2.50		Pass
HE40	MCS0	2	159	5795	Full	16.30	15.90	19.11	30.00		2.50		Pass
HE40	MCS0	2	159	5795	242/62	13.90	13.00	16.48	30.00		2.50		Pass
HE80	MCS0	2	155	5775	Full	14.70	13.90	17.33	30.00		2.50		Pass
HE80	MCS0	2	155	5775	484/65	11.90	11.00	14.48	30.00		2.50		Pass
HE80	MCS0	2	155	5775	484/66	11.80	11.20	14.52	30.00		2.50		Pass

Power Setting	
Ant 9	Ant 8
17.5	
8	
11	
13.5	
17.5	
8	
11	
13.5	
17.5	
7.5	
10	
13.5	
16.5	
13.5	
16.5	
13.5	
14.5	
11.5	
11.5	

TEST RESULTS DATA
Power Spectral Density

U-NII-3 MIMO																	
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	RU Config	Duty Factor (dB)		10log (500kHz /RBW) Factor (dB)		Average Power Density with Duty Factor (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
						Ant 9	Ant 8	Ant 9	Ant 8	Ant 9	Ant 8	SUM	Ant 9	Ant 8	Ant 9	Ant 8	
HE20	MCS0	2	149	5745	Full	0.00	0.00	2.22	2.07	1.22	5.08	30.00	4.29	Pass			
HE20	MCS0	2	149	5745	26/0	0.00	0.00	2.22	1.95	1.57	4.96	30.00	4.29	Pass			
HE20	MCS0	2	149	5745	52/37	0.00	0.00	2.22	2.03	1.31	5.04	30.00	4.29	Pass			
HE20	MCS0	2	149	5745	106/53	0.00	0.00	2.22	1.90	0.95	4.91	30.00	4.29	Pass			
HE20	MCS0	2	157	5785	Full	0.00	0.00	2.22	1.81	1.55	4.82	30.00	4.29	Pass			
HE20	MCS0	2	157	5785	26/4	0.00	0.00	2.22	1.51	1.23	4.52	30.00	4.29	Pass			
HE20	MCS0	2	157	5785	52/38	0.00	0.00	2.22	1.75	1.21	4.76	30.00	4.29	Pass			
HE20	MCS0	2	157	5785	106/53	0.00	0.00	2.22	1.38	0.63	4.39	30.00	4.29	Pass			
HE20	MCS0	2	165	5825	Full	0.00	0.00	2.22	1.80	1.29	4.81	30.00	4.29	Pass			
HE20	MCS0	2	165	5825	26/8	0.00	0.00	2.22	1.45	1.02	4.46	30.00	4.29	Pass			
HE20	MCS0	2	165	5825	52/40	0.00	0.00	2.22	1.61	0.27	4.62	30.00	4.29	Pass			
HE20	MCS0	2	165	5825	106/54	0.00	0.00	2.22	1.76	1.08	4.77	30.00	4.29	Pass			
HE40	MCS0	2	151	5755	Full	0.00	0.00	2.22	-1.45	-2.12	1.56	30.00	4.29	Pass			
HE40	MCS0	2	151	5755	242/61	0.00	0.00	2.22	-1.57	-2.77	1.44	30.00	4.29	Pass			
HE40	MCS0	2	159	5795	Full	0.00	0.00	2.22	-1.45	-2.16	1.56	30.00	4.29	Pass			
HE40	MCS0	2	159	5795	242/62	0.00	0.00	2.22	-1.53	-2.64	1.48	30.00	4.29	Pass			
HE80	MCS0	2	155	5775	Full	0.00	0.00	2.22	-6.37	-7.17	-3.36	30.00	4.29	Pass			
HE80	MCS0	2	155	5775	484/65	0.00	0.00	2.22	-6.50	-7.87	-3.49	30.00	4.29	Pass			
HE80	MCS0	2	155	5775	484/66	0.00	0.00	2.22	-6.54	-7.40	-3.53	30.00	4.29	Pass			

Note: PSD Sum = Max PSD(Ant. 9, Ant. 8) + 10 log (n)

<TXBF Mode>

Test Engineer:	Ching Chen	Temperature:	21~25	°C
Test Date:	2022/09/07-2022/10/03	Relative Humidity:	51~54	%

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

U-NII-3 MIMO													
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	RU Config	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
						Ant 9	Ant 8	Ant 9	Ant 8	Ant 9	Ant 8		
HE20	MCS0	2	149	5745	Full	19.33	19.53	30.10	38.70	19.10	19.25	0.5	Pass
HE20	MCS0	2	157	5785	Full	19.43	19.48	33.00	37.60	19.15	19.20	0.5	Pass
HE20	MCS0	2	165	5825	Full	19.33	19.36	27.60	36.60	18.80	19.15	0.5	Pass
HE40	MCS0	2	151	5755	Full	39.56	40.56	76.41	79.56	38.61	38.70	0.5	Pass
HE40	MCS0	2	159	5795	Full	39.46	39.96	72.54	77.58	38.34	38.16	0.5	Pass
HE80	MCS0	2	155	5775	Full	78.04	78.04	119.04	138.24	78.40	78.40	0.5	Pass

TEST RESULTS DATA
Average Power Table

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 9	Ant 8	SUM	Ant 9	Ant 8	Ant 9	Ant 8	
HE20	MCS0	2	149	5745	Full	16.10	16.70	19.42	30.00		4.29		Pass
HE20	MCS0	2	157	5785	Full	16.10	16.80	19.47	30.00		4.29		Pass
HE20	MCS0	2	165	5825	Full	16.10	17.20	19.70	30.00		4.29		Pass
HE40	MCS0	2	151	5755	Full	15.50	16.30	18.93	30.00		4.29		Pass
HE40	MCS0	2	159	5795	Full	15.40	16.30	18.88	30.00		4.29		Pass
HE80	MCS0	2	155	5775	Full	13.50	14.40	16.98	30.00		4.29		Pass

TEST RESULTS DATA
Power Spectral Density

U-NII-3 MIMO															
Mod.	Data Rate	N _{Tx}	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 9	Ant 8	Ant 9	Ant 8	SUM	Ant 9	Ant 8	Ant 9	Ant 8	
HE20	MCS0	2	149	5745	Full	2.22	4.68	5.53	8.54	30.00	4.29	Pass			
HE20	MCS0	2	157	5785	Full	2.22	4.66	5.63	8.64	30.00	4.29	Pass			
HE20	MCS0	2	165	5825	Full	2.22	5.06	6.03	9.04	30.00	4.29	Pass			
HE40	MCS0	2	151	5755	Full	2.22	1.04	2.28	5.29	30.00	4.29	Pass			
HE40	MCS0	2	159	5795	Full	2.22	0.76	1.79	4.80	30.00	4.29	Pass			
HE80	MCS0	2	155	5775	Full	2.22	-3.75	-2.98	0.03	30.00	4.29	Pass			

Note: PSD Sum = Max PSD(Ant. 9, Ant. 8) + 10 log (n)



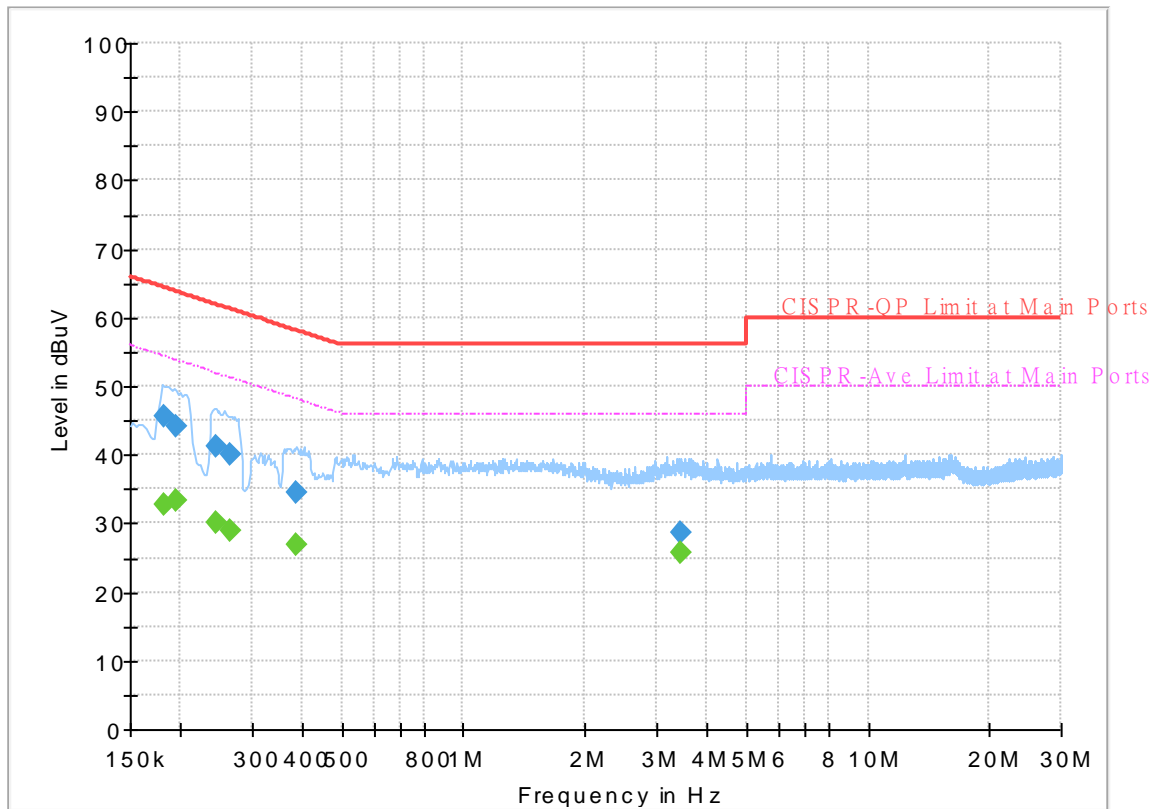
Appendix B. AC Conducted Emission Test Results

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

EUT Information

Report NO : 271554
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

Full Spectrum



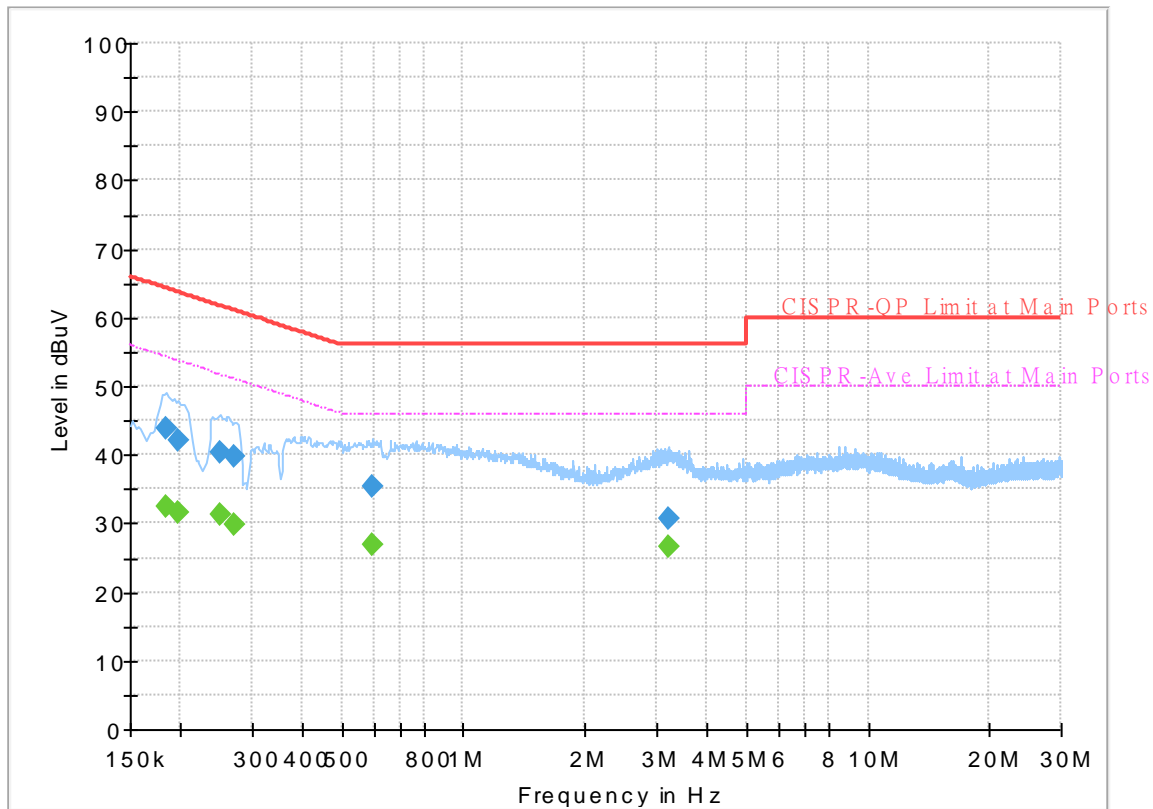
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.181500	---	32.74	54.42	21.68	L1	OFF	19.8
0.181500	45.50	---	64.42	18.92	L1	OFF	19.8
0.195000	---	33.25	53.82	20.57	L1	OFF	19.8
0.195000	44.25	---	63.82	19.57	L1	OFF	19.8
0.244500	---	30.03	51.94	21.91	L1	OFF	19.8
0.244500	41.36	---	61.94	20.58	L1	OFF	19.8
0.264750	---	28.98	51.28	22.30	L1	OFF	19.8
0.264750	39.95	---	61.28	21.33	L1	OFF	19.8
0.386250	---	26.90	48.14	21.24	L1	OFF	19.8
0.386250	34.36	---	58.14	23.78	L1	OFF	19.8
3.426000	---	25.81	46.00	20.19	L1	OFF	20.0
3.426000	28.62	---	56.00	27.38	L1	OFF	20.0

EUT Information

Report NO : 271554
 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)
0.183750	---	32.49	54.31	21.82	N	OFF	19.8
0.183750	43.73	---	64.31	20.58	N	OFF	19.8
0.197250	---	31.48	53.73	22.25	N	OFF	19.8
0.197250	42.03	---	63.73	21.70	N	OFF	19.8
0.251250	---	31.43	51.72	20.29	N	OFF	19.8
0.251250	40.33	---	61.72	21.39	N	OFF	19.8
0.271500	---	29.93	51.07	21.14	N	OFF	19.8
0.271500	39.75	---	61.07	21.32	N	OFF	19.8
0.597750	---	26.78	46.00	19.22	N	OFF	19.8
0.597750	35.38	---	56.00	20.62	N	OFF	19.8
3.198750	---	26.49	46.00	19.51	N	OFF	20.0
3.198750	30.66	---	56.00	25.34	N	OFF	20.0



Appendix C. Radiated Spurious Emission

Test Engineer :	Andy Yang, Karl Hou and Steven Wu	Temperature :	18~23°C
		Relative Humidity :	50~65%



<CDD Mode>

<Sample 1>

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.	
9+8		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
802.11a CH 149 5745MHz		5630.4	55.49	-12.71	68.2	40.45	33.04	11.59	29.59	100	320	P	H	
		5700	57.99	-47.21	105.2	42.52	33.4	11.68	29.61	100	320	P	H	
		5716.4	71.05	-38.74	109.79	55.49	33.47	11.7	29.61	100	320	P	H	
		5724.2	80.02	-40.36	120.38	64.42	33.5	11.71	29.61	100	320	P	H	
	*	5745	114.28	-	-	98.58	33.58	11.73	29.61	100	320	P	H	
	*	5745	107.04	-	-	91.34	33.58	11.73	29.61	100	320	A	H	
														H
														H
			5648.6	54.83	-13.37	68.2	39.82	33	11.61	29.6	100	294	P	V
			5654.6	55.44	-16.18	71.62	40.38	33.04	11.62	29.6	100	294	P	V
			5717.6	71.18	-38.95	110.13	55.62	33.47	11.7	29.61	100	294	P	V
			5723.6	81.59	-37.42	119.01	66.01	33.49	11.7	29.61	100	294	P	V
	*		5745	113.16	-	-	97.46	33.58	11.73	29.61	100	294	P	V
	*		5745	106.04	-	-	90.34	33.58	11.73	29.61	100	294	A	V
														V
													V	



WIFI Ant. 9+8	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		5628.4	55.05	-13.15	68.2	40.01	33.04	11.59	29.59	100	324	P	H	
		5689	53.96	-43.13	97.09	38.59	33.31	11.66	29.6	100	324	P	H	
		5713.8	54.31	-54.76	109.07	38.77	33.46	11.69	29.61	100	324	P	H	
		5723.6	53.21	-65.8	119.01	37.63	33.49	11.7	29.61	100	324	P	H	
	*	5785	114.75	-	-	98.78	33.81	11.78	29.62	100	324	P	H	
	*	5785	107.29	-	-	91.32	33.81	11.78	29.62	100	324	A	H	
		5850	54.57	-67.63	122.2	38.26	34.1	11.84	29.63	100	324	P	H	
		5866.2	54.63	-53.03	107.66	38.26	34.16	11.85	29.64	100	324	P	H	
		5878.4	55.38	-47.29	102.67	38.95	34.21	11.86	29.64	100	324	P	H	
		5932.4	55.37	-12.83	68.2	38.82	34.3	11.9	29.65	100	324	P	H	
														H
														H
			5619.6	53.7	-14.5	68.2	38.66	33.06	11.57	29.59	100	300	P	V
			5694.8	54.18	-47.19	101.37	38.76	33.36	11.67	29.61	100	300	P	V
			5720	54.33	-56.47	110.8	38.76	33.48	11.7	29.61	100	300	P	V
			5720	54.33	-56.47	110.8	38.76	33.48	11.7	29.61	100	300	P	V
	*	5785	113.47	-	-	97.5	33.81	11.78	29.62	100	300	P	V	
	*	5785	106.17	-	-	90.2	33.81	11.78	29.62	100	300	A	V	
			5853.2	53.79	-61.11	114.9	37.47	34.11	11.84	29.63	100	300	P	V
			5866.8	55.08	-52.41	107.49	38.7	34.17	11.85	29.64	100	300	P	V
			5892.6	54.88	-37.26	92.14	38.38	34.27	11.87	29.64	100	300	P	V
			5927.8	54.56	-13.64	68.2	38.01	34.3	11.9	29.65	100	300	P	V
													V	
													V	



WiFi Ant. 9+8	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	114.48	-	-	98.29	34	11.82	29.63	100	320	P	H	
	*	5825	107.1	-	-	90.91	34	11.82	29.63	100	320	A	H	
		5852.6	73.09	-43.18	116.27	56.77	34.11	11.84	29.63	100	320	P	H	
		5857.4	70.64	-39.49	110.13	54.3	34.13	11.84	29.63	100	320	P	H	
		5917.4	56.57	-17.23	73.8	40.03	34.3	11.89	29.65	100	320	P	H	
		5943.8	55.12	-13.08	68.2	38.56	34.3	11.91	29.65	100	320	P	H	
														H
														H
	*	5825	113.36	-	-	97.17	34	11.82	29.63	100	302	302	P	V
	*	5825	106.45	-	-	90.26	34	11.82	29.63	100	302	302	A	V
		5850.4	68.39	-52.9	121.29	52.08	34.1	11.84	29.63	100	302	302	P	V
		5855	67.15	-43.65	110.8	50.82	34.12	11.84	29.63	100	302	302	P	V
		5882.6	55.55	-44.01	99.56	39.1	34.23	11.86	29.64	100	302	302	P	V
		5938	54.73	-13.47	68.2	38.18	34.3	11.9	29.65	100	302	302	P	V
														V
														V
													V	
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 													



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

WIFI Ant. 9+8	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	48.97	-25.03	74	58.94	39.2	17.05	66.22	214	335	P	H	
		11490	39.16	-14.84	54	49.13	39.2	17.05	66.22	214	335	A	H	
		17235	48.55	-19.65	68.2	54.77	38.47	21.47	66.16	-	-	P	H	
													H	
													H	
													H	
													H	
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													H	
			11490	49.73	-24.27	74	59.7	39.2	17.05	66.22	300	9	P	V
			11490	40.26	-13.74	54	50.23	39.2	17.05	66.22	300	9	A	V
			17235	48.03	-20.17	68.2	54.25	38.47	21.47	66.16	-	-	P	V
														V
														V
														V
													V	
													V	
													V	
													V	



WIFI Ant. 9+8	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	47.97	-26.03	74	58.08	38.99	17.12	66.22	-	-	P	H
		17355	49.54	-18.66	68.2	55.29	38.76	21.52	66.03	-	-	P	H
													H
													H
													H
													H
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													H
													H
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													H
													H
													H
													H
			11570	47.87	-26.13	74	57.98	38.99	17.12	66.22	-	-	P
		17355	48.7	-19.5	68.2	54.45	38.76	21.52	66.03	-	-	P	V
													V
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WIFI Ant. 9+8	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	47.31	-26.69	74	57.54	38.8	17.19	66.22	-	-	P	H
		17475	48.85	-19.35	68.2	54.21	38.97	21.57	65.9	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			11650	47.86	-26.14	74	58.09	38.8	17.19	66.22	-	-	P
		17475	49.27	-18.93	68.2	54.63	38.97	21.57	65.9	-	-	P	V
													V
													V
													V
													V
													V
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Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 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 Ant. 9+8	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		5647.4	63.52	-4.68	68.2	48.5	33.01	11.61	29.6	100	317	P	H	
		5699.2	81.73	-22.88	104.61	66.28	33.39	11.67	29.61	100	317	P	H	
		5718.4	88.07	-22.28	110.35	72.51	33.47	11.7	29.61	100	317	P	H	
		5722.2	87.55	-28.27	115.82	71.97	33.49	11.7	29.61	100	317	P	H	
	*	5745	116.27	-	-	100.57	33.58	11.73	29.61	100	317	P	H	
	*	5745	105.96	-	-	90.26	33.58	11.73	29.61	100	317	A	H	
														H
														H
			5649.8	60.69	-7.51	68.2	45.68	33	11.61	29.6	100	295	P	V
			5691.8	75.81	-23.34	99.15	60.42	33.33	11.66	29.6	100	295	P	V
			5714.2	83.85	-25.33	109.18	68.31	33.46	11.69	29.61	100	295	P	V
			5721.4	86.77	-27.22	113.99	71.19	33.49	11.7	29.61	100	295	P	V
	*		5745	114.71	-	-	99.01	33.58	11.73	29.61	100	295	P	V
	*		5745	104.01	-	-	88.31	33.58	11.73	29.61	100	295	A	V
													V	
													V	



WIFI Ant. 9+8	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)
		5631.8	54.37	-13.83	68.2	39.33	33.04	11.59	29.59	100	325	P	H
		5698	62.35	-41.38	103.73	46.91	33.38	11.67	29.61	100	325	P	H
		5719.8	68.82	-41.92	110.74	53.25	33.48	11.7	29.61	100	325	P	H
		5721	69.13	-43.95	113.08	53.56	33.48	11.7	29.61	100	325	P	H
	*	5785	117.1	-	-	101.13	33.81	11.78	29.62	100	325	P	H
	*	5785	106.46	-	-	90.49	33.81	11.78	29.62	100	325	A	H
		5851.4	69.07	-49.94	119.01	52.75	34.11	11.84	29.63	100	325	P	H
		5859.2	69.83	-39.79	109.62	53.48	34.14	11.84	29.63	100	325	P	H
		5878.6	62.43	-40.1	102.53	46	34.21	11.86	29.64	100	325	P	H
		5935.6	54.38	-13.82	68.2	37.83	34.3	11.9	29.65	100	325	P	H
802.11ax													H
HE20 Full													H
CH 157		5635.8	55.27	-12.93	68.2	40.24	33.03	11.59	29.59	100	301	P	V
5785MHz		5693.6	60.58	-39.9	100.48	45.16	33.35	11.67	29.6	100	301	P	V
		5718.6	67.03	-43.38	110.41	51.47	33.47	11.7	29.61	100	301	P	V
		5724	70.07	-49.85	119.92	54.48	33.5	11.7	29.61	100	301	P	V
	*	5785	114.84	-	-	98.87	33.81	11.78	29.62	100	301	P	V
	*	5785	105.77	-	-	89.8	33.81	11.78	29.62	100	301	A	V
		5850	68.54	-53.66	122.2	52.23	34.1	11.84	29.63	100	301	P	V
		5858.6	67.75	-42.04	109.79	51.41	34.13	11.84	29.63	100	301	P	V
		5880.6	63.13	-37.91	101.04	46.69	34.22	11.86	29.64	100	301	P	V
		5937.4	56.23	-11.97	68.2	39.68	34.3	11.9	29.65	100	301	P	V
													V
													V



WIFI Ant. 9+8	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	117.46	-	-	101.27	34	11.82	29.63	100	320	P	H	
	*	5825	106.44	-	-	90.25	34	11.82	29.63	100	320	A	H	
		5851.4	89.32	-29.69	119.01	73	34.11	11.84	29.63	100	320	P	H	
		5858.6	88.9	-20.89	109.79	72.56	34.13	11.84	29.63	100	320	P	H	
		5880.2	79.26	-22.08	101.34	62.82	34.22	11.86	29.64	100	320	P	H	
		5932.6	64.15	-4.05	68.2	47.6	34.3	11.9	29.65	100	320	P	H	
														H
														H
	*	5825	115.46	-	-	99.27	34	11.82	29.63	100	302	302	P	V
	*	5825	106.06	-	-	89.87	34	11.82	29.63	100	302	302	A	V
		5853.6	87.24	-26.75	113.99	70.92	34.11	11.84	29.63	100	302	302	P	V
		5864.6	85.7	-22.41	108.11	69.33	34.16	11.85	29.64	100	302	302	P	V
		5876	79.14	-25.32	104.46	62.72	34.2	11.86	29.64	100	302	302	P	V
		5937	62.87	-5.33	68.2	46.32	34.3	11.9	29.65	100	302	302	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. 9+8	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	47.87	-26.13	74	57.84	39.2	17.05	66.22	-	-	P	H	
		17235	47.91	-20.29	68.2	54.13	38.47	21.47	66.16	-	-	P	H	
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													H	
													H	
													H	
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													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			11490	47.96	-26.04	74	57.93	39.2	17.05	66.22	-	-	P	V
			17235	49.14	-19.06	68.2	55.36	38.47	21.47	66.16	-	-	P	V
													V	
													V	
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WIFI Ant. 9+8	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		11650	47.86	-26.14	74	58.09	38.8	17.19	66.22	-	-	P	H
		17475	48.58	-19.62	68.2	53.94	38.97	21.57	65.9	-	-	P	H
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													H
													H
			11650	47.68	-26.32	74	57.91	38.8	17.19	66.22	-	-	P
		17475	48.54	-19.66	68.2	53.9	38.97	21.57	65.9	-	-	P	V
													V
													V
													V
													V
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													V
													V
													V
													V
													V
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Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 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_Partial 106 (Band Edge @ 3m)

WIFI Ant. 9+8	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 106/53 CH 149 5745MHz		5604.2	54.84	-13.36	68.2	39.78	33.09	11.56	29.59	100	316	P	H	
		5699	57.37	-47.09	104.46	41.92	33.39	11.67	29.61	100	316	P	H	
		5719.6	72.45	-38.24	110.69	56.88	33.48	11.7	29.61	100	316	P	H	
		5723.2	78.21	-39.89	118.1	62.63	33.49	11.7	29.61	100	316	P	H	
	*	5745	118.35	-	-	102.65	33.58	11.73	29.61	100	316	P	H	
	*	5745	108.94	-	-	93.24	33.58	11.73	29.61	100	316	A	H	
														H
														H
			5622.8	54.16	-14.04	68.2	39.12	33.05	11.58	29.59	100	294	P	V
			5687.2	55.46	-40.3	95.76	40.1	33.3	11.66	29.6	100	294	P	V
			5719.4	67.9	-42.73	110.63	52.33	33.48	11.7	29.61	100	294	P	V
			5723	78.21	-39.43	117.64	62.63	33.49	11.7	29.61	100	294	P	V
		*	5745	117.34	-	-	101.64	33.58	11.73	29.61	100	294	P	V
		*	5745	108.28	-	-	92.58	33.58	11.73	29.61	100	294	A	V
													V	
													V	



WIFI Ant. 9+8	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 106/54 CH 165 5825MHz	*	5825	118.65	-	-	102.46	34	11.82	29.63	100	321	P	H	
	*	5825	109.07	-	-	92.88	34	11.82	29.63	100	321	A	H	
		5850.2	74.3	-47.44	121.74	57.99	34.1	11.84	29.63	100	321	P	H	
		5863.4	62.41	-46.04	108.45	46.05	34.15	11.85	29.64	100	321	P	H	
		5895.8	56.87	-32.9	89.77	40.36	34.28	11.87	29.64	100	321	P	H	
		5927.4	56.24	-11.96	68.2	39.69	34.3	11.9	29.65	100	321	P	H	
														H
														H
	*	5825	117.87	-	-	101.68	34	11.82	29.63	100	300	300	P	V
	*	5825	108.68	-	-	92.49	34	11.82	29.63	100	300	300	A	V
		5850.4	72.29	-49	121.29	55.98	34.1	11.84	29.63	100	300	300	P	V
		5855	61.77	-49.03	110.8	45.44	34.12	11.84	29.63	100	300	300	P	V
		5875.6	56.2	-48.55	104.75	39.78	34.2	11.86	29.64	100	300	300	P	V
		5934.8	55.47	-12.73	68.2	38.92	34.3	11.9	29.65	100	300	300	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 (Band Edge @ 3m)

WIFI Ant. 9+8	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)
		5640.2	65.43	-2.77	68.2	50.41	33.02	11.6	29.6	102	319	P	H
		5699.2	73.55	-31.06	104.61	58.1	33.39	11.67	29.61	102	319	P	H
		5719.6	78.91	-31.78	110.69	63.34	33.48	11.7	29.61	102	319	P	H
		5724.6	79.92	-41.37	121.29	64.32	33.5	11.71	29.61	102	319	P	H
	*	5755	111.88	-	-	96.13	33.63	11.74	29.62	102	319	P	H
	*	5755	101.97	-	-	86.22	33.63	11.74	29.62	102	319	A	H
		5854	68.98	-44.1	113.08	52.65	34.12	11.84	29.63	102	319	P	H
		5869	68.77	-38.11	106.88	52.38	34.18	11.85	29.64	102	319	P	H
		5881.2	66.41	-34.18	100.59	49.97	34.22	11.86	29.64	102	319	P	H
		5929	59.92	-8.28	68.2	43.37	34.3	11.9	29.65	102	319	P	H
802.11ax													H
HE40 Full													H
CH 151		5612.6	64.68	-3.52	68.2	49.63	33.07	11.57	29.59	107	300	P	V
5755MHz		5694	76	-24.78	100.78	60.58	33.35	11.67	29.6	107	300	P	V
		5712.8	81.36	-27.43	108.79	65.83	33.45	11.69	29.61	107	300	P	V
		5723	82.19	-35.45	117.64	66.61	33.49	11.7	29.61	107	300	P	V
	*	5755	110.75	-	-	95	33.63	11.74	29.62	107	300	P	V
	*	5755	101.15	-	-	85.4	33.63	11.74	29.62	107	300	A	V
		5854.8	67.62	-43.64	111.26	51.29	34.12	11.84	29.63	107	300	P	V
		5863.8	68.09	-40.24	108.33	51.72	34.16	11.85	29.64	107	300	P	V
		5898.2	65.56	-22.43	87.99	49.04	34.29	11.87	29.64	107	300	P	V
		5925	58.84	-9.36	68.2	42.3	34.3	11.89	29.65	107	300	P	V
													V
													V



WIFI Ant. 9+8	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)
		5642.6	63.98	-4.22	68.2	48.97	33.01	11.6	29.6	100	325	P	H
		5699.2	69.19	-35.42	104.61	53.74	33.39	11.67	29.61	100	325	P	H
		5720	72.86	-37.94	110.8	57.29	33.48	11.7	29.61	100	325	P	H
		5720.6	74.75	-37.42	112.17	59.18	33.48	11.7	29.61	100	325	P	H
	*	5795	112.34	-	-	96.3	33.87	11.79	29.62	100	325	P	H
	*	5795	102.28	-	-	86.24	33.87	11.79	29.62	100	325	A	H
		5850.2	75.29	-46.45	121.74	58.98	34.1	11.84	29.63	100	325	P	H
		5862	74.58	-34.26	108.84	58.22	34.15	11.85	29.64	100	325	P	H
		5881.2	71.07	-29.52	100.59	54.63	34.22	11.86	29.64	100	325	P	H
		5940.6	64.46	-3.74	68.2	47.9	34.3	11.91	29.65	100	325	P	H
802.11ax													H
HE40 Full													H
CH 159		5645.4	62.77	-5.43	68.2	47.75	33.01	11.61	29.6	100	301	P	V
5795MHz		5692.8	65.67	-34.22	99.89	50.26	33.34	11.67	29.6	100	301	P	V
		5714	69.46	-39.66	109.12	53.92	33.46	11.69	29.61	100	301	P	V
		5723.2	73.43	-44.67	118.1	57.85	33.49	11.7	29.61	100	301	P	V
	*	5795	111.56	-	-	95.52	33.87	11.79	29.62	100	301	P	V
	*	5795	101.37	-	-	85.33	33.87	11.79	29.62	100	301	A	V
		5852.6	73.16	-43.11	116.27	56.84	34.11	11.84	29.63	100	301	P	V
		5864	71.24	-37.04	108.28	54.87	34.16	11.85	29.64	100	301	P	V
		5876	69.3	-35.16	104.46	52.88	34.2	11.86	29.64	100	301	P	V
		5935.8	62.54	-5.66	68.2	45.99	34.3	11.9	29.65	100	301	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)

WIFI Ant. 9+8	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		11510	47.9	-26.1	74	57.88	39.17	17.07	66.22	-	-	P	H
		17265	48.18	-20.02	68.2	54.3	38.53	21.48	66.13	-	-	P	H
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													H
													H
			11510	47.61	-26.39	74	57.59	39.17	17.07	66.22	-	-	P
		17265	48.35	-19.85	68.2	54.47	38.53	21.48	66.13	-	-	P	V
													V
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WIFI Ant. 9+8	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		11590	47.17	-26.83	74	57.32	38.93	17.14	66.22	-	-	P	H	
		17385	48.69	-19.51	68.2	54.3	38.85	21.54	66	-	-	P	H	
													H	
													H	
													H	
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													H	
													H	
													H	
			11590	47.61	-26.39	74	57.76	38.93	17.14	66.22	-	-	P	V
			17385	48.46	-19.74	68.2	54.07	38.85	21.54	66	-	-	P	V
													V	
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													V	
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													V	
													V	
													V	
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 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 HE40_Partial 242 (Band Edge @ 3m)

WIFI Ant. 9+8	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)
		5646.4	59.58	-8.62	68.2	44.56	33.01	11.61	29.6	100	320	P	H
		5697	73.93	-29.06	102.99	58.49	33.38	11.67	29.61	100	320	P	H
		5716.8	86.83	-23.08	109.91	71.27	33.47	11.7	29.61	100	320	P	H
		5721.6	89.6	-24.85	114.45	74.02	33.49	11.7	29.61	100	320	P	H
	*	5755	115.31	-	-	99.56	33.63	11.74	29.62	100	320	P	H
	*	5755	105.76	-	-	90.01	33.63	11.74	29.62	100	320	A	H
		5853	62.38	-52.98	115.36	46.06	34.11	11.84	29.63	100	320	P	H
		5868.6	60.82	-46.17	106.99	44.44	34.17	11.85	29.64	100	320	P	H
		5877.2	57.44	-46.13	103.57	41.01	34.21	11.86	29.64	100	320	P	H
		5934.4	55.75	-12.45	68.2	39.2	34.3	11.9	29.65	100	320	P	H
802.11ax													H
HE40													H
Partial													H
242/61		5643.8	56.86	-11.34	68.2	41.85	33.01	11.6	29.6	100	294	P	V
CH 151		5693	71.85	-28.19	100.04	56.44	33.34	11.67	29.6	100	294	P	V
5755MHz		5718.4	85.71	-24.64	110.35	70.15	33.47	11.7	29.61	100	294	P	V
		5722.6	87.27	-29.46	116.73	71.69	33.49	11.7	29.61	100	294	P	V
	*	5755	114.73	-	-	98.98	33.63	11.74	29.62	100	294	P	V
	*	5755	105.09	-	-	89.34	33.63	11.74	29.62	100	294	A	V
		5853.6	58.58	-55.41	113.99	42.26	34.11	11.84	29.63	100	294	P	V
		5855.2	57.44	-53.3	110.74	41.11	34.12	11.84	29.63	100	294	P	V
		5909.8	55.53	-23.89	79.42	38.99	34.3	11.88	29.64	100	294	P	V
		5945.4	54.86	-13.34	68.2	38.3	34.3	11.91	29.65	100	294	P	V
													V
													V



WIFI Ant. 9+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
802.11ax HE40 Partial 242/62 CH 159 5795MHz		5644.6	55.78	-12.42	68.2	40.76	33.01	11.61	29.6	100	320	P	H	
		5696.8	61.14	-41.7	102.84	45.71	33.37	11.67	29.61	100	320	P	H	
		5716.8	63.63	-46.28	109.91	48.07	33.47	11.7	29.61	100	320	P	H	
		5722.6	64.35	-52.38	116.73	48.77	33.49	11.7	29.61	100	320	P	H	
	*	5795	116.13	-	-	100.09	33.87	11.79	29.62	100	320	P	H	
	*	5795	106.06	-	-	90.02	33.87	11.79	29.62	100	320	A	H	
		5851.4	70.12	-48.89	119.01	53.8	34.11	11.84	29.63	100	320	P	H	
		5857.4	70.21	-39.92	110.13	53.87	34.13	11.84	29.63	100	320	P	H	
		5878.4	61.03	-41.64	102.67	44.6	34.21	11.86	29.64	100	320	P	H	
		5929.4	56.09	-12.11	68.2	39.54	34.3	11.9	29.65	100	320	P	H	
														H
														H
			5631.4	55.7	-12.5	68.2	40.66	33.04	11.59	29.59	109	300	P	V
			5683.6	55.7	-37.4	93.1	40.38	33.27	11.65	29.6	109	300	P	V
			5709	60.16	-47.56	107.72	44.64	33.44	11.69	29.61	109	300	P	V
			5724.6	61.24	-60.05	121.29	45.64	33.5	11.71	29.61	109	300	P	V
	*		5795	114	-	-	97.96	33.87	11.79	29.62	109	300	P	V
	*		5795	105.17	-	-	89.13	33.87	11.79	29.62	109	300	A	V
			5850.4	68.82	-52.47	121.29	52.51	34.1	11.84	29.63	109	300	P	V
			5855	65.34	-45.46	110.8	49.01	34.12	11.84	29.63	109	300	P	V
		5884	55.95	-42.57	98.52	39.49	34.24	11.86	29.64	109	300	P	V	
		5947.4	55.33	-12.87	68.2	38.77	34.3	11.91	29.65	109	300	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 (Band Edge @ 3m)

WIFI Ant. 9+8	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)
		5649	66.94	-1.26	68.2	51.93	33	11.61	29.6	100	322	P	H
		5692.6	70.68	-29.06	99.74	55.27	33.34	11.67	29.6	100	322	P	H
		5713.2	72.38	-36.52	108.9	56.85	33.45	11.69	29.61	100	322	P	H
		5721.6	72.46	-41.99	114.45	56.88	33.49	11.7	29.61	100	322	P	H
	*	5775	107.18	-	-	91.28	33.75	11.77	29.62	100	322	P	H
	*	5775	96.83	-	-	80.93	33.75	11.77	29.62	100	322	A	H
		5851.4	70.68	-48.33	119.01	54.36	34.11	11.84	29.63	100	322	P	H
		5861.4	69.09	-39.92	109.01	52.73	34.15	11.85	29.64	100	322	P	H
		5877.4	66.13	-37.29	103.42	49.7	34.21	11.86	29.64	100	322	P	H
		5931.6	60.55	-7.65	68.2	44	34.3	11.9	29.65	100	322	P	H
802.11ax													H
HE80 Full													H
CH 155		5647.4	60.62	-7.58	68.2	45.6	33.01	11.61	29.6	100	300	P	V
5775MHz		5694.4	65.61	-35.46	101.07	50.18	33.36	11.67	29.6	100	300	P	V
		5715.4	68.67	-40.84	109.51	53.13	33.46	11.69	29.61	100	300	P	V
		5723.6	67.12	-51.89	119.01	51.54	33.49	11.7	29.61	100	300	P	V
	*	5775	106.21	-	-	90.31	33.75	11.77	29.62	100	300	P	V
	*	5775	96.45	-	-	80.55	33.75	11.77	29.62	100	300	A	V
		5854.8	66.22	-45.04	111.26	49.89	34.12	11.84	29.63	100	300	P	V
		5855	64.77	-46.03	110.8	48.44	34.12	11.84	29.63	100	300	P	V
		5881.8	61.25	-38.9	100.15	44.8	34.23	11.86	29.64	100	300	P	V
		5930.8	58.32	-9.88	68.2	41.77	34.3	11.9	29.65	100	300	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)

WIFI Ant. 9+8	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		11550	47.54	-26.46	74	57.6	39.05	17.11	66.22	-	-	P	H	
		17325	47.99	-20.21	68.2	53.87	38.67	21.51	66.06	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			11550	47.48	-26.52	74	57.54	39.05	17.11	66.22	-	-	P	V
			17325	47.62	-20.58	68.2	53.5	38.67	21.51	66.06	-	-	P	V
													V	
													V	
													V	
													V	
													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 HE80_Partial 484 (Band Edge @ 3m)

WIFI Ant. 9+8	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)
		5631.6	64.04	-4.16	68.2	49	33.04	11.59	29.59	102	320	P	H
		5686.4	80.52	-14.65	95.17	65.17	33.29	11.66	29.6	102	320	P	H
		5718.2	85.78	-24.52	110.3	70.22	33.47	11.7	29.61	102	320	P	H
		5722.8	85.96	-31.22	117.18	70.38	33.49	11.7	29.61	102	320	P	H
	*	5775	111.82	-	-	95.92	33.75	11.77	29.62	102	320	P	H
	*	5775	102.85	-	-	86.95	33.75	11.77	29.62	102	320	A	H
		5853	76.83	-38.53	115.36	60.51	34.11	11.84	29.63	102	320	P	H
		5861.6	78.32	-30.63	108.95	61.96	34.15	11.85	29.64	102	320	P	H
		5877.8	69.86	-33.26	103.12	53.43	34.21	11.86	29.64	102	320	P	H
		5932.6	58.27	-9.93	68.2	41.72	34.3	11.9	29.65	102	320	P	H
802.11ax													H
HE80													H
Partial													H
484/65		5627.8	63.99	-4.21	68.2	48.96	33.04	11.58	29.59	100	294	P	V
CH 155		5688.4	79.08	-17.56	96.64	63.71	33.31	11.66	29.6	100	294	P	V
5775MHz		5714.2	81.89	-27.29	109.18	66.35	33.46	11.69	29.61	100	294	P	V
		5723	87.08	-30.56	117.64	71.5	33.49	11.7	29.61	100	294	P	V
	*	5775	111.3	-	-	95.4	33.75	11.77	29.62	100	294	P	V
	*	5775	102.11	-	-	86.21	33.75	11.77	29.62	100	294	A	V
		5853	75.48	-39.88	115.36	59.16	34.11	11.84	29.63	100	294	P	V
		5868.8	75.88	-31.05	106.93	59.49	34.18	11.85	29.64	100	294	P	V
		5879.4	67.78	-34.15	101.93	51.34	34.22	11.86	29.64	100	294	P	V
		5925	58.59	-9.61	68.2	42.05	34.3	11.89	29.65	100	294	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



WiFi Ant. 9+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
802.11ax HE80 Partial 484/66 CH 155 5775MHz		5647.4	65.98	-2.22	68.2	50.96	33.01	11.61	29.6	100	319	P	H	
		5686.6	81.76	-13.56	95.32	66.41	33.29	11.66	29.6	100	319	P	H	
		5716.8	86.49	-23.42	109.91	70.93	33.47	11.7	29.61	100	319	P	H	
		5721.2	84.89	-28.65	113.54	69.32	33.48	11.7	29.61	100	319	P	H	
	*	5775	112.97	-	-	97.07	33.75	11.77	29.62	100	319	P	H	
	*	5775	102.24	-	-	86.34	33.75	11.77	29.62	100	319	A	H	
		5852.4	79.33	-37.4	116.73	63.01	34.11	11.84	29.63	100	319	P	H	
		5857.4	81.43	-28.7	110.13	65.09	34.13	11.84	29.63	100	319	P	H	
		5878	67.69	-35.28	102.97	51.26	34.21	11.86	29.64	100	319	P	H	
		5927.6	61.09	-7.11	68.2	44.54	34.3	11.9	29.65	100	319	P	H	
														H
														H
			5648.8	62.93	-5.27	68.2	47.92	33	11.61	29.6	107	300	P	V
			5678.8	79.43	-10.12	89.55	64.15	33.23	11.65	29.6	107	300	P	V
			5719	82.36	-28.16	110.52	66.79	33.48	11.7	29.61	107	300	P	V
			5723.8	81.41	-38.05	119.46	65.82	33.5	11.7	29.61	107	300	P	V
	*		5775	111.02	-	-	95.12	33.75	11.77	29.62	107	300	P	V
	*		5775	101.27	-	-	85.37	33.75	11.77	29.62	107	300	A	V
			5853	73.31	-42.05	115.36	56.99	34.11	11.84	29.63	107	300	P	V
			5859	77.59	-32.09	109.68	61.24	34.14	11.84	29.63	107	300	P	V
		5876.2	65.38	-38.93	104.31	48.96	34.2	11.86	29.64	107	300	P	V	
		5925.2	59.83	-8.37	68.2	43.29	34.3	11.89	29.65	107	300	P	V	
													V	
													V	
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 													



Emission below 1GHz

5GHz WIFI 802.11ax HE80 Full (LF @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
9+8		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
802.11ax HE80 Full LF		76.56	22.77	-17.23	40	40.71	13.05	1.3	32.29	-	-	P	H	
		96.93	26.72	-16.78	43.5	41.91	15.54	1.52	32.25	-	-	P	H	
		155.13	25.59	-17.91	43.5	39.03	16.95	1.9	32.29	-	-	P	H	
		431.58	24.07	-21.93	46	30.27	23.03	3.21	32.44	-	-	P	H	
		744.89	29.52	-16.48	46	29.61	28.1	4.24	32.43	-	-	P	H	
		958.29	33.76	-12.24	46	29.36	30.83	4.83	31.26	-	-	P	H	
														H
														H
														H
														H
														H
														H
			38.73	31.21	-8.79	40	42.57	20.15	0.73	32.24	-	-	P	V
			94.99	30.76	-12.74	43.5	46.32	15.2	1.5	32.26	-	-	P	V
			183.26	28.45	-15.05	43.5	43.75	14.9	2.12	32.32	-	-	P	V
			398.6	22.13	-23.87	46	29.47	22	3.06	32.4	-	-	P	V
			566.41	27.3	-18.7	46	30.21	26	3.7	32.61	-	-	P	V
			959.26	33.5	-12.5	46	29.03	30.88	4.84	31.25	-	-	P	V
														V
														V
													V	
													V	
													V	
													V	

Remark

- No other spurious found.
- All results are PASS against limit line.
- 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.



<Sample 2>

Band 4 - 5725~5850MHz

WIFI 802.11ax HE80_Full (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
9+8		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		5632.8	57.13	-11.07	68.2	42.1	33.03	11.59	29.59	233	305	P	H
		5693	62.49	-37.55	100.04	47.08	33.34	11.67	29.6	233	305	P	H
		5707.6	64.71	-42.62	107.33	49.21	33.43	11.68	29.61	233	305	P	H
		5721.4	66.04	-47.95	113.99	50.46	33.49	11.7	29.61	233	305	P	H
	*	5775	107.7	-	-	91.8	33.75	11.77	29.62	233	305	P	H
	*	5775	97.21	-	-	81.31	33.75	11.77	29.62	233	305	A	H
		5852.8	62.39	-53.43	115.82	46.07	34.11	11.84	29.63	233	305	P	H
		5859.4	63.06	-46.51	109.57	46.71	34.14	11.84	29.63	233	305	P	H
		5887.4	60.22	-35.77	95.99	43.74	34.25	11.87	29.64	233	305	P	H
		5928.8	55.61	-12.59	68.2	39.06	34.3	11.9	29.65	233	305	P	H
802.11ax													H
HE80 Full													H
CH 155		5621.2	53.96	-14.24	68.2	38.91	33.06	11.58	29.59	301	265	P	V
5775MHz		5698.4	57.56	-46.46	104.02	42.11	33.39	11.67	29.61	301	265	P	V
		5709.8	58.85	-49.1	107.95	43.33	33.44	11.69	29.61	301	265	P	V
		5722.4	59.77	-56.5	116.27	44.19	33.49	11.7	29.61	301	265	P	V
	*	5775	103.33	-	-	87.43	33.75	11.77	29.62	301	265	P	V
	*	5775	93.59	-	-	77.69	33.75	11.77	29.62	301	265	A	V
		5850	59.24	-62.96	122.2	42.93	34.1	11.84	29.63	301	265	P	V
		5860.8	60.35	-48.82	109.17	43.99	34.14	11.85	29.63	301	265	P	V
		5881	57.11	-43.63	100.74	40.67	34.22	11.86	29.64	301	265	P	V
		5941.6	55.27	-12.93	68.2	38.71	34.3	11.91	29.65	301	265	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)

WIFI Ant. 9+8	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE80 Full CH 155 5775MHz		11550	47.94	-26.06	74	58	39.05	17.11	66.22	-	-	P	H
		17325	46.87	-21.33	68.2	52.75	38.67	21.51	66.06	-	-	P	H
													H
													H
													H
													H
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													H
	802.11ax HE80 Full CH 155 5775MHz		11550	47.84	-26.16	74	57.9	39.05	17.11	66.22	-	-	P
		17325	46.9	-21.3	68.2	52.78	38.67	21.51	66.06	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. 												



<TXBF Mode>

<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.	
9+8		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
802.11ax HE20 Full CH 149 5745MHz		5639.4	56.18	-12.02	68.2	41.16	33.02	11.6	29.6	100	319	P	H	
		5698.4	70.37	-33.65	104.02	54.92	33.39	11.67	29.61	100	319	P	H	
		5716.4	79.97	-29.82	109.79	64.41	33.47	11.7	29.61	100	319	P	H	
		5724.8	83.12	-38.62	121.74	67.52	33.5	11.71	29.61	100	319	P	H	
	*	5745	115.83	-	-	100.13	33.58	11.73	29.61	100	319	P	H	
	*	5745	104.52	-	-	88.82	33.58	11.73	29.61	100	319	A	H	
														H
														H
			5617.2	54.07	-14.13	68.2	39.02	33.07	11.57	29.59	100	295	P	V
			5693	65.77	-34.27	100.04	50.36	33.34	11.67	29.6	100	295	P	V
			5715.4	75.3	-34.21	109.51	59.76	33.46	11.69	29.61	100	295	P	V
			5725	82.49	-39.71	122.2	66.89	33.5	11.71	29.61	100	295	P	V
	*		5745	111.72	-	-	96.02	33.58	11.73	29.61	100	295	P	V
	*		5745	102.67	-	-	86.97	33.58	11.73	29.61	100	295	A	V
													V	
													V	



WIFI Ant. 9+8	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)
		5639.6	55.01	-13.19	68.2	39.99	33.02	11.6	29.6	100	319	P	H
		5694.8	57.96	-43.41	101.37	42.54	33.36	11.67	29.61	100	319	P	H
		5717	62.22	-47.74	109.96	46.66	33.47	11.7	29.61	100	319	P	H
		5721.6	65.63	-48.82	114.45	50.05	33.49	11.7	29.61	100	319	P	H
	*	5785	115.03	-	-	99.06	33.81	11.78	29.62	100	319	P	H
	*	5785	104.49	-	-	88.52	33.81	11.78	29.62	100	319	A	H
		5853.2	62.11	-52.79	114.9	45.79	34.11	11.84	29.63	100	319	P	H
		5855.8	61.26	-49.32	110.58	44.93	34.12	11.84	29.63	100	319	P	H
		5886.4	57.3	-39.44	96.74	40.83	34.25	11.86	29.64	100	319	P	H
		5945.2	55.29	-12.91	68.2	38.73	34.3	11.91	29.65	100	319	P	H
802.11ax													H
HE20 Full													H
CH 157		5637	53.83	-14.37	68.2	38.79	33.03	11.6	29.59	100	298	P	V
5785MHz		5657.2	54.77	-18.78	73.55	39.69	33.06	11.62	29.6	100	298	P	V
		5714	58	-51.12	109.12	42.46	33.46	11.69	29.61	100	298	P	V
		5723.6	58.32	-60.69	119.01	42.74	33.49	11.7	29.61	100	298	P	V
	*	5785	112.63	-	-	96.66	33.81	11.78	29.62	100	298	P	V
	*	5785	102.23	-	-	86.26	33.81	11.78	29.62	100	298	A	V
		5851.8	59.06	-59.04	118.1	42.74	34.11	11.84	29.63	100	298	P	V
		5874.4	56.62	-48.75	105.37	40.2	34.2	11.86	29.64	100	298	P	V
		5883.6	55.81	-43	98.81	39.36	34.23	11.86	29.64	100	298	P	V
		5932	56.29	-11.91	68.2	39.74	34.3	11.9	29.65	100	298	P	V
													V
													V



WIFI Ant. 9+8	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	114.49	-	-	98.3	34	11.82	29.63	100	318	P	H	
	*	5825	105.11	-	-	88.92	34	11.82	29.63	100	318	A	H	
		5852	74.22	-43.42	117.64	57.9	34.11	11.84	29.63	100	318	P	H	
		5855	70.86	-39.94	110.8	54.53	34.12	11.84	29.63	100	318	P	H	
		5876.8	62.35	-41.51	103.86	45.92	34.21	11.86	29.64	100	318	P	H	
		5935.8	55.39	-12.81	68.2	38.84	34.3	11.9	29.65	100	318	P	H	
														H
														H
	*	5825	112.89	-	-	96.7	34	11.82	29.63	100	301	301	P	V
	*	5825	103.09	-	-	86.9	34	11.82	29.63	100	301	301	A	V
		5854.6	76.12	-35.59	111.71	59.79	34.12	11.84	29.63	100	301	301	P	V
		5855.6	75.18	-35.45	110.63	58.85	34.12	11.84	29.63	100	301	301	P	V
		5876.4	64.34	-39.82	104.16	47.91	34.21	11.86	29.64	100	301	301	P	V
		5946.2	55.67	-12.53	68.2	39.11	34.3	11.91	29.65	100	301	301	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. 9+8	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	47.92	-26.08	74	57.89	39.2	17.05	66.22	-	-	P	H	
		17235	47.9	-20.3	68.2	54.12	38.47	21.47	66.16	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			11490	51.22	-22.78	74	61.19	39.2	17.05	66.22	300	360	P	V
			11490	40.1	-13.9	54	50.07	39.2	17.05	66.22	300	360	A	V
			17235	47.71	-20.49	68.2	53.93	38.47	21.47	66.16	-	-	P	V
														V
														V
														V
														V
													V	
													V	
													V	
													V	
													V	



WIFI Ant. 9+8	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		11650	47.83	-26.17	74	58.06	38.8	17.19	66.22	-	-	P	H	
		17475	47.99	-20.21	68.2	53.35	38.97	21.57	65.9	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
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													H	
													H	
													H	
													H	
			11650	47.83	-26.17	74	58.06	38.8	17.19	66.22	-	-	P	V
			17475	47.93	-20.27	68.2	53.29	38.97	21.57	65.9	-	-	P	V
													V	
													V	
													V	
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													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 HE40_Full (Band Edge @ 3m)

WIFI Ant. 9+8	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)
		5641.4	62.99	-5.21	68.2	47.97	33.02	11.6	29.6	100	318	P	H
		5699.6	70.74	-34.17	104.91	55.28	33.4	11.67	29.61	100	318	P	H
		5718	78.8	-31.44	110.24	63.24	33.47	11.7	29.61	100	318	P	H
		5722.6	80.82	-35.91	116.73	65.24	33.49	11.7	29.61	100	318	P	H
	*	5755	111.98	-	-	96.23	33.63	11.74	29.62	100	318	P	H
	*	5755	101.44	-	-	85.69	33.63	11.74	29.62	100	318	A	H
		5850.8	61.32	-59.06	120.38	45.01	34.1	11.84	29.63	100	318	P	H
		5859	61.49	-48.19	109.68	45.14	34.14	11.84	29.63	100	318	P	H
		5881.4	58.93	-41.52	100.45	42.48	34.23	11.86	29.64	100	318	P	H
		5929.8	57.03	-11.17	68.2	40.48	34.3	11.9	29.65	100	318	P	H
802.11ax													H
HE40 Full													H
CH 151		5647.4	56.82	-11.38	68.2	41.8	33.01	11.61	29.6	100	294	P	V
5755MHz		5694.2	65.45	-35.47	100.92	50.03	33.35	11.67	29.6	100	294	P	V
		5717.8	74.08	-36.1	110.18	58.52	33.47	11.7	29.61	100	294	P	V
		5724	76.83	-43.09	119.92	61.24	33.5	11.7	29.61	100	294	P	V
	*	5755	110.43	-	-	94.68	33.63	11.74	29.62	100	294	P	V
	*	5755	99.45	-	-	83.7	33.63	11.74	29.62	100	294	A	V
		5853.6	58.07	-55.92	113.99	41.75	34.11	11.84	29.63	100	294	P	V
		5867.8	58.99	-48.22	107.21	42.61	34.17	11.85	29.64	100	294	P	V
		5904.2	59.54	-24.01	83.55	43	34.3	11.88	29.64	100	294	P	V
		5933	55.68	-12.52	68.2	39.13	34.3	11.9	29.65	100	294	P	V
													V
													V



WIFI Ant. 9+8	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)
		5634.8	59.66	-8.54	68.2	44.63	33.03	11.59	29.59	100	318	P	H
		5681.2	61.32	-30.01	91.33	46.02	33.25	11.65	29.6	100	318	P	H
		5710	64.5	-43.5	108	48.98	33.44	11.69	29.61	100	318	P	H
		5724.6	65.76	-55.53	121.29	50.16	33.5	11.71	29.61	100	318	P	H
	*	5795	111.87	-	-	95.83	33.87	11.79	29.62	100	318	P	H
	*	5795	101.25	-	-	85.21	33.87	11.79	29.62	100	318	A	H
		5855	63.86	-46.94	110.8	47.53	34.12	11.84	29.63	100	318	P	H
		5855	63.86	-46.94	110.8	47.53	34.12	11.84	29.63	100	318	P	H
		5879.2	61.21	-40.87	102.08	44.77	34.22	11.86	29.64	100	318	P	H
		5933.2	58.05	-10.15	68.2	41.5	34.3	11.9	29.65	100	318	P	H
802.11ax													H
HE40 Full													H
CH 159		5642	55.01	-13.19	68.2	39.99	33.02	11.6	29.6	100	300	P	V
5795MHz		5699.4	59.35	-45.41	104.76	43.89	33.4	11.67	29.61	100	300	P	V
		5719.8	59.51	-51.23	110.74	43.94	33.48	11.7	29.61	100	300	P	V
		5724.6	62.03	-59.26	121.29	46.43	33.5	11.71	29.61	100	300	P	V
	*	5795	109.16	-	-	93.12	33.87	11.79	29.62	100	300	P	V
	*	5795	99.35	-	-	83.31	33.87	11.79	29.62	100	300	A	V
		5851.2	63.73	-55.73	119.46	47.42	34.1	11.84	29.63	100	300	P	V
		5860.2	62.93	-46.41	109.34	46.57	34.14	11.85	29.63	100	300	P	V
		5884.2	59.18	-39.19	98.37	42.72	34.24	11.86	29.64	100	300	P	V
		5933.2	56.17	-12.03	68.2	39.62	34.3	11.9	29.65	100	300	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)

WIFI Ant. 9+8	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		11510	47.44	-26.56	74	57.42	39.17	17.07	66.22	-	-	P	H
		17265	47.97	-20.23	68.2	54.09	38.53	21.48	66.13	-	-	P	H
													H
													H
													H
													H
													H
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													H
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													H
													H
													H
			11510	47.75	-26.25	74	57.73	39.17	17.07	66.22	-	-	P
		17265	48.1	-20.1	68.2	54.22	38.53	21.48	66.13	-	-	P	V
													V
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WIFI Ant. 9+8	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		11590	47.53	-26.47	74	57.68	38.93	17.14	66.22	-	-	P	H	
		17385	47.92	-20.28	68.2	53.53	38.85	21.54	66	-	-	P	H	
													H	
													H	
													H	
													H	
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													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			11590	47.52	-26.48	74	57.67	38.93	17.14	66.22	-	-	P	V
			17385	47.97	-20.23	68.2	53.58	38.85	21.54	66	-	-	P	V
													V	
													V	
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													V	
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Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 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 HE80_Full (Band Edge @ 3m)

WIFI Ant. 9+8	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)
		5645.8	66.78	-1.42	68.2	51.76	33.01	11.61	29.6	100	318	P	H
		5684	71.17	-22.23	93.4	55.85	33.27	11.65	29.6	100	318	P	H
		5719	73.55	-36.97	110.52	57.98	33.48	11.7	29.61	100	318	P	H
		5720.4	73.28	-38.43	111.71	57.71	33.48	11.7	29.61	100	318	P	H
	*	5775	107.02	-	-	91.12	33.75	11.77	29.62	100	318	P	H
	*	5775	96.81	-	-	80.91	33.75	11.77	29.62	100	318	A	H
		5852.6	67.8	-48.47	116.27	51.48	34.11	11.84	29.63	100	318	P	H
		5860	69.52	-39.88	109.4	53.16	34.14	11.85	29.63	100	318	P	H
		5884	63.75	-34.77	98.52	47.29	34.24	11.86	29.64	100	318	P	H
		5925.6	59.11	-9.09	68.2	42.57	34.3	11.89	29.65	100	318	P	H
802.11ax													H
HE80 Full													H
CH 155		5649.8	61.06	-7.14	68.2	46.05	33	11.61	29.6	100	296	P	V
5775MHz		5697.4	68.37	-34.91	103.28	52.93	33.38	11.67	29.61	100	296	P	V
		5717.8	70.48	-39.7	110.18	54.92	33.47	11.7	29.61	100	296	P	V
		5724.2	70.21	-50.17	120.38	54.61	33.5	11.71	29.61	100	296	P	V
	*	5775	105.73	-	-	89.83	33.75	11.77	29.62	100	296	P	V
	*	5775	95.82	-	-	79.92	33.75	11.77	29.62	100	296	A	V
		5854.8	63.38	-47.88	111.26	47.05	34.12	11.84	29.63	100	296	P	V
		5855	63.14	-47.66	110.8	46.81	34.12	11.84	29.63	100	296	P	V
		5882.4	61.37	-38.33	99.7	44.92	34.23	11.86	29.64	100	296	P	V
		5942.2	57.92	-10.28	68.2	41.36	34.3	11.91	29.65	100	296	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)

WIFI Ant. 9+8	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		11550	47.94	-26.06	74	58	39.05	17.11	66.22	-	-	P	H	
		17325	47.98	-20.22	68.2	53.86	38.67	21.51	66.06	-	-	P	H	
													H	
													H	
													H	
													H	
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													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			11550	47.27	-26.73	74	57.33	39.05	17.11	66.22	-	-	P	V
			17325	47.27	-20.93	68.2	53.15	38.67	21.51	66.06	-	-	P	V
													V	
													V	
													V	
													V	
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													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

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 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.	
9+8		(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. 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) – 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 :	Andy Yang, Karl Hou and Steven Wu	Temperature :	18~23°C
		Relative Humidity :	50~65%

<CDD Mode>

<Sample 1>

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

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
9+8	Horizontal	Fundamental
Peak	<p>Site : 03CH16-HY Condition : PEAK_8E(B4)_16-24 3m 91200_1522_220310 HORIZONTAL -RBW:1000.000KHz VSW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522_220310 HORIZONTAL -RBW:1000.000KHz VSW:3000.000KHz SWT:Auto</p>

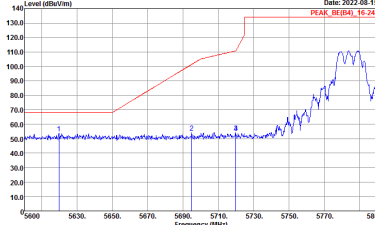
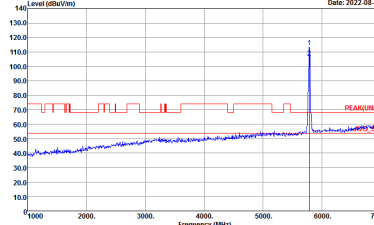
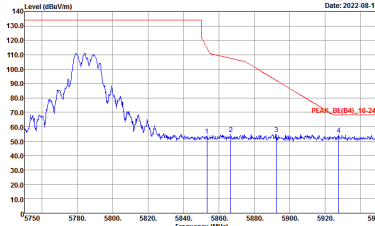


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
9+8	Vertical	Fundamental
Peak	<p>Site : 03CH16-14Y Condition : PEAK_85(B4)_16-24 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	<p>Site : 03CH16-14Y Condition : PEAK(UNIT) 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>

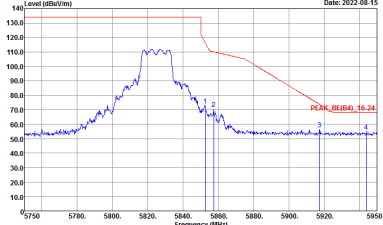
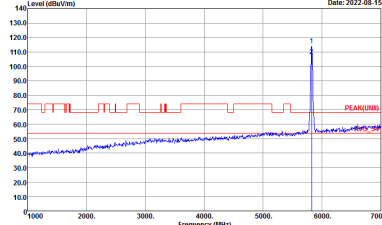


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
9+8	Horizontal	Fundamental
Peak	<p>Date: 2022-08-15 PEAK_BE(B4)_16-24</p> <p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Date: 2022-08-15 PEAK(B4)</p> <p>Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Date: 2022-08-15 PEAK_BE(B4)_16-24</p> <p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank

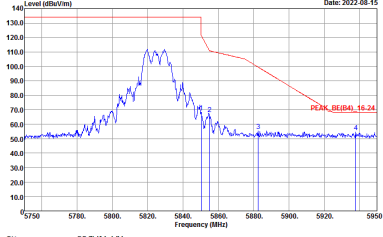
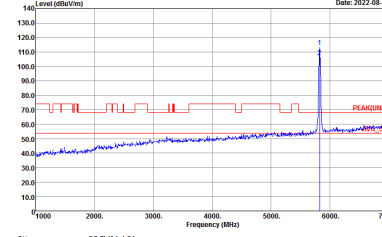


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
9+8	Vertical	Fundamental
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



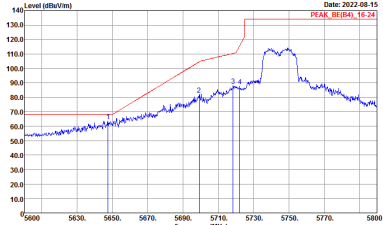
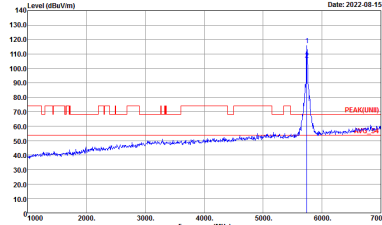
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
9+8	Horizontal	Fundamental
Peak	 <p>Site : 03CH16-11Y Condition : PEAK_85(B4)_16-24 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
9+8	Vertical	Fundamental
Peak	 <p>Site : 03CH16-11Y Condition : PEAK_85(B4)_16-24 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



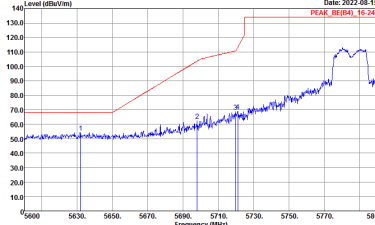
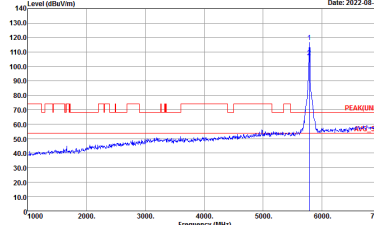
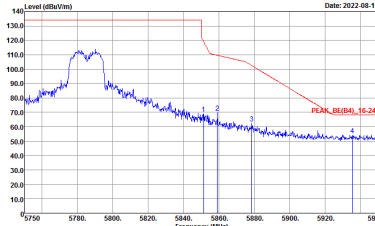
Band 4 5725~5850MHz
WIFI 802.11ax HE20 Full (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
9+8	Horizontal	Fundamental
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
9+8	Vertical	Fundamental
Peak	<p>Site : 03CH16-11Y Condition : PEAK_85(B4)_16-24 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>

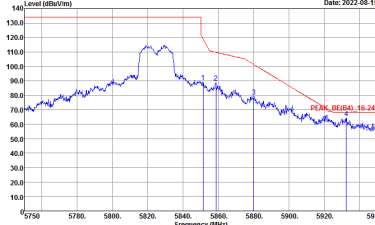
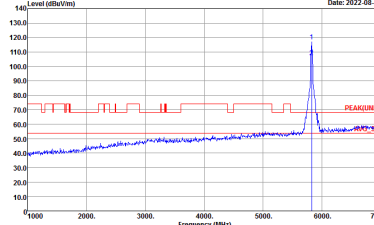


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
9+8	Horizontal	Fundamental
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank


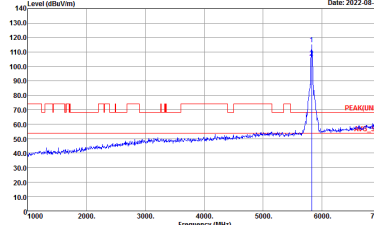


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
9+8	Vertical	Fundamental
Peak	<p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	<p>Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>
Peak	<p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
9+8	Horizontal	Fundamental
Peak	 <p>Site : 03CH16-11Y Condition : PEAK_85(16)_16-24 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



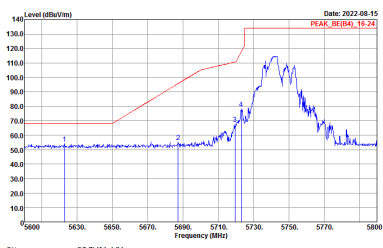
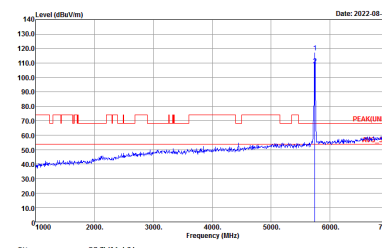
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
9+8	Vertical	Fundamental
Peak	 <p>Site : 03CH16-11Y Condition : PEAK_85(84)_16-24 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



Band 4 5725~5850MHz
WIFI 802.11ax HE20 Partial 106 (Band Edge @ 3m)

Table with 2 columns: Horizontal and Fundamental. It contains two spectral plots showing Level (dBm/10m) vs Frequency (MHz) with various annotations like 'PEAK_BE(84)_16-22' and 'PEAK(UNIT)'. Includes site and condition details for each plot.



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/53 CH149 5745MHz	
9+8	Vertical	Fundamental
Peak	 <p>Site : 03CH16-11Y Condition : PEAK_85(B4)_16-24 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	 <p>Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>



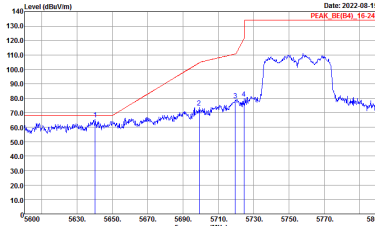
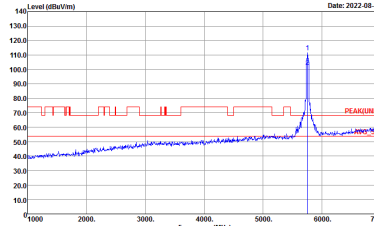
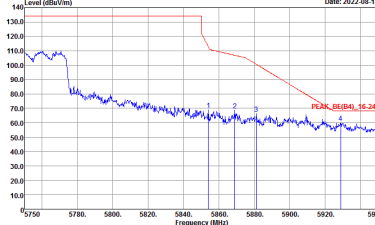
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/54 CH165 5825MHz	
9+8	Horizontal	Fundamental
Peak	<p>Site : 03CH16-11Y Condition : PEAK_85(B4)_16-24 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/54 CH165 5825MHz	
9+8	Vertical	Fundamental
Peak	<p>Site : 03CH16-11Y Condition : PEAK_85(B4)_16-24 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



Band 4 5725~5850MHz
WIFI 802.11ax HE40 Full (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
9+8	Horizontal	Fundamental
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank