



# FCC RADIO TEST REPORT

**FCC ID** : PU5-TP00139AS  
**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. 21, 2021 and testing was performed from Jan. 08, 2022 to Feb. 15, 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*



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## 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	9.48 dB under the limit at 18000.000 MHz
3.5	15.207	AC Conducted Emission	Pass	12.25 dB under the limit at 11.842 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: Sheng Kuo**

**Report Producer: Celery Wei**

# 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-TP00139AS
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 : WLAN(5G B4): 2.94	Aux Antenna : 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 : WLAN(5G B4): 2.91	Aux Antenna : 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

Product Specification is subject to this standard			
<b>Tx/Rx Channel Frequency Range</b>	5745 MHz ~ 5825 MHz		
<b>Maximum (Average) Output Power to antenna</b>	<b>MIMO &lt;Chain 1+2&gt;</b> 802.11a: 15.76 dBm / 0.0377 W 802.11n HT20: 15.71 dBm / 0.0372 W 802.11n HT40: 15.52 dBm / 0.0357 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		
<b>99% Occupied Bandwidth</b>	<b>MIMO &lt;Chain 1&gt;</b> 802.11a: 16.50 MHz 802.11ax HE20: 18.95 MHz 802.11ac HE40: 38.00 MHz 802.11ac HE80: 77.28 MHz <b>MIMO &lt;Chain 2&gt;</b> 802.11a: 16.50 MHz 802.11ax HE20: 18.95 MHz 802.11ac HE40: 37.90 MHz 802.11ac HE80: 77.40 MHz		
<b>Type of Modulation</b>	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)		
<b>Antenna Function for Transmitter</b>		Chain 1	Chain 2
	802.11a/n/ac/ax MIMO	V	V

**Remark:**

- The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.
- 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. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010
Test Site No.	<b>Sporton Site No.</b>
	TH05-HY, 03CH15-HY, CO07-HY

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

FCC designation No.: 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 <sup>#</sup>	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 "<sup>#</sup>" 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 + Battery 1 + Adapter + USB Cable (Data Link with HD) for Sample 2
<b>Remark:</b> 1. For Radiated Test Cases, the tests were performed with Battery 1. 2. Data Link with USB HD means data application transferred mode between EUT and USB HD.	

<Sample 1>

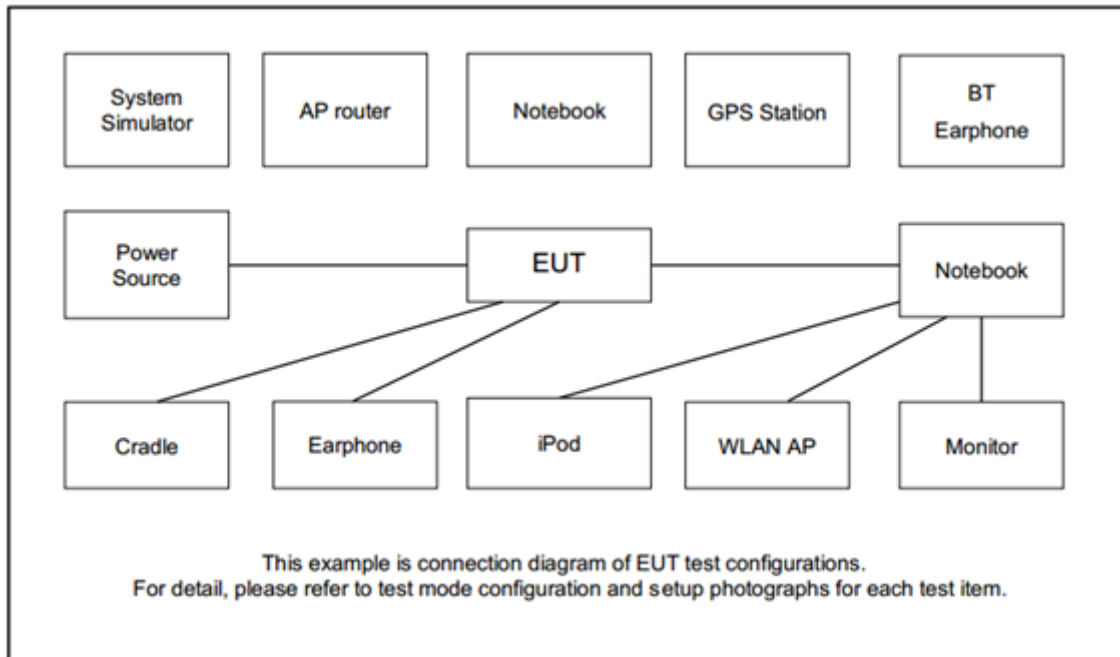
Ch. #		Band IV : 5725-5850 MHz	
		802.11ax HE40	
L	Low	151	
M	Middle	-	
H	High	-	

<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 EUT which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

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

Example :

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

*Offset = RF cable loss + attenuator factor.*

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

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

### 3 Test Result

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

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

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

26dB and 99% Occupied bandwidth are reporting only.

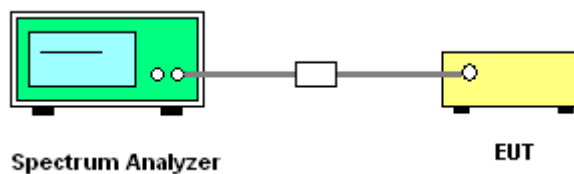
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

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

##### 3.1.4 Test Setup

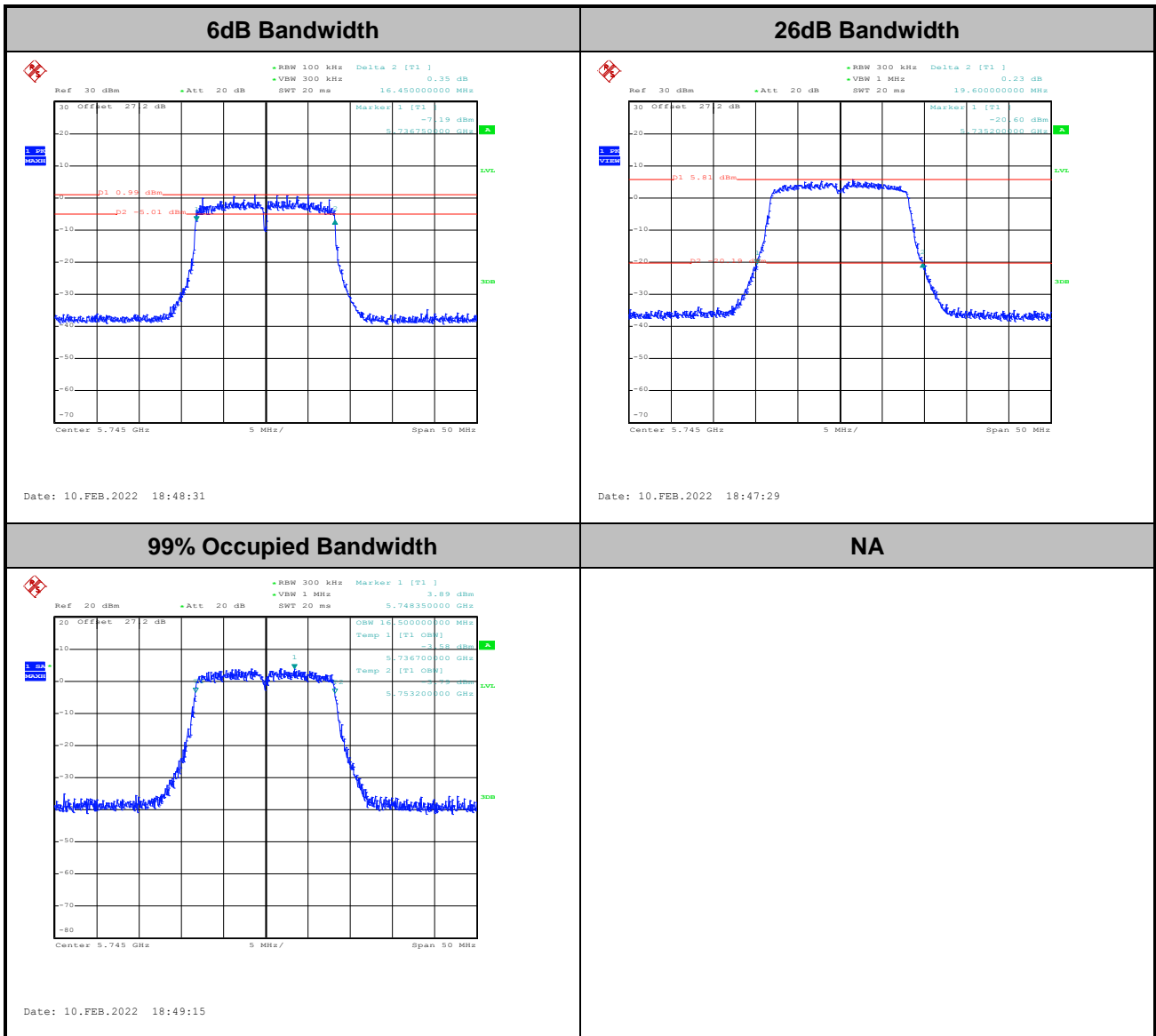


##### 3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.



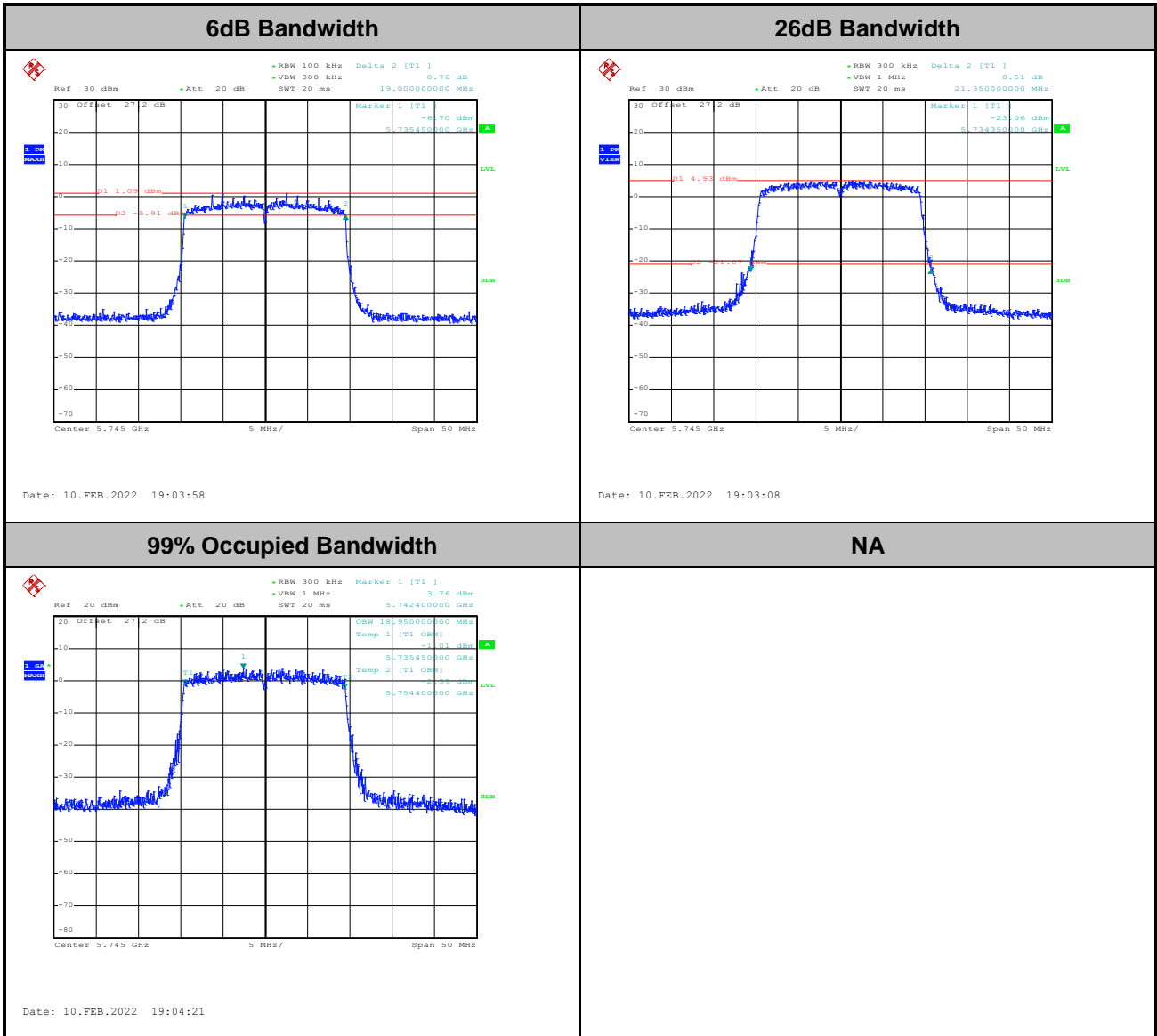
<802.11a>



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



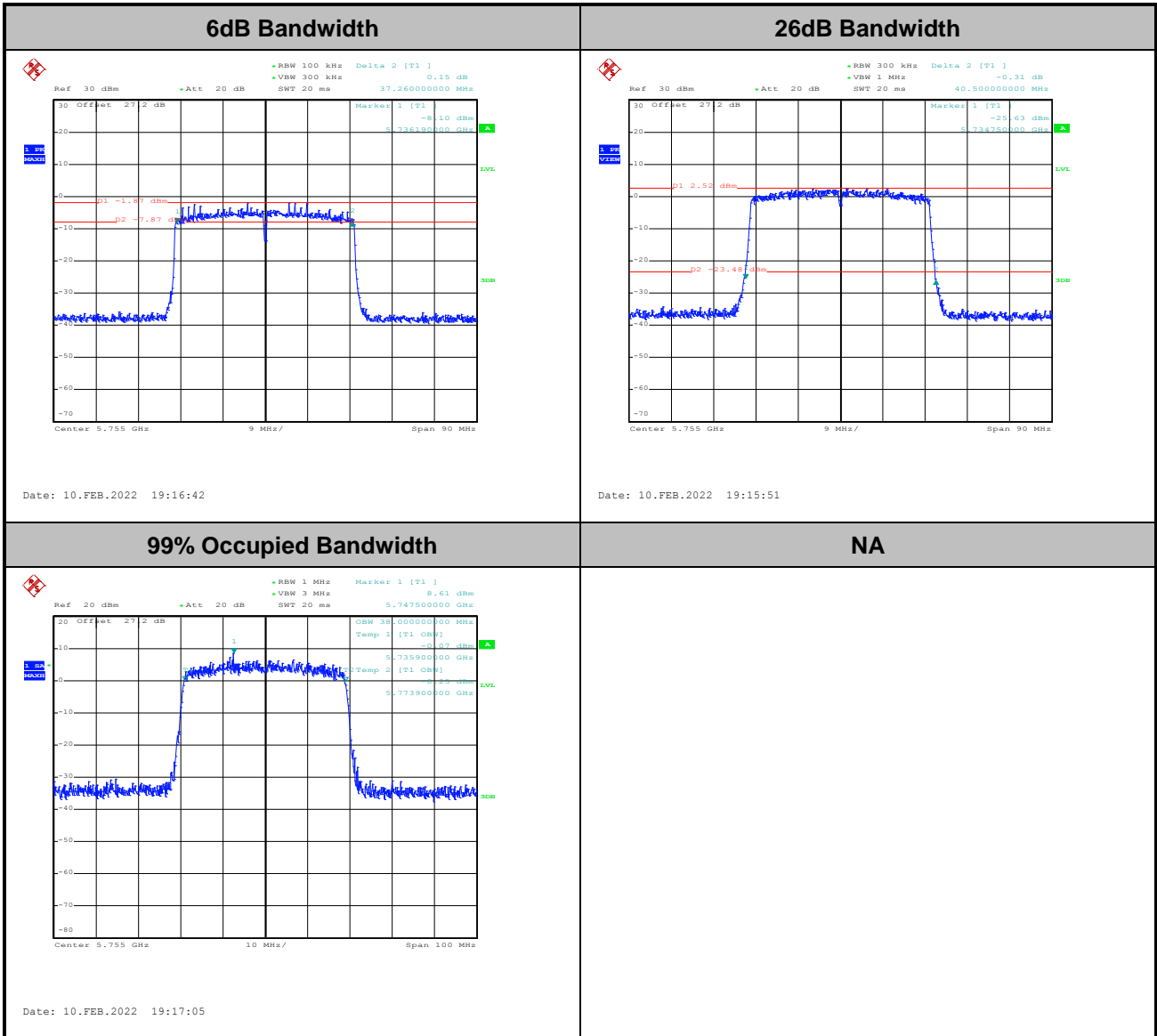
<802.11ax HE20>



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



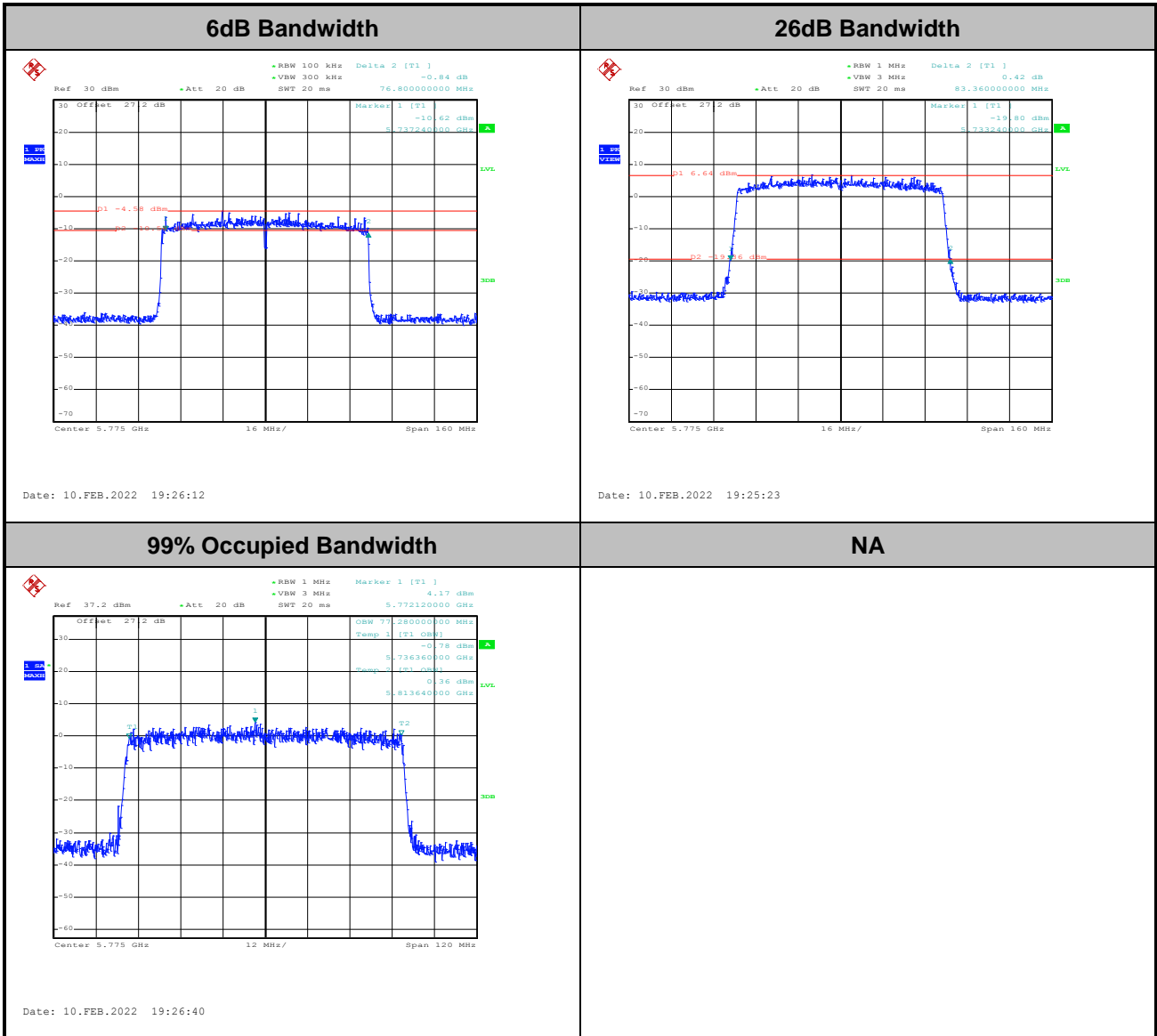
<802.11ax HE40>



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



<802.11ax HE80>



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



## 3.2 Maximum Conducted Output Power Measurement

### 3.2.1 Limit of Maximum Conducted Output Power

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

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

### 3.2.2 Measuring Instruments

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

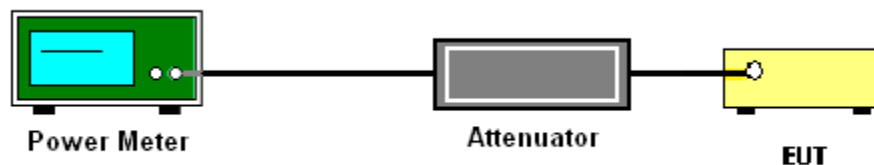
### 3.2.3 Test Procedures

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

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

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

### 3.2.4 Test Setup



### 3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



### 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

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

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

#### 3.3.2 Measuring Instruments

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

#### 3.3.3 Test Procedures

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

##### # Method SA-3 #

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

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

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

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



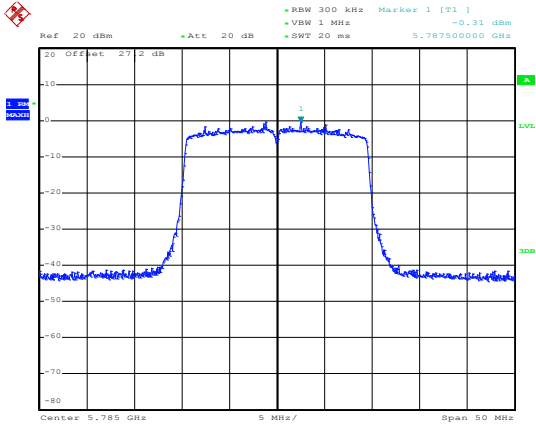


<802.11ax HE20>

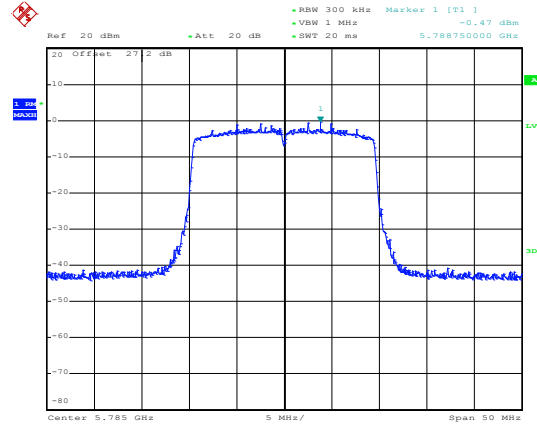
Maximum Power Density Plot (dBm/MHz)

MIMO Chain 1

MIMO Chain 2



Date: 10.FEB.2022 19:08:26



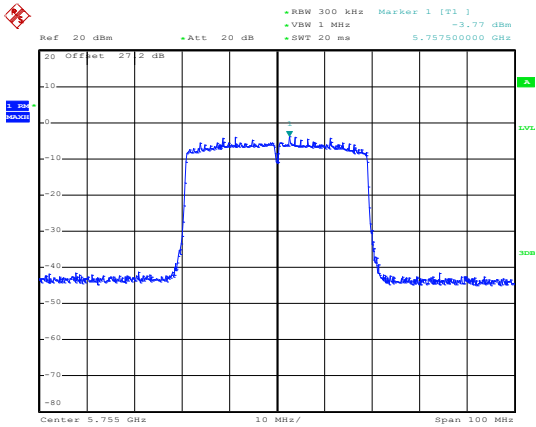
Date: 10.FEB.2022 19:10:18

<802.11ax HE40>

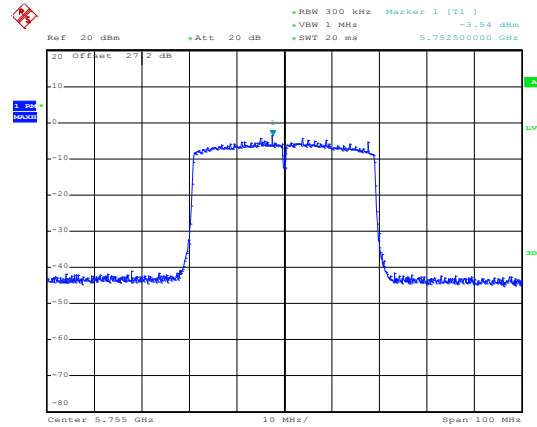
Maximum Power Density Plot (dBm/MHz)

MIMO Chain 1

MIMO Chain 2



Date: 11.FEB.2022 13:45:00



Date: 11.FEB.2022 13:44:39

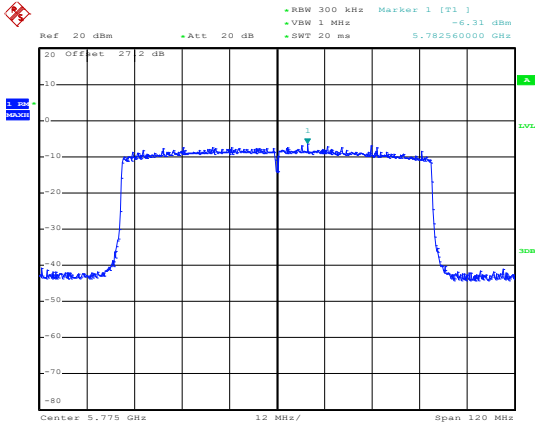


<802.11ax HE80>

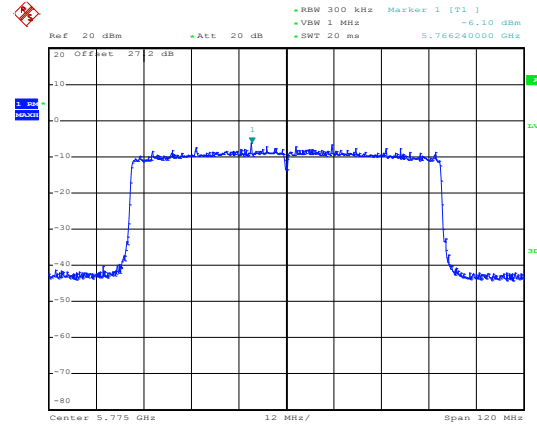
Maximum Power Density Plot (dBm/MHz)

MIMO Chain 1

MIMO Chain 2



Date: 10.FEB.2022 19:26:23



Date: 10.FEB.2022 19:27:50

### 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.

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

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

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

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

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



### 3.4.2 Measuring Instruments

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

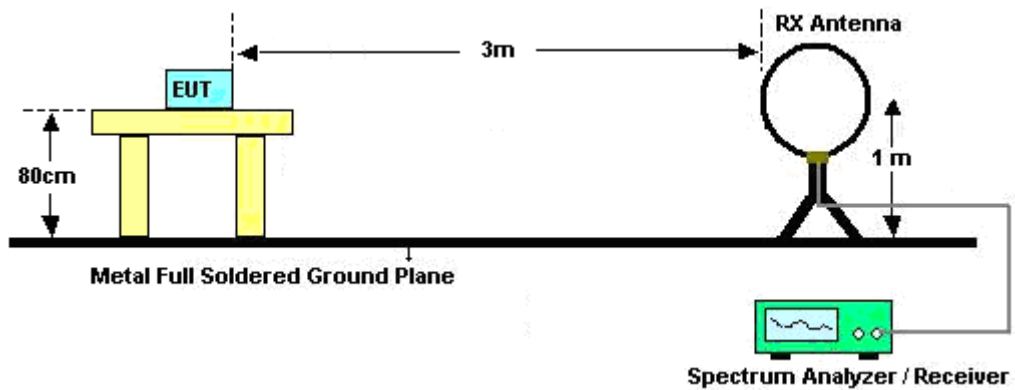
### 3.4.3 Test Procedures

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

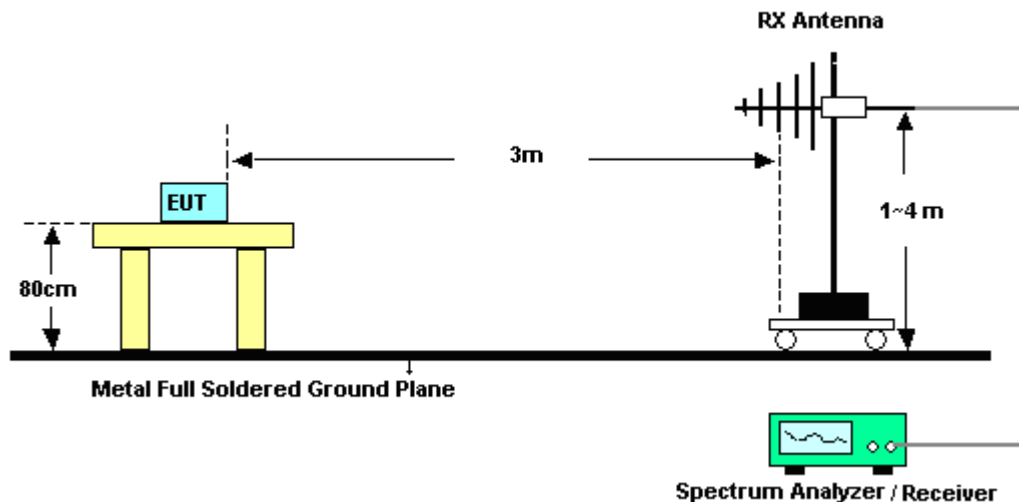
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit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

**3.4.4 Test Setup**

**For radiated emissions below 30MHz**

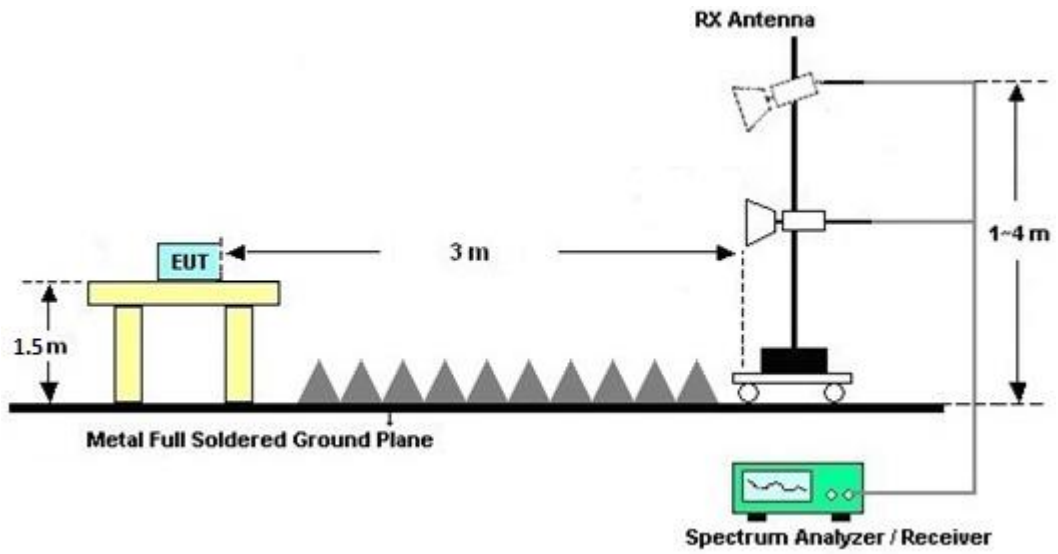


**For radiated emissions from 30MHz to 1GHz**

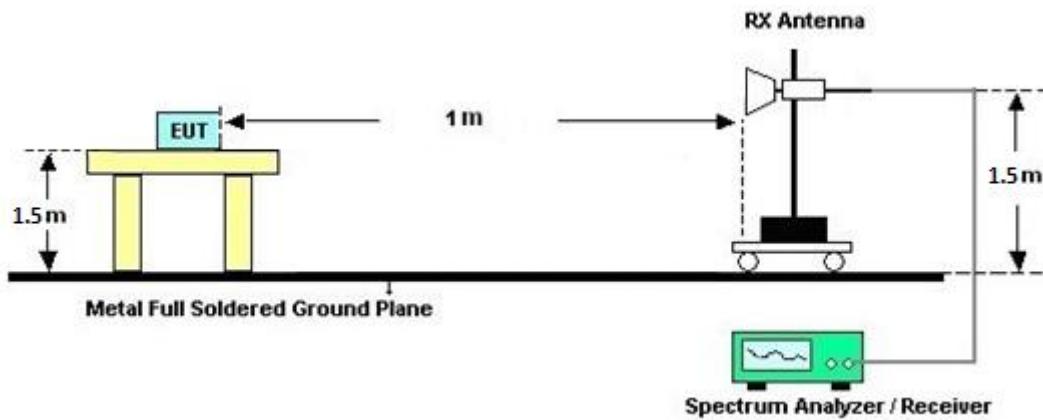




For radiated test from 1GHz to 18GHz



For radiated test above 18GHz





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

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

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

### **3.4.6 Test Result of Radiated Band Edges**

Please refer to Appendix C and D.

### **3.4.7 Duty Cycle**

Please refer to Appendix E.

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

Please refer to Appendix C and D.

## 3.5 AC Conducted Emission Measurement

### 3.5.1 Limit of AC Conducted Emission

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

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

\*Decreases with the logarithm of the frequency.

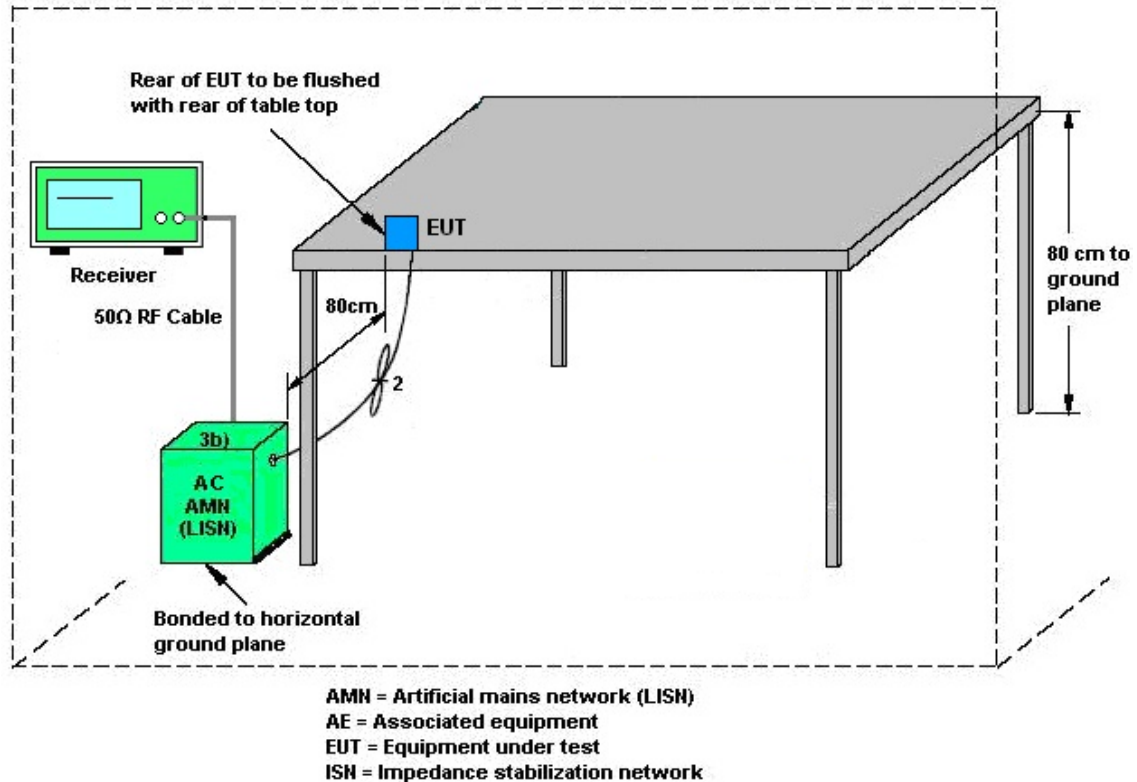
### 3.5.2 Measuring Instruments

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

### 3.5.3 Test Procedures

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

### 3.5.4 Test Setup



### 3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

### 3.6 Antenna Requirements

#### 3.6.1 Standard Applicable

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 power measurements on IEEE 802.11 devices,

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

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

$G_{ANT}$  is set equal to the gain of the antenna having the highest gain.

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

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

where

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

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

$N_{ANT}$  = the total number of antennas

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

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

Directional gain =  $10 \cdot \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$  dBi

Where  $G1, G2, \dots, GN$  denote single antenna gain.

For example: If a device has two antenna,  $G_{ANT1}= 3.6$ dBi;  $G_{ANT2}=4.2$ dBi

Directional gain of power measurement =  $\max(3.6, 4.2) + 0 = 4.2$  dBi

Directional gain of PSD measurement =  $10 \cdot \log[ (10^{3.6/20} + 10^{4.2/20})^2 / 2 ] = 6.92$  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)
	Chain 1 (dBi)	Chain 2 (dBi)				
Band IV	3.13	2.91	3.13	6.03	0.00	0.03

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

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

Calculation example:

The DG for PSD is derived from formula is

$$10 \times \log \left\{ \left[ 10^{(3.13\text{ dBi} / 20)} + 10^{(2.91\text{ dBi} / 20)} \right]^2 / 2 \right\}$$

$$= 6.03\text{ dBi}$$



## 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	100488	9 kHz~30 MHz	Sep. 07, 2021	Jan. 21, 2022~ Feb. 10, 2022	Sep. 06, 2022	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL6111D&0 0800N1D01 N-06	40103 & 07	30MHz to 1GHz	Apr. 28, 2021	Jan. 21, 2022~ Feb. 10, 2022	Apr. 27, 2022	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 27, 2021	Jan. 21, 2022~ Feb. 10, 2022	Dec. 26, 2022	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-0162 0	1GHz~18GHz	Oct. 25, 2021	Jan. 21, 2022~ Feb. 10, 2022	Oct. 24, 2022	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA91702 51	18GHz~40GHz	Nov. 30, 2021	Jan. 21, 2022~ Feb. 10, 2022	Nov. 29, 2022	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55- 303	1710001800 055006	1GHz~18GHz	May 06, 2021	Jan. 21, 2022~ Feb. 10, 2022	May 05, 2022	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY5327019 5	1GHz~26.5GHz	Nov. 28, 2021	Jan. 21, 2022~ Feb. 10, 2022	Nov. 27, 2022	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060801	18-40GHz	Jun. 22, 2021	Jan. 21, 2022~ Feb. 10, 2022	Jun. 21, 2022	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MX E)	MY5413008 5	20MHz~8.4GHz	Oct. 21, 2021	Jan. 21, 2022~ Feb. 10, 2022	Oct. 20, 2022	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	E4446A	MY5018013 6	3Hz~44GHz	May 07, 2021	Jan. 21, 2022~ Feb. 10, 2022	May 06, 2022	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jan. 21, 2022~ Feb. 10, 2022	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jan. 21, 2022~ Feb. 10, 2022	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24( k5)	RK-000451	N/A	N/A	Jan. 21, 2022~ Feb. 10, 2022	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY36980/4, MY9838/4P E,508405/2E	30MHz~18G	Nov. 15, 2021	Jan. 21, 2022~ Feb. 10, 2022	Nov. 14, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz-40GHz	Feb. 22, 2021	Jan. 21, 2022~ Feb. 10, 2022	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz-40GHz	Feb. 22, 2021	Jan. 21, 2022~ Feb. 10, 2022	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4P E	9kHz~30MHz	Mar. 11, 2021	Jan. 21, 2022~ Feb. 10, 2022	Mar. 10, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WLJ4-1000-1 530-6000-40 ST	SN4	1.53GHz Low Pass Filter	Jul. 02, 2021	Jan. 21, 2022~ Feb. 10, 2022	Jul. 01, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WHKX8-587 2.5-6750-180 00-40ST	SN6	6.75GHz High Pass Filter	Jun. 30, 2021	Jan. 21, 2022~ Feb. 10, 2022	Jun. 29, 2022	Radiation (03CH15-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECEPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Jan. 08, 2022~ Feb. 15, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Meter	DARE	RPR3006W	16I00054SN O12 (NO:113)	10MHz~6GHz	Dec. 16, 2021	Jan. 08, 2022~ Feb. 15, 2022	Dec. 15, 2022	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Dec. 30, 2021	Jan. 08, 2022~ Feb. 15, 2022	Dec. 29, 2022	Conducted (TH05-HY)
Switch Control Manframe	E-IUSTRUMENT	ETF-1405-0	EC1900067 (BOX7)	N/A	Aug. 12, 2021	Jan. 08, 2022~ Feb. 15, 2022	Aug. 11, 2022	Conducted (TH05-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Jan. 25, 2022	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jan. 25, 2022	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 29, 2021	Jan. 25, 2022	Oct. 28, 2022	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 17, 2021	Jan. 25, 2022	Mar. 16, 2022	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Feb. 01, 2021	Jan. 25, 2022	Jan. 31, 2022	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI7	100724	9kHz~7GHz	Feb. 18, 2021	Jan. 25, 2022	Feb. 17, 2022	Conduction (CO07-HY)
Hygrometer	TECEPEL	DTM-303B	TP200728	N/A	Mar. 09, 2021	Jan. 25, 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
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

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

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

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

Test Engineer:	Benny Ku	Temperature:	21~25	°C
Test Date:	2022/1/8~2/15	Relative Humidity:	51~54	%

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	16.50	16.50	19.60	20.00	16.45	16.45	0.5	Pass
11a	6Mbps	2	157	5785	16.50	16.50	19.50	19.60	16.45	16.45	0.5	Pass
11a	6Mbps	2	165	5825	16.45	16.40	19.55	19.45	16.45	16.50	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

**TEST RESULTS DATA**  
**Power Spectral Density**

Band IV MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		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	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	0.03	0.03	2.22		2.02	1.00	5.03	29.97		6.03		Pass
11a	6Mbps	2	157	5785	0.03	0.03	2.22		1.72	1.35	4.73	29.97		6.03		Pass
11a	6Mbps	2	165	5825	0.03	0.03	2.22		2.04	0.96	5.05	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	N <sub>TX</sub>	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	18.95	18.95	21.35	21.35	19.00	18.50	0.5	Pass
HE20	MCS0	2	157	5785	Full	18.90	18.90	21.15	21.35	19.00	18.80	0.5	Pass
HE20	MCS0	2	165	5825	Full	18.95	18.90	21.15	21.40	18.75	18.70	0.5	Pass
HE40	MCS0	2	151	5755	Full	38.00	37.90	40.50	40.50	37.26	36.63	0.5	Pass
HE40	MCS0	2	159	5795	Full	37.90	37.90	40.50	40.41	37.80	37.89	0.5	Pass
HE80	MCS0	2	155	5775	Full	77.28	77.40	83.36	82.40	76.80	77.12	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	9.90	13.22	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	11.90	15.38	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	Duty Factor (dB)		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	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
HE20	MCS0	2	149	5745	Full	0.01	0.01	2.22	0.89	0.46	3.90	29.97	6.03	Pass			
HE20	MCS0	2	149	5745	26/0	0.01	0.01	2.22	0.27	0.27	3.28	29.97	6.03	Pass			
HE20	MCS0	2	149	5745	52/37	0.01	0.01	2.22	0.75	0.02	3.76	29.97	6.03	Pass			
HE20	MCS0	2	149	5745	106/53	0.01	0.01	2.22	0.55	0.42	3.56	29.97	6.03	Pass			
HE20	MCS0	2	149	5745	242/61	0.01	0.01	2.22	0.52	0.43	3.53	29.97	6.03	Pass			
HE20	MCS0	2	157	5785	Full	0.01	0.01	2.22	1.91	1.75	4.92	29.97	6.03	Pass			
HE20	MCS0	2	157	5785	26/4	0.01	0.01	2.22	1.76	1.33	4.77	29.97	6.03	Pass			
HE20	MCS0	2	157	5785	52/38	0.01	0.01	2.22	1.76	1.63	4.77	29.97	6.03	Pass			
HE20	MCS0	2	157	5785	106/53	0.01	0.01	2.22	1.55	1.24	4.56	29.97	6.03	Pass			
HE20	MCS0	2	157	5785	242/61	0.01	0.01	2.22	1.12	0.87	4.13	29.97	6.03	Pass			
HE20	MCS0	2	165	5825	Full	0.01	0.01	2.22	1.84	0.66	4.85	29.97	6.03	Pass			
HE20	MCS0	2	165	5825	26/8	0.01	0.01	2.22	1.73	0.09	4.74	29.97	6.03	Pass			
HE20	MCS0	2	165	5825	52/40	0.01	0.01	2.22	1.79	-0.28	4.80	29.97	6.03	Pass			
HE20	MCS0	2	165	5825	106/54	0.01	0.01	2.22	1.64	-0.15	4.65	29.97	6.03	Pass			
HE20	MCS0	2	165	5825	242/61	0.01	0.01	2.22	0.98	-1.77	3.99	29.97	6.03	Pass			
HE40	MCS0	2	151	5755	Full	0.01	0.01	2.22	-1.55	-1.32	1.69	29.97	6.03	Pass			
HE40	MCS0	2	151	5755	26/9	0.01	0.01	2.22	-1.61	-1.34	1.67	29.97	6.03	Pass			
HE40	MCS0	2	151	5755	52/41	0.01	0.01	2.22	-2.20	-1.66	1.35	29.97	6.03	Pass			
HE40	MCS0	2	151	5755	106/55	0.01	0.01	2.22	-1.59	-1.62	1.42	29.97	6.03	Pass			
HE40	MCS0	2	151	5755	242/62	0.01	0.01	2.22	-1.86	-1.85	1.16	29.97	6.03	Pass			
HE40	MCS0	2	151	5755	484/65	0.01	0.01	2.22	-1.86	-1.86	1.15	29.97	6.03	Pass			
HE40	MCS0	2	159	5795	Full	0.01	0.01	2.22	-1.46	-1.95	1.55	29.97	6.03	Pass			
HE40	MCS0	2	159	5795	26/27	0.01	0.01	2.22	-1.82	-2.10	1.19	29.97	6.03	Pass			
HE40	MCS0	2	159	5795	52/48	0.01	0.01	2.22	-3.14	-3.11	-0.10	29.97	6.03	Pass			
HE40	MCS0	2	159	5795	106/58	0.01	0.01	2.22	-1.51	-2.83	1.50	29.97	6.03	Pass			
HE40	MCS0	2	159	5795	242/63	0.01	0.01	2.22	-1.68	-3.52	1.33	29.97	6.03	Pass			
HE40	MCS0	2	159	5795	484/65	0.01	0.01	2.22	-1.65	-2.46	1.36	29.97	6.03	Pass			
HE80	MCS0	2	155	5775	Full	0.01	0.01	2.22	-4.09	-3.88	-0.87	29.97	6.03	Pass			
HE80	MCS0	2	155	5775	996/67	0.01	0.01	2.22	-4.48	-5.11	-1.47	29.97	6.03	Pass			

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





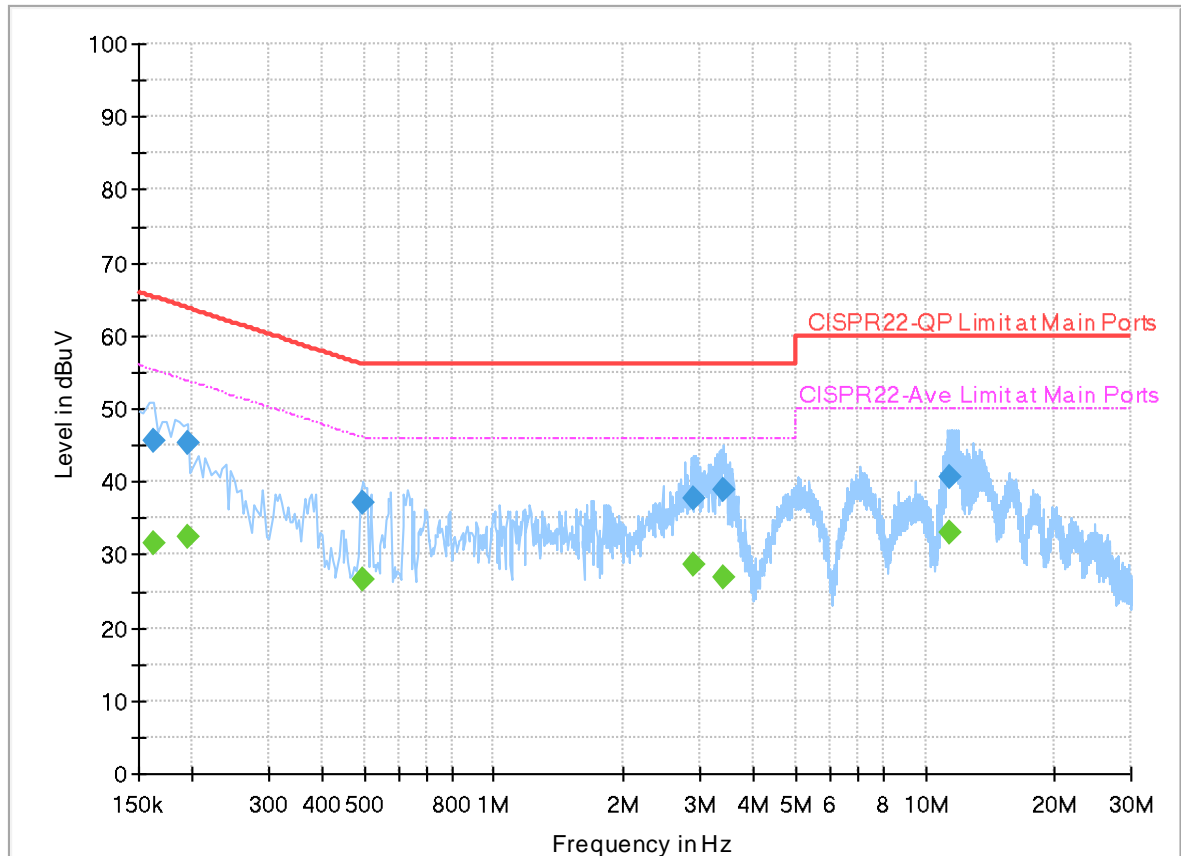
## Appendix B. AC Conducted Emission Test Results

Test Engineer :	Calvin Wang	Temperature :	23~26°C
		Relative Humidity :	45~55%

## EUT Information

Report NO : 1D1645-01  
 Test Mode : Mode 1  
 Test Voltage : 120Vac/60Hz  
 Phase : Line

Full Spectrum



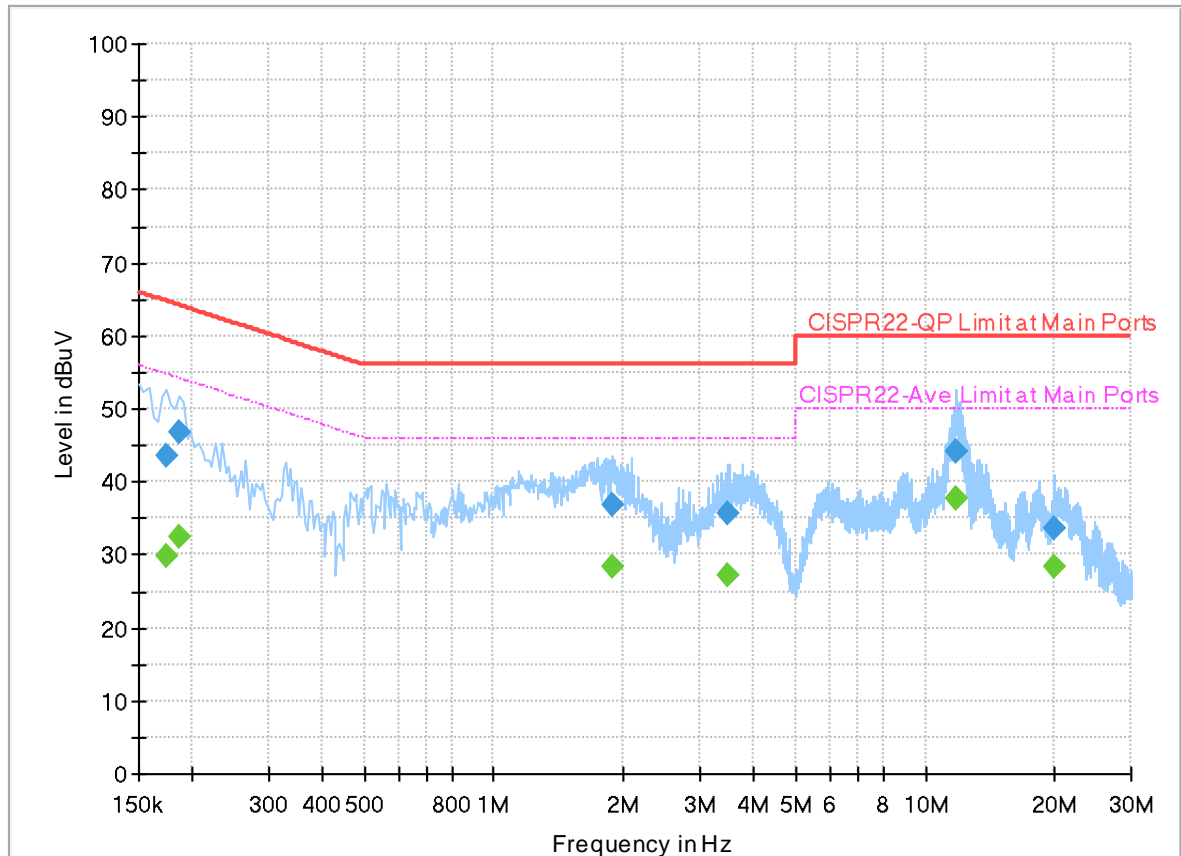
## Final\_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.162000	---	31.53	55.36	23.83	L1	OFF	20.1
0.162000	45.71	---	65.36	19.65	L1	OFF	20.1
0.194000	---	32.50	53.86	21.36	L1	OFF	20.0
0.194000	45.31	---	63.86	18.55	L1	OFF	20.0
0.494000	---	26.56	46.10	19.54	L1	OFF	20.0
0.494000	37.24	---	56.10	18.86	L1	OFF	20.0
2.890000	---	28.75	46.00	17.25	L1	OFF	20.1
2.890000	37.59	---	56.00	18.41	L1	OFF	20.1
3.406000	---	26.86	46.00	19.14	L1	OFF	20.1
3.406000	38.79	---	56.00	17.21	L1	OFF	20.1
11.438000	---	33.12	50.00	16.88	L1	OFF	20.2
11.438000	40.54	---	60.00	19.46	L1	OFF	20.2

## EUT Information

Report NO : 1D1645-01  
 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)
0.174000	---	29.71	54.77	25.06	N	OFF	20.1
0.174000	43.62	---	64.77	21.15	N	OFF	20.1
0.186000	---	32.32	54.21	21.89	N	OFF	20.1
0.186000	46.76	---	64.21	17.45	N	OFF	20.1
1.886000	---	28.25	46.00	17.75	N	OFF	20.1
1.886000	36.98	---	56.00	19.02	N	OFF	20.1
3.494000	---	27.26	46.00	18.74	N	OFF	20.1
3.494000	35.69	---	56.00	20.31	N	OFF	20.1
11.734000	---	37.74	50.00	12.26	N	OFF	20.2
11.734000	44.28	---	60.00	15.72	N	OFF	20.2
11.842000	---	37.75	50.00	12.25	N	OFF	20.2
11.842000	44.09	---	60.00	15.91	N	OFF	20.2
19.994000	---	28.38	50.00	21.62	N	OFF	20.3
19.994000	33.55	---	60.00	26.45	N	OFF	20.3



## Appendix C. Radiated Spurious Emission

Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	22~24.5°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 HE40\_Full (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant. 1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
		5639.6	49.07	-19.13	68.2	42.46	33	10.42	36.81	300	159	P	H
		5680.4	48.21	-42.52	90.73	41.52	33.06	10.47	36.84	300	159	P	H
		5707	47.18	-59.98	107.16	40.4	33.14	10.5	36.86	300	159	P	H
		5722	47.99	-67.37	115.36	41.12	33.23	10.51	36.87	300	159	P	H
	*	5755	93.02	-	-	85.93	33.43	10.55	36.89	300	159	P	H
	*	5755	83.75	-	-	76.66	33.43	10.55	36.89	300	159	A	H
		5851.395	48.34	-70.68	119.02	40.76	33.9	10.64	36.96	300	159	P	H
		5872.1	49.02	-56.99	106.01	41.41	33.94	10.65	36.98	300	159	P	H
		5877.02	49.2	-54.5	103.7	41.58	33.95	10.65	36.98	300	159	P	H
		5945.285	49.48	-18.72	68.2	41.81	34	10.7	37.03	300	159	P	H
802.11ax													H
HE40 Full													H
CH 151		5600.6	48.01	-20.19	68.2	41.41	33	10.38	36.78	296	130	P	V
5755MHz		5679.6	47.82	-42.32	90.14	41.13	33.06	10.47	36.84	296	130	P	V
		5712	48.1	-60.46	108.56	41.29	33.17	10.5	36.86	296	130	P	V
		5725	47.42	-74.78	122.2	40.52	33.25	10.52	36.87	296	130	P	V
	*	5755	97.32	-	-	90.23	33.43	10.55	36.89	296	130	P	V
	*	5755	87.84	-	-	80.75	33.43	10.55	36.89	296	130	A	V
		5849.96	47.72	-86.48	134.2	40.15	33.9	10.63	36.96	296	130	P	V
		5865.95	48.85	-58.88	107.73	41.24	33.93	10.65	36.97	296	130	P	V
		5907.975	49.34	-31.42	80.76	41.66	34	10.68	37	296	130	P	V
		5925.81	48.37	-19.83	68.2	40.7	34	10.69	37.02	296	130	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 )	
802.11ax HE40 Full CH 151 5755MHz		11510	45.91	-28.09	74	52.88	38.78	15.13	60.88	-	-	P	H	
		12357	48.78	-25.22	74	56.57	38.74	15.53	62.06	-	-	A	H	
		12357	39.32	-14.68	54	47.11	38.74	15.53	62.06	-	-	P	H	
		14480	47.87	-26.13	74	54.06	40.52	16.47	63.18	-	-	P	H	
		14480	40.7	-13.3	54	46.89	40.52	16.47	63.18	-	-	A	H	
		17265	46.1	-22.1	68.2	48.29	38.03	18.32	58.54	-	-	P	H	
		18000	52.89	-21.11	74	48.09	43.1	18.94	57.24	-	-	P	H	
		18000	43.27	-10.73	54	38.47	43.1	18.94	57.24	-	-	A	H	
														H
														H
														H
														H
														H
														H
														H
														H
			11510	45.3	-28.7	74	52.27	38.78	15.13	60.88	-	-	P	V
			11752	48.48	-25.52	74	55.92	38.45	15.25	61.14	-	-	A	V
		11752	39.45	-14.55	54	46.89	38.45	15.25	61.14	-	-	P	V	
		14480	47.92	-26.08	74	54.11	40.52	16.47	63.18	-	-	P	V	
		14480	40.79	-13.21	54	46.98	40.52	16.47	63.18	-	-	A	V	
		17265	45.87	-22.33	68.2	48.06	38.03	18.32	58.54	-	-	P	V	
		17901	52	-22	74	48.41	42.21	18.85	57.47	-	-	P	V	
		17901	41.07	-12.93	54	37.48	42.21	18.85	57.47	-	-	A	V	
													V	
													V	
													V	
													V	
													V	

**Remark**

- No other spurious found.
- All results are PASS against Peak and Average limit line.
- The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.
- 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	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Ant. 1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
802.11a CH 149 5745MHz		5626.8	47.64	-20.56	68.2	41.03	33	10.41	36.8	371	183	P	H	
		5651.8	47.63	-21.91	69.54	41.01	33	10.44	36.82	371	183	P	H	
		5705.6	46.99	-59.78	106.77	40.22	33.13	10.5	36.86	371	183	P	H	
		5723.4	48.05	-70.5	118.55	41.16	33.24	10.52	36.87	371	183	P	H	
	*	5745	108.06	-	-	101.04	33.37	10.54	36.89	371	183	P	H	
	*	5745	100.44	-	-	93.42	33.37	10.54	36.89	371	183	A	H	
														H
														H
			5631.6	47.77	-20.43	68.2	41.16	33	10.41	36.8	371	227	P	V
			5695.8	47.01	-55.09	102.1	40.28	33.09	10.49	36.85	371	227	P	V
			5715.8	47.21	-62.42	109.63	40.38	33.19	10.51	36.87	371	227	P	V
			5721.2	46.76	-66.78	113.54	39.89	33.23	10.51	36.87	371	227	P	V
	*		5745	102.38	-	-	95.36	33.37	10.54	36.89	371	227	P	V
	*		5745	94.7	-	-	87.68	33.37	10.54	36.89	371	227	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 )	
802.11a CH 157 5785MHz		5632.2	48.22	-19.98	68.2	41.61	33	10.42	36.81	346	183	P	H	
		5670.4	47.89	-35.45	83.34	41.22	33.04	10.46	36.83	346	183	P	H	
		5704	47.21	-59.11	106.32	40.46	33.12	10.49	36.86	346	183	P	H	
		5720.2	46.58	-64.68	111.26	39.72	33.22	10.51	36.87	346	183	P	H	
	*	5785	108.07	-	-	100.8	33.61	10.58	36.92	346	183	P	H	
	*	5785	101.04	-	-	93.77	33.61	10.58	36.92	346	183	A	H	
		5851.19	47.14	-72.35	119.49	39.56	33.9	10.64	36.96	346	183	P	H	
		5872.92	48.76	-57.02	105.78	41.14	33.95	10.65	36.98	346	183	P	H	
		5901.825	49.4	-35.91	85.31	41.73	34	10.67	37	346	183	P	H	
		5925.605	48.37	-19.83	68.2	40.7	34	10.69	37.02	346	183	P	H	
														H
														H
			5602.4	47.42	-20.78	68.2	40.82	33	10.38	36.78	100	221	P	V
			5667	47.51	-33.31	80.82	40.86	33.03	10.45	36.83	100	221	P	V
			5701.8	46.82	-58.88	105.7	40.08	33.11	10.49	36.86	100	221	P	V
			5722.4	47.13	-69.14	116.27	40.26	33.23	10.51	36.87	100	221	P	V
	*		5785	106.33	-	-	99.06	33.61	10.58	36.92	100	221	P	V
	*		5785	99.08	-	-	91.81	33.61	10.58	36.92	100	221	A	V
			5854.675	47.61	-63.93	111.54	40.03	33.91	10.64	36.97	100	221	P	V
			5859.8	48.04	-61.41	109.45	40.45	33.92	10.64	36.97	100	221	P	V
		5902.03	48.88	-36.28	85.16	41.21	34	10.67	37	100	221	P	V	
		5946.72	48.32	-19.88	68.2	40.65	34	10.7	37.03	100	221	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 )	
802.11a CH 165 5825MHz	*	5825	107.83	-	-	100.35	33.8	10.62	36.94	397	181	P	H	
	*	5825	100.87	-	-	93.39	33.8	10.62	36.94	397	181	A	H	
		5854.2	48.04	-64.58	112.62	40.46	33.91	10.64	36.97	397	181	P	H	
		5867.6	47.85	-59.42	107.27	40.23	33.94	10.65	36.97	397	181	P	H	
		5920.6	49.64	-21.8	71.44	41.97	34	10.68	37.01	397	181	P	H	
		5938	48.55	-19.65	68.2	40.88	34	10.7	37.03	397	181	P	H	
														H
														H
	*	5825	104.88	-	-	97.4	33.8	10.62	36.94	100	203	P	V	
	*	5825	97.28	-	-	89.8	33.8	10.62	36.94	100	203	A	V	
		5851	47.72	-72.2	119.92	40.14	33.9	10.64	36.96	100	203	P	V	
		5872.4	48.8	-57.13	105.93	41.19	33.94	10.65	36.98	100	203	P	V	
		5897.2	48.82	-39.91	88.73	41.16	33.99	10.67	37	100	203	P	V	
		5948.6	48.6	-19.6	68.2	40.93	34	10.7	37.03	100	203	P	V	
														V
														V
														V
<b>Remark</b>	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		10839	48.92	-25.08	74	56.13	38.88	14.79	60.88	-	-	P	H	
		10839	38.96	-15.04	54	46.17	38.88	14.79	60.88	-	-	A	H	
		11490	46.4	-27.6	74	53.32	38.83	15.12	60.87	-	-	P	H	
		14480	49.57	-24.43	74	55.76	40.52	16.47	63.18	-	-	P	H	
		14480	39.58	-14.42	54	45.77	40.52	16.47	63.18	-	-	A	H	
		17235	45.9	-22.3	68.2	48.18	37.97	18.3	58.55	-	-	P	H	
		17989	54.03	-19.97	74	49.37	43	18.93	57.27	-	-	P	H	
		17989	43.99	-10.01	54	39.33	43	18.93	57.27	-	-	A	H	
														H
														H
														H
														H
			10828	48.68	-25.32	74	55.85	38.92	14.79	60.88	-	-	P	V
			10828	38.64	-15.36	54	45.81	38.92	14.79	60.88	-	-	A	V
			11490	45.82	-28.18	74	52.74	38.83	15.12	60.87	-	-	P	V
			14491	49.19	-24.81	74	55.37	40.51	16.48	63.17	-	-	P	V
			14491	39.17	-14.83	54	45.35	40.51	16.48	63.17	-	-	A	V
			17235	45.54	-22.66	68.2	47.82	37.97	18.3	58.55	-	-	P	V
			18000	53.42	-20.58	74	48.62	43.1	18.94	57.24	-	-	P	V
			18000	43.41	-10.59	54	38.61	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 157 5785MHz		10949	49.06	-24.94	74	56.43	38.65	14.85	60.87	-	-	P	H	
		10949	39.04	-14.96	54	46.41	38.65	14.85	60.87	-	-	A	H	
		11570	46.05	-27.95	74	53.17	38.66	15.16	60.94	-	-	P	H	
		14470	49.76	-24.24	74	55.94	40.53	16.47	63.18	-	-	P	H	
		14470	39.73	-14.27	54	45.91	40.53	16.47	63.18	-	-	A	H	
		17355	47.04	-21.16	68.2	48.86	38.26	18.4	58.48	-	-	P	H	
		18000	52.98	-21.02	74	48.18	43.1	18.94	57.24	-	-	P	H	
		18000	42.96	-11.04	54	38.16	43.1	18.94	57.24	-	-	A	H	
														H
														H
														H
														H
			10806	48.62	-25.38	74	55.75	38.98	14.78	60.89	-	-	P	V
			10806	38.63	-15.37	54	45.76	38.98	14.78	60.89	-	-	A	V
			11570	45.7	-28.3	74	52.82	38.66	15.16	60.94	-	-	P	V
			14480	50.17	-23.83	74	56.36	40.52	16.47	63.18	-	-	P	V
			14480	40.18	-13.82	54	46.37	40.52	16.47	63.18	-	-	A	V
			17355	46.86	-21.34	68.2	48.68	38.26	18.4	58.48	-	-	P	V
			17989	52.86	-21.14	74	48.2	43	18.93	57.27	-	-	P	V
			17989	42.83	-11.17	54	38.17	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 )	
802.11a CH 165 5825MHz		10861	48.51	-25.49	74	55.77	38.82	14.8	60.88	-	-	P	H	
		10861	38.52	-15.48	54	45.78	38.82	14.8	60.88	-	-	A	H	
		11650	45.94	-28.06	74	53.22	38.55	15.2	61.03	-	-	P	H	
		14491	49.19	-24.81	74	55.37	40.51	16.48	63.17	-	-	P	H	
		14491	39.17	-14.83	54	45.35	40.51	16.48	63.17	-	-	A	H	
		17475	47.54	-20.66	68.2	48.98	38.47	18.5	58.41	-	-	P	H	
		18000	53.36	-20.64	74	48.56	43.1	18.94	57.24	-	-	P	H	
		18000	43.32	-10.68	54	38.52	43.1	18.94	57.24	-	-	A	H	
														H
														H
														H
														H
			10850	48.73	-25.27	74	55.96	38.85	14.8	60.88	-	-	P	V
			10850	38.71	-15.29	54	45.94	38.85	14.8	60.88	-	-	A	V
			11650	46.21	-27.79	74	53.49	38.55	15.2	61.03	-	-	P	V
			14470	49.27	-24.73	74	55.45	40.53	16.47	63.18	-	-	P	V
			14470	39.24	-14.76	54	45.42	40.53	16.47	63.18	-	-	A	V
			17475	46.96	-21.24	68.2	48.4	38.47	18.5	58.41	-	-	P	V
			18000	53.48	-20.52	74	48.68	43.1	18.94	57.24	-	-	P	V
			18000	43.44	-10.56	54	38.64	43.1	18.94	57.24	-	-	A	V
													V	
													V	
													V	
													V	
<b>Remark</b>	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> <li>The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.</li> <li>The emission level close to 18GHz is checked that the average emission level is noise floor only.</li> </ol>													



**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 )	
802.11ax HE20 Full CH 149 5745MHz		5631	47.37	-20.83	68.2	40.76	33	10.41	36.8	352	181	P	H	
		5668	48.17	-33.39	81.56	41.51	33.04	10.45	36.83	352	181	P	H	
		5719.8	49.15	-61.59	110.74	42.29	33.22	10.51	36.87	352	181	P	H	
		5725	48.96	-73.24	122.2	42.06	33.25	10.52	36.87	352	181	P	H	
	*	5745	110.63	-	-	103.61	33.37	10.54	36.89	352	181	P	H	
	*	5745	99.28	-	-	92.26	33.37	10.54	36.89	352	181	A	H	
														H
														H
			5624	48.22	-19.98	68.2	41.61	33	10.41	36.8	100	204	P	V
			5698.2	47.7	-56.17	103.87	40.96	33.1	10.49	36.85	100	204	P	V
			5719.6	47.15	-63.54	110.69	40.29	33.22	10.51	36.87	100	204	P	V
			5721.6	47.96	-66.49	114.45	41.09	33.23	10.51	36.87	100	204	P	V
	*		5745	106.7	-	-	99.68	33.37	10.54	36.89	100	204	P	V
	*		5745	95.71	-	-	88.69	33.37	10.54	36.89	100	204	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)
		5627.4	48.87	-19.33	68.2	42.26	33	10.41	36.8	349	182	P	H
		5670.8	47.45	-36.18	83.63	40.78	33.04	10.46	36.83	349	182	P	H
		5705.8	46.82	-60.01	106.83	40.05	33.13	10.5	36.86	349	182	P	H
		5720.4	47.5	-64.21	111.71	40.64	33.22	10.51	36.87	349	182	P	H
	*	5785	109.57	-	-	102.3	33.61	10.58	36.92	349	182	P	H
	*	5785	99.69	-	-	92.42	33.61	10.58	36.92	349	182	A	H
		5853.24	47.73	-67.08	114.81	40.14	33.91	10.64	36.96	349	182	P	H
		5870.05	47.98	-58.6	106.58	40.37	33.94	10.65	36.98	349	182	P	H
		5886.245	48.52	-48.33	96.85	40.88	33.97	10.66	36.99	349	182	P	H
		5925.605	48.21	-19.99	68.2	40.54	34	10.69	37.02	349	182	P	H
<b>802.11ax</b>													H
<b>HE20 Full</b>													H
<b>CH 157</b>		5605	47.95	-20.25	68.2	41.35	33	10.39	36.79	100	222	P	V
<b>5785MHz</b>		5696.4	48.31	-54.24	102.55	41.58	33.09	10.49	36.85	100	222	P	V
		5718	46.99	-63.25	110.24	40.14	33.21	10.51	36.87	100	222	P	V
		5722	46.96	-68.4	115.36	40.09	33.23	10.51	36.87	100	222	P	V
	*	5785	110.41	-	-	103.14	33.61	10.58	36.92	100	222	P	V
	*	5785	99.02	-	-	91.75	33.61	10.58	36.92	100	222	A	V
		5854.06	47.01	-65.93	112.94	39.42	33.91	10.64	36.96	100	222	P	V
		5859.8	48.2	-61.25	109.45	40.61	33.92	10.64	36.97	100	222	P	V
		5880.3	48.99	-52.27	101.26	41.35	33.96	10.66	36.98	100	222	P	V
		5941.595	48.94	-19.26	68.2	41.27	34	10.7	37.03	100	222	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 )	
802.11ax HE20 Full CH 165 5825MHz	*	5825	110.89	-	-	103.41	33.8	10.62	36.94	400	183	P	H	
	*	5825	100.47	-	-	92.99	33.8	10.62	36.94	400	183	A	H	
		5851	48.34	-71.58	119.92	40.76	33.9	10.64	36.96	400	183	P	H	
		5860.4	48.07	-61.22	109.29	40.48	33.92	10.64	36.97	400	183	P	H	
		5914	49.1	-27.21	76.31	41.43	34	10.68	37.01	400	183	P	H	
		5927.4	48.33	-19.87	68.2	40.66	34	10.69	37.02	400	183	P	H	
														H
														H
	*	5825	109.34	-	-	101.86	33.8	10.62	36.94	100	221	P	V	
	*	5825	99.08	-	-	91.6	33.8	10.62	36.94	100	221	A	V	
		5850.6	48.78	-72.05	120.83	41.2	33.9	10.64	36.96	100	221	P	V	
		5867.6	48.43	-58.84	107.27	40.81	33.94	10.65	36.97	100	221	P	V	
		5899.8	48.99	-37.82	86.81	41.32	34	10.67	37	100	221	P	V	
		5939.8	48.25	-19.95	68.2	40.58	34	10.7	37.03	100	221	P	V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													







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 )	
802.11ax HE20 Full CH 157 5785MHz		10828	49.05	-24.95	74	56.22	38.92	14.79	60.88	-	-	P	H	
		10828	39.03	-14.97	54	46.2	38.92	14.79	60.88	-	-	A	H	
		11570	46.29	-27.71	74	53.41	38.66	15.16	60.94	-	-	P	H	
		14480	50.09	-23.91	74	56.28	40.52	16.47	63.18	-	-	P	H	
		14480	40.03	-13.97	54	46.22	40.52	16.47	63.18	-	-	A	H	
		17355	47.31	-20.89	68.2	49.13	38.26	18.4	58.48	-	-	P	H	
		18000	54.56	-19.44	74	49.76	43.1	18.94	57.24	-	-	P	H	
		18000	44.52	-9.48	54	39.72	43.1	18.94	57.24	-	-	A	H	
														H
														H
														H
														H
														H
			10861	51.06	-22.94	74	58.32	38.82	14.8	60.88	-	-	P	V
			10861	41.05	-12.95	54	48.31	38.82	14.8	60.88	-	-	A	V
			11570	46.21	-27.79	74	53.33	38.66	15.16	60.94	-	-	P	V
			14480	49.91	-24.09	74	56.1	40.52	16.47	63.18	-	-	P	V
			14480	39.92	-14.08	54	46.11	40.52	16.47	63.18	-	-	A	V
			17355	47.02	-21.18	68.2	48.84	38.26	18.4	58.48	-	-	P	V
			18000	53.35	-20.65	74	48.55	43.1	18.94	57.24	-	-	P	V
			18000	43.32	-10.68	54	38.52	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 )	
802.11ax HE20 Full CH 165 5825MHz		10894	49.79	-24.21	74	57.12	38.72	14.82	60.87	-	-	P	H	
		10894	39.77	-14.23	54	47.1	38.72	14.82	60.87	-	-	A	H	
		11650	46.38	-27.62	74	53.66	38.55	15.2	61.03	-	-	P	H	
		14500	49.94	-24.06	74	56.13	40.5	16.48	63.17	-	-	P	H	
		14500	39.92	-14.08	54	46.11	40.5	16.48	63.17	-	-	A	H	
		17475	47.16	-21.04	68.2	48.6	38.47	18.5	58.41	-	-	P	H	
		17989	53.39	-20.61	74	48.73	43	18.93	57.27	-	-	P	H	
		17989	43.38	-10.62	54	38.72	43	18.93	57.27	-	-	A	H	
														H
														H
														H
														H
														H
														H
														H
														H
														H
														H
														H
	802.11ax HE20 Full CH 165 5825MHz		10817	49.33	-24.67	74	56.49	38.95	14.78	60.89	-	-	P	V
		10817	39.28	-14.72	54	46.44	38.95	14.78	60.89	-	-	A	V	
		11650	46.38	-27.62	74	53.66	38.55	15.2	61.03	-	-	P	V	
		14480	49.63	-24.37	74	55.82	40.52	16.47	63.18	-	-	P	V	
		14480	39.62	-14.38	54	45.81	40.52	16.47	63.18	-	-	A	V	
		17475	46.2	-22	68.2	47.64	38.47	18.5	58.41	-	-	P	V	
		17989	53.91	-20.09	74	49.25	43	18.93	57.27	-	-	P	V	
		17989	43.89	-10.11	54	39.23	43	18.93	57.27	-	-	A	V	
														V
														V
														V
														V
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														V
<b>Remark</b>		<ol style="list-style-type: none"> <li>1. No other spurious found.</li> <li>2. All results are PASS against Peak and Average limit line.</li> <li>3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.</li> <li>4. The emission level close to 18GHz is checked that the average emission level is noise floor only.</li> </ol>												



**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 )
		5632.8	48.49	-19.71	68.2	41.88	33	10.42	36.81	387	182	P	H
		5680.6	48.22	-42.66	90.88	41.53	33.06	10.47	36.84	387	182	P	H
		5717.2	51.02	-59	110.02	44.18	33.2	10.51	36.87	387	182	P	H
		5720.6	50.78	-61.39	112.17	43.92	33.22	10.51	36.87	387	182	P	H
	*	5755	109.5	-	-	102.41	33.43	10.55	36.89	387	182	P	H
	*	5755	98.39	-	-	91.3	33.43	10.55	36.89	387	182	A	H
		5853.855	49.08	-64.33	113.41	41.49	33.91	10.64	36.96	387	182	P	H
		5868.205	49.68	-57.42	107.1	42.07	33.94	10.65	36.98	387	182	P	H
		5916.79	49.99	-24.26	74.25	42.32	34	10.68	37.01	387	182	P	H
		5932.985	49.1	-19.1	68.2	41.43	34	10.69	37.02	387	182	P	H
<b>802.11ax</b>													H
<b>HE40 Full</b>													H
<b>CH 151</b>		5603.4	48.11	-20.09	68.2	41.51	33	10.38	36.78	250	217	P	V
<b>5755MHz</b>		5689.4	49.01	-48.37	97.38	42.3	33.08	10.48	36.85	250	217	P	V
		5719.4	49.39	-61.24	110.63	42.53	33.22	10.51	36.87	250	217	P	V
		5724.6	51.35	-69.94	121.29	44.45	33.25	10.52	36.87	250	217	P	V
	*	5755	107.14	-	-	100.05	33.43	10.55	36.89	250	217	P	V
	*	5755	96.55	-	-	89.46	33.43	10.55	36.89	250	217	A	V
		5854.265	48.35	-64.12	112.47	40.77	33.91	10.64	36.97	250	217	P	V
		5867.795	49.95	-57.27	107.22	42.33	33.94	10.65	36.97	250	217	P	V
		5912.895	50.05	-27.08	77.13	42.38	34	10.68	37.01	250	217	P	V
		5948.155	50.39	-17.81	68.2	42.72	34	10.7	37.03	250	217	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 )
		5646.8	49.07	-19.13	68.2	42.46	33	10.43	36.82	400	182	P	H
		5676.8	48.68	-39.39	88.07	42.01	33.05	10.46	36.84	400	182	P	H
		5700	48.66	-56.54	105.2	41.92	33.1	10.49	36.85	400	182	P	H
		5724.6	47.81	-73.48	121.29	40.91	33.25	10.52	36.87	400	182	P	H
	*	5795	107.55	-	-	100.21	33.67	10.59	36.92	400	182	P	H
	*	5795	97.99	-	-	90.65	33.67	10.59	36.92	400	182	A	H
		5850.37	48.61	-72.75	121.36	41.03	33.9	10.64	36.96	400	182	P	H
		5874.765	49.09	-56.18	105.27	41.47	33.95	10.65	36.98	400	182	P	H
		5918.225	49.27	-23.93	73.2	41.6	34	10.68	37.01	400	182	P	H
		5930.73	49.63	-18.57	68.2	41.96	34	10.69	37.02	400	182	P	H
802.11ax													H
HE40 Full													H
CH 159		5643	49.01	-19.19	68.2	42.39	33	10.43	36.81	258	215	P	V
5795MHz		5694.4	48.99	-52.08	101.07	42.27	33.09	10.48	36.85	258	215	P	V
		5709.8	48.64	-59.31	107.95	41.84	33.16	10.5	36.86	258	215	P	V
		5722	47.4	-67.96	115.36	40.53	33.23	10.51	36.87	258	215	P	V
	*	5795	106.49	-	-	99.15	33.67	10.59	36.92	258	215	P	V
	*	5795	96.8	-	-	89.46	33.67	10.59	36.92	258	215	A	V
		5852.01	48.2	-69.42	117.62	40.62	33.9	10.64	36.96	258	215	P	V
		5856.93	48.47	-61.79	110.26	40.89	33.91	10.64	36.97	258	215	P	V
		5909.82	49.07	-30.33	79.4	41.4	34	10.68	37.01	258	215	P	V
		5925.81	49.13	-19.07	68.2	41.46	34	10.69	37.02	258	215	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)	
802.11ax HE40 Full CH 151 5755MHz		10938	48.14	-25.86	74	55.51	38.66	14.84	60.87	-	-	P	H	
		10938	39.46	-14.54	54	46.83	38.66	14.84	60.87	-	-	A	H	
		11510	45.49	-28.51	74	52.46	38.78	15.13	60.88	-	-	P	H	
		14491	48.59	-25.41	74	54.77	40.51	16.48	63.17	-	-	P	H	
		14491	41.09	-12.91	54	47.27	40.51	16.48	63.17	-	-	A	H	
		17265	46.17	-22.03	68.2	48.36	38.03	18.32	58.54	-	-	P	H	
		17978	52.58	-21.42	74	48.04	42.9	18.93	57.29	-	-	P	H	
		17978	42.88	-11.12	54	38.34	42.9	18.93	57.29	-	-	A	H	
														H
														H
														H
														H
														H
														H
														H
														H
														H
														H
														H
														H
		10839	48.24	-25.76	74	55.45	38.88	14.79	60.88	-	-	P	V	
		10839	39.48	-14.52	54	46.69	38.88	14.79	60.88	-	-	A	V	
		11510	45.58	-28.42	74	52.55	38.78	15.13	60.88	-	-	P	V	
		14491	47.95	-26.05	74	54.13	40.51	16.48	63.17	-	-	P	V	
		14491	41.02	-12.98	54	47.2	40.51	16.48	63.17	-	-	A	V	
		17265	47.01	-21.19	68.2	49.2	38.03	18.32	58.54	-	-	P	V	
		17989	52.97	-21.03	74	48.31	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	
													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 )
		11590	45.93	-28.07	74	53.11	38.62	15.17	60.97	-	-	P	H
		11763	48.76	-25.24	74	56.21	38.44	15.26	61.15	-	-	P	H
		11763	39.4	-14.6	54	46.85	38.44	15.26	61.15	-	-	A	H
		14491	48.14	-25.86	74	54.32	40.51	16.48	63.17	-	-	P	H
		14491	40.99	-13.01	54	47.17	40.51	16.48	63.17	-	-	A	H
		17385	46.78	-21.42	68.2	48.47	38.35	18.42	58.46	-	-	P	H
		18000	52.91	-21.09	74	48.11	43.1	18.94	57.24	-	-	P	H
		18000	43.09	-10.91	54	38.29	43.1	18.94	57.24	-	-	A	H
													H
													H
													H
													H
802.11ax													H
HE40 Full													H
CH 159		10894	48.92	-25.08	74	56.25	38.72	14.82	60.87	-	-	P	V
5795MHz		10894	39.23	-14.77	54	46.56	38.72	14.82	60.87	-	-	A	V
		11590	46.09	-27.91	74	53.27	38.62	15.17	60.97	-	-	P	V
		14480	48.1	-25.9	74	54.29	40.52	16.47	63.18	-	-	P	V
		14480	41.12	-12.88	54	47.31	40.52	16.47	63.18	-	-	A	V
		17385	47.18	-21.02	68.2	48.87	38.35	18.42	58.46	-	-	P	V
		17989	53.91	-20.09	74	49.25	43	18.93	57.27	-	-	P	V
		17989	43.31	-10.69	54	38.65	43	18.93	57.27	-	-	A	V
													V
													V
													V
													V
<b>Remark</b>	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> <li>The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.</li> <li>The emission level close to 18GHz is checked that the average emission level is noise floor only.</li> </ol>												



**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 )
		5627.6	48.71	-19.49	68.2	42.1	33	10.41	36.8	385	183	P	H
		5683.8	49.54	-43.71	93.25	42.84	33.07	10.47	36.84	385	183	P	H
		5710.6	49.15	-59.02	108.17	42.35	33.16	10.5	36.86	385	183	P	H
		5721.2	49.12	-64.42	113.54	42.25	33.23	10.51	36.87	385	183	P	H
	*	5775	106.19	-	-	98.98	33.55	10.57	36.91	385	183	P	H
	*	5775	95.95	-	-	88.74	33.55	10.57	36.91	385	183	A	H
		5850.165	49.8	-72.02	121.82	42.22	33.9	10.64	36.96	385	183	P	H
		5859.595	49.73	-59.78	109.51	42.14	33.92	10.64	36.97	385	183	P	H
		5891.78	50.12	-42.63	92.75	42.47	33.98	10.66	36.99	385	183	P	H
		5940.57	49.93	-18.27	68.2	42.26	34	10.7	37.03	385	183	P	H
<b>802.11ax</b>													H
<b>HE80 Full</b>													H
<b>CH 155</b>		5600.4	49.04	-19.16	68.2	42.44	33	10.38	36.78	180	214	P	V
<b>5775MHz</b>		5679.8	48.67	-41.62	90.29	41.98	33.06	10.47	36.84	180	214	P	V
		5718.6	49.04	-61.37	110.41	42.19	33.21	10.51	36.87	180	214	P	V
		5723.4	49.53	-69.02	118.55	42.64	33.24	10.52	36.87	180	214	P	V
	*	5775	103.95	-	-	96.74	33.55	10.57	36.91	180	214	P	V
	*	5775	94.41	-	-	87.2	33.55	10.57	36.91	180	214	A	V
		5853.035	50.1	-65.18	115.28	42.51	33.91	10.64	36.96	180	214	P	V
		5863.9	50.01	-58.3	108.31	42.41	33.93	10.64	36.97	180	214	P	V
		5902.645	49.71	-34.99	84.7	42.04	34	10.67	37	180	214	P	V
		5943.03	49.8	-18.4	68.2	42.13	34	10.7	37.03	180	214	P	V
													V
													V
<b>Remark</b>	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)	
802.11ax HE80 Full CH 155 5775MHz		10861	48.42	-25.58	74	55.68	38.82	14.8	60.88	-	-	P	H	
		10861	39.63	-14.37	54	46.89	38.82	14.8	60.88	-	-	A	H	
		11550	45.05	-28.95	74	52.12	38.7	15.15	60.92	-	-	P	H	
		14480	47.7	-26.3	74	53.89	40.52	16.47	63.18	-	-	P	H	
		14480	41.2	-12.8	54	47.39	40.52	16.47	63.18	-	-	A	H	
		17325	47.15	-21.05	68.2	49.11	38.17	18.37	58.5	-	-	P	H	
		18000	53.43	-20.57	74	48.63	43.1	18.94	57.24	-	-	P	H	
		18000	43.08	-10.92	54	38.28	43.1	18.94	57.24	-	-	A	H	
														H
														H
														H
														H
			10850	48.16	-25.84	74	55.39	38.85	14.8	60.88	-	-	P	V
			10850	39.52	-14.48	54	46.75	38.85	14.8	60.88	-	-	A	V
			11550	44.95	-29.05	74	52.02	38.7	15.15	60.92	-	-	P	V
			14491	48.01	-25.99	74	54.19	40.51	16.48	63.17	-	-	P	V
			14491	40.78	-13.22	54	46.96	40.51	16.48	63.17	-	-	A	V
			17325	46.69	-21.51	68.2	48.65	38.17	18.37	58.5	-	-	P	V
			17989	53.04	-20.96	74	48.38	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	
<b>Remark</b>	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 (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 )
		5620.6	49.58	-18.62	68.2	42.98	33	10.4	36.8	366	184	P	H
		5656.8	54	-19.25	73.25	47.37	33.01	10.44	36.82	366	184	P	H
		5716.2	58.19	-51.55	109.74	51.35	33.2	10.51	36.87	366	184	P	H
		5724.6	64.91	-56.38	121.29	58.01	33.25	10.52	36.87	366	184	P	H
	*	5775	103.91	-	-	96.7	33.55	10.57	36.91	366	184	P	H
	*	5775	95.23	-	-	88.02	33.55	10.57	36.91	366	184	A	H
		5853.445	56.26	-58.08	114.34	48.67	33.91	10.64	36.96	366	184	P	H
		5856.93	57.93	-52.33	110.26	50.35	33.91	10.64	36.97	366	184	P	H
		5877.84	52.57	-50.52	103.09	44.94	33.96	10.65	36.98	366	184	P	H
<b>802.11ax</b>		5937.7	49.59	-18.61	68.2	41.92	34	10.7	37.03	366	184	P	H
<b>HE80</b>													H
<b>Partial</b>													H
<b>996/67</b>		5642.2	49.29	-18.91	68.2	42.67	33	10.43	36.81	261	217	P	V
<b>CH 155</b>		5698.2	52.22	-51.65	103.87	45.48	33.1	10.49	36.85	261	217	P	V
<b>5775MHz</b>		5718.4	59.46	-50.89	110.35	52.61	33.21	10.51	36.87	261	217	P	V
		5724.6	61.74	-59.55	121.29	54.84	33.25	10.52	36.87	261	217	P	V
	*	5775	104.26	-	-	97.05	33.55	10.57	36.91	261	217	P	V
	*	5775	94.02	-	-	86.81	33.55	10.57	36.91	261	217	A	V
		5854.47	56.7	-55.31	112.01	49.12	33.91	10.64	36.97	261	217	P	V
		5869.025	57.32	-49.55	106.87	49.71	33.94	10.65	36.98	261	217	P	V
		5880.095	53.64	-47.78	101.42	46	33.96	10.66	36.98	261	217	P	V
		5937.495	49.82	-18.38	68.2	42.14	34	10.7	37.02	261	217	P	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												







Emission below 1GHz

5GHz WIFI 802.11ax HE40 Full (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 )	
802.11ax HE40 Full LF		30	21.96	-18.04	40	29.25	24.57	0.61	32.47	-	-	P	H	
		125.06	18.09	-25.41	43.5	31.56	17.52	1.53	32.52	-	-	P	H	
		239.52	27.48	-18.52	46	40.78	16.99	2.17	32.46	-	-	P	H	
		370.47	26.1	-19.9	46	35.23	20.75	2.58	32.46	-	-	P	H	
		446.13	25.49	-20.51	46	32.07	23.02	2.82	32.42	-	-	P	H	
		721.61	30.27	-15.73	46	32.51	26.49	3.62	32.35	-	-	P	H	
														H
														H
														H
														H
														H
														H
														H
			62.98	25.24	-14.76	40	44.92	11.8	1.06	32.54	-	-	P	V
			134.76	17.9	-25.6	43.5	31.25	17.5	1.66	32.51	-	-	P	V
			259.89	20.03	-25.97	46	30.65	19.55	2.27	32.44	-	-	P	V
			335.55	23.27	-22.73	46	33.37	19.86	2.47	32.43	-	-	P	V
			562.53	26.2	-19.8	46	29.55	25.91	3.24	32.5	-	-	P	V
			874.87	30.54	-15.46	46	29.42	28.81	4.05	31.74	-	-	P	V
														V
													V	
													V	
													V	
													V	
													V	

**Remark**

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



Note symbol

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



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 )
802.11b		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 :	22~24.5°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).

### Note symbol

-L	Low channel location
-R	High channel location



<Sample 1>

**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	<p>Site : 03CH15-HY            Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Site : 03CH15-HY            Condition : PEAK(UNIT) 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Peak	<p>Site : 03CH15-HY            Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left blank





WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
1+2	Vertical	Fundamental
Peak	<p>Date: 2022-02-10 PEAK_BE(B4)_15-24</p> <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Date: 2022-02-10 PEAK(FUNB) AVG_54</p> <p>Site : 03CH15-HY Condition : PEAK(FUNB) 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Date: 2022-02-10 PEAK_BE(B4)_15-24</p> <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



**Band 4 - 5725~5850MHz**

**WIFI 802.11ax HE40 Full (Harmonic @ 3m)**

<b>WIFI</b>	<b>Band 4 5725~5850MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11ax HE40 Full CH151 5755MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 9D120_02038_20210804 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 9D120_02038_20210804 VERTICAL</p>



<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	<p>Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 90120_02038_20210804 HORIZONTAL -RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK(UNIT) 3m 90120_02038_20210804 HORIZONTAL -RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	<p>Date: 2022-01-27 PEAK_BE(B4)_16-24</p> <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Date: 2022-01-27 PEAK(LINE)</p> <p>Site : 03CH15-HY Condition : PEAK(LINE) 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>

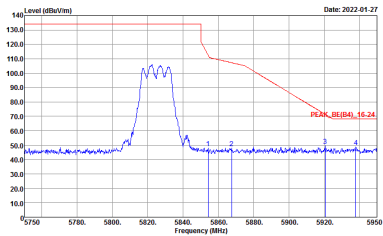
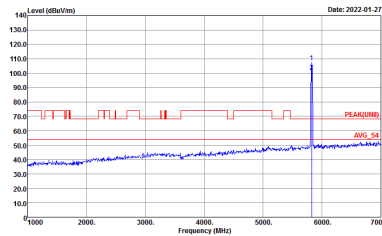


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	<p>Date: 2022-01-27 PEAK_BE(B4)_16-24</p> <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Date: 2022-01-27 PEAK(LINE) AVG_54</p> <p>Site : 03CH15-HY Condition : PEAK(LINE) 3m 90120_02038_20210804 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Date: 2022-01-27 PEAK_BE(B4)_16-24</p> <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank

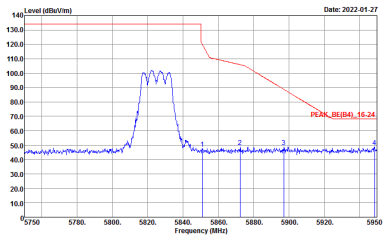
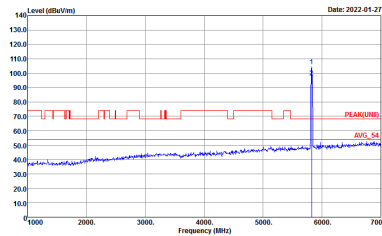


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Date: 2022-01-27</p> <p>Site : 03CH15-HY          Condition : PEAK_SE[94]_16-24 3m 9b120_02038_20210804 HORIZONTAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Date: 2022-01-27</p> <p>Site : 03CH15-HY          Condition : PEAK[LINE] 3m 9b120_02038_20210804 HORIZONTAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY          Condition : PEAK_BI(B4)_16-24 3m 9b120_02038_20210804 VERTICAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY          Condition : PEAK(LINE) 3m 9b120_02038_20210804 VERTICAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>





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

<b>WIFI</b>	<b>Band 4 5725~5850MHz Band Edge @ 3m</b>	
<b>ANT</b>	<b>802.11ax HE20 Full CH149 5745MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Fundamental</b>
<b>Peak</b>	<p>Date: 2022-01-27  PEAK_BE(84)_16-24</p> <p>Site : 03CH15-HY  Condition : PEAK_BE(84)_16-24 3m 90120_02038_20210804 HORIZONTAL  : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Date: 2022-01-27  PEAK(UNII)  AVG_54</p> <p>Site : 03CH15-HY  Condition : PEAK(UNII) 3m 90120_02038_20210804 HORIZONTAL  : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>

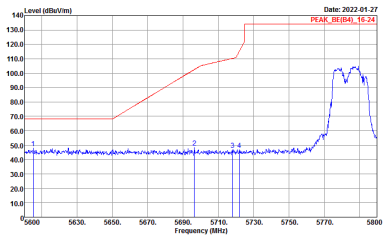
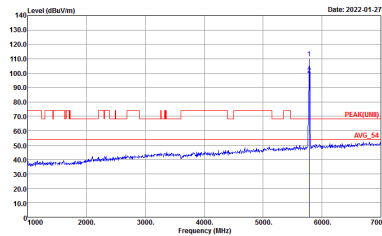
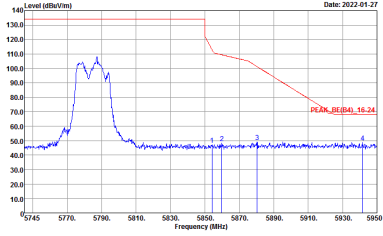


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY          Condition : PEAK_BE(B4)_16-24 3m 9D120_02038_20210804 VERTICAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY          Condition : PEAK(FUNB)_AUG_24 3m 9D120_02038_20210804 VERTICAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>

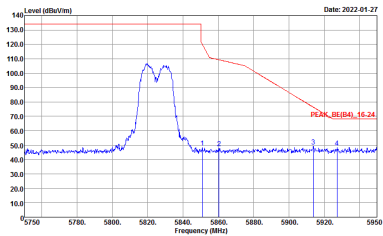
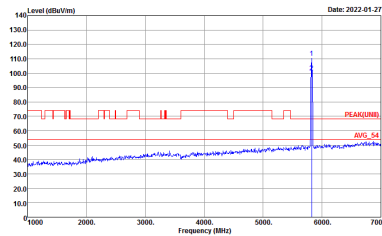


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK(LINE) 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY  Condition : PEAK_SC(S4)_16-24 3m 9D120_02038_20210804 HORIZONTAL  : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY  Condition : PEAK(LINE) 3m 9D120_02038_20210804 HORIZONTAL  : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



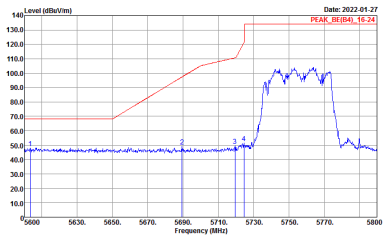
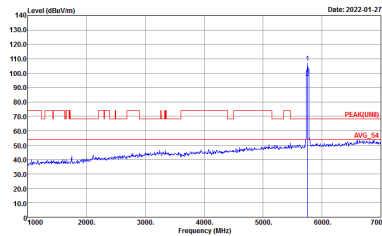
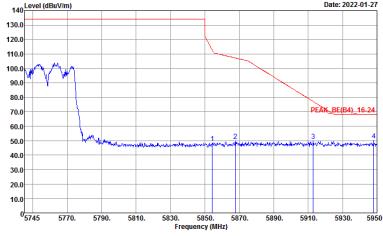
<b>WIFI</b>	<b>Band 4 5725~5850MHz Band Edge @ 3m</b>	
<b>ANT</b>	<b>802.11ax HE20 Full CH165 5825MHz</b>	
<b>1+2</b>	<b>Vertical</b>	<b>Fundamental</b>
<b>Peak</b>	<p>Site : 03CH15-HY          Condition : PEAK_B4(B4)_16-24 3m 9D120_02038_20210804 VERTICAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY          Condition : PEAK(LINE) 3m 9D120_02038_20210804 VERTICAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



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

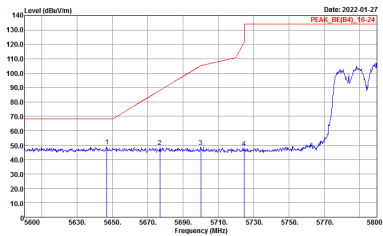
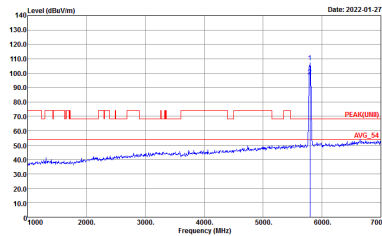
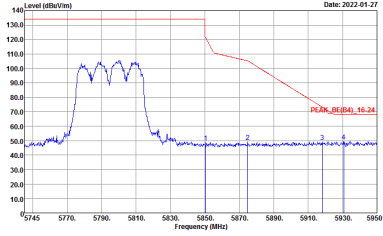
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
1+2	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY            Condition : PEAK_BE(84)_16-24 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY            Condition : PEAK(UNII) 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Site : 03CH15-HY            Condition : PEAK_BE(84)_16-24 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



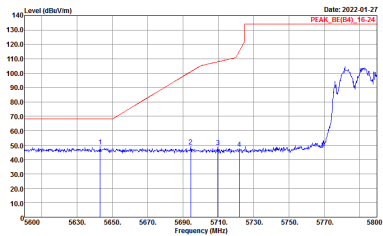
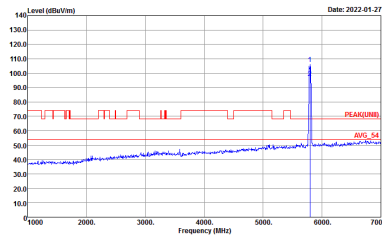
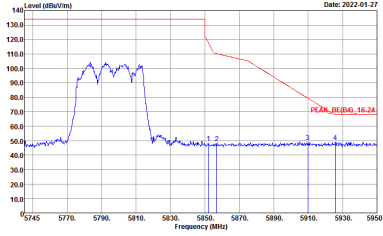
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
1+2	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK(LINE) 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank





WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK(LINE) 3m 90120_02038_20210804 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



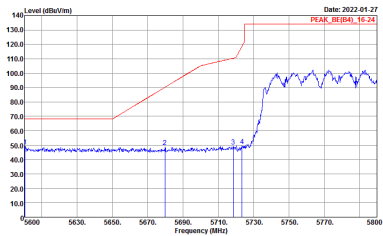
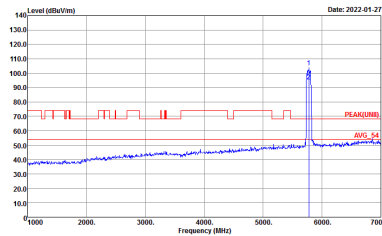
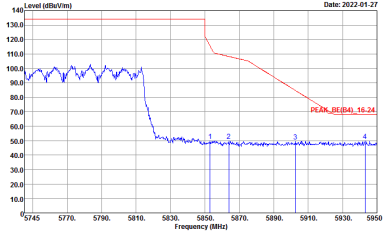
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
1+2	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK(LINE) 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	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	<p>Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 90120_02038_20210804 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 90120_02038_20210804 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 90120_02038_20210804 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK(LINE) 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	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
<b>Peak</b>	<p>Date: 2022-01-27            PEAK_BE(B4)_16-24</p> <p>Site : 03CH15-HY            Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Date: 2022-01-27            PEAK(UNB)            AVG_54</p> <p>Site : 03CH15-HY            Condition : PEAK(UNB) 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
<b>Peak</b>	<p>Date: 2022-01-27            PEAK_BE(B4)_16-24</p> <p>Site : 03CH15-HY            Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<b>Left blank</b>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 996/67 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK(LINE) 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 90120_02038_20210804 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	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	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 9D120_02038_20210804 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 9D120_02038_20210804 VERTICAL</p>
Avg.		



<b>WIFI</b>	<b>Band 4 5725~5850MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11a CH157 5785MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CH15-HY Condition : PEAK(LNII) 3m 9D120_02038_20210804 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK(LNII) 3m 9D120_02038_20210804 VERTICAL</p>





<b>WIFI</b>	<b>Band 4 5725~5850MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11a CH165 5825MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CH15-HY Condition : PEAK(LNII) 3m 9D120_02038_20210804 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK(LNII) 3m 9D120_02038_20210804 VERTICAL</p>



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

Table with 4 columns: WIFI, ANT, 1+2, and two sub-columns for Horizontal and Vertical. It contains two spectral plots showing Level (dBu/Vm) vs Frequency (MHz) for Peak and Avg. measurements.



<b>WIFI</b>	<b>Band 4 5725~5850MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11ax HE20 Full CH157 5785MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CH15-HY Condition : PEAK(LNII) 3m 9D120_02038_20210804 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK(LNII) 3m 9D120_02038_20210804 VERTICAL</p>



<b>WIFI</b>	<b>Band 4 5725~5850MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11ax HE20 Full CH165 5825MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CH15-HY Condition : PEAK(LINEI) 3m 9D120_02038_20210804 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK(LINEI) 3m 9D120_02038_20210804 VERTICAL</p>



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

<b>WIFI</b>	<b>Band 4 5725~5850MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11ax HE40 Full CH151 5755MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CHS-14Y Condition : -PEAK(LINE) 3m 9D120_02038_20210804 HORIZONTAL</p>	<p>Site : 03CHS-14Y Condition : -PEAK(LINE) 3m 9D120_02038_20210804 VERTICAL</p>



<b>WIFI</b>	<b>Band 4 5725~5850MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11ax HE40 Full CH159 5795MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CH15-HY Condition : PEAK(LNII) 3m 9D120_02038_20210804 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK(LNII) 3m 9D120_02038_20210804 VERTICAL</p>



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

<b>WIFI</b>	<b>Band 4 5725~5850MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11ax HE80 Full CH155 5775MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak Avg.</b>	<p>Site : 03CHS-14Y          Condition : -PEAK(LINE) 3m 9D120_02038_20210804 HORIZONTAL</p>	<p>Site : 03CHS-14Y          Condition : -PEAK(LINE) 3m 9D120_02038_20210804 VERTICAL</p>



**Band 4 5725~5850MHz**  
**WIFI 802.11ax HE80 Partial 996 (Harmonic @ 3m)**

<b>WIFI</b>	<b>Band 4 5725~5850MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11ax HE80 Partial 996/67 CH155 5775MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CHS-14          Condition : PEAK(LINE) 3m 9D120_02038_20210804 HORIZONTAL</p>	<p>Site : 03CHS-14          Condition : PEAK(LINE) 3m 9D120_02038_20210804 VERTICAL</p>





Emission above 18GHz

5GHz WIFI 802.11ax HE40 Full (SHF @ 1m)

WIFI	5GHz WIFI	
ANT	802.11ax HE40 Full SHF	
1+2	Horizontal	Vertical
<p><b>Peak</b></p> <p><b>Avg.</b></p>	<p>Site : 03CH15-HY Condition : PEAK(UNIT)_6E 1m SHF ANT_9170_00993 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK(UNIT)_6E 1m SHF ANT_9170_00993 VERTICAL</p>



Emission below 1GHz

5GHz WIFI 802.11ax HE40 Full (LF @ 3m)

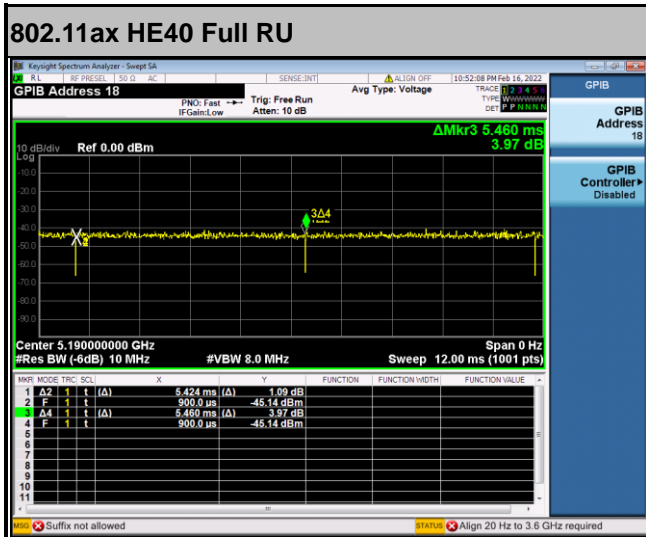
WIFI	5GHz WIFI	
ANT	802.11ax HE40 Full LF	
1+2	Horizontal	Vertical
QP / Peak	<p>Site : 03CH15-HY Condition : QP 3m BIL06_40103407_2021 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : QP 3m BIL06_40103407_2021 VERTICAL</p>



## Appendix E. Duty Cycle Plots

<Sample 1>

Chain	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1+2	5GHz 802.11ax HE40 Full RU	99.34	-	-	10Hz





<Sample 2>

Chain	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1+2	802.11a	98.33	-	-	10Hz
1+2	5GHz 802.11ax HE20 Full RU	99.56	-	-	10Hz
1+2	5GHz 802.11ax HE40 Full RU	99.56	-	-	10Hz
1+2	5GHz 802.11ax HE80 Full RU	99.56	-	-	10Hz

MIMO <Chain 1+2>

