FCC RADIO TEST REPORT

FCC ID	:	**PU5-TP00139AM**
Equipment	:	**Notebook Computer**
Brand Name	:	**Lenovo**
Model Name	:	**TP00139A**
Applicant	:	**Wistron Corporation** **21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist, New Taipei City 221,Taiwan**
Manufacturer	:	**Lenovo PC HK Limited.** **23/F, Lincoln House, Taikoo Place, 979 King's Road, Quarry Bay, Hong Kong, China**
Standard	:	**FCC Part 15 Subpart E §15.407**

Equipment: Murata LBEE5QG2CX tested inside of Lenovo Notebook Computer.

The product was received on Dec. 16, 2021 and testing was performed from Feb. 18, 2022 to Feb. 25, 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

Table of Contents

History of this test report

Report No.	Version	Description	Issue Date
FR1D1645E	01	Initial issue of report	Mar. 01, 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	18.13 dB under the limit at 5938.520 MHz
3.5	15.207	AC Conducted Emission	Pass	13.76 dB under the limit at 0.791 MHz
3.6	15.203 15.407(a)	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 this 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: William Chen

Report Producer: Amy Chen

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Notebook Computer
Brand Name	Lenovo
Model Name	TP00139A
FCC ID	PU5-TP00139AM
Sample 1	EUT with INPAQ Antenna
Sample 2	EUT with WNC Antenna
EUT supports Radios application	WCDMA/HSPA/LTE/5G NR/GNSS WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80/VHT160 WLAN 11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer.
2. Equipment: Murata LBEE5QG2CX tested inside of Lenovo Notebook Computer.

Antenna Information			
Antenna 1	**Manufacturer**	INPAQ	
	Antenna Type	PIFA Antenna	PIFA Antenna
	Part number	025.901YK.0011	025.901YL.0011
	Peak gain (dBi)	Main Antenna :	Aux. Antenna :
		WLAN (5G B4): 2.94	WLAN (5G B4): 2.97
Antenna 2	**Manufacturer**	WNC	
	Antenna Type	PIFA Antenna	PIFA Antenna
	Part number	025.901YK.0001	025.901YL.0001
	Peak gain (dBi)	Main Antenna :	Aux. Antenna :
		WLAN (5G B4): 2.91	WLAN (5G B4): 3.13

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

1.2 Product Specification of Equipment Under Test

<table>
<tr><th colspan="2">Product Specification is subject to this standard</th></tr>
<tr><td>Tx / Rx Channel Frequency Range</td><td>5745 MHz ~ 5825 MHz</td></tr>
<tr><td>Maximum Output Power to Antenna</td><td>MIMO <Chain 1+2>
802.11a: 15.76 dBm / 0.0377 W
802.11n HT20: 15.71 dBm / 0.0372 W
802.11n HT40: 15.52 dBm / 0.0356 W
802.11ac VHT20: 15.71 dBm / 0.0372 W
802.11ac VHT40: 15.52 dBm / 0.0356 W
802.11ac VHT80: 15.76 dBm / 0.0377 W
802.11ax HE20: 15.81 dBm / 0.0381 W
802.11ax HE40: 15.76 dBm / 0.0377 W
802.11ax HE80: 15.86 dBm / 0.0385 W</td></tr>
<tr><td>99% Occupied Bandwidth</td><td>MIMO <Chain 1>
802.11a: 16.53 MHz
802.11ax HE20: 18.93 MHz
802.11ax HE40: 37.96 MHz
802.11ax HE80: 77.08 MHz
MIMO <Chain 2>
802.11a: 16.48 MHz
802.11ax HE20: 18.88 MHz
802.11ax HE40: 37.86 MHz
802.11ax HE80: 77.08 MHz</td></tr>
<tr><td>Type of Modulation</td><td>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)</td></tr>
<tr><td>Antenna Function Description</td><td><table><tr><td></td><td>Chain 1</td><td>Chain 2</td></tr><tr><td>802.11a/n/ac/ax MIMO</td><td>V</td><td>V</td></tr></table></td></tr>
</table>

Remark:

1. For other wireless features of this EUT, test report will be issued separately
2. MIMO Chain 1+2 is a calculated result from sum of the power MIMO Chain 1 and MIMO Chain 2.

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
Test Site No.	**Sporton Site No.**
	TH02-HY (TAF Code: 1190)
Remark	The Conducted test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010,
Test Site No.	**Sporton Site No.**
	03CH15-HY, CO07-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.

2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

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

2.1 Carrier Frequency and Channel

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

Note:

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

2.2 Test Mode

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 CDD mode is chosen as worst case configuration for all test cases due to higher power than SISO mode.

The 802.11n/ac mode has no higher power and PSD than 802.11ax mode, thus the 802.11ax mode is chosen as main test configuration, and the 802.11n/ac mode is verified the power.

The final test modes consider the modulation and the worst data rates as shown in the table below.

MIMO Mode

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

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

Remark:
1. For Radiated Test Cases, the tests were performed with Adapter 2.
2. Data Link with USB HD means data application transferred mode between EUT and USB HD.

<Sample 1>

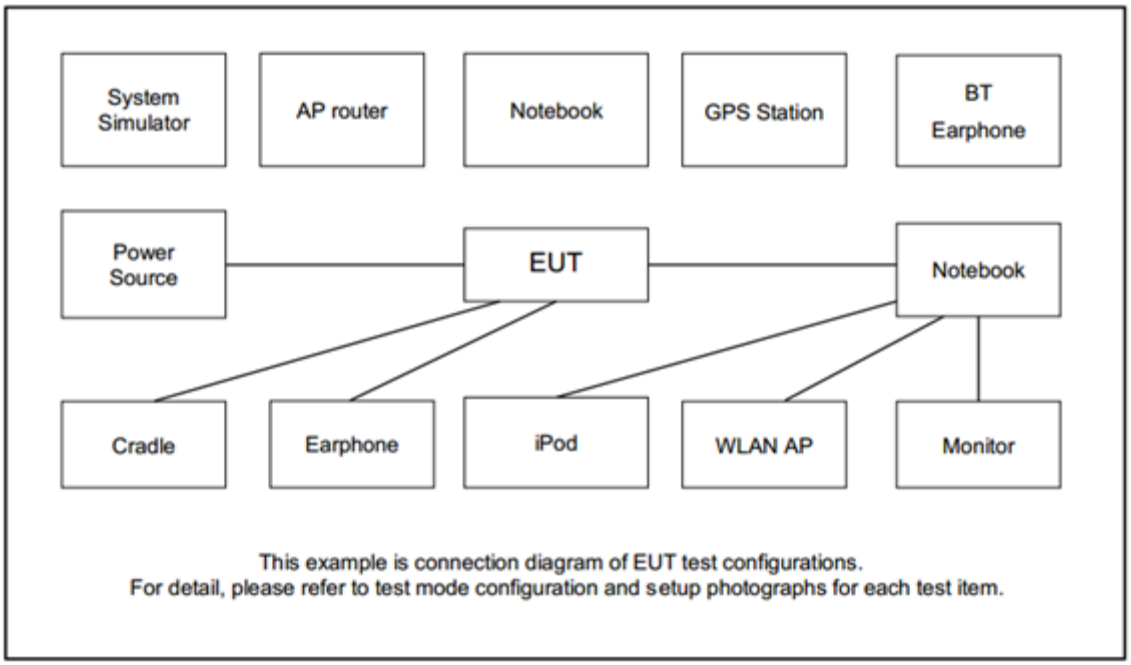
Ch. #		Band IV：5725-5850 MHz
		802.11ax HE80
L	Low	-
M	Middle	155
H	High	-

<Sample 2>

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	-

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

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY700A2029	N/A	N/A
2.	WLAN AP	ASUS	GT-AXE11000	MSQ-RTAXJF00	N/A	Unshielded, 1.8m
3.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
4.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	USB HD	WD	WDBGPU0010BBL	FCC DoC	Shielded, 1.0m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “QRCT v4.0.00195.0” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

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

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 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.

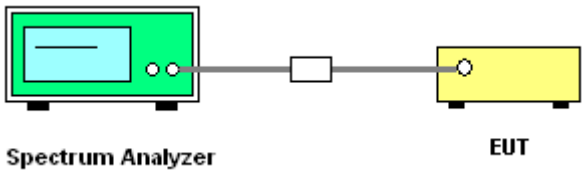
3.1.2 Measuring Instruments

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 ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

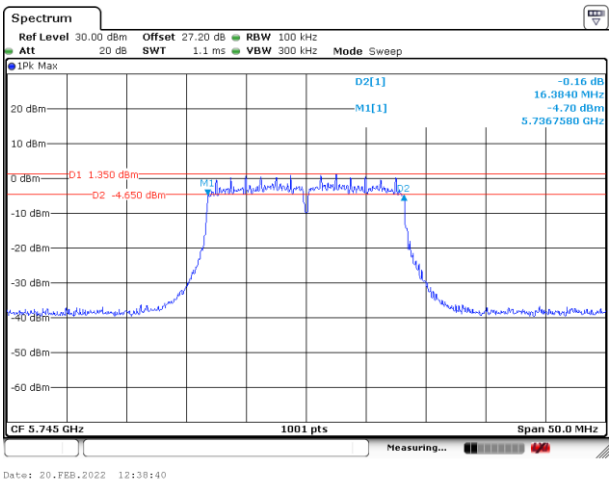
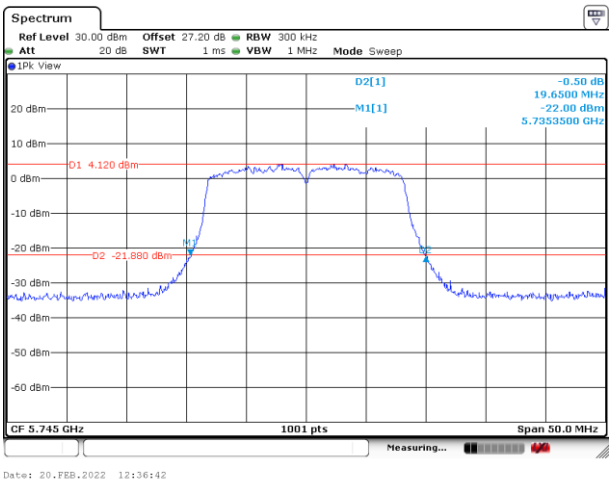
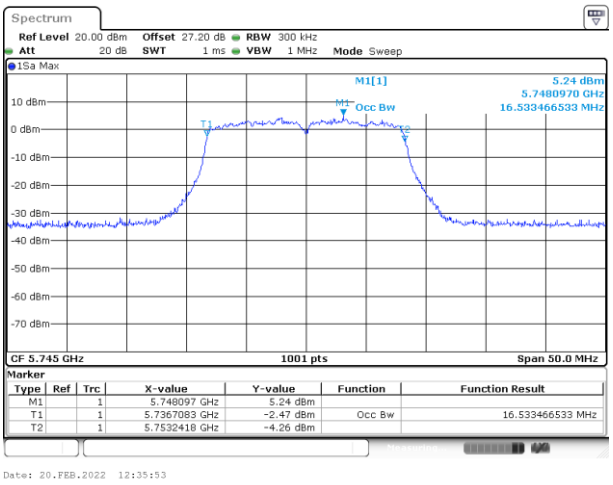
3.1.4 Test Setup



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

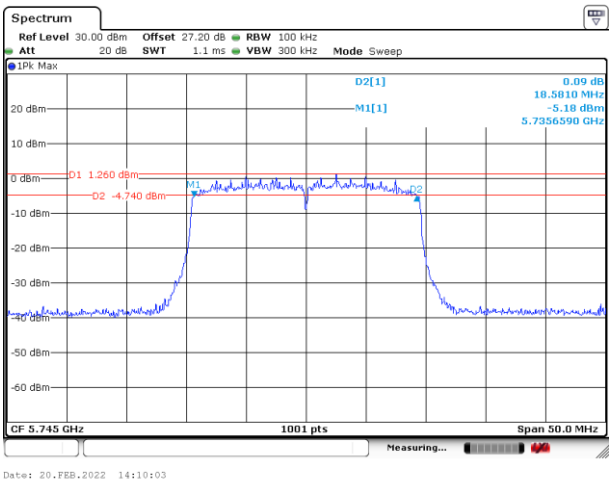
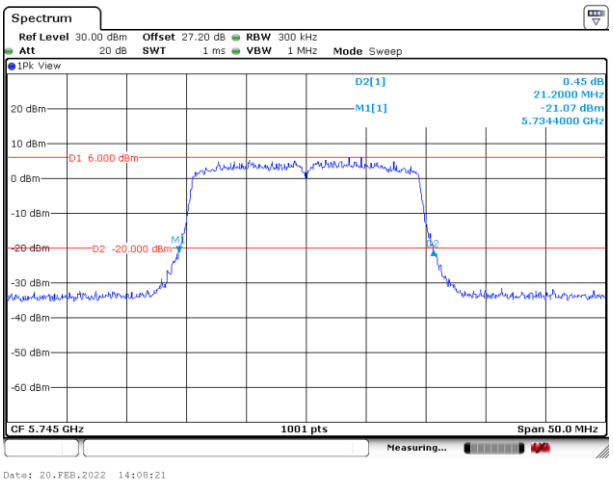
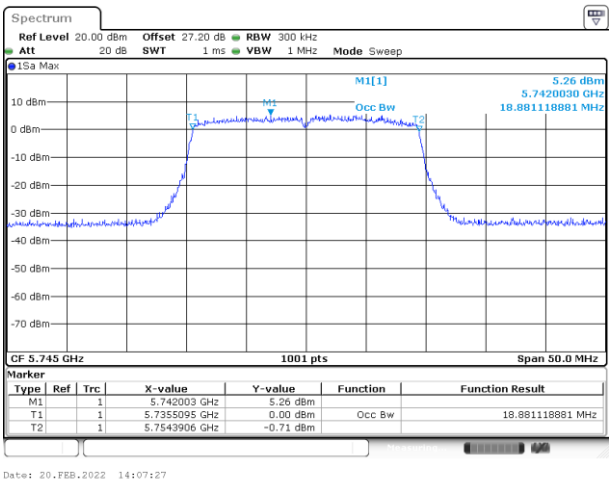
Please refer to Appendix A.

<802.11a>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**NA**
	

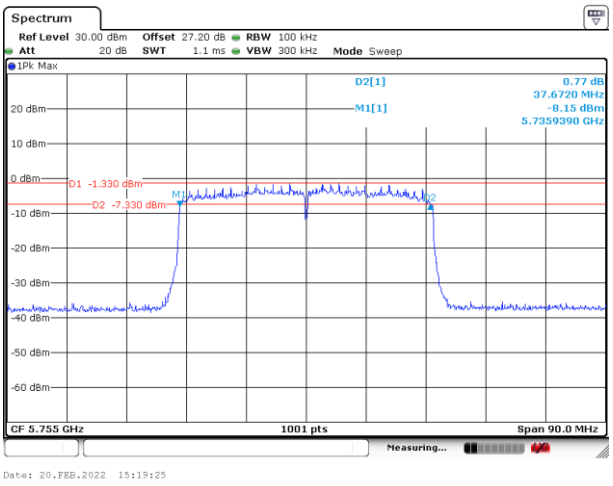
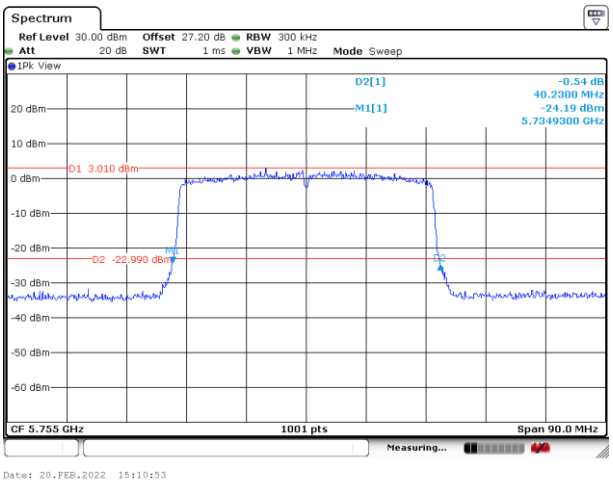
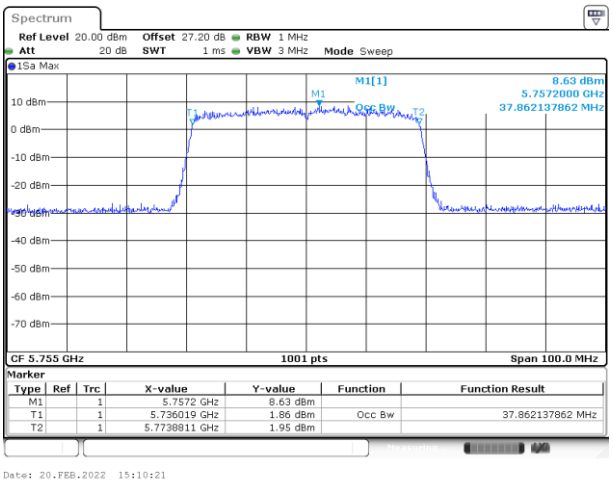
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<802.11ax HE20>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**NA**
	

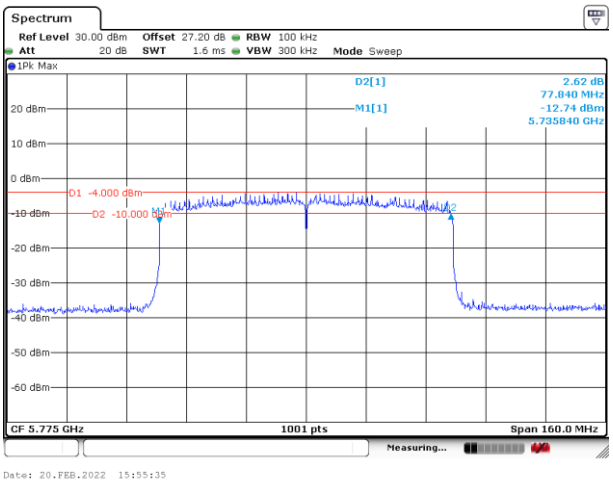
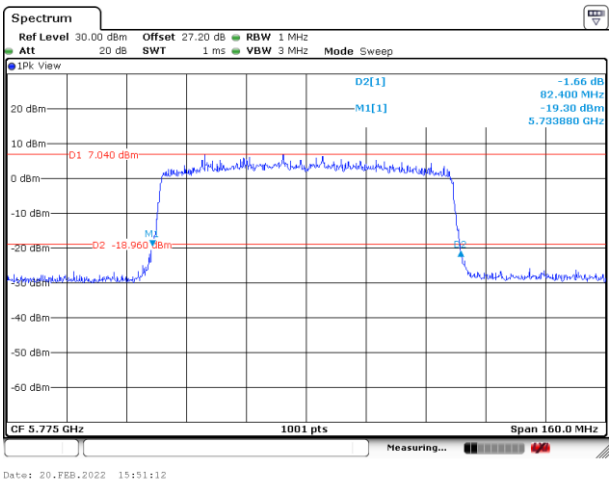
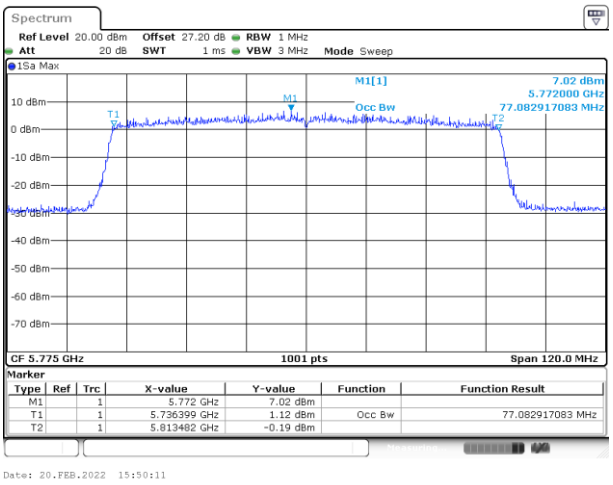
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<802.11ax HE40>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**NA**
	

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

<802.11ax HE80>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**NA**
	

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

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

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

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

3.2.2 Measuring Instruments

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

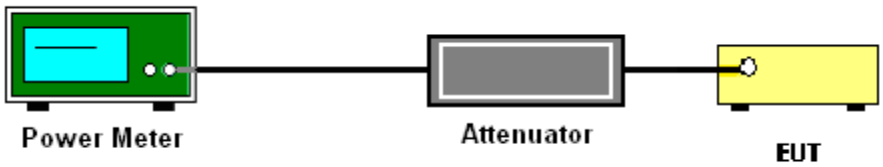
3.2.3 Test Procedures

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

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

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

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

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

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

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

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

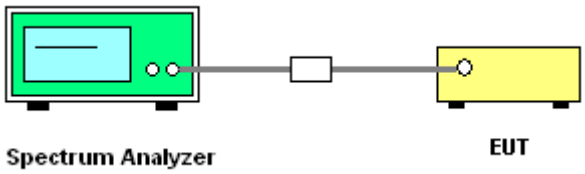
 # Method SA-3 #

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

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Add 10 log (500 kHz/RBW) to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement
- Sweep time ≤ (number of points in sweep) × T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
  Detector = power averaging (rms).
- Trace mode = max hold.
- Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

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

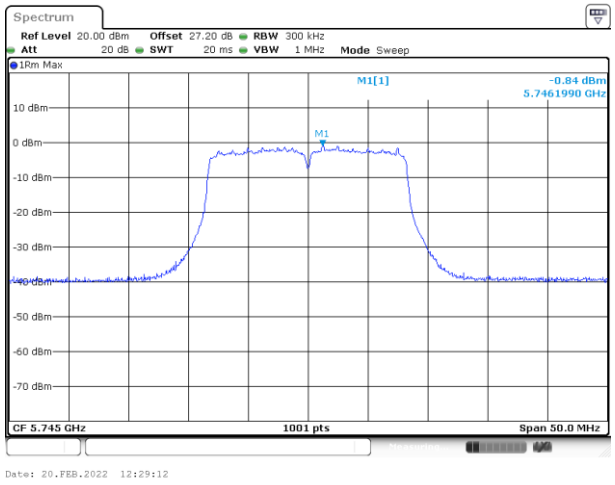
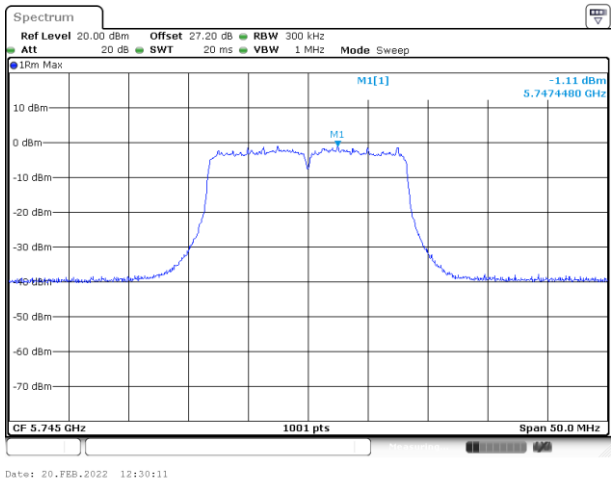
3.3.4 Test Setup



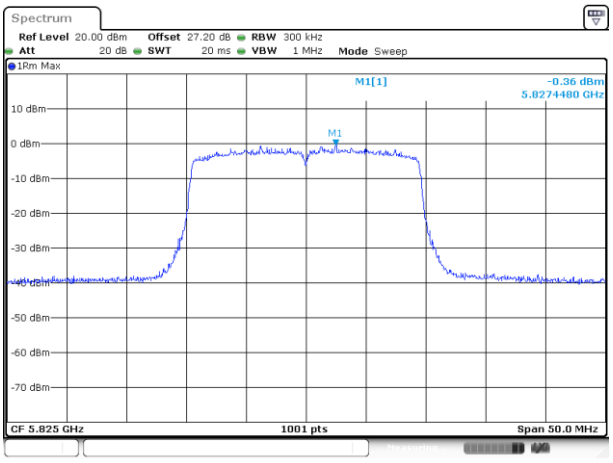
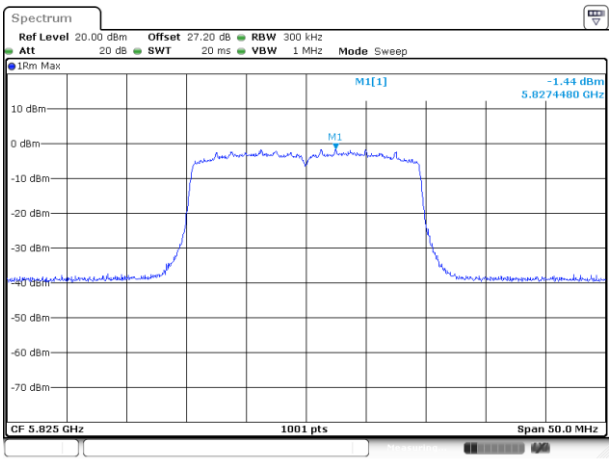
3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

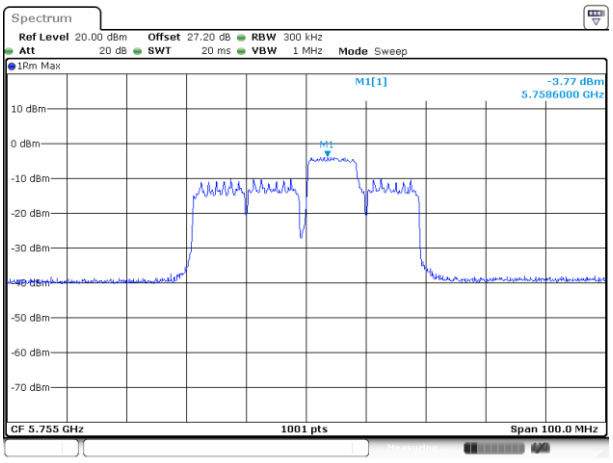
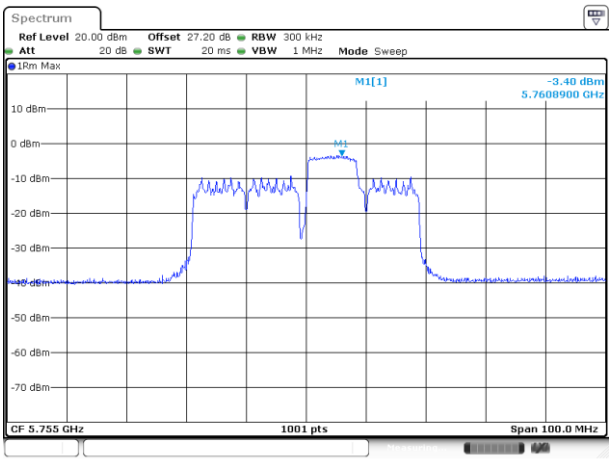
<802.11a>

Maximum Power Density Plot (dBm/MHz)	
MIMO Ant. 1	**MIMO Ant. 2**
	

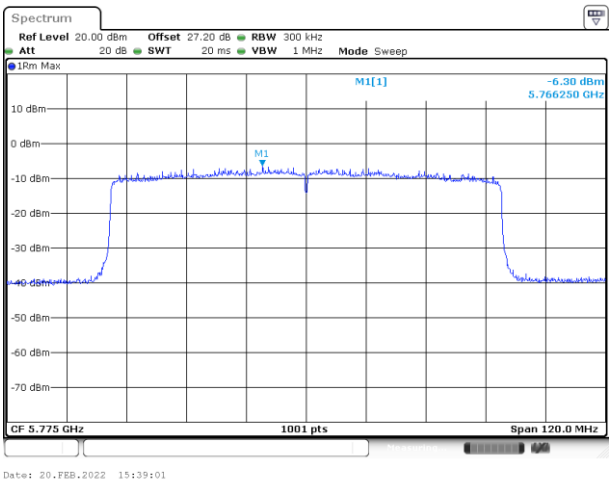
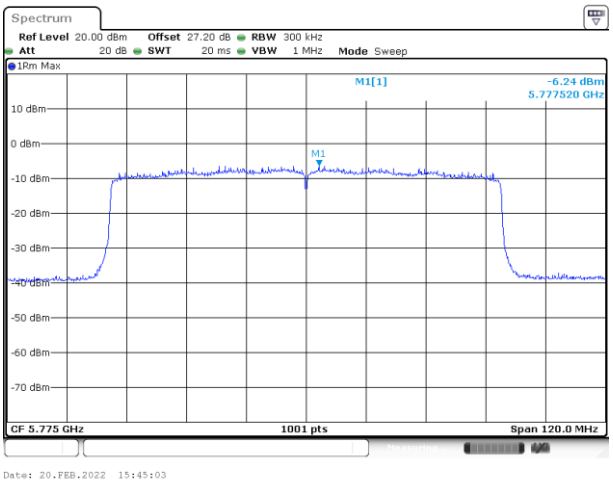
<802.11ax HE20>

Maximum Power Density Plot (dBm/MHz)	
MIMO Ant. 1	**MIMO Ant. 2**
	

<802.11ax HE40>

Maximum Power Density Plot (dBm/MHz)	
MIMO Ant. 1	**MIMO Ant. 2**
	

<802.11ax HE80>

Maximum Power Density Plot (dBm/MHz)	
MIMO Ant. 1	**MIMO Ant. 2**
	

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.

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

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

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

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

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

3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000 MHz

   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

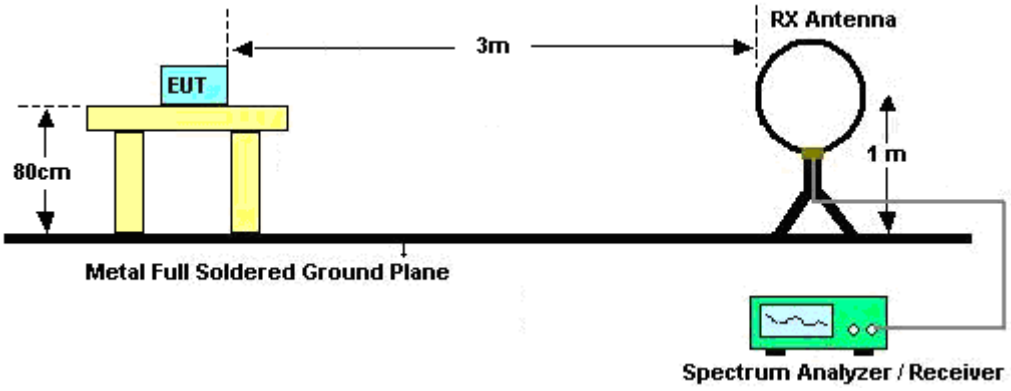
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT is set 3 meters away from the receiving antenna which is mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT is arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.

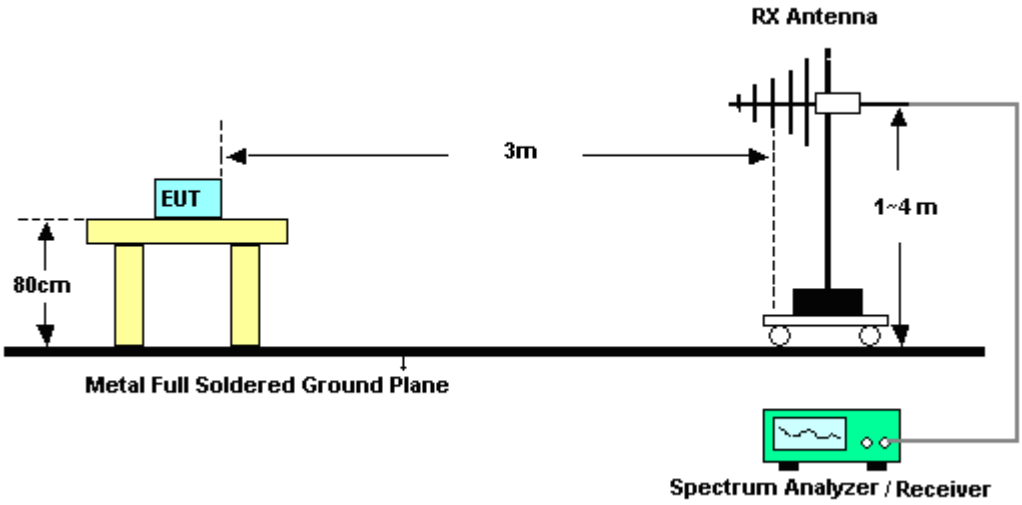
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as "-"..
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies.
   When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".

3.4.4 Test Setup

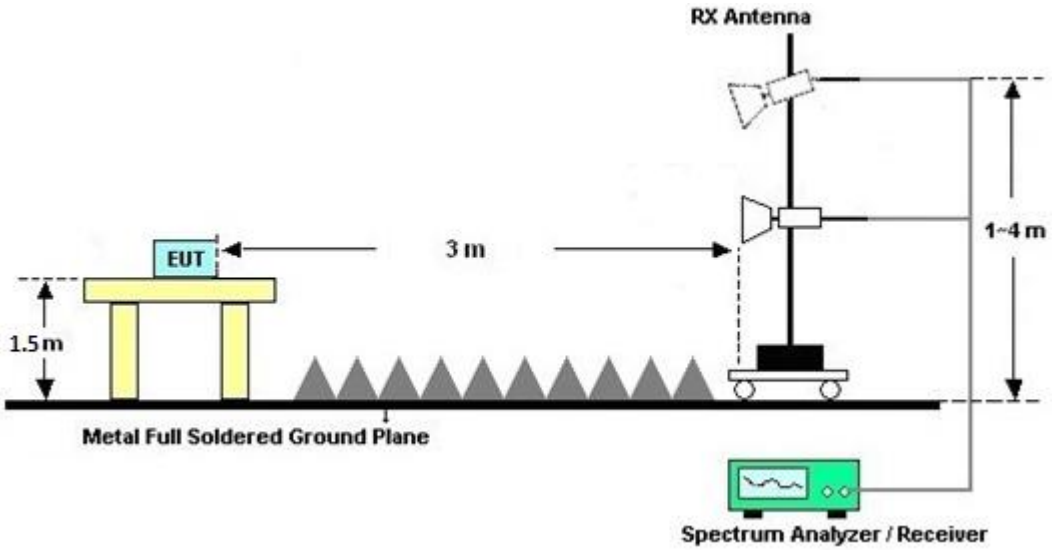
For radiated emissions below 30MHz



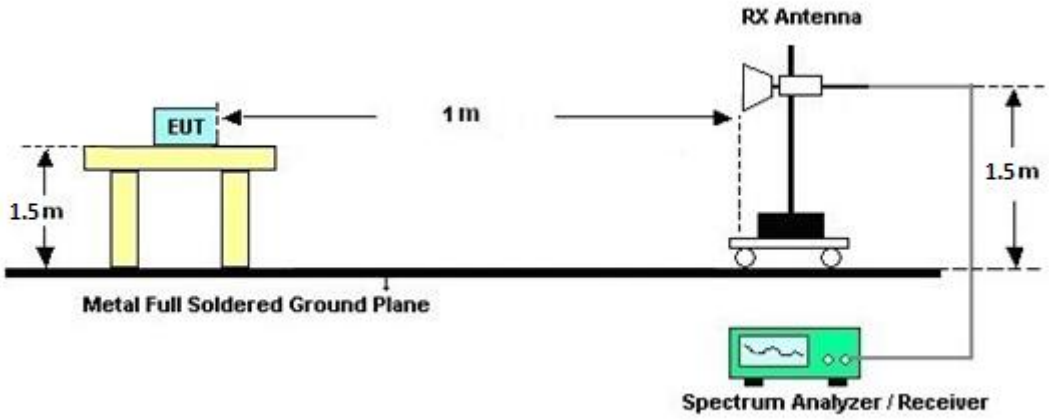
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.4.5 Test Results of Radiated 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 (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

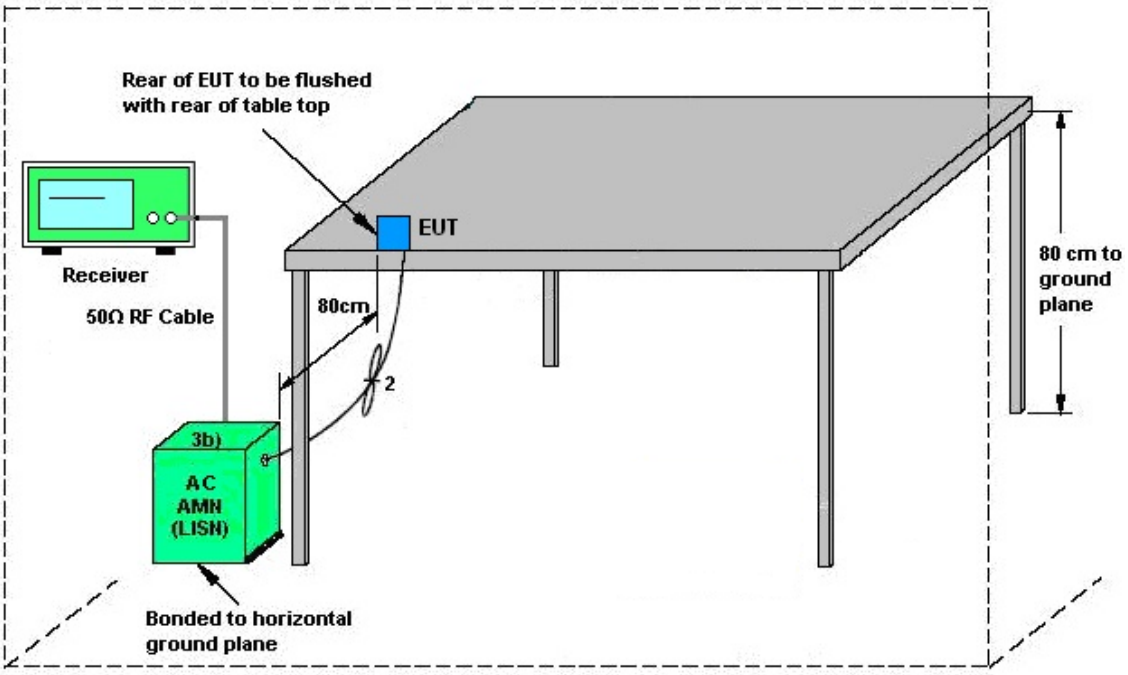
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

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

3.5.4 Test Setup



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

3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Antenna Requirements

3.6.1 Standard Applicable

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

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.6.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

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

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log(N_{ANT}/N_{SS}=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

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

<CDD Modes>

	Ant. 1 (dBi)	Ant. 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
Band IV	3.13	2.91	3.13	6.03	0.00	0.03

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	TR-32	HE17XB2468	N/A	Mar. 09, 2021	Feb. 18, 2022~ Feb. 23, 2022	Mar. 08, 2022	Conducted (TH02-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 10 (NO:131))	10MHz~6GHz	Dec. 16, 2021	Feb. 18, 2022~ Feb. 23, 2022	Dec. 15, 2022	Conducted (TH02-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 30, 2021	Feb. 18, 2022~ Feb. 23, 2022	Aug. 29, 2022	Conducted (TH02-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302 (Box9)	N/A	Mar. 17, 2021	Feb. 18, 2022~ Feb. 23, 2022	Mar. 16, 2022	Conducted (TH02-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 09, 2021	Feb. 23, 2022~ Feb. 25, 2022	Sep. 08, 2022	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL6111D&00 800N1D01N-0 6	40103 & 07	30MHz to 1GHz	Apr. 28, 2021	Feb. 23, 2022~ Feb. 25, 2022	Apr. 27, 2022	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 30, 2021	Feb. 23, 2022~ Feb. 25, 2022	Dec. 29, 2022	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-01620	1GHz~18GHz	Oct. 25, 2021	Feb. 23, 2022~ Feb. 25, 2022	Oct. 24, 2022	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917025 1	18GHz~40GHz	Nov. 30, 2021	Feb. 23, 2022~ Feb. 25, 2022	Nov. 29, 2022	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-30 3	171000180000 55006	1GHz~18GHz	May 06, 2021	Feb. 23, 2022~ Feb. 25, 2022	May 05, 2022	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 19, 2021	Feb. 23, 2022~ Feb. 25, 2022	Aug. 18, 2022	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060801	18-40GHz	Jun. 22, 2021	Feb. 23, 2022~ Feb. 25, 2022	Jun. 21, 2022	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Oct. 21, 2021	Feb. 23, 2022~ Feb. 25, 2022	Oct. 20, 2022	Radiation (03CH15-HY
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	May 07, 2021	Feb. 23, 2022~ Feb. 25, 2022	May 06, 2022	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Feb. 23, 2022~ Feb. 25, 2022	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Feb. 23, 2022~ Feb. 25, 2022	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24(k5)	RK-000451	N/A	N/A	Feb. 23, 2022~ Feb. 25, 2022	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY36980/4, MY9838/4PE, 508405/2E	30MHz~18G	Nov. 15, 2021	Feb. 23, 2022~ Feb. 25, 2022	Nov. 14, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2,804 012/2	30MHz-40GHz	Jan. 04, 2022	Feb. 23, 2022~ Feb. 25, 2022	Jan. 03, 2023	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 11, 2021	Feb. 23, 2022~ Feb. 25, 2022	Mar. 10, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WLJ4-1000-15 30-6000-40ST	SN4	1.53GHz Low Pass Filter	Jul. 02, 2021	Feb. 23, 2022~ Feb. 25, 2022	Jul. 01, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WHKX8-5872. 5-6750-18000- 40ST	SN6	6.75GHz High Pass Filter	Jun. 30, 2021	Feb. 23, 2022~ Feb. 25, 2022	Jun. 29, 2022	Radiation (03CH15-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Feb. 21, 2022	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Feb. 21, 2022	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 29, 2021	Feb. 21, 2022	Oct. 28, 2022	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 17, 2021	Feb. 21, 2022	Mar. 16, 2022	Conduction (CO07-HY)
AC LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 16, 2021	Feb. 21, 2022	Nov. 15, 2022	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Oct. 21, 2021	Feb. 21, 2022	Oct. 20, 2022	Conduction (CO07-HY)
Hygrometer	TECPEL	DTM-303B	TP200728	N/A	Mar. 09, 2021	Feb. 21, 2022	Mar. 08, 2022	Conduction (CO07-HY)

5 Uncertainty of Evaluation

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

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

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))	**5.3 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.6 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Tommy Lee	Temperature:	21~25	°C
Test Date:	2022/02/18~2022/02/23	Relative Humidity:	51~56	%

Remark: For Conducted Test Items, Ant. 1 means Chain 1 (Aux.) and Ant. 2 means Chain 2 (Main).

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

Band IV 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 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	2	149	5745	16.53	16.48	19.65	19.50	16.38	16.43	0.5	Pass
11a	6Mbps	2	157	5785	16.53	16.48	19.65	19.20	16.38	16.28	0.5	Pass
11a	6Mbps	2	165	5825	16.53	16.48	19.65	19.35	16.38	16.38	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	12.90	12.00	15.48	30.00		3.13		Pass
11a	6Mbps	2	157	5785	12.90	12.60	15.76	30.00		3.13		Pass
11a	6Mbps	2	165	5825	13.00	12.00	15.54	30.00		3.13		Pass
HT20	MCS0	2	149	5745	12.60	11.30	15.01	30.00		3.13		Pass
HT20	MCS0	2	157	5785	12.80	12.60	15.71	30.00		3.13		Pass
HT20	MCS0	2	165	5825	12.70	11.80	15.28	30.00		3.13		Pass
HT40	MCS0	2	151	5755	12.80	12.20	15.52	30.00		3.13		Pass
HT40	MCS0	2	159	5795	12.90	11.80	15.40	30.00		3.13		Pass
VHT20	MCS0	2	149	5745	12.60	11.30	15.01	30.00		3.13		Pass
VHT20	MCS0	2	157	5785	12.80	12.60	15.71	30.00		3.13		Pass
VHT20	MCS0	2	165	5825	12.70	11.80	15.28	30.00		3.13		Pass
VHT40	MCS0	2	151	5755	12.80	12.20	15.52	30.00		3.13		Pass
VHT40	MCS0	2	159	5795	12.90	11.80	15.40	30.00		3.13		Pass
VHT80	MCS0	2	155	5775	12.90	12.60	15.76	30.00		3.13		Pass

Report Number : FR1D1645E

TEST RESULTS DATA
Power Spectral Density

Band IV MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	2.22		1.38	1.11	4.39	29.97		6.03		Pass
11a	6Mbps	2	157	5785	2.22		1.36	1.28	4.37	29.97		6.03		Pass
11a	6Mbps	2	165	5825	2.22		1.11	0.95	4.12	29.97		6.03		Pass

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

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

Band IV MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
						Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	2	149	5745	Full	18.88	18.88	21.20	21.20	18.58	18.63	0.5	Pass
HE20	MCS0	2	157	5785	Full	18.93	18.88	21.20	21.30	18.98	18.58	0.5	Pass
HE20	MCS0	2	165	5825	Full	18.88	18.88	21.40	21.10	18.68	18.68	0.5	Pass
HE40	MCS0	2	151	5755	Full	37.86	37.86	40.23	40.23	37.67	37.85	0.5	Pass
HE40	MCS0	2	159	5795	Full	37.96	37.86	40.23	40.32	37.76	37.31	0.5	Pass
HE80	MCS0	2	155	5775	Full	77.08	77.08	82.40	82.24	77.84	77.20	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
						Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
HE20	MCS0	2	149	5745	Full	12.70	11.90	15.33	30.00		3.13		Pass
HE20	MCS0	2	149	5745	26/0	2.50	3.20	5.87	30.00		3.13		Pass
HE20	MCS0	2	149	5745	52/37	5.90	5.30	8.62	30.00		3.13		Pass
HE20	MCS0	2	149	5745	106/53	9.30	9.10	12.21	30.00		3.13		Pass
HE20	MCS0	2	149	5745	242/61	12.60	11.80	15.23	30.00		3.13		Pass
HE20	MCS0	2	157	5785	Full	12.90	12.70	15.81	30.00		3.13		Pass
HE20	MCS0	2	157	5785	26/4	4.50	4.00	7.27	30.00		3.13		Pass
HE20	MCS0	2	157	5785	52/38	6.60	6.00	9.32	30.00		3.13		Pass
HE20	MCS0	2	157	5785	106/53	10.50	9.80	13.17	30.00		3.13		Pass
HE20	MCS0	2	157	5785	242/61	12.80	12.50	15.66	30.00		3.13		Pass
HE20	MCS0	2	165	5825	Full	12.80	11.90	15.38	30.00		3.13		Pass
HE20	MCS0	2	165	5825	26/8	4.40	2.10	6.41	30.00		3.13		Pass
HE20	MCS0	2	165	5825	52/40	7.60	5.10	9.54	30.00		3.13		Pass
HE20	MCS0	2	165	5825	106/54	10.50	9.00	12.82	30.00		3.13		Pass
HE20	MCS0	2	165	5825	242/61	12.70	10.40	14.71	30.00		3.13		Pass
HE40	MCS0	2	151	5755	Full	12.80	12.70	15.76	30.00		3.13		Pass
HE40	MCS0	2	151	5755	26/9	0.50	0.70	3.61	30.00		3.13		Pass
HE40	MCS0	2	151	5755	52/41	2.90	3.30	6.11	30.00		3.13		Pass
HE40	MCS0	2	151	5755	106/55	7.10	6.70	9.91	30.00		3.13		Pass
HE40	MCS0	2	151	5755	242/62	10.50	10.20	13.36	30.00		3.13		Pass
HE40	MCS0	2	151	5755	484/65	12.70	12.60	15.66	30.00		3.13		Pass
HE40	MCS0	2	159	5795	Full	12.80	12.20	15.52	30.00		3.13		Pass
HE40	MCS0	2	159	5795	26/27	0.30	1.20	3.78	30.00		3.13		Pass
HE40	MCS0	2	159	5795	52/48	2.30	2.80	5.57	30.00		3.13		Pass
HE40	MCS0	2	159	5795	106/58	7.40	5.90	9.72	30.00		3.13		Pass
HE40	MCS0	2	159	5795	242/63	10.40	8.60	12.60	30.00		3.13		Pass
HE40	MCS0	2	159	5795	484/65	13.00	11.90	15.50	30.00		3.13		Pass
HE80	MCS0	2	155	5775	Full	13.00	12.70	15.86	30.00		3.13		Pass
HE80	MCS0	2	155	5775	996/67	12.90	12.60	15.76	30.00		3.13		Pass

TEST RESULTS DATA
Power Spectral Density

Band IV MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
						Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
HE20	MCS0	2	149	5745	Full	2.22		0.94	0.57	3.95	29.97		6.03		Pass
HE20	MCS0	2	149	5745	26/0	2.22		-0.19	0.33	3.34	29.97		6.03		Pass
HE20	MCS0	2	149	5745	52/37	2.22		0.40	0.41	3.42	29.97		6.03		Pass
HE20	MCS0	2	149	5745	106/53	2.22		0.26	0.89	3.90	29.97		6.03		Pass
HE20	MCS0	2	149	5745	242/61	2.22		0.89	0.55	3.90	29.97		6.03		Pass
HE20	MCS0	2	157	5785	Full	2.22		1.53	1.17	4.54	29.97		6.03		Pass
HE20	MCS0	2	157	5785	26/4	2.22		1.33	1.38	4.39	29.97		6.03		Pass
HE20	MCS0	2	157	5785	52/38	2.22		1.37	1.38	4.39	29.97		6.03		Pass
HE20	MCS0	2	157	5785	106/53	2.22		0.73	1.20	4.21	29.97		6.03		Pass
HE20	MCS0	2	157	5785	242/61	2.22		0.85	1.36	4.37	29.97		6.03		Pass
HE20	MCS0	2	165	5825	Full	2.22		1.86	0.78	4.87	29.97		6.03		Pass
HE20	MCS0	2	165	5825	26/8	2.22		1.78	1.26	4.79	29.97		6.03		Pass
HE20	MCS0	2	165	5825	52/40	2.22		1.64	1.30	4.65	29.97		6.03		Pass
HE20	MCS0	2	165	5825	106/54	2.22		1.38	1.53	4.54	29.97		6.03		Pass
HE20	MCS0	2	165	5825	242/61	2.22		0.86	1.21	4.22	29.97		6.03		Pass
HE40	MCS0	2	151	5755	Full	2.22		-1.68	-0.99	2.02	29.97		6.03		Pass
HE40	MCS0	2	151	5755	26/9	2.22		-1.86	-1.29	1.72	29.97		6.03		Pass
HE40	MCS0	2	151	5755	52/41	2.22		-1.90	-1.26	1.75	29.97		6.03		Pass
HE40	MCS0	2	151	5755	106/55	2.22		-1.55	-1.18	1.83	29.97		6.03		Pass
HE40	MCS0	2	151	5755	242/62	2.22		-2.15	-1.26	1.75	29.97		6.03		Pass
HE40	MCS0	2	151	5755	484/65	2.22		-2.10	-1.21	1.80	29.97		6.03		Pass
HE40	MCS0	2	159	5795	Full	2.22		-1.45	-1.81	1.56	29.97		6.03		Pass
HE40	MCS0	2	159	5795	26/27	2.22		-2.38	-1.49	1.52	29.97		6.03		Pass
HE40	MCS0	2	159	5795	52/48	2.22		-3.63	-3.00	0.01	29.97		6.03		Pass
HE40	MCS0	2	159	5795	106/58	2.22		-1.58	-2.27	1.43	29.97		6.03		Pass
HE40	MCS0	2	159	5795	242/63	2.22		-2.49	-2.96	0.52	29.97		6.03		Pass
HE40	MCS0	2	159	5795	484/65	2.22		-2.35	-3.06	0.66	29.97		6.03		Pass
HE80	MCS0	2	155	5775	Full	2.22		-4.08	-4.02	-1.01	29.97		6.03		Pass
HE80	MCS0	2	155	5775	996/67	2.22		-5.78	-5.22	-2.21	29.97		6.03		Pass

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

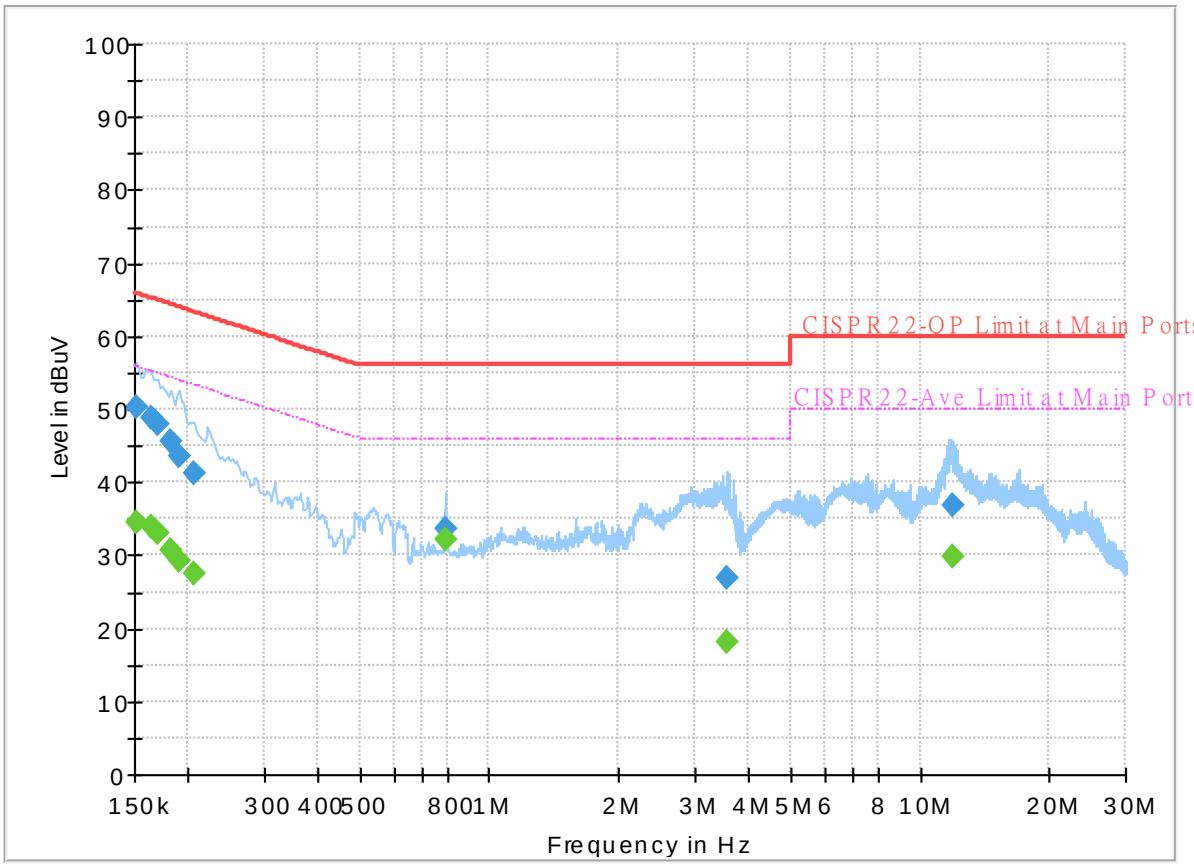
Appendix B. AC Conducted Emission Test Results

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

EUT Information

Report NO :	1D1645
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum



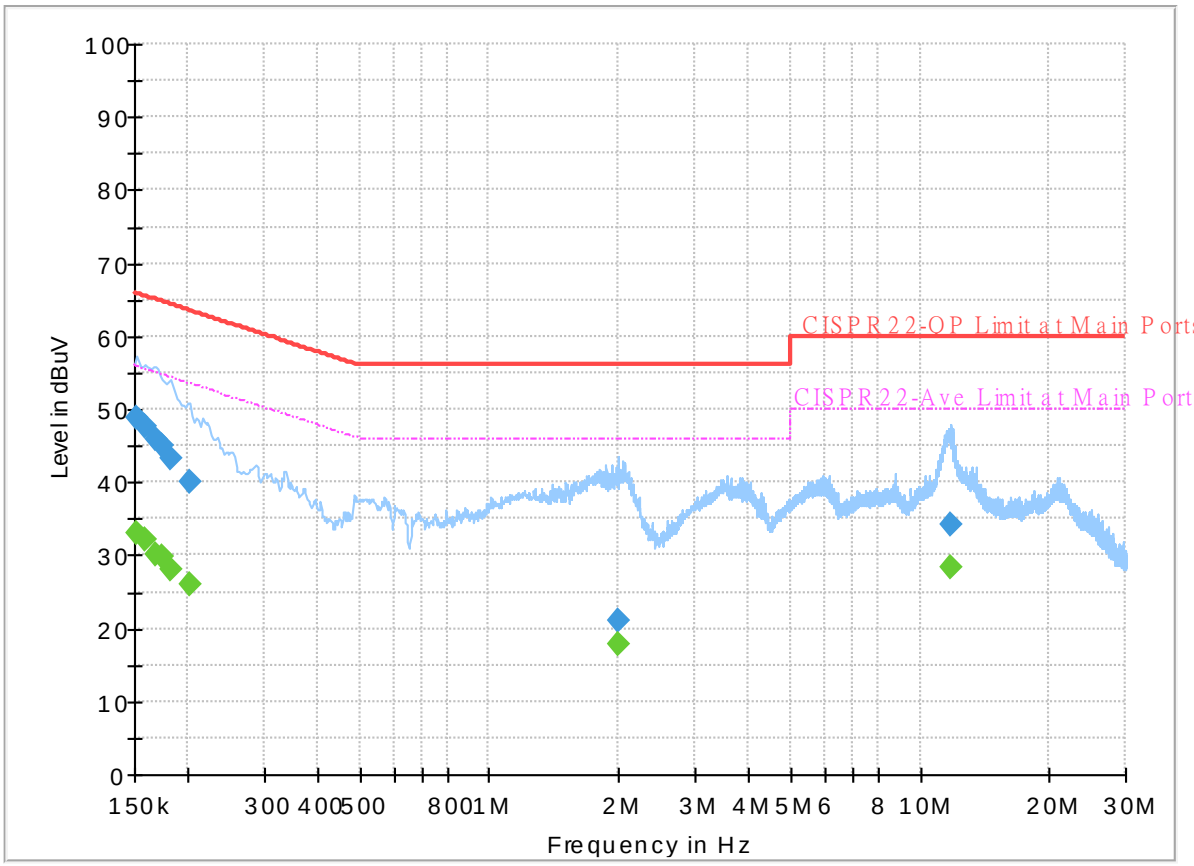
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	34.56	55.88	21.32	L1	OFF	19.7
0.152250	50.34	---	65.88	15.54	L1	OFF	19.7
0.163500	---	33.82	55.28	21.46	L1	OFF	19.7
0.163500	48.93	---	65.28	16.35	L1	OFF	19.7
0.170250	---	33.04	54.95	21.91	L1	OFF	19.7
0.170250	47.99	---	64.95	16.96	L1	OFF	19.7
0.181500	---	30.78	54.42	23.64	L1	OFF	19.7
0.181500	45.49	---	64.42	18.93	L1	OFF	19.7
0.190500	---	29.33	54.02	24.69	L1	OFF	19.7
0.190500	43.63	---	64.02	20.39	L1	OFF	19.7
0.206250	---	27.50	53.36	25.86	L1	OFF	19.7
0.206250	41.16	---	63.36	22.20	L1	OFF	19.7
0.791250	---	32.24	46.00	13.76	L1	OFF	19.7
0.791250	33.51	---	56.00	22.49	L1	OFF	19.7
3.552000	---	18.11	46.00	27.89	L1	OFF	19.8
3.552000	26.87	---	56.00	29.13	L1	OFF	19.8
11.868000	---	29.92	50.00	20.08	L1	OFF	19.9
11.868000	36.86	---	60.00	23.14	L1	OFF	19.9

EUT Information

Report NO :	1D1645
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)
0.152250	---	33.16	55.88	22.72	N	OFF	19.7
0.152250	48.72	---	65.88	17.16	N	OFF	19.7
0.159000	---	32.10	55.52	23.42	N	OFF	19.7
0.159000	47.78	---	65.52	17.74	N	OFF	19.7
0.168000	---	30.19	55.06	24.87	N	OFF	19.7
0.168000	45.83	---	65.06	19.23	N	OFF	19.7
0.174750	---	29.75	54.73	24.98	N	OFF	19.7
0.174750	45.13	---	64.73	19.60	N	OFF	19.7
0.181500	---	28.10	54.42	26.32	N	OFF	19.7
0.181500	43.21	---	64.42	21.21	N	OFF	19.7
0.201750	---	25.91	53.54	27.63	N	OFF	19.7
0.201750	40.20	---	63.54	23.34	N	OFF	19.7
1.988250	---	17.72	46.00	28.28	N	OFF	19.7
1.988250	21.19	---	56.00	34.81	N	OFF	19.7
11.825250	---	28.23	50.00	21.77	N	OFF	19.9
11.825250	34.20	---	60.00	25.80	N	OFF	19.9

Appendix C. Radiated Spurious Emission

Test Engineer :	Leo Lee, Mancy Chou, and Bigshow Wang	**Temperature :**	22.0~24.5°C
		Relative Humidity :	40~60%

Remark: For Radiated Spurious Emission Test Items, Ant. 1 means Chain 1 (Aux.) and Ant. 2 means Chain 2 (Main).

<Sample 1>

Band 4 - 5725~5850MHz

WIFI 802.11ax HE80_Partial 996 (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.
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		5643	49.27	-18.93	68.2	42.65	33	10.43	36.81	350	189	P	H
		5692.8	55.5	-44.39	99.89	48.78	33.09	10.48	36.85	350	189	P	H
		5714.2	55.13	-54.05	109.18	48.29	33.19	10.51	36.86	350	189	P	H
		5724.4	59.31	-61.52	120.83	52.41	33.25	10.52	36.87	350	189	P	H
	*	5775	100.83	-	-	93.62	33.55	10.57	36.91	350	189	P	H
	*	5775	91.26	-	-	84.05	33.55	10.57	36.91	350	189	A	H
		5854.47	53.89	-58.12	112.01	46.31	33.91	10.64	36.97	350	189	P	H
		5859.595	56.4	-53.11	109.51	48.81	33.92	10.64	36.97	350	189	P	H
		5880.095	52.82	-48.6	101.42	45.18	33.96	10.66	36.98	350	189	P	H
802.11ax		5949.59	49.03	-19.17	68.2	41.36	34	10.7	37.03	350	189	P	H
HE80													H
Partial													H
996/67		5643.8	48.28	-19.92	68.2	41.66	33	10.43	36.81	300	177	P	V
CH 155		5698.6	52.19	-51.98	104.17	45.45	33.1	10.49	36.85	300	177	P	V
5775MHz		5718.2	55.51	-54.79	110.3	48.66	33.21	10.51	36.87	300	177	P	V
		5724	57.37	-62.55	119.92	50.48	33.24	10.52	36.87	300	177	P	V
	*	5775	101.85	-	-	94.64	33.55	10.57	36.91	300	177	P	V
	*	5775	91.77	-	-	84.56	33.55	10.57	36.91	300	177	A	V
		5854.47	56.89	-55.12	112.01	49.31	33.91	10.64	36.97	300	177	P	V
		5874.56	56.11	-49.21	105.32	48.49	33.95	10.65	36.98	300	177	P	V
		5878.045	56.59	-46.35	102.94	48.96	33.96	10.65	36.98	300	177	P	V
		5948.565	49.41	-18.79	68.2	41.74	34	10.7	37.03	300	177	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_Partial 996 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11550	45.43	-28.57	74	52.5	38.7	15.15	60.92	-	-	P	H
		12544	47.96	-26.04	74	55.88	38.74	15.6	62.26	-	-	P	H
		12544	38.89	-15.11	54	46.81	38.74	15.6	62.26	-	-	A	H
		14491	47.67	-26.33	74	53.85	40.51	16.48	63.17	-	-	P	H
		14491	41.01	-12.99	54	47.19	40.51	16.48	63.17	-	-	A	H
		17325	46.18	-22.02	68.2	48.14	38.17	18.37	58.5	-	-	P	H
		17989	52.53	-21.47	74	47.87	43	18.93	57.27	-	-	P	H
		17989	42.81	-11.19	54	38.15	43	18.93	57.27	-	-	A	H
													H
802.11ax													H
HE80													H
Partial													H
996/67		10872	48.2	-25.8	74	55.49	38.78	14.81	60.88	-	-	P	V
CH 155		10872	39.54	-14.46	54	46.83	38.78	14.81	60.88	-	-	A	V
5775MHz		11550	45.61	-28.39	74	52.68	38.7	15.15	60.92	-	-	P	V
		14491	47.54	-26.46	74	53.72	40.51	16.48	63.17	-	-	P	V
		14491	40.94	-13.06	54	47.12	40.51	16.48	63.17	-	-	A	V
		17325	46.87	-21.33	68.2	48.83	38.17	18.37	58.5	-	-	P	V
		17989	52.33	-21.67	74	47.67	43	18.93	57.27	-	-	P	V
		17989	42.94	-11.06	54	38.28	43	18.93	57.27	-	-	A	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.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

<Sample 2>

Band 4 - 5725~5850MHz

WIFI 802.11a (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.
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5645.6	48.63	-19.57	68.2	42.01	33	10.43	36.81	389	182	P	H
		5683.2	48.13	-44.67	92.8	41.43	33.07	10.47	36.84	389	182	P	H
		5712	48.9	-59.66	108.56	42.09	33.17	10.5	36.86	389	182	P	H
		5723.2	49.84	-68.26	118.1	42.95	33.24	10.52	36.87	389	182	P	H
	*	5745	108.97	-	-	101.95	33.37	10.54	36.89	389	182	P	H
	*	5745	101.61	-	-	94.59	33.37	10.54	36.89	389	182	A	H
													H
													H
		5646.4	48.09	-20.11	68.2	41.48	33	10.43	36.82	256	193	P	V
		5684	48.14	-45.26	93.4	41.44	33.07	10.47	36.84	256	193	P	V
		5716.4	47.52	-62.27	109.79	40.68	33.2	10.51	36.87	256	193	P	V
		5725	50.37	-71.83	122.2	43.47	33.25	10.52	36.87	256	193	P	V
	*	5745	107.09	-	-	100.07	33.37	10.54	36.89	256	193	P	V
	*	5745	99.01	-	-	91.99	33.37	10.54	36.89	256	193	A	V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5608.2	48.03	-20.17	68.2	41.43	33	10.39	36.79	360	181	P	H
		5674.6	48.46	-37.98	86.44	41.79	33.05	10.46	36.84	360	181	P	H
		5714.4	47.39	-61.84	109.23	40.55	33.19	10.51	36.86	360	181	P	H
		5723.8	47.15	-72.31	119.46	40.26	33.24	10.52	36.87	360	181	P	H
	*	5785	109.24	-	-	101.97	33.61	10.58	36.92	360	181	P	H
	*	5785	101.47	-	-	94.2	33.61	10.58	36.92	360	181	A	H
		5854.675	48.42	-63.12	111.54	40.84	33.91	10.64	36.97	360	181	P	H
		5856.11	48.77	-61.72	110.49	41.19	33.91	10.64	36.97	360	181	P	H
		5921.505	49.01	-21.77	70.78	41.33	34	10.69	37.01	360	181	P	H
		5938.52	50.07	-18.13	68.2	42.4	34	10.7	37.03	360	181	P	H
													H
802.11a CH 157 5785MHz													H
		5622	48.48	-19.72	68.2	41.88	33	10.4	36.8	254	186	P	V
		5650.4	47.73	-20.77	68.5	41.11	33	10.44	36.82	254	186	P	V
		5713.2	48.27	-60.63	108.9	41.45	33.18	10.5	36.86	254	186	P	V
		5720.6	48.11	-64.06	112.17	41.25	33.22	10.51	36.87	254	186	P	V
	*	5785	107.89	-	-	100.62	33.61	10.58	36.92	254	186	P	V
	*	5785	99.76	-	-	92.49	33.61	10.58	36.92	254	186	A	V
		5854.47	47.91	-64.1	112.01	40.33	33.91	10.64	36.97	254	186	P	V
		5873.125	48.24	-57.48	105.72	40.62	33.95	10.65	36.98	254	186	P	V
		5901.21	49.03	-36.74	85.77	41.36	34	10.67	37	254	186	P	V
		5944.67	48.65	-19.55	68.2	40.98	34	10.7	37.03	254	186	P	V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	*	5825	109.4	-	-	101.92	33.8	10.62	36.94	379	181	P	H
	*	5825	101.54	-	-	94.06	33.8	10.62	36.94	379	181	A	H
		5852.2	48.16	-69.02	117.18	40.58	33.9	10.64	36.96	379	181	P	H
		5867.4	48.51	-58.82	107.33	40.9	33.93	10.65	36.97	379	181	P	H
		5878.4	48.63	-54.04	102.67	41	33.96	10.65	36.98	379	181	P	H
		5930.4	48.69	-19.51	68.2	41.02	34	10.69	37.02	379	181	P	H
													H
802.11a													H
CH 165	*	5825	107.74	-	-	100.26	33.8	10.62	36.94	252	189	P	V
5825MHz	*	5825	99.98	-	-	92.5	33.8	10.62	36.94	252	189	A	V
		5854.2	48.59	-64.03	112.62	41.01	33.91	10.64	36.97	252	189	P	V
		5869.8	49.27	-57.38	106.65	41.66	33.94	10.65	36.98	252	189	P	V
		5912.2	50.19	-27.45	77.64	42.52	34	10.68	37.01	252	189	P	V
		5933.4	48.81	-19.39	68.2	41.14	34	10.69	37.02	252	189	P	V
													V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	45.13	-28.87	74	52.05	38.83	15.12	60.87	-	-	P	H
		12500	47.6	-26.4	74	55.64	38.7	15.59	62.33	-	-	P	H
		12500	38.88	-15.12	54	46.92	38.7	15.59	62.33	-	-	A	H
		14480	47.89	-26.11	74	54.08	40.52	16.47	63.18	-	-	P	H
		14480	40.84	-13.16	54	47.03	40.52	16.47	63.18	-	-	A	H
		17235	45.82	-22.38	68.2	48.1	37.97	18.3	58.55	-	-	P	H
		18000	52.38	-21.62	74	47.58	43.1	18.94	57.24	-	-	P	H
		18000	43.02	-10.98	54	38.22	43.1	18.94	57.24	-	-	A	H
													H
													H
													H
													H
		11490	45	-29	74	51.92	38.83	15.12	60.87	-	-	P	V
		11851	47.8	-26.2	74	55.24	38.5	15.3	61.24	-	-	P	V
		11851	39.43	-14.57	54	46.87	38.5	15.3	61.24	-	-	A	V
		14480	48.94	-25.06	74	55.13	40.52	16.47	63.18	-	-	P	V
		14480	40.87	-13.13	54	47.06	40.52	16.47	63.18	-	-	A	V
		17235	45.17	-23.03	68.2	47.45	37.97	18.3	58.55	-	-	P	V
		18000	52.58	-21.42	74	47.78	43.1	18.94	57.24	-	-	P	V
		18000	42.92	-11.08	54	38.12	43.1	18.94	57.24	-	-	A	V
													V
													V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		10839	47.33	-26.67	74	54.54	38.88	14.79	60.88	-	-	P	H
		10839	39.58	-14.42	54	46.79	38.88	14.79	60.88	-	-	A	H
		11570	45.28	-28.72	74	52.4	38.66	15.16	60.94	-	-	P	H
		14480	49.11	-24.89	74	55.3	40.52	16.47	63.18	-	-	P	H
		14480	40.67	-13.33	54	46.86	40.52	16.47	63.18	-	-	A	H
		17355	46.42	-21.78	68.2	48.24	38.26	18.4	58.48	-	-	P	H
		18000	52.61	-21.39	74	47.81	43.1	18.94	57.24	-	-	P	H
		18000	43.11	-10.89	54	38.31	43.1	18.94	57.24	-	-	A	H
													H
													H
													H
802.11a CH 157 5785MHz													H
		11048	48.16	-25.84	74	55.52	38.6	14.9	60.86	-	-	P	V
		11048	39.46	-14.54	54	46.82	38.6	14.9	60.86	-	-	A	V
		11570	45.1	-28.9	74	52.22	38.66	15.16	60.94	-	-	P	V
		14480	48.82	-25.18	74	55.01	40.52	16.47	63.18	-	-	P	V
		14480	41.02	-12.98	54	47.21	40.52	16.47	63.18	-	-	A	V
		17355	46.2	-22	68.2	48.02	38.26	18.4	58.48	-	-	P	V
		18000	52.47	-21.53	74	47.67	43.1	18.94	57.24	-	-	P	V
		18000	43.07	-10.93	54	38.27	43.1	18.94	57.24	-	-	A	V
													V
													V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz		11650	44.99	-29.01	74	52.27	38.55	15.2	61.03	-	-	P	H
		11741	47.59	-26.41	74	55.01	38.46	15.25	61.13	-	-	P	H
		11741	39.36	-14.64	54	46.78	38.46	15.25	61.13	-	-	A	H
		14480	48.31	-25.69	74	54.5	40.52	16.47	63.18	-	-	P	H
		14480	40.66	-13.34	54	46.85	40.52	16.47	63.18	-	-	A	H
		17475	46.09	-22.11	68.2	47.53	38.47	18.5	58.41	-	-	P	H
		17923	52.02	-21.98	74	48.15	42.41	18.88	57.42	-	-	P	H
		17923	42.11	-11.89	54	38.24	42.41	18.88	57.42	-	-	A	H
													H
													H
													H
													H
		11650	45.76	-28.24	74	53.04	38.55	15.2	61.03	-	-	P	V
		11873	47.94	-26.06	74	55.34	38.55	15.32	61.27	-	-	P	V
		11873	39.32	-14.68	54	46.72	38.55	15.32	61.27	-	-	A	V
		14491	47.23	-26.77	74	53.41	40.51	16.48	63.17	-	-	P	V
		14491	40.9	-13.1	54	47.08	40.51	16.48	63.17	-	-	A	V
		17475	46.59	-21.61	68.2	48.03	38.47	18.5	58.41	-	-	P	V
		17901	52.23	-21.77	74	48.64	42.21	18.85	57.47	-	-	P	V
		17901	41.96	-12.04	54	38.37	42.21	18.85	57.47	-	-	A	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.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

Band 4 5725~5850MHz

WIFI 802.11ax HE20_Full (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5617	47.4	-20.8	68.2	40.79	33	10.4	36.79	388	181	P	H
		5677.6	48.69	-39.97	88.66	42	33.06	10.47	36.84	388	181	P	H
		5719.8	48.48	-62.26	110.74	41.62	33.22	10.51	36.87	388	181	P	H
		5721.6	50.82	-63.63	114.45	43.95	33.23	10.51	36.87	388	181	P	H
	*	5745	111.4	-	-	104.38	33.37	10.54	36.89	388	181	P	H
	*	5745	101.08	-	-	94.06	33.37	10.54	36.89	388	181	A	H
802.11ax													H
HE20 Full													H
CH 149		5642.8	47.74	-20.46	68.2	41.12	33	10.43	36.81	236	198	P	V
5745MHz		5687.2	48.43	-47.33	95.76	41.72	33.07	10.48	36.84	236	198	P	V
		5713.2	47.2	-61.7	108.9	40.38	33.18	10.5	36.86	236	198	P	V
		5724.8	49.07	-72.67	121.74	42.17	33.25	10.52	36.87	236	198	P	V
	*	5745	108.7	-	-	101.68	33.37	10.54	36.89	236	198	P	V
	*	5745	98.45	-	-	91.43	33.37	10.54	36.89	236	198	A	V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5609.8	48.96	-19.24	68.2	42.36	33	10.39	36.79	366	181	P	H
		5669.8	47.97	-34.92	82.89	41.3	33.04	10.46	36.83	366	181	P	H
		5703.4	48.42	-57.73	106.15	41.67	33.12	10.49	36.86	366	181	P	H
		5725	47.47	-74.73	122.2	40.57	33.25	10.52	36.87	366	181	P	H
	*	5785	109.63	-	-	102.36	33.61	10.58	36.92	366	181	P	H
	*	5785	99.54	-	-	92.27	33.61	10.58	36.92	366	181	A	H
		5853.24	47.88	-66.93	114.81	40.29	33.91	10.64	36.96	366	181	P	H
		5868.615	48.86	-58.13	106.99	41.25	33.94	10.65	36.98	366	181	P	H
		5889.115	49.18	-45.54	94.72	41.53	33.98	10.66	36.99	366	181	P	H
		5932.575	49.07	-19.13	68.2	41.4	34	10.69	37.02	366	181	P	H
802.11ax													H
HE20 Full													H
CH 157		5617.8	48.83	-19.37	68.2	42.22	33	10.4	36.79	256	196	P	V
5785MHz		5665.2	47.79	-31.69	79.48	41.14	33.03	10.45	36.83	256	196	P	V
		5703.2	48.24	-57.86	106.1	41.49	33.12	10.49	36.86	256	196	P	V
		5721.6	47.72	-66.73	114.45	40.85	33.23	10.51	36.87	256	196	P	V
	*	5785	110.83	-	-	103.56	33.61	10.58	36.92	256	196	P	V
	*	5785	99.81	-	-	92.54	33.61	10.58	36.92	256	196	A	V
		5853.855	49.29	-64.12	113.41	41.7	33.91	10.64	36.96	256	196	P	V
		5871.075	48.89	-57.41	106.3	41.28	33.94	10.65	36.98	256	196	P	V
		5915.56	49.13	-26.03	75.16	41.46	34	10.68	37.01	256	196	P	V
		5924.99	48.87	-19.34	68.21	41.2	34	10.69	37.02	256	196	P	V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	*	5825	110.53	-	-	103.05	33.8	10.62	36.94	379	179	P	H
	*	5825	100.64	-	-	93.16	33.8	10.62	36.94	379	179	A	H
		5850.4	49.77	-71.52	121.29	42.19	33.9	10.64	36.96	379	179	P	H
		5860.8	48.99	-60.18	109.17	41.4	33.92	10.64	36.97	379	179	P	H
		5879.4	49.05	-52.88	101.93	41.41	33.96	10.66	36.98	379	179	P	H
		5927.2	47.95	-20.25	68.2	40.28	34	10.69	37.02	379	179	P	H
802.11ax													H
HE20 Full													H
CH 165	*	5825	109.73	-	-	102.25	33.8	10.62	36.94	252	191	P	V
5825MHz	*	5825	100.08	-	-	92.6	33.8	10.62	36.94	252	191	A	V
		5852.2	48.01	-69.17	117.18	40.43	33.9	10.64	36.96	252	191	P	V
		5865	48.67	-59.33	108	41.06	33.93	10.65	36.97	252	191	P	V
		5891.2	48.94	-44.24	93.18	41.29	33.98	10.66	36.99	252	191	P	V
		5930.2	48.75	-19.45	68.2	41.08	34	10.69	37.02	252	191	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11ax HE20 Full (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	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)
		11490	45.17	-28.83	74	52.09	38.83	15.12	60.87	-	-	P	H
		11807	48.07	-25.93	74	55.58	38.41	15.28	61.2	-	-	P	H
		11807	39.06	-14.94	54	46.57	38.41	15.28	61.2	-	-	A	H
		14480	47.59	-26.41	74	53.78	40.52	16.47	63.18	-	-	P	H
		14480	40.91	-13.09	54	47.1	40.52	16.47	63.18	-	-	A	H
		17235	45.31	-22.89	68.2	47.59	37.97	18.3	58.55	-	-	P	H
		17989	52.17	-21.83	74	47.51	43	18.93	57.27	-	-	P	H
		17989	43.08	-10.92	54	38.42	43	18.93	57.27	-	-	A	H
													H
													H
802.11ax													H
HE20 Full													H
CH 149		10872	49.32	-24.68	74	56.61	38.78	14.81	60.88	-	-	P	V
5745MHz		10872	39.6	-14.4	54	46.89	38.78	14.81	60.88	-	-	A	V
		11490	45.24	-28.76	74	52.16	38.83	15.12	60.87	-	-	P	V
		14491	48.26	-25.74	74	54.44	40.51	16.48	63.17	-	-	P	V
		14491	40.9	-13.1	54	47.08	40.51	16.48	63.17	-	-	A	V
		17989	53.55	-20.45	74	48.89	43	18.93	57.27	-	-	P	V
		17989	42.73	-11.27	54	38.07	43	18.93	57.27	-	-	A	V
													V
													V
													V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		10993	47.97	-26.03	74	55.35	38.61	14.87	60.86	-	-	P	H
		10993	39.34	-14.66	54	46.72	38.61	14.87	60.86	-	-	A	H
		11570	45.18	-28.82	74	52.3	38.66	15.16	60.94	-	-	P	H
		14491	48.87	-25.13	74	55.05	40.51	16.48	63.17	-	-	P	H
		14491	41.03	-12.97	54	47.21	40.51	16.48	63.17	-	-	A	H
		17355	46.94	-21.26	68.2	48.76	38.26	18.4	58.48	-	-	P	H
		17901	52.23	-21.77	74	48.64	42.21	18.85	57.47	-	-	P	H
		17901	41.95	-12.05	54	38.36	42.21	18.85	57.47	-	-	A	H
													H
													H
802.11ax													H
HE20 Full													H
CH 157		11570	44.91	-29.09	74	52.03	38.66	15.16	60.94	-	-	P	V
5785MHz		12379	47.93	-26.07	74	55.77	38.72	15.54	62.1	-	-	P	V
		12379	38.98	-15.02	54	46.82	38.72	15.54	62.1	-	-	A	V
		14480	47.54	-26.46	74	53.73	40.52	16.47	63.18	-	-	P	V
		14480	41.08	-12.92	54	47.27	40.52	16.47	63.18	-	-	A	V
		17335	46.43	-21.77	68.2	48.35	38.2	18.37	58.49	-	-	P	V
		18000	51.89	-22.11	74	47.09	43.1	18.94	57.24	-	-	P	V
		18000	42.92	-11.08	54	38.12	43.1	18.94	57.24	-	-	A	V
													V
													V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11650	45.73	-28.27	74	53.01	38.55	15.2	61.03	-	-	P	H
		12500	48.34	-25.66	74	56.38	38.7	15.59	62.33	-	-	P	H
		12500	38.86	-15.14	54	46.9	38.7	15.59	62.33	-	-	A	H
		14491	47.44	-26.56	74	53.62	40.51	16.48	63.17	-	-	P	H
		14491	40.89	-13.11	54	47.07	40.51	16.48	63.17	-	-	A	H
		17475	45.85	-22.35	68.2	47.29	38.47	18.5	58.41	-	-	P	H
		18000	52.17	-21.83	74	47.37	43.1	18.94	57.24	-	-	P	H
		18000	42.92	-11.08	54	38.12	43.1	18.94	57.24	-	-	A	H
													H
													H
802.11ax													H
HE20 Full													H
CH 165		11650	45.72	-28.28	74	53	38.55	15.2	61.03	-	-	P	V
5825MHz		11741	48.07	-25.93	74	55.49	38.46	15.25	61.13	-	-	P	V
		11741	39.47	-14.53	54	46.89	38.46	15.25	61.13	-	-	A	V
		14491	48.21	-25.79	74	54.39	40.51	16.48	63.17	-	-	P	V
		14491	40.89	-13.11	54	47.07	40.51	16.48	63.17	-	-	A	V
		17475	46.22	-21.98	68.2	47.66	38.47	18.5	58.41	-	-	P	V
		17989	52.27	-21.73	74	47.61	43	18.93	57.27	-	-	P	V
		17989	42.92	-11.08	54	38.26	43	18.93	57.27	-	-	A	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.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

Band 4 5725~5850MHz

WIFI 802.11ax HE40_Full (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5600.6	47.87	-20.33	68.2	41.27	33	10.38	36.78	358	180	P	H
		5664.2	48.51	-30.23	78.74	41.86	33.03	10.45	36.83	358	180	P	H
		5719.8	50.4	-60.34	110.74	43.54	33.22	10.51	36.87	358	180	P	H
		5721.2	50.37	-63.17	113.54	43.5	33.23	10.51	36.87	358	180	P	H
	*	5755	108.13	-	-	101.04	33.43	10.55	36.89	358	180	P	H
	*	5755	96.47	-	-	89.38	33.43	10.55	36.89	358	180	A	H
		5851.6	47.97	-70.58	118.55	40.39	33.9	10.64	36.96	358	180	P	H
		5855.905	49.26	-61.29	110.55	41.68	33.91	10.64	36.97	358	180	P	H
		5915.765	49.35	-25.66	75.01	41.68	34	10.68	37.01	358	180	P	H
		5925.605	49.06	-19.14	68.2	41.39	34	10.69	37.02	358	180	P	H
802.11ax													H
HE40 Full													H
CH 151		5637.8	47.99	-20.21	68.2	41.38	33	10.42	36.81	254	188	P	V
5755MHz		5653.4	47.94	-22.79	70.73	41.31	33.01	10.44	36.82	254	188	P	V
		5713.8	48.11	-60.96	109.07	41.28	33.18	10.51	36.86	254	188	P	V
		5723.6	49.74	-69.27	119.01	42.85	33.24	10.52	36.87	254	188	P	V
	*	5755	107.12	-	-	100.03	33.43	10.55	36.89	254	188	P	V
	*	5755	95.98	-	-	88.89	33.43	10.55	36.89	254	188	A	V
		5853.855	47.7	-65.71	113.41	40.11	33.91	10.64	36.96	254	188	P	V
		5870.05	49.39	-57.19	106.58	41.78	33.94	10.65	36.98	254	188	P	V
		5895.88	49.35	-40.36	89.71	41.69	33.99	10.67	37	254	188	P	V
		5945.9	48.88	-19.32	68.2	41.21	34	10.7	37.03	254	188	P	V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5649	48.87	-19.33	68.2	42.26	33	10.43	36.82	382	180	P	H
		5664	48.19	-30.4	78.59	41.54	33.03	10.45	36.83	382	180	P	H
		5712.4	47.06	-61.61	108.67	40.25	33.17	10.5	36.86	382	180	P	H
		5724.4	47.21	-73.62	120.83	40.31	33.25	10.52	36.87	382	180	P	H
	*	5795	108.29	-	-	100.95	33.67	10.59	36.92	382	180	P	H
	*	5795	98.39	-	-	91.05	33.67	10.59	36.92	382	180	A	H
		5849.96	49.03	-85.17	134.2	41.46	33.9	10.63	36.96	382	180	P	H
		5856.11	49.16	-61.33	110.49	41.58	33.91	10.64	36.97	382	180	P	H
		5910.435	49.5	-29.45	78.95	41.83	34	10.68	37.01	382	180	P	H
		5942.005	49.11	-19.09	68.2	41.44	34	10.7	37.03	382	180	P	H
802.11ax													H
HE40 Full													H
CH 159		5617.6	48.72	-19.48	68.2	42.11	33	10.4	36.79	256	196	P	V
5795MHz		5677.8	48.51	-40.3	88.81	41.82	33.06	10.47	36.84	256	196	P	V
		5712.8	49.25	-59.54	108.79	42.43	33.18	10.5	36.86	256	196	P	V
		5722	46.62	-68.74	115.36	39.75	33.23	10.51	36.87	256	196	P	V
	*	5795	106.84	-	-	99.5	33.67	10.59	36.92	256	196	P	V
	*	5795	97.08	-	-	89.74	33.67	10.59	36.92	256	196	A	V
		5850.37	48.49	-72.87	121.36	40.91	33.9	10.64	36.96	256	196	P	V
		5860.62	49.13	-60.09	109.22	41.54	33.92	10.64	36.97	256	196	P	V
		5923.145	49.43	-20.14	69.57	41.75	34	10.69	37.01	256	196	P	V
		5932.78	48.95	-19.25	68.2	41.28	34	10.69	37.02	256	196	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. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		10872	48.37	-25.63	74	55.66	38.78	14.81	60.88	-	-	P	H
		10872	39.44	-14.56	54	46.73	38.78	14.81	60.88	-	-	A	H
		11510	45.73	-28.27	74	52.7	38.78	15.13	60.88	-	-	P	H
		14480	47.79	-26.21	74	53.98	40.52	16.47	63.18	-	-	P	H
		14480	40.9	-13.1	54	47.09	40.52	16.47	63.18	-	-	A	H
		17265	47.12	-21.08	68.2	49.31	38.03	18.32	58.54	-	-	P	H
		18000	53.02	-20.98	74	48.22	43.1	18.94	57.24	-	-	P	H
		18000	43.01	-10.99	54	38.21	43.1	18.94	57.24	-	-	A	H
													H
													H
802.11ax													H
HE40 Full													H
CH 151		11510	45.11	-28.89	74	52.08	38.78	15.13	60.88	-	-	P	V
5755MHz		11752	48.74	-25.26	74	56.18	38.45	15.25	61.14	-	-	P	V
		11752	39.35	-14.65	54	46.79	38.45	15.25	61.14	-	-	A	V
		14480	48.69	-25.31	74	54.88	40.52	16.47	63.18	-	-	P	V
		14480	41.02	-12.98	54	47.21	40.52	16.47	63.18	-	-	A	V
		17265	46.16	-22.04	68.2	48.35	38.03	18.32	58.54	-	-	P	V
		17989	52.76	-21.24	74	48.1	43	18.93	57.27	-	-	P	V
		17989	42.89	-11.11	54	38.23	43	18.93	57.27	-	-	A	V
													V
													V
													V
													V

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		10839	47.81	-26.19	74	55.02	38.88	14.79	60.88	-	-	P	H
		10839	39.68	-14.32	54	46.89	38.88	14.79	60.88	-	-	A	H
		11590	45.15	-28.85	74	52.33	38.62	15.17	60.97	-	-	P	H
		14491	47.68	-26.32	74	53.86	40.51	16.48	63.17	-	-	P	H
		14491	40.92	-13.08	54	47.1	40.51	16.48	63.17	-	-	A	H
		17385	47.62	-20.58	68.2	49.31	38.35	18.42	58.46	-	-	P	H
		17901	52.16	-21.84	74	48.57	42.21	18.85	57.47	-	-	P	H
		17901	41.79	-12.21	54	38.2	42.21	18.85	57.47	-	-	A	H
													H
													H
802.11ax													H
HE40 Full													H
CH 159		11590	45.93	-28.07	74	53.11	38.62	15.17	60.97	-	-	P	V
5795MHz		12357	48.08	-25.92	74	55.87	38.74	15.53	62.06	-	-	P	V
		12357	39	-15	54	46.79	38.74	15.53	62.06	-	-	A	V
		14491	48.17	-25.83	74	54.35	40.51	16.48	63.17	-	-	P	V
		14491	40.78	-13.22	54	46.96	40.51	16.48	63.17	-	-	A	V
		17385	47.01	-21.19	68.2	48.7	38.35	18.42	58.46	-	-	P	V
		18000	52.76	-21.24	74	47.96	43.1	18.94	57.24	-	-	P	V
		18000	42.95	-11.05	54	38.15	43.1	18.94	57.24	-	-	A	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.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

Band 4 5725~5850MHz

WIFI 802.11ax HE80_Full (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5630.8	48.15	-20.05	68.2	41.54	33	10.41	36.8	361	180	P	H
		5693.2	50.54	-49.65	100.19	43.82	33.09	10.48	36.85	361	180	P	H
		5711.4	49.14	-59.25	108.39	42.33	33.17	10.5	36.86	361	180	P	H
		5723.8	50.17	-69.29	119.46	43.28	33.24	10.52	36.87	361	180	P	H
	*	5775	105.35	-	-	98.14	33.55	10.57	36.91	361	180	P	H
	*	5775	94.99	-	-	87.78	33.55	10.57	36.91	361	180	A	H
		5850.78	48.76	-71.66	120.42	41.18	33.9	10.64	36.96	361	180	P	H
		5868.205	48.33	-58.77	107.1	40.72	33.94	10.65	36.98	361	180	P	H
		5907.36	49.35	-31.87	81.22	41.67	34	10.68	37	361	180	P	H
		5943.03	49.38	-18.82	68.2	41.71	34	10.7	37.03	361	180	P	H
802.11ax													H
HE80 Full													H
CH 155		5644	48.63	-19.57	68.2	42.01	33	10.43	36.81	253	191	P	V
5775MHz		5697.4	48.09	-55.19	103.28	41.36	33.09	10.49	36.85	253	191	P	V
		5716.8	48.68	-61.23	109.91	41.84	33.2	10.51	36.87	253	191	P	V
		5724.8	49.73	-72.01	121.74	42.83	33.25	10.52	36.87	253	191	P	V
	*	5775	105.47	-	-	98.26	33.55	10.57	36.91	253	191	P	V
	*	5775	93.62	-	-	86.41	33.55	10.57	36.91	253	191	A	V
		5854.675	50.05	-61.49	111.54	42.47	33.91	10.64	36.97	253	191	P	V
		5855.495	50.8	-59.86	110.66	43.22	33.91	10.64	36.97	253	191	P	V
		5922.12	50.18	-20.14	70.32	42.5	34	10.69	37.01	253	191	P	V
		5932.37	48.51	-19.69	68.2	40.84	34	10.69	37.02	253	191	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. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11550	45.01	-28.99	74	52.08	38.7	15.15	60.92	-	-	P	H
		11774	47.97	-26.03	74	55.43	38.43	15.27	61.16	-	-	P	H
		11774	39.38	-14.62	54	46.84	38.43	15.27	61.16	-	-	A	H
		14491	49.27	-24.73	74	55.45	40.51	16.48	63.17	-	-	P	H
		14491	41.06	-12.94	54	47.24	40.51	16.48	63.17	-	-	A	H
		17325	46.66	-21.54	68.2	48.62	38.17	18.37	58.5	-	-	P	H
		17989	52.04	-21.96	74	47.38	43	18.93	57.27	-	-	P	H
		17989	42.93	-11.07	54	38.27	43	18.93	57.27	-	-	A	H
													H
													H
802.11ax													H
HE80 Full													H
CH 155		11550	46.11	-27.89	74	53.18	38.7	15.15	60.92	-	-	P	V
5775MHz		12368	47.98	-26.02	74	55.79	38.73	15.54	62.08	-	-	P	V
		12368	39.04	-14.96	54	46.85	38.73	15.54	62.08	-	-	A	V
		14480	47.85	-26.15	74	54.04	40.52	16.47	63.18	-	-	P	V
		14480	41.1	-12.9	54	47.29	40.52	16.47	63.18	-	-	A	V
		17325	46.5	-21.7	68.2	48.46	38.17	18.37	58.5	-	-	P	V
		17989	52.2	-21.8	74	47.54	43	18.93	57.27	-	-	P	V
		17989	42.86	-11.14	54	38.2	43	18.93	57.27	-	-	A	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.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

Band 4 5725~5850MHz

WIFI 802.11ax HE80_Partial 996 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5624.8	48.69	-19.51	68.2	42.08	33	10.41	36.8	358	181	P	H
		5699.4	59.71	-45.05	104.76	52.97	33.1	10.49	36.85	358	181	P	H
		5720	62.73	-48.07	110.8	55.87	33.22	10.51	36.87	358	181	P	H
		5725	64.5	-57.7	122.2	57.6	33.25	10.52	36.87	358	181	P	H
	*	5775	105.35	-	-	98.14	33.55	10.57	36.91	358	181	P	H
	*	5775	94.7	-	-	87.49	33.55	10.57	36.91	358	181	A	H
		5851.6	58.65	-59.9	118.55	51.07	33.9	10.64	36.96	358	181	P	H
		5857.135	59.72	-50.48	110.2	52.14	33.91	10.64	36.97	358	181	P	H
		5877.225	54.39	-49.16	103.55	46.77	33.95	10.65	36.98	358	181	P	H
802.11ax		5948.565	48.77	-19.43	68.2	41.1	34	10.7	37.03	358	181	P	H
HE80													H
Partial													H
996/67		5621.8	48.97	-19.23	68.2	42.37	33	10.4	36.8	253	190	P	V
CH 155		5694.2	55.71	-45.21	100.92	48.99	33.09	10.48	36.85	253	190	P	V
5775MHz		5714.4	60.98	-48.25	109.23	54.14	33.19	10.51	36.86	253	190	P	V
		5724.2	61.75	-58.63	120.38	54.85	33.25	10.52	36.87	253	190	P	V
	*	5775	104.44	-	-	97.23	33.55	10.57	36.91	253	190	P	V
	*	5775	93.45	-	-	86.24	33.55	10.57	36.91	253	190	A	V
		5854.265	62.24	-50.23	112.47	54.66	33.91	10.64	36.97	253	190	P	V
		5859.8	62.03	-47.42	109.45	54.44	33.92	10.64	36.97	253	190	P	V
		5875.995	56.33	-48.13	104.46	48.71	33.95	10.65	36.98	253	190	P	V
		5947.95	49.42	-18.78	68.2	41.75	34	10.7	37.03	253	190	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_Partial 996 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		10762	48.59	-25.41	74	55.81	38.92	14.75	60.89	-	-	P	H
		10762	39.64	-14.36	54	46.86	38.92	14.75	60.89	-	-	A	H
		11550	45.22	-28.78	74	52.29	38.7	15.15	60.92	-	-	P	H
		14480	48.24	-25.76	74	54.43	40.52	16.47	63.18	-	-	P	H
		14480	41.09	-12.91	54	47.28	40.52	16.47	63.18	-	-	A	H
		17325	45.55	-22.65	68.2	47.51	38.17	18.37	58.5	-	-	P	H
		17989	52.75	-21.25	74	48.09	43	18.93	57.27	-	-	P	H
		17989	42.86	-11.14	54	38.2	43	18.93	57.27	-	-	A	H
													H
802.11ax													H
HE80													H
Partial													H
996/67		10861	48.76	-25.24	74	56.02	38.82	14.8	60.88	-	-	P	V
CH 155		10861	39.66	-14.34	54	46.92	38.82	14.8	60.88	-	-	A	V
5775MHz		11550	44.69	-29.31	74	51.76	38.7	15.15	60.92	-	-	P	V
		14491	48.62	-25.38	74	54.8	40.51	16.48	63.17	-	-	P	V
		14491	40.76	-13.24	54	46.94	40.51	16.48	63.17	-	-	A	V
		17325	46.15	-22.05	68.2	48.11	38.17	18.37	58.5	-	-	P	V
		18000	52.08	-21.92	74	47.28	43.1	18.94	57.24	-	-	P	V
		18000	43.07	-10.93	54	38.27	43.1	18.94	57.24	-	-	A	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.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

Emission above 18GHz

5GHz WIFI 802.11ax HE80_Partial 996 (SHF @ 1m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		24768	43.07	-30.93	74	59.97	39.01	-2.82	53.09	-	-	P	H
		39230	47.17	-26.83	74	60.46	44.41	-1.24	56.46	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
802.11ax													H
HE80													H
Partial 996		23152	41.74	-32.26	74	60.03	38.9	-3.12	54.07	-	-	P	V
SHF		39944	46.7	-27.3	74	58.72	44.5	-0.75	55.77	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

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

Emission below 1GHz

5GHz WIFI 802.11ax HE80_Partial 996 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		30	21.69	-18.31	40	29.25	24.3	0.61	32.47	-	-	P	H
		125.06	17.97	-25.53	43.5	31.56	17.4	1.53	32.52	-	-	P	H
		239.52	27.43	-18.57	46	40.78	16.94	2.17	32.46	-	-	P	H
		370.47	26.09	-19.91	46	35.23	20.74	2.58	32.46	-	-	P	H
		446.13	25.47	-20.53	46	32.06	23.01	2.82	32.42	-	-	P	H
		721.61	30.65	-15.35	46	32.51	26.87	3.62	32.35	-	-	P	H
													H
													H
													H
													H
802.11ax													H
HE80													H
Partial 996		62.98	25.2	-14.8	40	44.92	11.76	1.06	32.54	-	-	P	V
LF		134.76	17.83	-25.67	43.5	31.24	17.44	1.66	32.51	-	-	P	V
		259.89	20.25	-25.75	46	30.65	19.77	2.27	32.44	-	-	P	V
		335.55	23.22	-22.78	46	33.37	19.81	2.47	32.43	-	-	P	V
		562.53	26.34	-19.66	46	29.55	26.05	3.24	32.5	-	-	P	V
		874.87	30.5	-15.5	46	29.42	28.77	4.05	31.74	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

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

Note symbol

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

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		11490	51.62	-22.38	74	57.08	40.29	15.12	60.87	100	10	P	H
		11490	40.67	-13.33	54	46.13	40.29	15.12	60.87	100	10	A	H

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

For Peak Limit @ 11490MHz:

1. Level(dBμV/m)

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

=40.29(dB/m) + 15.12(dB) + 57.08(dBμV) – 60.87 (dB)

= 51.62 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 51.62(dBμV/m) – 74(dBμV/m)

= -22.38(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

= 46.13(dB/m) + 15.12(dB) + 46.13(dBμV) – 60.87 (dB)

= 40.67 (dBμV/m)

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

= 40.67(dBμV/m) – 54(dBμV/m)

= -13.33(dB)

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

Appendix D. Radiated Spurious Emission Plots

Test Engineer :	Leo Lee, Mancy Chou, and Bigshow Wang	**Temperature :**	22.0~24.5°C
		Relative Humidity :	40~60%

Remark: For Radiated Spurious Emission Plots Test Items, Ant. 1 means Chain 1 (Aux.) and Ant. 2 means Chain 2 (Main).

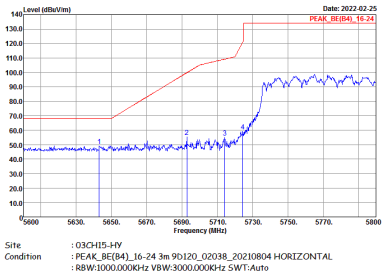
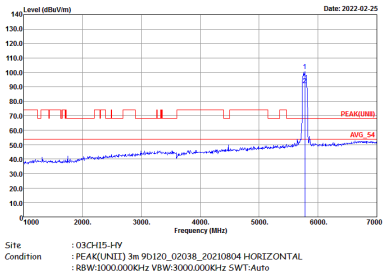
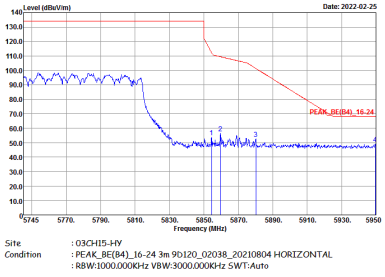
Note symbol

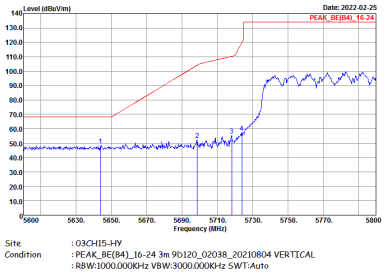
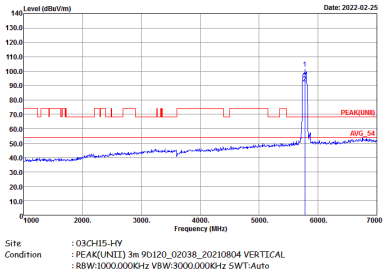
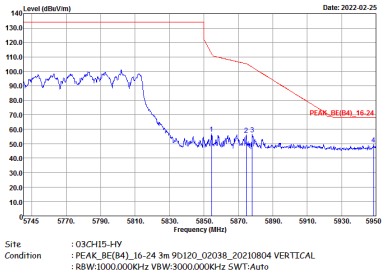
-L	**Low channel location**
-R	**High channel location**

<Sample 1>

Band 4 - 5725~5850MHz

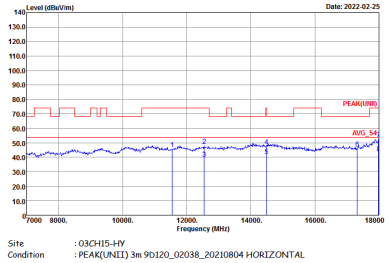
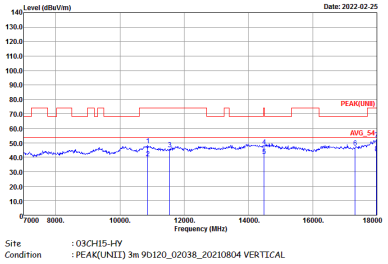
WIFI 802.11ax HE80 Partial 996 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 996/67 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 996/67 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

Band 4 - 5725~5850MHz

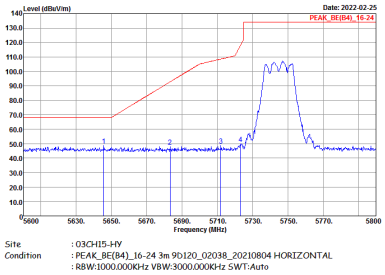
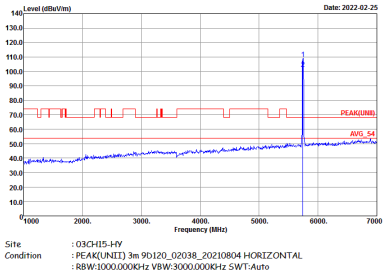
WIFI 802.11ax HE80 Partial 996 (Harmonic @ 3m)

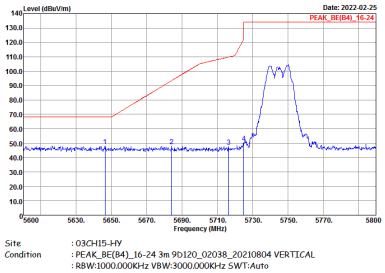
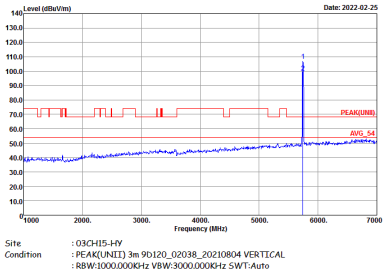
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE80 Partial 996/67 CH155 5775MHz	
1+2	Horizontal	Vertical
Peak Avg.		

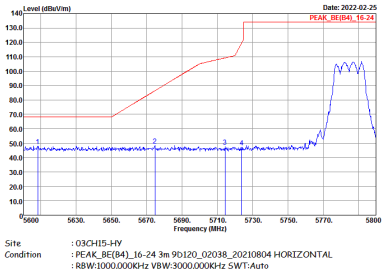
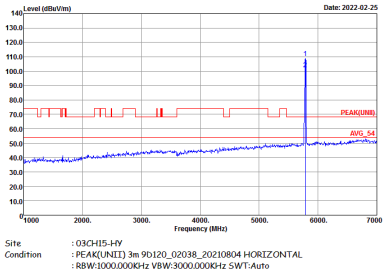
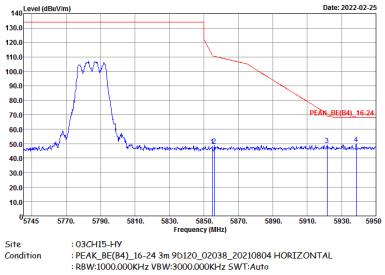
<Sample 2>

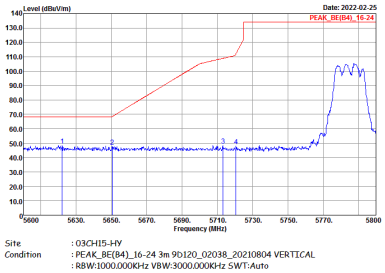
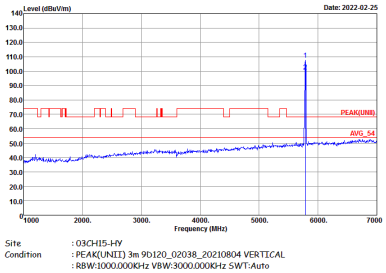
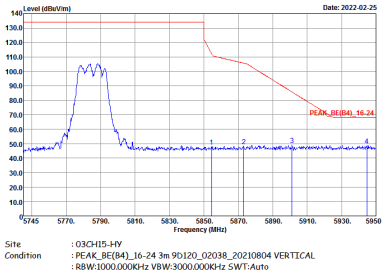
Band 4 - 5725~5850MHz

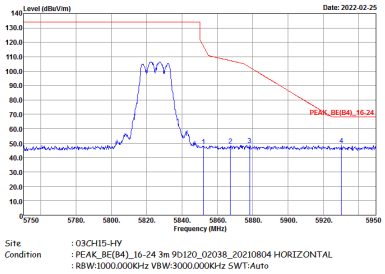
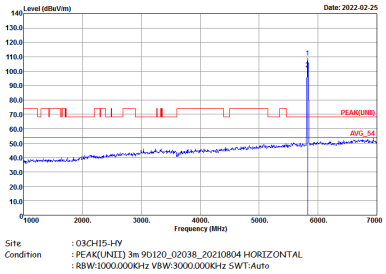
WIFI 802.11a (Band Edge @ 3m)

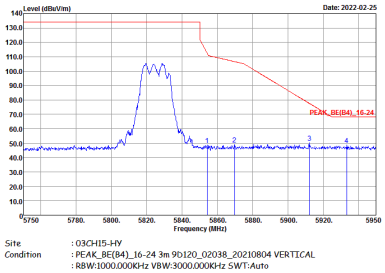
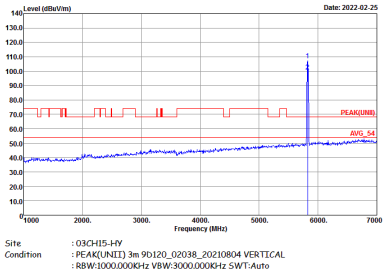
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Vertical	Fundamental
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

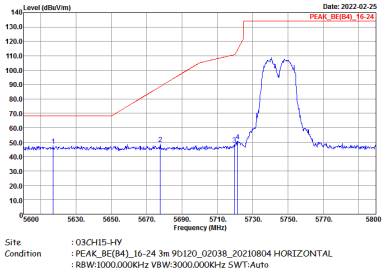
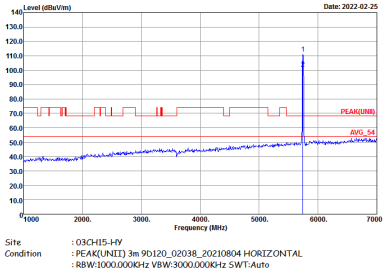
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

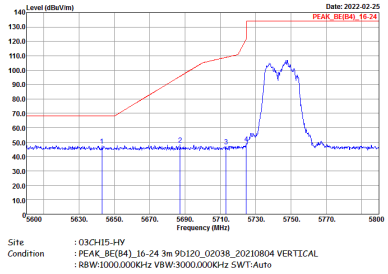
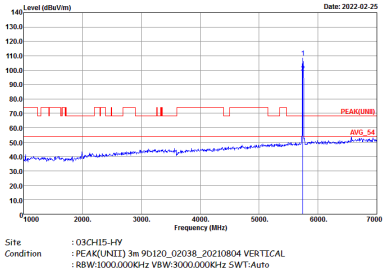
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak		

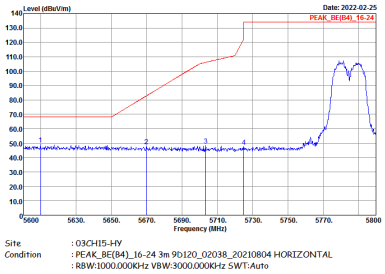
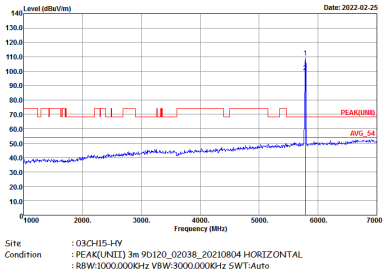
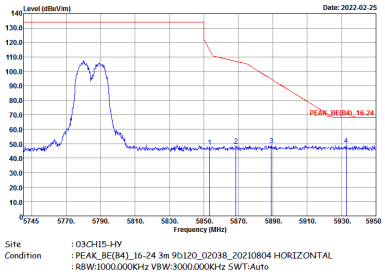
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Vertical	Fundamental
Peak		

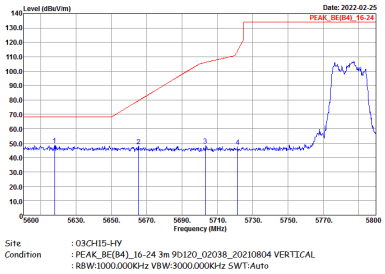
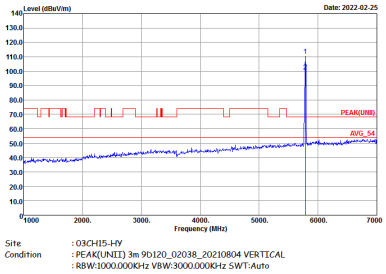
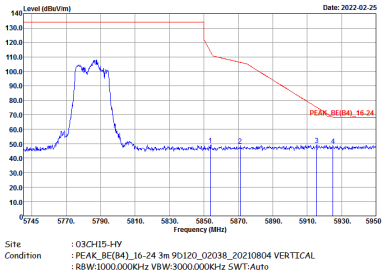
Band 4 5725~5850MHz

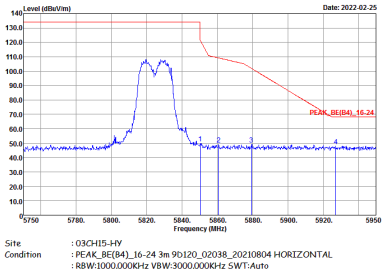
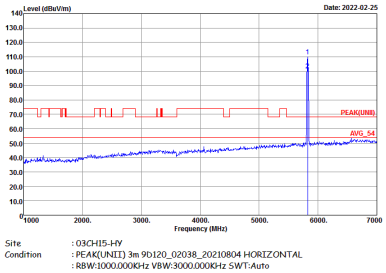
WIFI 802.11ax HE20 Full (Band Edge @ 3m)

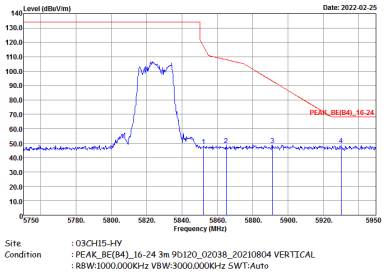
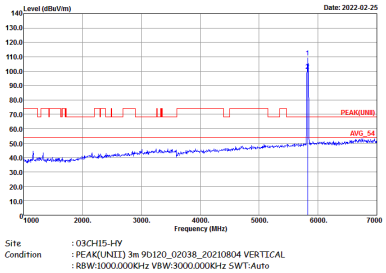
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
1+2	Vertical	Fundamental
Peak		

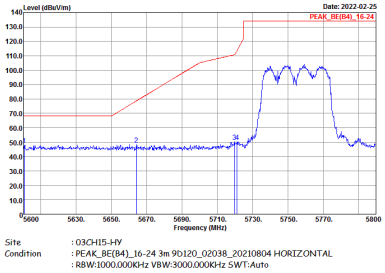
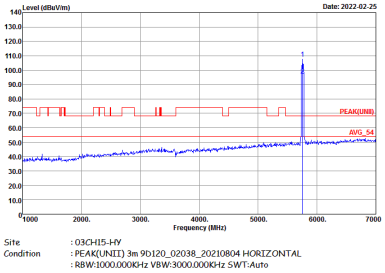
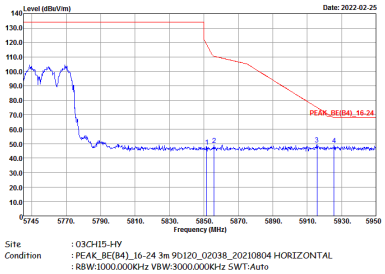
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

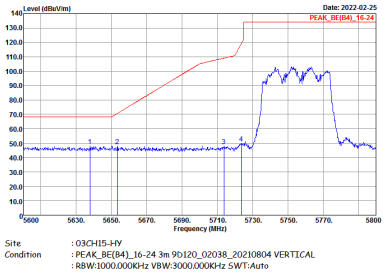
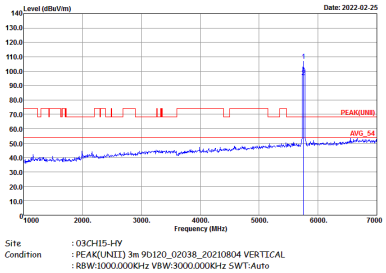
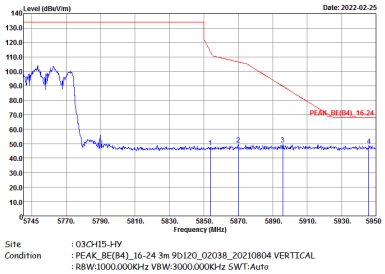
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

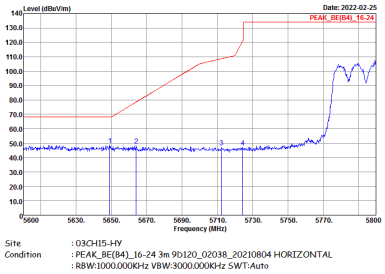
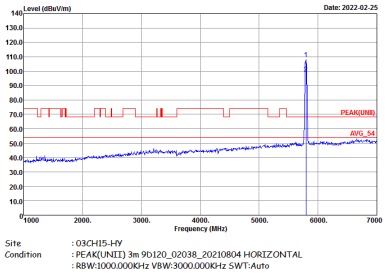
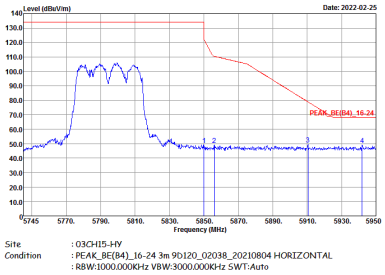
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak		

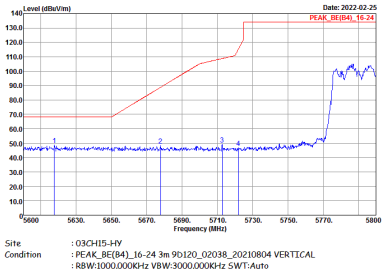
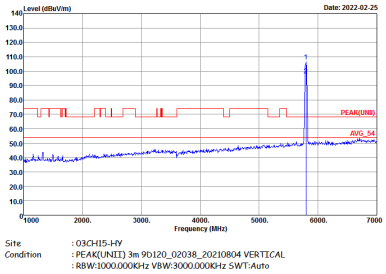
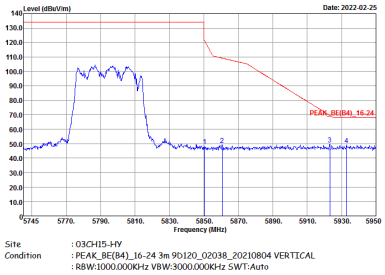
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
1+2	Vertical	Fundamental
Peak		

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

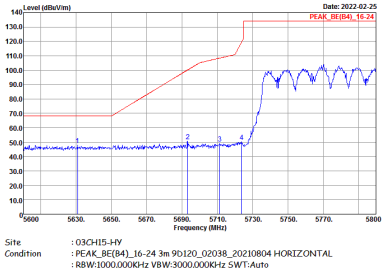
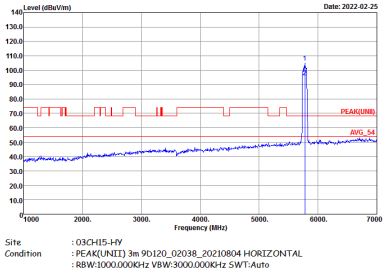
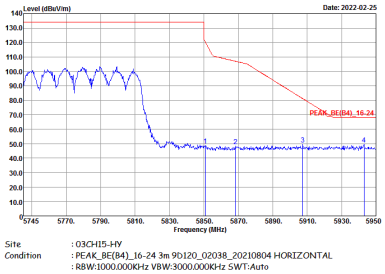
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

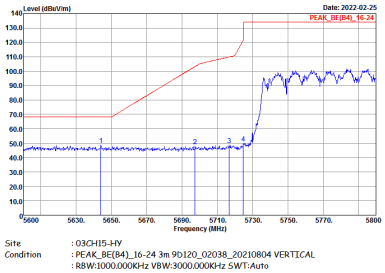
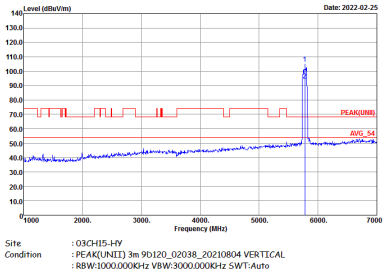
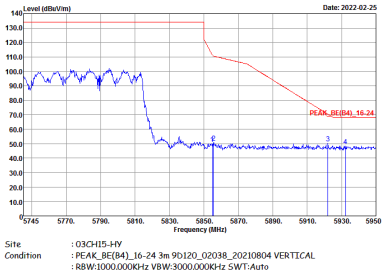
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

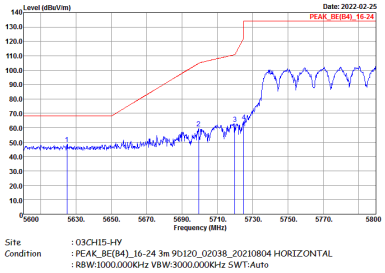
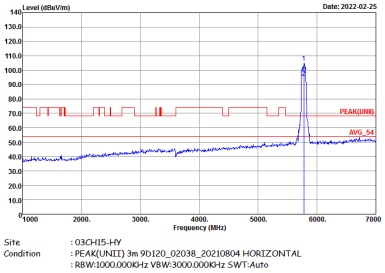
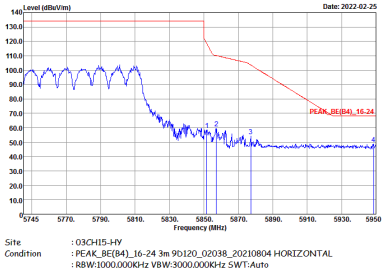
Band 4 5725~5850MHz
WIFI 802.11ax HE80 Full (Band Edge @ 3m)

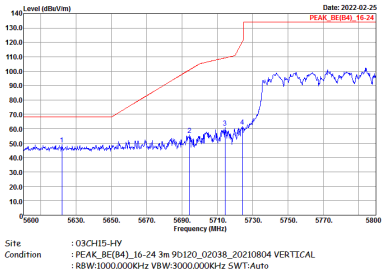
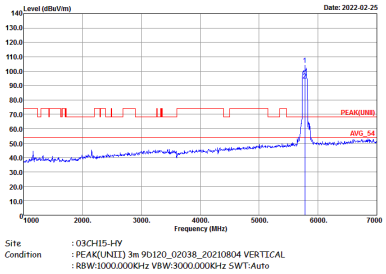
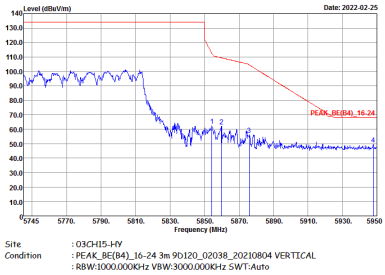
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

Band 4 5725~5850MHz

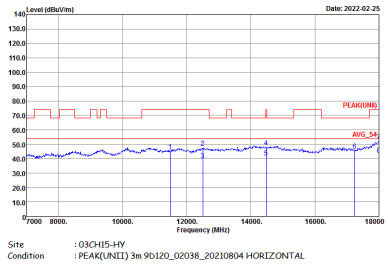
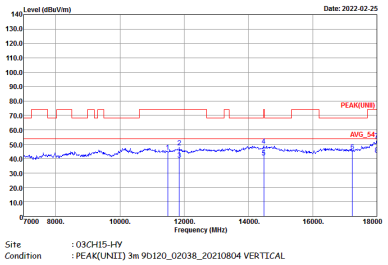
WIFI 802.11ax HE80 Partial 996 (Band Edge @ 3m)

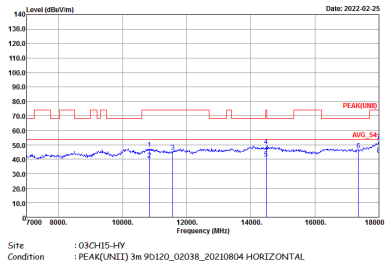
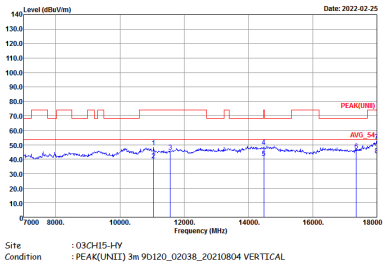
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 996/67 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

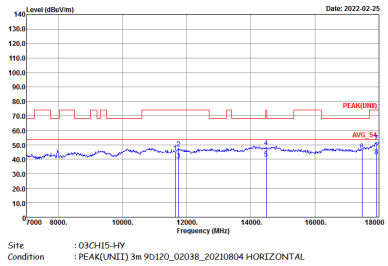
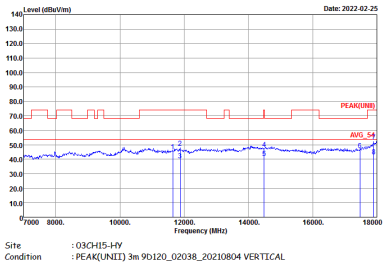
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 996/67 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

Band 4 - 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

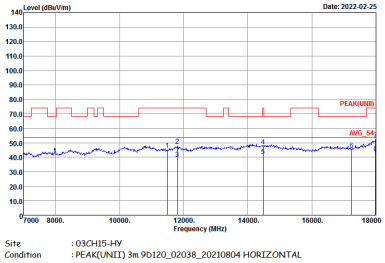
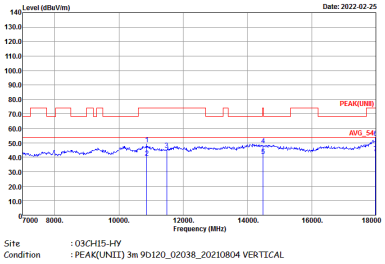
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

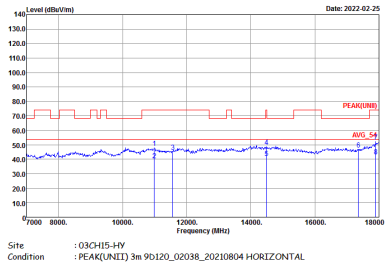
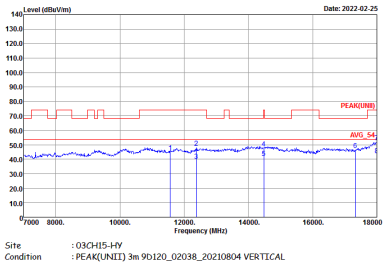
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.		

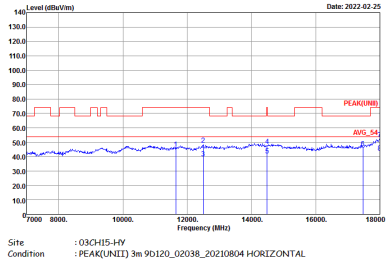
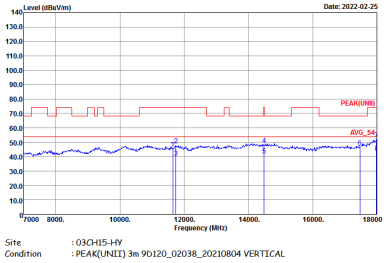
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz

WIFI 802.11ax HE20 Full (Harmonic @ 3m)

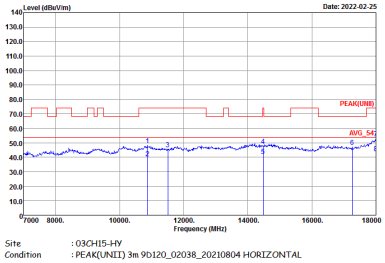
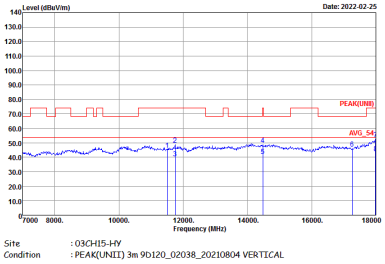
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

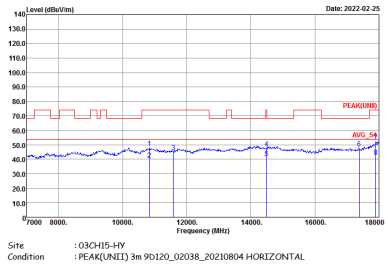
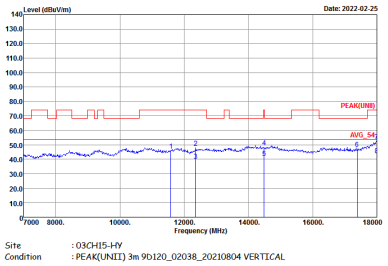
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz

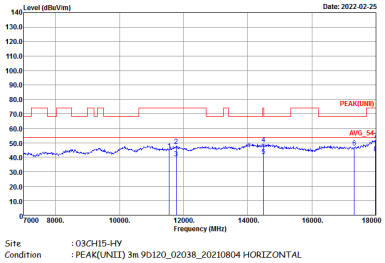
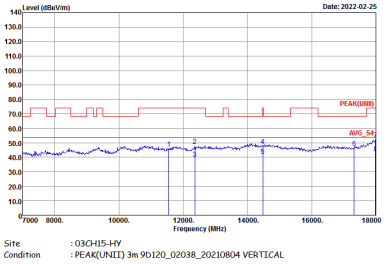
WIFI 802.11ax HE40 Full (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
1+2	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
1+2	Horizontal	Vertical
Peak Avg.		

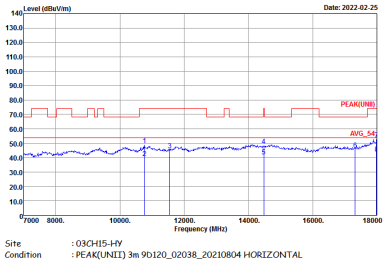
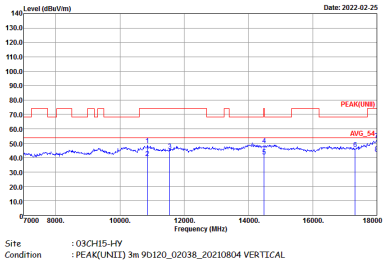
Band 4 5725~5850MHz

WIFI 802.11ax HE80 Full (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1+2	Horizontal	Vertical
Peak Avg.		

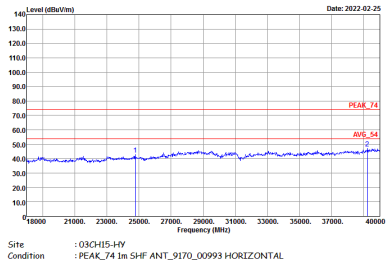
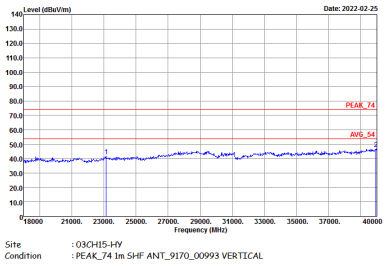
Band 4 5725~5850MHz

WIFI 802.11ax HE80 Partial 996 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE80 Partial 996/67 CH155 5775MHz	
1+2	Horizontal	Vertical
Peak Avg.		

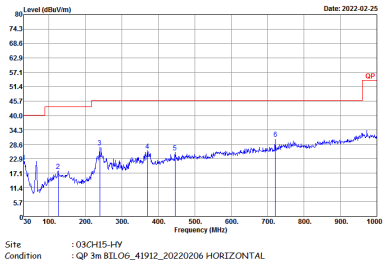
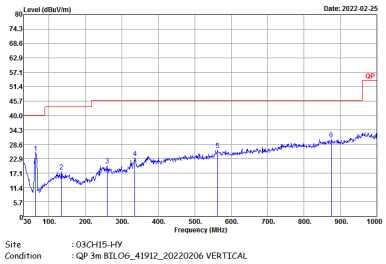
Emission above 18GHz

5GHz WIFI 802.11ax HE80 Partial 996 (SHF @ 1m)

WIFI	5GHz WIFI	
ANT	802.11ax HE80 Partial 996 SHF	
1+2	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

5GHz WIFI 802.11ax HE80 Partial 996 (LF @ 3m)

WIFI	5GHz WIFI	
ANT	802.11ax HE80 Partial 996 LF	
1+2	Horizontal	Vertical
QP / Peak		

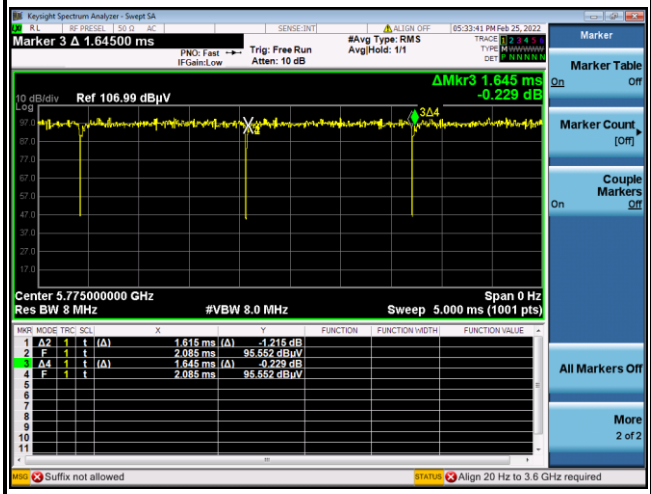
Appendix E. Duty Cycle Plots

<Sample 1>

Chain	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1+2	5GHz 802.11ax HE80 996 RU	98.18	-	-	10Hz

MIMO <Chain 1+2>

802.11ax HE80 996 RU

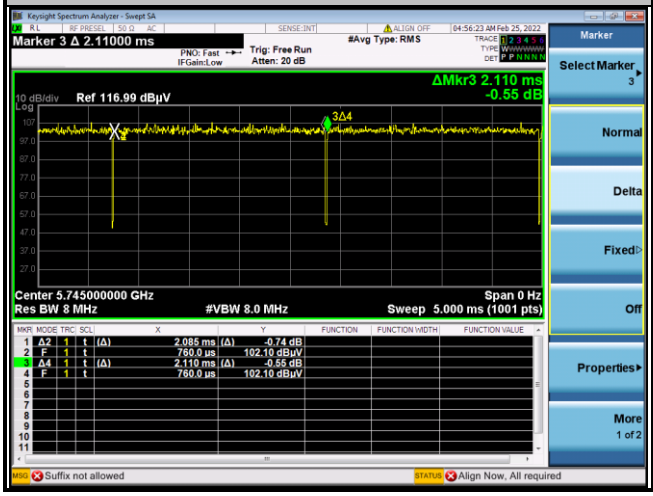


<Sample 2>

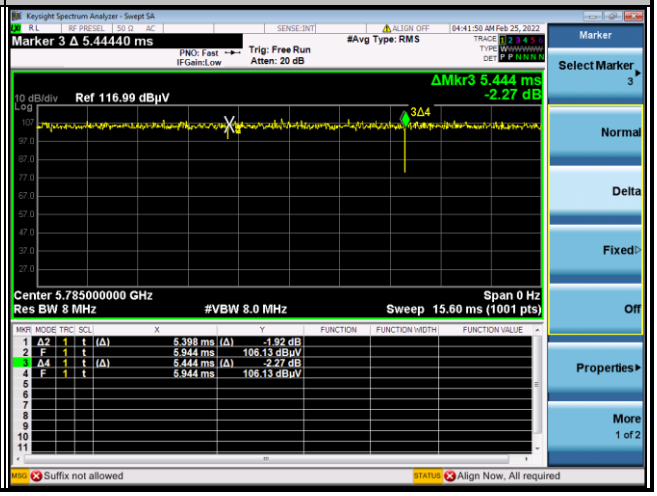
Chain	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1+2	802.11a	98.82	-	-	10Hz
1+2	5GHz 802.11ax HE20 Full RU	99.16	-	-	10Hz
1+2	5GHz 802.11ax HE40 Full RU	99.18	-	-	10Hz
1+2	5GHz 802.11ax HE80 Full RU	99.18	-	-	10Hz
1+2	5GHz 802.11ax HE80 996 RU	98.48	-	-	10Hz

MIMO <Chain 1+2>

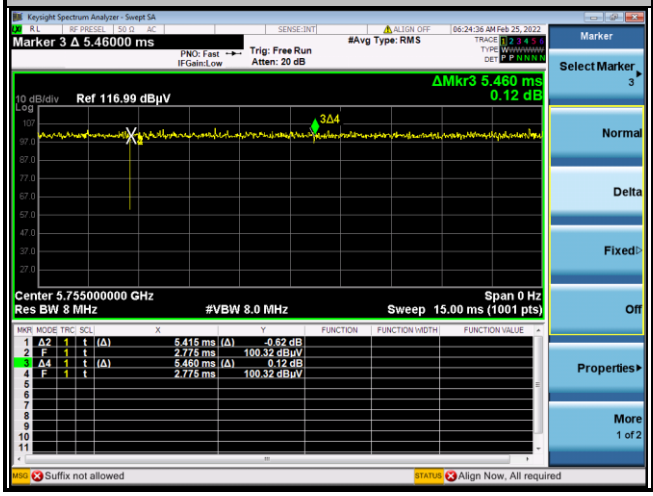
802.11a



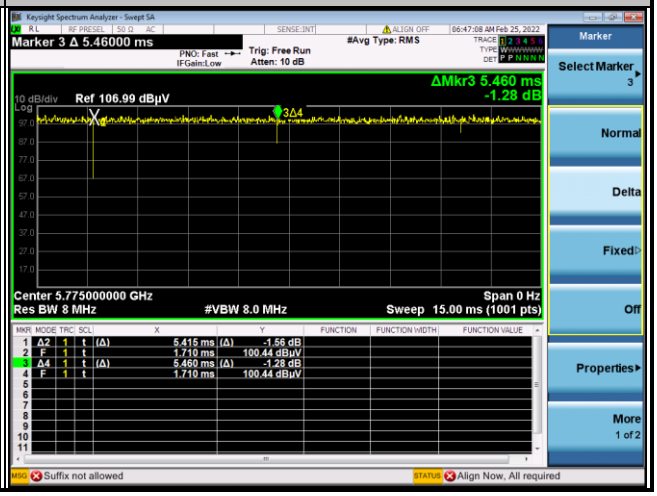
802.11ax HE20 Full RU



802.11ax HE40 Full RU



802.11ax HE80 Full RU



802.11ax HE80 996 RU