# FCC RF Test Report

| | | |
|---|---|---|
| APPLICANT | : | Zebra Technologies Corporation |
| EQUIPMENT | : | Mobile Computer |
| BRAND NAME | : | Zebra |
| MODEL NAME | : | MC330M |
| FCC ID | : | UZ7MC330M |
| STANDARD | : | FCC Part 15 Subpart E §15.407 |
| CLASSIFICATION | : | (NII) Unlicensed National Information Infrastructure |

**This is a variant report which is only valid together with the original test report. The product was received on Sep. 02, 2017 and testing was completed on Oct. 16, 2017. We, SPORTON INTERNATIONAL INC., 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., the test report shall not be reproduced except in full.**

**Reviewed by: Joseph Lin / Supervisor**

**Approved by: Jones Tsai / Manager**

Testing Laboratory 1190

***SPORTON INTERNATIONAL INC.***
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# REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|---|---|---|---|
| FR790120-02E | Rev. 01 | Initial issue of report | Nov. 03, 2017 |
| FR790120-02E | Rev. 02 | Updating the description of Data Re-use in Summary of Test Result | Nov. 08, 2017 |
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# SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description | Limit | Result | Remark |
|---|---|---|---|---|---|
| - | 15.403(i) | 6dB, 26dB and 99% Occupied Bandwidth | > 500kHz | Not Required | - |
| 3.1 | 15.407(a) | Maximum Conducted Output Power | ≤ 30 dBm | Pass | - |
| - | 15.407(a) | Power Spectral Density | ≤ 30 dBm/500kHz | Not Required | - |
| 3.2 | 15.407(b) | Unwanted Emissions | 15.407(b)(4)(i) &15.209(a) | Not Required | Under limit 1.75 dB at 5649.200 MHz |
| - | 15.207 | AC Conducted Emission | 15.207(a) | Not Required | - |
| - | 15.407(g) | Frequency Stability | Within Operation Band | Not Required | - |
| 3.3 | 15.407(c) | Automatically Discontinue Transmission | Discontinue Transmission | Pass | - |
| 3.4 | 15.203 & 15.407(a) | Antenna Requirement | N/A | Pass | - |

**Note:**

1. Not required means after assessing, test items are not necessary to carry out.
2. The original model (FCC ID: UZ7MC330K) and the variant model (FCC ID: UZ7MC330M) have identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi. Based on their similarity, the test reports of FCC Part 15C & 15E (equipment class: DTS, DSS, NII) for the original model represent compliance for the variant model, and are referenced into the FCC filing of the variant model.
   In this test report, performed conducted power measurement and BT/WLAN radiated spurious emission that based on the worst-case condition from the original model (FCC ID: UZ7MC330K) which can be referred to Sporton Report Number FR790120F.

# 1 General Description

## 1.1 Applicant

**Zebra Technologies Corporation**
1 Zebra Plaza, Holtsville, NY 11742

## 1.2 Manufacturer

**Zebra Technologies Corporation**
1 Zebra Plaza, Holtsville, NY 11742

## 1.3 Product Feature of Equipment Under Test

| Product Feature | |
|---|---|
| **Equipment** | Mobile Computer |
| **Brand Name** | Zebra |
| **Model Name** | MC330M |
| **FCC ID** | UZ7MC330M |
| **EUT supports Radios application** | WLAN 11a/b/g/n HT20/HT40<br>WLAN 11ac VHT20/VHT40/VHT80<br>Bluetooth BR/EDR/LE |
| **HW Version** | EV1b |
| **SW Version** | Android Version 7.1.2 |
| **FW Version** | W10: Aug 4 2017 12:57:11 version 7.35.205.8 (r ) FWID 01-895bc792 |
| **Fusion Version** | Fusion_BA_2.10.0.0.007_N-0809201717-N |
| **MFD** | 30AUG17 |
| **EUT Stage** | Engineering Sample |

**<SKU List>**

| Standard | | | | | |
|---|---|---|---|---|---|
| SKU | Type-scanner | camera | Audio Jack | NFC | Speaker |
| 1 | GUN-SE4850 | X | X | X | X |
| 2 | GUN-SE4750 | X | X | X | X |
| 3 | GUN-SE965 | X | X | X | X |
| 4 | Brick-SE4850 | X | X | X | X |
| 5 | Brick-SE4750 | X | X | X | X |
| 6 | Brick-SE965 | X | X | X | X |
| 7 | Rotate | X | X | X | X |

| Specification of Accessories | | | | |
|---|---|---|---|---|
| **Sentry 1X Battery** | **Brand Name** | Zebra | **Part Number** | BT-000338-01 |
| **Sentry 2X Battery** | **Brand Name** | Zebra | **Part Number** | BT-000337-01 |
| **MC32 1X Battery** | **Brand Name** | Symbol | **Part Number** | 82-000011-01 |
| **MC32 2X Battery** | **Brand Name** | Symbol | **Part Number** | 82-000012-02 |
| **Wall wart power supply(18W)** | **Brand Name** | Zebra | **Part Number** | PWR-WUA5V12W0US |
| **Charge Cable for Wall wart power supply** | **Brand Name** | Zebra | **Part Number** | PWRS-14000-249R |
| **HS2100 Earphone** | **Brand Name** | Symbol | **Part Number** | HS2100-OTH |
| **Quick Disconnect cable for HS2100 Headset** | **Brand Name** | Symbol | **Part Number** | CBL-HS2100-QDC1-01 |
| **RCH51 Earphone** | **Brand Name** | Symbol | **Part Number** | RCH51 |
| **Cable for RCH51 earphone** | **Brand Name** | Symbol | **Part Number** | 25-124411-02R |
| **U cable** | **Brand Name** | Symbol | **Part Number** | CBL-MC33-USBCHG-01 |
| **Gun Holster MC3000** | **Brand Name** | Symbol | **Model Name** | SG-MC3021212-01R |
| **Holster MC30XX** | **Brand Name** | Symbol | **Model Name** | 11-69293-01R |

## 1.4 Product Specification of Equipment Under Test

<table>
<tr><th colspan="2">Standards-related Product Specification</th></tr>
<tr><td>Tx/Rx Channel Frequency Range</td><td>5745 MHz ~ 5825 MHz</td></tr>
<tr><td>Maximum Output Power <CDD Mode></td><td><Ant. 1><br>802.11a : 17.23 dBm / 0.0528 W<br>802.11n HT20 : 17.47 dBm / 0.0558 W<br>802.11n HT40 : 16.75 dBm / 0.0473 W<br>802.11ac VHT20: 17.49 dBm / 0.0561 W<br>802.11ac VHT40: 16.79 dBm / 0.0478 W<br>802.11ac VHT80: 14.86 dBm / 0.0306 W<br><Ant. 2><br>802.11a : 17.23 dBm / 0.0528 W<br>802.11n HT20 : 17.35 dBm / 0.0543 W<br>802.11n HT40 : 16.97 dBm / 0.0498 W<br>802.11ac VHT20: 17.39 dBm / 0.0548 W<br>802.11ac VHT40: 16.98 dBm / 0.0499 W<br>802.11ac VHT80: 14.52 dBm / 0.0283 W<br>MIMO <Ant. 1 + 2><br>802.11a : 20.10 dBm / 0.1023 W<br>802.11n HT20 : 20.17 dBm / 0.104 W<br>802.11n HT40 : 19.56 dBm / 0.0904 W<br>802.11ac VHT20: 20.21 dBm / 0.1050 W<br>802.11ac VHT40: 19.65 dBm / 0.0923 W<br>802.11ac VHT80: 18.62 dBm / 0.0728 W</td></tr>
<tr><td>Maximum Output Power <TXBF Mode></td><td>MIMO <Ant. 1 + 2><br>802.11n HT20 : 20.50 dBm / 0.1122 W<br>802.11n HT40 : 19.86 dBm / 0.0968 W<br>802.11ac VHT20: 20.47 dBm / 0.1114 W<br>802.11ac VHT40: 19.96 dBm / 0.0991 W<br>802.11ac VHT80: 18.94 dBm / 0.0783 W</td></tr>
<tr><td>Antenna Type / Gain</td><td><Ant. 1> : PIFA Antenna with gain 5.31 dBi<br><Ant. 2> : PIFA Antenna with gain 4.85 dBi</td></tr>
<tr><td>Type of Modulation</td><td>802.11a : OFDM (BPSK / QPSK / 16QAM / 64QAM)<br>802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)</td></tr>
<tr><td>Antenna Function Description</td><td>
<table>
<tr><th></th><th>Ant. 1</th><th>Ant. 2</th></tr>
<tr><td>802.11 a/n/ac</td><td>V</td><td>V</td></tr>
<tr><td>802.11 a/n/ac MIMO</td><td>V</td><td>V</td></tr>
<tr><td>802.11 n/ac TXBF</td><td>V</td><td>V</td></tr>
</table>
</td></tr>
</table>

**Note:** MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.

## 1.5 Modification of EUT

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

## 1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

| | | |
|---|---|---|
| **Test Site** | SPORTON INTERNATIONAL INC. | |
| **Test Site Location** | No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,<br>Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 | |
| **Test Site No.** | **Sporton Site No.** | |
| | TH05-HY | 03CH07-HY |

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

## 1.7 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 v01r04.
- 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. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

# 2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated:, radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.

## 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.
2. The above Frequency and Channel in "#" were 802.11ac VHT80.

## 2.2 Test Mode

**Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.**

**Single Antenna**

| Modulation | Data Rate |
|---|---|
| 802.11a | 6 Mbps |
| 802.11n HT20 | MCS0 |
| 802.11n HT40 | MCS0 |
| 802.11ac VHT20 | MCS0 |
| 802.11ac VHT40 | MCS0 |
| 802.11ac VHT80 | MCS0 |

**MIMO Antenna**

| Modulation | Data Rate |
|---|---|
| 802.11a | 6 Mbps |
| 802.11n HT20 | MCS0 |
| 802.11n HT40 | MCS0 |
| 802.11ac VHT20 | MCS0 |
| 802.11ac VHT40 | MCS0 |
| 802.11ac VHT80 | MCS0 |

**TXBF Antenna**

| Modulation | Data Rate |
|---|---|
| 802.11n HT20 | MCS0 |
| 802.11n HT40 | MCS0 |
| 802.11ac VHT20 | MCS0 |
| 802.11ac VHT40 | MCS0 |
| 802.11ac VHT80 | MCS0 |

**<Antenna 1>**

| 802.11a mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| Duty Cycle (%) | | 96.03 |
| CH 149 | 5745 | **17.23** |
| CH 157 | 5785 | 17.02 |
| CH 165 | 5825 | 17.01 |

| 802.11n HT20 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| Duty Cycle (%) | | 95.83 |
| CH 149 | 5745 | 17.00 |
| CH 157 | 5785 | 17.16 |
| CH 165 | 5825 | **17.47** |

| 802.11n HT40 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| Duty Cycle (%) | | 91.58 |
| CH 151 | 5755 | 16.57 |
| CH 159 | 5795 | **16.75** |

| 802.11ac VHT20 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| Duty Cycle (%) | | 95.87 |
| CH 149 | 5745 | 17.01 |
| CH 157 | 5785 | 17.48 |
| CH 165 | 5825 | **17.49** |

| 802.11ac VHT40 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| Duty Cycle (%) | | 91.84 |
| CH 151 | 5755 | **16.79** |
| CH 159 | 5795 | 16.77 |

| 802.11ac VHT80 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| Duty Cycle (%) | | 85.32 |
| CH 155 | 5755 | **14.86** |

**<Antenna 2>**

| 802.11a mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| Duty Cycle (%) | | 95.28 |
| CH 149 | 5745 | **17.23** |
| CH 157 | 5785 | 17.03 |
| CH 165 | 5825 | 17.02 |

| 802.11n HT20 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| Duty Cycle (%) | | 95.83 |
| CH 149 | 5745 | 17.18 |
| CH 157 | 5785 | **17.35** |
| CH 165 | 5825 | 17.26 |

| 802.11n HT40 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| Duty Cycle (%) | | 91.58 |
| CH 151 | 5755 | 16.91 |
| CH 159 | 5795 | **16.97** |

| 802.11ac VHT20 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| Duty Cycle (%) | | 95.08 |
| CH 149 | 5745 | 17.30 |
| CH 157 | 5785 | **17.39** |
| CH 165 | 5825 | 17.32 |

| 802.11ac VHT40 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| Duty Cycle (%) | | 91.75 |
| CH 151 | 5755 | **16.98** |
| CH 159 | 5795 | 16.97 |

| 802.11ac VHT80 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| Duty Cycle (%) | | 86.11 |
| CH 155 | 5755 | **14.52** |

**<CDD Mode>**

**MIMO < Antenna 1+2>**

| 802.11a mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| CH 149 | 5745 | 20.01 |
| CH 157 | 5785 | **20.10** |
| CH 165 | 5825 | 20.01 |

| 802.11n HT20 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| CH 149 | 5745 | **20.17** |
| CH 157 | 5785 | 20.10 |
| CH 165 | 5825 | 20.02 |

| 802.11n HT40 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| CH 151 | 5755 | **19.56** |
| CH 159 | 5795 | 19.53 |

| 802.11ac VHT20 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| CH 149 | 5745 | **20.21** |
| CH 157 | 5785 | 20.12 |
| CH 165 | 5825 | 20.20 |

| 802.11ac VHT40 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| CH 151 | 5755 | 19.60 |
| CH 159 | 5795 | **19.65** |

| 802.11ac VHT80 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| CH 155 | 5755 | **18.62** |

**<TXBF Mode>**

**MIMO <Antenna 1+2>**

| 802.11n HT20 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| CH 149 | 5745 | 20.47 |
| CH 157 | 5785 | 20.46 |
| CH 165 | 5825 | **20.50** |

| 802.11n HT40 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| CH 151 | 5755 | 19.67 |
| CH 159 | 5795 | **19.86** |

| 802.11ac VHT20 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| CH 149 | 5745 | **20.47** |
| CH 157 | 5785 | 20.46 |
| CH 165 | 5825 | 20.45 |

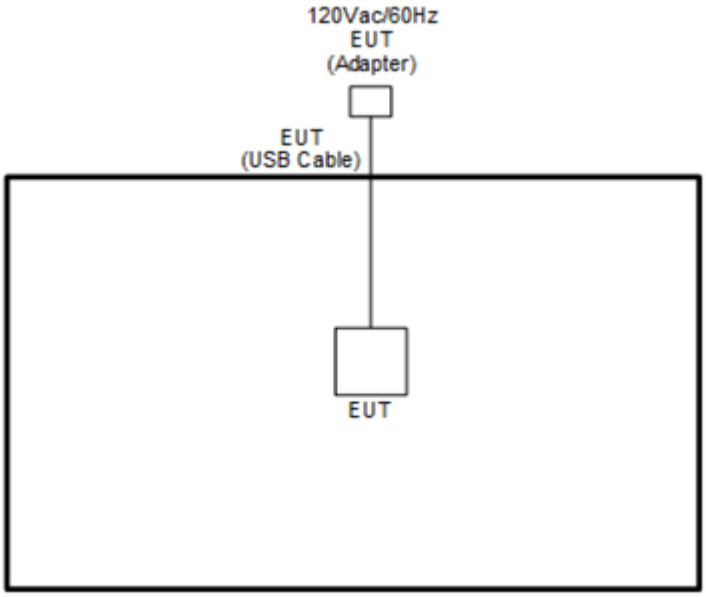
| 802.11ac VHT40 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | MCS0 |
| CH 151 | 5755 | 19.67 |
| CH 159 | 5795 | **19.96** |

| 802.11ac VHT80 mode | | |
|---|---|---|
| Power vs. Channel | | |
| Channel | Frequency (MHz) | Data Rate (bps) |
| | | 6M |
| CH 155 | 5755 | **18.94** |

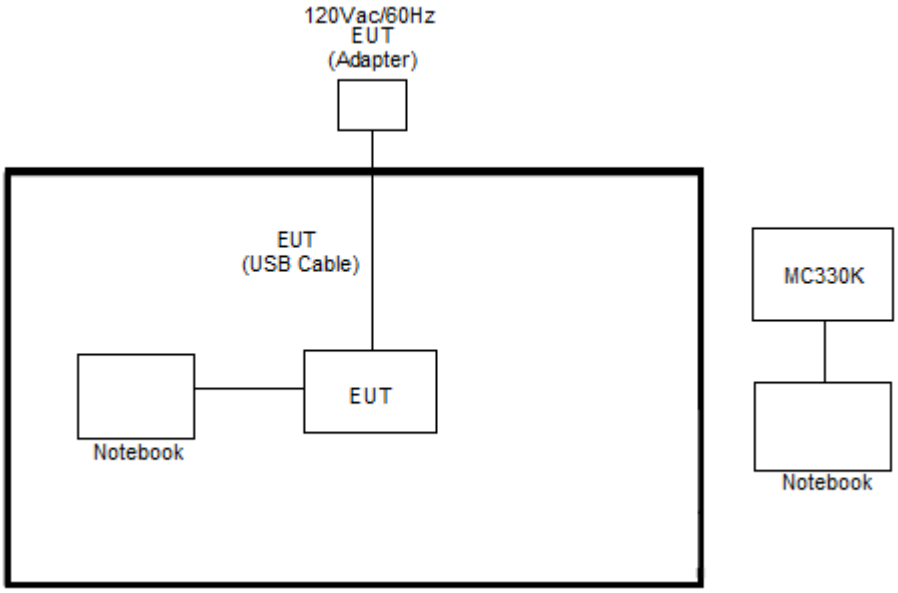
**Remark:** For radiated test cases, the test was performed with SKU 7, Keypad (38), MC32 1X Battery, USB Link with Adapter, PWR-WUA5V12W0US(LV6).

## 2.3 Connection Diagram of Test System.

**<CDD Mode>**




**<TXBF Mode>**



## 2.4 Support Unit used in test configuration and system

| Item | Equipment | Trade Name | Model Name | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1. | RX EUT | RX EUT | Sentry Prem+ Rotating head | UZ7MC330M | Unshielded, 1.0 m | N/A |
| 2. | Notebook | DELL | Latitude E3340 | FCC DoC/ Contains FCC ID: PD97260NGU | N/A | AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m |

## 2.5 EUT Operation Test Setup

The RF test items, programmed RF utility, “ADB” installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting signals

For WLAN MIMO TXBF modes, the EUT was tested under normal operation and link to another device with power, modulation modes and data rates controlled by engineer mode command lines. The CMD software tool was used to make EUT continuous transmitting signals.

# 3 Test Result

## 3.1 Maximum Conducted Output Power Measurement

### 3.1.1 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.

### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.1.3 Test Procedures

**CDD mode**

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

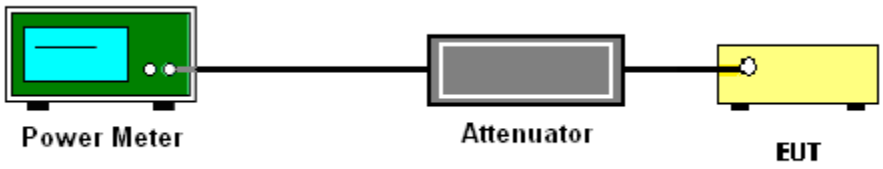
**TXBF mode**

The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04 for TXBF modes.

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

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

### 3.1.4 Test Setup



### 3.1.5 Test Result of Maximum Conducted Output Power

**<CDD Mode>**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Duty Factor (dB) | | Average Conducted Power (dBm) | | | FCC Conducted Power Limit (dBm) | | DG (dBi) | | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ant 1 | Ant 2 | Ant 1 | Ant 2 | SUM | Ant 1 | Ant 2 | Ant 1 | Ant 2 | |
| 11a | 6Mbps | 1 | 149 | 5745 | 0.18 | 0.21 | 17.23 | 17.23 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| 11a | 6Mbps | 1 | 157 | 5785 | 0.18 | 0.21 | 17.02 | 17.03 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| 11a | 6Mbps | 1 | 165 | 5825 | 0.18 | 0.21 | 17.01 | 17.02 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| HT20 | MCS0 | 1 | 149 | 5745 | 0.18 | 0.00 | 17.00 | 17.18 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| HT20 | MCS0 | 1 | 157 | 5785 | 0.18 | 0.00 | 17.16 | 17.35 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| HT20 | MCS0 | 1 | 165 | 5825 | 0.18 | 0.00 | 17.47 | 17.26 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| HT40 | MCS0 | 1 | 151 | 5755 | 0.38 | 0.38 | 16.57 | 16.91 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| HT40 | MCS0 | 1 | 159 | 5795 | 0.38 | 0.38 | 16.75 | 16.97 | | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| VHT20 | MCS0 | 1 | 149 | 5745 | 0.18 | 0.22 | 17.01 | 17.30 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| VHT20 | MCS0 | 1 | 157 | 5785 | 0.18 | 0.22 | 17.48 | 17.39 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| VHT20 | MCS0 | 1 | 165 | 5825 | 0.18 | 0.22 | 17.49 | 17.32 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| VHT40 | MCS0 | 1 | 151 | 5755 | 0.37 | 0.37 | 16.79 | 16.98 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| VHT40 | MCS0 | 1 | 159 | 5795 | 0.37 | 0.37 | 16.77 | 16.97 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| VHT80 | MCS0 | 1 | 155 | 5775 | 0.69 | 0.65 | 14.86 | 14.52 | - | 30.00 | 30.00 | 5.31 | 4.85 | Pass |
| 11a | 6Mbps | 2 | 149 | 5745 | 0.21 | 0.21 | 17.19 | 16.81 | 20.01 | 30.00 | | 5.31 | | Pass |
| 11a | 6Mbps | 2 | 157 | 5785 | 0.21 | 0.21 | 17.30 | 16.86 | 20.10 | 30.00 | | 5.31 | | Pass |
| 11a | 6Mbps | 2 | 165 | 5825 | 0.21 | 0.21 | 17.32 | 16.65 | 20.01 | 30.00 | | 5.31 | | Pass |
| HT20 | MCS0 | 2 | 149 | 5745 | 0.22 | 0.22 | 17.28 | 17.03 | 20.17 | 30.00 | | 5.31 | | Pass |
| HT20 | MCS0 | 2 | 157 | 5785 | 0.22 | 0.22 | 17.29 | 16.88 | 20.10 | 30.00 | | 5.31 | | Pass |
| HT20 | MCS0 | 2 | 165 | 5825 | 0.22 | 0.22 | 17.67 | 16.24 | 20.02 | 30.00 | | 5.31 | | Pass |
| HT40 | MCS0 | 2 | 151 | 5755 | 0.38 | 0.38 | 16.62 | 16.48 | 19.56 | 30.00 | | 5.31 | | Pass |
| HT40 | MCS0 | 2 | 159 | 5795 | 0.38 | 0.38 | 17.02 | 15.95 | 19.53 | 30.00 | | 5.31 | | Pass |
| VHT20 | MCS0 | 2 | 149 | 5745 | 0.22 | 0.18 | 17.35 | 17.04 | 20.21 | 30.00 | | 5.31 | | Pass |
| VHT20 | MCS0 | 2 | 157 | 5785 | 0.22 | 0.18 | 17.29 | 16.93 | 20.12 | 30.00 | | 5.31 | | Pass |
| VHT20 | MCS0 | 2 | 165 | 5825 | 0.22 | 0.18 | 17.75 | 16.54 | 20.20 | 30.00 | | 5.31 | | Pass |
| VHT40 | MCS0 | 2 | 151 | 5755 | 0.37 | 0.37 | 16.73 | 16.45 | 19.60 | 30.00 | | 5.31 | | Pass |
| VHT40 | MCS0 | 2 | 159 | 5795 | 0.37 | 0.37 | 17.14 | 16.07 | 19.65 | 30.00 | | 5.31 | | Pass |
| VHT80 | MCS0 | 2 | 155 | 5775 | 0.64 | 0.64 | 15.75 | 15.45 | 18.62 | 30.00 | | 5.31 | | Pass |

**<TXBF Mode>**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Average Conducted Power (dBm) | | | FCC Conducted Power Limit (dBm) | | DG (dBi) | | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ant 1 | Ant 2 | SUM | Ant 1 | Ant 2 | Ant 1 | Ant 2 | |
| HT20 | MCS0 | 2 | 149 | 5745 | 17.10 | 17.80 | 20.47 | 27.91 | | 8.09 | | Pass |
| HT20 | MCS0 | 2 | 157 | 5785 | 17.40 | 17.50 | 20.46 | 27.91 | | 8.09 | | Pass |
| HT20 | MCS0 | 2 | 165 | 5825 | 18.00 | 16.90 | 20.50 | 27.91 | | 8.09 | | Pass |
| HT40 | MCS0 | 2 | 151 | 5755 | 16.30 | 17.00 | 19.67 | 27.91 | | 8.09 | | Pass |
| HT40 | MCS0 | 2 | 159 | 5795 | 16.70 | 17.00 | 19.86 | 27.91 | | 8.09 | | Pass |
| VHT20 | MCS0 | 2 | 149 | 5745 | 17.10 | 17.80 | 20.47 | 27.91 | | 8.09 | | Pass |
| VHT20 | MCS0 | 2 | 157 | 5785 | 17.30 | 17.60 | 20.46 | 27.91 | | 8.09 | | Pass |
| VHT20 | MCS0 | 2 | 165 | 5825 | 18.00 | 16.80 | 20.45 | 27.91 | | 8.09 | | Pass |
| VHT40 | MCS0 | 2 | 151 | 5755 | 16.30 | 17.00 | 19.67 | 27.91 | | 8.09 | | Pass |
| VHT40 | MCS0 | 2 | 159 | 5795 | 16.80 | 17.10 | 19.96 | 27.91 | | 8.09 | | Pass |
| VHT80 | MCS0 | 2 | 155 | 5775 | 15.40 | 16.40 | 18.94 | 27.91 | | 8.09 | | Pass |

## 3.2 Unwanted Emissions Measurement

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

### 3.2.1 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 per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 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) |
|---|---|
| -17 | 78.3 |
| - 27 | 68.3 |

(3) KDB789033 D02 v01r04 G)2)c)

(i) Section 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and 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. However, an out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz dBm/MHz peak emission limit.

(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). An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the alternative limit.

**Note 3:** An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.

**Note 4:** Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

### 3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.2.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

   - 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 1000MHz

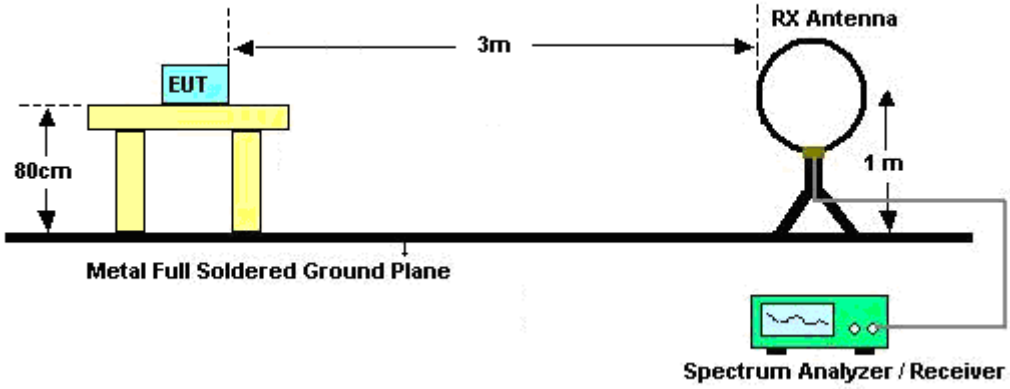
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz 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 1GHz, 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 1GHz, the emission level of the EUT in peak mode was 20dB 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

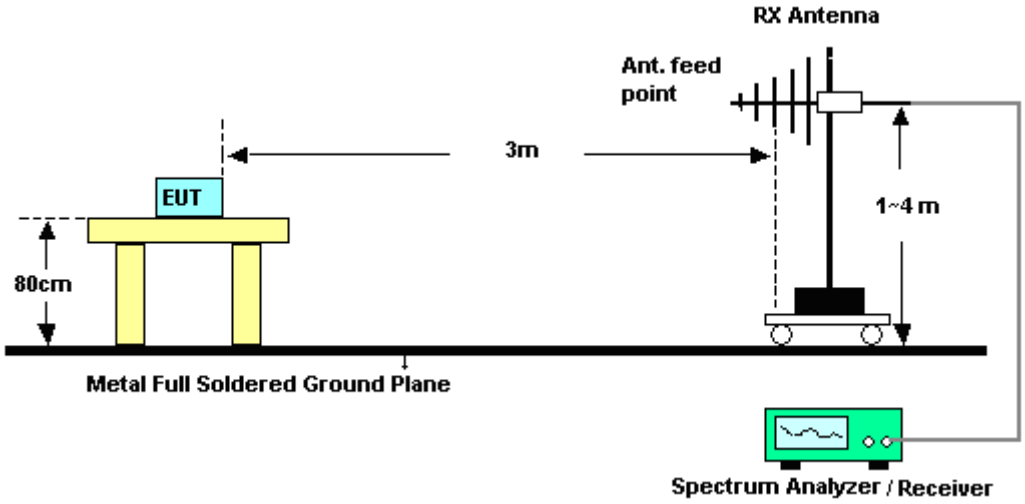
measured in average mode again and reported.

### 3.2.4 Test Setup

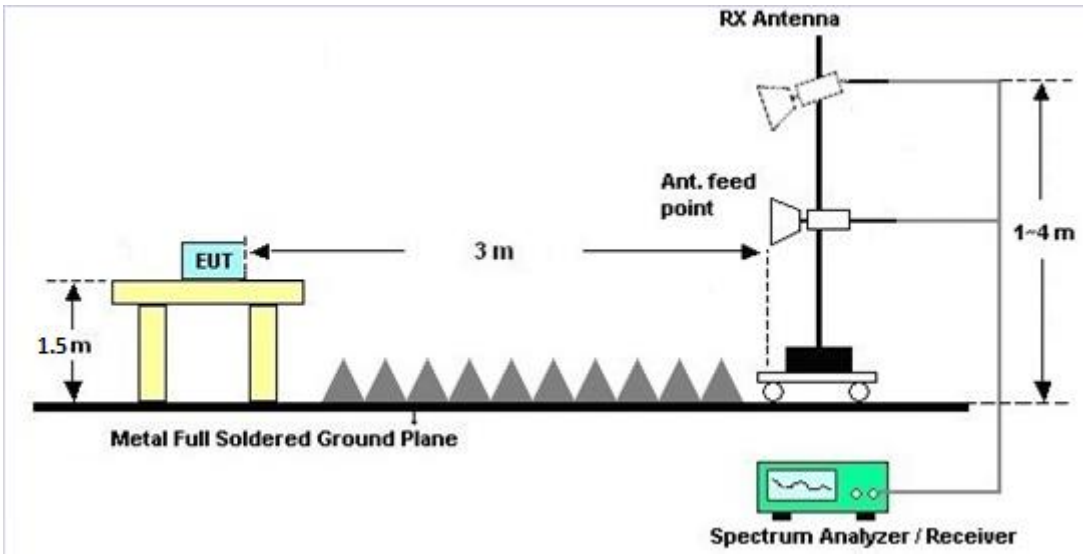
**For radiated emissions below 30MHz**




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



**For radiated emissions above 1GHz**




### 3.2.5 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.

### 3.2.6 Test Result of Radiated Band Edges

Please refer to Appendix A and B.

### 3.2.7 Duty Cycle

Please refer to Appendix C.

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

Please refer to Appendix A and B.

## 3.3 Automatically Discontinue Transmission

### 3.3.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

### 3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.3.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

# 3.4 Antenna Requirements

## 3.4.1 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.

## 3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

## 3.4.3 Antenna Gain

**CDD mode**

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.

| | Ant 1 (dBi) | Ant 2 (dBi) | DG for Power (dBi) | DG for PSD (dBi) | Power Limit Reduction (dB) | PSD Limit Reduction (dB) |
|---|---|---|---|---|---|---|
| **Band IV** | 5.31 | 4.85 | 5.31 | 8.09 | 0.00 | 2.09 |

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

*PSD limit reduction = Composite gain + PSD Array gain – 6dBi, ( min = 0 )*

**TXBF modes**

FCC KDB 662911 D01 Multiple Transmitter Output **v02r01**

For CDD transmissions, directional gain is calculated as

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

*where*

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

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

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

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

$G_k$ is the gain in dBi of the kth antenna.

The EUT supports beamforming for 802.11ac modes.

The directional gain calculation is following F)2)e)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.

| | Ant 1 (dBi) | Ant 2 (dBi) | DG for Power (dBi) | DG for PSD (dBi) | Power Limit Reduction (dB) | PSD Limit Reduction (dB) |
|---|---|---|---|---|---|---|
| **Band IV** | 5.31 | 4.85 | 8.09 | 8.09 | 2.09 | 2.09 |

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

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

# 4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Power Meter | Anritsu | ML2495A | 0932001 | N/A | Sep. 26, 2017 | Oct. 04, 2017 ~ Oct. 13, 2017 | Sep. 25, 2018 | Conducted (TH05-HY) |
| Power Sensor | Anritsu | MA2411B | 0846202 | 300MHz~40GHz | Sep. 26, 2017 | Oct. 04, 2017 ~ Oct. 13, 2017 | Sep. 25, 2018 | Conducted (TH05-HY) |
| Spectrum Analyzer | Rohde & Schwarz | FSP30 | 101067 | 9kHz ~ 30GHz | Nov. 17, 2016 | Oct. 04, 2017 ~ Oct. 13, 2017 | Nov. 16, 2017 | Conducted (TH05-HY) |
| Programmable Power Supply | GW Instek | PSS-2005 | GEO821763 | N/A | Nov. 14, 2016 | Oct. 04, 2017 ~ Oct. 13, 2017 | Nov. 13, 2017 | Conducted (TH05-HY) |
| Power Sensor | DARE | RPR3006W | 16I000054SNO13 | 10MHz~6GHz | Dec. 22, 2016 | Oct. 14, 2017 | Dec. 21, 2017 | Conducted (TH05-HY) |
| Spectrum Analyzer | Rohde & Schwarz | FSP40 | 100057 | 9kHz-40GHz | Nov. 25, 2016 | Oct. 14, 2017 | Nov. 24, 2017 | Conducted (TH05-HY) |
| Bilog Antenna | TESEQ | CBL 6111D&00800N1D01N-06 | 35419&03 | 30MHz to 1GHz | Jan. 07, 2017 | Oct. 12, 2017 ~ Oct. 16, 2017 | Jan. 06, 2018 | Radiation (03CH07-HY) |
| Double Ridge Horn Antenna | ESCO | 3117 | 00075962 | 1GHz ~ 18GHz | Aug. 23, 2017 | Oct. 12, 2017 ~ Oct. 16, 2017 | Aug. 22, 2018 | Radiation (03CH07-HY) |
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100315 | 9 kHz~30 MHz | May 15, 2017 | Oct. 12, 2017 ~ Oct. 16, 2017 | May 14, 2019 | Radiation (03CH07-HY) |
| Preamplifier | MITEQ | AMF-7D-00101800-30-10P | 1590075 | 1GHz ~ 18GHz | Apr. 25, 2017 | Oct. 12, 2017 ~ Oct. 16, 2017 | Apr. 24, 2018 | Radiation (03CH07-HY) |
| Preamplifier | COM-POWER | PA-103A | 161241 | 10MHz-1GHz | Mar. 14, 2017 | Oct. 12, 2017 ~ Oct. 16, 2017 | Mar. 13, 2018 | Radiation (03CH07-HY) |
| Spectrum Analyzer | Agilent | N9010A | MY53470118 | 10Hz~44GHz | Apr. 17, 2017 | Oct. 12, 2017 ~ Oct. 16, 2017 | Apr. 16, 2018 | Radiation (03CH07-HY) |
| Antenna Mast | Max-Full | MFA520BS | N/A | 1m~4m | N/A | Oct. 12, 2017 ~ Oct. 16, 2017 | N/A | Radiation (03CH07-HY) |
| Turn Table | ChainTek | Chaintek 3000 | N/A | 0~360 Degree | N/A | Oct. 12, 2017 ~ Oct. 16, 2017 | N/A | Radiation (03CH07-HY) |
| Amplifier | MITEQ | TTA1840-35-HG | 1871923 | 18GHz~40GHz, VSWR : 2.5:1 max | Jul. 18, 2017 | Oct. 12, 2017 ~ Oct. 16, 2017 | Jul. 17, 2018 | Radiation (03CH07-HY) |
| EMI Test Receiver | Agilent | N9038A(MXE) | MY53290053 | 20Hz to 26.5GHz | Jan. 12, 2017 | Oct. 12, 2017 ~ Oct. 16, 2017 | Jan. 11, 2018 | Radiation (03CH07-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170584 | 18GHz- 40GHz | Nov. 08, 2016 | Oct. 12, 2017 ~ Oct. 16, 2017 | Nov. 07, 2017 | Radiation (03CH07-HY) |
| Preamplifier | Agilent | 8449B | 3008A02375 | 1GHz~26.5GHz | Dec. 21, 2016 | Oct. 12, 2017 ~ Oct. 16, 2017 | Dec. 20, 2017 | Radiation (03CH07-HY) |

# 5 Uncertainty of Evaluation

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **2.70** |

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **5.70** |

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **5.50** |

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

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **5.20** |

# Appendix A. Radiated Spurious Emission

| Test Engineer : | Jesse Wang | Temperature : | 23~27°C |
|---|---|---|---|
| | | Relative Humidity : | 55~58% |

**<CDD Mode>**

**Band 4 - 5725~5850MHz**

**WIFI 802.11ac VHT20 (Band Edge @ 3m)**

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5623 | 54 | -14.2 | 68.2 | 40.72 | 35.07 | 12.61 | 34.4 | 100 | 155 | P | H |
| | | 5699.6 | 61.62 | -43.29 | 104.91 | 48.2 | 35.17 | 12.67 | 34.42 | 100 | 155 | P | H |
| | | 5720 | 75.61 | -35.19 | 110.8 | 62.09 | 35.21 | 12.73 | 34.42 | 100 | 155 | P | H |
| | | 5724.8 | 81.05 | -40.69 | 121.74 | 67.53 | 35.21 | 12.73 | 34.42 | 100 | 155 | P | H |
| | * | 5745 | 110.88 | - | - | 97.28 | 35.24 | 12.79 | 34.43 | 100 | 155 | P | H |
| | * | 5745 | 103.2 | - | - | 89.6 | 35.24 | 12.79 | 34.43 | 100 | 155 | A | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT20 | | | | | | | | | | | | | H |
| CH 149 | | 5649.6 | 52.31 | -15.89 | 68.2 | 38.98 | 35.12 | 12.61 | 34.4 | 100 | 245 | P | V |
| 5745MHz | | 5692.8 | 57.83 | -42.06 | 99.89 | 44.41 | 35.17 | 12.67 | 34.42 | 100 | 245 | P | V |
| | | 5720 | 70.11 | -40.69 | 110.8 | 56.59 | 35.21 | 12.73 | 34.42 | 100 | 245 | P | V |
| | | 5724.6 | 78.25 | -43.04 | 121.29 | 64.73 | 35.21 | 12.73 | 34.42 | 100 | 245 | P | V |
| | * | 5745 | 109.35 | - | - | 95.75 | 35.24 | 12.79 | 34.43 | 100 | 245 | P | V |
| | * | 5745 | 101.15 | - | - | 87.55 | 35.24 | 12.79 | 34.43 | 100 | 245 | 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 802.11ac VHT20 (Harmonic @ 3m)

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11490 | 45.43 | -28.57 | 74 | 45.51 | 38.38 | 18.88 | 57.34 | 100 | 0 | P | H |
| | | 17235 | 55.7 | -12.5 | 68.2 | 46.35 | 41.77 | 23.38 | 55.8 | 100 | 0 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT20 | | | | | | | | | | | | | H |
| CH 149 | | 11490 | 45.95 | -28.05 | 74 | 46.03 | 38.38 | 18.88 | 57.34 | 100 | 0 | P | V |
| 5745MHz | | 17235 | 58.34 | -9.86 | 68.2 | 48.99 | 41.77 | 23.38 | 55.8 | 100 | 0 | 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 802.11ac VHT40 (Band Edge @ 3m)

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5642.6 | 58.53 | -9.67 | 68.2 | 45.23 | 35.09 | 12.61 | 34.4 | 100 | 156 | P | H |
| | | 5698.2 | 71.78 | -32.09 | 103.87 | 58.36 | 35.17 | 12.67 | 34.42 | 100 | 156 | P | H |
| | | 5715.2 | 81.48 | -27.98 | 109.46 | 67.98 | 35.19 | 12.73 | 34.42 | 100 | 156 | P | H |
| | | 5723 | 83.44 | -34.2 | 117.64 | 69.92 | 35.21 | 12.73 | 34.42 | 100 | 156 | P | H |
| | * | 5755 | 107.63 | - | - | 94.01 | 35.26 | 12.79 | 34.43 | 100 | 156 | P | H |
| | * | 5755 | 99.94 | - | - | 86.32 | 35.26 | 12.79 | 34.43 | 100 | 156 | A | H |
| | | 5851.4 | 54.53 | -64.48 | 119.01 | 40.67 | 35.38 | 12.94 | 34.46 | 100 | 156 | P | H |
| | | 5867.6 | 54.78 | -52.49 | 107.27 | 40.82 | 35.41 | 13.02 | 34.47 | 100 | 156 | P | H |
| | | 5879 | 53.32 | -48.91 | 102.23 | 39.34 | 35.43 | 13.02 | 34.47 | 100 | 156 | P | H |
| | | 5930.4 | 52.04 | -16.16 | 68.2 | 37.91 | 35.5 | 13.11 | 34.48 | 100 | 156 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT40 | | | | | | | | | | | | | H |
| CH 151 | | 5647 | 57.39 | -10.81 | 68.2 | 44.09 | 35.09 | 12.61 | 34.4 | 100 | 244 | P | V |
| 5755MHz | | 5698.4 | 70.1 | -33.92 | 104.02 | 56.68 | 35.17 | 12.67 | 34.42 | 100 | 244 | P | V |
| | | 5719.2 | 79.35 | -31.23 | 110.58 | 65.83 | 35.21 | 12.73 | 34.42 | 100 | 244 | P | V |
| | | 5724 | 80.05 | -39.87 | 119.92 | 66.53 | 35.21 | 12.73 | 34.42 | 100 | 244 | P | V |
| | * | 5755 | 105.85 | - | - | 92.23 | 35.26 | 12.79 | 34.43 | 100 | 244 | P | V |
| | * | 5755 | 98.28 | - | - | 84.66 | 35.26 | 12.79 | 34.43 | 100 | 244 | A | V |
| | | 5851.8 | 53.61 | -64.49 | 118.1 | 39.75 | 35.38 | 12.94 | 34.46 | 100 | 244 | P | V |
| | | 5868.2 | 54.56 | -52.54 | 107.1 | 40.6 | 35.41 | 13.02 | 34.47 | 100 | 244 | P | V |
| | | 5880 | 52.87 | -48.62 | 101.49 | 38.89 | 35.43 | 13.02 | 34.47 | 100 | 244 | P | V |
| | | 5927.2 | 53.71 | -14.49 | 68.2 | 39.58 | 35.5 | 13.11 | 34.48 | 100 | 244 | 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 802.11ac VHT40 (Harmonic @ 3m)

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11510 | 45.02 | -28.98 | 74 | 45 | 38.4 | 18.92 | 57.3 | 100 | 0 | P | H |
| | | 17265 | 54.14 | -14.06 | 68.2 | 44.81 | 41.73 | 23.4 | 55.8 | 100 | 0 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT40 | | | | | | | | | | | | | H |
| CH 151 | | 11510 | 45.05 | -28.95 | 74 | 45.03 | 38.4 | 18.92 | 57.3 | 100 | 0 | P | V |
| 5755MHz | | 17265 | 53.14 | -15.06 | 68.2 | 43.81 | 41.73 | 23.4 | 55.8 | 100 | 0 | 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 802.11ac VHT80 (Band Edge @ 3m)

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5646.8 | 63.35 | -4.85 | 68.2 | 50.05 | 35.09 | 12.61 | 34.4 | 100 | 156 | P | H |
| | | 5693.2 | 73.07 | -27.12 | 100.19 | 59.65 | 35.17 | 12.67 | 34.42 | 100 | 156 | P | H |
| | | 5719.8 | 74.02 | -36.72 | 110.74 | 60.5 | 35.21 | 12.73 | 34.42 | 100 | 156 | P | H |
| | | 5723.6 | 75.7 | -43.31 | 119.01 | 62.18 | 35.21 | 12.73 | 34.42 | 100 | 156 | P | H |
| | * | 5775 | 103.39 | - | - | 89.75 | 35.29 | 12.79 | 34.44 | 100 | 156 | P | H |
| | * | 5775 | 96.23 | - | - | 82.59 | 35.29 | 12.79 | 34.44 | 100 | 156 | A | H |
| | | 5851.4 | 68.17 | -50.84 | 119.01 | 54.31 | 35.38 | 12.94 | 34.46 | 100 | 156 | P | H |
| | | 5855.8 | 69.78 | -40.8 | 110.58 | 55.89 | 35.41 | 12.94 | 34.46 | 100 | 156 | P | H |
| | | 5875.2 | 62.78 | -42.27 | 105.05 | 48.8 | 35.43 | 13.02 | 34.47 | 100 | 156 | P | H |
| | | 5931.8 | 53.88 | -14.32 | 68.2 | 39.75 | 35.5 | 13.11 | 34.48 | 100 | 156 | P | H |
| **802.11ac** | | | | | | | | | | | | | H |
| **VHT80** | | | | | | | | | | | | | H |
| **CH 155** | | 5648.8 | 60.58 | -7.62 | 68.2 | 47.28 | 35.09 | 12.61 | 34.4 | 100 | 245 | P | V |
| **5775MHz** | | 5692.6 | 71.36 | -28.38 | 99.74 | 57.94 | 35.17 | 12.67 | 34.42 | 100 | 245 | P | V |
| | | 5715.6 | 72.79 | -36.78 | 109.57 | 59.29 | 35.19 | 12.73 | 34.42 | 100 | 245 | P | V |
| | | 5724 | 73.78 | -46.14 | 119.92 | 60.26 | 35.21 | 12.73 | 34.42 | 100 | 245 | P | V |
| | * | 5775 | 101.47 | - | - | 87.83 | 35.29 | 12.79 | 34.44 | 100 | 245 | P | V |
| | * | 5775 | 94.26 | - | - | 80.62 | 35.29 | 12.79 | 34.44 | 100 | 245 | A | V |
| | | 5851 | 65.1 | -54.82 | 119.92 | 51.24 | 35.38 | 12.94 | 34.46 | 100 | 245 | P | V |
| | | 5864 | 64.75 | -43.53 | 108.28 | 50.79 | 35.41 | 13.02 | 34.47 | 100 | 245 | P | V |
| | | 5875.4 | 59.84 | -45.06 | 104.9 | 45.86 | 35.43 | 13.02 | 34.47 | 100 | 245 | P | V |
| | | 5937.8 | 53.32 | -14.88 | 68.2 | 39.2 | 35.5 | 13.11 | 34.49 | 100 | 245 | 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 802.11ac VHT80 (Harmonic @ 3m)**

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11550 | 46.24 | -27.76 | 74 | 46.07 | 38.44 | 18.95 | 57.22 | 100 | 0 | P | H |
| | | 17325 | 53.03 | -15.17 | 68.2 | 43.74 | 41.66 | 23.43 | 55.8 | 100 | 0 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT80 | | | | | | | | | | | | | H |
| CH 155 | | 11550 | 45.58 | -28.42 | 74 | 45.41 | 38.44 | 18.95 | 57.22 | 100 | 0 | P | V |
| 5775MHz | | 17325 | 53.94 | -14.26 | 68.2 | 44.65 | 41.66 | 23.43 | 55.8 | 100 | 0 | 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 802.11ac VHT20 (Band Edge @ 3m)

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | 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) |
| | | 5642.4 | 54.82 | -13.38 | 68.2 | 41.52 | 35.09 | 12.61 | 34.4 | 100 | 304 | P | H |
| | | 5694 | 65.13 | -35.65 | 100.78 | 51.71 | 35.17 | 12.67 | 34.42 | 100 | 304 | P | H |
| | | 5719.2 | 75.4 | -35.18 | 110.58 | 61.88 | 35.21 | 12.73 | 34.42 | 100 | 304 | P | H |
| | | 5724.6 | 82.48 | -38.81 | 121.29 | 68.96 | 35.21 | 12.73 | 34.42 | 100 | 304 | P | H |
| | * | 5745 | 113.8 | - | - | 100.2 | 35.24 | 12.79 | 34.43 | 100 | 304 | P | H |
| | * | 5745 | 106.57 | - | - | 92.97 | 35.24 | 12.79 | 34.43 | 100 | 304 | A | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT20 | | | | | | | | | | | | | H |
| CH 149 | | 5629.2 | 53.61 | -14.59 | 68.2 | 40.33 | 35.07 | 12.61 | 34.4 | 100 | 243 | P | V |
| 5745MHz | | 5699.2 | 60.72 | -43.89 | 104.61 | 47.3 | 35.17 | 12.67 | 34.42 | 100 | 243 | P | V |
| | | 5719.8 | 70.4 | -40.34 | 110.74 | 56.88 | 35.21 | 12.73 | 34.42 | 100 | 243 | P | V |
| | | 5724.6 | 76.44 | -44.85 | 121.29 | 62.92 | 35.21 | 12.73 | 34.42 | 100 | 243 | P | V |
| | * | 5745 | 110.32 | - | - | 96.72 | 35.24 | 12.79 | 34.43 | 100 | 243 | P | V |
| | * | 5745 | 103.2 | - | - | 89.6 | 35.24 | 12.79 | 34.43 | 100 | 243 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

3. No other spurious found.
4. All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT20 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11490 | 45.37 | -28.63 | 74 | 45.45 | 38.38 | 18.88 | 57.34 | 100 | 0 | P | H |
| | | 17235 | 53.06 | -15.14 | 68.2 | 43.71 | 41.77 | 23.38 | 55.8 | 100 | 0 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT20 | | | | | | | | | | | | | H |
| CH 149 | | 11490 | 45.92 | -28.08 | 74 | 46 | 38.38 | 18.88 | 57.34 | 100 | 0 | P | V |
| 5745MHz | | 17235 | 61.14 | -7.06 | 68.2 | 51.79 | 41.77 | 23.38 | 55.8 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

3. No other spurious found.
4. All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT40 (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5649.2 | 63.42 | -4.78 | 68.2 | 50.12 | 35.09 | 12.61 | 34.4 | 100 | 305 | P | H |
| | | 5697.6 | 76.04 | -27.39 | 103.43 | 62.62 | 35.17 | 12.67 | 34.42 | 100 | 305 | P | H |
| | | 5719.4 | 85.21 | -25.42 | 110.63 | 71.69 | 35.21 | 12.73 | 34.42 | 100 | 305 | P | H |
| | | 5724 | 85 | -34.92 | 119.92 | 71.48 | 35.21 | 12.73 | 34.42 | 100 | 305 | P | H |
| | * | 5755 | 110.21 | - | - | 96.59 | 35.26 | 12.79 | 34.43 | 100 | 305 | P | H |
| | * | 5755 | 102.95 | - | - | 89.33 | 35.26 | 12.79 | 34.43 | 100 | 305 | A | H |
| | | 5850.01 | 55.58 | -66.6 | 122.18 | 41.72 | 35.38 | 12.94 | 34.46 | 100 | 305 | P | H |
| | | 5857 | 55.01 | -55.23 | 110.24 | 41.12 | 35.41 | 12.94 | 34.46 | 100 | 305 | P | H |
| | | 5904.6 | 52.71 | -30.55 | 83.26 | 38.59 | 35.48 | 13.11 | 34.47 | 100 | 305 | P | H |
| | | 5925 | 52.41 | -15.79 | 68.2 | 38.28 | 35.5 | 13.11 | 34.48 | 100 | 305 | P | H |
| **802.11ac** | | | | | | | | | | | | | H |
| **VHT40** | | | | | | | | | | | | | H |
| **CH 151** | | 5646.6 | 58.04 | -10.16 | 68.2 | 44.74 | 35.09 | 12.61 | 34.4 | 102 | 243 | P | V |
| **5755MHz** | | 5699 | 69.92 | -34.54 | 104.46 | 56.5 | 35.17 | 12.67 | 34.42 | 102 | 243 | P | V |
| | | 5718.8 | 78.32 | -32.14 | 110.46 | 64.8 | 35.21 | 12.73 | 34.42 | 102 | 243 | P | V |
| | | 5720.6 | 78.43 | -33.74 | 112.17 | 64.91 | 35.21 | 12.73 | 34.42 | 102 | 243 | P | V |
| | * | 5755 | 105.58 | - | - | 91.96 | 35.26 | 12.79 | 34.43 | 102 | 243 | P | V |
| | * | 5755 | 99.03 | - | - | 85.41 | 35.26 | 12.79 | 34.43 | 102 | 243 | A | V |
| | | 5852.8 | 52.81 | -63.01 | 115.82 | 38.95 | 35.38 | 12.94 | 34.46 | 102 | 243 | P | V |
| | | 5859.4 | 53.01 | -56.56 | 109.57 | 39.13 | 35.41 | 12.94 | 34.47 | 102 | 243 | P | V |
| | | 5905.8 | 53.28 | -29.09 | 82.37 | 39.16 | 35.48 | 13.11 | 34.47 | 102 | 243 | P | V |
| | | 5942 | 52.75 | -15.45 | 68.2 | 38.51 | 35.53 | 13.2 | 34.49 | 102 | 243 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

3. No other spurious found.
4. All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT40 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11510 | 45.81 | -28.19 | 74 | 45.79 | 38.4 | 18.92 | 57.3 | 100 | 0 | P | H |
| | | 17265 | 59.7 | -8.5 | 68.2 | 50.37 | 41.73 | 23.4 | 55.8 | 100 | 0 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT40 | | | | | | | | | | | | | H |
| CH 151 | | 11510 | 45.49 | -28.51 | 74 | 45.47 | 38.4 | 18.92 | 57.3 | 100 | 0 | P | V |
| 5755MHz | | 17268 | 51.15 | -17.05 | 68.2 | 41.82 | 41.73 | 23.4 | 55.8 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

3. No other spurious found.
4. All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT80 (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5649.2 | 66.45 | -1.75 | 68.2 | 53.15 | 35.09 | 12.61 | 34.4 | 100 | 304 | P | H |
| | | 5699.2 | 77 | -27.61 | 104.61 | 63.58 | 35.17 | 12.67 | 34.42 | 100 | 304 | P | H |
| | | 5719.6 | 79.37 | -31.32 | 110.69 | 65.85 | 35.21 | 12.73 | 34.42 | 100 | 304 | P | H |
| | | 5722.8 | 78.77 | -38.41 | 117.18 | 65.25 | 35.21 | 12.73 | 34.42 | 100 | 304 | P | H |
| | * | 5775 | 106.63 | - | - | 92.99 | 35.29 | 12.79 | 34.44 | 100 | 304 | P | H |
| | * | 5775 | 100.11 | - | - | 86.47 | 35.29 | 12.79 | 34.44 | 100 | 304 | A | H |
| | | 5852.2 | 71.73 | -45.45 | 117.18 | 57.87 | 35.38 | 12.94 | 34.46 | 100 | 304 | P | H |
| | | 5864.6 | 71.72 | -36.39 | 108.11 | 57.76 | 35.41 | 13.02 | 34.47 | 100 | 304 | P | H |
| | | 5876.4 | 64.61 | -39.55 | 104.16 | 50.63 | 35.43 | 13.02 | 34.47 | 100 | 304 | P | H |
| | | 5930 | 54.86 | -13.34 | 68.2 | 40.73 | 35.5 | 13.11 | 34.48 | 100 | 304 | P | H |
| **802.11ac** | | | | | | | | | | | | | H |
| **VHT80** | | | | | | | | | | | | | H |
| **CH 155** | | 5647.4 | 63.85 | -4.35 | 68.2 | 50.55 | 35.09 | 12.61 | 34.4 | 100 | 243 | P | V |
| **5775MHz** | | 5692.4 | 71.8 | -27.8 | 99.6 | 58.38 | 35.17 | 12.67 | 34.42 | 100 | 243 | P | V |
| | | 5702.4 | 72.67 | -33.2 | 105.87 | 59.17 | 35.19 | 12.73 | 34.42 | 100 | 243 | P | V |
| | | 5722.6 | 72.23 | -44.5 | 116.73 | 58.71 | 35.21 | 12.73 | 34.42 | 100 | 243 | P | V |
| | * | 5775 | 101.03 | - | - | 87.39 | 35.29 | 12.79 | 34.44 | 100 | 243 | P | V |
| | * | 5775 | 95.31 | - | - | 81.67 | 35.29 | 12.79 | 34.44 | 100 | 243 | A | V |
| | | 5851.4 | 66 | -53.01 | 119.01 | 52.14 | 35.38 | 12.94 | 34.46 | 100 | 243 | P | V |
| | | 5863.8 | 65.04 | -43.29 | 108.33 | 51.08 | 35.41 | 13.02 | 34.47 | 100 | 243 | P | V |
| | | 5877.2 | 58.69 | -44.88 | 103.57 | 44.71 | 35.43 | 13.02 | 34.47 | 100 | 243 | P | V |
| | | 5940.2 | 52.69 | -15.51 | 68.2 | 38.45 | 35.53 | 13.2 | 34.49 | 100 | 243 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

3. No other spurious found.
4. All results are PASS against Peak and Average limit line.

**Band 4 5725~5850MHz**

**WIFI 802.11ac VHT80 (Harmonic @ 3m)**

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11550 | 45 | -29 | 74 | 44.83 | 38.44 | 18.95 | 57.22 | 100 | 0 | P | H |
| | | 17325 | 50.99 | -17.21 | 68.2 | 41.7 | 41.66 | 23.43 | 55.8 | 100 | 0 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT80 | | | | | | | | | | | | | H |
| CH 155 | | 11550 | 45.08 | -28.92 | 74 | 44.91 | 38.44 | 18.95 | 57.22 | 100 | 0 | P | V |
| 5775MHz | | 17325 | 51.85 | -16.35 | 68.2 | 42.56 | 41.66 | 23.43 | 55.8 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

3. No other spurious found.
4. All results are PASS against Peak and Average limit line.

## <TXBF Mode>

### Band 4 - 5725~5850MHz

### WIFI 802.11ac VHT20 (Band Edge @ 3m)

| WIFI Ant. | Note | Frequency | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1+2 | | ( MHz ) | ( dBµV/m ) | ( dB ) | ( dBµV/m ) | ( dBµV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| | | 5636 | 55.59 | -12.61 | 68.2 | 42.29 | 35.09 | 12.61 | 34.4 | 100 | 311 | P | H |
| | | 5698.6 | 62.81 | -41.36 | 104.17 | 49.39 | 35.17 | 12.67 | 34.42 | 100 | 311 | P | H |
| | | 5712 | 71.32 | -37.24 | 108.56 | 57.82 | 35.19 | 12.73 | 34.42 | 100 | 311 | P | H |
| | | 5724.2 | 81.29 | -39.09 | 120.38 | 67.77 | 35.21 | 12.73 | 34.42 | 100 | 311 | P | H |
| | * | 5745 | 116.31 | - | - | 102.71 | 35.24 | 12.79 | 34.43 | 100 | 311 | P | H |
| | * | 5745 | 108.76 | - | - | 95.16 | 35.24 | 12.79 | 34.43 | 100 | 311 | A | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT20 | | | | | | | | | | | | | H |
| CH 149 | | 5637 | 54.61 | -13.59 | 68.2 | 41.31 | 35.09 | 12.61 | 34.4 | 339 | 233 | P | V |
| 5745MHz | | 5695.4 | 58.69 | -43.12 | 101.81 | 45.27 | 35.17 | 12.67 | 34.42 | 339 | 233 | P | V |
| | | 5720 | 70.29 | -40.51 | 110.8 | 56.77 | 35.21 | 12.73 | 34.42 | 339 | 233 | P | V |
| | | 5723.6 | 77.56 | -41.45 | 119.01 | 64.04 | 35.21 | 12.73 | 34.42 | 339 | 233 | P | V |
| | * | 5745 | 111.71 | - | - | 98.11 | 35.24 | 12.79 | 34.43 | 339 | 233 | P | V |
| | * | 5745 | 105.24 | - | - | 91.64 | 35.24 | 12.79 | 34.43 | 339 | 233 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

5. No other spurious found.
6. All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT20 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11490 | 46.03 | -27.97 | 74 | 46.11 | 38.38 | 18.88 | 57.34 | 100 | 0 | P | H |
| | | 17235 | 61.38 | -6.82 | 68.2 | 52.03 | 41.77 | 23.38 | 55.8 | 100 | 0 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT20 | | | | | | | | | | | | | H |
| CH 149 | | 11490 | 45.13 | -28.87 | 74 | 45.21 | 38.38 | 18.88 | 57.34 | 100 | 0 | P | V |
| 5745MHz | | 17235 | 55.96 | -12.24 | 68.2 | 46.61 | 41.77 | 23.38 | 55.8 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

5. No other spurious found.
6. All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT40 (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5644.2 | 61.02 | -7.18 | 68.2 | 47.72 | 35.09 | 12.61 | 34.4 | 100 | 311 | P | H |
| | | 5699 | 70.51 | -33.95 | 104.46 | 57.09 | 35.17 | 12.67 | 34.42 | 100 | 311 | P | H |
| | | 5708.2 | 82.92 | -24.58 | 107.5 | 69.42 | 35.19 | 12.73 | 34.42 | 100 | 311 | P | H |
| | | 5722.6 | 84.16 | -32.57 | 116.73 | 70.64 | 35.21 | 12.73 | 34.42 | 100 | 311 | P | H |
| | * | 5755 | 109.4 | - | - | 95.78 | 35.26 | 12.79 | 34.43 | 100 | 311 | P | H |
| | * | 5755 | 102.78 | - | - | 89.16 | 35.26 | 12.79 | 34.43 | 100 | 311 | A | H |
| | | 5850.6 | 55.82 | -65.01 | 120.83 | 41.96 | 35.38 | 12.94 | 34.46 | 100 | 311 | P | H |
| | | 5858.6 | 55.44 | -54.35 | 109.79 | 41.56 | 35.41 | 12.94 | 34.47 | 100 | 311 | P | H |
| | | 5877.8 | 54.49 | -48.63 | 103.12 | 40.51 | 35.43 | 13.02 | 34.47 | 100 | 311 | P | H |
| | | 5938.6 | 53.42 | -14.78 | 68.2 | 39.27 | 35.53 | 13.11 | 34.49 | 100 | 311 | P | H |
| **802.11ac** | | | | | | | | | | | | | H |
| **VHT40** | | | | | | | | | | | | | H |
| **CH 151** | | 5632 | 55.66 | -12.54 | 68.2 | 42.38 | 35.07 | 12.61 | 34.4 | 363 | 63 | P | V |
| **5755MHz** | | 5700 | 66.48 | -38.72 | 105.2 | 53.06 | 35.17 | 12.67 | 34.42 | 363 | 63 | P | V |
| | | 5712.2 | 78.96 | -29.66 | 108.62 | 65.46 | 35.19 | 12.73 | 34.42 | 363 | 63 | P | V |
| | | 5723.6 | 79.1 | -39.91 | 119.01 | 65.58 | 35.21 | 12.73 | 34.42 | 363 | 63 | P | V |
| | * | 5755 | 104.57 | - | - | 90.95 | 35.26 | 12.79 | 34.43 | 363 | 63 | P | V |
| | * | 5755 | 97.64 | - | - | 84.02 | 35.26 | 12.79 | 34.43 | 363 | 63 | A | V |
| | | 5850.6 | 54.42 | -66.41 | 120.83 | 40.56 | 35.38 | 12.94 | 34.46 | 363 | 63 | P | V |
| | | 5867.8 | 55.18 | -52.03 | 107.21 | 41.22 | 35.41 | 13.02 | 34.47 | 363 | 63 | P | V |
| | | 5921 | 53.48 | -17.67 | 71.15 | 39.37 | 35.48 | 13.11 | 34.48 | 363 | 63 | P | V |
| | | 5929.6 | 53.43 | -14.77 | 68.2 | 39.3 | 35.5 | 13.11 | 34.48 | 363 | 63 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

5. No other spurious found.
6. All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT40 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11510 | 45.51 | -28.49 | 74 | 45.49 | 38.4 | 18.92 | 57.3 | 100 | 0 | P | H |
| | | 17265 | 51.93 | -16.27 | 68.2 | 42.6 | 41.73 | 23.4 | 55.8 | 100 | 0 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT40 | | | | | | | | | | | | | H |
| CH 151 | | 11510 | 45.08 | -28.92 | 74 | 45.06 | 38.4 | 18.92 | 57.3 | 100 | 0 | P | V |
| 5755MHz | | 17265 | 51.05 | -17.15 | 68.2 | 41.72 | 41.73 | 23.4 | 55.8 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

5. No other spurious found.
6. All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT80 (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5643 | 64.73 | -3.47 | 68.2 | 51.43 | 35.09 | 12.61 | 34.4 | 100 | 316 | P | H |
| | | 5699 | 76.49 | -27.97 | 104.46 | 63.07 | 35.17 | 12.67 | 34.42 | 100 | 316 | P | H |
| | | 5718 | 78.67 | -31.57 | 110.24 | 65.15 | 35.21 | 12.73 | 34.42 | 100 | 316 | P | H |
| | | 5724.8 | 78.39 | -43.35 | 121.74 | 64.87 | 35.21 | 12.73 | 34.42 | 100 | 316 | P | H |
| | * | 5775 | 107.9 | - | - | 94.26 | 35.29 | 12.79 | 34.44 | 100 | 316 | P | H |
| | * | 5775 | 99.6 | - | - | 85.96 | 35.29 | 12.79 | 34.44 | 100 | 316 | A | H |
| | | 5853.4 | 68.59 | -45.86 | 114.45 | 54.73 | 35.38 | 12.94 | 34.46 | 100 | 316 | P | H |
| | | 5868.2 | 70.56 | -36.54 | 107.1 | 56.6 | 35.41 | 13.02 | 34.47 | 100 | 316 | P | H |
| | | 5877.6 | 65.03 | -38.24 | 103.27 | 51.05 | 35.43 | 13.02 | 34.47 | 100 | 316 | P | H |
| | | 5933 | 53.75 | -14.45 | 68.2 | 39.62 | 35.5 | 13.11 | 34.48 | 100 | 316 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT80 | | | | | | | | | | | | | H |
| CH 155 | | 5639.2 | 57.89 | -10.31 | 68.2 | 44.59 | 35.09 | 12.61 | 34.4 | 100 | 328 | P | V |
| 5775MHz | | 5677.4 | 70.23 | -18.29 | 88.52 | 56.83 | 35.14 | 12.67 | 34.41 | 100 | 328 | P | V |
| | | 5702.6 | 68.03 | -37.9 | 105.93 | 54.53 | 35.19 | 12.73 | 34.42 | 100 | 328 | P | V |
| | | 5722.8 | 67.48 | -49.7 | 117.18 | 53.96 | 35.21 | 12.73 | 34.42 | 100 | 328 | P | V |
| | * | 5775 | 99.69 | - | - | 86.05 | 35.29 | 12.79 | 34.44 | 100 | 328 | P | V |
| | * | 5775 | 92.57 | - | - | 78.93 | 35.29 | 12.79 | 34.44 | 100 | 328 | A | V |
| | | 5850.6 | 66.24 | -54.59 | 120.83 | 52.38 | 35.38 | 12.94 | 34.46 | 100 | 328 | P | V |
| | | 5861.2 | 68.22 | -40.84 | 109.06 | 54.26 | 35.41 | 13.02 | 34.47 | 100 | 328 | P | V |
| | | 5875.6 | 64.96 | -39.79 | 104.75 | 50.98 | 35.43 | 13.02 | 34.47 | 100 | 328 | P | V |
| | | 5935.2 | 53.89 | -14.31 | 68.2 | 39.77 | 35.5 | 13.11 | 34.49 | 100 | 328 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

5. No other spurious found.
6. All results are PASS against Peak and Average limit line.

**Band 4 5725~5850MHz**

**WIFI 802.11ac VHT80 (Harmonic @ 3m)**

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11550 | 45.74 | -28.26 | 74 | 45.57 | 38.44 | 18.95 | 57.22 | 100 | 0 | P | H |
| | | 17325 | 53.66 | -14.54 | 68.2 | 44.37 | 41.66 | 23.43 | 55.8 | 100 | 0 | P | H |
| 802.11ac | | | | | | | | | | | | | H |
| VHT80 | | | | | | | | | | | | | H |
| CH 155 | | 11550 | 45.44 | -28.56 | 74 | 45.27 | 38.44 | 18.95 | 57.22 | 100 | 0 | P | V |
| 5775MHz | | 17325 | 51.18 | -17.02 | 68.2 | 41.89 | 41.66 | 23.43 | 55.8 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

5. No other spurious found.
6. All results are PASS against Peak and Average 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 | Cable | 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. Level(dBμV/m) =

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

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

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable 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) + Cable 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 B. Radiated Spurious Emission Plots

| | | | |
|---|---|---|---|
| **Test Engineer :** | Jesse Wang | **Temperature :** | 23~27°C |
| | | **Relative Humidity :** | 55~58% |

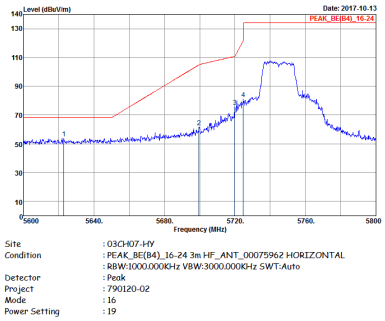
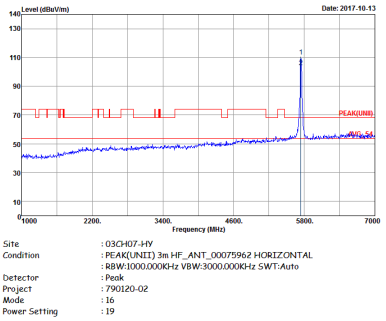
**Note symbol**

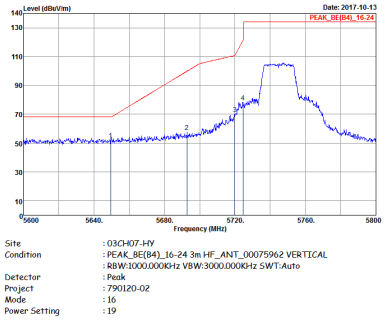
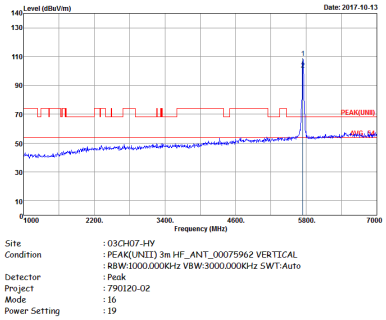
| | |
|---|---|
| -L | **Low channel location** |
| -R | **High channel location** |

## <CDD Mode>

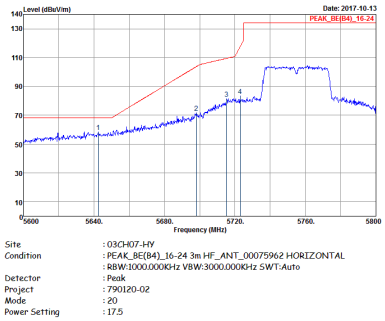
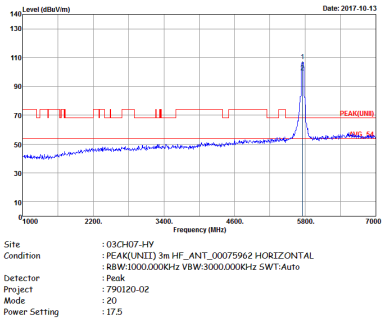
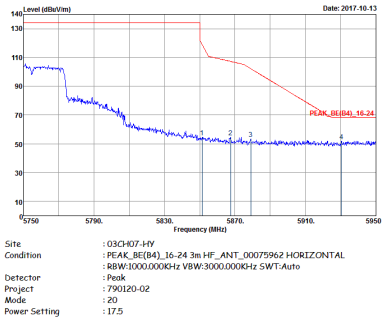
## Band 4 - 5725~5850MHz

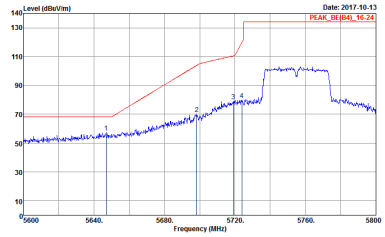
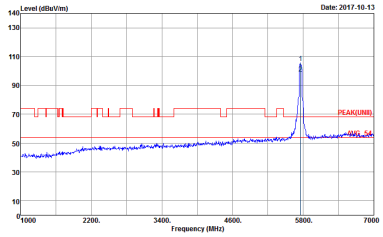
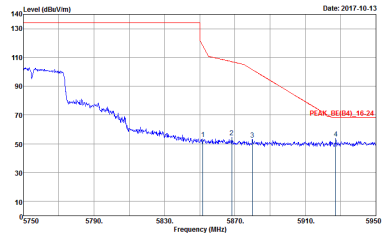
## WIFI 802.11ac VHT20 (Band Edge @ 3m)

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT20 CH149 5745MHz | |
| 1 | Horizontal | Fundamental |
| Peak |  |  |

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT20 CH149 5745MHz | |
| 1 | Vertical | Fundamental |
| Peak<br>Avg. |  |  |

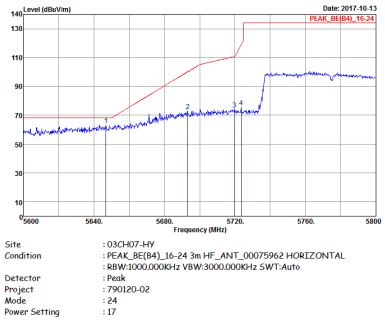
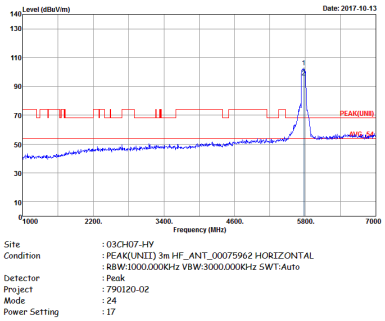
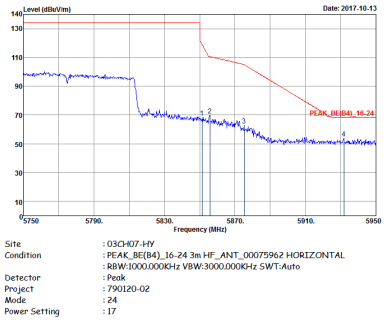
## Band 4 5725~5850MHz
## WIFI 802.11ac VHT40 (Band Edge @ 3m)

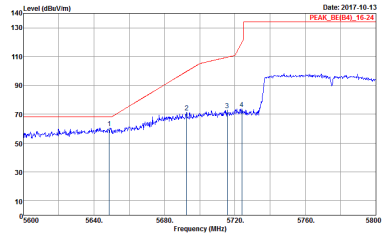
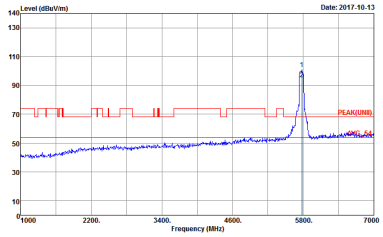
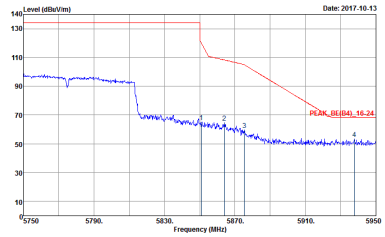
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT40 CH151 5755MHz | |
| 1 | Horizontal | Fundamental |
| Peak |  |  |
| Peak |  | Left blank |

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT40 CH151 5755MHz | |
| 1 | Vertical | Fundamental |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 20<br>Power Setting : 17.5 |  <br>Site : 03CH07-HY<br>Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 20<br>Power Setting : 17.5 |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 20<br>Power Setting : 17.5 | Left blank |

## Band 4 5725~5850MHz

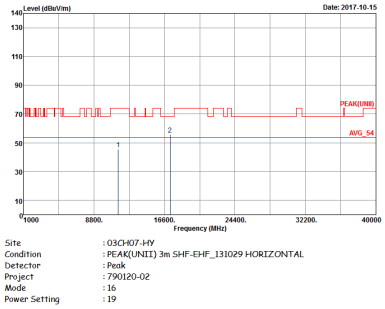
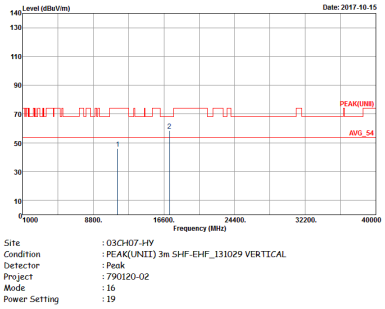
## WIFI 802.11ac VHT80 (Band Edge @ 3m)

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT80 CH155 5775MHz | |
| 1 | Horizontal | Fundamental |
| Peak |  |  |
| Peak |  | Left blank |

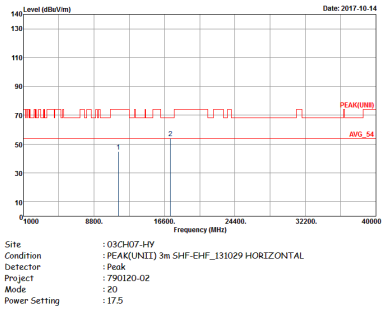
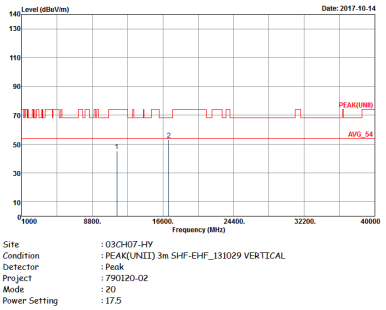
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT80 CH155 5775MHz | |
| 1 | Vertical | Fundamental |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 24<br>Power Setting : 17 |  <br>Site : 03CH07-HY<br>Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 24<br>Power Setting : 17 |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 24<br>Power Setting : 17 | Left blank |

## Band 4 - 5725~5850MHz

## WIFI 802.11ac VHT20 (Harmonic @ 3m)

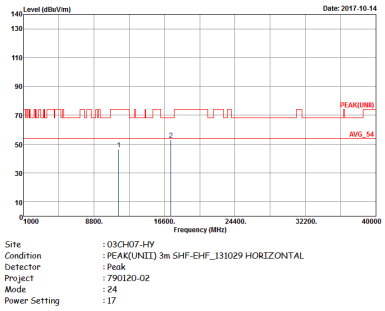
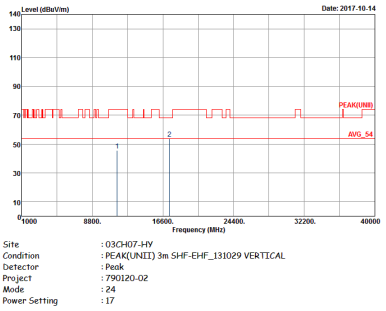
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT20 CH149 5745MHz | |
| 1 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

## Band 4 5725~5850MHz
## WIFI 802.11ac VHT40 (Harmonic @ 3m)

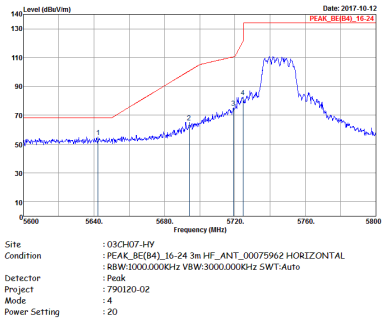
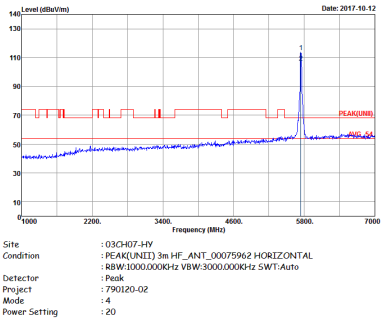
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT40 CH151 5755MHz | |
| 1 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

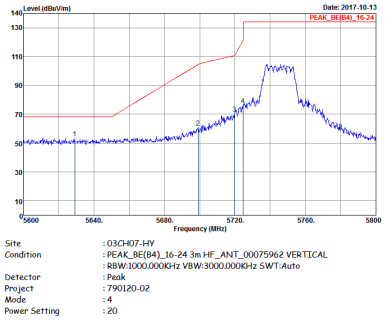
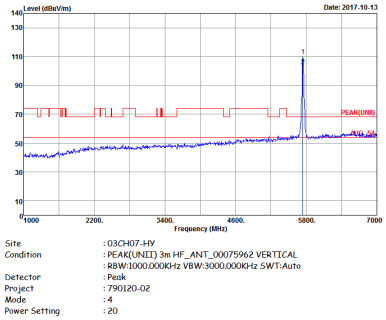
## Band 4 5725~5850MHz

## WIFI 802.11ac VHT80 (Harmonic @ 3m)

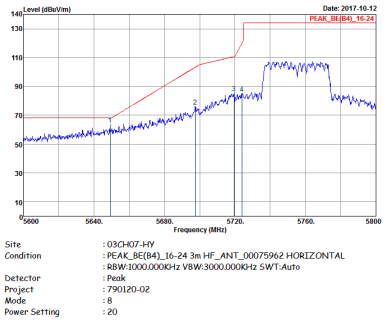
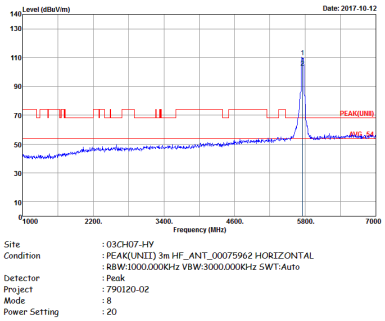
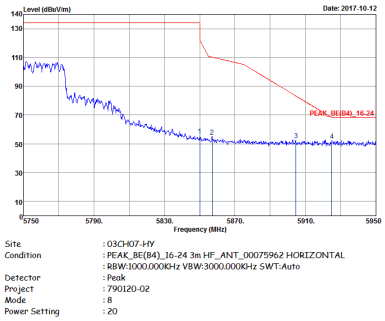
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT80 CH155 5775MHz | |
| 1 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

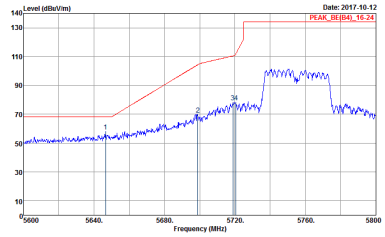
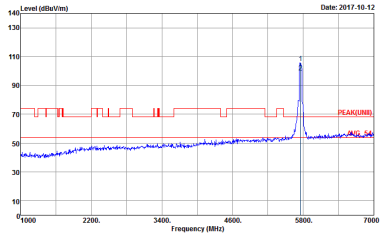
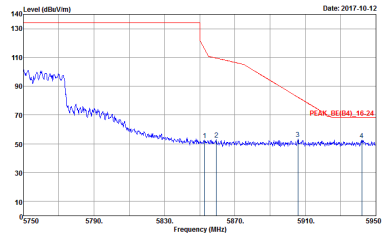
## Band 4 5725~5850MHz
## WIFI 802.11ac VHT20 (Band Edge @ 3m)

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT20 CH149 5745MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT20 CH149 5745MHz | |
| 1+2 | Vertical | Fundamental |
| Peak<br>Avg. |  |  |

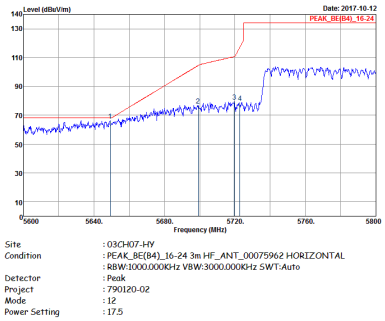
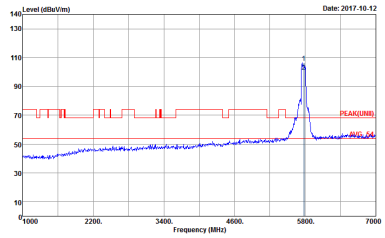
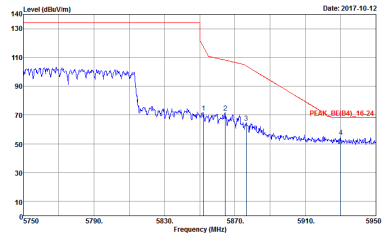
## Band 4 5725~5850MHz
## WIFI 802.11ac VHT40 (Band Edge @ 3m)

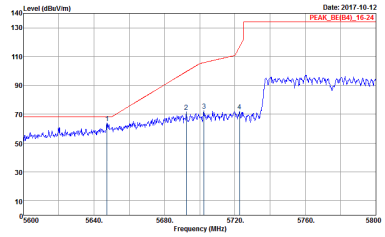
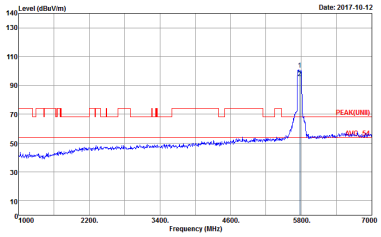
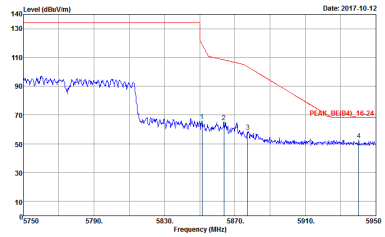
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT40 CH151 5755MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Peak |  | Left blank |

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT40 CH151 5755MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 8<br>Power Setting : 20 |  <br>Site : 03CH07-HY<br>Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 8<br>Power Setting : 20 |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 8<br>Power Setting : 20 | Left blank |

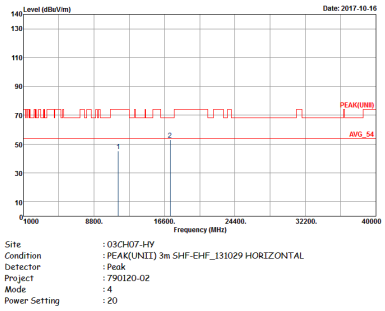
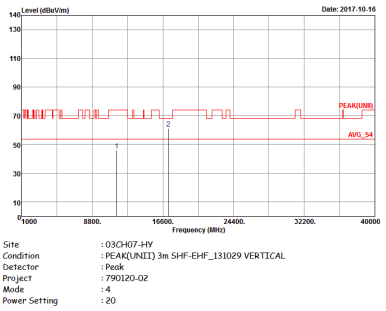
## Band 4 5725~5850MHz

## WIFI 802.11ac VHT80 (Band Edge @ 3m)

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT80 CH155 5775MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 12<br>Power Setting : 17.5 |  <br>Site : 03CH07-HY<br>Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 12<br>Power Setting : 17.5 |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 12<br>Power Setting : 17.5 | Left blank |

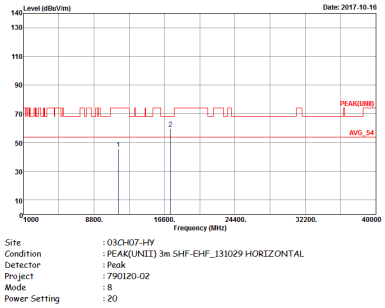
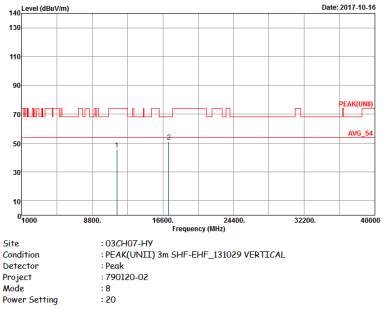
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT80 CH155 5775MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 12<br>Power Setting : 17.5 |  <br>Site : 03CH07-HY<br>Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 12<br>Power Setting : 17.5 |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 12<br>Power Setting : 17.5 | Left blank |

## Band 4 5725~5850MHz
## WIFI 802.11ac VHT20 (Harmonic @ 3m)

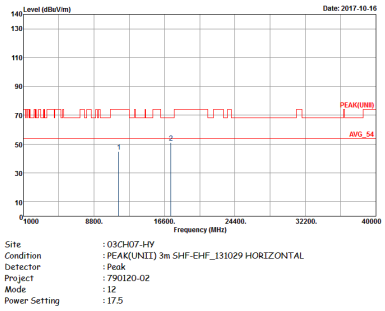
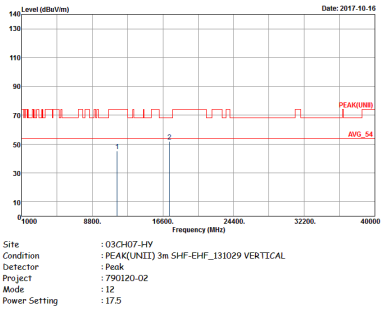
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT20 CH149 5745MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT40 (Harmonic @ 3m)

| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT40 CH151 5755MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

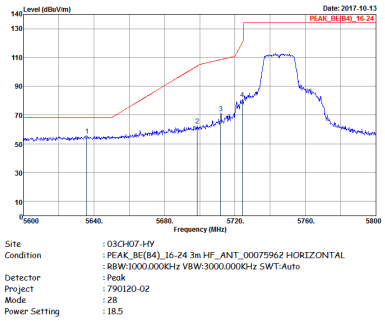
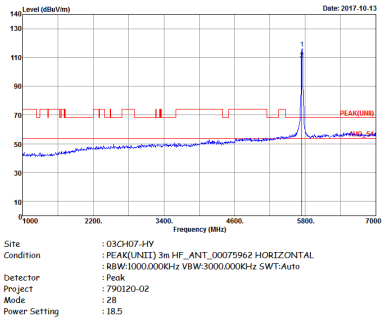
## Band 4 5725~5850MHz
## WIFI 802.11ac VHT80 (Harmonic @ 3m)

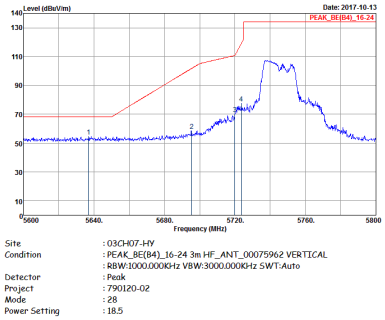
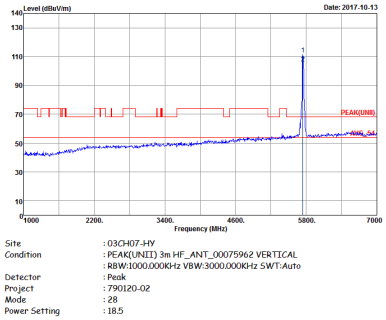
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT80 CH155 5775MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

## <TXBF Mode>

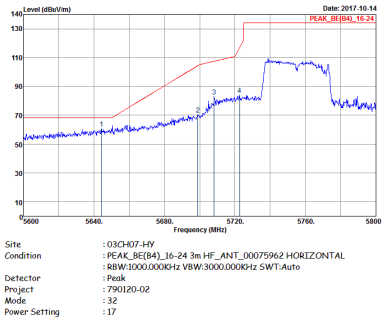
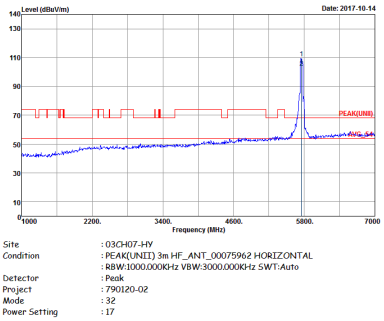
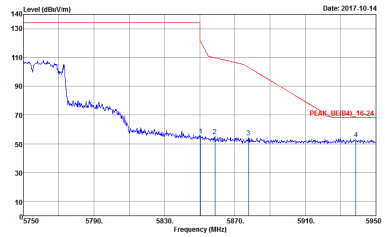
## Band 4 - 5725~5850MHz

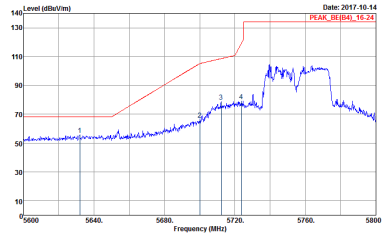
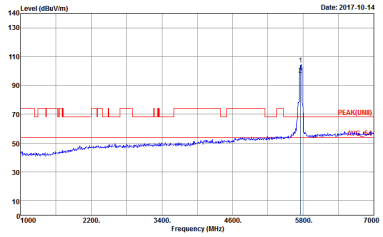
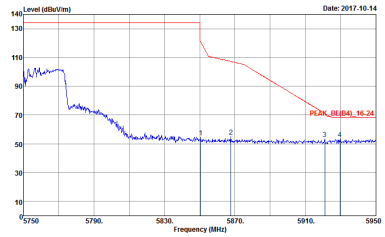
## WIFI 802.11ac VHT20 (Band Edge @ 3m)

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT20 CH149 5745MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT20 CH149 5745MHz | |
| 1+2 | Vertical | Fundamental |
| Peak<br>Avg. |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 28<br>Power Setting : 18.5 |  <br>Site : 03CH07-HY<br>Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 28<br>Power Setting : 18.5 |

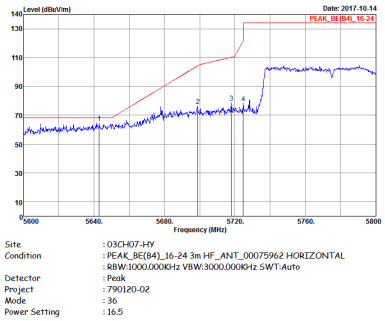
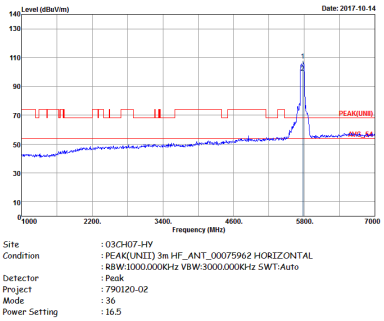
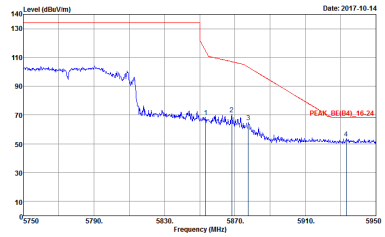
## Band 4 5725~5850MHz
## WIFI 802.11ac VHT40 (Band Edge @ 3m)

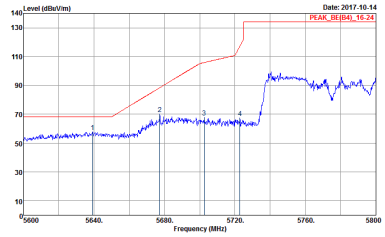
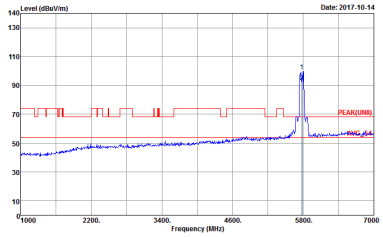
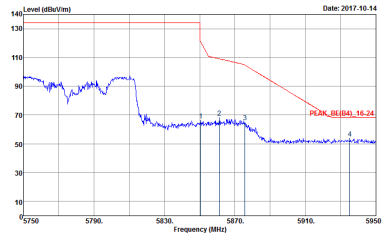
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT40 CH151 5755MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 32<br>Power Setting : 17 |  <br>Site : 03CH07-HY<br>Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 32<br>Power Setting : 17 |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 32<br>Power Setting : 17 | Left blank |

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT40 CH151 5755MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 32<br>Power Setting : 17 |  <br>Site : 03CH07-HY<br>Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 32<br>Power Setting : 17 |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 32<br>Power Setting : 17 | Left blank |

## Band 4 5725~5850MHz

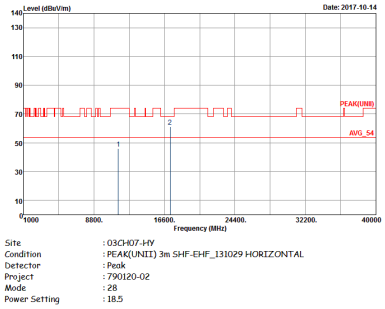
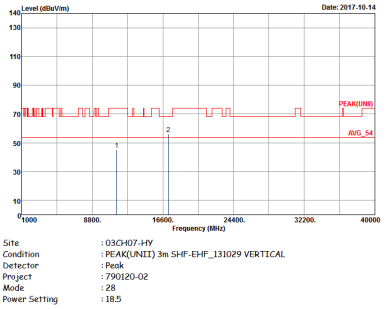
## WIFI 802.11ac VHT80 (Band Edge @ 3m)

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT80 CH155 5775MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 36<br>Power Setting : 16.5 |  <br>Site : 03CH07-HY<br>Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 36<br>Power Setting : 16.5 |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 36<br>Power Setting : 16.5 | Left blank |

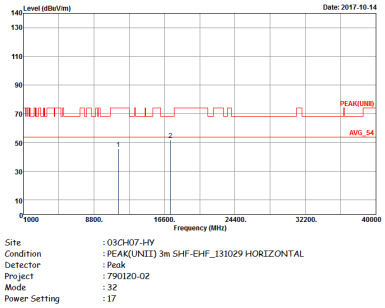
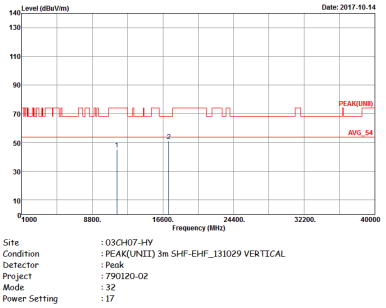
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT80 CH155 5775MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 36<br>Power Setting : 16.5 |  <br>Site : 03CH07-HY<br>Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 36<br>Power Setting : 16.5 |
| Peak |  <br>Site : 03CH07-HY<br>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL<br>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br>Detector : Peak<br>Project : 790120-02<br>Mode : 36<br>Power Setting : 16.5 | Left blank |

## Band 4 - 5725~5850MHz

## WIFI 802.11ac VHT20 (Harmonic @ 3m)

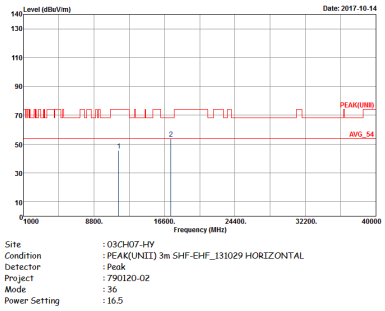
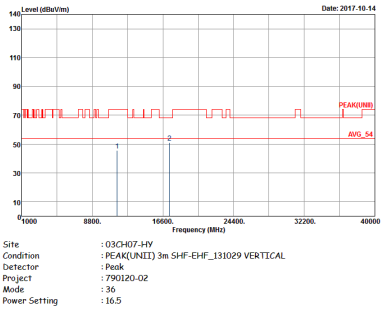
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT20 CH149 5745MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

## Band 4 5725~5850MHz
## WIFI 802.11ac VHT40 (Harmonic @ 3m)

| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT40 CH151 5755MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT80 (Harmonic @ 3m)

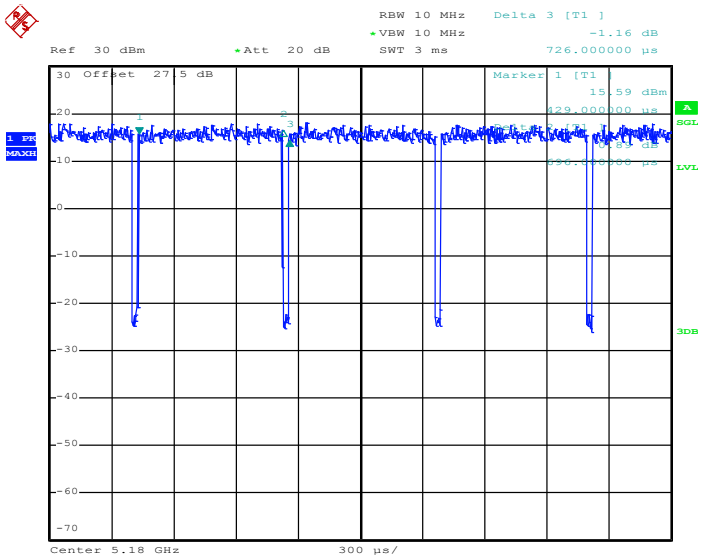
| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11ac VHT80 CH155 5775MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

# Appendix C. Duty Cycle Plots

| Antenna | Band | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting |
|---|---|---|---|---|---|
| 1 | 5GHz 802.11ac VHT20 | 95.87 | 696.00 | 1.44 | 3kHz |
| 1+2 | 5GHz 802.11ac VHT20 for Ant. 1 | 95.08 | 696.00 | 1.44 | 3kHz |
| 1+2 | 5GHz 802.11ac VHT20 for Ant. 2 | 95.90 | 702.00 | 1.42 | 3kHz |
| 1 | 5GHz 802.11ac VHT40 | 91.84 | 360.00 | 2.78 | 3kHz |
| 1+2 | 5GHz 802.11ac VHT40 for Ant. 1 | 91.84 | 360.00 | 2.78 | 3kHz |
| 1+2 | 5GHz 802.11ac VHT40 for Ant. 2 | 91.84 | 360.00 | 2.78 | 3kHz |
| 1 | 5GHz 802.11ac VHT80 | 85.32 | 186.00 | 5.38 | 10kHz |
| 1+2 | 5GHz 802.11ac VHT80 for Ant. 1 | 86.24 | 188.00 | 5.32 | 10kHz |
| 1+2 | 5GHz 802.11ac VHT80 for Ant. 2 | 86.24 | 188.00 | 5.32 | 10kHz |

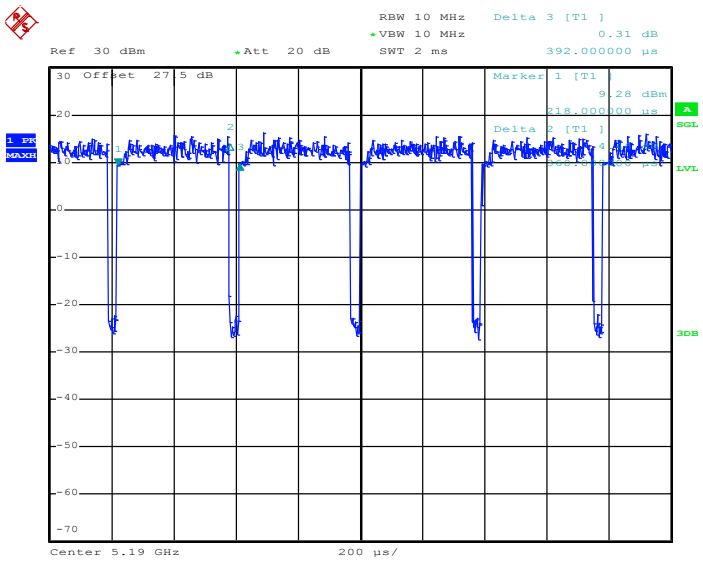
**<Ant. 1>**

**802.11ac VHT20**



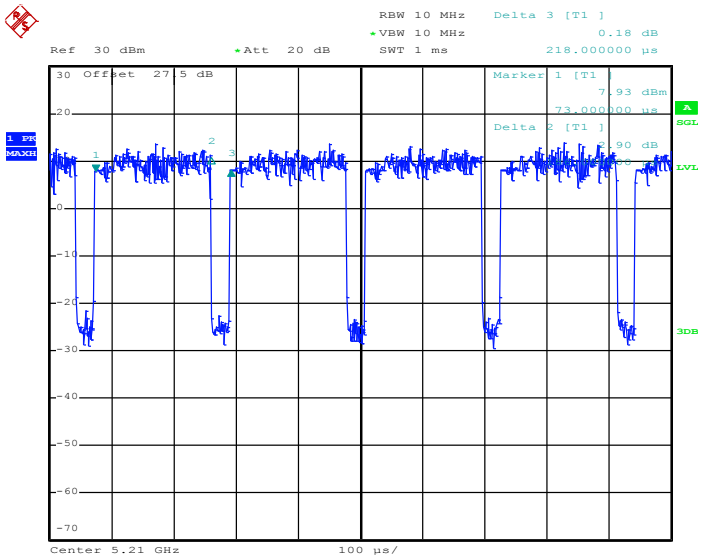

Date: 4.OCT.2017 10:04:56

**802.11ac VHT40**




Date: 4.OCT.2017 11:25:23

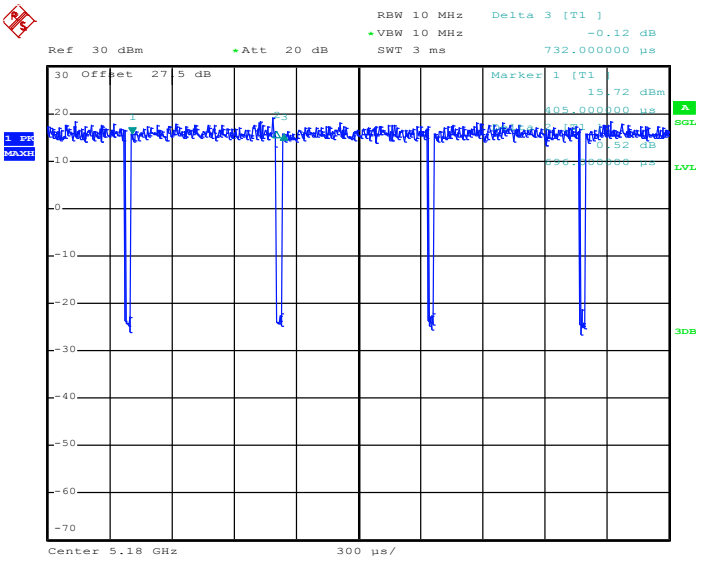
## 802.11ac VHT80




Date: 4.OCT.2017 12:05:20

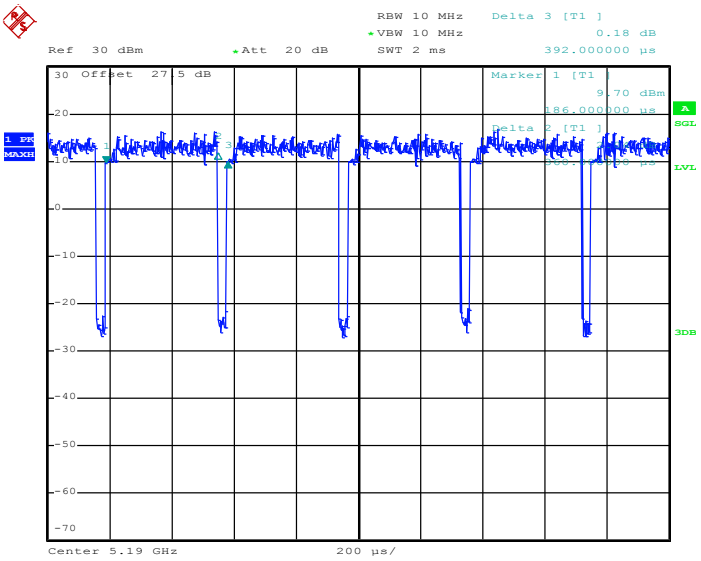
**<MIMO Ant. 1>**

**802.11ac VHT20**



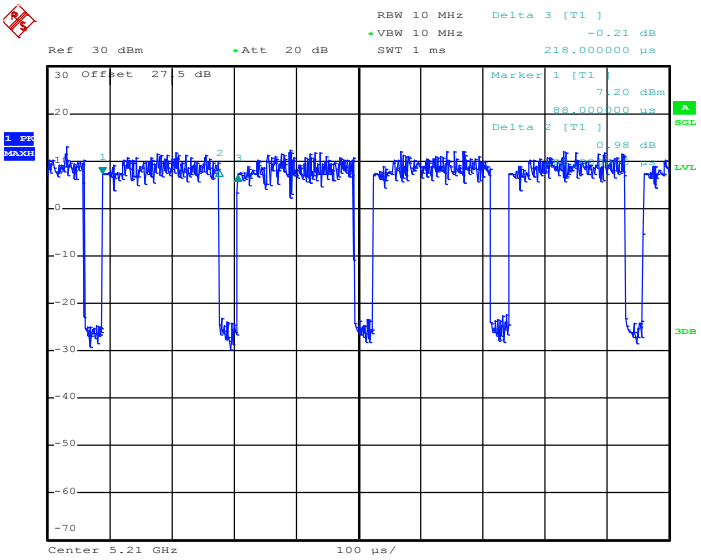

Date: 4.OCT.2017 10:09:24

**802.11ac VHT40**




Date: 4.OCT.2017 11:30:57

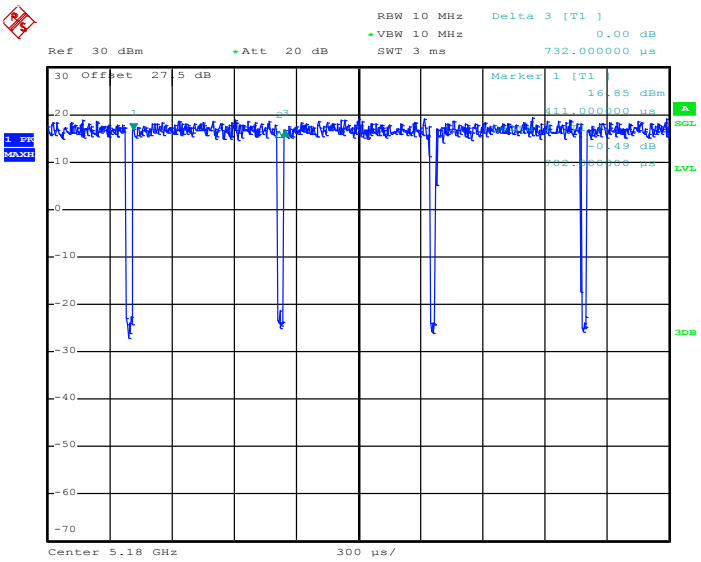
## 802.11ac VHT80




Date: 4.OCT.2017 12:10:04

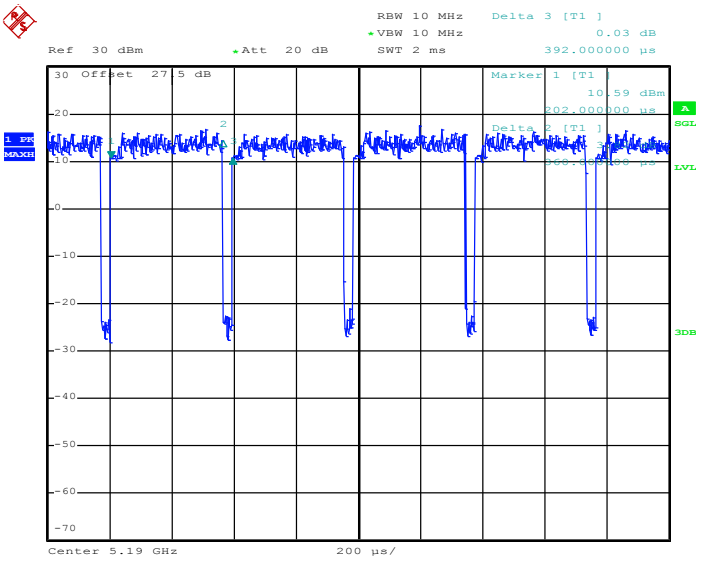
**<MIMO Ant. 2>**

**802.11ac VHT20**



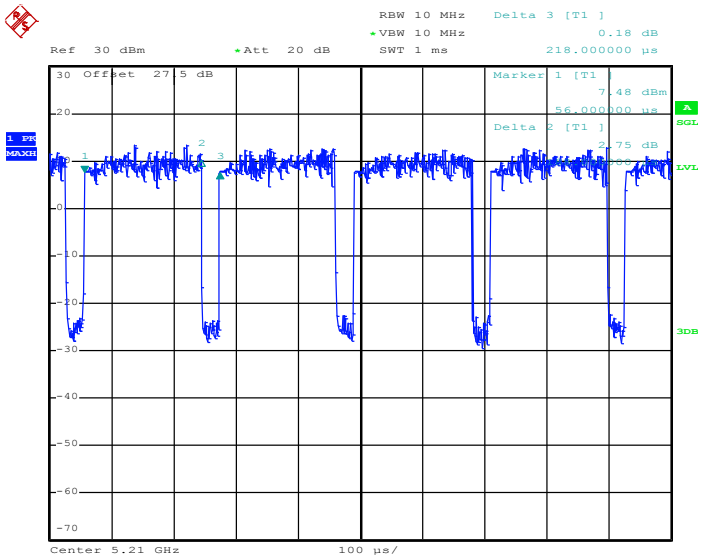

Date: 4.OCT.2017 10:10:04

**802.11ac VHT40**




Date: 4.OCT.2017 11:31:45

## 802.11ac VHT80




Date: 4.OCT.2017 12:11:08