



FCC RADIO TEST REPORT

FCC ID : 2AFZZ16UG
Equipment : Mobile Phone
Brand Name : Redmi
Model Name : 21091116UG
Applicant : Xiaomi Communications Co., Ltd.
#019, 9th Floor, Building 6, 33 Xi'erqi Middle
Road, Haidian District, Beijing, China, 100085
Manufacturer : Xiaomi Communications Co., Ltd.
#019, 9th Floor, Building 6, 33 Xi'erqi Middle
Road, Haidian District, Beijing, China, 100085
Standard : FCC Part 15 Subpart E §15.407

The product was received on Sep. 13, 2021 and testing was started from Sep. 22, 2021 and completed on Oct. 18, 2021. 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 of Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

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



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History of this test report

Report No.	Version	Description	Issued Date
FR190910F	01	Initial issue of report	Oct. 20, 2021

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	Under limit 3.55 dB at 18000.000 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 20.89 dB at 0.474 MHz
3.6	15.203 15.407(a)	Antenna Requirement	Pass	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Danny Lee

Report Producer: Ruby Zou

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE/5G NR, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ax, Wi-Fi 5GHz 802.11a/n/ac/ax, NFC, FM Receiver, and GNSS.

Product Specification subjective to this standard		
Sample 1	6G+128GB	
Sample 2	8G+128GB	
Sample 3	8G+256GB	
Antenna Type	WWAN: Fixed Internal Antenna WLAN <Ant. 8>: PIFA Antenna <Ant. 9>: PIFA Antenna Bluetooth: PIFA Antenna GPS / Glonass / BDS / Galileo / SBAS / QZSS: PIFA Antenna NFC: Coil Antenna FM: Using earphone as Antenna	
Antenna information		
5725 MHz ~ 5850 MHz	Peak Gain (dBi)	Ant. 8: -1.61 Ant. 9: -1.32

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

1.2 Modification of EUT

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



1.3 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No.
	TH05-HY, 03CH15-HY, CO07-HY

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

FCC designation No.: TW3786

1.4 Applicable Standards

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

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

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find X plane as worst plane.
- 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 in "*" were 802.11n HT40 and 802.11ac VHT40 and 802.11ax HE40.
2. The above Frequency and Channel in "[#]" were 802.11ac VHT80 and 802.11ax HE80.

2.2 Test Mode

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

MIMO Mode

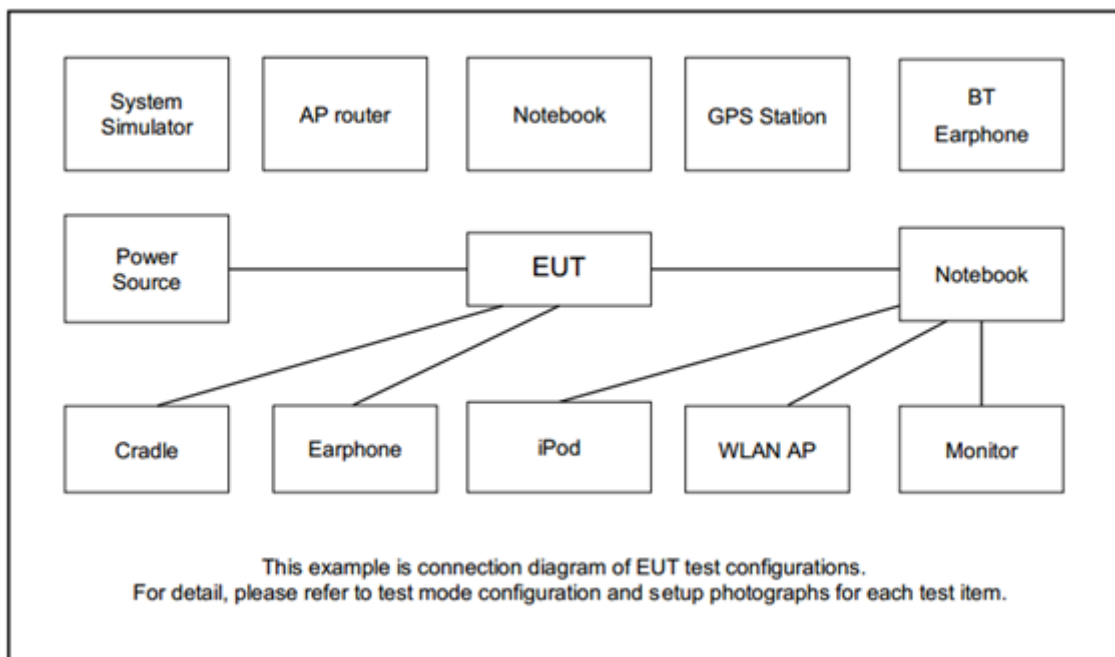
Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20 (Covered by HE20)	MCS0
802.11n HT40 (Covered by HE40)	MCS0
802.11ac VHT20 (Covered by HE20)	MCS0
802.11ac VHT40 (Covered by HE40)	MCS0
802.11ac VHT80 (Covered by HE80)	MCS0
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : LTE Band 17 Idle (High Channel) + Bluetooth Link + WLAN (5GHz) Link + GNSS Rx + Earphone + Battery + USB Cable (Data Link with Notebook) for Sample 3
Remark: - For Radiated Test Cases, the tests were performed with Adapter 1 and Sample 1 - Data Link with Notebook means data application transferred mode between EUT and Notebook.	

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

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

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8m
3.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
4.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
5.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0m	N/A
6.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
7.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
8.	Earphone	MI	EM023	N/A	Unshielded, 1.2m	N/A



2.5 EUT Operation Test Setup

The RF test items, make the EUT (SW: MIUI 12.5 Global 0.0.0) get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

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

3 Test Result

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

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

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

26dB and 99% Occupied bandwidth are reporting only.

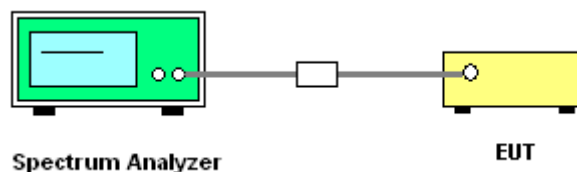
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

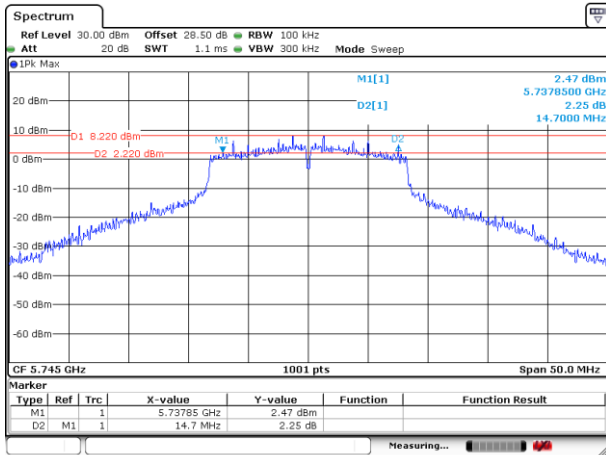
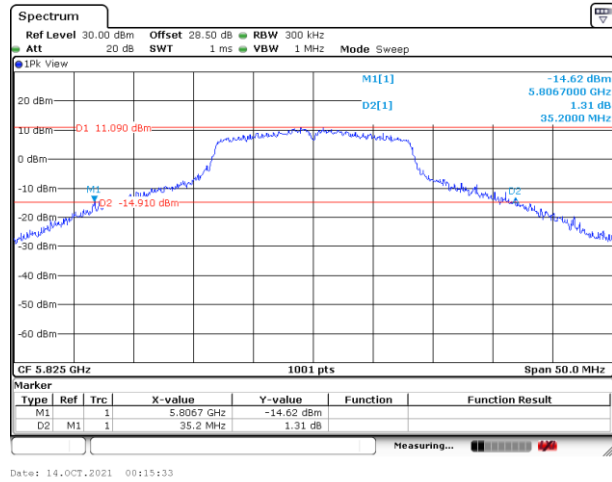
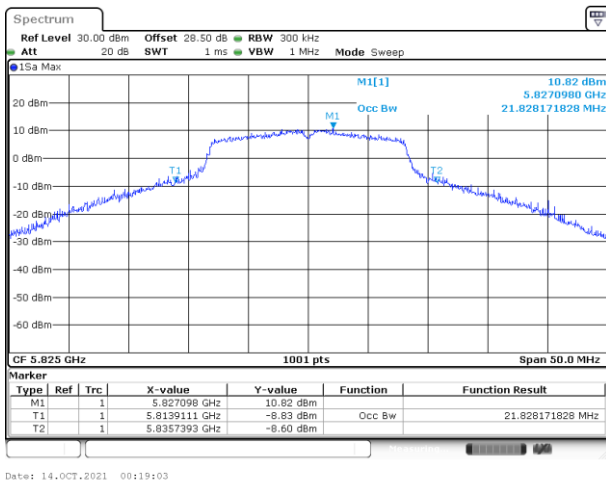
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section C) Emission bandwidth for the band 5.725-5.85 GHz
2. Set RBW = 100 kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is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

3.1.4 Test Setup



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

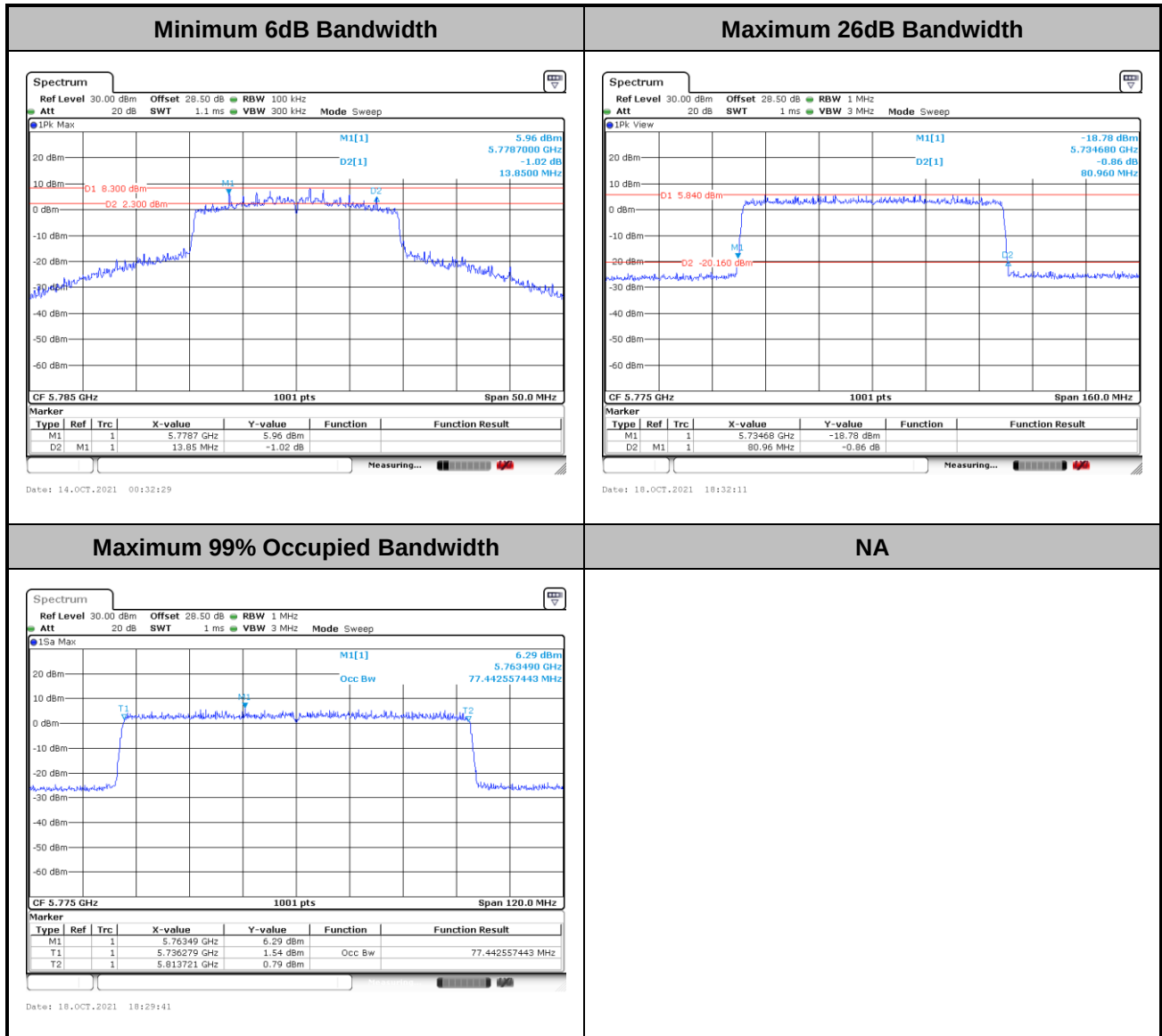
Please refer to Appendix A.

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

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



<For 802.11ax mode>



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

See list of measuring equipment of this test report.

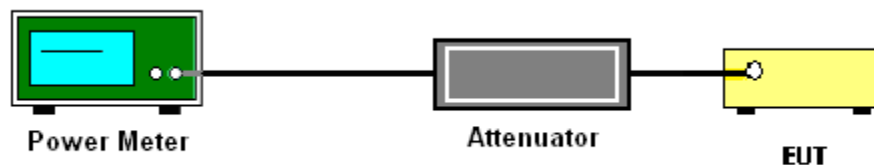
3.2.3 Test Procedures

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

See list of measuring equipment of 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):

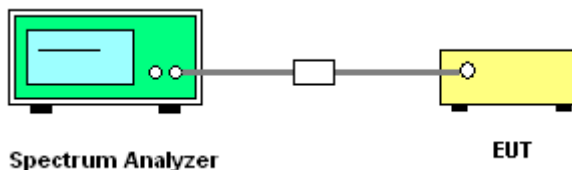
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW $\geq$ 3 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time $\leq$ (number of points in sweep) $\times$ T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Detector = power averaging (rms).
- Trace mode = max hold.
- Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

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

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

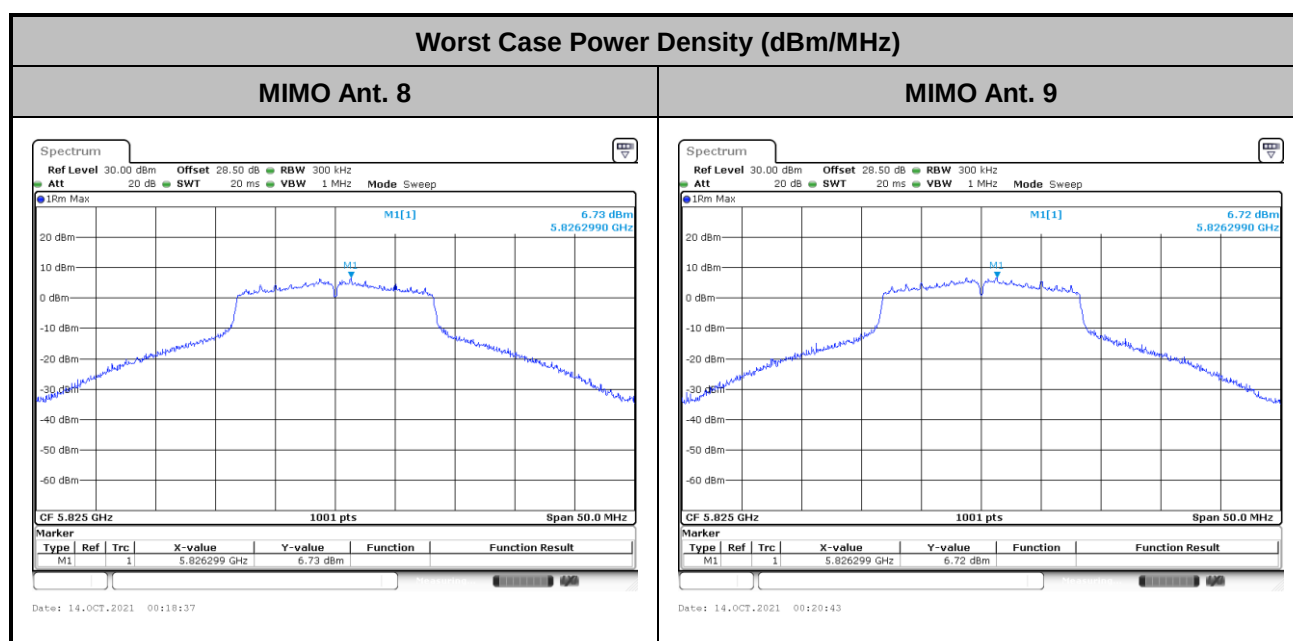
With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity $10 \log(N_{\text{ANT}})$ dB is added to each spectrum value before comparing to the emission limit. The addition of $10 \log(N_{\text{ANT}})$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

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

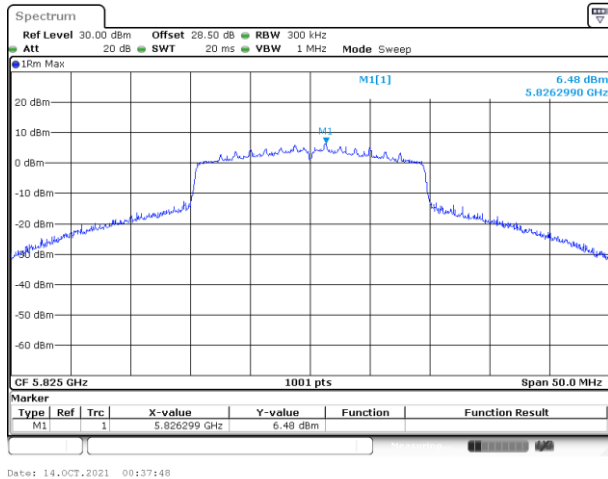




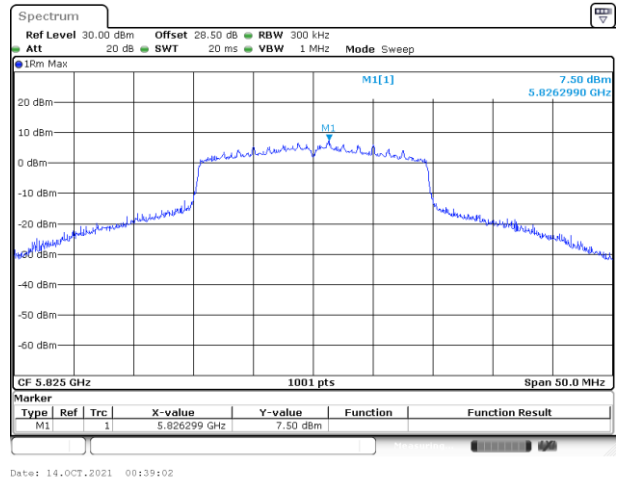
<For 802.11ax mode>

Worst Case Power Density (dBm/MHz)

MIMO Ant. 8



MIMO Ant. 9



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 fallen in restricted bands shall comply with the general field strength limits as below table,

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

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

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

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

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

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

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

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

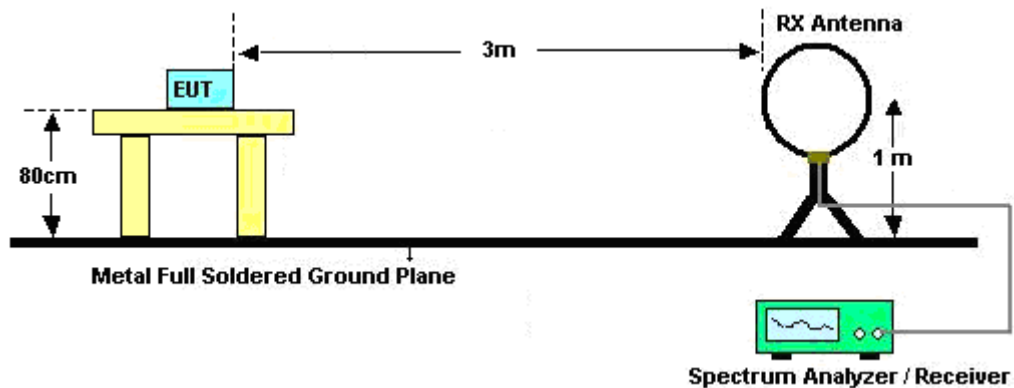
3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000 MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - (3) Procedures for Average Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.

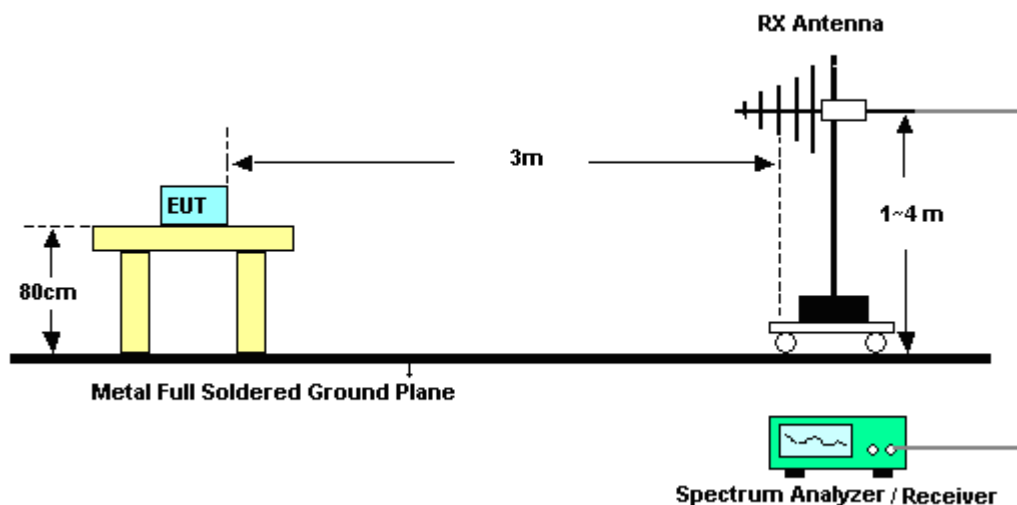
6. Radiated testing below 1GHz was performed by adjusting the antenna tower from 1m to 4m and by rotating the turn table from 0degree to 360 degree to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6dB margin against QP limit line,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

3.4.4 Test Setup

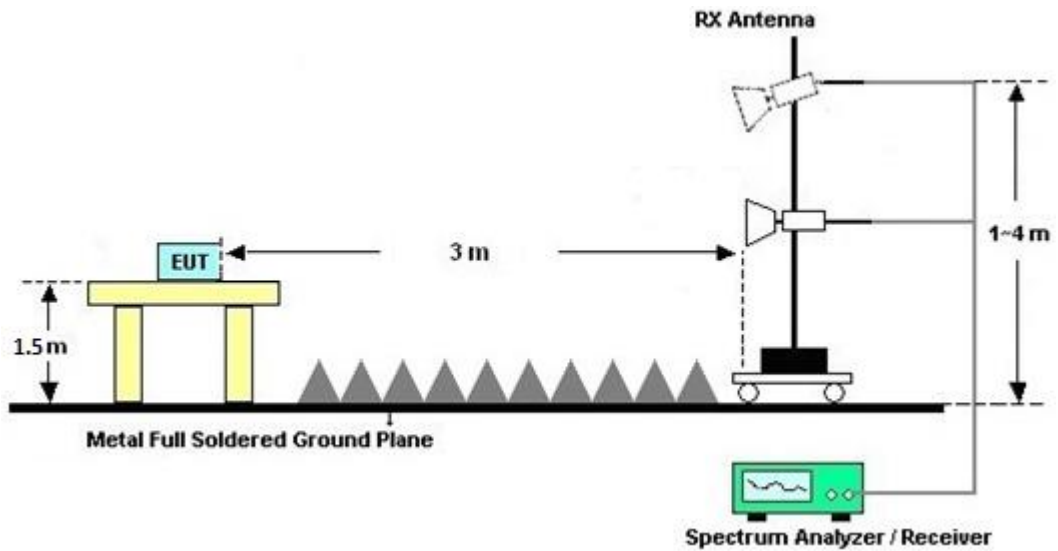
For radiated emissions below 30MHz



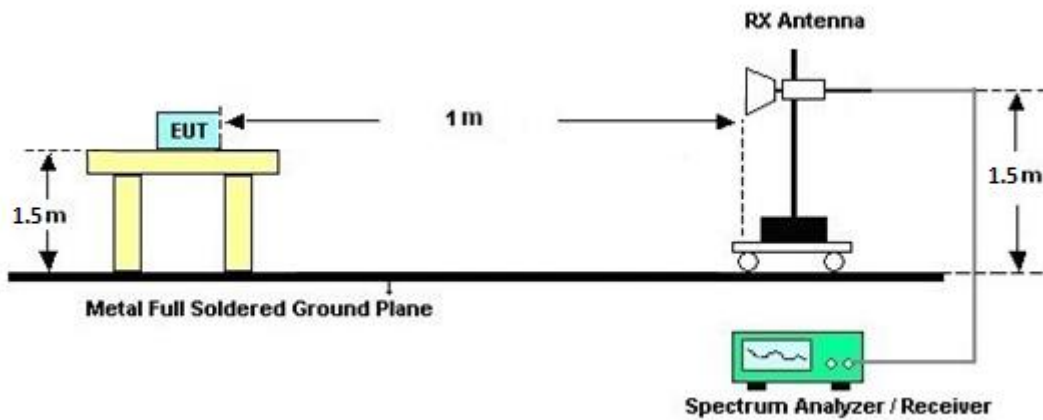
For radiated emissions from 30MHz to 1GHz



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

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

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

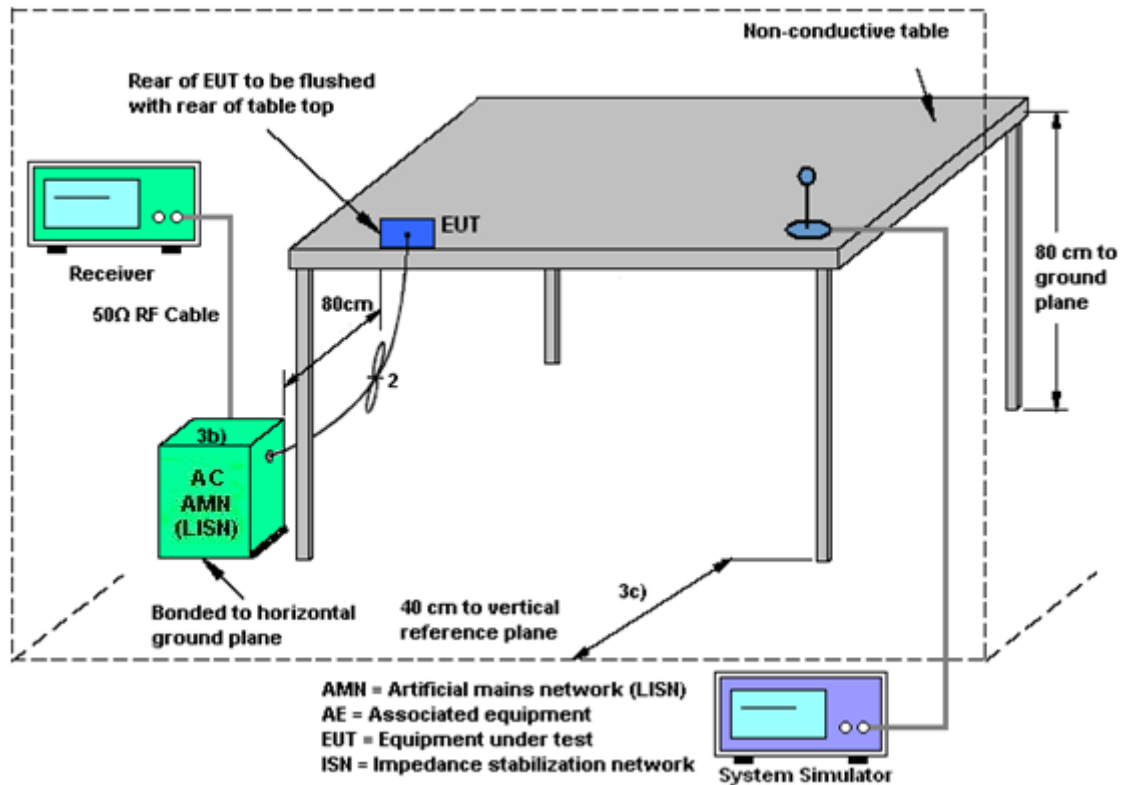
3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Antenna Requirements

3.6.1 Standard Applicable

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>						
			DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant. 8 (dBi)	Ant. 9 (dBi)				
Band IV	-1.61	-1.32	-1.32	1.55	0.00	0.00

Power Limit Reduction = $DG(\text{Power}) - 6\text{dBi}$, (min = 0)

PSD Limit Reduction = $DG(\text{PSD}) - 6\text{dBi}$, (min = 0)



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 04, 2021	Sep. 25, 2021~ Oct. 13, 2021	Jun. 03, 2022	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N- 06	41912 & 05	30MHz~1GHz	Feb. 08, 2021	Sep. 25, 2021~ Oct. 13, 2021	Feb. 07, 2022	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-01620	1GHz~18GHz	Nov. 03, 2020	Sep. 25, 2021~ Oct. 13, 2021	Nov. 02, 2021	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917025 1	18GHz~40GHz	Dec. 02, 2020	Sep. 25, 2021~ Oct. 13, 2021	Dec. 01, 2021	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 28, 2020	Sep. 25, 2021~ Oct. 13, 2021	Dec. 27, 2021	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-30 3	17100018000 55006	1GHz~18GHz	May 06, 2021	Sep. 25, 2021~ Oct. 13, 2021	May 05, 2022	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 19, 2021	Sep. 25, 2021~ Oct. 13, 2021	Aug. 18, 2022	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060801	18-40GHz	Jun. 22, 2021	Sep. 25, 2021~ Oct. 13, 2021	Jun. 21, 2022	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Nov. 02, 2020	Sep. 25, 2021~ Oct. 13, 2021	Nov. 01, 2021	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	May 07, 2021	Sep. 25, 2021~ Oct. 13, 2021	May 06, 2022	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Sep. 25, 2021~ Oct. 13, 2021	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Sep. 25, 2021~ Oct. 13, 2021	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24(k5)	RK-000451	N/A	N/A	Sep. 25, 2021~ Oct. 13, 2021	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY36980/4, MY9838/4PE, 508405/2E	30MHz~18G	Nov. 16, 2020	Sep. 25, 2021~ Oct. 13, 2021	Nov. 15, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 22, 2021	Sep. 25, 2021~ Oct. 13, 2021	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz~40GHz	Feb. 22, 2021	Sep. 25, 2021~ Oct. 13, 2021	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 11, 2021	Sep. 25, 2021~ Oct. 13, 2021	Mar. 10, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WLJ4-1000-153 0-6000-40ST	SN4	1.53GHz Low Pass Filter	Jul. 02, 2021	Sep. 25, 2021~ Oct. 13, 2021	Jul. 01, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WHKX8-5872.5- 6750-18000-40 ST	SN6	6.75GHz High Pass Filter	Jun. 30, 2021	Sep. 25, 2021~ Oct. 13, 2021	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	Sep. 24, 2021	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Sep. 24, 2021	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-FN	9561-FN00373	9kHz-200MHz	Nov. 02, 2020	Sep. 24, 2021	Nov. 01, 2021	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	N/A	Sep. 24, 2021	N/A	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Feb. 01, 2021	Sep. 24, 2021	Jan. 31, 2022	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 52	36122	N/A	Feb. 01, 2021	Sep. 24, 2021	Jan. 31, 2022	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 30, 2020	Sep. 24, 2021	Nov. 29, 2021	Conduction (CO07-HY)
Power Sensor	DARE	RPR3006W	RPR6W-2101001	10MHz~8GHz	Feb. 03, 2021	Sep. 22, 2021~Oct. 18, 2021	Feb. 02, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 27, 2020	Sep. 22, 2021~Oct. 18, 2021	Nov. 26, 2021	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2021	Sep. 22, 2021~Oct. 18, 2021	Mar. 16, 2022	Conducted (TH05-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.2dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.8dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.3dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.6dB
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Hank Hsu	Temperature:	22.5~25.9	°C
Test Date:	2021/9/22~2021/10/18	Relative Humidity:	45.1~58.7	%

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 8	ANT 9	ANT 8	ANT 9	ANT 8	ANT 9		
11a	6Mbps	2	149	5745	19.83	19.73	32.70	32.95	14.70	15.65	0.5	Pass
11a	6Mbps	2	157	5785	20.98	19.63	34.05	34.10	15.15	16.30	0.5	Pass
11a	6Mbps	2	165	5825	21.83	20.63	35.20	34.90	14.80	15.05	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 8	ANT 9	SUM	ANT 8	ANT 9	ANT 8	ANT 9	
11a	6Mbps	2	149	5745	18.70	18.80	21.76	30.00		-1.32		Pass
11a	6Mbps	2	157	5785	18.80	18.80	21.81	30.00		-1.32		Pass
11a	6Mbps	2	165	5825	18.50	18.80	21.66	30.00		-1.32		Pass
HT20	MCS0	2	149	5745	18.40	18.60	21.51	30.00		-1.32		Pass
HT20	MCS0	2	157	5785	18.60	18.60	21.61	30.00		-1.32		Pass
HT20	MCS0	2	165	5825	18.30	18.60	21.46	30.00		-1.32		Pass
HT40	MCS0	2	151	5755	18.40	18.50	21.46	30.00		-1.32		Pass
HT40	MCS0	2	159	5795	18.60	18.60	21.61	30.00		-1.32		Pass
VHT20	MCS0	2	149	5745	18.50	18.70	21.61	30.00		-1.32		Pass
VHT20	MCS0	2	157	5785	18.70	18.70	21.71	30.00		-1.32		Pass
VHT20	MCS0	2	165	5825	18.40	18.70	21.56	30.00		-1.32		Pass
VHT40	MCS0	2	151	5755	17.50	17.60	20.56	30.00		-1.32		Pass
VHT40	MCS0	2	159	5795	17.60	17.70	20.66	30.00		-1.32		Pass
VHT80	MCS0	2	155	5775	11.50	11.90	14.71	30.00		-1.32		Pass

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 8	ANT 9	ANT 8	ANT 9	SUM	ANT 8	ANT 9	ANT 8	ANT 9	
11a	6Mbps	2	149	5745	2.22		8.41	8.89	11.90	30.00		1.55		Pass
11a	6Mbps	2	157	5785	2.22		8.83	8.74	11.84	30.00		1.55		Pass
11a	6Mbps	2	165	5825	2.22		8.95	8.94	11.96	30.00		1.55		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 8	ANT 9	ANT 8	ANT 9	ANT 8	ANT 9		
HE20	MCS0	2	149	5745	Full	19.23	19.23	33.50	27.65	15.05	15.05	0.5	Pass
HE20	MCS0	2	157	5785	Full	19.33	19.18	31.30	30.00	13.85	15.10	0.5	Pass
HE20	MCS0	2	165	5825	Full	19.83	19.33	36.50	32.40	14.85	15.00	0.5	Pass
HE40	MCS0	2	151	5755	Full	38.36	38.26	58.32	55.08	36.81	35.10	0.5	Pass
HE40	MCS0	2	159	5795	Full	38.76	38.36	65.34	66.15	35.28	35.10	0.5	Pass
HE80	MCS0	2	155	5775	Full	77.44	77.20	80.96	80.64	78.08	77.92	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 8	ANT 9	SUM	ANT 8	ANT 9	ANT 8	ANT 9	
HE20	MCS0	2	149	5745	Full	18.90	19.10	22.01	30.00		-1.32		Pass
HE20	MCS0	2	149	5745	26/0	10.60	11.10	13.87	30.00		-1.32		Pass
HE20	MCS0	2	149	5745	52/37	14.30	14.90	17.62	30.00		-1.32		Pass
HE20	MCS0	2	149	5745	106/53	16.80	17.00	19.91	30.00		-1.32		Pass
HE20	MCS0	2	157	5785	Full	19.10	19.10	22.11	30.00		-1.32		Pass
HE20	MCS0	2	165	5825	Full	18.80	19.10	21.96	30.00		-1.32		Pass
HE20	MCS0	2	165	5825	26/8	11.20	11.70	14.47	30.00		-1.32		Pass
HE20	MCS0	2	165	5825	52/40	14.20	14.80	17.52	30.00		-1.32		Pass
HE20	MCS0	2	165	5825	106/54	16.80	17.30	20.07	30.00		-1.32		Pass
HE40	MCS0	2	151	5755	Full	18.80	19.00	21.91	30.00		-1.32		Pass
HE40	MCS0	2	151	5755	242/61	17.00	17.40	20.21	30.00		-1.32		Pass
HE40	MCS0	2	159	5795	Full	18.90	19.00	21.96	30.00		-1.32		Pass
HE40	MCS0	2	159	5795	242/62	17.00	17.20	20.11	30.00		-1.32		Pass
HE80	MCS0	2	155	5775	Full	12.10	12.30	15.21	30.00		-1.32		Pass
HE80	MCS0	2	155	5775	484/65	10.10	10.30	13.21	30.00		-1.32		Pass
HE80	MCS0	2	155	5775	484/66	10.00	10.10	13.06	30.00		-1.32		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 8	ANT 9	ANT 8	ANT 9	SUM	ANT 8	ANT 9	ANT 8	ANT 9	
HE20	MCS0	2	149	5745	Full	2.22		8.49	9.56	12.57	30.00		1.55		Pass
HE20	MCS0	2	149	5745	26/0	2.22		8.31	9.23	12.24	30.00		1.55		Pass
HE20	MCS0	2	149	5745	52/37	2.22		8.38	9.54	12.55	30.00		1.55		Pass
HE20	MCS0	2	149	5745	106/53	2.22		8.31	9.22	12.23	30.00		1.55		Pass
HE20	MCS0	2	157	5785	Full	2.22		9.05	9.67	12.68	30.00		1.55		Pass
HE20	MCS0	2	165	5825	Full	2.22		8.70	9.72	12.73	30.00		1.55		Pass
HE20	MCS0	2	165	5825	26/8	2.22		8.34	9.53	12.54	30.00		1.55		Pass
HE20	MCS0	2	165	5825	52/40	2.22		8.67	9.44	12.45	30.00		1.55		Pass
HE20	MCS0	2	165	5825	106/54	2.22		8.63	9.62	12.63	30.00		1.55		Pass
HE40	MCS0	2	151	5755	Full	2.22		5.78	6.38	9.39	30.00		1.55		Pass
HE40	MCS0	2	151	5755	242/61	2.22		5.36	6.25	9.26	30.00		1.55		Pass
HE40	MCS0	2	159	5795	Full	2.22		5.73	6.05	9.06	30.00		1.55		Pass
HE40	MCS0	2	159	5795	242/62	2.22		5.24	5.94	8.95	30.00		1.55		Pass
HE80	MCS0	2	155	5775	Full	2.22		-4.08	-3.38	-0.37	30.00		1.55		Pass
HE80	MCS0	2	155	5775	484/65	2.22		-3.94	-3.66	-0.65	30.00		1.55		Pass
HE80	MCS0	2	155	5775	484/66	2.22		-3.78	-3.66	-0.65	30.00		1.55		Pass

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



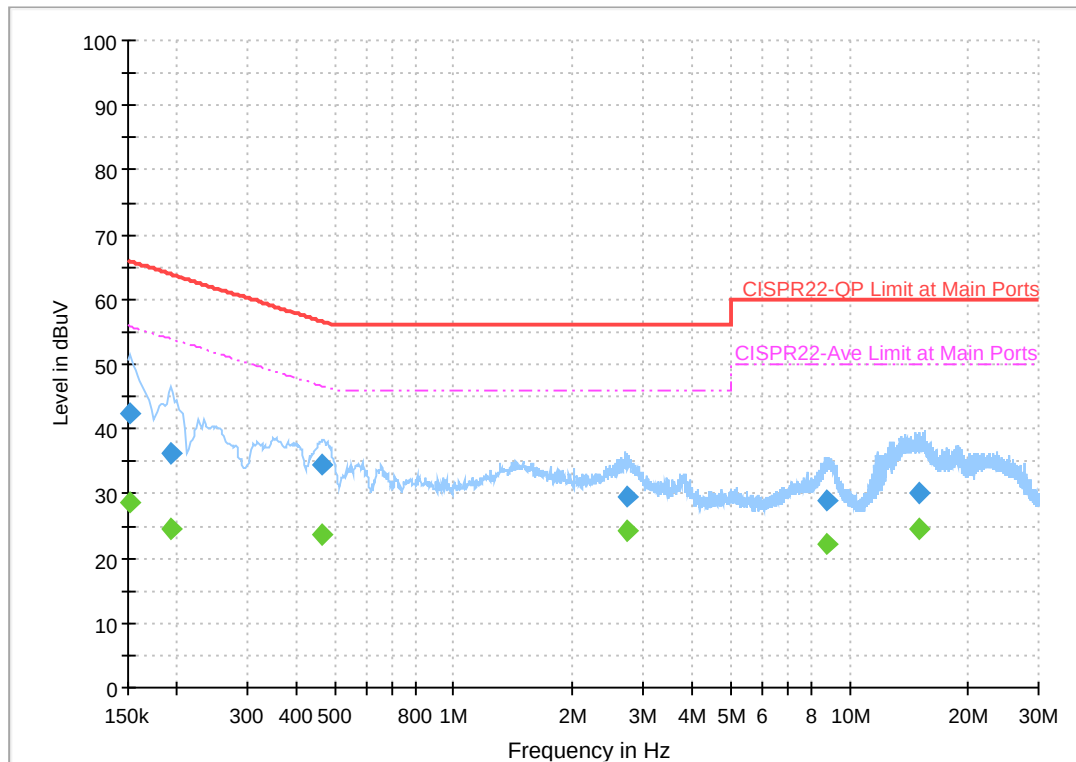
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Tom Lee	Temperature :	23~26℃
		Relative Humidity :	40~50%

EUT Information

Report NO : 190910
Test Mode : Mode 1
Test Voltage : Power From System
Phase : Line

Full Spectrum



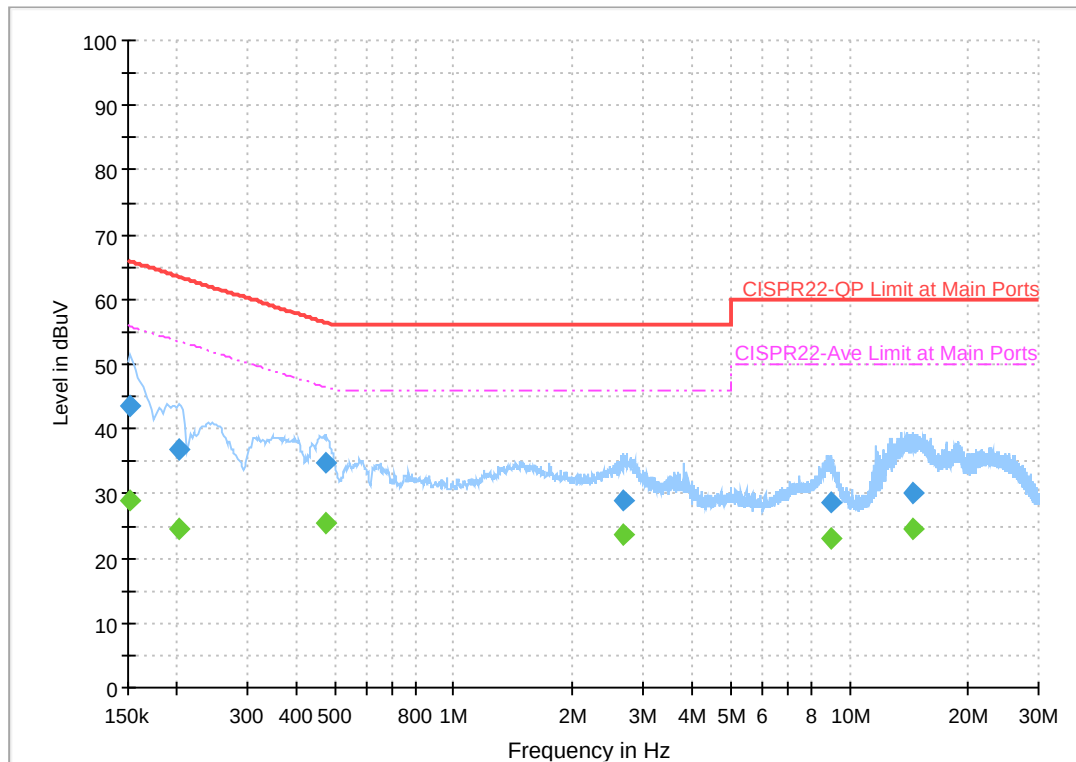
Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	28.77	55.88	27.11	L1	OFF	20.0
0.152250	42.47	---	65.88	23.41	L1	OFF	20.0
0.192750	---	24.42	53.92	29.50	L1	OFF	20.0
0.192750	36.35	---	63.92	27.57	L1	OFF	20.0
0.465000	---	23.64	46.60	22.96	L1	OFF	20.0
0.465000	34.56	---	56.60	22.04	L1	OFF	20.0
2.748750	---	24.17	46.00	21.83	L1	OFF	20.1
2.748750	29.46	---	56.00	26.54	L1	OFF	20.1
8.760750	---	22.32	50.00	27.68	L1	OFF	20.1
8.760750	28.88	---	60.00	31.12	L1	OFF	20.1
14.959500	---	24.64	50.00	25.36	L1	OFF	20.2
14.959500	30.08	---	60.00	29.92	L1	OFF	20.2

EUT Information

Report NO : 190910
Test Mode : Mode 1
Test Voltage : Power From System
Phase : Neutral

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	28.92	55.88	26.96	N	OFF	20.0
0.152250	43.55	---	65.88	22.32	N	OFF	20.0
0.201750	---	24.47	53.54	29.06	N	OFF	20.0
0.201750	36.82	---	63.54	26.72	N	OFF	20.0
0.474000	---	25.55	46.44	20.89	N	OFF	20.0
0.474000	34.72	---	56.44	21.73	N	OFF	20.0
2.688000	---	23.66	46.00	22.34	N	OFF	20.1
2.688000	29.06	---	56.00	26.94	N	OFF	20.1
8.961000	---	23.21	50.00	26.79	N	OFF	20.1
8.961000	28.59	---	60.00	31.41	N	OFF	20.1
14.532000	---	24.70	50.00	25.30	N	OFF	20.2
14.532000	30.01	---	60.00	29.99	N	OFF	20.2



Appendix C. Radiated Spurious Emission

Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	23.2~24.6°C
		Relative Humidity :	42~56%

Band 4 - 5725~5850MHz

WIFI 802.11ax HE20_Full (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
8+9		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE20 Full CH 149 5745MHz		5605.6	50.56	-17.64	68.2	38.75	31.61	10.39	30.19	100	297	P	H
		5699	58.15	-46.31	104.46	46.19	31.7	10.49	30.23	100	297	P	H
		5719.2	71.72	-38.86	110.58	59.71	31.74	10.51	30.24	100	297	P	H
		5723.2	75.02	-43.08	118.1	62.99	31.75	10.52	30.24	100	297	P	H
	*	5745	115.51	-	-	103.43	31.79	10.54	30.25	100	297	P	H
	*	5745	105.37	-	-	93.29	31.79	10.54	30.25	100	297	A	H
													H
													H
		5615	50.35	-17.85	68.2	38.51	31.63	10.4	30.19	298	242	P	V
		5699.2	59.2	-45.41	104.61	47.24	31.7	10.49	30.23	298	242	P	V
		5719.2	69.39	-41.19	110.58	57.38	31.74	10.51	30.24	298	242	P	V
		5724.2	79.52	-40.86	120.38	67.49	31.75	10.52	30.24	298	242	P	V
	*	5745	114.44	-	-	102.36	31.79	10.54	30.25	298	242	P	V
	*	5745	105.91	-	-	93.83	31.79	10.54	30.25	298	242	A	V
													V
													V



WIFI Ant. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 157 5785MHz		5611.6	50.61	-17.59	68.2	38.79	31.62	10.39	30.19	100	298	P	H
		5695.2	52.17	-49.49	101.66	40.22	31.7	10.48	30.23	100	298	P	H
		5706.8	51.78	-55.33	107.11	39.81	31.71	10.5	30.24	100	298	P	H
		5724.8	53.35	-68.39	121.74	41.32	31.75	10.52	30.24	100	298	P	H
	*	5785	113.98	-	-	101.87	31.8	10.58	30.27	100	298	P	H
	*	5785	104.19	-	-	92.08	31.8	10.58	30.27	100	298	A	H
		5852.215	50.27	-66.88	117.15	37.93	32	10.64	30.3	100	298	P	H
		5857.75	51.1	-58.93	110.03	38.74	32.02	10.64	30.3	100	298	P	H
		5885.425	51.29	-46.17	97.46	38.88	32.07	10.66	30.32	100	298	P	H
		5948.975	50.99	-17.21	68.2	38.44	32.2	10.7	30.35	100	298	P	H
													H
													H
		5621.4	50.77	-17.43	68.2	38.93	31.64	10.4	30.2	293	242	P	V
		5668.6	50.76	-31.24	82	38.82	31.7	10.46	30.22	293	242	P	V
		5719.6	51.63	-59.06	110.69	39.62	31.74	10.51	30.24	293	242	P	V
		5725	51.93	-70.27	122.2	39.9	31.75	10.52	30.24	293	242	P	V
	*	5785	114.07	-	-	101.96	31.8	10.58	30.27	293	242	P	V
	*	5785	104.46	-	-	92.35	31.8	10.58	30.27	293	242	A	V
		5855.085	50	-60.78	110.78	37.65	32.01	10.64	30.3	293	242	P	V
		5857.135	50.76	-59.44	110.2	38.41	32.01	10.64	30.3	293	242	P	V
		5894.65	51.08	-39.54	90.62	38.64	32.09	10.67	30.32	293	242	P	V
		5925.81	50.23	-17.97	68.2	37.73	32.15	10.69	30.34	293	242	P	V
													V
													V



WIFI Ant. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 165 5825MHz	*	5825	113.95	-	-	101.72	31.9	10.62	30.29	100	297	P	H
	*	5825	103.74	-	-	91.51	31.9	10.62	30.29	100	297	A	H
		5850.2	71.42	-50.32	121.74	59.08	32	10.64	30.3	100	297	P	H
		5856	64.86	-45.66	110.52	52.51	32.01	10.64	30.3	100	297	P	H
		5875	53.72	-51.48	105.2	41.33	32.05	10.65	30.31	100	297	P	H
		5949.4	50.5	-17.7	68.2	37.95	32.2	10.7	30.35	100	297	P	H
													H
													H
	*	5825	113.32	-	-	101.09	31.9	10.62	30.29	305	241	P	V
	*	5825	103.91	-	-	91.68	31.9	10.62	30.29	305	241	A	V
		5850.4	72.67	-48.62	121.29	60.33	32	10.64	30.3	305	241	P	V
		5857.6	62.7	-47.37	110.07	50.34	32.02	10.64	30.3	305	241	P	V
		5875.6	53.15	-51.6	104.75	40.76	32.05	10.65	30.31	305	241	P	V
		5930	50.79	-17.41	68.2	38.28	32.16	10.69	30.34	305	241	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. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 149 5745MHz		10000	47.63	-20.57	68.2	55.02	38.7	14.37	60.46	-	-	P	H
		11490	47.96	-26.04	74	53.62	40.09	15.12	60.87	-	-	P	H
		14000	50.21	-17.99	68.2	56.59	40.8	16.22	63.4	-	-	P	H
		17235	49.81	-18.39	68.2	49.19	40.87	18.3	58.55	-	-	P	H
		17967	60.12	-13.88	74	50.12	48.41	18.91	57.32	-	-	P	H
		17967	50.33	-3.67	54	40.33	48.41	18.91	57.32	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
		10000	48.39	-19.81	68.2	55.78	38.7	14.37	60.46	-	-	P	V
		11490	52.59	-21.41	74	58.25	40.09	15.12	60.87	100	238	P	V
		11490	43.32	-10.68	54	48.98	40.09	15.12	60.87	100	238	A	V
		14000	50.21	-17.99	68.2	56.59	40.8	16.22	63.4	-	-	P	V
		17235	50.3	-17.9	68.2	49.68	40.87	18.3	58.55	-	-	P	V
		18000	60.1	-13.9	74	49.4	49	18.94	57.24	-	-	P	V
		18000	50.45	-3.55	54	39.75	49	18.94	57.24	-	-	A	V
													V
													V
													V
													V
													V



WIFI Ant. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 157 5785MHz		10000	48.62	-19.58	68.2	56.01	38.7	14.37	60.46	-	-	P	H
		11570	50.69	-23.31	74	56.44	40.03	15.16	60.94	100	42	P	H
		11570	40.83	-13.17	54	46.58	40.03	15.16	60.94	100	42	A	H
		14000	50.4	-17.8	68.2	56.78	40.8	16.22	63.4	-	-	P	H
		17355	52.35	-15.85	68.2	50.83	41.6	18.4	58.48	-	-	P	H
		18000	60.28	-13.72	74	49.58	49	18.94	57.24	-	-	P	H
		18000	50.37	-3.63	54	39.67	49	18.94	57.24	-	-	A	H
													H
													H
													H
													H
													H
		10000	48.22	-19.98	68.2	55.61	38.7	14.37	60.46	-	-	P	V
		11570	52.96	-21.04	74	58.71	40.03	15.16	60.94	100	230	P	V
		11570	43.14	-10.86	54	48.89	40.03	15.16	60.94	100	230	A	V
		14000	50.14	-18.06	68.2	56.52	40.8	16.22	63.4	-	-	P	V
		17355	51.36	-16.84	68.2	49.84	41.6	18.4	58.48	-	-	P	V
		18000	59.65	-14.35	74	48.95	49	18.94	57.24	-	-	P	V
		18000	49.57	-4.43	54	38.87	49	18.94	57.24	-	-	A	V
													V
													V
													V
													V
													V

WIFI Ant. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 165 5825MHz		10000	47.74	-20.46	68.2	55.13	38.7	14.37	60.46	-	-	P	H
		11650	50.91	-23.09	74	57.04	39.7	15.2	61.03	100	44	P	H
		11650	40.39	-13.61	54	46.52	39.7	15.2	61.03	100	44	A	H
		14000	50.73	-17.47	68.2	57.11	40.8	16.22	63.4	-	-	P	H
		17475	53.3	-14.9	68.2	50.43	42.78	18.5	58.41	-	-	P	H
		18000	59.7	-14.3	74	49	49	18.94	57.24	-	-	P	H
		18000	49.97	-4.03	54	39.27	49	18.94	57.24	-	-	A	H
													H
													H
													H
													H
													H
													H
		10000	47.71	-20.49	68.2	55.1	38.7	14.37	60.46	-	-	P	V
		11650	51.96	-22.04	74	58.09	39.7	15.2	61.03	100	225	P	V
		11650	42.29	-11.71	54	48.42	39.7	15.2	61.03	100	225	A	V
		14000	50.16	-18.04	68.2	56.54	40.8	16.22	63.4	-	-	P	V
		17475	52.73	-15.47	68.2	49.86	42.78	18.5	58.41	-	-	P	V
		18000	59.06	-14.94	74	48.36	49	18.94	57.24	-	-	P	V
		18000	49.19	-4.81	54	38.49	49	18.94	57.24	-	-	A	V
												V	
												V	
												V	
												V	
												V	
												V	
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												
	3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												
	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. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE40 Full CH 151 5755MHz		5649.4	52.82	-15.38	68.2	40.9	31.7	10.43	30.21	100	297	P	H
		5698.6	63.28	-40.89	104.17	51.32	31.7	10.49	30.23	100	297	P	H
		5718.6	79.99	-30.42	110.41	67.98	31.74	10.51	30.24	100	297	P	H
		5723	81.72	-35.92	117.64	69.69	31.75	10.52	30.24	100	297	P	H
	*	5755	111.88	-	-	99.79	31.8	10.55	30.26	100	297	P	H
	*	5755	101.99	-	-	89.9	31.8	10.55	30.26	100	297	A	H
		5850.37	51.2	-70.16	121.36	38.86	32	10.64	30.3	100	297	P	H
		5858.365	52.71	-57.15	109.86	40.35	32.02	10.64	30.3	100	297	P	H
		5913.1	52.49	-24.49	76.98	40.01	32.13	10.68	30.33	100	297	P	H
		5940.365	50.81	-17.39	68.2	38.27	32.18	10.7	30.34	100	297	P	H
													H
													H
		5649.6	52.65	-15.55	68.2	40.73	31.7	10.43	30.21	293	242	P	V
		5696.2	64.96	-37.44	102.4	53	31.7	10.49	30.23	293	242	P	V
		5718.8	79.96	-30.5	110.46	67.95	31.74	10.51	30.24	293	242	P	V
		5723	81.73	-35.91	117.64	69.7	31.75	10.52	30.24	293	242	P	V
	*	5755	111.68	-	-	99.59	31.8	10.55	30.26	293	242	P	V
	*	5755	101.91	-	-	89.82	31.8	10.55	30.26	293	242	A	V
		5854.88	51.1	-59.97	111.07	38.75	32.01	10.64	30.3	293	242	P	V
		5860.62	50.56	-58.66	109.22	38.21	32.02	10.64	30.31	293	242	P	V
		5908.18	51.82	-28.79	80.61	39.35	32.12	10.68	30.33	293	242	P	V
		5935.035	50	-18.2	68.2	37.48	32.17	10.69	30.34	293	242	P	V
													V
													V



WIFI Ant. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE40 Full CH 159 5795MHz		5630.6	50.53	-17.67	68.2	38.66	31.66	10.41	30.2	100	296	P	H
		5698.4	54.36	-49.66	104.02	42.4	31.7	10.49	30.23	100	296	P	H
		5718.6	60.18	-50.23	110.41	48.17	31.74	10.51	30.24	100	296	P	H
		5723	60.8	-56.84	117.64	48.77	31.75	10.52	30.24	100	296	P	H
	*	5795	110.57	-	-	98.46	31.8	10.59	30.28	100	296	P	H
	*	5795	101.48	-	-	89.37	31.8	10.59	30.28	100	296	A	H
		5854.06	60.25	-52.69	112.94	47.9	32.01	10.64	30.3	100	296	P	H
		5858.775	60.16	-49.58	109.74	47.81	32.02	10.64	30.31	100	296	P	H
		5876.405	53.92	-50.24	104.16	41.53	32.05	10.65	30.31	100	296	P	H
		5930.525	51.06	-17.14	68.2	38.55	32.16	10.69	30.34	100	296	P	H
													H
													H
		5640	50.1	-18.1	68.2	38.2	31.68	10.42	30.2	311	242	P	V
		5699.4	56.22	-48.54	104.76	44.26	31.7	10.49	30.23	311	242	P	V
		5719	60.88	-49.64	110.52	48.87	31.74	10.51	30.24	311	242	P	V
		5722.6	60.85	-55.88	116.73	48.83	31.75	10.51	30.24	311	242	P	V
	*	5795	111.37	-	-	99.26	31.8	10.59	30.28	311	242	P	V
	*	5795	101.46	-	-	89.35	31.8	10.59	30.28	311	242	A	V
		5854.675	58.96	-52.58	111.54	46.61	32.01	10.64	30.3	311	242	P	V
		5859.595	58.76	-50.75	109.51	46.41	32.02	10.64	30.31	311	242	P	V
		5878.865	52.65	-49.68	102.33	40.24	32.06	10.66	30.31	311	242	P	V
		5945.285	50.18	-18.02	68.2	37.63	32.19	10.7	30.34	311	242	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ax HE80_Full (Band Edge @ 3m)

WIFI Ant. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE80 Full CH 155 5775MHz		5644	58.26	-9.94	68.2	46.35	31.69	10.43	30.21	100	297	P	H
		5691.4	72.19	-26.67	98.86	60.24	31.7	10.48	30.23	100	297	P	H
		5717.8	76.26	-33.92	110.18	64.25	31.74	10.51	30.24	100	297	P	H
		5724.2	75.38	-45	120.38	63.35	31.75	10.52	30.24	100	297	P	H
	*	5775	106.96	-	-	94.86	31.8	10.57	30.27	100	297	P	H
	*	5775	97.07	-	-	84.97	31.8	10.57	30.27	100	297	A	H
		5850.985	71.25	-48.7	119.95	58.91	32	10.64	30.3	100	297	P	H
		5857.545	70.68	-39.41	110.09	58.32	32.02	10.64	30.3	100	297	P	H
		5875.995	64.69	-39.77	104.46	52.3	32.05	10.65	30.31	100	297	P	H
		5931.14	52.69	-15.51	68.2	40.18	32.16	10.69	30.34	100	297	P	H
													H
													H
		5649.2	57.88	-10.32	68.2	45.96	31.7	10.43	30.21	290	242	P	V
		5699.4	73.45	-31.31	104.76	61.49	31.7	10.49	30.23	290	242	P	V
		5717.4	75.29	-34.78	110.07	63.29	31.73	10.51	30.24	290	242	P	V
		5721.6	75.18	-39.27	114.45	63.17	31.74	10.51	30.24	290	242	P	V
	*	5775	107.51	-	-	95.41	31.8	10.57	30.27	290	242	P	V
	*	5775	96.65	-	-	84.55	31.8	10.57	30.27	290	242	A	V
		5851.19	69.28	-50.21	119.49	56.94	32	10.64	30.3	290	242	P	V
		5857.75	69.44	-40.59	110.03	57.08	32.02	10.64	30.3	290	242	P	V
		5875.995	60.9	-43.56	104.46	48.51	32.05	10.65	30.31	290	242	P	V
		5928.475	51.14	-17.06	68.2	38.63	32.16	10.69	30.34	290	242	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 484 (Band Edge @ 3m)

WIFI Ant. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE80 Partial 484/65 CH 155 5775MHz		5642.6	54.9	-13.3	68.2	42.99	31.69	10.43	30.21	110	296	P	H
		5699.8	62.44	-42.61	105.05	50.48	31.7	10.49	30.23	110	296	P	H
		5717.8	73.59	-36.59	110.18	61.58	31.74	10.51	30.24	110	296	P	H
		5722.8	75.6	-41.58	117.18	63.57	31.75	10.52	30.24	110	296	P	H
	*	5775	107.46	-	-	95.36	31.8	10.57	30.27	110	296	P	H
	*	5775	98.29	-	-	86.19	31.8	10.57	30.27	110	296	A	H
		5852.83	51.76	-63.99	115.75	39.41	32.01	10.64	30.3	110	296	P	H
		5859.595	52.61	-56.9	109.51	40.26	32.02	10.64	30.31	110	296	P	H
		5901.415	50.54	-35.07	85.61	38.09	32.1	10.67	30.32	110	296	P	H
		5937.905	50.61	-17.59	68.2	38.07	32.18	10.7	30.34	110	296	P	H
													H
													H
		5642.8	53.04	-15.16	68.2	41.13	31.69	10.43	30.21	300	242	P	V
		5697.6	64.68	-38.75	103.43	52.72	31.7	10.49	30.23	300	242	P	V
		5717.8	75.38	-34.8	110.18	63.37	31.74	10.51	30.24	300	242	P	V
		5720.8	75.87	-36.75	112.62	63.86	31.74	10.51	30.24	300	242	P	V
	*	5775	109.05	-	-	96.95	31.8	10.57	30.27	300	242	P	V
	*	5775	100.05	-	-	87.95	31.8	10.57	30.27	300	242	A	V
		5849.96	55.15	-79.05	134.2	42.82	32	10.63	30.3	300	242	P	V
		5855.085	53.39	-57.39	110.78	41.04	32.01	10.64	30.3	300	242	P	V
		5906.13	50.84	-31.29	82.13	38.39	32.11	10.67	30.33	300	242	P	V
		5944.875	50.26	-17.94	68.2	37.71	32.19	10.7	30.34	300	242	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



WIFI Ant. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE80 Partial 484/66 CH 155 5775MHz		5637.8	50.69	-17.51	68.2	38.79	31.68	10.42	30.2	100	279	P	H
		5696.2	57.03	-45.37	102.4	45.07	31.7	10.49	30.23	100	279	P	H
		5718	57.87	-52.37	110.24	45.86	31.74	10.51	30.24	100	279	P	H
		5720.2	59.41	-51.85	111.26	47.4	31.74	10.51	30.24	100	279	P	H
	*	5775	106.02	-	-	93.92	31.8	10.57	30.27	100	279	P	H
	*	5775	97.59	-	-	85.49	31.8	10.57	30.27	100	279	A	H
		5852.83	57.68	-58.07	115.75	45.33	32.01	10.64	30.3	100	279	P	H
		5856.725	58.75	-51.57	110.32	46.4	32.01	10.64	30.3	100	279	P	H
		5894.855	55.04	-35.43	90.47	42.6	32.09	10.67	30.32	100	279	P	H
		5943.235	50.43	-17.77	68.2	37.88	32.19	10.7	30.34	100	279	P	H
													H
													H
		5628.4	51.09	-17.11	68.2	39.22	31.66	10.41	30.2	292	251	P	V
		5696	58.97	-43.28	102.25	47.01	31.7	10.49	30.23	292	251	P	V
		5708.4	60.71	-46.84	107.55	48.73	31.72	10.5	30.24	292	251	P	V
		5725	62.32	-59.88	122.2	50.29	31.75	10.52	30.24	292	251	P	V
	*	5775	108.8	-	-	96.7	31.8	10.57	30.27	292	251	P	V
	*	5775	99.4	-	-	87.3	31.8	10.57	30.27	292	251	A	V
		5853.445	60.86	-53.48	114.34	48.51	32.01	10.64	30.3	292	251	P	V
		5856.52	60.35	-50.02	110.37	48	32.01	10.64	30.3	292	251	P	V
		5874.97	58.03	-47.18	105.21	45.64	32.05	10.65	30.31	292	251	P	V
		5938.93	51.47	-16.73	68.2	38.93	32.18	10.7	30.34	292	251	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission above 18GHz

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
8+9		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE80 Full SHF		21384	40.82	-33.18	74	60.49	38.4	-3.27	54.8	-	-	P	H
		28548	44.85	-43.35	88.2	61.34	39.96	-2.29	54.16	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		21216	41.13	-32.87	74	60.9	38.33	-3.3	54.8	-	-	P	V
		28688	45.61	-42.59	88.2	62.06	40.13	-2.25	54.33	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against limit line.												
	3. The emission position marked as "-" means no suspected emission found 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 below 1GHz

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

WIFI Ant. 8+9	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE80 Full LF		30.97	24.43	-15.57	40	32.1	24.21	0.62	32.5	-	-	P	H
		88.2	21.52	-21.98	43.5	38.41	14.36	1.25	32.5	-	-	P	H
		191.99	28.49	-15.01	43.5	44.3	14.76	1.89	32.46	-	-	P	H
		213.33	35.09	-8.41	43.5	50.5	15	2.02	32.43	-	-	P	H
		252.13	34.38	-11.62	46	45.85	18.68	2.25	32.4	-	-	P	H
		564.47	26.38	-19.62	46	29.58	26.15	3.24	32.59	-	-	P	H
													H
													H
													H
													H
													H
													H
		30.97	30.53	-9.47	40	38.2	24.21	0.62	32.5	-	-	P	V
		173.56	27.39	-16.11	43.5	42.76	15.31	1.81	32.49	-	-	P	V
		212.36	29.31	-14.19	43.5	44.69	15.04	2.01	32.43	-	-	P	V
		251.16	25.23	-20.77	46	36.85	18.54	2.24	32.4	-	-	P	V
		567.38	26.07	-19.93	46	29.36	26.03	3.25	32.57	-	-	P	V
		945.68	33.63	-12.37	46	30.24	30.47	4.25	31.33	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												



Note symbol

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

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
8+9		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)
 = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
 = 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
 = 55.45 (dBμV/m)
2. Over Limit(dB)
 = Level(dBμV/m) – Limit Line(dBμV/m)
 = 55.45(dBμV/m) – 74(dBμV/m)
 = -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)
 = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
 = 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
 = 43.54 (dBμV/m)
2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)
 = 43.54(dBμV/m) – 54(dBμV/m)
 = -10.46(dB)

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



Appendix D. Radiated Spurious Emission Plots

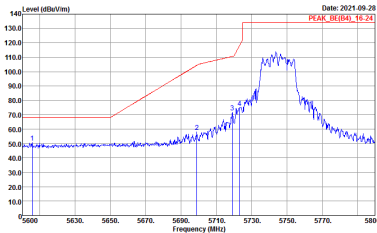
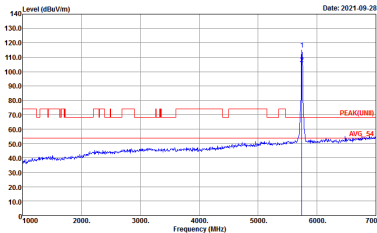
Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	23.2~24.6°C
		Relative Humidity :	42~56%

Note symbol

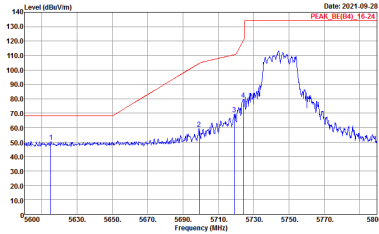
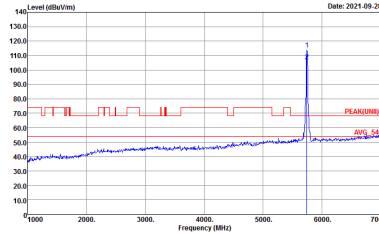
-L	Low channel location
-R	High channel location



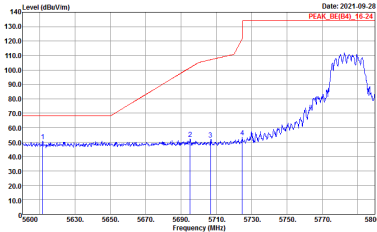
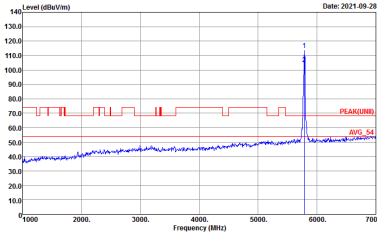
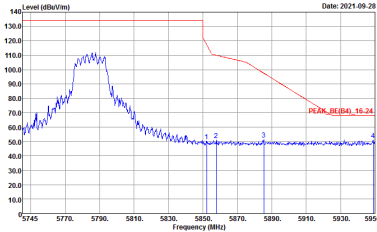
Band 4 - 5725~5850MHz
WIFI 802.11ax HE20 Full (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
8+9	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_16(16)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_16(16)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

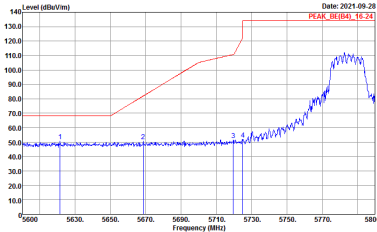
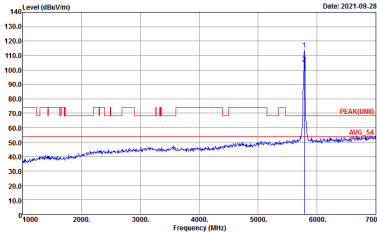
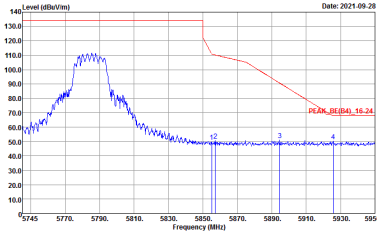


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
8+9	Vertical	Fundamental
Peak	 Site : 09CH15-HY Condition : P5AKL_85(B4)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 09CH15-HY Condition : P5AKL_85(B4)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

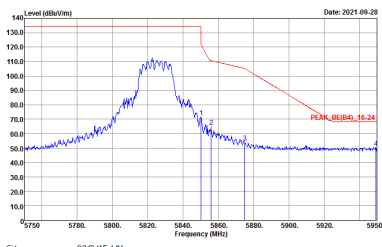
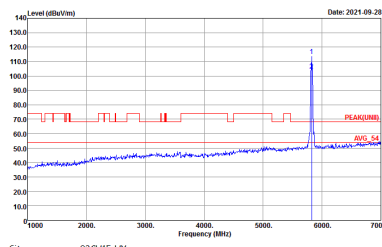


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
8+9	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(UNIT)_3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

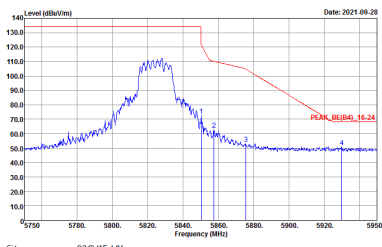
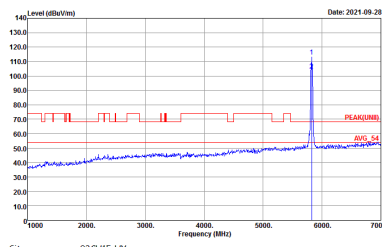


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
8+9	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
8+9	Horizontal	Fundamental
Peak	 Site : 09CH15-HY Condition : PEAK_85(84)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 09CH15-HY Condition : PEAK_85(84)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



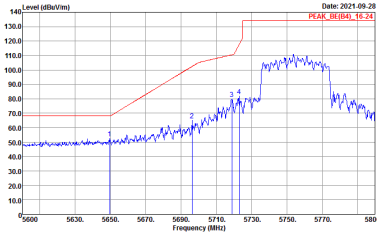
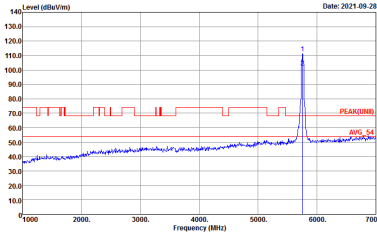
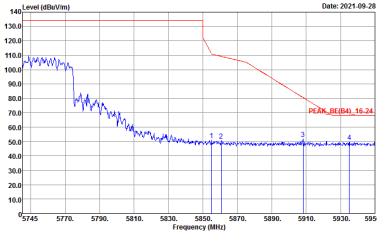
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
8+9	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_85(B4)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_85(B4)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



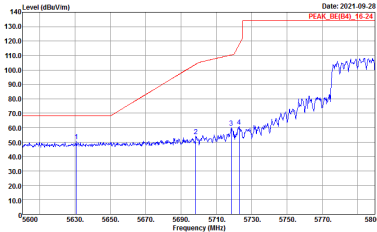
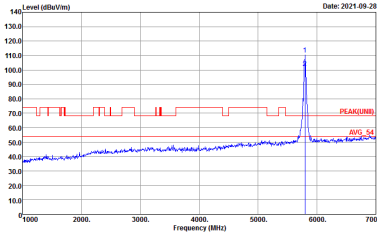
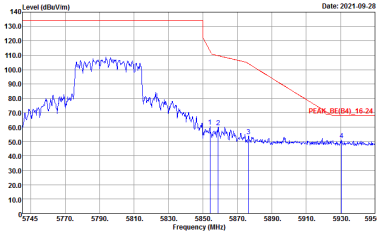
Band 4 5725~5850MHz
WIFI 802.11ax HE40 Full (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
8+9	Horizontal	Fundamental
Peak	Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH15-HY Condition : PEAK(UMI) 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

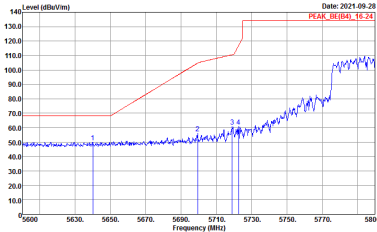
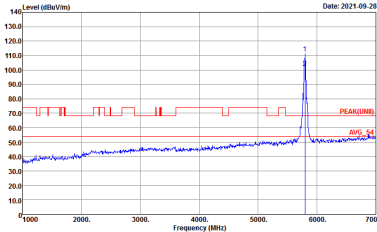
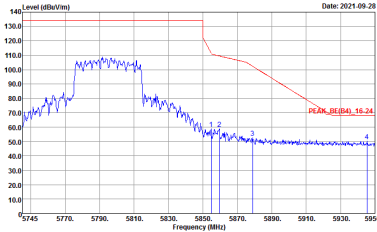


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
8+9	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



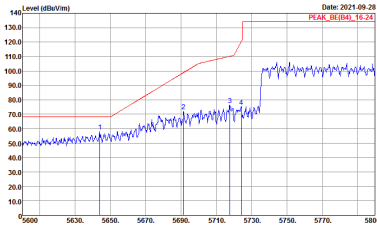
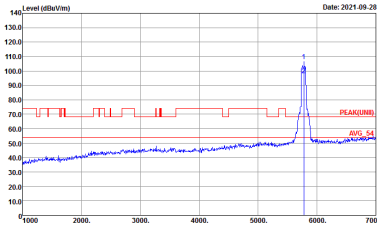
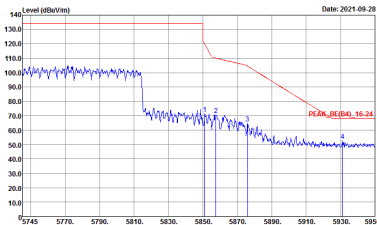
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
8+9	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



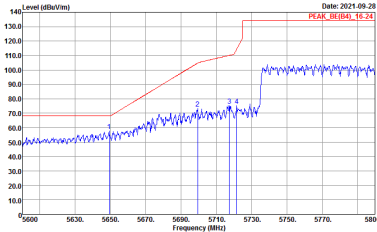
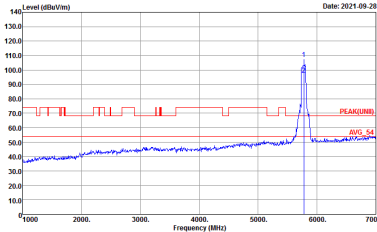
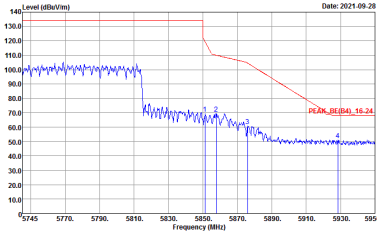
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
8+9	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



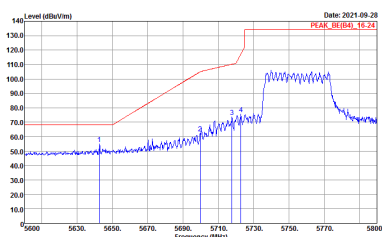
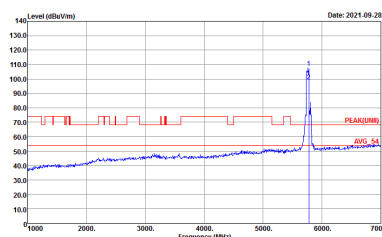
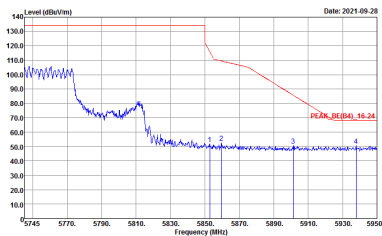
Band 4 5725~5850MHz
WIFI 802.11ax HE80 Full (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
8+9	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(UMB) 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

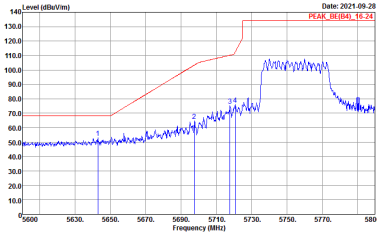
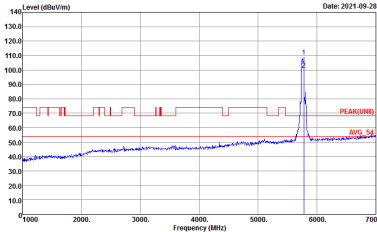
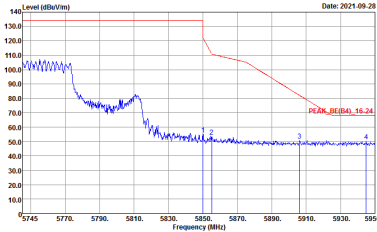


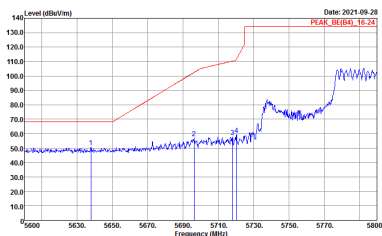
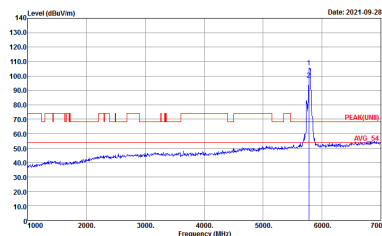
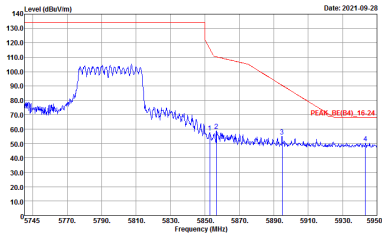
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
8+9	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

Band 4 5725~5850MHz
WIFI 802.11ax HE80 Partial 484 (Band Edge @ 3m)

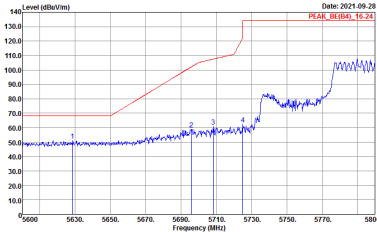
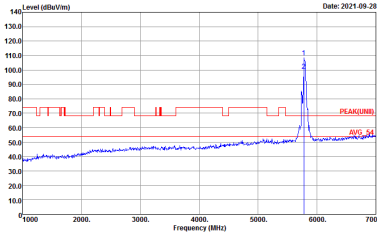
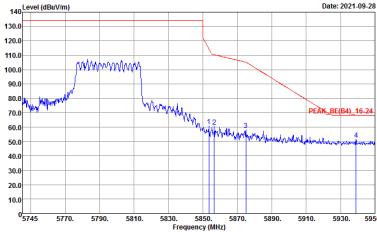
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/65 CH155 5775MHz	
8+9	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(UMB) 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



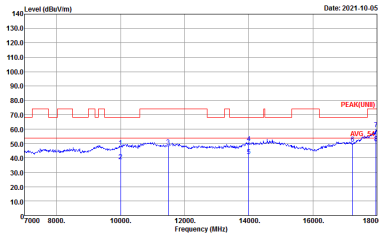
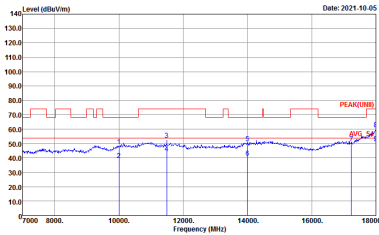
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/65 CH155 5775MHz	
8+9	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/66 CH155 5775MHz	
8+9	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK(UNIT)_3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

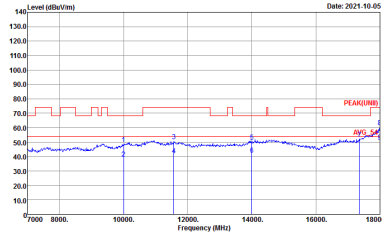
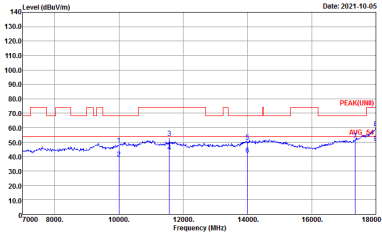


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/66 CH155 5775MHz	
8+9	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

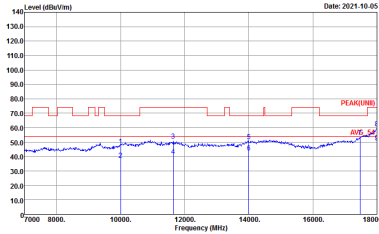
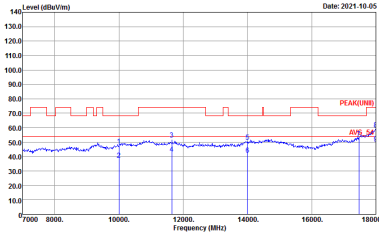
Band 4 - 5725~5850MHz
WIFI 802.11ax HE20 Full (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
8+9	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK(LINE1) 3m 91200_15_1620 HORIZONTAL Detector : Peak	 Site : 03CH15-HY Condition : PEAK(LINE1) 3m 91200_15_1620 VERTICAL Detector : Peak

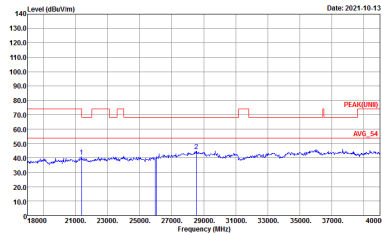
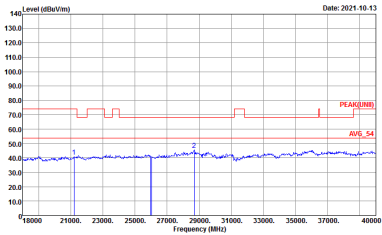


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
8+9	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 HORIZONTAL Detector : Peak	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 VERTICAL Detector : Peak

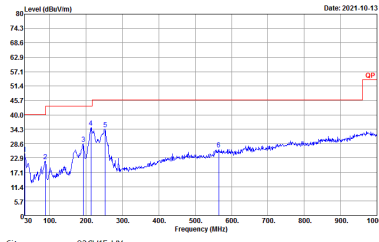
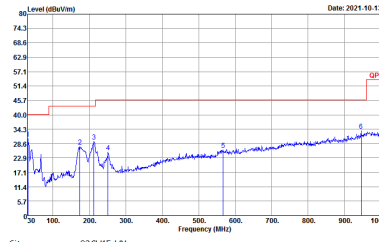


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
8+9	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 HORIZONTAL Detector : Peak	 Site : 03CH15-HY Condition : PEAK(UNIT) 3m 91200_15_1620 VERTICAL Detector : Peak

Emission above 18GHz
5GHz WIFI 802.11ax HE80 Full (SHF @ 1m)

WIFI	5GHz WIFI	
ANT	802.11ax HE80 Full SHF	
8+9	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK(LINE1) 1m SHF_BBHA917000993 HORIZONTAL Detector : Peak	 Site : 03CH15-HY Condition : PEAK(LINE1) 1m SHF_BBHA917000993 VERTICAL Detector : Peak

Emission below 1GHz
5GHz WIFI 802.11ax HE80 Full (LF @ 3m)

WIFI	5GHz WIFI	
ANT	802.11ax HE80 Full LF	
8+9	Horizontal	Vertical
QP / Peak	 Site : 03CH15-HY Condition : QP 3m B1LO6_41912_20210208 HORIZONTAL Detector : Peak	 Site : 03CH15-HY Condition : QP 3m B1LO6_41912_20210208 VERTICAL Detector : Peak



Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
8+9	802.11a	97.21	1395	0.72	1kHz
8+9	5GHz 802.11ax HE20 Full RU	47.64	1010	0.99	1kHz
8+9	5GHz 802.11ax HE40 Full RU	92.23	534	1.87	3kHz
8+9	5GHz 802.11ax HE40 242 RU	96.04	1090	0.92	1kHz
8+9	5GHz 802.11ax HE80 Full RU	87.88	290	3.45	10kHz
8+9	5GHz 802.11ax HE80 484 RU	92.74	575	1.74	3kHz

MIMO <Ant. 8+9>

