# FCC RADIO TEST REPORT

| | | |
|---|---|---|
| **FCC ID** | **:** | **A4RGB7N6** |
| **Equipment** | **:** | **Phone** |
| **Model Name** | **:** | **GB7N6, GR1YH** |
| **Applicant** | **:** | **Google LLC**<br>**1600 Amphitheatre Parkway,**<br>**Mountain View, California, 94043 USA** |
| **Standard** | **:** | **FCC Part 15 Subpart E §15.407** |

**The product was received on Jun. 03, 2021 and testing was started from Jun. 11, 2021 and completed on Aug. 23, 2021. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.**

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

Louis Wu

**Approved by: Louis Wu**

***Sporton International Inc. Wensan Laboratory***
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# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR0D2942-05F | 01 | Initial issue of report | Aug. 05, 2021 |
| FR0D2942-05F | 02 | 1. Retest for 26dB and 99% bandwidth<br>2. Revise remark for antenna gain calculation | Aug. 24, 2021 |
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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 | Under limit 3.37 dB at 17235.000 MHz |
| 3.5 | 15.207 | AC Conducted Emission | Pass | Under limit 19.85 dB at 19.672 MHz |
| 3.6 | 15.203<br>15.407(a) | Antenna Requirement | Pass | - |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

**Reviewed by: William Chen**

**Report Producer: Vivian Hsu**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature | |
|---|---|
| **Equipment** | Phone |
| **Model Name** | GB7N6, GR1YH |
| **FCC ID** | A4RGB7N6 |
| **EUT supports Radios application** | GSM/EGPRS/WCDMA/HSPA/LTE/5G NR/NFC/ GNSS/WPC/WPT<br>WLAN 11b/g/n HT20<br>WLAN 11a/n HT20/HT40<br>WLAN 11ac VHT20/VHT40/VHT80/VHT160<br>WLAN 11ax HE20/HE40/HE80/HE160<br>Bluetooth BR/EDR/LE |

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

| EUT Information List | |
|---|---|
| S/N | Performed Test Item |
| 15201FDF60001C | RF Conducted Measurement |
| 15171FDF600099 | Radiated Spurious Emission |
| 15141FDF600064 | Conducted Emission |

## 1.2 Product Specification of Equipment Under Test

| Standards-related Product Specification | |
|---|---|
| **Tx/Rx Channel Frequency Range** | 5745 MHz ~ 5825 MHz |
| **Maximum Output Power** | **MIMO <Ant. 4 + 3>**<br>802.11a: 23.45 dBm / 0.2213 W<br>802.11n HT20: 23.61 dBm / 0.2296 W<br>802.11n HT40: 22.75 dBm / 0.1884 W<br>802.11ac VHT20: 23.65 dBm / 0.2317 W<br>802.11ac VHT40: 22.79 dBm / 0.1901 W<br>802.11ac VHT80: 22.79 dBm / 0.1901 W<br>802.11ax HE20: 23.70 dBm / 0.2344 W<br>802.11ax HE40: 22.85 dBm / 0.1928 W<br>802.11ax HE80: 22.85 dBm / 0.1928 W |
| **99% Occupied Bandwidth** | **MIMO <Ant. 4>**<br>802.11a: 19.38 MHz<br>802.11ax HE20: 20.18 MHz<br>802.11ax HE40: 38.76 MHz<br>802.11ax HE80: 77.32 MHz<br>**MIMO <Ant. 3>**<br>802.11a: 18.88 MHz<br>802.11ax HE20: 19.98 MHz<br>802.11ax HE40: 38.36 MHz<br>802.11ax HE80: 77.20 MHz |
| **Type of Modulation** | 802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)<br>802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)<br>802.11ax:<br>OFDMA (BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM) |
| **Antenna Type / Gain** | **<Ant. 4> :** ILA Antenna with gain 0.30 dBi<br>**<Ant. 3> :** IFA Antenna with gain -1.40 dBi |
| **Antenna Function Description** | <table><tr><td></td><td>Ant. 4</td><td>Ant. 3</td></tr><tr><td>802.11 a/n/ac/ax MIMO</td><td>V</td><td>V</td></tr></table> |

**Remark:**

1. MIMO Ant. 4+3 Directional Gain is a calculated result from MIMO Ant.4 and MIMO Ant.3. The formula used in calculation is documented in section 3.6.
   Power of MIMO Ant.4 + Ant.3 is a calculated result from sum of the power MIMO Ant.4 and MIMO Ant.3.
2. The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

## 1.3 Modification of EUT

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

## 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.,<br>Taoyuan City 333010, Taiwan (R.O.C.)<br>TEL: +886-3-327-0868<br>FAX: +886-3-327-0855 |
| **Test Site No.** | **Sporton Site No.** |
| | 03CH16-HY, TH05-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 of the manufacturer, the EUT must comply with the requirements of the following standards:

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

**Remark:**

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

# 2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). The measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find X plane with Adapter as worst plane.

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

## 2.1 Carrier Frequency and Channel

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

**Note:**

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

## 2.2 Test Mode

**This device support 26/52/106/242/484/996-tone RU but does not support 2x996-tone RU on 160MHz channel.**

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

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

| 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 + USB Cable 2 (Charging from AC Adapter 2) |

**Remark:**

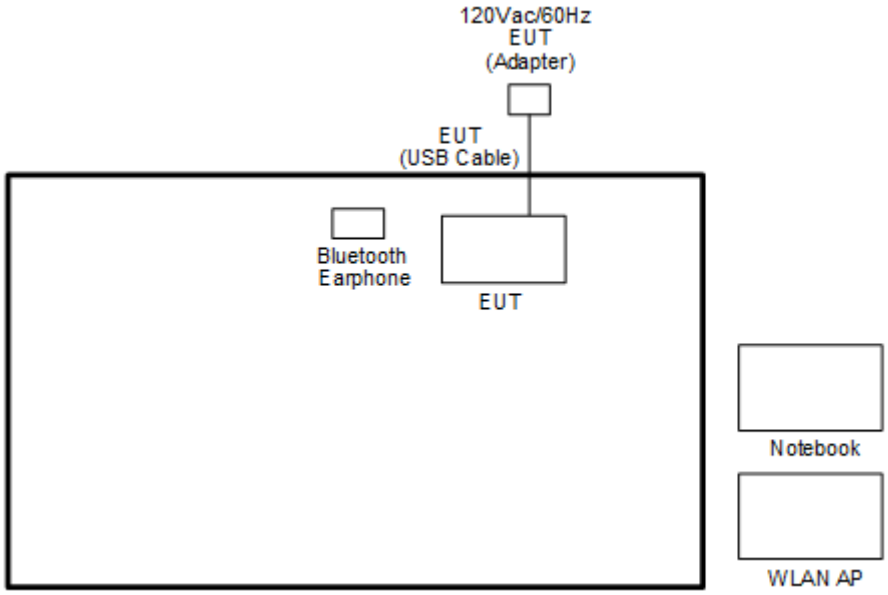
1. For Radiated Test Cases, the tests were performed with Adapter 2 and USB Cable 2.
2. During the preliminary test, both charging modes (Adapter mode and WPC Charging mode) were verified. It is determined that the adaptor mode is the worst case for official test.

| 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 | - |

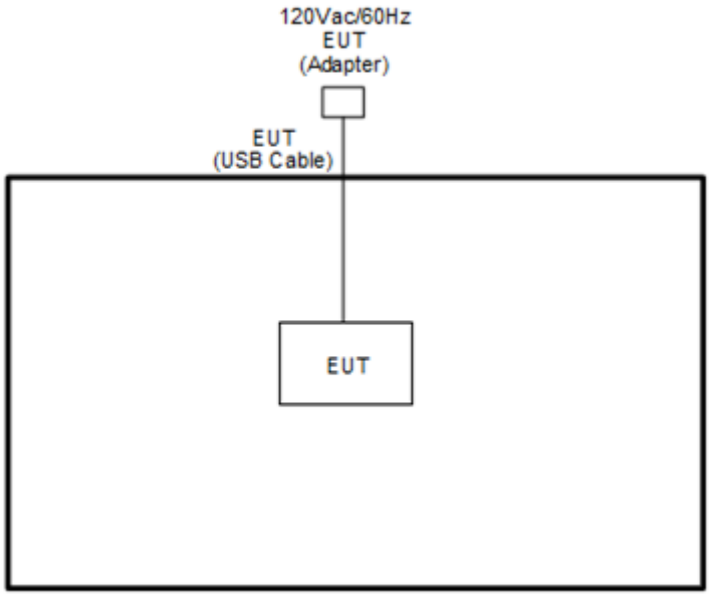
**Remark:** For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

## 2.3 Connection Diagram of Test System

**<AC Conducted Emission Mode>**




**<WLAN Tx Mode>**



## 2.4 Support Unit used in test configuration and system

| Item | Equipment | Brand Name | Model Name | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1. | Bluetooth Earphone | Google | G1013 | N/A | N/A | N/A |
| 2. | WLAN AP | ASUS | RT-AC66U | MSQ-RTAC66U | N/A | Unshielded, 1.8 m |
| 3. | Notebook | Dell | Latitude E3480 | FCC DoC | N/A | AC I/P：Unshielded, 1.2m DC O/P：Shielded, 1.8m |

## 2.5 EUT Operation Test Setup

The RF test items, utility “adb command V_1.0.36” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

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

Example :

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

*Offset = RF cable loss + attenuator factor.*

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

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

= 4.2 + 10 = 14.2 (dB)

# 3 Test Result

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

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

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

26dB and 99% Occupied bandwidth are reporting only.

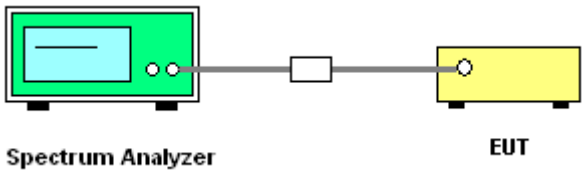
### 3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.1.3 Test Procedures

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

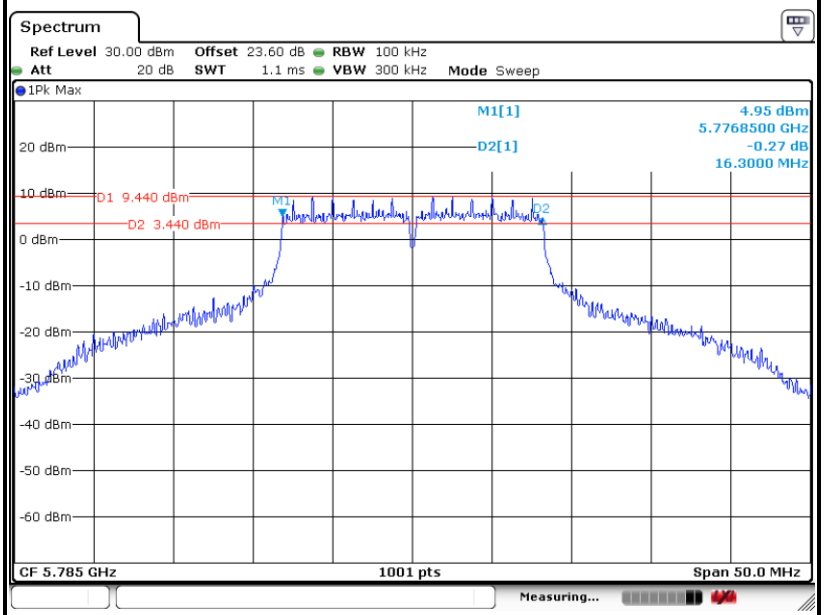
### 3.1.4 Test Setup



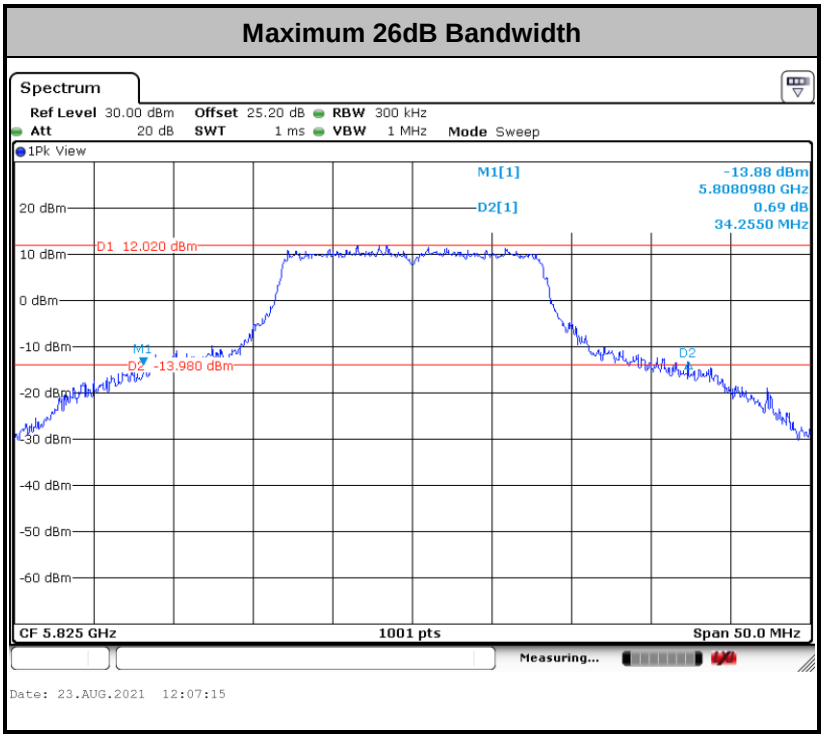

### 3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.

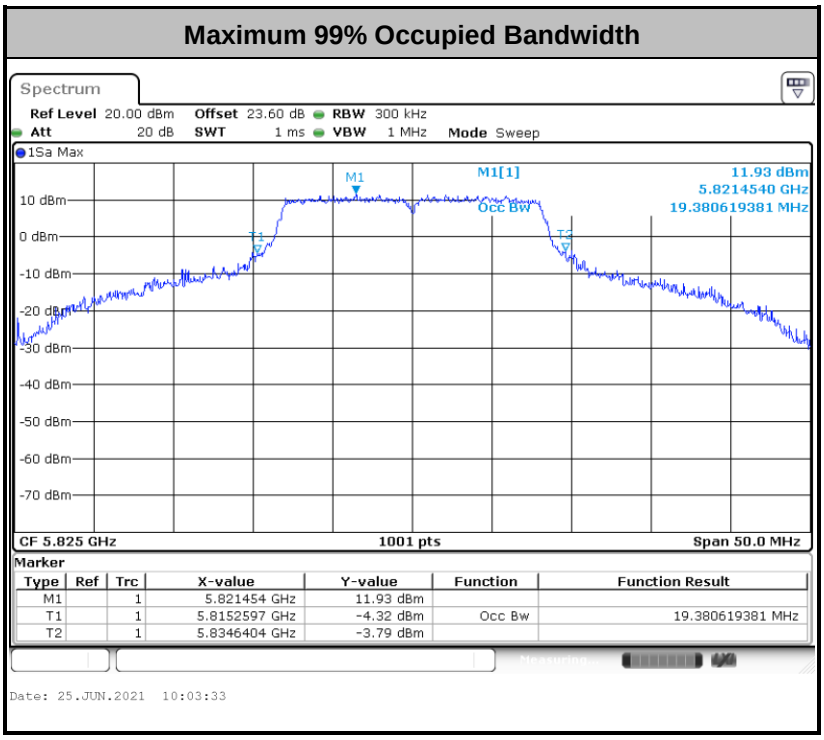
## Minimum 6dB Bandwidth




## Maximum 26dB Bandwidth



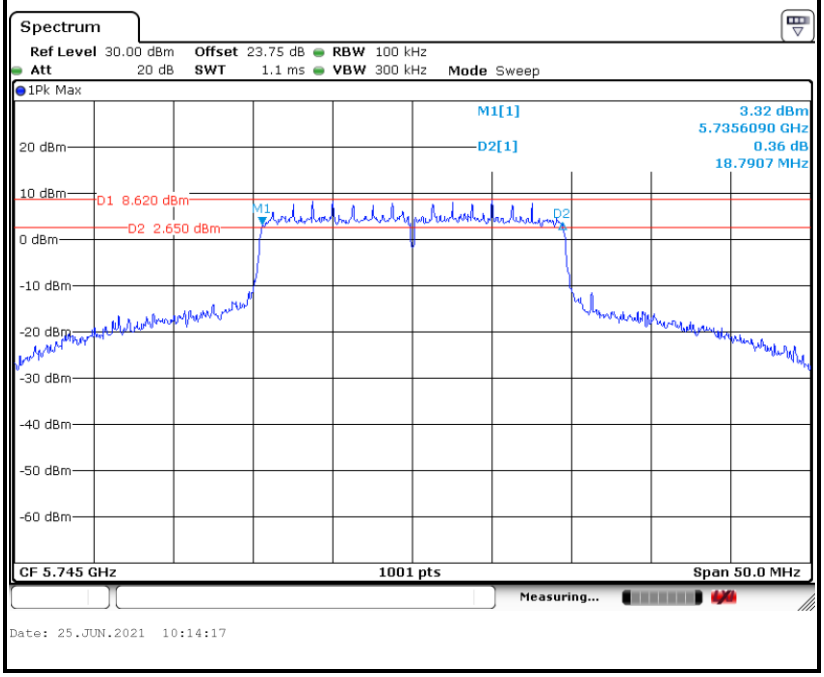
**Maximum 99% Occupied Bandwidth**



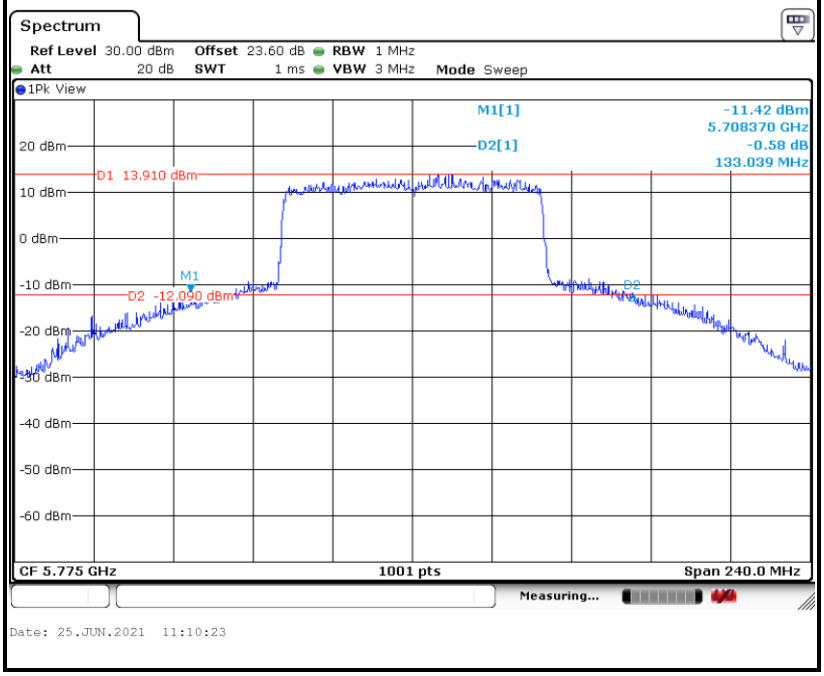

**Note:** The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

**<For 802.11ax Mode>**

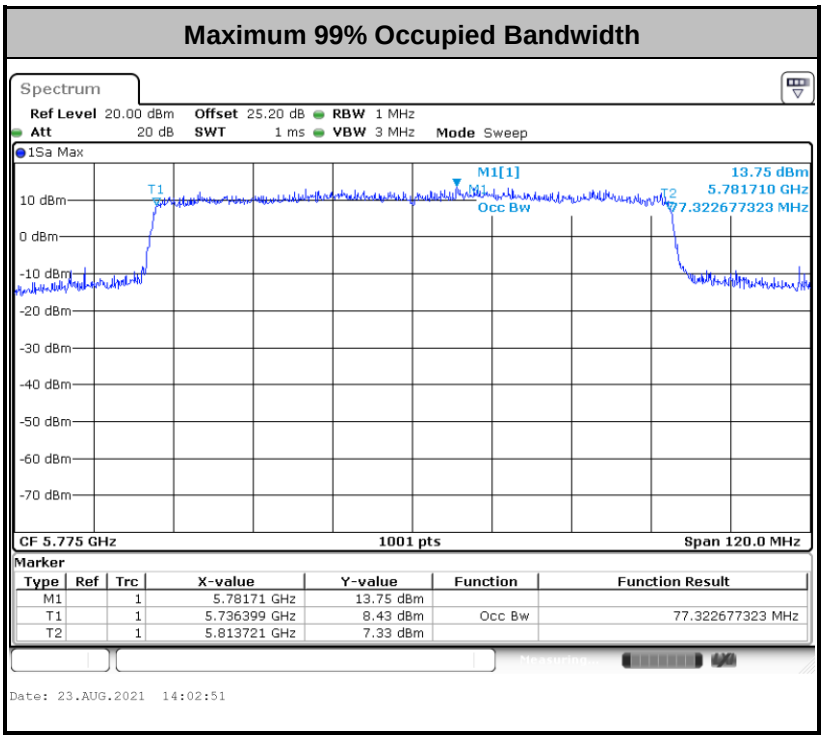
**Minimum 6dB Bandwidth**




**Maximum 26dB Bandwidth**



**Maximum 99% Occupied Bandwidth**




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

## 3.2 Maximum Conducted Output Power Measurement

### 3.2.1 Limit of Maximum Conducted Output Power

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

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

### 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

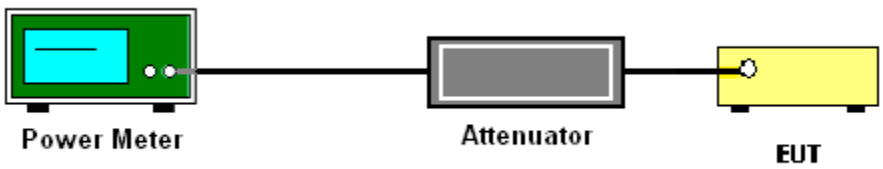
### 3.2.3 Test Procedures

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

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

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter.
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

### 3.2.4 Test Setup




### 3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

## 3.3 Power Spectral Density Measurement

### 3.3.1 Limit of Power Spectral Density

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

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

### 3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Section F) Maximum power spectral density.

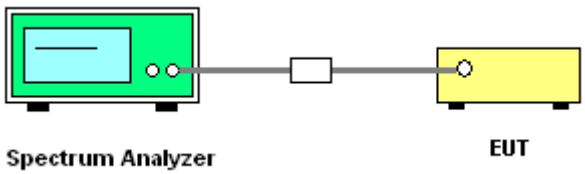
**# Method SA-3 #**

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

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

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
   Method (c): Measure and add 10 log($N_{ANT}$) dB.
   With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity 10 log($N_{ANT}$) dB is added to each spectrum value before comparing to the emission limit. The addition of 10 log($N_{ANT}$) dB serves to apportion the emission limit among the $N_{ANT}$ outputs so that each output is permitted to contribute no more than $1/N_{ANT}$ $^{th}$ of the PSD limit.

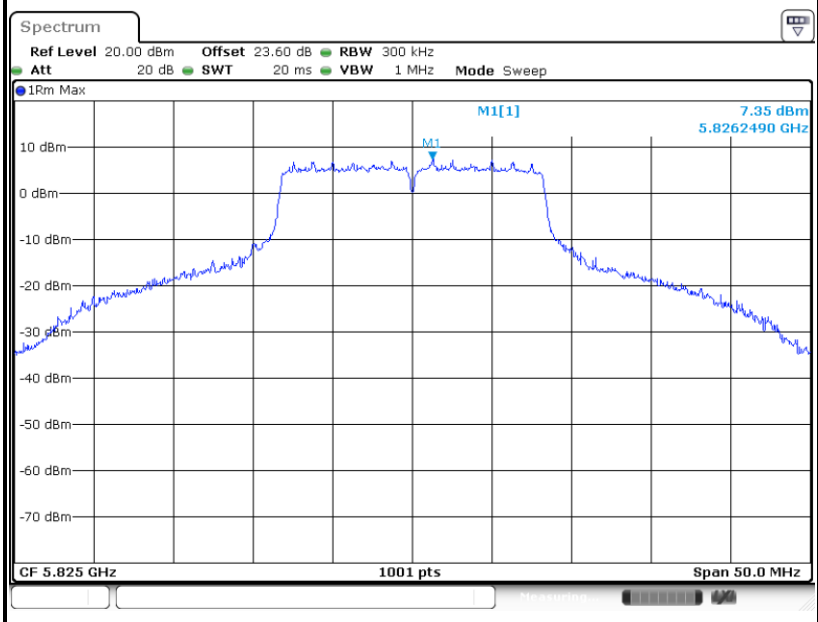
### 3.3.4 Test Setup



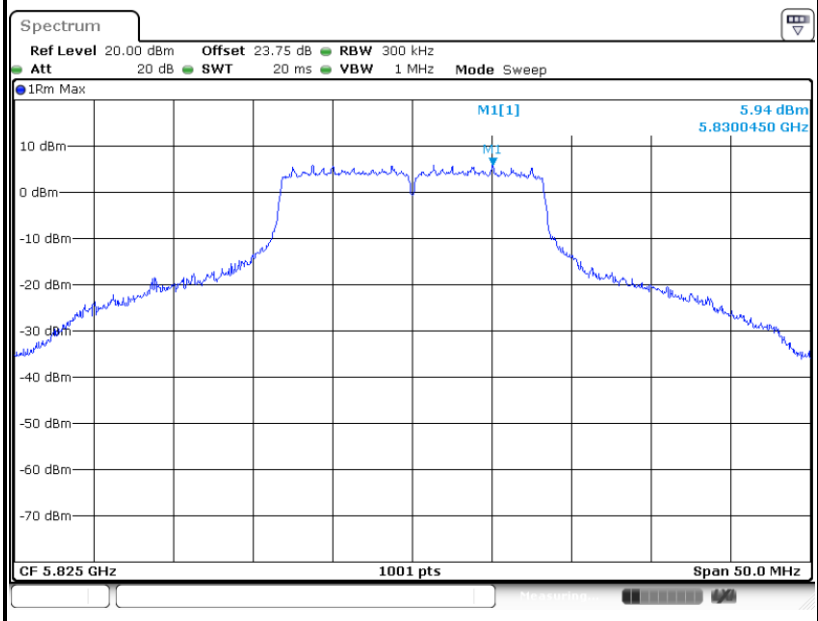
### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

**Worst Case Power Density (dBm/MHz) for MIMO Ant. 4**

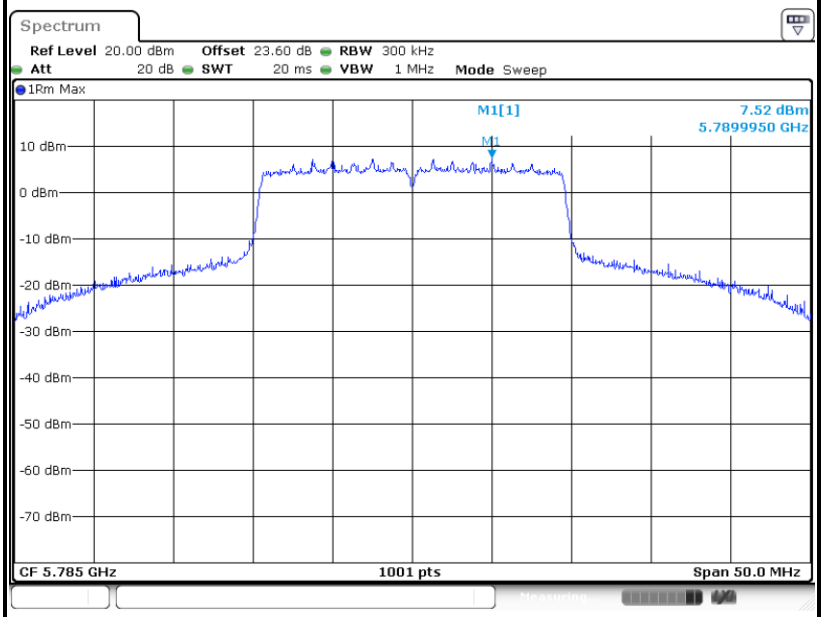



**Worst Case Power Density (dBm/MHz) for MIMO Ant. 3**

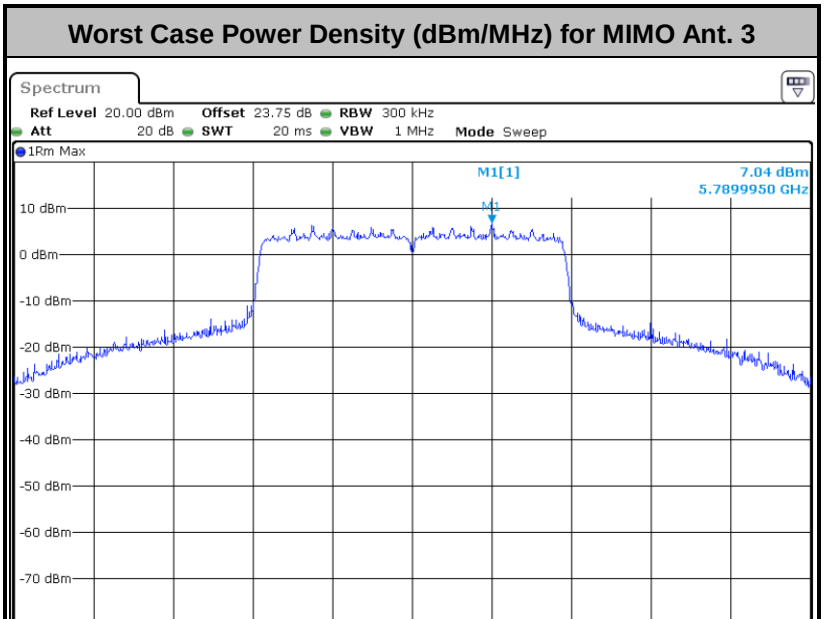


**<For 802.11ax Mode>**

**Worst Case Power Density (dBm/MHz) for MIMO Ant. 4**




**Worst Case Power Density (dBm/MHz) for MIMO Ant. 3**



## 3.4 Unwanted Emissions Measurement

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

### 3.4.1 Limit of Unwanted Emissions

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

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

(2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

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

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

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

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

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

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

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

### 3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.4.3 Test Procedures

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

   (1) Procedure for Unwanted Emissions Measurements Below 1000 MHz

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

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

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

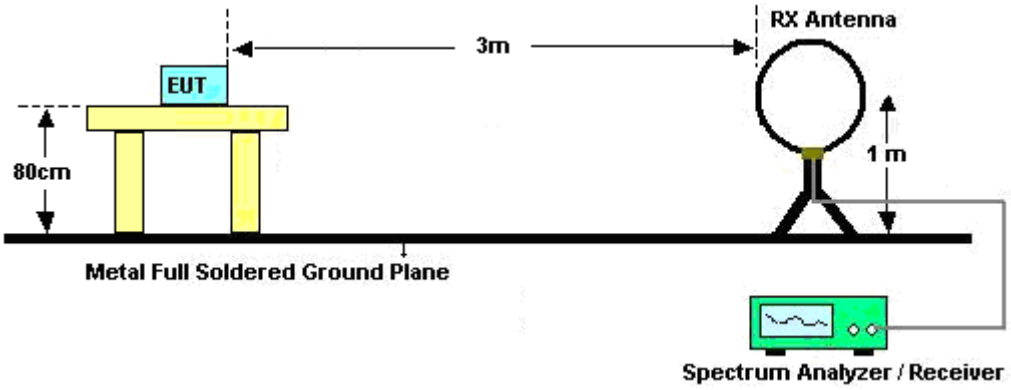
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000 MHz

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

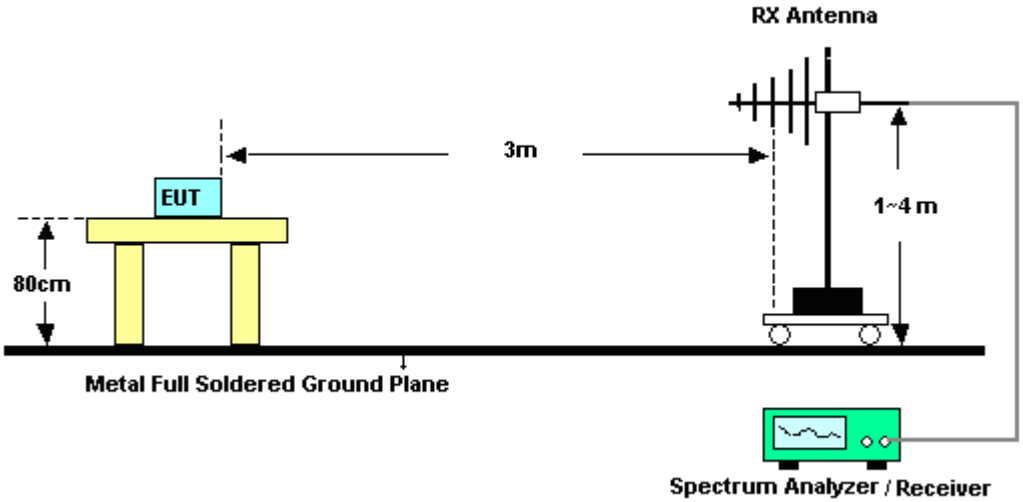
7. For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

### 3.4.4 Test Setup

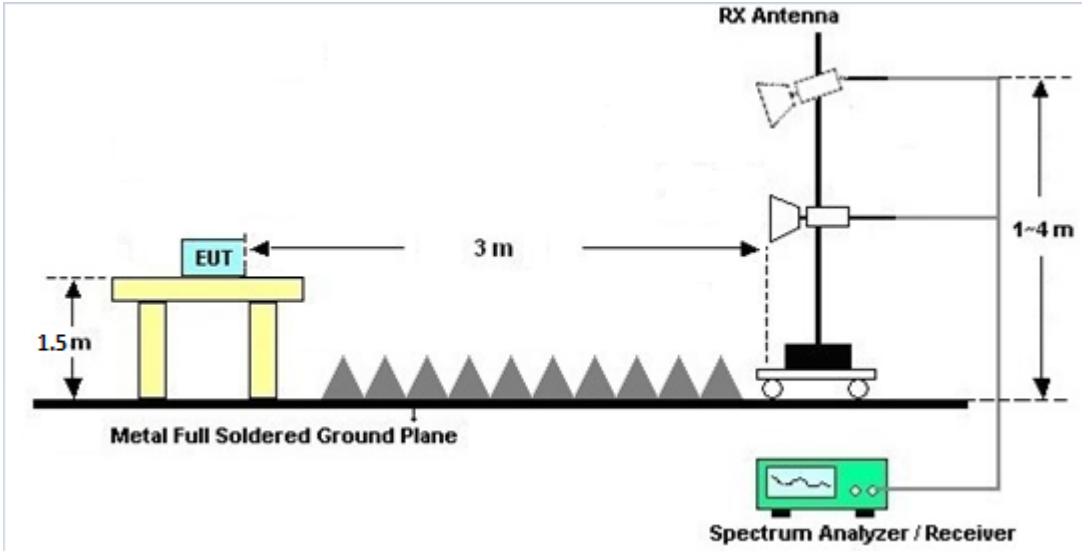
**For radiated emissions below 30MHz**



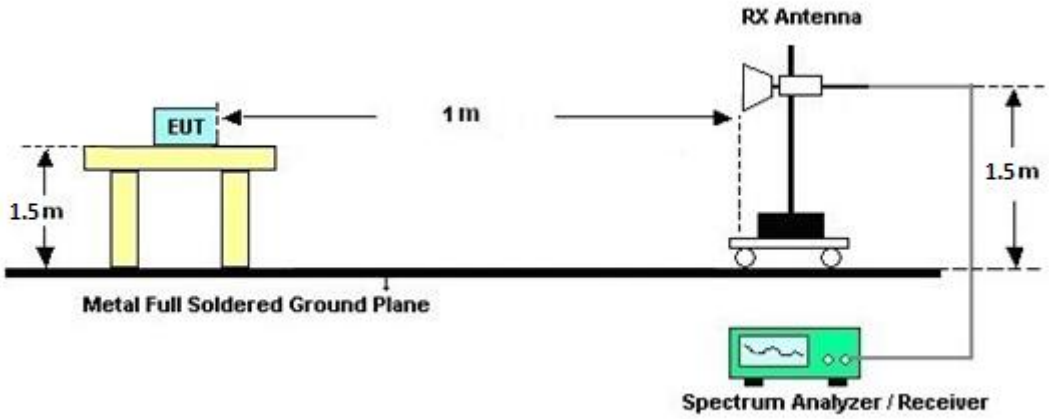

**For radiated emissions from 30MHz to 1GHz**



**For radiated test from 1GHz to 18GHz**




**For radiated test above 18GHz**



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

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

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

### 3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C and D.

### 3.4.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

# 3.5 AC Conducted Emission Measurement

## 3.5.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

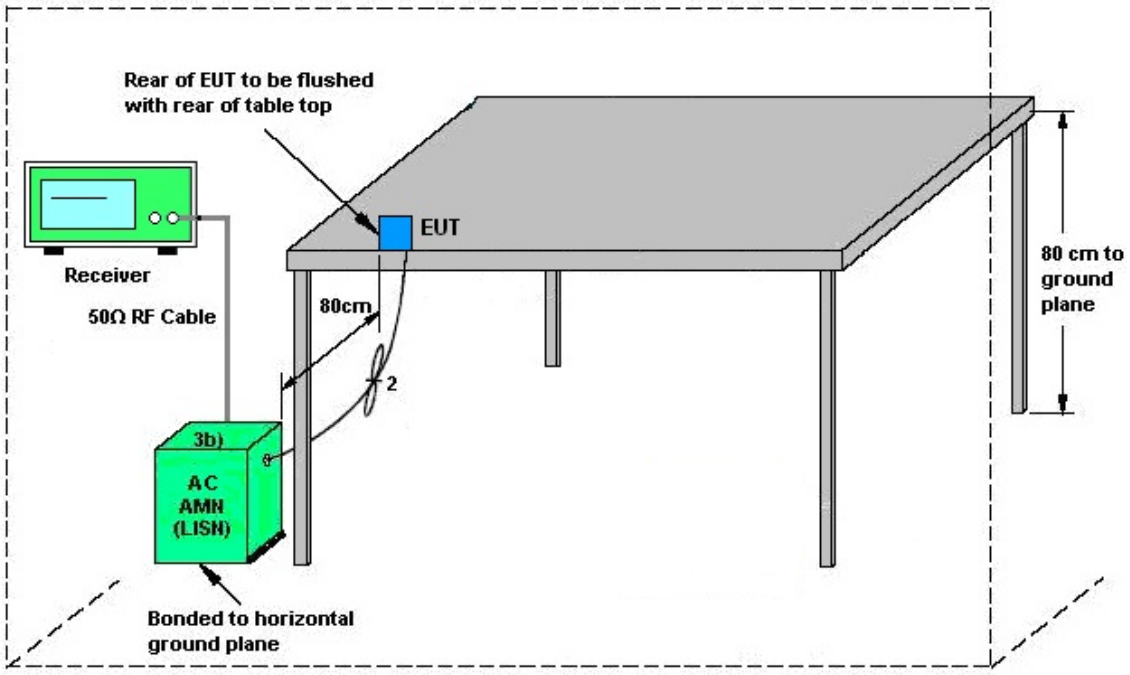
## 3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

## 3.5.3 Test Procedures

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

### 3.5.4 Test Setup




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

### 3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

# 3.6 Antenna Requirements

## 3.6.1 Standard Applicable

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

## 3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

## 3.6.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

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

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

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

For power measurements on IEEE 802.11 devices,

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

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

The EUT supports CDD mode.

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

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

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

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

**<CDD Modes>**

| | | | DG for Power | DG for PSD | Power Limit Reduction | PSD Limit Reduction |
|---|---|---|---|---|---|---|
| | Ant. 4 (dBi) | Ant. 3 (dBi) | (dBi) | (dBi) | (dB) | (dB) |
| **Band IV** | 0.30 | -1.40 | 0.30 | 2.50 | 0.00 | 0.00 |

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

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

# 4 List of Measuring Equipment

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100315 | 9 kHz~30 MHz | Jan. 04, 2021 | Jun. 11, 2021~ Jul. 27, 2021 | Jan. 03, 2022 | Radiation (03CH16-HY) |
| Bilog Antenna | TESEQ | CBL 6111D & 00802N1D01 N-06 | 47020 & 06 | 30MHz to 1GHz | Oct. 11, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Oct. 10, 2021 | Radiation (03CH16-HY) |
| Horn Antenna | SCHWARZBECK | BBHA 9120 D | 9120D-1522 | 1G~18GHz | Sep. 29, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Sep. 28, 2021 | Radiation (03CH16-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | 00993 | 18GHz ~40GHz | Nov. 19, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Nov. 18, 2021 | Radiation (03CH16-HY) |
| Amplifier | SONOMA | 310N | 371607 | 9kHz~1GHz | Sep. 30, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Sep. 29, 2021 | Radiation (03CH16-HY) |
| Amplifier | EMCI | EMC051845 SE | 980729 | 1-18GHz | Jul. 10, 2020 | Jun. 11, 2021~ Jul. 08, 2021 | Jul. 09, 2021 | Radiation (03CH16-HY) |
| Amplifier | EMCI | EMC051845 SE | 980729 | 1-18GHz | Jul. 09, 2021 | Jul. 09, 2021~ Jul. 27, 2021 | Jul. 08, 2022 | Radiation (03CH16-HY) |
| Preamplifier | Jet-Power | JPA0118-55-303 | 1710001800 054001 | 1-18GHz | Sep. 04, 2020 | Jun.11, 2021~ Jul. 27, 2021 | Sep. 03, 2021 | Radiation (03CH16-HY) |
| Preamplifier | Keysight | 83017A | MY53270264 | 1GHz~26.5GHz | Dec. 10, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Dec. 09, 2021 | Radiation (03CH16-HY) |
| Preamplifier | EMEC | EM18G40G | 060715 | 18GHz~40GHz | Dec. 11, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Dec. 10, 2021 | Radiation (03CH16-HY) |
| EMI Test Receiver | Keysight | N9038A(MXE) | MY57290111 | 3Hz~26.5GHz | Dec. 11, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Dec. 10, 2021 | Radiation (03CH16-HY) |
| EMI Test Receiver | Keysight | N9010B | MY60240520 | 3Hz ~40GHz | Dec. 02, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Dec. 01, 2021 | Radiation (03CH16-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY11680/4PE | NA | Aug. 29, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Aug. 28, 2021 | Radiation (03CH16-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY11688/4PE | NA | Aug. 29, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Aug. 28, 2021 | Radiation (03CH16-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | EC-A5-300-5757 | NA | Aug. 29, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Aug. 28, 2021 | Radiation (03CH16-HY) |
| Hygrometer | TECPEL | DTM-303B | TP200881 | QA-3-031 | Oct. 22, 2020 | Jun. 11, 2021~ Jul. 27, 2021 | Oct. 21, 2021 | Radiation (03CH16-HY) |
| Software | Audix | E3 6.2009-8-24 | RK-001136 | N/A | N/A | Jun. 11, 2021~ Jul. 27, 2021 | N/A | Radiation (03CH16-HY) |
| Controller | ChainTek | 3000-1 | N/A | Control Turn table & Ant Mast | N/A | Jun. 11, 2021~ Jul. 27, 2021 | N/A | Radiation (03CH16-HY) |
| Antenna Mast | ChainTek | MBS-520-1 | N/A | 1m~4m | N/A | Jun. 11, 2021~ Jul. 27, 2021 | N/A | Radiation (03CH16-HY) |
| Turn Table | ChainTek | T-200-S-1 | N/A | 0~360 Degree | N/A | Jun. 11, 2021~ Jul. 27, 2021 | N/A | Radiation (03CH16-HY) |

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| AC Power Source | ACPOWER | AFC-11003G | F317040033 | N/A | N/A | Jun. 29, 2021 | N/A | Conduction (CO07-HY) |
| Software | Rohde & Schwarz | EMC32 V10.30 | N/A | N/A | N/A | Jun. 29, 2021 | N/A | Conduction (CO07-HY) |
| Pulse Limiter | SCHWARZBECK | VTSD 9561-F N | 9561-F N00373 | 9kHz-200MHz | Nov. 02, 2020 | Jun. 29, 2021 | Nov. 01, 2021 | Conduction (CO07-HY) |
| RF Cable | HUBER + SUHNER | RG 214/U | 1358175 | 9kHz~30MHz | Mar. 17, 2021 | Jun. 29, 2021 | Mar. 16, 2022 | Conduction (CO07-HY) |
| Two-Line V-Network | TESEQ | NNB 51 | 45051 | N/A | Feb. 01, 2021 | Jun. 29, 2021 | Jan. 31, 2022 | Conduction (CO07-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESR3 | 102317 | 9kHz~3.6GHz | Sep. 11, 2020 | Jun. 29, 2021 | Sep. 10, 2021 | Conduction (CO07-HY) |
| Hygrometer | Testo | 608-H1 | 34893241 | N/A | Mar. 03, 2021 | Jun. 25, 2021~ Aug. 23, 2021 | Mar. 02, 2022 | Conducted (TH05-HY) |
| Power Sensor | DARE | RPR3006W | 16I00054SNO10 | 10MHz~6GHz | Dec. 09, 2020 | Jun. 25, 2021~ Aug. 23, 2021 | Dec. 08, 2021 | Conducted (TH05-HY) |
| Signal Analyzer | Rohde & Schwarz | FSV40 | 101566 | 10Hz ~ 40GHz | Jul. 22, 2020 | Jun. 25, 2021~ Jul. 02, 2021 | Jul. 21, 2021 | Conducted (TH05-HY) |
| Signal Analyzer | Rohde & Schwarz | FSV40 | 101565 | 10Hz ~ 40GHz | Nov. 13, 2020 | Aug. 23, 2021 | Nov. 12, 2021 | Conducted (TH05-HY) |
| Switch Box & RF Cable | EM Electronics | EMSW18SE | SW200302 | N/A | Mar. 17, 2021 | Jun. 25, 2021~ Aug. 23, 2021 | Mar. 16, 2022 | Conducted (TH05-HY) |

# 5 Uncertainty of Evaluation

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **2.2 dB** |

**Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)**

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **5.1 dB** |

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **6.8 dB** |

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **4.7 dB** |

# Appendix A. Test Result of Conducted Test Items

| | | | | |
|---|---|---|---|---|
| Test Engineer: | Richard Qiu | Temperature: | 23.9~25.1 | °C |
| Test Date: | 2021/6/25~2021/8/23 | Relative Humidity: | 52.1~58.7 | % |

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

| Band IV MIMO | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Bandwidth (MHz) | | 26dB Bandwidth (MHz) | | 6 dB Bandwidth (MHz) | | 6 dB Bandwidth Min. Limit (MHz) | Pass/Fail |
| | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | Ant 4 | Ant 3 | | |
| 11a | 6Mbps | 2 | 149 | 5745 | 18.78 | 18.03 | 32.11 | 30.75 | 16.35 | 16.34 | 0.5 | Pass |
| 11a | 6Mbps | 2 | 157 | 5785 | 19.28 | 18.88 | 34.16 | 32.60 | 16.30 | 16.30 | 0.5 | Pass |
| 11a | 6Mbps | 2 | 165 | 5825 | 19.38 | 18.53 | 34.26 | 32.26 | 16.35 | 16.35 | 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 4 | Ant 3 | SUM | Ant 4 | Ant 3 | Ant 4 | Ant 3 | |
| 11a | 6Mbps | 2 | 149 | 5745 | 20.70 | 19.75 | 23.26 | 30.00 | | 0.30 | | Pass |
| 11a | 6Mbps | 2 | 157 | 5785 | 20.80 | 20.05 | 23.45 | 30.00 | | 0.30 | | Pass |
| 11a | 6Mbps | 2 | 165 | 5825 | 20.80 | 19.65 | 23.27 | 30.00 | | 0.30 | | Pass |
| HT20 | MCS0 | 2 | 149 | 5745 | 21.00 | 20.15 | 23.61 | 30.00 | | 0.30 | | Pass |
| HT20 | MCS0 | 2 | 157 | 5785 | 20.90 | 20.05 | 23.51 | 30.00 | | 0.30 | | Pass |
| HT20 | MCS0 | 2 | 165 | 5825 | 21.00 | 19.55 | 23.35 | 30.00 | | 0.30 | | Pass |
| HT40 | MCS0 | 2 | 151 | 5755 | 20.40 | 18.95 | 22.75 | 30.00 | | 0.30 | | Pass |
| HT40 | MCS0 | 2 | 159 | 5795 | 20.30 | 19.05 | 22.73 | 30.00 | | 0.30 | | Pass |
| VHT20 | MCS0 | 2 | 149 | 5745 | 21.00 | 20.25 | 23.65 | 30.00 | | 0.30 | | Pass |
| VHT20 | MCS0 | 2 | 157 | 5785 | 21.00 | 20.05 | 23.56 | 30.00 | | 0.30 | | Pass |
| VHT20 | MCS0 | 2 | 165 | 5825 | 21.00 | 19.65 | 23.39 | 30.00 | | 0.30 | | Pass |
| VHT40 | MCS0 | 2 | 151 | 5755 | 20.40 | 19.05 | 22.79 | 30.00 | | 0.30 | | Pass |
| VHT40 | MCS0 | 2 | 159 | 5795 | 20.30 | 19.15 | 22.77 | 30.00 | | 0.30 | | Pass |
| VHT80 | MCS0 | 2 | 155 | 5775 | 20.40 | 19.05 | 22.79 | 30.00 | | 0.30 | | Pass |

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

| Band IV MIMO | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 10log (500kHz /RBW) Factor (dB) | | Average Power Density (dBm/500kHz) | | | Average PSD Limit (dBm/500kHz) | | DG (dBi) | | Pass /Fail |
| | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | SUM | Ant 4 | Ant 3 | Ant 4 | Ant 3 | |
| 11a | 6Mbps | 2 | 149 | 5745 | 2.22 | | 9.30 | 8.43 | 12.31 | 30.00 | | 2.50 | | Pass |
| 11a | 6Mbps | 2 | 157 | 5785 | 2.22 | | 9.15 | 8.76 | 12.16 | 30.00 | | 2.50 | | Pass |
| 11a | 6Mbps | 2 | 165 | 5825 | 2.22 | | 9.57 | 8.16 | 12.58 | 30.00 | | 2.50 | | Pass |

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

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

| Band IV MIMO | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | RU Config. | 99% Bandwidth (MHz) | | 26dB Bandwidth (MHz) | | 6 dB Bandwidth (MHz) | | 6 dB Bandwidth Min. Limit (MHz) | Pass/Fail |
| | | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | Ant 4 | Ant 3 | | |
| HE20 | MCS0 | 2 | 149 | 5745 | Full | 20.18 | 19.73 | 39.58 | 37.86 | 18.94 | 18.79 | 0.5 | Pass |
| HE20 | MCS0 | 2 | 157 | 5785 | Full | 19.93 | 19.98 | 40.61 | 34.61 | 19.00 | 18.85 | 0.5 | Pass |
| HE20 | MCS0 | 2 | 165 | 5825 | Full | 20.18 | 19.88 | 37.44 | 34.51 | 19.00 | 18.90 | 0.5 | Pass |
| HE40 | MCS0 | 2 | 151 | 5755 | Full | 38.66 | 38.36 | 67.32 | 51.51 | 37.80 | 37.53 | 0.5 | Pass |
| HE40 | MCS0 | 2 | 159 | 5795 | Full | 38.76 | 38.36 | 59.86 | 49.79 | 37.62 | 37.53 | 0.5 | Pass |
| HE80 | MCS0 | 2 | 155 | 5775 | Full | 77.32 | 77.20 | 133.04 | 108.82 | 77.28 | 77.24 | 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 4 | Ant 3 | SUM | Ant 4 | Ant 3 | Ant 4 | Ant 3 | |
| HE20 | MCS0 | 2 | 149 | 5745 | Full | 21.00 | 20.35 | 23.70 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 149 | 5745 | 26/0 | 12.70 | 12.15 | 15.44 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 149 | 5745 | 52/37 | 15.40 | 14.55 | 18.01 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 149 | 5745 | 106/53 | 18.30 | 17.45 | 20.91 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 157 | 5785 | Full | 21.00 | 20.15 | 23.61 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 157 | 5785 | 26/4 | 13.30 | 12.35 | 15.86 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 157 | 5785 | 52/38 | 15.80 | 14.65 | 18.27 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 157 | 5785 | 106/53 | 18.10 | 17.35 | 20.75 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 165 | 5825 | Full | 21.00 | 19.75 | 23.43 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 165 | 5825 | 26/8 | 12.20 | 11.05 | 14.67 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 165 | 5825 | 52/40 | 15.20 | 13.75 | 17.55 | 30.00 | | 0.30 | | Pass |
| HE20 | MCS0 | 2 | 165 | 5825 | 106/54 | 17.90 | 16.75 | 20.37 | 30.00 | | 0.30 | | Pass |
| HE40 | MCS0 | 2 | 151 | 5755 | Full | 20.50 | 19.05 | 22.85 | 30.00 | | 0.30 | | Pass |
| HE40 | MCS0 | 2 | 159 | 5795 | Full | 20.40 | 19.15 | 22.83 | 30.00 | | 0.30 | | Pass |
| HE80 | MCS0 | 2 | 155 | 5775 | Full | 20.50 | 19.05 | 22.85 | 30.00 | | 0.30 | | Pass |

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

| Band IV MIMO | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | RU Config. | 10log (500kHz /RBW) Factor (dB) | | Average Power Density (dBm/500kHz) | | | Average PSD Limit (dBm/500kHz) | | DG (dBi) | | Pass /Fail |
| | | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | SUM | Ant 4 | Ant 3 | Ant 4 | Ant 3 | |
| HE20 | MCS0 | 2 | 149 | 5745 | Full | 2.22 | | 9.67 | 8.52 | 12.68 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 149 | 5745 | 26/0 | 2.22 | | 9.43 | 9.33 | 12.44 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 149 | 5745 | 52/37 | 2.22 | | 9.38 | 9.17 | 12.39 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 149 | 5745 | 106/53 | 2.22 | | 9.46 | 9.27 | 12.47 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 157 | 5785 | Full | 2.22 | | 9.74 | 9.26 | 12.75 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 157 | 5785 | 26/4 | 2.22 | | 9.71 | 8.94 | 12.72 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 157 | 5785 | 52/38 | 2.22 | | 9.52 | 8.83 | 12.53 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 157 | 5785 | 106/53 | 2.22 | | 9.43 | 9.32 | 12.44 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 165 | 5825 | Full | 2.22 | | 9.36 | 8.57 | 12.37 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 165 | 5825 | 26/8 | 2.22 | | 9.18 | 8.22 | 12.19 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 165 | 5825 | 52/40 | 2.22 | | 9.25 | 8.35 | 12.26 | 30.00 | | 2.50 | | Pass |
| HE20 | MCS0 | 2 | 165 | 5825 | 106/54 | 2.22 | | 9.28 | 8.70 | 12.29 | 30.00 | | 2.50 | | Pass |
| HE40 | MCS0 | 2 | 151 | 5755 | Full | 2.22 | | 6.23 | 4.68 | 9.24 | 30.00 | | 2.50 | | Pass |
| HE40 | MCS0 | 2 | 159 | 5795 | Full | 2.22 | | 6.60 | 4.83 | 9.61 | 30.00 | | 2.50 | | Pass |
| HE80 | MCS0 | 2 | 155 | 5775 | Full | 2.22 | | 3.51 | 2.05 | 6.52 | 30.00 | | 2.50 | | Pass |

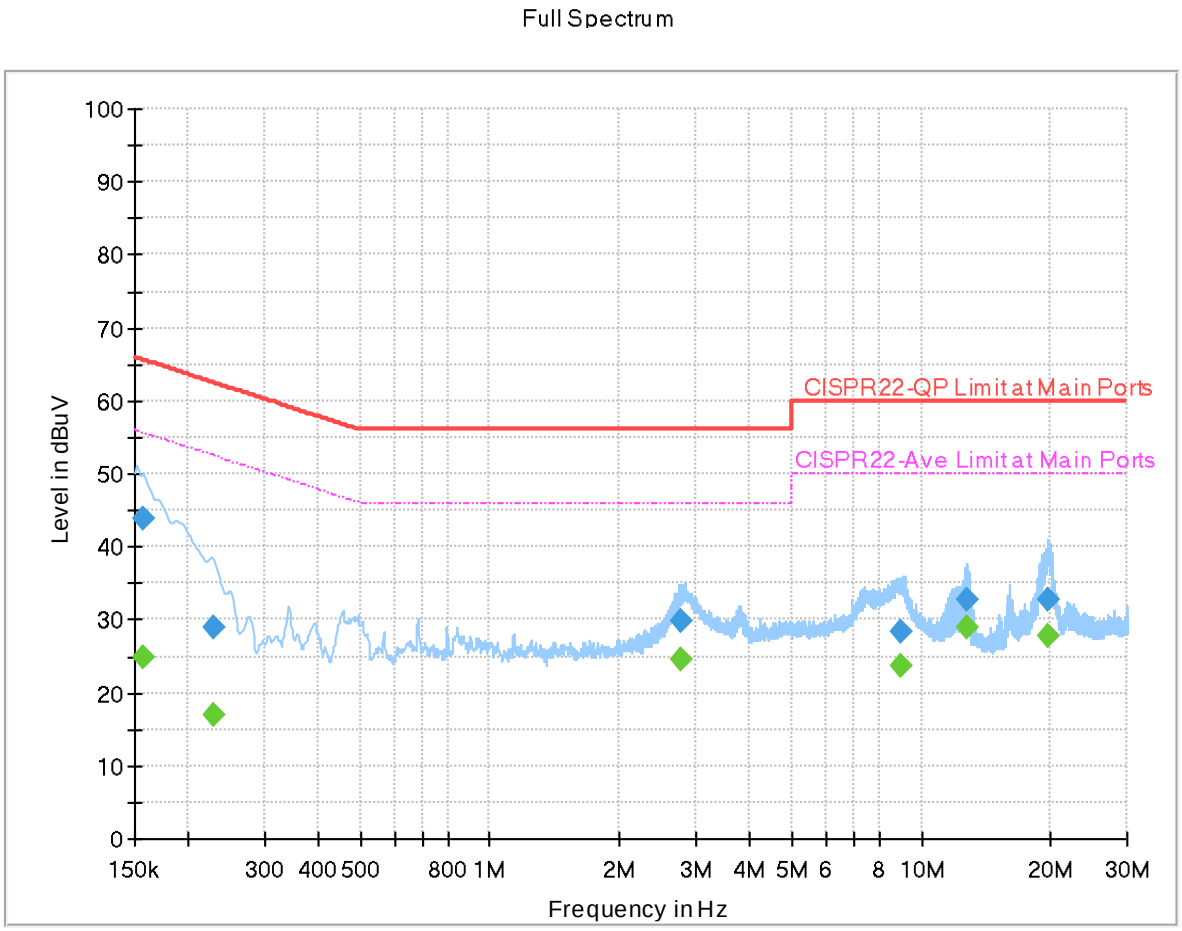
Note: PSD Sum = Max PSD(Ant. 1, Ant. 2) + 10 log (n)

# Appendix B. AC Conducted Emission Test Results

| | | | |
|---|---|---|---|
| **Test Engineer :** | Howard Huang | **Temperature :** | 23~26℃ |
| | | **Relative Humidity :** | 40~50% |

# EUT Information

| | |
|---|---|
| Report NO : | 0D2942-05 |
| Test Mode : | Mode 1 |
| Test Voltage : | 120Vac/60Hz |
| Phase : | Line |

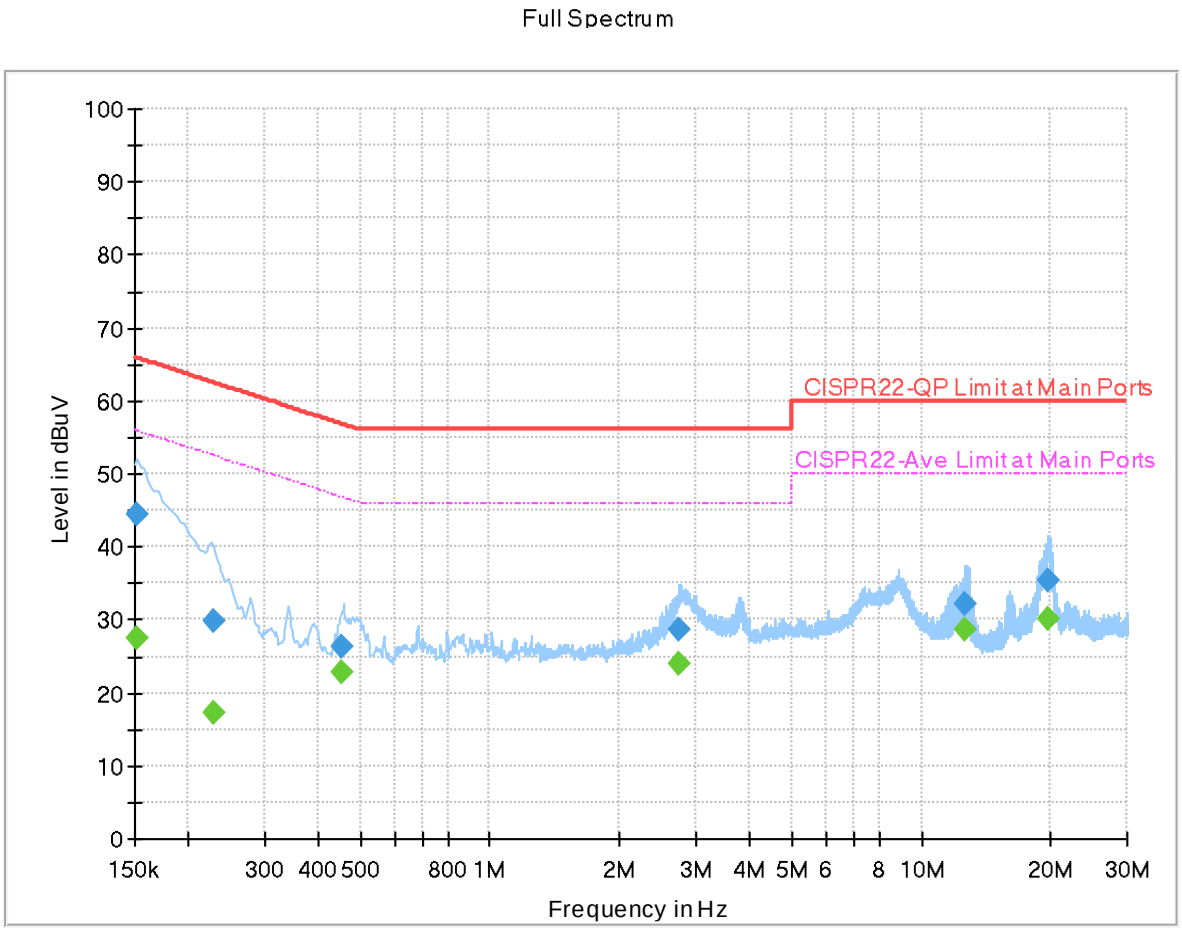



# Final_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Line | Filter | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 0.156750 | --- | 24.75 | 55.63 | 30.88 | L1 | OFF | 20.0 |
| 0.156750 | 43.84 | --- | 65.63 | 21.79 | L1 | OFF | 20.0 |
| 0.229830 | --- | 16.82 | 52.46 | 35.64 | L1 | OFF | 20.0 |
| 0.229830 | 28.95 | --- | 62.46 | 33.51 | L1 | OFF | 20.0 |
| 2.779260 | --- | 24.53 | 46.00 | 21.47 | L1 | OFF | 20.1 |
| 2.779260 | 29.92 | --- | 56.00 | 26.08 | L1 | OFF | 20.1 |
| 8.951820 | --- | 23.58 | 50.00 | 26.42 | L1 | OFF | 20.1 |
| 8.951820 | 28.40 | --- | 60.00 | 31.60 | L1 | OFF | 20.1 |
| 12.777270 | --- | 28.93 | 50.00 | 21.07 | L1 | OFF | 20.2 |
| 12.777270 | 32.77 | --- | 60.00 | 27.23 | L1 | OFF | 20.2 |
| 19.646790 | --- | 27.69 | 50.00 | 22.31 | L1 | OFF | 20.2 |
| 19.646790 | 32.63 | --- | 60.00 | 27.37 | L1 | OFF | 20.2 |

# EUT Information

| | |
|---|---|
| Report NO : | 0D2942-05 |
| Test Mode : | Mode 1 |
| Test Voltage : | 120Vac/60Hz |
| Phase : | Neutral |




# Final_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Line | Filter | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 0.151755 | --- | 27.37 | 55.90 | 28.53 | N | OFF | 20.0 |
| 0.151755 | 44.33 | --- | 65.90 | 21.57 | N | OFF | 20.0 |
| 0.227940 | --- | 17.28 | 52.52 | 35.24 | N | OFF | 20.0 |
| 0.227940 | 29.90 | --- | 62.52 | 32.62 | N | OFF | 20.0 |
| 0.454200 | --- | 22.77 | 46.80 | 24.03 | N | OFF | 20.0 |
| 0.454200 | 26.19 | --- | 56.80 | 30.61 | N | OFF | 20.0 |
| 2.751000 | --- | 24.08 | 46.00 | 21.92 | N | OFF | 20.1 |
| 2.751000 | 28.60 | --- | 56.00 | 27.40 | N | OFF | 20.1 |
| 12.682230 | --- | 28.72 | 50.00 | 21.28 | N | OFF | 20.2 |
| 12.682230 | 32.30 | --- | 60.00 | 27.70 | N | OFF | 20.2 |
| 19.671900 | --- | 30.15 | 50.00 | 19.85 | N | OFF | 20.3 |
| 19.671900 | 35.51 | --- | 60.00 | 24.49 | N | OFF | 20.3 |

# Appendix C. Radiated Spurious Emission

| Test Engineer : | Karl Hou and Andy Yang | Temperature : | 20~25°C |
|---|---|---|---|
| | | Relative Humidity : | 50~60% |

**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. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 4+3 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11a CH 149 5745MHz | | 5609.4 | 56.45 | -11.75 | 68.2 | 40.89 | 31.68 | 13.65 | 29.77 | 100 | 231 | P | H |
| | | 5695.6 | 57.04 | -44.92 | 101.96 | 41.42 | 31.69 | 13.73 | 29.8 | 100 | 231 | P | H |
| | | 5720 | 70.68 | -40.12 | 110.8 | 54.92 | 31.82 | 13.75 | 29.81 | 100 | 231 | P | H |
| | | 5724.6 | 78.39 | -42.9 | 121.29 | 62.61 | 31.85 | 13.75 | 29.82 | 100 | 231 | P | H |
| | * | 5745 | 113.4 | - | - | 97.48 | 31.97 | 13.77 | 29.82 | 100 | 231 | P | H |
| | * | 5745 | 106.3 | - | - | 90.38 | 31.97 | 13.77 | 29.82 | 100 | 231 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 5617.2 | 55.28 | -12.92 | 68.2 | 39.72 | 31.67 | 13.66 | 29.77 | 323 | 119 | P | V |
| | | 5699.4 | 63.11 | -41.65 | 104.76 | 47.49 | 31.7 | 13.73 | 29.81 | 323 | 119 | P | V |
| | | 5718 | 69.6 | -40.64 | 110.24 | 53.85 | 31.81 | 13.75 | 29.81 | 323 | 119 | P | V |
| | | 5723.6 | 80.95 | -38.06 | 119.01 | 65.17 | 31.84 | 13.75 | 29.81 | 323 | 119 | P | V |
| | * | 5745 | 115.07 | - | - | 99.15 | 31.97 | 13.77 | 29.82 | 323 | 119 | P | V |
| | * | 5745 | 107.55 | - | - | 91.63 | 31.97 | 13.77 | 29.82 | 323 | 119 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| WIFI Ant. 4+3 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5608 | 56.48 | -11.72 | 68.2 | 40.92 | 31.68 | 13.65 | 29.77 | 100 | 224 | P | H |
| | | 5651.6 | 56.1 | -13.29 | 69.39 | 40.6 | 31.6 | 13.69 | 29.79 | 100 | 224 | P | H |
| | | 5717.2 | 56.79 | -53.23 | 110.02 | 41.05 | 31.8 | 13.75 | 29.81 | 100 | 224 | P | H |
| | | 5722.2 | 58.1 | -57.72 | 115.82 | 42.33 | 31.83 | 13.75 | 29.81 | 100 | 224 | P | H |
| | * | 5785 | 113.78 | - | - | 97.81 | 32 | 13.81 | 29.84 | 100 | 224 | P | H |
| | * | 5785 | 106.11 | - | - | 90.14 | 32 | 13.81 | 29.84 | 100 | 224 | A | H |
| | | 5851 | 57.74 | -62.18 | 119.92 | 41.69 | 32.1 | 13.81 | 29.86 | 100 | 224 | P | H |
| | | 5855.8 | 55.33 | -55.25 | 110.58 | 39.28 | 32.11 | 13.81 | 29.87 | 100 | 224 | P | H |
| | | 5923.8 | 55.74 | -13.34 | 69.08 | 39.57 | 32.25 | 13.81 | 29.89 | 100 | 224 | P | H |
| | | 5932.6 | 55.51 | -12.69 | 68.2 | 39.32 | 32.27 | 13.81 | 29.89 | 100 | 224 | P | H |
| | | | | | | | | | | | | | H |
| 802.11a CH 157 5785MHz | | | | | | | | | | | | | H |
| | | 5624.8 | 56.04 | -12.16 | 68.2 | 40.51 | 31.65 | 13.66 | 29.78 | 368 | 114 | P | V |
| | | 5699.4 | 56.68 | -48.08 | 104.76 | 41.06 | 31.7 | 13.73 | 29.81 | 368 | 114 | P | V |
| | | 5703.2 | 60.45 | -45.65 | 106.1 | 44.81 | 31.72 | 13.73 | 29.81 | 368 | 114 | P | V |
| | | 5723.6 | 61.99 | -57.02 | 119.01 | 46.21 | 31.84 | 13.75 | 29.81 | 368 | 114 | P | V |
| | * | 5785 | 115.51 | - | - | 99.54 | 32 | 13.81 | 29.84 | 368 | 114 | P | V |
| | * | 5785 | 108.1 | - | - | 92.13 | 32 | 13.81 | 29.84 | 368 | 114 | A | V |
| | | 5850.6 | 58.56 | -62.27 | 120.83 | 42.51 | 32.1 | 13.81 | 29.86 | 368 | 114 | P | V |
| | | 5855.2 | 57.26 | -53.48 | 110.74 | 41.2 | 32.11 | 13.81 | 29.86 | 368 | 114 | P | V |
| | | 5919.4 | 58.51 | -13.82 | 72.33 | 42.35 | 32.24 | 13.81 | 29.89 | 368 | 114 | P | V |
| | | 5926.2 | 55.89 | -12.31 | 68.2 | 39.72 | 32.25 | 13.81 | 29.89 | 368 | 114 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| WIFI<br>Ant.<br>4+3 | Note | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Path<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>(P/A) | Pol.<br>(H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | 5825 | 112.93 | - | - | 96.91 | 32.05 | 13.82 | 29.85 | 100 | 240 | P | H |
| | * | 5825 | 105.5 | - | - | 89.48 | 32.05 | 13.82 | 29.85 | 100 | 240 | A | H |
| | | 5850 | 69.5 | -52.7 | 122.2 | 53.45 | 32.1 | 13.81 | 29.86 | 100 | 240 | P | H |
| | | 5855.8 | 65.81 | -44.77 | 110.58 | 49.76 | 32.11 | 13.81 | 29.87 | 100 | 240 | P | H |
| | | 5902.8 | 57.08 | -27.51 | 84.59 | 40.94 | 32.21 | 13.81 | 29.88 | 100 | 240 | P | H |
| | | 5926.2 | 55.67 | -12.53 | 68.2 | 39.5 | 32.25 | 13.81 | 29.89 | 100 | 240 | P | H |
| | | | | | | | | | | | | | H |
| 802.11a | | | | | | | | | | | | | H |
| CH 165 | * | 5825 | 115.6 | - | - | 99.58 | 32.05 | 13.82 | 29.85 | 383 | 118 | P | V |
| 5825MHz | * | 5825 | 107.21 | - | - | 91.19 | 32.05 | 13.82 | 29.85 | 383 | 118 | A | V |
| | | 5852.6 | 72.13 | -44.14 | 116.27 | 56.07 | 32.11 | 13.81 | 29.86 | 383 | 118 | P | V |
| | | 5855.8 | 69.28 | -41.3 | 110.58 | 53.23 | 32.11 | 13.81 | 29.87 | 383 | 118 | P | V |
| | | 5877.8 | 60.93 | -42.19 | 103.12 | 44.83 | 32.16 | 13.81 | 29.87 | 383 | 118 | P | V |
| | | 5932.2 | 56.94 | -11.26 | 68.2 | 40.76 | 32.26 | 13.81 | 29.89 | 383 | 118 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

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

## Band 4 5725~5850MHz

## WIFI 802.11a (Harmonic @ 3m)

| WIFI Ant. 4+3 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11a CH 149 5745MHz | | 11490 | 48.83 | -25.17 | 74 | 44.32 | 39.91 | 20.11 | 55.51 | 100 | 0 | P | H |
| | | 17235 | 52.17 | -16.03 | 68.2 | 42.84 | 40.9 | 25.16 | 56.73 | 100 | 0 | P | H |
| | | 17989 | 59.51 | -14.49 | 74 | 42.29 | 49.07 | 25.45 | 57.3 | 100 | 0 | P | H |
| | | 17989 | 48.08 | -5.92 | 54 | 30.86 | 49.07 | 25.45 | 57.3 | 100 | 0 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 11490 | 49.07 | -24.93 | 74 | 44.56 | 39.91 | 20.11 | 55.51 | 100 | 0 | P | V |
| | | 17235 | 64.83 | -3.37 | 68.2 | 55.5 | 40.9 | 25.16 | 56.73 | 100 | 20 | P | V |
| | | 17945 | 60.19 | -13.81 | 74 | 43.89 | 48.15 | 25.43 | 57.28 | 100 | 0 | P | V |
| | | 17945 | 47.01 | -6.99 | 54 | 30.71 | 48.15 | 25.43 | 57.28 | 100 | 0 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11a CH 157 5785MHz | | 11570 | 48.86 | -25.14 | 74 | 44.36 | 39.76 | 20.18 | 55.44 | 100 | 0 | P | H |
| | | 17355 | 53.34 | -14.86 | 68.2 | 43.43 | 41.6 | 25.21 | 56.9 | 100 | 0 | P | H |
| | | 17967 | 60.68 | -13.32 | 74 | 43.92 | 48.61 | 25.44 | 57.29 | 100 | 0 | P | H |
| | | 17967 | 47.55 | -6.45 | 54 | 30.79 | 48.61 | 25.44 | 57.29 | 100 | 0 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 11570 | 49.27 | -24.73 | 74 | 44.77 | 39.76 | 20.18 | 55.44 | 100 | 0 | P | V |
| | | 17355 | 64.15 | -4.05 | 68.2 | 54.24 | 41.6 | 25.21 | 56.9 | 100 | 20 | P | V |
| | | 17945 | 60.21 | -13.79 | 74 | 43.91 | 48.15 | 25.43 | 57.28 | 100 | 0 | P | V |
| | | 17945 | 47.14 | -6.86 | 54 | 30.84 | 48.15 | 25.43 | 57.28 | 100 | 0 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11a CH 165 5825MHz | | 11650 | 49 | -25 | 74 | 44.6 | 39.55 | 20.23 | 55.38 | 100 | 0 | P | H |
| | | 17475 | 53.75 | -14.45 | 68.2 | 43.11 | 42.45 | 25.25 | 57.06 | 100 | 0 | P | H |
| | | 17967 | 60.22 | -13.78 | 74 | 43.46 | 48.61 | 25.44 | 57.29 | 100 | 0 | P | H |
| | | 17967 | 47.45 | -6.55 | 54 | 30.69 | 48.61 | 25.44 | 57.29 | 100 | 0 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 11650 | 49.49 | -24.51 | 74 | 45.09 | 39.55 | 20.23 | 55.38 | 100 | 0 | P | V |
| | | 17475 | 63.65 | -4.55 | 68.2 | 53.01 | 42.45 | 25.25 | 57.06 | 100 | 0 | P | V |
| | | 17956 | 59.4 | -14.6 | 74 | 42.86 | 48.38 | 25.44 | 57.28 | 100 | 0 | P | V |
| | | 17956 | 47.32 | -6.68 | 54 | 30.78 | 48.38 | 25.44 | 57.28 | 100 | 0 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## Band 4 5725~5850MHz

## WIFI 802.11ax HE20_Full (Band Edge @ 3m)

| WIFI Ant. 4+3 | 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 | 55.71 | -12.49 | 68.2 | 40.21 | 31.61 | 13.68 | 29.79 | 100 | 224 | P | H |
| | | 5695.8 | 61.35 | -40.75 | 102.1 | 45.73 | 31.69 | 13.73 | 29.8 | 100 | 224 | P | H |
| | | 5719.6 | 76.83 | -33.86 | 110.69 | 61.07 | 31.82 | 13.75 | 29.81 | 100 | 224 | P | H |
| | | 5722 | 82.04 | -33.32 | 115.36 | 66.27 | 31.83 | 13.75 | 29.81 | 100 | 224 | P | H |
| | * | 5745 | 113.49 | - | - | 97.57 | 31.97 | 13.77 | 29.82 | 100 | 224 | P | H |
| | * | 5745 | 104.51 | - | - | 88.59 | 31.97 | 13.77 | 29.82 | 100 | 224 | A | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 149 | | 5601.6 | 56.55 | -11.65 | 68.2 | 40.98 | 31.7 | 13.64 | 29.77 | 305 | 117 | P | V |
| 5745MHz | | 5697.4 | 65.3 | -37.98 | 103.28 | 49.69 | 31.69 | 13.73 | 29.81 | 305 | 117 | P | V |
| | | 5719.8 | 80.58 | -30.16 | 110.74 | 64.82 | 31.82 | 13.75 | 29.81 | 305 | 117 | P | V |
| | | 5723.4 | 87.13 | -31.42 | 118.55 | 71.35 | 31.84 | 13.75 | 29.81 | 305 | 117 | P | V |
| | * | 5745 | 115.86 | - | - | 99.94 | 31.97 | 13.77 | 29.82 | 305 | 117 | P | V |
| | * | 5745 | 106.08 | - | - | 90.16 | 31.97 | 13.77 | 29.82 | 305 | 117 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| WIFI Ant. 4+3 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5600.8 | 56.7 | -11.5 | 68.2 | 41.13 | 31.7 | 13.64 | 29.77 | 100 | 238 | P | H |
| | | 5686.2 | 55.47 | -39.55 | 95.02 | 39.88 | 31.67 | 13.72 | 29.8 | 100 | 238 | P | H |
| | | 5708 | 55.61 | -51.83 | 107.44 | 39.93 | 31.75 | 13.74 | 29.81 | 100 | 238 | P | H |
| | | 5723.4 | 54.96 | -63.59 | 118.55 | 39.18 | 31.84 | 13.75 | 29.81 | 100 | 238 | P | H |
| | * | 5785 | 113.62 | - | - | 97.65 | 32 | 13.81 | 29.84 | 100 | 238 | P | H |
| | * | 5785 | 103.46 | - | - | 87.49 | 32 | 13.81 | 29.84 | 100 | 238 | A | H |
| | | 5855 | 54.3 | -56.5 | 110.8 | 38.24 | 32.11 | 13.81 | 29.86 | 100 | 238 | P | H |
| | | 5859.6 | 54.82 | -54.69 | 109.51 | 38.76 | 32.12 | 13.81 | 29.87 | 100 | 238 | P | H |
| | | 5914.6 | 55.61 | -20.26 | 75.87 | 39.46 | 32.23 | 13.81 | 29.89 | 100 | 238 | P | H |
| | | 5935.8 | 54.77 | -13.43 | 68.2 | 38.59 | 32.27 | 13.81 | 29.9 | 100 | 238 | P | H |
| **802.11ax** | | | | | | | | | | | | | H |
| **HE20 Full** | | | | | | | | | | | | | H |
| **CH 157** | | 5626 | 56.38 | -11.82 | 68.2 | 40.85 | 31.65 | 13.66 | 29.78 | 352 | 123 | P | V |
| **5785MHz** | | 5698.6 | 55.38 | -48.79 | 104.17 | 39.76 | 31.7 | 13.73 | 29.81 | 352 | 123 | P | V |
| | | 5708.2 | 61.17 | -46.33 | 107.5 | 45.49 | 31.75 | 13.74 | 29.81 | 352 | 123 | P | V |
| | | 5721.8 | 60.67 | -54.23 | 114.9 | 44.9 | 31.83 | 13.75 | 29.81 | 352 | 123 | P | V |
| | * | 5785 | 116.03 | - | - | 100.06 | 32 | 13.81 | 29.84 | 352 | 123 | P | V |
| | * | 5785 | 105.37 | - | - | 89.4 | 32 | 13.81 | 29.84 | 352 | 123 | A | V |
| | | 5850 | 60.21 | -61.99 | 122.2 | 44.16 | 32.1 | 13.81 | 29.86 | 352 | 123 | P | V |
| | | 5856.6 | 60.22 | -50.13 | 110.35 | 44.17 | 32.11 | 13.81 | 29.87 | 352 | 123 | P | V |
| | | 5919.8 | 57.28 | -14.75 | 72.03 | 41.12 | 32.24 | 13.81 | 29.89 | 352 | 123 | P | V |
| | | 5925.8 | 56.14 | -12.06 | 68.2 | 39.97 | 32.25 | 13.81 | 29.89 | 352 | 123 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| WIFI Ant. 4+3 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | 5825 | 113.66 | - | - | 97.64 | 32.05 | 13.82 | 29.85 | 100 | 240 | P | H |
| | * | 5825 | 103.24 | - | - | 87.22 | 32.05 | 13.82 | 29.85 | 100 | 240 | A | H |
| | | 5851 | 74.41 | -45.51 | 119.92 | 58.36 | 32.1 | 13.81 | 29.86 | 100 | 240 | P | H |
| | | 5856.4 | 66.34 | -44.07 | 110.41 | 50.29 | 32.11 | 13.81 | 29.87 | 100 | 240 | P | H |
| | | 5906 | 56.9 | -25.32 | 82.22 | 40.76 | 32.21 | 13.81 | 29.88 | 100 | 240 | P | H |
| | | 5948.2 | 55.28 | -12.92 | 68.2 | 39.07 | 32.3 | 13.81 | 29.9 | 100 | 240 | P | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 165 | * | 5825 | 115.46 | - | - | 99.44 | 32.05 | 13.82 | 29.85 | 384 | 117 | P | V |
| 5825MHz | * | 5825 | 105.03 | - | - | 89.01 | 32.05 | 13.82 | 29.85 | 384 | 117 | A | V |
| | | 5851.2 | 75.16 | -44.3 | 119.46 | 59.11 | 32.1 | 13.81 | 29.86 | 384 | 117 | P | V |
| | | 5857.2 | 68.36 | -41.82 | 110.18 | 52.31 | 32.11 | 13.81 | 29.87 | 384 | 117 | P | V |
| | | 5887 | 59.94 | -36.35 | 96.29 | 43.84 | 32.17 | 13.81 | 29.88 | 384 | 117 | P | V |
| | | 5929.6 | 56.44 | -11.76 | 68.2 | 40.26 | 32.26 | 13.81 | 29.89 | 384 | 117 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

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

## Band 4 5725~5850MHz

## WIFI 802.11ax HE20 Full (Harmonic @ 3m)

| WIFI Ant. 4+3 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11490 | 49.52 | -24.48 | 74 | 45.01 | 39.91 | 20.11 | 55.51 | 100 | 0 | P | H |
| | | 17235 | 53.66 | -14.54 | 68.2 | 44.33 | 40.9 | 25.16 | 56.73 | 100 | 0 | P | H |
| | | 17967 | 60.38 | -13.62 | 74 | 43.62 | 48.61 | 25.44 | 57.29 | 100 | 0 | P | H |
| | | 17967 | 47.47 | -6.53 | 54 | 30.71 | 48.61 | 25.44 | 57.29 | 100 | 0 | A | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 149 | | 11490 | 49.92 | -24.08 | 74 | 45.41 | 39.91 | 20.11 | 55.51 | 100 | 0 | P | V |
| 5745MHz | | 17235 | 64.33 | -3.87 | 68.2 | 55 | 40.9 | 25.16 | 56.73 | 100 | 19 | P | V |
| | | 17945 | 59.69 | -14.31 | 74 | 43.39 | 48.15 | 25.43 | 57.28 | 100 | 0 | P | V |
| | | 17945 | 47.39 | -6.61 | 54 | 31.09 | 48.15 | 25.43 | 57.28 | 100 | 0 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | 11570 | 48.6 | -25.4 | 74 | 44.1 | 39.76 | 20.18 | 55.44 | 100 | 0 | P | H |
| | | 17355 | 53.95 | -14.25 | 68.2 | 44.04 | 41.6 | 25.21 | 56.9 | 100 | 0 | P | H |
| | | 17978 | 61.06 | -12.94 | 74 | 44.07 | 48.84 | 25.44 | 57.29 | 100 | 0 | P | H |
| | | 17978 | 47.52 | -6.48 | 54 | 30.53 | 48.84 | 25.44 | 57.29 | 100 | 0 | A | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 157 | | 11570 | 49.32 | -24.68 | 74 | 44.83 | 39.76 | 20.18 | 55.44 | 100 | 0 | P | V |
| 5785MHz | | 17355 | 63.95 | -4.25 | 68.2 | 54.04 | 41.6 | 25.21 | 56.9 | 101 | 21 | P | V |
| | | 18000 | 59.55 | -14.45 | 74 | 42.1 | 49.3 | 25.45 | 57.3 | 100 | 0 | P | V |
| | | 18000 | 47.63 | -6.37 | 54 | 30.18 | 49.3 | 25.45 | 57.3 | 100 | 0 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11650 | 49.18 | -24.82 | 74 | 44.78 | 39.55 | 20.23 | 55.38 | 100 | 0 | P | H |
| | | 17475 | 52.72 | -15.48 | 68.2 | 42.08 | 42.45 | 25.25 | 57.06 | 100 | 0 | P | H |
| | | 17945 | 60.34 | -13.66 | 74 | 44.04 | 48.15 | 25.43 | 57.28 | 100 | 0 | P | H |
| | | 17945 | 47.44 | -6.56 | 54 | 31.14 | 48.15 | 25.43 | 57.28 | 100 | 0 | A | H |
| **802.11ax** | | | | | | | | | | | | | H |
| **HE20 Full** | | | | | | | | | | | | | H |
| **CH 165** | | 11650 | 49.84 | -24.16 | 74 | 45.44 | 39.55 | 20.23 | 55.38 | 100 | 0 | P | V |
| **5825MHz** | | 17475 | 62.99 | -5.21 | 68.2 | 52.35 | 42.45 | 25.25 | 57.06 | 100 | 19 | P | V |
| | | 17956 | 59.88 | -14.12 | 74 | 43.34 | 48.38 | 25.44 | 57.28 | 100 | 0 | P | V |
| | | 17956 | 47.42 | -6.58 | 54 | 30.88 | 48.38 | 25.44 | 57.28 | 100 | 0 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| | |
|---|---|
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |

## Band 4 5725~5850MHz

## WIFI 802.11ax HE40_Full (Band Edge @ 3m)

| WIFI Ant. 4+3 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5624.6 | 56.15 | -12.05 | 68.2 | 40.62 | 31.65 | 13.66 | 29.78 | 100 | 224 | P | H |
| | | 5699.2 | 66.37 | -38.24 | 104.61 | 50.75 | 31.7 | 13.73 | 29.81 | 100 | 224 | P | H |
| | | 5720 | 80.69 | -30.11 | 110.8 | 64.93 | 31.82 | 13.75 | 29.81 | 100 | 224 | P | H |
| | | 5724.6 | 82.83 | -38.46 | 121.29 | 67.05 | 31.85 | 13.75 | 29.82 | 100 | 224 | P | H |
| | * | 5755 | 111.18 | - | - | 95.23 | 32 | 13.78 | 29.83 | 100 | 224 | P | H |
| | * | 5755 | 101.64 | - | - | 85.69 | 32 | 13.78 | 29.83 | 100 | 224 | A | H |
| | | 5853.2 | 55.3 | -59.6 | 114.9 | 39.24 | 32.11 | 13.81 | 29.86 | 100 | 224 | P | H |
| | | 5874.2 | 55.82 | -49.6 | 105.42 | 39.73 | 32.15 | 13.81 | 29.87 | 100 | 224 | P | H |
| | | 5882.8 | 56.32 | -43.09 | 99.41 | 40.22 | 32.17 | 13.81 | 29.88 | 100 | 224 | P | H |
| | | 5937.6 | 55.22 | -12.98 | 68.2 | 39.03 | 32.28 | 13.81 | 29.9 | 100 | 224 | P | H |
| **802.11ax** | | | | | | | | | | | | | H |
| **HE40 Full** | | | | | | | | | | | | | H |
| **CH 151** | | 5648.8 | 55.78 | -12.42 | 68.2 | 40.29 | 31.6 | 13.68 | 29.79 | 332 | 119 | P | V |
| **5755MHz** | | 5695.6 | 65.79 | -36.17 | 101.96 | 50.17 | 31.69 | 13.73 | 29.8 | 332 | 119 | P | V |
| | | 5717.6 | 83.11 | -27.02 | 110.13 | 67.36 | 31.81 | 13.75 | 29.81 | 332 | 119 | P | V |
| | | 5724.4 | 82.18 | -38.65 | 120.83 | 66.4 | 31.85 | 13.75 | 29.82 | 332 | 119 | P | V |
| | * | 5755 | 112.5 | - | - | 96.55 | 32 | 13.78 | 29.83 | 332 | 119 | P | V |
| | * | 5755 | 102.62 | - | - | 86.67 | 32 | 13.78 | 29.83 | 332 | 119 | A | V |
| | | 5851.6 | 56.69 | -61.86 | 118.55 | 40.64 | 32.1 | 13.81 | 29.86 | 332 | 119 | P | V |
| | | 5857.4 | 55.58 | -54.55 | 110.13 | 39.53 | 32.11 | 13.81 | 29.87 | 332 | 119 | P | V |
| | | 5878.2 | 56.46 | -46.36 | 102.82 | 40.36 | 32.16 | 13.81 | 29.87 | 332 | 119 | P | V |
| | | 5945.4 | 56.45 | -11.75 | 68.2 | 40.25 | 32.29 | 13.81 | 29.9 | 332 | 119 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| WIFI Ant. 4+3 | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5637.6 | 54.74 | -13.46 | 68.2 | 39.23 | 31.62 | 13.67 | 29.78 | 100 | 237 | P | H |
| | | 5696.6 | 55.15 | -47.54 | 102.69 | 39.53 | 31.69 | 13.73 | 29.8 | 100 | 237 | P | H |
| | | 5718.4 | 60.41 | -49.94 | 110.35 | 44.66 | 31.81 | 13.75 | 29.81 | 100 | 237 | P | H |
| | | 5724.6 | 61.04 | -60.25 | 121.29 | 45.26 | 31.85 | 13.75 | 29.82 | 100 | 237 | P | H |
| | * | 5795 | 109.67 | - | - | 93.69 | 32 | 13.82 | 29.84 | 100 | 237 | P | H |
| | * | 5795 | 100.76 | - | - | 84.78 | 32 | 13.82 | 29.84 | 100 | 237 | A | H |
| | | 5852.2 | 63.53 | -53.65 | 117.18 | 47.48 | 32.1 | 13.81 | 29.86 | 100 | 237 | P | H |
| | | 5863.8 | 63.76 | -44.57 | 108.33 | 47.69 | 32.13 | 13.81 | 29.87 | 100 | 237 | P | H |
| | | 5877.2 | 59.42 | -44.15 | 103.57 | 43.33 | 32.15 | 13.81 | 29.87 | 100 | 237 | P | H |
| | | 5930 | 56.46 | -11.74 | 68.2 | 40.28 | 32.26 | 13.81 | 29.89 | 100 | 237 | P | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE40 Full | | | | | | | | | | | | | H |
| CH 159 | | 5616.6 | 56.78 | -11.42 | 68.2 | 41.23 | 31.67 | 13.65 | 29.77 | 353 | 119 | P | V |
| 5795MHz | | 5692.6 | 56.5 | -43.24 | 99.74 | 40.89 | 31.69 | 13.72 | 29.8 | 353 | 119 | P | V |
| | | 5718 | 61.23 | -49.01 | 110.24 | 45.48 | 31.81 | 13.75 | 29.81 | 353 | 119 | P | V |
| | | 5724.4 | 64.19 | -56.64 | 120.83 | 48.41 | 31.85 | 13.75 | 29.82 | 353 | 119 | P | V |
| | * | 5795 | 112.12 | - | - | 96.14 | 32 | 13.82 | 29.84 | 353 | 119 | P | V |
| | * | 5795 | 102.37 | - | - | 86.39 | 32 | 13.82 | 29.84 | 353 | 119 | A | V |
| | | 5853.6 | 64.89 | -49.1 | 113.99 | 48.83 | 32.11 | 13.81 | 29.86 | 353 | 119 | P | V |
| | | 5863.8 | 64.66 | -43.67 | 108.33 | 48.59 | 32.13 | 13.81 | 29.87 | 353 | 119 | P | V |
| | | 5883.8 | 58.53 | -40.14 | 98.67 | 42.43 | 32.17 | 13.81 | 29.88 | 353 | 119 | P | V |
| | | 5948.4 | 56.47 | -11.73 | 68.2 | 40.26 | 32.3 | 13.81 | 29.9 | 353 | 119 | 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. 4+3 | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11510 | 49.48 | -24.52 | 74 | 44.96 | 39.88 | 20.13 | 55.49 | 100 | 0 | P | H |
| | | 17265 | 53.86 | -14.34 | 68.2 | 44.47 | 40.99 | 25.17 | 56.77 | 100 | 0 | P | H |
| | | 17978 | 59.73 | -14.27 | 74 | 42.74 | 48.84 | 25.44 | 57.29 | 100 | 0 | P | H |
| | | 17978 | 47.6 | -6.4 | 54 | 30.61 | 48.84 | 25.44 | 57.29 | 100 | 0 | A | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE40 Full | | | | | | | | | | | | | H |
| CH 151 | | 11510 | 49.15 | -24.85 | 74 | 44.63 | 39.88 | 20.13 | 55.49 | 100 | 0 | P | V |
| 5755MHz | | 17265 | 61.29 | -6.91 | 68.2 | 51.9 | 40.99 | 25.17 | 56.77 | 100 | 19 | P | V |
| | | 17989 | 59.44 | -14.56 | 74 | 42.22 | 49.07 | 25.45 | 57.3 | 100 | 0 | P | V |
| | | 17989 | 47.59 | -6.41 | 54 | 30.37 | 49.07 | 25.45 | 57.3 | 100 | 0 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | 11590 | 49.18 | -24.82 | 74 | 44.7 | 39.72 | 20.19 | 55.43 | 100 | 0 | P | H |
| | | 17385 | 52.62 | -15.58 | 68.2 | 42.48 | 41.86 | 25.22 | 56.94 | 100 | 0 | P | H |
| | | 17989 | 59.7 | -14.3 | 74 | 42.48 | 49.07 | 25.45 | 57.3 | 100 | 0 | P | H |
| | | 17989 | 47.67 | -6.33 | 54 | 30.45 | 49.07 | 25.45 | 57.3 | 100 | 0 | A | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE40 Full | | | | | | | | | | | | | H |
| CH 159 | | 11590 | 49.73 | -24.27 | 74 | 45.25 | 39.72 | 20.19 | 55.43 | 100 | 0 | P | V |
| 5795MHz | | 17385 | 59.49 | -8.71 | 68.2 | 49.35 | 41.86 | 25.22 | 56.94 | 100 | 19 | P | V |
| | | 17956 | 59.96 | -14.04 | 74 | 43.42 | 48.38 | 25.44 | 57.28 | 100 | 0 | P | V |
| | | 17956 | 47.38 | -6.62 | 54 | 30.84 | 48.38 | 25.44 | 57.28 | 100 | 0 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

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

## Band 4 5725~5850MHz

## WIFI 802.11ax HE80_Full (Band Edge @ 3m)

| WIFI Ant. 4+3 | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5644.4 | 61.45 | -6.75 | 68.2 | 45.94 | 31.61 | 13.68 | 29.78 | 100 | 67 | P | H |
| | | 5698 | 77.06 | -26.67 | 103.73 | 61.44 | 31.7 | 13.73 | 29.81 | 100 | 67 | P | H |
| | | 5719 | 82.32 | -28.2 | 110.52 | 66.57 | 31.81 | 13.75 | 29.81 | 100 | 67 | P | H |
| | | 5723.2 | 81.57 | -36.53 | 118.1 | 65.79 | 31.84 | 13.75 | 29.81 | 100 | 67 | P | H |
| | * | 5775 | 109.15 | - | - | 93.18 | 32 | 13.8 | 29.83 | 100 | 67 | P | H |
| | * | 5775 | 98.47 | - | - | 82.5 | 32 | 13.8 | 29.83 | 100 | 67 | A | H |
| | | 5851.4 | 77.59 | -41.42 | 119.01 | 61.54 | 32.1 | 13.81 | 29.86 | 100 | 67 | P | H |
| | | 5857.4 | 74.75 | -35.38 | 110.13 | 58.7 | 32.11 | 13.81 | 29.87 | 100 | 67 | P | H |
| | | 5878 | 68.76 | -34.21 | 102.97 | 52.66 | 32.16 | 13.81 | 29.87 | 100 | 67 | P | H |
| | | 5935 | 57.93 | -10.27 | 68.2 | 41.75 | 32.27 | 13.81 | 29.9 | 100 | 67 | P | H |
| **802.11ax** | | | | | | | | | | | | | H |
| **HE80 Full** | | | | | | | | | | | | | H |
| **CH 155** | | 5649.4 | 63.18 | -5.02 | 68.2 | 47.69 | 31.6 | 13.68 | 29.79 | 301 | 122 | P | V |
| **5775MHz** | | 5694.2 | 78.18 | -22.74 | 100.92 | 62.57 | 31.69 | 13.72 | 29.8 | 301 | 122 | P | V |
| | | 5718.6 | 81.56 | -28.85 | 110.41 | 65.81 | 31.81 | 13.75 | 29.81 | 301 | 122 | P | V |
| | | 5722 | 81.9 | -33.46 | 115.36 | 66.13 | 31.83 | 13.75 | 29.81 | 301 | 122 | P | V |
| | * | 5775 | 109.56 | - | - | 93.59 | 32 | 13.8 | 29.83 | 301 | 122 | P | V |
| | * | 5775 | 100.32 | - | - | 84.35 | 32 | 13.8 | 29.83 | 301 | 122 | A | V |
| | | 5851.6 | 77.1 | -41.45 | 118.55 | 61.05 | 32.1 | 13.81 | 29.86 | 301 | 122 | P | V |
| | | 5857 | 75.29 | -34.95 | 110.24 | 59.24 | 32.11 | 13.81 | 29.87 | 301 | 122 | P | V |
| | | 5878.6 | 68.28 | -34.25 | 102.53 | 52.18 | 32.16 | 13.81 | 29.87 | 301 | 122 | P | V |
| | | 5927.2 | 57.34 | -10.86 | 68.2 | 41.17 | 32.25 | 13.81 | 29.89 | 301 | 122 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

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

## Band 4 5725~5850MHz

## WIFI 802.11ax HE80_Full (Harmonic @ 3m)

| WIFI Ant. 4+3 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11550 | 48.31 | -25.69 | 74 | 43.81 | 39.8 | 20.16 | 55.46 | 100 | 0 | P | H |
| | | 17325 | 52.15 | -16.05 | 68.2 | 42.48 | 41.32 | 25.2 | 56.85 | 100 | 0 | P | H |
| | | 17956 | 59.96 | -14.04 | 74 | 43.42 | 48.38 | 25.44 | 57.28 | 100 | 0 | P | H |
| | | 17956 | 47.37 | -6.63 | 54 | 30.83 | 48.38 | 25.44 | 57.28 | 100 | 0 | A | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE80 Full | | | | | | | | | | | | | H |
| CH 155 | | 11550 | 48.65 | -25.35 | 74 | 44.15 | 39.8 | 20.16 | 55.46 | 100 | 0 | P | V |
| 5775MHz | | 17325 | 53.39 | -14.81 | 68.2 | 43.72 | 41.32 | 25.2 | 56.85 | 100 | 0 | P | V |
| | | 17978 | 59.14 | -14.86 | 74 | 42.15 | 48.84 | 25.44 | 57.29 | 100 | 0 | P | V |
| | | 17978 | 47.74 | -6.26 | 54 | 30.75 | 48.84 | 25.44 | 57.29 | 100 | 0 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |
|---|---|

## Emission above 18GHz

## WIFI 802.11a (SHF @ 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. | |
| 4+3 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | (dBμV) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| | | 21776 | 35.02 | -33.18 | 68.2 | 54.43 | 38.57 | -3.28 | 54.7 | 150 | 0 | P | H |
| | | 34792 | 37.91 | -30.29 | 68.2 | 56.2 | 41.67 | -1.5 | 58.46 | 150 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| 802.11a | | | | | | | | | | | | | H |
| SHF | | 23504 | 35.44 | -32.76 | 68.2 | 53.15 | 39.29 | -3 | 54 | 150 | 0 | P | V |
| | | 31530 | 36.29 | -37.71 | 74 | 54.93 | 39.86 | -1.97 | 56.53 | 150 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

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

## Emission below 1GHz

## 5GHz WIFI 802.11a (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. | |
| 4+3 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | (dBμV) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| | | 98.87 | 32.21 | -11.29 | 43.5 | 47.01 | 15.96 | 1.54 | 32.3 | 100 | 0 | P | H |
| | | 129.91 | 27.42 | -16.08 | 43.5 | 40.37 | 17.52 | 1.8 | 32.27 | - | - | P | H |
| | | 208.48 | 25.88 | -17.62 | 43.5 | 40.54 | 15.21 | 2.39 | 32.26 | - | - | P | H |
| | | 267.65 | 22.89 | -23.11 | 46 | 32.85 | 19.55 | 2.75 | 32.26 | - | - | P | H |
| | | 553.8 | 27.4 | -18.6 | 46 | 29.92 | 25.87 | 4.02 | 32.41 | - | - | P | H |
| | | 788.54 | 31.4 | -14.6 | 46 | 30.75 | 28.03 | 4.89 | 32.27 | - | - | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| 802.11a | | | | | | | | | | | | | H |
| LF | | 49.4 | 31.49 | -8.51 | 40 | 48.21 | 14.62 | 0.96 | 32.3 | 100 | 0 | P | V |
| | | 96.93 | 32.97 | -10.53 | 43.5 | 48.07 | 15.7 | 1.51 | 32.31 | - | - | P | V |
| | | 129.91 | 23.05 | -20.45 | 43.5 | 36 | 17.52 | 1.8 | 32.27 | - | - | P | V |
| | | 186.17 | 23.92 | -19.58 | 43.5 | 38.85 | 15.06 | 2.24 | 32.23 | - | - | P | V |
| | | 206.54 | 21.86 | -21.64 | 43.5 | 36.53 | 15.22 | 2.37 | 32.26 | - | - | P | V |
| | | 729.37 | 31.27 | -14.73 | 46 | 31.24 | 27.74 | 4.65 | 32.36 | - | - | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

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

**Note symbol**

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

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

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Path | Preamp | Ant | Table | Peak | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 1+2 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11b CH 01 2412MHz | | 2390 | 55.45 | -18.55 | 74 | 54.51 | 32.22 | 4.58 | 35.86 | 103 | 308 | P | H |
| | | 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)

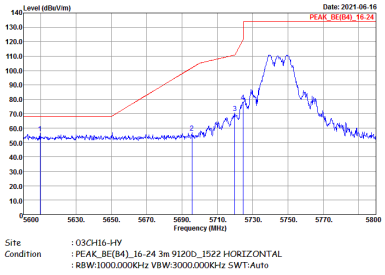
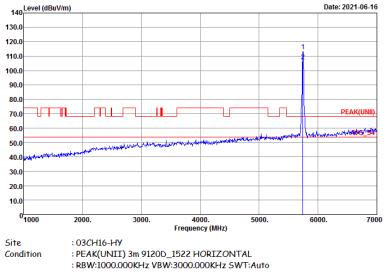
**Both peak and average measured complies with the limit line, so test result is "PASS".**

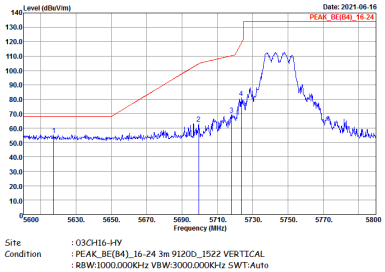
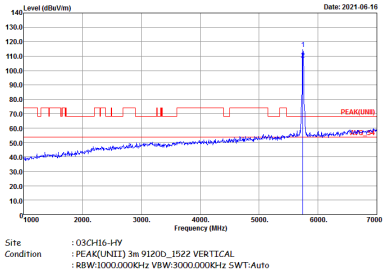
# Appendix D. Radiated Spurious Emission Plots

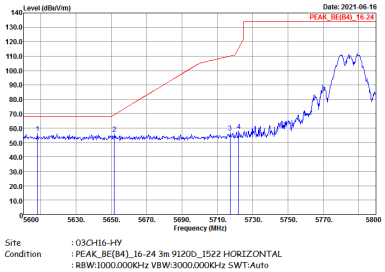
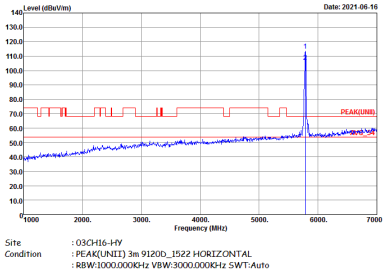
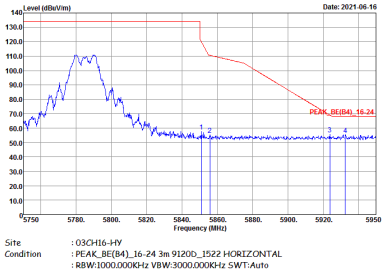
| | | | |
|---|---|---|---|
| **Test Engineer :** | Karl Hou and Andy Yang | **Temperature :** | 20~25°C |
| | | **Relative Humidity :** | 50~60% |

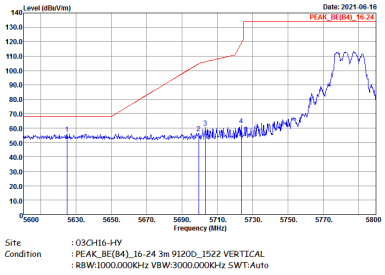
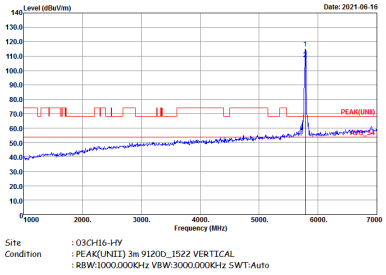
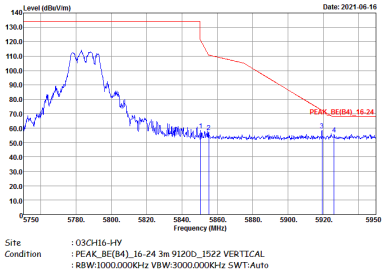
**Band 4 - 5725~5850MHz**

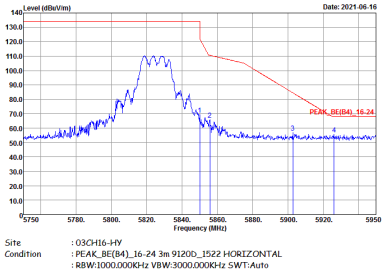
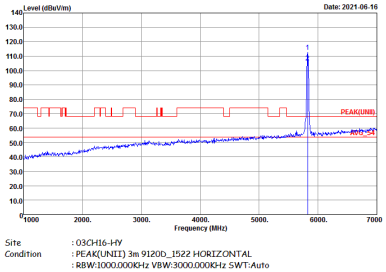
**WIFI 802.11a (Band Edge @ 3m)**

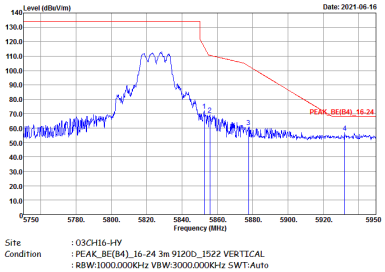
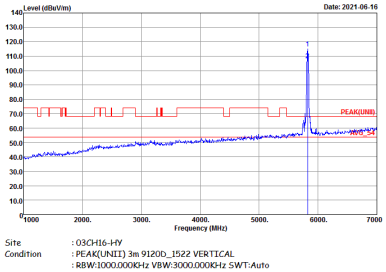
| **WIFI** | **Band 4 5725~5850MHz Band Edge @ 3m** | |
|---|---|---|
| **ANT** | **802.11a CH149 5745MHz** | |
| **4+3** | **Horizontal** | **Fundamental** |
| **Peak** |  |  |

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

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

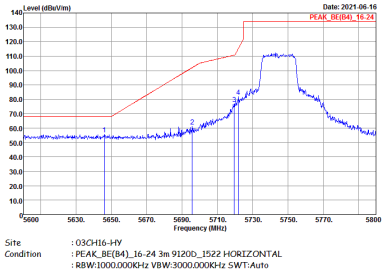
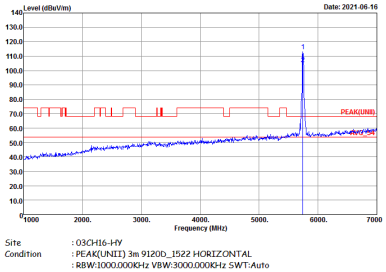
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11a CH157 5785MHz | |
| 4+3 | Vertical | Fundamental |
| Peak |  |  |
| Peak |  | Left blank |

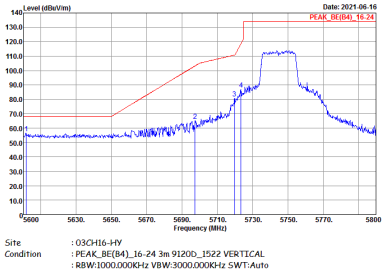
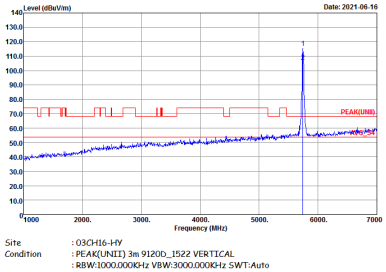
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11a CH165 5825MHz | |
| 4+3 | Horizontal | Fundamental |
| Peak |  <br>Site : 03CH16-HV<br>Condition : PEAK_BE(B4)_16-24 3m 9120D_1522 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto |  <br>Site : 03CH16-HV<br>Condition : PEAK(UNII) 3m 9120D_1522 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto |

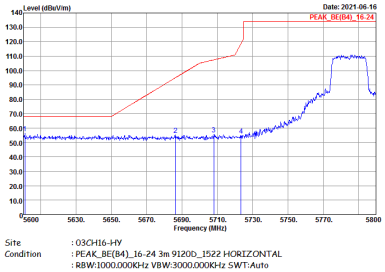
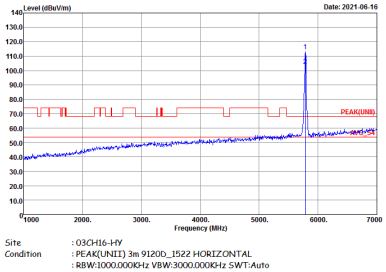
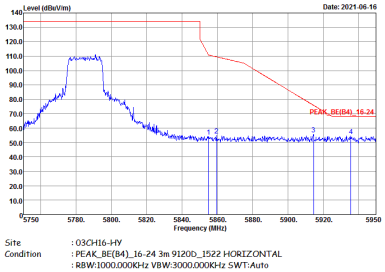
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11a CH165 5825MHz | |
| 4+3 | Vertical | Fundamental |
| Peak |  |  |

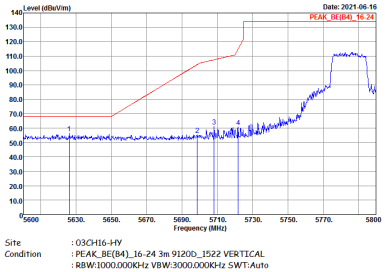
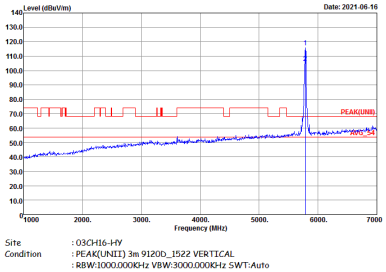
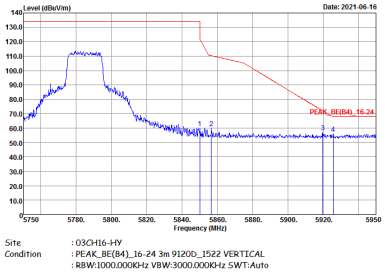
## Band 4 5725~5850MHz

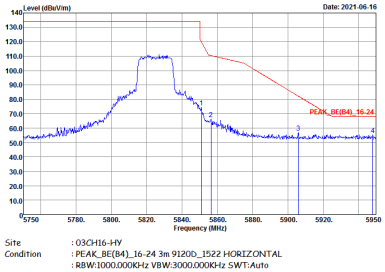
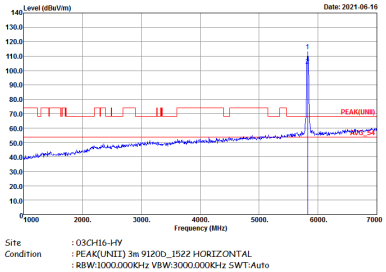
## WIFI 802.11ax HE20 Full (Band Edge @ 3m)

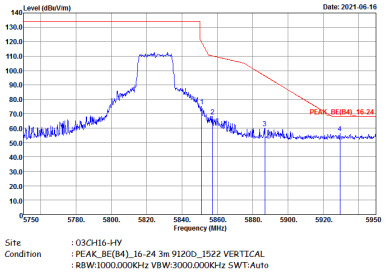
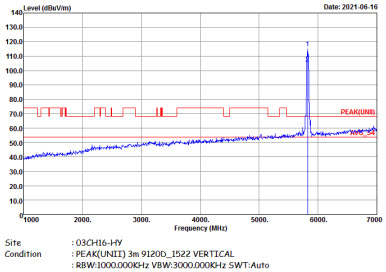
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ax HE20 Full CH149 5745MHz | |
| 4+3 | Horizontal | Fundamental |
| Peak |  |  |

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

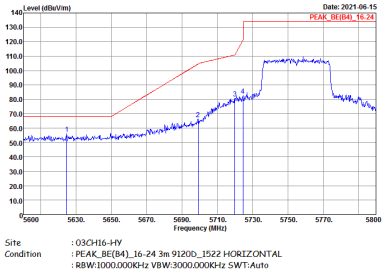
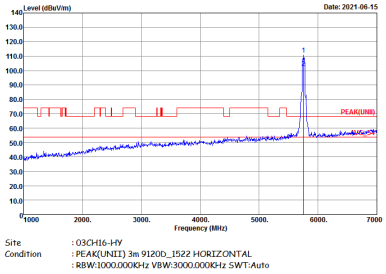
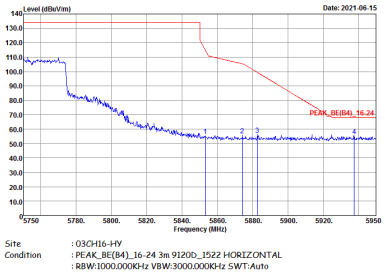
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ax HE20 Full CH157 5785MHz | |
| 4+3 | Horizontal | Fundamental |
| Peak |  |  |
| Peak |  | Left blank |

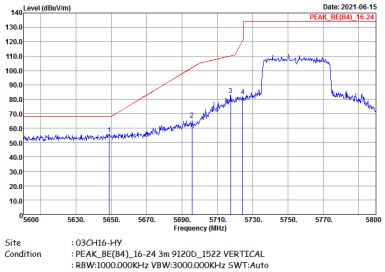
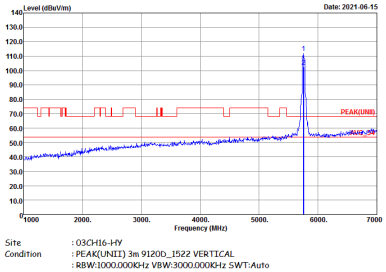
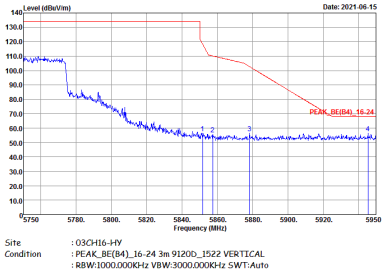
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ax HE20 Full CH157 5785MHz | |
| 4+3 | Vertical | Fundamental |
| Peak |  |  |
| Peak |  | Left blank |

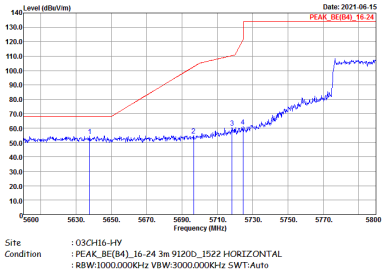
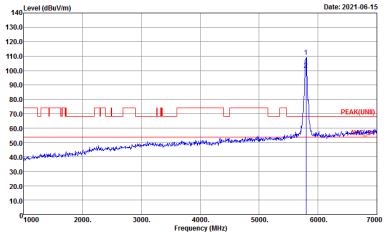
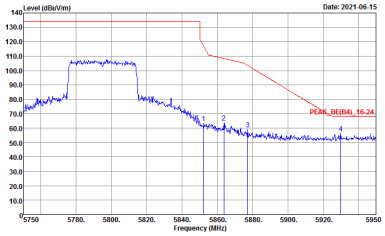
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ax HE20 Full CH165 5825MHz | |
| 4+3 | Horizontal | Fundamental |
| Peak |  |  |

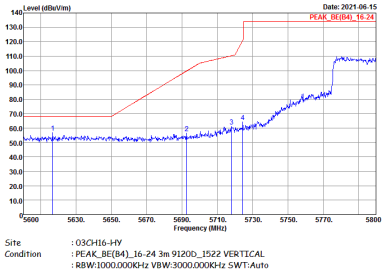
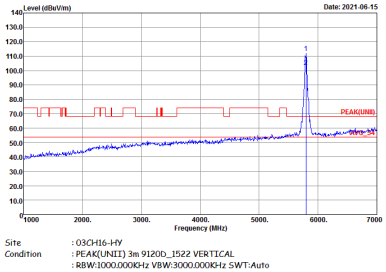
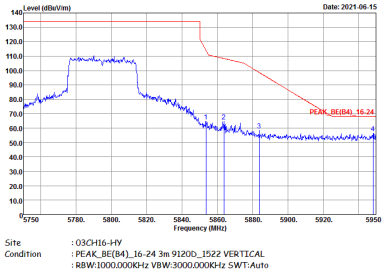
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ax HE20 Full CH165 5825MHz | |
| 4+3 | Vertical | Fundamental |
| Peak |  |  |

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

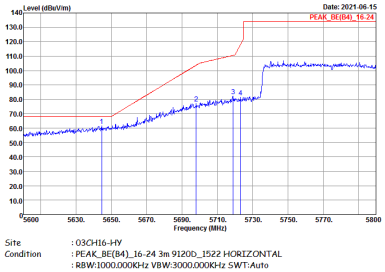
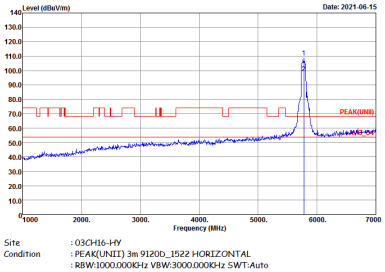
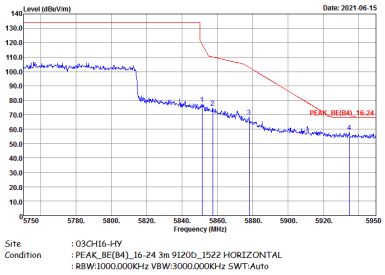
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ax HE40 Full CH151 5755MHz | |
| 4+3 | Horizontal | Fundamental |
| Peak |  |  |
| Peak |  | Left blank |

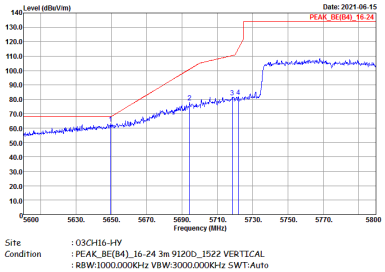
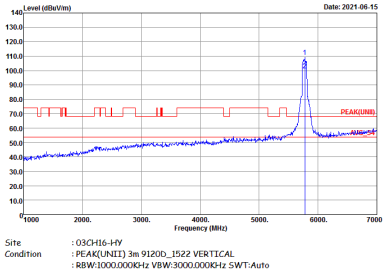
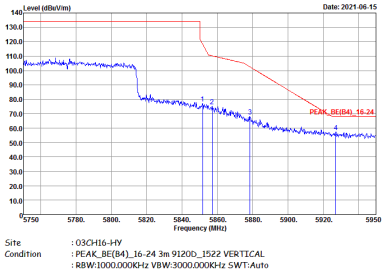
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ax HE40 Full CH151 5755MHz | |
| 4+3 | Vertical | Fundamental |
| Peak |  |  |
| Peak |  | Left blank |

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ax HE40 Full HT40 CH159 5795MHz | |
| 4+3 | Horizontal | Fundamental |
| Peak |  <br>Site : 03CH16-HV<br>Condition : PEAK_BE(B4)_16-24 3m 9120D_1522 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto |  <br>Site : 03CH16-HV<br>Condition : PEAK(UNII) 3m 9120D_1522 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto |
| Peak |  <br>Site : 03CH16-HV<br>Condition : PEAK_BE(B4)_16-24 3m 9120D_1522 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto | Left blank |

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

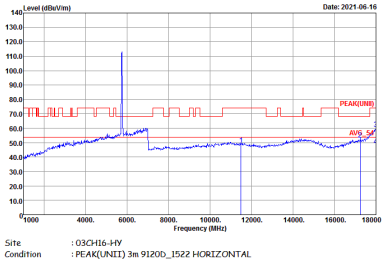
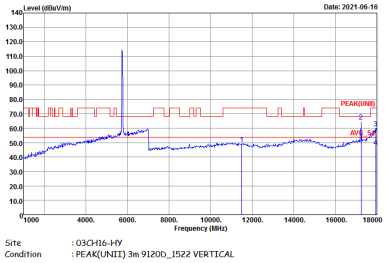
## Band 4 5725~5850MHz
## WIFI 802.11ax HE80 Full (Band Edge @ 3m)

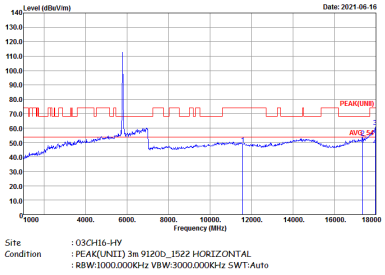
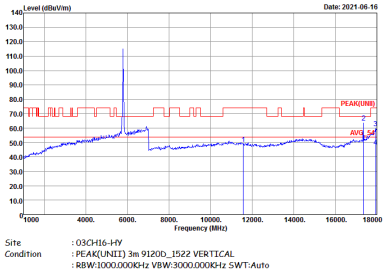
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ax HE80 Full CH155 5775MHz | |
| 4+3 | Horizontal | Fundamental |
| Peak |  |  |
| Peak |  | Left blank |

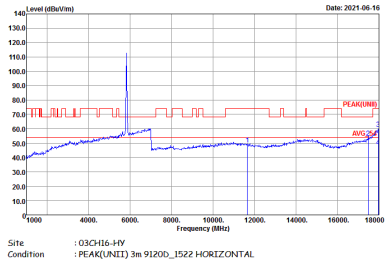
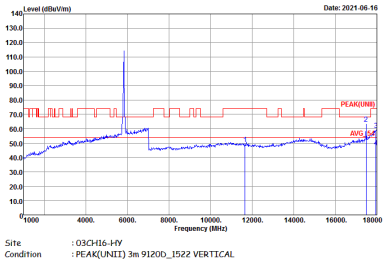
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ax HE80 Full CH155 5775MHz | |
| 4+3 | Vertical | Fundamental |
| Peak |  |  |
| Peak |  | Left blank |

## Band 4 - 5725~5850MHz

## WIFI 802.11a (Harmonic @ 3m)

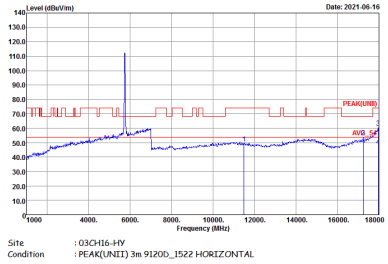
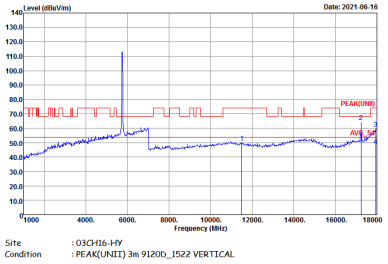
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11a CH149 5745MHz | |
| 4+3 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

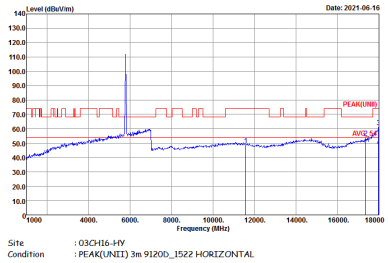
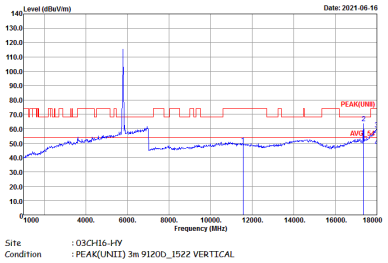
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11a CH157 5785MHz | |
| 4+3 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

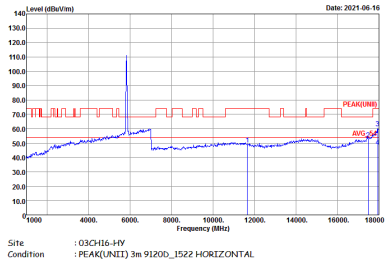
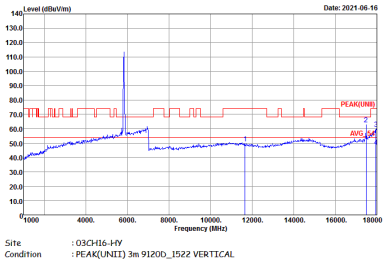
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11a CH165 5825MHz | |
| 4+3 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

## Band 4 5725~5850MHz

## WIFI 802.11ax HE20 Full (Harmonic @ 3m)

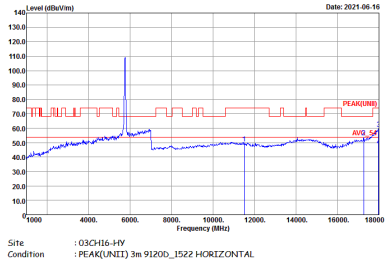
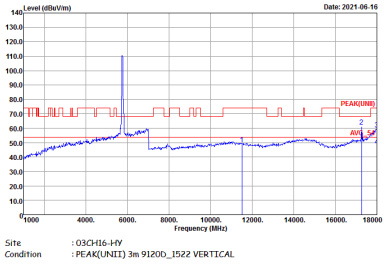
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ax HE20 Full CH149 5745MHz | |
| 4+3 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

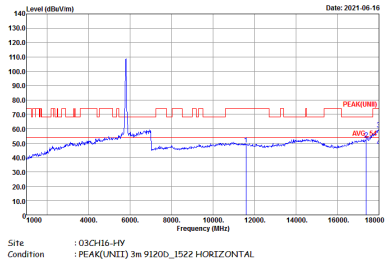
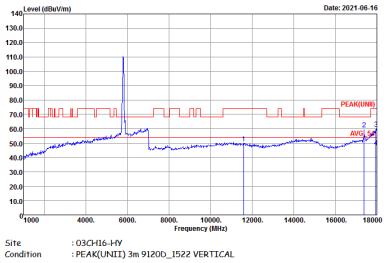
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ax HE20 Full CH157 5785MHz | |
| 4+3 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ax HE20 Full CH165 5825MHz | |
| 4+3 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

## Band 4 5725~5850MHz

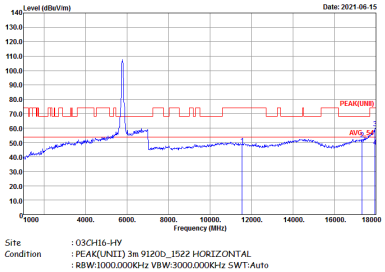
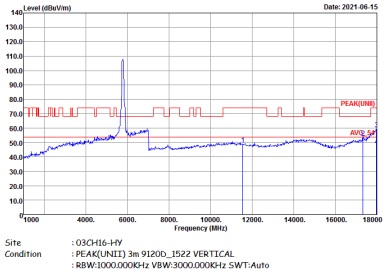
## WIFI 802.11ax HE40 Full (Harmonic @ 3m)

| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ax HE40 Full CH151 5755MHz | |
| 4+3 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ax HE40 Full CH159 5795MHz | |
| 4+3 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

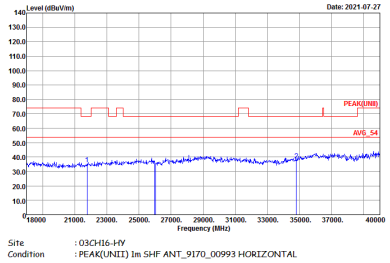
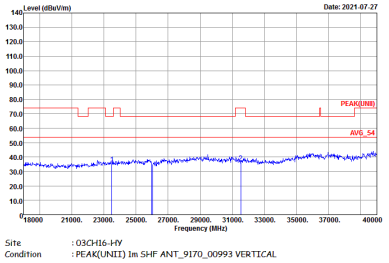
## Band 4 5725~5850MHz

## WIFI 802.11ax HE80 Full (Harmonic @ 3m)

| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ax HE80 Full CH155 5775MHz | |
| 4+3 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

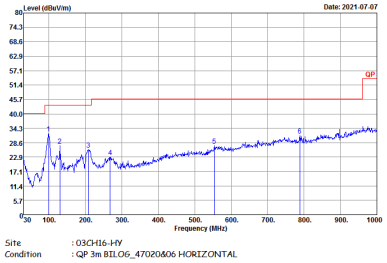
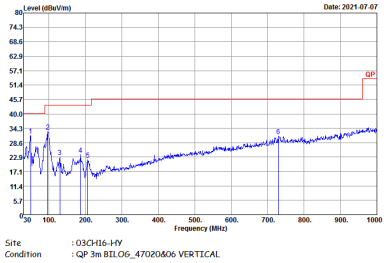
## Emission above 18GHz

## 5GHz WIFI 802.11a (SHF)

| WIFI | 5GHz WIFI | |
|---|---|---|
| ANT | 802.11a SHF | |
| 4+3 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

## Emission below 1GHz

## 5GHz WIFI 802.11a (LF @ 3m)

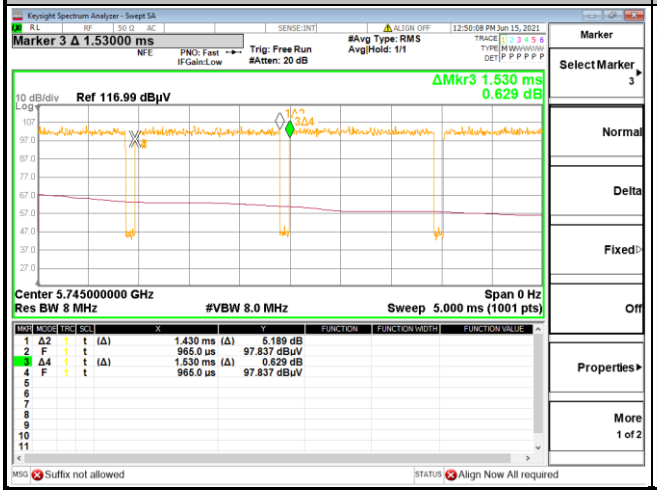
| WIFI | 5GHz WIFI | |
|---|---|---|
| ANT | 802.11a LF | |
| 4+3 | Horizontal | Vertical |
| QP / Peak |  |  |

# Appendix E. Duty Cycle Plots

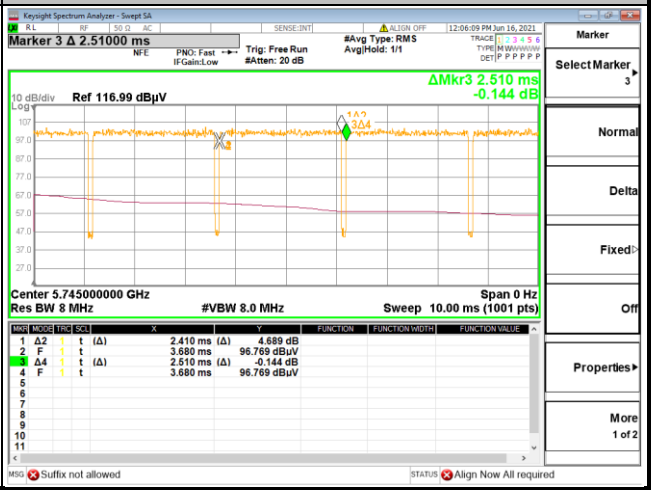
| Antenna | Band | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting |
|---|---|---|---|---|---|
| 4+3 | 802.11a | 93.77 | 1430 | 0.70 | 1kHz |
| 4+3 | 5GHz 802.11ax HE20 Full RU | 96.02 | 2410 | 0.41 | 1kHz |
| 4+3 | 5GHz 802.11ax HE40 Full RU | 92.51 | 1235 | 0.81 | 1kHz |
| 4+3 | 5GHz 802.11ax HE80 Full RU | 86.36 | 627 | 1.59 | 3kHz |

**MIMO <Ant. 4+3>**

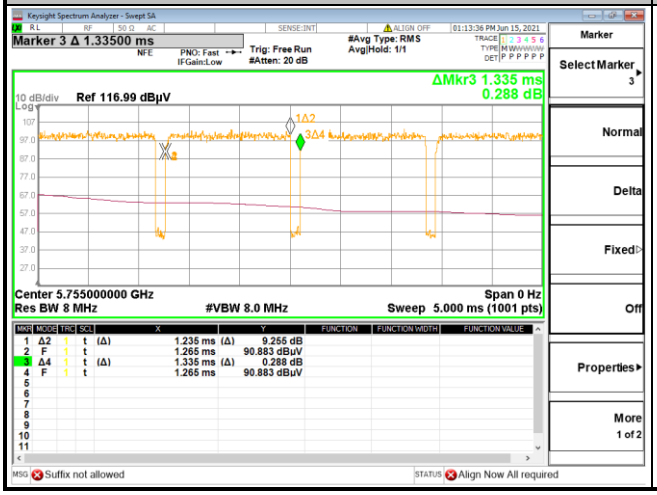
**802.11a**



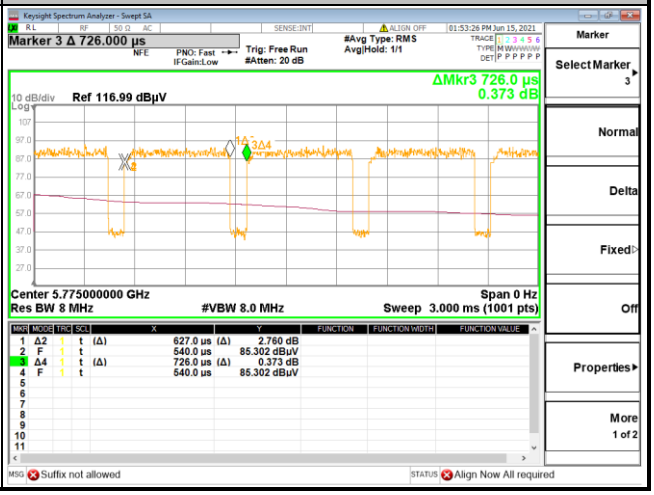

**802.11ax HE20**




**802.11ax HE40**




**802.11ax HE80**




———THE END———